THE OXFORD ENCYCLOPEDIA OF
ARCHAEOLOGY IN THE NEAR EAST

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THE OXFORD ENCYCLOPEDIA OF ARCHAEOLOGY IN THE NEAR EAST

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Eric M. Meyers
EDITOR IN CHIEF

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PREFACE

The genesis of this work was in 1988 when the American Schools of Oriental Research (ASOR) moved its headquarters from Philadelphia to the campus of the Johns Hopkins University in Baltimore. As first vice president for publications I was encouraged by the ASOR Board of Trustees to establish a closer working relationship with the Johns Hopkins University Press. In that context I developed a project entitled *The ASOR Handbook of Biblical Archaeology*, which was to be an authoritative one-volume reference work on all aspects of the material culture of the lands of the Bible in antiquity. The geographical region to be covered was Syria-Palestine, or the modern territories of Israel, Jordan, Syria, and Lebanon. The chronological range was to have been the Early Bronze Age to the Byzantine period. The idea was to make available and easily accessible the results of modern archaeological scholarship to readers interested in the ancient Near East and biblical studies. A major motivating factor was the absence of such a work in the existing literature.

The model for the ASOR handbook was a German classic in the field, Kurt Galling's *Biblisches Reallexikon*, largely unavailable to English readers and long ago out of print. From the outset, the ASOR handbook was to have endeavored to bring together the results of archaeological fieldwork, epigraphy, and literary-historical studies. Archaeological fieldwork was also understood as something more than site reports. Rather, it was viewed as a means of securing data that would lead to a better understanding of aspects of everyday life such as agriculture, family life, medicine and public health, clothing, diet, and architecture; it was a way of examining how different sorts of material culture shaped and were shaped by the environment. Similarly, a major concern was to have been the economy of the peoples of the Levant; their industries, such as the production of agricultural commodities, glassmaking, shipbuilding, metallurgy, and so forth, were to be considered. The more familiar quest to determine the social world as well as the political setting of the peoples and cultures of the ancient Near East remained a basic aim from the outset. In addition, true to the tradition of W. F. Albright—preeminent archaeologist and orientalist, former professor of Near Eastern Studies at the Johns Hopkins University and long-term director of ASOR's Jerusalem school—the handbook would deal with the full range of written materials that have survived from Syria-Palestine, from the origins of alphabetic writing to the development of elaborate scribal practices and varied literatures. Finally, the project would embrace the challenge of explaining archaeological techniques, theory, methods, and practice including all matters pertaining to science and archaeology.

It soon became apparent to me and my counterparts at the Johns Hopkins University Press that such an undertaking was far too ambitious for ASOR and Hopkins and that what I envisioned fell squarely into the area of encyclopedic reference works. It was then, in seeking a publisher with a strong reference department, that ASOR and Oxford University Press came together.

After a few consultations with members of the reference department it became abundantly clear that there were many conceptual issues to be resolved before such a project could commence. The first issue to be considered was that of length. After several meetings I was convinced that the only way that the wide variety of issues to be covered could be properly accommodated was through a multivolume approach. The idea of bringing texts

into dialogue with archaeological realia was appealing to all of us. No less important was the hope that this project would bring scholars from all countries of the region into dialogue with one another for the first time. Given the reality, at that time, of the Israeli-Palestinian conflict, which separated Israel from the rest of the Arab world, this was to be one of the greatest challenges but one that ASOR, with its historic position of neutrality in political matters and with research centers in both worlds, and Oxford University Press were particularly capable of meeting.

In organizing the editorial board I was mindful of all of these concerns. The inclusion of James A. Sauer, with his long experience in Jordan and the rest of the Arab world and knowledge of the sites there, was intended to ensure the participation of scholars from those countries where Americans have had only limited experience and even less familiarity with the data uncovered. The combination of William G. Dever's extensive field experience in Israel with my own work there as well as that of Carol Meyers was designed to attract our distinguished Israeli colleagues. James Muhly's expertise in several important areas—ancient history, the archaeology of the Aegean, and aspects of scientific approaches to the discipline—was deemed valuable to the project. Dennis Pardee seemed uniquely qualified to handle matters concerning ancient Near Eastern languages and literatures, especially Semitics, linguistics, and epigraphy. Carol Meyers's participation was enlisted in addition to her work in Israel, for her particular interest in methodology, theory, and social science aspects of the archaeological enterprise. My own focus on the classical periods and on the history of the discipline were considered beneficial and sufficient to guide us through those areas.

When the editorial board first met, we were of course aware that work was proceeding on the Israel Exploration Society's *New Encyclopedia of Archaeological Excavations in the Holy Land*; indeed, those of us who had contributed to the society's previous encyclopedia, published in English in 1975-1978, had been asked to revise and update our articles. The anticipated publication of their project was hardly a deterrent to us in our planning because theirs was to be strictly an encyclopedia of sites, virtually all of which are in Israel. As the development of our table of contents progressed, we learned that another multivolume work, titled *Civilizations of the Ancient Near East*, was being planned. Although comprehensive in its intended coverage of the region and its ancient cultures, the work was to be a collection of about two hundred lengthy and somewhat idiosyncratic topical essays, thematically organized, which would make it far less useful as a reference work than a standard encyclopedia, with its more specific, alphabetically arranged articles. Both works eventually were published, the former in 1993 (English edition) and the latter in 1995.

As the editorial team began the serious work of laying out a general plan, it became clear that we did not want to limit our geographical locations to the Levant. Rather, we were interested in the archaeology of the entire Near East, from the eastern Mediterranean to Iran, from Anatolia to the Arabian Peninsula; we also wanted to include Egypt, Cyprus, and parts of North and East Africa. Because of ASOR's particular role in the archaeology of Cyprus there was hardly any argument there. What soon became a very real problem for all of us was the classical world and the question of sites relating to the New Testament. In thinking about the Hellenistic world or the Roman Empire it became very difficult to limit our scope to the territories associated with the Near East. What would we do with Rome or Athens, the Italian Peninsula and Greece? If we would deal only with sites relating to the New Testament world how would that section stand up vis-à-vis the other conceptual categories in the encyclopedia?

In the end, we opted for the geographical principle and added places such as Malta and Sardinia where Semitic culture had been strong since antiquity, the Aegean world, and North Africa as far as Morocco. Anatolia would be our northern boundary, Iran our eastern boundary, and Ethiopia and the Arabian Peninsula our southern limits. In a way we adopted Albright's inclusive geographical view of the ancient Near East and decided to employ a broader chronological range as well. Since so much important new archaeo-

logical work is being done in periods prior to the Bronze Age, we felt that any new archaeological reference work could not fail to treat the newest discoveries in prehistory.

At the other end of the chronological spectrum it seemed less and less acceptable to end our studies in the Byzantine period, especially given the recent upsurge of interest and discoveries in the field of Islamic archaeology. In the end we decided to extend our coverage through the Crusades while allowing for individual authors to discuss some sites and some aspects of material culture of even later periods where appropriate. It should be noted, however, that many subjects and sites do not fall easily into the categories or parameters of the project. In some regions or countries certain periods of human history simply have not received as much attention as others. Islamic archaeology is stronger, as might be expected, in the Arab world. Iron Age archaeology is stronger in Israel because of interest in the Bible and the ancient kingdom of Israel. More extensive digging in Israel, for example, has resulted in the fact that more is known about its antiquity than about most other ancient societies. Correspondingly, the relatively fewer excavations in Arabia and East Africa and the current political situation in those areas means that our knowledge of their ancient cultures is more limited. Our coverage of individual countries thus varies considerably. For all areas we have tried to engage scholars with firsthand knowledge of the site, region, or topic to present available data with the idea of being as current and accurate as possible. Needless to say we have been more successful in some cases than in others.

Given the major reconceptualization of the project after our initial meetings with the Oxford University Press reference editors, it was impossible for us to title our project anything but what we in truth had become, an encyclopedia of Near Eastern archaeology. While some of us had some nostalgic feelings for titles such as *Encyclopedia of Archaeology in the Biblical World* or some variant of that, in the end we were all more comfortable with the more descriptive, geographical nomenclature, which we also believed was more appropriate, less political, and more inclusive: *The Oxford Encyclopedia of Archaeology in the Near East.* With our larger geographical and chronological scope there was no disposition or reason whatever to use the term *Syro-Palestinian* in the title of what was to be a multivolume work. Although Syria-Palestine remains very much at the core of these volumes, it is largely the result of the fact that there has been more historic interest, and consequently, more fieldwork in that area.

The cultures of both ancient Egypt and Mesopotamia, which have held such places of pride in Western consciousness since the beginning of the nineteenth century, especially after the decipherment of hieroglyphics and cuneiform (see "History of the Field," *overview article*), presented us with special problems as we planned our coverage. Both cultures have enormous literatures and complex histories that cannot be comprehensively presented even in a five-volume work such as this encyclopedia, which includes so many individual site entries. Nonetheless, we have aimed to provide sufficient coverage of these cultures so that the interested student or scholar can use our entries and their accompanying bibliographies as suitable entry points for further study. Similarly, given the limited access of Westerners, especially English speakers, to Iraq and Iran, we have only been able to highlight the most important sites there, although we have also included broader entries on all the significant historical peoples and cultures in those countries.

In pointing out some of the problems encountered in dealing with different ancient cultures, I must also mention other factors that have led to what might appear to be an unevenness in the amount of coverage and nature of the material presented for the various regions and cultures covered. Many subfields have their own audiences, and individual scholars in those fields do not necessarily know the work of other scholars engaged in similar projects in a nearby country. Egyptologists, for example, focus closely on their own subject. That is not to say that Egyptian archaeologists are uninformed about neighboring cultures or that a specialist in hieroglyphics is ignorant of Semitic languages, but in general the crossover from Egyptology to other fields is limited. Similarly, biblical ar-

chaeologists in general are not well informed about the larger ancient Near Eastern environment, in part because of contemporary regional politics but perhaps owing more to the tradition of scholarship that favors the Bible over the literatures of other Near Eastern cultures. Mesopotamian archaeologists, especially those working in Iran or Iraq, are still struggling to establish chronologies for certain periods; in other regions such efforts are no longer essential. It is only very recently that Jordanians and Israelis have had complete access to each other's published research or enjoyed the possibility of visiting each other's sites; despite the proximity of one area to the next there has been very little collaboration among local scholars in the region. In 1990 none of us had any inkling that many age-old political barriers that had so hindered synthetic thinking about the Near East region in the past would come tumbling down in the mid-1990s. These volumes do not in any sense reflect the scholarly fruits or potential benefits that will ultimately emerge as a result of the recent breakthroughs in the peace process. In this connection it is important to note also that different countries have different standards and laws for archaeological preservation and for reporting of data to the government antiquities authority. These variations have perforce affected the nature of the discipline of archaeology as practiced in individual countries or regions; it is the purpose of numerous entries in the encyclopedia to examine the implications of this reality (see, for example, "Nationalism and Archaeology").

One of the major areas of complexity has been the question of periodization and its nomenclature. Any serious reader in Near Eastern archaeology knows how heated debates can be over matters of chronology and period names. Though the editorial board considered developing its own neutral or common terminology that might be utilized by all contributors, it ultimately decided to allow the traditions of particular scholarly groups or specializations to stand. For example, the subperiods for the Iron Age used in Cyprus and in the Aegean reflect the longtime involvement and continuing influence of classical archaeologists. In general, the Arab world has eschewed certain classifications or designations that are common in Israel. For example, in the Arab world one would not encounter such expressions as *First Temple period* (a reference to Solomon's Temple from its construction in the tenth century until its destruction in 587/6 BCE) or *Israelite period*, which refers to the period of Israelite political autonomy. For obvious reasons it is more common in the Arab world than elsewhere to designate the period after the time of the prophet Muhammad as the *Islamic period* and to label the field that specializes in those periods *Islamic archaeology*. Similarly, the use by some scholars of the term *Crusader period* to designate the nearly two centuries of medieval history greatly influenced by the Crusades does not necessarily mean that it is appropriate to use such a term for the Near East as a whole.

The reader is thus alerted to such divergences and inconsistencies and should consult the chronological charts in volume 5 for assistance in terminology and the relevant individual entries for the distinctive chronological treatments by country, culture, or region. Some of the disagreements about nomenclature, it must be said, arise out of different scholarly trends in the country of the researcher rather than of the area being studied. So, for example, the British treat the transition between the Early Bronze Age and the Middle Bronze Age in their own way, referring to it as the *Intermediate Bronze Age*. Some American and Israeli scholars would call this period *Middle Bronze I*, others *Early Bronze IV*. Hence the reader is cautioned that what might be designated *late Early Bronze Age* in one culture may not be so designated in another setting. The French, whose presence has been especially strong in Egypt, North Africa, Syria, and Iraq, have their own scholarly traditions in this regard as well. The reader is referred to the regional survey entries (e.g., "Palestine," "Transjordan," "Cyprus") and their numerous sections organized by periods, and to the article "Periodization" for assistance in understanding this issue.

The attentive reader will also note that there are wide discrepancies in the periodization of what we call prehistory, roughly from the Stone Age to the Chalcolithic period. These discrepancies reflect the various levels of sophistication and refinement in establishing the

chronologies of prehistoric archaeology in different countries. Like the ones already noted, the differences are indicative of the developing nature of the discipline and should serve as an incentive to further serious inquiry.

The presentation of sites stands at the very core of the present work and represents the first time that site reports of the archaeology of the entire Near East have been brought together in a single work. It has of course been necessary to be selective in choosing which sites would receive treatment in independent entries; despite this selectivity, site entries number almost 450 of the 1,100 entries in the encyclopedia. The editors have endeavored to include entries on all of the most significant sites; others are discussed within the context of the more general entries on regions, countries, or peoples. A careful use of the index together with the synoptic outline of contents (both at the back of volume 5) should lead the interested student or scholar to the discussion of the site in question even if it is not the subject of a separate entry. However, readers may not find coverage within the encyclopedia on relatively obscure sites, information on which is likely to be found only in more specialized scholarly literature.

Some might wonder about the illustrations program and its rationale. The editorial committee relied first on the submissions of individual contributors and second on the ASOR photographic archives. We particularly wished to illustrate places and sites that are not well known, especially in such areas as Syria, Jordan, and the Arabian Peninsula. Although we ultimately had to abandon our efforts to illustrate certain articles, particularly those for which contributors were unable to provide materials, in the end we found that we had included 650 drawings, plans, and photographs, a significant increase over the 450 originally planned. In addition, there is a separate series of regional maps in volume 5 that are designed to assist the reader in locating all sites that are the subject of independent entries; the less detailed maps accompanying individual entries on empires and peoples enable the reader to understand individual cultural and political entities (e.g., ʿAbbasid Caliphate, Arameans, Roman Empire).

Just as archaeologists from different countries and different scholarly traditions have different standards and modes of communications, so too do our colleagues in the fields of linguistics, language, literature, and epigraphy. Though we have attempted to render their presentations somewhat more accessible to the nonspecialist reader through certain editorial conventions, we have not attempted to alter their fundamental mode of scholarly discourse, which for some may seem a bit technical in places. Nonetheless, this practice is entirely in keeping with the editorial policy of inviting state-of-the-art presentations from experts in the field. In an age of specialization it should come as no surprise that both archaeologists and linguists have their own technical modes of discourse.

It has been especially difficult to develop a common system of spelling. Where a proper name is used commonly in the literature we have adopted the most frequently used spelling. So, for example, in Hebrew we have preferred *Beth-Shean* to the more precise *Beth She'an*. Where a strict transliteration rendered awkward or unfamiliar a fairly common Greek name, such as *Seleukos* following Greek convention rather than the more frequently encountered *Seleucus*, we opted for the more familiar latinized form, as we did for sites and individuals bearing Semitic names.

For place names in Israel we tended to be strict in utilizing diacritical marks with consonants, though we eschewed using macrons and other indications of vowel length. This general rule of thumb, however, was not adhered to for such common place names as *Bethlehem* (more properly *Beth-Leḥem*). For Hebrew site names that include the element *tell*, the spelling *tel* was employed to reflect the Hebrew spelling, while for those places within Israel bearing Arabic names the spelling *tell* was used. In this way we were able to remain sensitive to both Arabic and Hebrew conventions rather than leveling through and opting for one spelling over the other (e.g., *Tell Beit Mirsim* vs. *Tel Miqne*). We did try to be consistent in rendering the Hebrew *ṣade* using *ṣ*, though there are instances where we used *z* following a more common spelling from the primary publications (e.g., *Nazareth*,

'Ein-Zippori). For the common element meaning "spring/well" in Hebrew place names we chose the construct state spelling *'Ein* with the dipthong *ei* to indicate the long *ṣere* vowel as opposed to the alternate spelling *'En*, which is more frequently used by Israeli scholars; thus, we have preferred the spellings *'Ein-Besor* and *'Ein-Gedi* to *'En Besor* and *'En Gedi*. This we contrast with the absolute state spelling, *'Ayin*. While as a rule we did not indicate aspiration of the *begadkepat* consonants (e.g., *'Atlit* rather than *'Athlit*), we maintained the common spelling *Beth-* as in *Beth-Shean* and *Beth-Shemesh*, and so forth. For technical terms, we have usually included indications of vowel length as well, for example, *maṣṣēbâ*, *bāmâ*.

In deciding on spellings for Arabic place names we generally deferred to the spellings utilized in the primary publications (i.e., the formal excavation reports), since we did not wish to create conflicts with officially accepted forms, though again, as with the Hebrew names, normally we did not include indications of vowel length. We were perhaps less innovative here than in our choice for Hebrew place names. As with Hebrew place names, where a common spelling existed we maintained that spelling, as in *San'a* (contrast with the more proper *Ṣan'a'*). Note that in this context we spell "spring/well" *'Ain* (e.g., *'Ain Ghazal*).

Since Turkish is written in Latin characters with only slight modifications, we tried as best as possible to adhere to standard Turkish spellings. For instance the site name *Boghazkoy* is spelled *Boğazköy*. We employed the dotless i (*ı*) where appropriate; any inconsistency in its use is inadvertent.

For personal names, we generally tended simplify the names with little use of diacriticals. Thus, for instance, although we used the spelling *Aššur* for the Assyrian capital, we used *Ashurbanipal* for the name of the Assyrian king. This rule applies to most personal names.

Finally, since it was nearly impossible to be completely consistent in our spellings, we often provided variant spellings parenthetically in the opening lines of a site article or on first mention of a name in an article. Readers should be aware of the frequency of name changes for sites through time, resulting in a single location having an ancient name, a Roman name, and modern names (sometimes both Hebrew and Arabic). Variant spellings appear in the index; we have attempted to be thorough in linking these variant spellings so that readers will find all mentions of a particular site, regardless of the spelling used.

Readers seeking information about a particular subject are referred to the index and synoptic outline of the work in volume 5; as mentioned above, specific sites for which we have independent entries may be generally located on the regional maps. Such topics as scientific techniques and archaeology, biographies of prominent archaeologists now deceased; histories of all the major archaeological institutes and organizations in the Near East; and discussion of peoples, places, and languages as well as individual artifacts and their decoration and industries may be readily located by utilizing one of these reference tools. In locating the discussion on certain specialties such as glassmaking (see "Vitreous Materials") or shipbuilding (see "Underwater Archaeology," "Seafaring," or "Ships and Boats") the reader will have to pay attention to our system of internal cross-referencing, which is designed to make the encyclopedia user-friendly, leading readers from a particular entry into a vast network of related topics.

There are several kinds of specialty article in this work that distinguish it from all other presentations; the issues involved in these articles are at the cutting edge of the field of Near Eastern and world archaeology. In the area of theory or history of the discipline I would call attention to the multipart entry "History of the Field," which, following a general overview, is organized as ten articles that cover all the countries and regions of the Near East (Syria, Israel, Jordan, Mesopotamia, Persia, the Anatolian Plateau, Egypt, Cyprus, the Aegean Islands, and the Arabian Peninsula). The special role of "biblical archaeology" becomes clear within the larger context of Near Eastern archaeology. To round out the broad geographical perspective the reader should consult the entries "Ethiopia," "Nubia," and "North Africa." Other entries such as "New Archaeology," "Un-

derwater Archaeology," "Survey, Archaeological," and "Salvage Excavation" will also indicate the rich diversity of archaeological theory and method. While there have been numerous works on the history of archaeology, there is nothing in the existing literature that can quite compare to this treatment, which has the benefit of being site specific and up to date in terms of actual fieldwork while treating archaeology historically and in general terms.

It is only in the broader Near Eastern context and setting that we also may fully appreciate the distinctive contributions of specialists who have written on "Ceramics," "Bone, Ivory, and Shell," or "Building Materials and Techniques." In this broader context, too, the role of various kinds of settlements or a particular kind of fortification or weapon may be better appreciated and understood.

I would also like to mention a number of special entries planned within the category of Theory and Practice: "Development and Archaeology," "Museums and Museology," "Ethics and Archaeology," "Ideology and Archaeology," "Nationalism and Archaeology," and "Tourism and Archaeology." Each of these articles is designed to call attention to the place and plight of archaeology in the individual countries in which it is practiced. Moreover, these entries focus on the results of archaeological work and the influence those results have on both the national culture and consciousness of people at home and abroad. How the stories of peoples and places of long ago are recovered and told anew brings us closer to the contemporary issue of how modern nation-states define themselves and their cultures in the multicultural universe of contemporary society. These articles allow the reader to reflect on the impact of the field of archaeology on the citizens of the modern countries located in the territories of ancient civilizations, on the tourists who visit there, and on the students who read their ancient literatures.

When Edward Robinson, the United States's pioneer explorer and first historical geographer of ancient Palestine, and David Roberts, England's premier landscape artist, set out to explore and illustrate the Holy Land in 1839, neither individual had an inkling of how his scientific achievement or artistic genius would so capture the imagination and hearts of the West. Yet the enthusiasm that they generated at home and throughout Europe was only a prelude to what was to come in the latter part of the nineteenth century: the beginning of a systematic and scientific exploration of all the countries of the region. The canvas of the artist was ultimately replaced by the lens of the camera, which ironically also came to Palestine in 1839 when the first landscape pictures of Palestine were taken with the daguerreotype process by the French painter Horace Vernet. The beginnings of the scientific exploration and excavation of the Near East followed closely the establishment of the national schools of archaeology (see "American Schools of Oriental Research," "École Biblique et Archéologique Française," "Institut Français d'Archéologie du Proche Orient," "Israel Exploration Society," "British School of Archaeology in Jerusalem," "British School of Archaeology in Iraq," "Deutsche Orient-Gesellschaft," etc.), which were ultimately the leading sponsors of actual fieldwork in nearly all of the countries of the region. The breakup of the Ottoman Empire and the assignment to individual countries of "mandates" to administer vast territories only strengthened the forces of national interest, which are reflected in the archaeology of the contemporary Middle East even today.

Bringing together the work of a wide array of scholars from all over the world has been a real challenge; by the time we had completed the commissioning of articles, we had enlisted 560 contributors from more than two dozen countries. The encyclopedia contains more than 1,100 entries, and the sheer logistics of communicating in a variety of languages with individuals from so many countries has been enormously complicated. During the course of the evolution of this project the editors have witnessed the electronic mail revolution. Unfortunately, although in the later stages of the project this improved communications with our American contributors considerably, it has not yet been established in most of the countries of the Middle East, nor is it yet widely used in Europe. Thus we

have had to rely on mail, phone, and fax for most of our communications. The efforts of the dedicated staff of the Scholarly and Professional Reference Department at Oxford University Press have enabled the editors to overcome many of these logistical barriers. It has been a privilege to work with them.

This project could not have been launched and completed without the encouragement, support, and wisdom of Oxford's Claude Conyers, whose input at the conceptual planning stage was essential and determinative. Also involved at the earliest stage and extraordinarily helpful in conceptual matters was Mark Cummings, who served as the encyclopedia's development editor until his departure from the press in June 1991. It was at that point that Jeffrey Edelstein assumed direct administrative and editorial responsibility as project editor, later managing editor. Jeffrey's indefatigable work ethic, keen eye, and versatile editorial skills enabled the project to progress with great efficiency and care. I have benefited in so many ways from collaboration with these editors that it is almost impossible to offer words that can express adequate appreciation. Nonetheless, I do so on a personal level and on behalf of all the members of the editorial board.

Our assistants in New York and Durham, Paul Arthur of Oxford University Press and John S. Jorgensen of Duke University, have also helped greatly in a variety of matters, but especially in locating illustrations and preparing captions, checking spellings and bibliographies, and assisting in the preparation of maps, charts, and other such materials. Roberta Maltese, bringing to the project valuable editorial experience with the writings of archaeologists, served as principal copyeditor, adding a level of clarity and consistency and establishing standards for the presentation of information that we could not otherwise have achieved. All of us are indebted to them for their tireless efforts.

Eric M. Meyers
Durham, North Carolina
February 1996

ABBREVIATIONS AND SYMBOLS

ACOR	American Center of Oriental Research
AD	*anno Domini*, in the year of the (our) Lord
AH	*anno Hegirae*, in the year of the Hijrah
AIA	Archaeological Institute of America
AIAR	(W. F.) Albright Institute of Archaeological Research
AJA	*American Journal of Archaeology*
Akk.	Akkadian
Am.	*Amos*
ANEP	J. B. Pritchard, ed., *Ancient Near East in Pictures*
ANET	J. B. Pritchard, ed., *Ancient Near Eastern Texts*
AOS	American Oriental Society
APES	American Palestine Exploration Society
Ar.	Arabic
'Arakh.	*'Arakhin*
Aram.	Aramaic
ASOR	American Schools of Oriental Research
Assyr.	Assyrian
A.Z.	*'Avodah Zarah*
b.	born
B.A.	Bachelor of Arts
Bab.	Babylonian
BASOR	*Bulletin of the American Schools of Oriental Research*
B.B.	*Bava' Batra'*
BC	before Christ
BCE	before the common era
Bekh.	*Bekhorot*
Ber.	*Berakhot*
Bik.	*Bikkurim*
BP	before the present
BSAE	British School of Archaeology in Egypt
BSAI	British School of Archaeology in Iraq
BSAJ	British School of Archaeology in Jerusalem
B.T.	Babylonian Talmud
c.	*circa*, about, approximately
CAARI	Cyprus American Archaeological Research Institute
CAD	computer-aided design/drafting
CAORC	Council of American Overseas Research Centers
CE	of the common era
cf.	*confer*, compare
chap., chaps.	chapter, chapters
1 Chr.	*1 Chronicles*
2 Chr.	*2 Chronicles*
CIG	*Corpus Inscriptionum Graecarum*
CIS	Corpus Inscriptionum Semiticarum
cm	centimeters
CNRS	Centre National de la Recherche Scientifique
col., cols.	column, columns
Col.	*Colossians*
1 Cor.	*1 Corinthians*
2 Cor.	*2 Corinthians*
CTA	A. Herdner, *Corpus des tablettes en cunéiformes alphabétiques*
cu	cubic
d.	died
DAI	Deutsches Archäologisches Institut
diss.	dissertation
Dn.	*Daniel*
DOG	Deutche Orient-Gesellschaft
D.Sc.	Doctor of Science
Dt.	*Deuteronomy*
EB	Early Bronze
Eccl.	*Ecclesiastes*
ed., eds.	editor, editors; edition
ED	Early Dynastic
EEF	Egyptian Exploration Fund
e.g.	*exempli gratia*, for example
Egyp.	Egyptian
Elam.	Elamite
En.	*Enoch*
Eng.	English
enl.	enlarged
esp.	especially
et al.	*et alii*, and others
etc.	*et cetera*, and so forth
Eth.	Ethiopic
et seq.	*et sequens*, and the following
Ex.	*Exodus*
exp.	expanded
Ez.	*Ezekiel*
Ezr.	*Ezra*
fasc.	fascicle
fem.	feminine
ff.	and following
fig.	figure
fl.	*floruit*, flourished
ft.	feet
frag., frags.	fragment, fragments
gal., gals.	gallon, gallons
Geog.	Ptolemy, *Geographica*
Ger.	German
GIS	Geographic Information Systems
Gk.	Greek
Gn.	*Genesis*
ha	hectares
Heb.	Hebrew
Hg.	*Haggai*
Hist.	Herodotus, *History*
Hitt.	Hittite
Hos.	*Hosea*
Hur.	Hurrian
IAA	Israel Antiquities Authority
ibid.	*ibidem*, in the same place (as the one immediately preceding)
IDA(M)	Israel Department of Antiquities (and Museums)
i.e.	*id est*, that is

IEJ	*Israel Exploration Journal*
IES	Israel Exploration Society
IFAPO	Institut Français d'Archéologie du Proche-Orient
Is.	*Isaiah*
IsMEO	Istituto Italiano per il Medio ed Estremo Oriente
Jb.	*Job*
Jer.	*Jeremiah*
Jgs.	*Judges*
Jn.	*John*
Jon.	*Jonah*
Jos.	*Joshua*
JPOS	*Journal of the Palestine Oriental Society*
JRA	*Journal of Roman Archaeology*
J.T.	Jerusalem Talmud
KAI	H. Donner and W. Röllig, *Kanaanäische und aramäische Inschriften*
Kel.	*Kelim*
Ket.	*Ketubbot*
kg	kilogram
1 Kgs.	*1 Kings*
2 Kgs.	*2 Kings*
km	kilometers
KTU	M. Dietrich and O. Lorentz, *Die keilalphabetischen Texte aus Ugarit*
l	liter
l., ll.	line, lines
Lat.	Latin
lb.	pounds
LB	Late Bronze
lit.	literally
Lk.	*Luke*
LM	Late Minoan
Lv.	*Leviticus*
m	meters
M.A.	Master of Arts
masc.	masculine
Mal.	*Malachi*
MB	Middle Bronze
Mc.	*Maccabees*
M.Div.	Master of Divinity
Meg.	*Megillah*
mi.	miles
Mk.	*Mark*
mm	millimeter
mod.	modern
Mt.	Mount
Mt.	*Matthew*
n.	note
NAA	Neutron Activation Analysis
Nat. Hist.	Pliny, *Naturalis Historia* (Natural History)
n.b.	*nota bene*, note well
n.d.	no date
Nm.	*Numbers*
no., nos.	number, numbers
n.p.	no place
n.s.	new series
O.P.	Ordo Praedicatorum, Order of Preachers (Dominicans)
p., pp.	page, pages
para.	paragraph
PEF	Palestine Exploration Fund
Pers.	Persian
Ph.D.	Philosophiae Doctor, Doctor of Philosophy
Phil.	*Philippians*
pl.	plate; plural
PN	Pottery Neolithic
ppm	parts per million
PPN	Pre-Pottery Neolithic
Prv.	*Proverbs*
Ps.	*Psalms*
pt., pts.	part, parts
1 Pt.	*1 Peter*
2 Pt.	*2 Peter*
r.	reigned, ruled
RCEA	*Répertoire chronologique d'epigraphie arabe*
Rev.	*Revelations*
rev.	revised
Ru.	*Ruth*
SBF	Studium Biblicum Franciscanum
SBL	Society of Biblical Literature
SEG	*Supplementum Epigraphicum Graecum*
ser.	series
sg.	singular
Sg.	*Song of Songs*
Shab.	*Shabbath*
S.J.	Societas Jesu, Society of Jesus (Jesuits)
1 Sm.	*1 Samuel*
2 Sm.	*2 Samuel*
sq	square
St., Sts.	Saint, Saints
Sum.	Sumerian
supp.	supplement
Syr.	Syriac
Ta'an.	*Ta'anit*
Th.D.	Theologicae Doctor, Doctor of Theology
Ti.	*Titus*
Tk.	Turkish
1 Tm.	*1 Timothy*
2 Tm.	*2 Timothy*
trans.	translated by
Ugar.	Ugaritic
v.	verse
viz.	*videlicet*, namely
vol., vols.	volume, volumes
vs.	versus
Yad.	*Yadayim*
ZDPV	*Zeitschrift des Deutschen Palästina-Vereins*
Zec.	*Zechariah*
*	hypothetical; in bibliographic citations, English language pages in Hebrew journals
?	uncertain; possibly; perhaps
°	degrees
′	minutes; feet
″	seconds; inches
+	plus
−	minus
±	plus or minus
=	equals; is equivalent to
×	by
→	yields

A

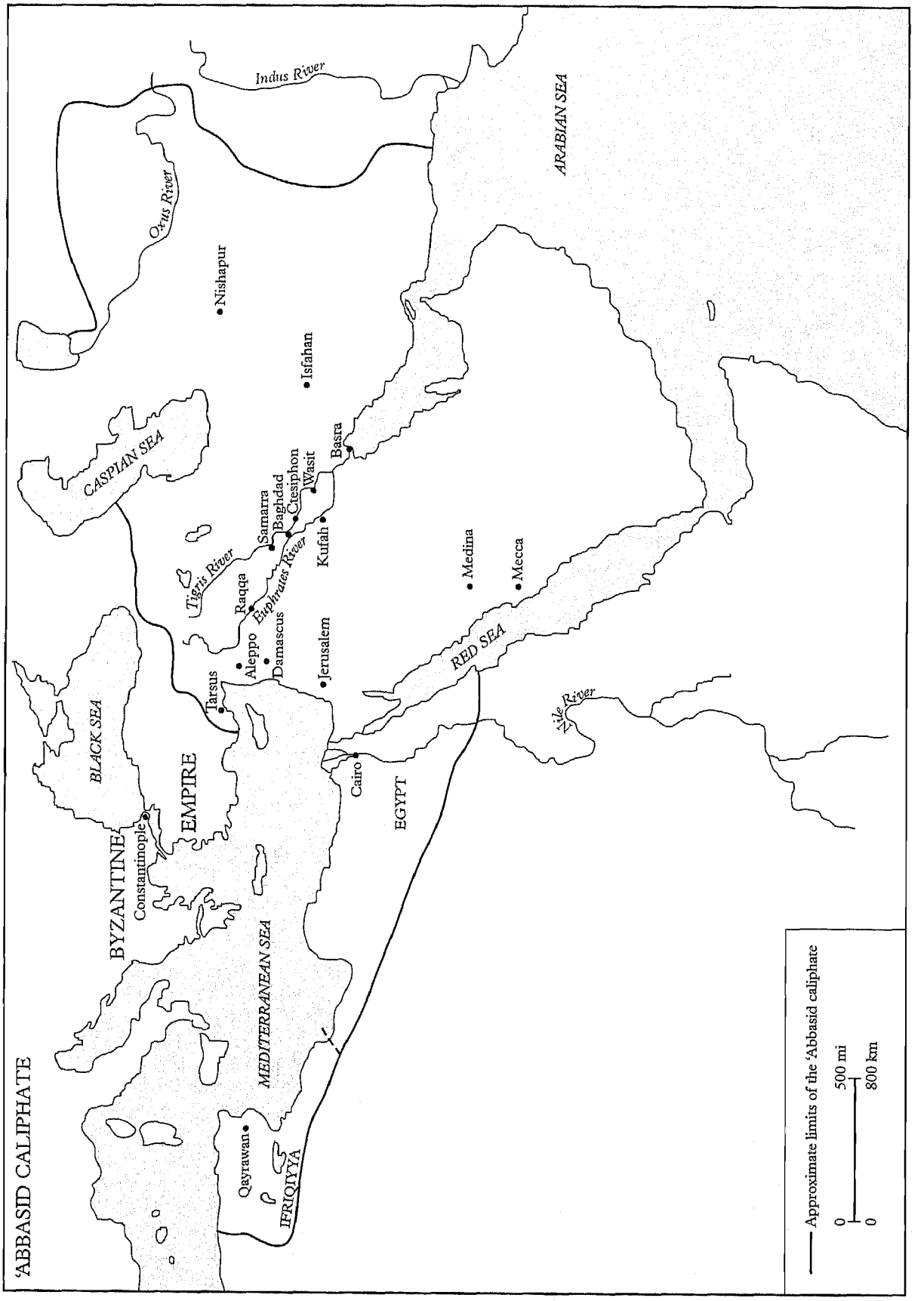
ʿABBASID CALIPHATE. As the result of a revolution that culminated in 750 CE in the defeat of the last Umayyad caliph, Marwan ibn Muhammad, on the River Zab in northern Iraq, the ʿAbbasid family came to power. This real revolution stemmed from the profound social stresses of the Umayyad period: the imposition of new cultural values on the Middle East, the privileged position of Arab Muslims over others, the perceived irreligious lifestyle of the Umayyads, exemplified by their desert castles, and finally the constant in-fighting of the Arab tribes. Like all revolutions, the constitution of the new state did not initially differ much from the old but was rather affected by environmental factors. Although the ʿAbbasid family had lived at Humeima in Jordan, the revolutionary army, the Khurasaniyah, was recruited on the frontier in eastern Iran, and the ʿAbbasids found their support in the former territories of the Sasanian empire, notably in Iraq.

The ʿAbbasids first settled near Kufah, but in 762 the second ʿAbbasid caliph, al-Mansur, founded a new capital, Baghdad, only 30 km (19 mi.) from the Sasanian capital of Ctesiphon. The centralized administrative traditions of the late Sasanian Empire were taken as a model for an imperial state, a phase which in its original form lasted for half a century until the death of Harun al-Rashid in 809. [*See* Sasanians.] The subsequent civil war, including the siege of Baghdad in 811–813, destroyed much of the state's infrastructure and led to the increasing recruitment of peoples from the eastern frontier in the army, notably Central Asian Iranians and Turks. Reliance on the Turks led to alienation of the state from the Muslim population; in particular disturbances between the Turks and the Baghdadis led to the foundation of a new capital, Samarra, by al-Muʿtasim in 836. In spite of the success of al-Muʿtasim himself in reforming the state, the isolation of the caliphs with their army in Samarra exposed the ruler to control by the soldiery, culminating in a decade of troubles in the 860s, and gravely weakened the prestige of the state. Already existing tendencies were given free rein: the increasingly successful attempts by the provinces to gain independence, a separation of the religious institution of Islam from the control of the caliph, and the evolution of a commercial economy that was uncontrolled by the state.

Although the state's prestige was reestablished under the regent al-Muwaffaq (d. 891) and his son al-Muʿtaḍid, who settled again at Baghdad in 892, the disastrous reign of al-Muqtadir (d. 932) led to a complete loss of power by the regime from 937 and a takeover of Baghdad by an Iranian Shiʿi tribal dynasty, the Buyids, in 945. The ʿAbbasids remained virtual prisoners in their palaces even after the Sunni reconquest by the Seljuks in 1055. Nevertheless, the idea of a unified Islamic world did not disappear, and the ʿAbbasids gave legitimacy to independent dynasts. Notably under al-Muqtafi (1136–1160) and al-Nasir li-Din Allah (1180–1225), an independent ʿAbbasid state reemerged in central Iraq, only to be extinguished finally by the Mongols under Hülegü in 1258. Even subsequently, the Mamluks installed an ʿAbbasid prince as caliph in the Cairo Citadel, a line that continued until the Ottoman conquest in 1517.

The ʿAbbasids never controlled the extensive territories lightly governed by the Umayyads; the ʿAbbasid empire extended from Tunisia to Samarkand. The problem of control over far distant provinces was solved at the beginning of the ninth century by hereditary dynasties of autonomous governors: the Aghlabids in Tunisia and the Tahirids in Khurasan (eastern Iran), who continued to contribute to the central treasury. In the era of Samarra, however, genuinely independent rulers, such as the Saffarids of Sistan, ceased to pay, and much confusion was caused by the slave revolt of the Zanj in the marshes of southern Iraq for fifteen years until 883. Removal of Arabs from the pay registers of the army (c. 833) equally alienated the tribes, and control over the Arabian Peninsula was increasingly lost, apart from the Holy Cities of Mecca and Medina.

The economic basis of the ʿAbbasid state was the land tax on agriculture, initially calculated in cash, and later as a proportion of the crop. By far the largest sums were contributed by Iraq, but Egypt and western Iran were also significant. The importance of Iraq stemmed from the high degree of development of irrigation under the Sasanians, which has been well illustrated by the area surveys of Robert McC. Adams in the Diyala region (Adams, 1965), and south central Iraq (Adams, 1981). [*See* Diyala.] Although it is difficult to date the construction of canals, the full elaboration of the system seems to date to the later Sasanian period in the sixth


ʿABBASID CALIPHATE
BYZANTINE EMPIRE
Constantinople
BLACK SEA
CASPIAN SEA
Oxus River
Indus River
ARABIAN SEA
Nishapur
Isfahan
Basra
Wasit
Ctesiphon
Baghdad
Samarra
Kufah
Tigris River
Euphrates River
Raqqa
Aleppo
Damascus
Tarsus
Jerusalem
Medina
Mecca
RED SEA
Nile River
Cairo
EGYPT
MEDITERRANEAN SEA
Qayrawan
IFRIQIYYA
Approximate limits of the ʿAbbasid caliphate
0 500 mi
0 800 km

century, probably under the centralizing monarch Khusrau Anushirvan (531–578). Particularly the northern extension of the Nahrawan canal east of Baghdad (Ar., al-Qatul al-Kisrawi) with its offtakes from the Tigris River in the region of Samarra increased the availability of irrigation water considerably. The early 'Abbasids, al-Rashid and al-Ma'mun (813–833), took care to add to the system. However, this achievement carried within it the seeds of its own decay: according to Adams, the sharp increase in the availability of water leads to rapid salinization and, after a certain length of time, decline in land productivity (Adams, 1981, p. 20). Even if this were not so, the long and massive Sasanian irrigation canals of Iraq—the Nahrawan canal is 225 km (139.5 mi.) long—required a large investment to excavate, and a centralized administration to maintain, a degree of organization that did not exist before the sixth century or after the ninth century. It was impossible, then, later to replace canals ruined by warfare, sedimentation or, more importantly, the regrettably frequent tendency of the Tigris and the Euphrates to change their courses. According to both archaeological surveys and historical sources, there was a severe retrenchment in the cultivated area of Iraq from the mid-tenth century onward. Although the decline of Iraq, one of the most striking phenomena of the economic history of Islam, remains a puzzle, it may be that the explanation lies in this area.

There is no doubt that the fortunes of the 'Abbasid state paralleled the economic fortunes of Iraqi agriculture. In its first century the 'Abbasid caliphate was a great world power. The system was established by al-Mansur (754–775), based upon the bureaucracy inherited from the Sasanians and an aristocracy of the Khurasani Arabs. Monumental architecture played a significant role. The new capital of Baghdad (founded 762–766) was dominated by the Round City, the circular fortified palace and administrative quarter, which is the first fully developed example of an Islamic royal city (Northedge, 1994). The 'Abbasid army, the Khurasaniyah, were settled in a cantonment in al-Harbiyah, and the crown prince, al-Mahdi, had his own establishment on the east bank in Rusafa. The markets were centered around a pre-Islamic settlement at al-Karkh. Although we have no archaeological trace of early Baghdad, the plan was very influential, and the same general pattern can be seen repeated over the following century. After the abandoned construction of an octagonal city on the pattern of the Round City at Qadisiyah in 796, Harun al-Rashid (786–809) built a palace quarter at Raqqa in Syria, outside the walls of a horseshoe-plan city built by al-Mansur in 772 apparently as a garrison center. [*See* Raqqa, ar-.]

The construction of caliphal cities reached its greatest extent at Samarra (836–892), where 57 sq km (22 sq. mi.) of construction in pisé, mud brick and baked brick in a steppe zone on the bank of the Tigris included two caliphal establishments, Surra Man Ra'a and al-Mutawakkiliyah, six major military cantonments and a moderate-sized town. The two main military cantonments (Ar., *qati'a*), of the Turks at al-Karkh, and the Central Asian Iranians at al-Matira, were placed apart from Surra Man Ra'a, at a distance of 2 *farsakh*s each (c. 10 km [6 mi.]), although Matira was later engulfed by the development of the city, and there were further cantonments in the city itself. The caliphal establishments and military cantonments consisted of a main palace, minor palaces, a grand avenue, and a grid of streets with houses. Significant differences from Roman practices in military settlement lay in the freedom of 'Abbasid troops to marry, personal allegiance to generals, and ethnic division of units. The imperial character of the city is emphasized by the lack of fortifications and the monumental provision for sports—race courses and polo grounds. According to the extravagant textual descriptions, the tenth-century palace complex in Baghdad *(Dar al-Khilafah)* was similar, but the economic collapse of the caliphate suggests a reality of more limited dimensions.

The planning of the palaces revolved around the four *iwan* plan—according to E. J. Keall (1974) the *iwan* is first found as an open-fronted vaulted hall in Parthian Mesopotamia. The original pattern of four *iwan*s facing onto a courtyard gave way to a central dome chamber with four *iwan*s opening to the exterior. Samarra and Raqqa are typically Mesopotamian, vast complexes of rooms and courtyards, with provision at Samarra for sunken basins to avoid the heat of summer. In Iraq and Iran the Sasanian tradition of carved stucco revetments was further developed with new inspiration in the designs, suggested to be of Indian, Central Asian, and Byzantine origin—a sign of wider cultural horizons.

This dynastic concentration on the capital diverts our attention from the growing islamization of the provinces; apart from Syria, many of the congregational mosques in cities were first built in the ninth century, such as at Isfahan. The pattern was established of a courtyard mosque with a hypostyle or basilical prayer hall, and a minaret opposite to the *mihrab* (the niche indicating the direction of Mecca), a plan built differently according to local architectural traditions. At Kairouan (Qayrawan) in Tunisia the mosque has a square brick minaret, horseshoe arches, and square external buttresses; at Samarra the minaret is helicoidal, apparently after the pattern of Assyrian ziggurats, the buttresses semicircular, and the arches pointed.

The defenses of the Byzantine frontier in southeastern Anatolia, stretching from Tarsus to Malatya, and Erzurum, were based on series of fortified cities, in which the frontier troops were settled. It was only at the end of the eighth century and the beginning of the ninth that the Roman concept of the frontier fort was introduced in the *ribat*s of the Tunisian coast and Central Asia. With the collapse of the secular authority of the 'Abbasid Caliphate, the *ribat*s were manned by volunteers for religious reasons, and in the tenth century they developed into religious centers, or caravanserais, if located on a main route.

During the early part of the ʿAbbasid period, especially in the reigns of al-Mahdi and Harun al-Rashid, the transdesert pilgrim road from Baghdad and Kufah to Mecca was built up in a monumental form, known today as Darb Zubaydah [*See* Darb Zubaydah.] The *hajj* was sometimes led by the caliph and nearly always by a leading man of state. Long stretches of the road were cleared of boulders, and in places the road was walled and drainage ditches were dug. The road stations in Iraq and Saudi Arabia have been surveyed, and the station at ar-Rabadha has been excavated. The arrangements seem to have fallen into decay in the tenth century.

Apart from state activity, a thriving commercial economy begins to be visible in the archaeological evidence. In part this was related to the growth of maritime trade with the Far East. Although the Sasanians had taken care to control Indian Ocean trade, a substantial increase in quantity occurred about 800, based on Basra and the Gulf. Excavations at Siraf on the Iranian coast recorded the first appearance of Chinese stoneware and, later, porcelain, the first of a long line of Chinese ceramic imports that came to dominate the Middle East. However, distribution patterns show that in fact Chinese pottery did not penetrate in quantity far from the ports or river transport to the capital cities of Iraq. Ceramics are also only the most visible element of trade in the archaeological record; spices and teakwood were also important. From the tenth century onward, after the sack of Basra by the Qaramita, the trade moved elsewhere, notably the Red Sea and Egypt.

The consequences of this trade were fundamental. On the simplest level, it is remarkable that the introduction of polychrome-glaze pottery in Iraq, and thus in Islam, closely postdates the first large-scale Chinese imports. Although some copying of Chinese white stoneware and splash-lead glazes took place, original Islamic techniques played a more important role—cobalt-blue painting, luster painting, and glazed-relief molded wares. The evidence appears to show that the idea of polychromy spread immediately to Syria, Egypt, and Iran, and polychrome-glaze pottery quickly became the staple of fine ceramics. The stimulation to the pottery industry was not limited to glazed wares: Brittle-Ware cooking pots from North Syria, and unglazed barbotine and molded vessels were also traded widely.

However, as demonstrated for later periods by K. N. Chaudhuri (1985), although there was a risk of shipwreck, even a single successful eastern voyage could lead to enormous profits. The availability of large quantities of investment capital among Basran and other merchants is the best explanation of phenomena in the historical sources and the archaeological record. Gangs of imported East African slaves (Zanj) put to clearing saline land for agricultural estates around Basra, revolted, but particularly there was economic development in the Arabian Peninsula. Large-scale development of copper mining in Oman during the ninth century has been demonstrated, and the Saudi Arabian archaeological survey has found mining sites east of Medina for gold and chlorite-schist for cooking pots, lamps, and incense burners. Produced around Saʿdah in Yemen even today, chlorite-schist is found in most archaeological deposits in the Fertile Crescent between the mid-eighth and ninth centuries, and the central Arabian production represents an expansion. Investment in Arabia may have been sentimental, but peaceful conditions there opened up possibilities that did not exist later.

At any rate the political collapse of the ʿAbbasid regime in the second quarter of the tenth century brought an end to promising developments. Political and economic power (including also the centers of production, most visibly of ceramics) was subsequently in Egypt (the Fatimids from 969) and Iran–Central Asia (the Buyids, Samanids and Seljuks). The agriculture of these regions depends on short-distance, easily maintained irrigation systems, which could survive independently of the low level of organization of a medieval state.

[*See also* Arabian Peninsula, *article on* Arabian Peninsula in Islamic Times; Baghdad; Fatimid Dynasty; Mesopotamia, *article on* Mesopotamia in the Islamic Period; Samarra, *article on* Islamic Period; *and* Umayyad Caliphate.]

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ALASTAIR NORTHEDGE

ABEL, FÉLIX-MARIE (1878–1953), professor of history and geography at the École Biblique et Archéologique Française in Jerusalem from 1905 to 1953. Abel went to Jerusalem as a novice in the Dominician Order in 1900. Even as a student he participated in the scientific activity of the École Biblique, where he was to spend his entire career.

From his debut in the pages of the *Revue Biblique* in 1903, Abel systematically published dozens of detailed studies of different areas in the regions, from the Orontes River to the Sinai Desert and from Cyprus to Jordan. He eventually synthesized in his two-volume *Géographie de la Palestine* (Paris, 1933–1938), which deals in exemplary detail with physical, historical, and political geography from earliest times to the Byzantine period. The ten maps he prepared have served as the prime, but often unacknowledged, source of much subsequent topographical identification.

Abel's mastery of the whole range of Greek sources is displayed in his *Grammaire du Grec biblique suivie d'un choix de Papyrus* (Paris, 1927), his major commentary on *1* and *2 Maccabees* (1949), and his two-volume *Histoire de la Palestine depuis la conquête d'Alexandre jusqu'à l'invasion arabe* (Paris, 1952). He had an uncanny ability to identify the key questions in texts, and the vast majority of his proposed answers—for example, his location of Pilate's praetorium in Herod the Great's palace, rather than at the Antonia fortress—have stood the test of time.

Inevitably L.-H. Vincent, also of the École Biblique, called on him to contribute the documentary evidence to the magisterial studies of Bethlehem, Hebron, Jerusalem, and Emmaus on which they collaborated (Paris, 1914, 1923, 1926, 1932, respectively). His extraordinary erudition facilitated the ease with which he tracked down the most esoteric data, even for individual buildings. It is his insights rather than Vincent's conclusions that give these volumes their permanent value.

[*See also* École Biblique et Archéologique Française; *and the biography of Vincent.*]

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JEROME MURPHY-O'CONNOR, O.P.

ABILA, city of the Decapolis, located about 15 km (9 mi.) north-northeast of Irbid in northern Jordan. Abila has an occupational history that extends from the fourth millennium to 1500 CE. It is identified in numerous ancient sources: Polybius (second century BCE) mentions that Antiochus III (218 BCE) conquered Abila along with Pella and Gadara/Umm Qeis (*Historiae* 5.69–70). It is later conquered by Alexander Jannaeus (first century BCE), as reported by Georgios Synkellos (*Chronographia,* 294 D–295 A). An inscription (133/144 CE) at Tayibeh, northeast of Palmyra, Syria, speaks of an *agathangelos Abilenos tēs Dekapoleōs* ("good messenger, or well-heralded Abila of the Decapolis;" *CIG* 4501 or LeBas-Waddington, *Inscriptiones III,* 2, no. 2631 = *OGIS* 631). In the second century CE, Ptolemy (*Geography* 5.14) identifies this Abila separately from the Abila of Lysanias just north of Damascus, Syria. Hierokles (sixth century CE) in *Synekdemos* (pp. 720–721) lists this Abila as part of the Provincia Secunda, along with the nearby sites of Scythopolis, Sella (Pella), Gadara, and Capitolias. Jerome identifies an Abila 12 Roman miles from Gadara (Carl Ritter, *Erdkunde,* Berlin, 1832–1858, vol. 15, p. 1060), the same city (Abel) Eusebius had earlier located 12 Roman miles east of Gadara (*Onomasticon,* 32.16; Spijkerman, 1978, pp. 48–49, n. 5; cf. Johann L. Burckhardt, *Travels in Syria and the Holy Land,* rpt. New York, 1983, vol. 1, p. 537, note to p. 425). In 1888 Gottlieb Schumacher (1889, pp. 18, 21) found that the nationals at this site still called the north tell Tell Abil. The 1984 excavation on Tell Abila produced an inscription in Greek with the name cut in the second line; in the fourth line Emma[tha] (Ḥammath-Gader), a site 18 km (11 mi.) west of Abila (Michael Avi-Yonah, *The Holy Land,* Grand Rapids, Mich., 1977, pp. 166, 170) is mentioned, further verifying that this is Abila of the Decapolis. In the Bronze and Iron Ages the site's name may have carried the prefixed noun, *'ābēl* (Heb., "meadow"; Ar., "green"). It is similar to the Semitic noun used in several other sites in the Jordan River system: Abel Beth-Maacah (*2 Kgs.* 15:29); Abel

Meholah (*Jgs.* 7:22); Abel Shittim (*Nm.* 33:49); and Abel Keramim (*Jgs.* 11:33). *Matthew* 4:25 and *Mark* 5:20 and 7:31 mention the Decapolis but without specifying Abila or any other individual city.

In the modern period, in 1806, Ulrich Jasper Seetzen (*Reisen durch Syrien*, ed. Fr. Kruse, Berlin, 1854–1859, vol. 1, p. 371, vol. 4, pp. 190–191) rediscovered Abila. He was followed by Schumacher (see above) who described the ruins and drew a map of the site, today called Quailibah. In 1978 W. Harold Mare of Covenant Theological Seminary, St. Louis, revisited the site; he began excavating there in 1980, with subsequent seasons in 1982, 1984, 1986, 1988, 1990, 1992, 1994, and 1995.

Abila of the Decapolis is about one mile north–south and a half-mile east–west in area. The site consists of Tell Abila to the north and Tell Umm el-ʿAmad to the south. It is protected by deep wadis on the north, east, and south and by a saddle depression between the two tells. The site is surrounded by rich farmlands and has a generous water supply. Ancient building remains are visible over the entire site. Its occupational history begins in the Neolithic period and goes through the Early Bronze, Middle Bronze, Late Bronze, and Iron Ages and the Hellenistic period, concentrated particularly on the acropolis of Tell Abila. Occupation in the Roman, Byzantine, and Islamic periods (especially Umayyad and ʿAbbasid, a bit of Fatimid, and some Ayyubid/Mamluk) is evident throughout the site. Occasional Ottoman sherds are also found, indicating more recent Turkish hegemony.

Excavations (1982–1990) on the acropolis of Tell Abila uncovered a large sixth-century triapsidal Christian basilica (19 × 34.5 m) in area A. It shows evidence of two rows of twelve columns dividing the nave from the side aisles. The nave is paved with an opus sectile floor and the atrium in the west with mosaics. The church was built on the foundations of an earlier possibly fourth–fifth-century Christian basilica or Greco-Roman temple. Just to the northeast of the basilica, in deep trenches (area AA), pottery and walls point to Roman, Hellenistic, and Iron and Bronze Age occupations. EB and MB pottery appeared extensively in area AA.

Excavation on Tell Umm el-ʿAmad revealed a seventh-century triapsidal Christian basilica (20 × 41 m), with two rows of twelve columns each. It, too, was paved with an opus sectile floor and had mosaics in its auxiliary rooms, colonnaded porch, and atrium. The excavated remains of this basilica were restored in 1988 (see figure 1).

In the terraced depression between the two tells a large civic center existed in the Roman and Byzantine periods. It included what seems to have been a theater built into the northeast slope of Umm el-ʿAmad. Most of the theater's remains were reused both recently and in antiquity. Schumacher (1889, p. 30) saw some of the seats in 1888. In the Umayyad period a large building (palace?) was constructed within the theater's cavea. Part of the cavea was used in the ʿAbbasid and Ayyubid/Mamluk periods. An extended Byzantine basalt street existed just in front (north) of the Islamic building. Its eastern segment at least lay over an earlier lime-

ABILA. Figure 1. *Restored seventh-century basilica.* The basilica, partially restored in 1988, is located on Umm el-ʿAmad, the southern tell at Abila. (Courtesy W. H. Mare)

stone street or plaza with an entranceway. North of this plaza excavation was begun in 1990 in what seems to have been a bath/nymphaeum complex; a channel cut into a vault at the east end of the complex indicates that water was brought there from springs ('Ain Quailibah at the southern foot of Umm el-'Amad and Khuraybah, farther south) through an intricate system of underground aqueducts. These aqueducts, which have been excavated, studied, and mapped, were used to bring water to the site to provide for the needs of industry, civic installations, and private citizens. In the civic center farther to the northeast, near the Roman bridge, excavation was begun in 1990, and has continued, on another large Christian basilica, cruciform in design (32 m × 29.25 m); at the extremities of the arms of the central apse, large basalt piers with Ionic capitals were found, as well as another north row and also a south row of basalt columns.

Extensive burial sites were cut into the wadis. Between 1982 and 1994, eighty-five burial sites (mostly tombs, but some graves) were excavated. The burials date mainly from the Late Hellenistic, Roman, and Byzantine periods, but a few Iron Age and MB/LB period tombs were also excavated. The grave goods, the embellishment of the tombs and their architectural style, food offerings, and religious iconography indicate three levels of society: the wealthy, the middle class, and the poor.

Excavation thus far of the Iron and Bronze Age levels has produced evidence of a fairly well-developed society, with a variety of pottery types and buildings with small rooms. Excavation of the Roman and Byzantine levels points to a considerably well-developed city of seven thousand–eight thousand inhabitants, with a strong agricultural base, thriving commercial activity, and a strong emphasis on cultural and religious activities.

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W. HAROLD MARE

ABU ḤAMID, TELL, site located in the Jordan Valley, at 240 m below sea level, on Lisan marl deposits between two small wadis (32°19′ N, 35°33′ E). It originally covered an area of 1,400 m east–west and 400 m north–south. Since 1975 and the development of modern agriculture, it has suffered from intensive leveling, and most of the site has disappeared.

The site was first surveyed in 1975 (Ibrahim, Sauer, and Yassine, 1975), and revisited in 1982 by Zeidan Kafafi (Kafafi, 1982). In 1984 an international research project was initiated by the Institute of Archaeology and Anthropology of Yarmouk University, Jordan; the Institut Français d'Archéologie du Proche Orient (IFAPO, Amman); and the Centre National de la Recherche Scientifique, with the cooperation of the Department of Antiquities of Jordan. Research was focused on the Jordan Valley and the northern Jordanian plateau in the seventh–fifth millennia BP. The first stage of the project was the excavation of Abu Ḥamid. The five seasons carried out from 1986 to 1992 provided a firm stratigraphic and chronological sequence: 350–2,000 sq m were exposed, and long north–south and east–west sections were established. The stratigraphic sequence and the chronology of the occupation of the site can now be combined with the sequence at Munḥata (30 km, or 19 mi., to the north, on the west bank of the Jordan River) to provide a clear picture of the history of the middle Jordan Valley region. [*See* Munḥata; Jordan Valley.]

At Abu Ḥamid no significant hiatus is presented in the stratigraphic sequence; however, small gaps were observed that were caused by occasional abandonment or by the use of the site by seasonal groups (Dollfus and Kafafi, 1993). At the beginning of the occupation, in the early seventh millennium BP, the group lived in circular or oval shelters partially dug into the soil (up to 1.50 m deep, 1.80–3 m in diameter); some are lined with roughly made bricks along the sides. The inhabitants used various kinds of pits and gypsum basins to store and process food. Their handmade pottery includes a small percentage of painted ware (bowls with in-

terior and/or exterior decoration, such as chevrons or diagonal lines; jars with sun motifs and criss-crossed lines). In terms of subsistence, the inhabitants were beyond merely exploiting natural resources; they employed strategies to exploit their livestock and grew wheat, barley, lentils, and peas. These levels are certainly postclassical Yarmukian, as defined at Shaʿar ha-Golan by Moshe Stekelis; at Munḥata 2b by Jean Perrot, Avi Gopher, and Yosef Garfinkel; at Abu Thawwab; at ʿAin Rahub; and at Wadi Shuʿeib by Kafafi (1993). [*See* Shaʿar ha-Golan; Shuʿeib, Wadi.] In some strata ashy floors, pits, and hearths were observed, but no dwelling remains.

During the next occupation, which, according to the stratigraphy and the associated cultural remains could be dated to the second part of the seventh millennium BP, the houses were built with well-made plano-convex mud bricks and most are pluricellular. Their rooms are rectangular and, in some instances, their interior walls were plastered with gypsum. At least one structure had a wall painting, of which some fragments were uncovered. Its design is linear, broad, straight lines in yellow and red, with a series of narrower vertical and curved lines in red. [*See* Wall Paintings.]

The occupants either heated their houses or cooked inside (cf. some small oval pits with ashes), but most domestic activities took place outside, as suggested by the many gypsum plastered basins, oval fire pits, and hearths found in one of the dwelling complexes. In that same complex, the large rectangular living room is clearly separated from a storage building comprised of two small rectangular rooms and a brick platform.

The ceramic evidence shows new techniques, especially in decoration: incisions, impressions, deep punctures, combing and such plastic decoration as incised or finger-impressed bands in relief; an applied snake decoration appears for the first time. Painted sherds as well as some sherds of extremely finely made dark- and red-faced burnished ware were found. Shapes that played an important role in the following periods, such as churns and pedestal vessels, make their debut here. From a chronological point of view, these levels undoubtedly pertain to the Wadi Rabah chronological horizon (cf. Wadi Rabah, Munḥata 2a, Hazoreaʿ). Differences do exist, for at Abu Ḥamid there is an absence of carinated vessels and bow rims.

In the early sixth millennium BP, the village compound was comprised of a series of houses. Most of them were originally unicellular, but during their occupation partitions were made in some; in others, small rooms were added. The houses differ in building technique. Some are made completely of mud bricks, while others have walls with stone bases. As at the beginning of the occupation, the group raised animals: sheep, goats, pigs, and cattle. [*See* Sheep and Goats; Pigs; Cattle and Oxen.] Its material culture represents a regional facies—northern Middle Jordan Valley, Upper Jordan Valley, Djaulan, Irbid plateau—of the Ghassulian/Beersheba culture, evident in aspects of its pottery and artifacts (large storage jars, flint perforated disks, "pillar mortars"). As the violin figurines and large zoomorphological vessel (bull) recovered at Tel Abu Ḥamid suggest, the group certainly had links with others living in the south (Negev); moreover there also were ties with the inhabitants of the Wadi ʿArabah, indicated by the copper used in some pins from Wadi Feinan copper ores.

[*See also* Institut Français d'Archéologie du Proche Orient.]

ABU ḤAMID, TELL. *Rectangular living room from a late fifth-millennium dwelling.* (Courtesy Z. Kafafi)

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ZEIDAN A. KAFAFI and GENEVIEVE DOLLFUS

ABU HAWAM, TELL, 10-acre mound on the Mediterranean coast near where the Kishon River empties into the bay of Haifa (map reference 151 × 144). It may be identified with Bronze–Iron Age Achshaph, or biblical Shihor-Libnah (*Jos.* 19:26). Within the Haifa city limits, the site was the focus of several salvage excavations by the British Mandatory Department of Antiquities (1922–1933), and later by the Israeli archaeologists Emanuel Anati, Yaacov Olami, and Moshe Prausnitz (1952, 1963). More modern stratigraphic work was carried out in 1984–1989 by French and Israeli archaeologists. They also investigated the ancient harbor area, which was responsible for Tell Abu Hawam's relative abundance of imported wares and commercial prominence.

The earlier stratigraphic sequence, mostly derived by R. W. Hamilton (1932, 1933), has been much debated in the literature. Jacqueline Balensi (1980) has revised the strata and dates (1985, 1986) based on the latest excavations.

The town was founded at the end of the Middle Bronze Age (stratum VI; sixteenth–fifteenth century BCE), then fortified and equipped with a citadel and sanctuary when it became a major entrepôt during the Late Bronze Age (stratum VA–C; mid-fifteenth–twelfth century). The material belonging to the latter horizon is exceptionally fine and often imported; the older view that Tell Abu Hawam was an Egyptian nineteenth-dynasty naval base has now been largely abandoned (Weinstein, 1980). The destruction that ended stratum VC was probably caused by invading "Sea Peoples" in about 1200 BCE, as at other sites along the Levantine coast. [*See* Philistines, *article on* Early Philistines.] A gap posited by Hamilton at the end of stratum V seems not to have existed.

Stratum IVA–B (eleventh–tenth century) represents an Iron I reoccupation, characterized by reuse of temple 30, three-room houses, and some Phoenician bichrome wares. This stratum ended in a great conflagration.

Stratum IIIA–B (tenth–eighth century) belongs to the Iron II period and seems to represent a mixed Israelite-Phoenician culture, in which some of the earlier cyclopean walls and other installations were reused. The pottery included late Cypro-Phoenician wares; some "Samaria" wares; Cypriot White-Painted III wares, and Greek imports. This stratum either declined, perhaps as a result of the silting up of the harbor, or was destroyed in the Assyrian invasions in the eighth century BCE. [*See* Phoenicians; Assyrians.]

Stratum IIA–B (fifth–fourth century) produced a Persian-period settlement, with substantial fortifications and considerable imported pottery. Tell Abu Hawam was subsequently largely abandoned. Many of the tombs in the nearby cemetery on the northern slope of Mt. Carmel belong to this Persian horizon.

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WILLIAM G. DEVER

ABU SALABIKH (modern name, Ar., Tell or Īšān Abū eṣ-Ṣalābīḫ ["father of clinker"]), city of the fourth and third millennia in southern Iraq, located at the center of the Mesopotamian alluvial plain between the Euphrates and Tigris Rivers (32°15′ N, 45°3′ E). The site's modern name comes from the quantities of overfired ceramic slag found on its surface. Settlement distribution and geomorphology suggest that in antiquity the site lay on a principal arm of the Euphrates, flowing from Kish toward Nippur, which lies only some 16 km (about 10 mi.) to the southeast and can be seen from Abu Salabikh on a clear day.

The site's ancient name remains uncertain. Kesh (*kèš*), which was initially proposed, seems likelier to be near Adab, farther east (perhaps at Tell al-Wilayah). At present, Eresh counts as the best candidate, which would be significant in that its patron deity was Nisaba, goddess of reeds and hence of scribal craft.

The mounds on the site are scattered over an area of about 2 × 1 km. None rises more than 5 m above the surrounding plain, but their lower parts are shrouded by 2–3 m of silt that has accumulated since the first settlement here. The earliest occupation is hinted at by a few Late Ubaid painted potsherds from unstratified contexts. Uruk levels are represented on the Southwest ("Uruk"), West, and Northwest Mounds but are not yet identified elsewhere. The Northeast Mound and compounds laid out on the flattened surface of the West Mound date from the beginning of Early Dynastic (ED) I (c. 2900 BC). The occupation of the Main Mound may not predate the later ED I. All that is known of the South Mound is that its surface levels were occupied in ED III. The very low-lying area known as the East Mounds may be Ur III, on the evidence of an unstratified Amar-Suen brick. Dates of abandonment are more difficult to establish because of massive erosion. There is no reason to think that

the main part of the Uruk Mound was occupied after the Uruk period, or the West Mound after ED I. The highest buildings surviving on the Main Mound are ED III, but the evidence of potsherds used as packing around drains, in pits and in tip lines outside the city wall proves Akkadian and probably Ur III occupation. There is no artifactual evidence for the second millennium BC or later.

Archaeological notice of the site was first published by Albrecht Goetze and Vaughn E. Crawford, as part of the Akkad survey carried out by the American Schools of Oriental Research. Crawford initiated excavations in 1963–1965, assisted by Donald P. Hansen. Several soundings were made: of principal interest was the unexpected discovery of about five hundred pieces of Pre-Sargonic cuneiform tablets scattered through the rooms of a building in area E on the Main Mound, probably part of a temple complex. Published by Robert D. Biggs in 1974, they revolutionized our view of early Mesopotamian literature. Of particular interest are versions of the Instructions of Shuruppak and the Kesh Temple Hymn. Old Babylonian copies of these texts help us to understand them. In addition to lexical and geographical lists, some now duplicated by texts from Ebla in Syria, there are literary and religious pieces and a few public administrative documents. Later work at the site yielded additional tablets, some from other buildings on the Main Mound, including administrative tablets and an incantation.

A contour survey was carried out in 1973 and excavation was resumed in 1975 by the British School of Archaeology in Iraq, under the direction of J. N. Postgate. The work continued with occasional fallow years until 1989 and will be resumed if circumstances permit. The principal results include the recovery of more than 4 ha (10 acres) of the city layout as a result of surface clearing: on the main mound this revealed the street and lane network, the line of the city wall, the probable location of gates, and many individual buildings. On the West Mound it showed that the ED I settlement was laid out in compounds divided by heavy walls.

In areas A and E of the Main Mound, buildings excavated by the earlier excavators were further investigated. This entailed excavating numerous graves, furnished with considerable amounts of pottery, jewelry, and other goods, including equids presumably harnessed to wheeled vehicles. Some of the graves were demonstrably intramural having been dug from within the houses. Against the southeastern side of the area E complex a massive refuse tip was identified that was more than 6 m deep. It contained many door sealings, figurines, and other items suggestive of temple discard. Two large ED III domestic buildings were excavated on the Main Mound, with particular attention, given to defining the use of space through quantitatively controlled recovery and micromorphological examination of the stratification.

Susan M. Pollock undertook excavation and other work on the Uruk Mound between 1985 and 1990. Her work confirmed an occupation from Early to Late Uruk, with a small ED occupation on the mound's southeastern sector. A Late Uruk city wall 20 m thick was located. Detailed observation of its surface remains has illuminated the distribution of activities throughout the settlement.

[*See also* Mesopotamia, *article on* Ancient Mesopotamia.]

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J. N. POSTGATE

ABU SIMBEL, colossal temple complex located in the northern Sudan about 200 km (186 mi.) up the Nile from Aswan (22°21′ N, 31°38′ E). Built in Nubia by the Egyptian pharaoh Rameses II (1279–1213 BCE), the complex consists of two rock-cut temples, a large structure for the pharaoh and a small one for him and his queen, Nefertari. Begun after 1274, both temples were officially opened for cult purposes in 1255; the officials responsible for the work were two successive viceroys of Kush (Nubia), Iuny and Hekanakht, and a royal cupbearer, Ashahebsed. In 1238 Abu Simbel experienced a severe earthquake. Viceroy Paser carried out extensive repairs, but the upper part of one of four great colossi of Rameses II that fronted the Great Temple had to be left where it had fallen. The colossi, and the Great Temple itself, were already partly buried under encroaching sand in 593, when Greek, Carian, and Phoenician mercenaries serving in an invading army of Psammetik II (595–589) left

graffiti relatively high up on the legs of the colossi. Eventually both temples were largely buried under sand; the Great Temple was rediscovered by the Swiss traveler Johann Burckhardt in 1813 and first entered by the early Egyptologist Giovanni Belzoni in 1817.

The two temples of Abu Simbel are the best-preserved examples of the grandiose art and architecture typical of the reign of Rameses II. Each was cut into separate, high sandstone bluffs. Nefertari's structure lay northeast of the Great Temple. The Great Temple's facade is cut directly into the cliff face (over 26 m [85 ft.] high and recalling a temple pylon in form). Four colossal figures (over 19.8 m [65 ft.] high) of an enthroned Rameses stand in front, and over the entrance a statue of Re-Harakhti, a solar god, set in a recess, receives offerings from figures of Rameses cut in relief on either side. A frieze of baboons along the top of the facade represents those creatures of the "eastern horizon" who adore the rising sun. The Great Temple's maximum depth is 62.85 m (206.2 ft.); on each side, also rock cut, are long chambers, which housed temple utensils and furniture.

Within is a large columned hall lined with eight colossal figures of Rameses standing in both royal regalia and Osiride pose. The reliefs covering the walls focus mostly on royal victories; in particular, the north wall is occupied by the best-preserved depiction of the famous battle of Rameses II against the Hittites at Qadesh (1274). More conventional scenes involving Syrians, Libyans, and Nubians are found on the south wall. Beyond, a smaller columned hall is embellished with cult scenes, and further in (after a small vestibule) is the sanctuary, which contains an altar or barque stand (at festival times, images of gods were carried outside the temple in a boat-shaped palanquin) and, along the rear wall, four seated statues representing Ptah and Amun on the south side and the deified Rameses and Re-Harakhti on the north side. In the New Kingdom (eighteenth to twentieth dynasties, 1550–1069) a pharaoh could be understood as being both a mortal earthly ruler and simultaneously a divine being capable of receiving cult like a god.

Nefertari's temple is markedly smaller; its facade is only 12 m (39 ft.) high, and its total depth about 20 m (66 ft.). Six colossal standing figures (all 9.9 m [32.4 ft.] high) front the temple. On each side, Nefertari is depicted as the goddess Hathor and is flanked by figures of Rameses. A columned hall with six Hathoric columns within is decorated mainly with cult scenes, and a small chamber before the sanctuary celebrates in its reliefs deities associated with femininity and birth. Hathor in cow form emerges from the marshes, and Taweret, protector of women in childbirth, appears. In the sanctuary is a statue of Hathor as a cow protecting the king. Implicitly he is her maturing son, although he is shown as an adult.

The temples of Abu Simbel are of manifold significance; they are best understood as a conceptual, as much as an architectural, whole. On one level, the temples link Rameses with the gods of Nubia and Egypt, specifically the Nubian gods Horus of Meh and Hathor of Ibshek, and the four Egyptian deities Ptah, Amun, Re-Harakhti, and the deified Rameses himself. They also provide the context for a cult of the divine Rameses. However, the mythic dimensions of kingship are also involved. The Nefertari temple is conceptually a secluded arena for conception, gestation, birth, and creation, and Nefertari and four individualized hypostases (essential natures) of Rameses (the six colossi) literally stride out from it. These same four hypostases take their place as the four colossi of the Great Temple, which celebrates Rameses as virtual embodiment of the sun god on earth and ruler of Egypt and the world. The Nefertari temple was aligned so that its' most direct solar illumination would occur at about the winter solstice. Sunlight penetrated the Great Temple most deeply about a month and a half before or after the solstice. These schedules suggest that Nefertari's temple was ritually most significant during the period of growth and emergence, and the Great Temple was most prominent at the time of increasing heat and at the inundation.

As a result of the flooding of Nubia by the Lake Nasser reservoir, both temples were cut into segments and rebuilt at a higher location between 1964 and 1968, a spectacularly successful example of salvage archaeology.

[*See also* Nubia.]

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ABYDOS, one of ancient Egypt's most sacred sites, located in the eighth Upper Egyptian nome, or province (26°11′ N, 31°55′ E). Archaeological survey indicates that along with This (Thinis) it was one of two prominent towns within this administrative district. Initially, Khentiamentiu, a protector of cemeteries, was the local god, but by the late Old Kingdom (c. 2350 BCE), he had been syncretized with Osiris, the powerful god of the underworld. Most likely, Osiris came to be associated with Abydos because the ancient Egyptians believed the underworld's entrance was there. By the twelfth dynasty (c. 1991–1783 BCE), annual rites included a procession from the temple at the edge of the flood plain to Osiris's supposed tomb at Umm el-Qa'ab, the Early

Dynastic royal cemetery at the foot of the high desert escarpment.

In ancient Egypt the name *Abydos* applied only to the town in which the Osiris temple was located. Today the designation *Abydos* refers to the town as well as a number of settlements, cemeteries, and monuments located along a narrow 4 km (2.5 mi.) stretch of low desert. Additionally, several other Abydos cemeteries, including Umm el-Qa'ab, are found beyond this zone, into the low desert along a small wadi whose mouth was located behind the town of Abydos.

The first person to excavate at Abydos was Auguste Mariette around 1858–1859. He focused on the necropoleis, labeling the largest ones the North, Middle, and South Cemeteries. He was principally interested in acquiring funerary stelae, (commemorative tablets), although he undertook a substantial amount of excavation in the northwest corner of Kom es-Sultan (the modern name for the ancient town site), searching for the "tomb of Osiris." The ancient Egyptians believed that Abydos was the burial place of Osiris, hence Mariette's search for that tomb.

Between 1895 and 1897, Émile Amélineau conducted the first excavations at Umm el-Qa'ab, uncovering tombs of early kings. A considerable body of early archaeological work was conducted under the auspices of the Egypt Exploration Fund (EEF) of London. William Matthew Flinders Petrie was responsible for the largest and most systematic body of early EEF excavations. Although Amélineau had already dug at Umm el-Qa'ab, Petrie's more detailed research on the tombs and Amélineau's dumps allowed him to outline the Early Dynastic period. Also he excavated the Osiris temple, some of the early town, as well as the Middle Cemetery; much of this work has yet to be improved upon. Other archaeologists worked there as well: T. Eric Peet and Henri Frankfort (Middle Cemetery); E. R. Ayrton and C. T. Currelly (South Abydos); and Arthur C. Mace (North Cemetery). John Garstang dug in the North and Middle Cemeteries as well but published little.

Abydos continues to be a rich source of data. Since 1979, the Pennsylvania–Yale Expedition to Abydos has regularly and systematically explored the ancient town and nearby funerary remains, especially Middle Kingdom cenotaphs of private persons and the mud-brick funerary enclosures of the first and second dynasties. At the latter, numerous mud-brick structures have been discovered that house wooden boats. Recent work at Cemetery U near Umm el-Qa'ab by the German Archaeological Institute in Cairo has uncovered tombs belonging to high-ranking individuals, possibly kings, whose remains date prior to Narmer of Dynasty 0 (c. 3150 BCE).

The earliest predynastic remains date to the late Naqada I and early Naqada II periods (Cemeteries ϕ/C, E, U, and S/Salmani and a settlement east of the Ahmose cenotaph). Numerous cemeteries (ϰ/B, E, U, and S/Salmani) and several small settlements (west of the Osireion [elaborate centoptah built by Seti I] and under Cemetery D) have been assigned to the subsequent late Naqada II and III periods. The stratigraphic remains from Kom es-Sultan suggest that the town was occupied by the end of the Predynastic period, but the earliest stratified levels in the Osiris temple cannot be documented prior to the late Old Kingdom. Caches of objects and several burials within the town site (M series), generally agreed to be principally of Early Dynastic date, suggest, however, that the temple flourished earlier.

The ten royal tombs at Umm el-Qa'ab and their funerary enclosures in the Middle Cemetery are the most significant early dynastic remains. The Old Kingdom is represented by tombs (most in Mariette's North and Middle cemeteries), temple architecture, and a settlement (both in Kom es-Sultan). The increasing importance of Abydos to the Middle Kingdom Egyptians can be seen in the growth of the cemetery zone. In addition to traditional burials, cenotaphs (or more precisely, memorial chapels) became fashionable. The private cenotaphs are located in the easternmost portion of the North Cemetery, but large royal cenotaph-temples, such as those of Senwosret (Sesostris) III and Ahmose, were built farther south (now known as South Abydos). Particularly well known are the nineteenth-dynasty structures, including one dedicated to Rameses I, the large, well-preserved example built by Seti I, and the small Rameses II temple.

The North and Middle Cemeteries were used extensively from the New Kingdom through the Roman period, and the south cemetery is certainly of a late date. As of the Ptolemaic period, the wadi bed, previously taboo for burial purposes, became a heavily exploited cemetery zone. The cemeteries for animals—predominantly ibis, dog, and hawk—date to the Late period and subsequent phases of Egyptian history.

The Osiris temple was expanded in the Middle Kingdom, and in the later New Kingdom, it was leveled and rebuilt. Numerous rulers of the New Kingdom (eighteenth–twentieth dynasties) decorated and added onto the revamped temple. Rameses II built a new temple, the portal, to the west. Finds of private and royal statuary, dating through the end of the twenty-sixth dynasty, testify to the Osiris temple's continued use. Fragments bore a dedication to Nectanebo, suggesting that building continued in the thirtieth Dynasty, and the same structure was probably used in the Ptolemaic and Roman periods.

[*See also* Egypt, *article on* Predynastic Egypt; Egypt Exploration Society; *and the biographies of Frankfort, Garstang, Mariette, and Petrie.*]

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ACHAEMENID DYNASTY. *See* Persians.

ACHZIV (or Akhzib; Ar., Ez-Zib; Assyr., Accipu), site located on the Mediterranean coast of Israel, 15 km (9 mi.) north of Akko and 25 km (15 mi.) south of Tyre (33°02′08″ N, 35°06′ E). The tell, a double mound, is located on a *kurkar* (sandstone) ridge that overlooks the Mediterranean Sea and is south of the estuary of the Kesib River. To the south a deep riverbed is usable as an anchorage. Beyond the southern bay, a well-protected and sizable harbor (Minat ez-Zib) can accommodate a considerable number of boats. An underwater survey revealed rock installations used in growing crops of the Murex snail that produces the purple and blue dyes so valued in antiquity.

Achziv is mentioned in the Hebrew Bible as a town on the northern coast of Canaan bordering the land of the Sidonians and allotted to the tribe of Asher (*Jos.* 19:29). Greek and Roman writers, among them Josephus, knew Ekdippa, a city on the Phoenician coast (*War* 1.257). Travelers and historians in Roman, Byzantine, and Arab times also mention Achziv on the road to Tyre, 16 km (9 mi.) from Akko. The Crusaders built a fortress, the Casal Umberti, on the higher mound of the tell. The native Arabic-speaking population continues to call the village Ekziv/ez-Zib.

In 1963–1964, excavations were undertaken jointly by the Istituto de Vicino Oriente of the University of Rome and the Israel Department of Antiquities, directed by Moshe W. Prausnitz. Four contemporary, or overlapping, Iron Age cemeteries were excavated: the central cemetery (CCA) at the foot of the defenses on the eastern slope; the northern cemetery (NCA) on the northern bank of the Kesib River; the southern cemetery (SCA) overlooking Minat ez-Zib; and the eastern cemetery (ECA), dug into a second *kurkar* ridge east of and parallel to the coastal ridge. According to Jewish tradition, this is the northwest border of the ancient land of Israel.

Achziv's strategic position on the coastal main artery, the Via Maris, from Tyre to Akko and on to Philistia, was coveted by the Asherites and the Tyrians. In antiquity the harbor was regularly visited by Levantine, as well as Cypriot, coastal vessels. The Sidonians focused all their resources on maintaining control of the harbor. Their flourishing arts and crafts survived the aftermath of the collapse of eastern Mediterranean trade in the twelfth century BCE (see below).

The site's earthworks—its rampart and glacis—and towers were built in the Middle Bronze IIA period. The peninsula was turned into an island city by cutting the fosse to join the creek with the mouth of the Kesib River. At the beginning of the Late Bronze Age I, the site's defenses were destroyed and then rebuilt, only to be destroyed again at the end of LB II.

Inside the city, the excavators discontinued a test trench when it reached the final LB destruction layers. Among the few remains belonging to the transitional Iron Age IA, pits, fireplaces, and occasional walls were excavated. Inside the pits, wall brackets and Philistine-style pottery were discovered. Achziv recovered in the eleventh century BCE (Iron IB). The town proceeded to develop rapidly, and during the eighth century BCE reached its largest size, some 20 acres. Sennacherib of Assyria conquered a prosperous town in 701 BCE. The excavations on the northern part of the mound uncovered a number of storerooms adjacent to the Late Iron Age and Persian-period fortifications. Inside the storerooms were jars given as tax payments "to my lord the king," incised in Aramaic *Adonimelech.* The town's prosperity continued throughout the Hellenistic and Early Roman periods. The higher, small central mound contained levels from the Byzantine to the Arab and Crusader periods.

Four phases of activity in the northern cemetery were discerned. Stratum 4, the earliest, revealed part of a floor of an open area—a "high place"—that had a cultic use. It was founded on sand and covered with thick layers of plaster, indicating frequent reuse during the eighth–seventh centuries BCE. A *maṣṣēbâ,* or stela (1.5 × 1 m), used as an altar was found lying on the floor. Subsequently, this "high place" was enclosed by a wall. The wall remained in use throughout stratum 3. Jars with ashes and kraters containing cremation burials, juglets, and Achziv-ware vessels had been placed around the high place and beneath its foundations. Graves first appear in stratum 3, with small baetyls (upright stones signifying Heb., *bêt-ēl,* "house of God") marking each burial. Until recently, this type of baetyl was known

only in Punic North Africa. A tophet was discovered nearby—the first instance of a tophet related to a central high place discovered in the Phoenician homeland.

The central cemetery contained cist graves dated to Early Iron IB. Single or pairs of skeletons were buried in a supine position. They were found with cylinder seals, a bronze bowl, a small ivory bowl with a lion couchant on the rim, and numerous locally made bichrome pilgrim flasks—burnished and decorated with vertical, concentric circles. A bronze double axhead, a spear, and a fibula date the cists to the eleventh century BCE. [*See* Seals; Tombs; Grave Goods.]

The eastern cemetery began to be used at the end of Iron IB. Many rock-hewn burial chambers with shafts were found in a family vault that was in use for 250–300 years. These chamber tombs are identical with contemporary Israelite burials. In them, a sequence of proto–Black-on-Red and Black-on-Red I wares was found along with red-burnished and red-polished jugs of typical Achziv ware. Only a few early bichrome vessels and pilgrim flasks were found.

A different range of Iron II pottery appeared with most of the burials in the southern cemetery. Bichrome, black-on-red, and black-on-pink pilgrim flasks represent the overwhelming majority of pottery in this cemetery's early phase, which was dated by its ceramics, scarabs, and seals to the eleventh–tenth centuries BCE. A recently excavated built tomb illustrates funerary architecture and this cemetery's three phases. A short dromos led to the entrance of a rectangular chamber dug into the earth and hewn into the rock. Its roof, visible aboveground, was covered with large stone slabs sealed by a stepped, upper structure of clay bricks, to form a high place. The dromos and the chamber were arranged on an east–west axis. This was a family tomb in which the bodies were placed on their back facing the entrance in the southern corner of the east wall. The cemetery's middle phase (end of the tenth to end of the eighth century BCE) is marked by the first appearance of red-polished Achziv jugs and bowls. The final phase (seventh century BCE) is noteworthy for the large imported storage jars used as receptacles for funerary gifts. During all three phases, valuable metals (lead net weights, bronze armrings, and other ornaments of gold), ivories, amber beads and seals, and votive figurines were buried with the deceased. These finds bear witness to the range of Sidonian trade throughout the Mediterranean basin and the rest of the Near East.

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ACOR. *See* American Center of Oriental Research.

ADAB (modern Bism[a]ya), mounds located in a desert area of southern Iraq about 40 km (25 mi.) due east of the modern town of Diwaniya and about 30 km (19 mi.) southeast of the ancient religious capital of Nippur (31°54′ N, 45°36′ E) The identification of the site with ancient Adab was made by Edgar James Banks at the beginning of the twentieth century on the basis of inscriptions from the main temple, which named it as the E-Sar, known to be the main temple of Adab. In 1885 J. P. Peters, the excavator of Nippur, visited the site and noted its main features. Banks carried out the first full-scale excavations in 1903–1904, which he described in his book (1912). It remains the major source of information about the site.

Adab is roughly rectangular in shape and is approximately a mile long by half a mile wide. It is surrounded by a double wall that, at least in part, is third-millennium in date and is bisected by the bed of a dried-out canal, a branch of the Shatt-an-Nil, which linked it to Nippur. Inside the walls are a number of mounds, one of which Banks identified as a temenos with a ziggurat and temple; others contained a palace and an area of domestic dwelling. Additional low mounds lay outside the walls and may represent the remains of suburbs and gardens.

The town was inhabited from at least the early third millennium and appears in the Sumerian King List where the dynasty of Adab contains the name of a single king, Lugal-anne-Munda, credited with a reign of ninety years. He is thought to have lived at the end of the Early Dynastic III period. The importance of the town in the third millennium is confirmed by the archaeological finds, which include the statue of another ruler of similar date, Lugal Da-udu, and

an area of well-preserved private houses which included one fine courtyard house with a brick-paved floor. Banks identified the house as the residence of the local governor, on the basis of cuneiform tablets found in it. Bricks stamped with the names of Early Dynastic and Agade (Akkadian) kings, including Sargon I and Naram-Sin, were recovered from the temenos; bricks stamped with the name of Shulgi came from the top levels of the ziggurat. Hammurabi claims, in the prologue to his law code, to have (re)built the temple and the city. Part of a palace thought to date to this period was found on mound 1. Occasional bricks stamped with the name of Kurigalzu indicate that the city was still inhabited, and of some importance, in the Kassite period.

Small finds include a collection of about three hundred cuneiform clay tablets from the so-called palace, and some of a late third-millennium date from the private houses. A magnificent collection of inscribed and decorated sherds from a wide variety of stone bowls was found in the temple dump. Some of the finest are of steatite, or chlorite, elaborately decorated with geometric and figurative designs. Many of the designs can be matched on similar vessels from Iran and Arabia, as well as from Mesopotamian cities such as Nippur, Ur, and Mari. It has been suggested that Adab may have been a distribution point for this type of imported vessel. Provenience analyses of the stone have also indicated a number of different sources for them in southeast Iran and the Arabian Peninsula. A fine alabaster head of a man, with a close-trimmed beard and inlaid eyes, only 10 cm high, is dated to the Akkadian period on stylistic grounds and on the basis of its stratigraphic association with an inscription thought to be of that date. It is the finest of a number of heads and other fragments of statuary. Adab undoubtedly is one of the most important third-millennium sites in southern Iraq, still to be fully explored.

[*See also* Nippur; Sumerians; *and the biography of Peters.*]

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ADEN, since antiquity a major port city (12°46′ N, 45°02′ E) on the Gulf of Aden, now in Yemen. Modern Aden is associated with the northwestern port on Bandar Tawahi, but the ancient and medieval port appears to have been on Sira Bay, on the eastern side of the irregular oval volcanic promontory known as Aden (ʿAdan). The ancient city was located at Crater, the hollow of the volcano washed by the waters of Sira Bay. In antiquity, Aden may have been an island intermittently, especially at high tide. Ancient land and sea communications routes met at Aden, as known primarily from deductions and later sources. The very few inscriptions found in Aden may not come from there originally, and South Arabian texts name many cities called Aden. It is not clear when the present name came to be associated with this particular city. The principal pieces of direct evidence concerning Aden are the famous water tanks and the ancient text the *Periplus of the Erythraean Sea.*

From prehistoric until modern times, the city at the present location of Aden has been an emporium, importing and exporting, serving the masters of the interior, rather than becoming a power in its own right. Historically the port of Aden served the frankincense trade of the kingdom of ʾAwsan in Wadi Markha in the first half of the first millennium BCE and then the kingdom of Saba (Sheba) in the following centuries, before falling into the hands of the kingdom of Qataban and later Ḥimyar. Informed speculation suggests that the historic role mirrored a prehistoric precedent—the importation of frankincense from Dhufar and Somalia and the transshipment by the overland trade route heading north.

During the first centuries of Islam, apart from continuing to serve as an emporium, Aden may have become a primary source of glass, which was exported to the Levant and the Far East, again perhaps in continuation of an earlier tradition. During the Rasulid period (thirteenth century), Aden imported Chinese products and exported horses. It would seem that the temporary decline of ancient Aden in the first centuries CE can be associated with the rise of the Ḥimyarite port Muza (near modern Mocha, on the Red Sea coast) and the Ḥadhramaut port Qanaʾ (modern Bir ʿAli, 500 km [310 mi.] farther east), which flourished from roughly the first century BCE until well after the demise of the Ḥadhramaut kingdom. Historically, Aden probably dominated the seaborne import-export frankincense trade during the entire first millennium BCE.

The *Periplus of the Erythraean Sea,* a shipping guide dating to the first–third century, describes all of the ports in the region, defining the South Arabian coast as "Ausanic" (thus associated with the kingdom of ʾAwsan) and reports that the port of Aden (Eudaimon Arabia or Arabia Felix) was sacked, possibly by the Roman Emperor Claudius (41–54 CE). It has been equally plausibly argued, however, that the plundering was the work of a Ḥimyarite king. Because the date of the *Periplus* itself is not certain, the destruction may have occurred anywhere from first to the third centuries CE. Regardless of the date, the eclipse was only temporary; and Eudaimon Arabia was flourishing again soon thereafter.

The most overwhelming archaeological feature of Aden consists of the famous Tawila tanks. Carved into the rock of a narrow cleft on the southern edge of Crater, they have a combined capacity of some 136,500,000 l (30 million imperial gals.) of water. They were filled completely in 1993,

showing that the capacity corresponded to the extraordinarily irregular rainfall patterns of Aden, where 70 mm (2.8 in.) annual rainfall was the mean in the 1980s. That the tanks were remodeled by Islamic and British rulers is clear, but the date of their conception is not.

Apart from random soundings and an attempt to reestablish the ancient coastline, archaeological research in Aden itself has never been undertaken, and the objects supposedly coming from the city and neighboring regions cannot be regarded as reliable sources. The column capitals found 3 m (10 ft.) beneath the surface in the city are medieval and not ancient.

Dating to the third and early second millennia and revealing parallels to both Africa and the rest of the peninsula, the pottery from the sites of Ṣubr and Bir Nasser, some 25–30 km (15.5–18.6 mi.) north, suggests, however, that Aden was indeed a trading center in prehistoric times. Prehistoric import pieces can have reached Ṣubr only after passing through Aden, and the same route applies to the Greco-Roman finds from the district northwest of Ṣubr. The Qatabanian material from Bir Fadhl, one of the mainland suburbs of the modern city, underlines the continuous importance of the site. Thus, despite the dearth of material, dispersed artifacts and written South Arabian and medieval sources indicate that Aden always served as a major port despite occasional periods of decline, such as that mentioned in the *Periplus*.

[*See also* Ḥadhramaut; Ḥimyar; Mocha; Qataban; *and* Yemen.]

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ADULIS, important ancient coastal trading center in Ethiopia (now in Eritrea; 15°17′ N, 39°40′ E). Located on the deep Gulf of Zula (Annesley Bay), Adulis was the Red Sea port of ancient Axum. This was where Roman traders transshipped goods to vessels headed for southern India. From Adulis, ivory collected in northern Ethiopia was shipped to the eastern Mediterranean. Although the site was occupied before the Aksumite period, the period of its activity as a trading center was from the first through the eighth century CE.

The first extensive note about Adulis and the first mention of Axum appears in a Greek merchant's handbook, the *Periplus of the Erythraean [Red] Sea,* datable to 40–70 CE. According to this source, the journey from Adulis to Koloē, an inland city and the first trading post for ivory, took three days. From there it was five days to the metropolis called Axōmitēs. The ruler of these regions was Zōskalēs, who was well versed in reading and writing Greek. Major exports of Adulis were ivory, tortoise shell, and rhinocerus horn; imports included clothing from Egypt, millefiori glass, brass, iron, wine, olive oil, Indian iron, and steel (*Periplus,* 4–6).

The land route went up the northern Ethiopian escarpment to Koloē of the *Periplus* (perhaps the site known currently as Maṭara) and then west to Axum. Fragments of Mediterranean amphorae, glass, and iron in later chronological levels at Adulis, Axum, and Maṭara demonstrate the continued importance of Axum's import trade.

The author of the *Christian Topography* (recently identified as Costantine of Antioch) visited Adulis about 520 CE. The port of the Axumites, he wrote, was visited by merchants of Alexandria and Eilat [Aila]. At Adulis he copied the Greek inscription of a marble victory throne of an unidentified Axumite ruler (the *Monumentum Adulitanum*) and the Greek inscription of a basalt stele of Ptolemy III. The search for the *Monumentum Adulitanum* inspired nineteenth-century interest in the ruins of Adulis.

Roberto Paribeni excavated at Adulis in 1906, followed by Francis Anfray in 1961 and 1962. Like Axum and Maṭara, Adulis was unwalled. The monumental architecture complexes of the northern and northeastern portions of the site reveal characteristic traits of Axumite architecture—stepped podia platforms with projecting and re-entrant walls, and adjacent annex constructions. Anfray's excavations revealed specific similarities between Adulis and Maṭara. He uncovered an area at the western part of the site with popular two- to three-room dwellings that appear to have been part of a much larger architectural complex.

Unlike the churches at inland Axumite sites, those at Adulis yielded fragments of prefabricated marble ecclesiastical furnishings from the eastern Mediterranean (see figure 1). These are datable to the sixth century. Fragments of similar or identical marble chancel panels and posts are found at Constantinople and Ravenna as well as at churches in Byzantine Palestine. The prefabricated marbles found at Adulis must have been carved at eastern Mediterranean quarries, sent overland through the Negev, and shipped from a port at the northern end of the Red Sea, probably Aila.

These marble fragments found at Adulis are associated with churches built in Axumite style. Their plan (like the church in complex F at Maṭara) is a basilica with an inscribed eastern apse. The latter feature is typical of sixth-century churches in Byzantine Palestine. In the complex that includes the northern church, Paribeni found fragments of marble reliefs carved with a six-armed star disk. This design prompted him to identify the architectural mass below the church as a pagan *ara del sole* ("altar of the sun"). However, the six-armed star disk is typical of the repertoire of designs carved on prefabricated marble chancel and ambo (pulpit) furnishings; these fragments should also be dated to the sixth century.

Ash layers and charcoal provide ample evidence of fire at Adulis, but the port city was not destroyed in the second quarter of the seventh century as some have assumed. International trade routes were deflected from the Red Sea from the late sixth century onward, and the importance of Adulis waned.

[*See also* Axum; Ethiopia; Matara.]

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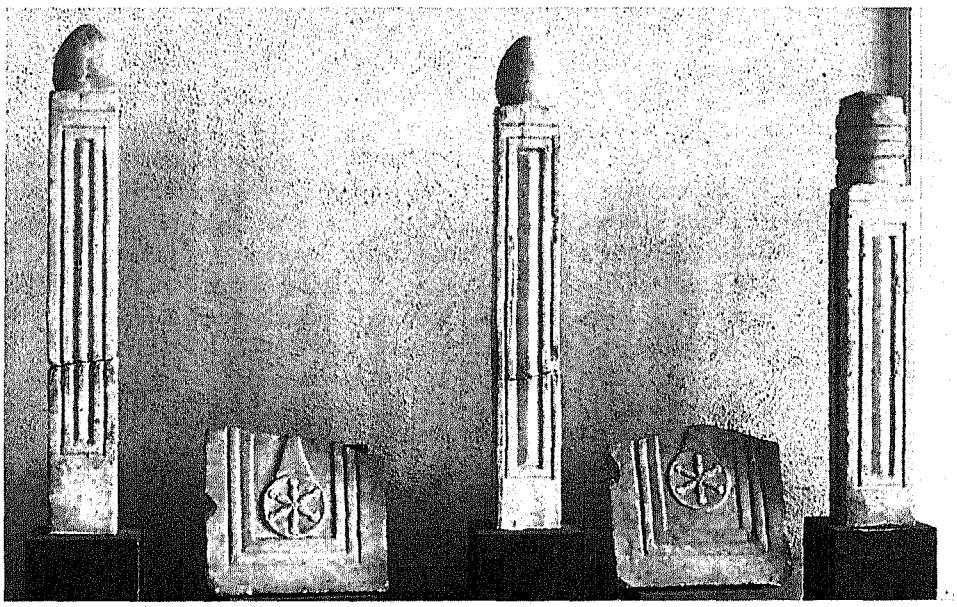
AEGEAN ISLANDS. The purpose of this essay is to situate the Aegean Islands in their own social, economic and cultural milieu as well as in a Near Eastern context. Links between the Aegean Islands and the ancient Near East were influenced by the ever-changing array of states and cultures that dominated the eastern Mediterranean—in Syria-Palestine, Anatolia, and Egypt. To discuss these island cultures and their relationship to Near Eastern societies, it is important to move back and forth between between historical and archaeological records, always keeping each distinct but placing one in counterpoint to the other wherever appropriate. Such an approach will facilitate our understanding of the political ties, economic relationships, and cultural associations between the major polities of the mainland Near East and the dominant island cultures of the Aegean.

By the beginning of the Early Bronze Age, about 3000 BCE, most of the Aegean Islands had been settled for the better part of a millennium, but Crete had been occupied for several millennia. Our understanding of island developments during the third millennium is based exclusively on archaeological evidence. Documentary materials do not come into play before the Middle Bronze Age (about 2000–1600). By the Late Bronze Age (about 1600–1200/1100), the developing international spirit in the Aegean and eastern Mediterranean led to much closer connections within the Mediterranean islands and between those islands and the ancient Near East. Such developments fostered a need for more detailed records of commercial transactions or political alliances and divisions.

The absolute chronology of the Aegean Early Bronze Age has improved markedly in recent years, and yet, because it is difficult to establish chronological connections among so many islands, cultural sequences still remain vague, and economic or social developments can only be assessed in the broadest of terms. By the Middle and Late Bronze Ages (about 2000–1200), more detailed cultural sequences help to characterize many of the Aegean Islands. One result is



ADULIS. Figure 1. *Marble chancel posts and panels.* Sixth century CE. Archaeological Museum, Asmara. (Courtesy M. E. Heldman)

that the chronological framework and the relative chronological sequences in the Aegean and eastern Mediterranean are well known. Absolute dating, however, and the radiocarbon dating method are still much debated.

The two following reasons underlie the improved situation for dating: (1) The international contacts that developed on an unprecedented scale between about 1800 and 1100 BCE brought distinctive Aegean pottery or metal products into reasonably secure stratigraphic contexts in Egypt or western Asia, where astronomically derived dates have enhanced possibilities for closer dating; (2) the spectacular Bronze Age eruption on the Cycladic island of Thera not only buried the site of Akrotiri but also preserved crucial evidence for radiocarbon dating.

Still the chronological debate continues. The best radiocarbon-based approximation for the cataclysmic event associated with the Thera eruption is 1728 BCE a date which *may* correlate with other types of scientific evidence. Yet there remain considerable problems associated with laboratory error, interlaboratory comparisons, and the statistical approximation of calibrated radiocarbon-date ranges. Unlike most archaeologists elsewhere, many Aegean prehistorians do not accept radiocarbon-dating evidence. One consequence is the notable disparity of up to 150 years between their favored date for the eruption of Thera (about 1550) and the best estimate that current scientific evidence can provide. Despite the wide range of scholarly expertise and high-tech equipment brought to bear on the problem, such discrepancies persist: they are typical of archaeology the world over.

Cyclades and Crete. Although limited in size, most Cycladic islands were colonized by the Bronze Age, not least because water and arable land were available. The role of the Cyclades in Bronze Age regional trade networks was perhaps even more important in their permanent settlement. Early mariners used islands as landmarks (or "stepping stones") to avoid crossing open stretches of sea. The location of the Cyclades within the Aegean allowed them to serve as bridges linking mainland Greece, Crete and Anatolia.

During the Early Cycladic period (about 3000–1800 BCE), these islands were at the forefront of cultural and artistic developments in the Aegean, only to give way in the subsequent Middle and Late Cycladic periods to their increasingly influential neighbors, the Minoans and the Mycenaeans. In comparison with Crete, the Cyclades show less archaeological evidence for contact with areas beyond the Aegean. The final settlement at Thera in the late Middle Bronze Age is an exception. Links between Minoan Crete and Cyprus, the eastern Mediterranean, and the Near East (including Egypt) increased through time and reached a peak during the Late Bronze Age. Whereas the likelihood of some Near Eastern influence on Minoan Crete is still debated, recent finds of Minoan-style frescoes (Egypt) and painted-plaster floors (Israel) leave no doubt that Aegean influences traveled in the opposite direction.

Aegean prehistorians work in a nearly "prehistoric" context with a very limited range of documentary evidence (Linear A and Linear B) at their disposal. This factor combined with the inherent chronological imprecision for Bronze Age Crete and the Cyclades (from 50 to 200 years) makes it difficult to provide reliable narrative accounts for much of the Bronze Age. Given the nature of the evidence, the best that Aegean prehistorians can do is to outline patterns of human activity, development, or change. To reflect this situation, the chronological terms used here are based on the most obvious material development in the Aegean world: the emergence, development, and decline of palatial civilization on Middle–Late Bronze Crete.

- The *Pre-Palatial Period* corresponds to the Early Bronze Age (EBA) and spans the period from 3000 to about 2000/1950 BCE.
- The *Old Palatial Period* corresponds to the Middle Bronze Age (MBA), covering the period 1950–1700 BCE.
- The *New Palatial Period* marks the transition from Middle to Late Bronze, about 1700–1400 BCE.
- The *Post-Palatial Period* corresponds to the later phases of the Late Bronze Age (LBA), extending from 1400 to 1200 BCE.
- The final period is the *Sub-Minoan/Mycenaean*, from 1200 to 1000 BCE.

During the third millennium BCE, innovations in maritime transport and the earliest cultivation of olives and vines had a striking effect on social and economic developments. Heretofore isolated from the broader Mediterranean world, Aegean islanders began to manufacture distinctive artifacts, to participate in overseas trade, and to construct the earliest towns in the Mediterranean. Most Cycladic sites (farming settlements) were no more than an acre in size, but their spread throughout the islands is a notable feature of the Early Bronze Age archaeological record. At the same time, the advent and spread of copper and silver metallurgy permitted some Aegean islanders to acquire wealth and prestige, which promoted social stratification. A multitude of harbors and the potential diversity of trading routes further promoted international contacts.

These interrelated developments represent a sharp break with earlier patterns. On Crete in the Early Bronze Age, several new, widely dispersed settlements arose. Before larger sites such as Knossos, Mallia, or Phaistos—all situated in agriculturally favorable positions and all destined to become palace centers—could be constructed and maintained (along with their dependent personnel), society had to be reoriented, and a labor force mobilized. It is still difficult to reconstruct this social reorganization from the archaeological record.

How did these developments promote long-distance trade, and how did that trade help to stabilize the new palatial regimes? The Aegean generally and Crete in particular were obvious nodes for trade and communications between the east and central Mediterranean, and between Europe and the Near East. Although Early Bronze Age trade in the Aegean was chiefly local or regional, it had an international aspect concerned with the acquisition of luxury items or basic resources. Such "prestige goods" singled out the social groups that increasingly maintained centralized control over Crete and developed the Aegean palatial system. Because the palaces not only maintained production for export but at the same time controlled imports, they played a key role in overseas trade. In the return trade, Crete offered its Near Eastern partners finished goods—textiles, metal, semiprecious stones, organic goods, and dyes.

The material evidence of contact with the ancient Near East, therefore, is clear, but the nature of this contact is a problematic issue that the archaeological record cannot resolve easily. How were goods exchanged? Who actually conducted trade? Some scholars who study the later, Minoan Linear B tablets maintain that the palaces could not have controlled overseas trade because it is never mentioned as such in the tablets.

Given the evidence for contacts between Minoan Crete and the Levant during the Old Palatial period, is it possible that Minoan palatial civilization evolved as a result of interaction between the Aegean and the Near East? Because certain functional (drainage systems), technical, and stylistic aspects (ashlar masonry, wall paintings) in the two areas are similar, some archaeologists have argued for a direct technological and artistic exchange of ideas. Several new features apparent in the Minoan palaces (pottery shapes, monumentality of the palaces, iconography, use of writing, and complexity of Minoan production and communication systems) are not random occurrences. They may reflect a close knowledge of Near Eastern ideas of kingship. The ceremonial and administrative aspects, however, appear as early on Crete as they do in the Near East, and there is little that is specifically Near Eastern about their adoption in Minoan bureaucracies. Each Minoan palace reveals unique elements, and in overall design they focus on a central court in a manner distinct from Near Eastern palaces (Mari or Alalakh), or from Egyptian urban centers (Tell el-Amarna). In other words, the form of the Minoan palaces is clearly not derived from Near Eastern prototypes.

In an era of increasing internationalism, cultural interconnections between the Near East and the Aegean are not especially remarkable. It is likely, therefore, that the intensification of long-distance trade during the twentieth-seventeenth centuries BCE (including gift exchanges between palace centers in both regions) may have led Crete's rulers to emulate what they learned about Near Eastern royal institutions, particularly those aspects that may have helped to consolidate their own rule. Acquiring "prestige goods" from abroad helped to confer higher status on Minoan elites, which in turn led to further social inequalities. In sum, exposure to the ideas and institutions of the ancient Near East did not lead directly to the rise of the Minoan palaces, although it may have initiated some level of competition among elites in neighboring Minoan polities and thereby led to intensified production, as well as social and organizational change.

Crete's Neo-Palatial Period. About 1700 BCE, an earthquake or series of quakes destroyed Crete's first palaces. In the elaborate reconstructions that followed, the magnificent frescoes widely recognized as an important hallmark of Minoan civilization were applied to the new palace walls. Unprecedented wealth is further indicated by fine painted pottery, jewelry, engraved gems, bronze items, and ivory figurines. Self-supporting in food and most other basic resources except metals, the inhabitants of Minoan Crete intensified their agricultural and textile production. Combined with the extensive trade contacts that funneled luxury items and other goods into the economy, these factors brought Crete to the apex of prosperity by about 1600.

Even if land and agriculture-pastoralism formed the economic basis of the palatial system, centralized control over foreign trade provided much of the extraordinary wealth and prestige items that helped to solidify political and economic power. Merchants or mariners, moreover, would have indulged in other forms of (private) trade and barter. Through such mechanisms, Minoan goods began to appear in increasing numbers throughout the Aegean and western Anatolia, and in Cyprus, the Levant, and Egypt. Documentary and pictorial evidence related to *Keftiu/Kaptaru* (Crete, or the Aegean world generally) suggests that this trade was much more extensive than the archaeological evidence alone would imply. The "cultural imperialism" suggested by the presence of Minoan goods overseas, however, does not mean that the Minoans also exercised political or even economic dominion.

Toward the end of what Aegean prehistorians term the Late Minoan (LM) IB period, when "marine-style" pottery flourished on Crete, there is evidence of damage, desertion, or destruction at several Minoan sites with the possible exception of Knossos. The immediate and extensive rebuilding that followed was almost as elaborate as that of the palatial period, but Minoan settlement overall contracted during the LM II period. Knossos, extensively remodeled at the same time, remained the only functioning palatial center. Mycenaean (i.e., Greek mainland) influence became more evident on Crete at the same time. Sometime within the post-palatial period (the date is disputed) Knossos's grand palace was destroyed by fire. Afterward, although Minoan culture flourished at sites such as Khania in the west and

Kommos on the south coast, palatial life on Crete along with Minoan power and influence in the Aegean ceased to exist.

The political and economic collapse of Minoan Crete came at a time when Minoan power, in archaeological terms, seemed to be at its peak. Over recent decades the LM IB destructions and the Minoan collapse have been attributed exclusively to such factors as the cataclysmic eruption of a volcano on Thera, earthquakes and fires, a Mycenaean invasion, or an internal revolution. Yet we know that the collapse of dominant early states at the peak of their power is not uncommon—witness Mesopotamia during the Old Babylonian or Neo-Assyrian periods or Egypt during its New Kingdom. It is much more likely that Crete's political and economic preeminence was disrupted by several interrelated factors, among them the Theran eruption, the later LM IB earthquakes, and Mycenaean incursions. External factors such as increased Mycenaean power and Hittite expansion in Anatolia and north Syria may also have upset the balance of Minoan power, and disrupted long-standing Minoan links with those areas. Once Minoan power was shattered, an internal revolution may have temporarily concentrated power at Knossos. Crete never regained its position of dominance, and like all other states in the eastern Mediterranean, it suffered further economic stress at the end of the Late Bronze Age.

Thera. Nowhere is the extent of Minoan cultural contacts overseas more apparent than at the site of Akrotiri in Thera. Excavations at Akrotiri (a Bronze Age Pompeii in the Aegean) have uncovered hundreds of examples of Minoan pottery, as well as "Minoanizing" features and iconography in pottery, frescoes, spindle whorls, lamps, and other items. When the Minoans emerged as a major economic force in the Aegean during the early second millennium BCE, other islands like Thera may have accrued prestige or power simply by possessing Minoan products.

In the final two phases of its occupation, the inhabitants of Akrotiri had rebuilt their town in a manner reminiscent of the dominant Minoan centers on Crete. Throughout the island there are signs of dispersed settlement—farmsteads, villages, perhaps "country houses"—similar to that of contemporary Minoan Crete. Akrotiri's multistoried architecture, however, is unique, and its pottery and other fine arts represent a high Cycladic standard.

The site of Akrotiri would have been an important bureaucratic center with a maritime location ideally situated for inter-Aegean communications. Sailing ships, which are depicted on Thera's "Miniature Fresco," would have helped to regularize intra-Aegean trade, and to facilitate an increased movement of local, surplus, and luxury goods. As in Crete, the incentive may have come from the elite desire to acquire prestige goods (on Thera, often of Minoan origin or style) in order to concentrate and legitimize power and from the ability of that elite to control a labor force that produced finished goods for trade.

The cataclysmic destruction suffered by the town of Akrotiri toward the end of LM IA buried it in more than 30 m (98 ft.) of volcanic ash and debris. The entire island of Thera was devastated. Throughout the Aegean area, ash fallout, if not tidal waves, wreaked further havoc. Shipping and trading within the Aegean must have been curtailed as a result, and some scholars argue that this hypothetical series of related events must have broken Minoan control over Aegean seas. Even if earthquakes connected with the eruption caused localized destructions on Crete, the series of catastrophes on Crete, which served to undermine its preeminence within the Aegean, occurred during the LM IB (not the LM IA) pottery phase. In other words, however disruptive the Theran eruption may have been to Aegean society and commerce, it did not cause the demise of Minoan cultural and political dominion.

Rhodes. Throughout the Dodecanese group of islands, which includes Rhodes, archaeological evidence for the Early and Middle Bronze Ages is still limited. The heaviest concentration of sites on Rhodes is found along the fertile northwest coastal plain, where two key Late Bronze Age sites—Trianda and Ialysos—were situated. The earliest middle Bronze Age settlement at Trianda reveals a local character peppered with northwest Anatolian influence. A subsequent Late Minoan IA town covered more than 12 ha (29.6 acres) and revealed so much evidence of Minoan contact that LM IA Trianda is widely regarded as a Minoan colony. This classification masks the fact that the inhabitants of Trianda like those of contemporary Akrotiri and of many Minoan settlements had greatly expanded and elaborated their towns during the LM IA period.

After what appears to be earthquake damage, Trianda underwent some renovations, which were disrupted and left unfinished. Perhaps this was yet another outcome of the massive volcanic eruption on Thera (tephra from several places in northwest Rhodes has been analyzed as Theran in origin). Trianda was partially reconstructed in LM IB, but the new town was reduced in size and more limited in habitation. The LM IB and Late Cypriot I pottery found in this stratum indicates that overseas links remained open, and the increasing occurrence of Mycenaean pottery (Late Helladic II–IIIA2) in the upper layers may indicate changing economic orientations. Evidence for Late Bronze Age settlements on Rhodes ends with the apparent abandonment of the site of Trianda during the fourteenth century BCE.

The mortuary evidence for the following centuries is overwhelmingly based on the massive cemetery site at nearby Ialysos. The presence in the Ialysos tombs of a variety of metal artifacts, amber, glass ornaments, beads of semiprecious stones, and rock crystal, and even the odd seal and Egyptian scarab, attests to far-flung economic relations. Like Trianda before it, Ialysos would have been an ideal point for transshipping cargo from eastern Mediterranean

bottoms onto local craft and may therefore have controlled much of the eastern trade coming into the Aegean. The current archaeological record of Late Bronze Age Rhodes suggests that a group of Minoan or Mycenaean merchants ensconced at Trianda or Ialysos may have managed the transshipment of goods to and from the eastern Mediterranean. In this scenario, Rhodian elites would have emulated and sought to acquire certain prestige goods from the Aegean core area.

The Aegean World and the Ancient Near East. Cuneiform, hieroglyphic, and hieratic documents dated primarily to the second millennium BCE refer only sporadically to the Aegean Islands. Even then, the geographic identifications proposed—Aḫḫijawa=Achaean; Keftiu/Kaphtor=Crete or the Aegean—are not universally accepted. These texts are not only limited in number, they are also uneven in nature and concerned with idiosyncratic matters that often have little relevance for historical reconstruction. Many have little bearing on the archaeological record of the Bronze Age Aegean world.

Cultural associations between the Aegean Islands and the ancient Near East are best demonstrated by archaeological materials, which show particularly close contacts on the part of Minoan Crete during the Middle and Late Bronze Ages. The documentary evidence associated with the terms *Aḫḫijawa*, *Keftiu*, and *Kaptaru* provides insight into certain types of island-mainland contacts, usually economic or geopolitical in nature. What we can learn from textual evidence about relations between Aḫḫijawa and Hittite Anatolia, for example, is decidedly geopolitical or military in outlook. Yet we also know that the people of Aḫḫijawa were able to ply the eastern Mediterranean Sea to their economic advantage. By contrast, documentary materials that refer to Keftiu/Kaptaru are decidedly economic in nature. Yet we also learn that Keftiu was ranked politically with powerful states such as Babylon, Ḫatti, Aššur, Ugarit, and Cyprus.

Our understanding of the relationships between the Bronze Age Aegean and Egypt or the Levant has been colored by nineteenth-century preconceptions that discounted the notion of Semitic cultural impact upon the Bronze Age precursors of classical Greek civilization. These views have now altered dramatically, not least because of Martin Bernal's controversial study *Black Athena* (1987). Bernal believes that Egypto-Levantine cultural and linguistic influences on the Aegean world began as early as 2000 BCE and played a central role in the formation of Greek civilization. The present study has suggested, quite to the contrary, that some rulers of Minoan Crete, as an adjunct to commercial trade, came to emulate various aspects of Near Eastern ideology in order to enhance their own political roles.

The Keftiu evidence makes it clear that Aegean traders visited Egypt during the mid-second millennium, while the evidence of the Tell ed-Dab'a frescos indicates that contacts between Egypt and the Aegean went beyond the purely commercial. The Egyptians chose to describe their own relationship with the Keftiu as tributary—and thus politically motivated. Although a statue base of Amenophis III may well have recorded a fourteenth-century Egyptian ambassadorial visit to the Aegean, it cannot be interpreted (following Bernal) as indicating Egyptian suzerainty over the Aegean. In sum, whereas Bernal's challenge to the orthodoxy about the nature of second millennium Aegean-Near Eastern relations may force scholars to reevaluate earlier colonial and racist notions, his concept of Egyptian or Levantine colonizations in the Aegean is ill founded and confuses the nature of economic and ideological processes at work in the Bronze Age eastern Mediterranean.

The Keftiu/Kaptaru documents show that the Aegean world had a recognized political status among contemporary Near Eastern states and enjoyed economic relations with Egypt, Mari, and Ugarit. Crete's active involvement in this trade enriched its own culture, vitalized the palatial economy, and expanded its horizons far beyond the Aegean area. If the Aḫḫijawa-Achaiwa equation is accepted, the geopolitical status of the Aegean world indicated by the Keftiu/Kaptaru records finds further substantiation. Mycenaean trading ventures correspond closely in time and space to the economic and political activities of the Aḫḫijawa. The Aḫḫijawa-Achaiwa correspondence seems eminently defensible. It hints at Aegean military and political maneuvers in western Anatolia, reveals that diplomatic relations existed between the two areas, and makes it feasible to reconsider the quasi-historical aspects of the Trojan war.

The elaborate commercial networks of the Bronze Age Mediterranean involved a multitude of trade mechanisms and a variety of trading partners. Together they defined the nature and intensity of Mediterranean contacts with the ancient Near East. Although some have argued for a state-controlled Minoan thalassocracy, there are good reasons to think that localized trade predominated in the Cycladic and Dodecanese islands. In either case, centralized control over some aspects of trade does not preclude private initiative in others. The ethnicity of the merchants and mariners who conducted Mediterranean trade has been deduced from archaeological evidence or presumed on the basis of personal names found in documentary records. Together they indicate that Semites, Hurrians, Anatolians, Egyptians, Minoans, Cypriotes, and probably Mycenaean Greeks were involved. Yet there is no final way to determine who controlled or directed trade. A Canaanite thalassocracy is no more plausible than a Minoan one. The picture that emerges from the foregoing suggests that ruling elites, royal merchants, itinerant tinkers, and private individuals were all involved in the long-term political and economic interconnections between the Aegean Islands and the ancient Near East.

[*See also* Crete; Minoans.]

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A. BERNARD KNAPP

AGRICULTURE. The broad array of activities and knowledge whereby human communities exploit plants to produce food and other crops (fibers and oils), agriculture, literally means the cultivation of fields. In the Near East, agriculture-based subsistence nearly always included a component of pastoralism. The nature of agricultural systems is determined by the complex interaction of environment, population, and technology. Technology includes tools and techniques as well as cultural traditions—knowledge and so-

cial organization—for dealing with the material and social environment. Population size determines the number of hands available for agricultural tasks. The influence of population on the conduct of agriculture is also shaped by its distribution on the landscape, both in terms of density and its location relative to particular environmental conditions and lines of communication. The environmental determinant itself embraces both the physical environment—climate, soil, vegetation, and topography—and the cultural/historical environment, including the configuration of interregional political power. The interrelatedness of these three parameters bears emphasizing. The study of agriculture in the Near East has periodically highlighted either technological innovation, environmental change, or population growth as the key to explain the ebb and flow of farming. Yet none of these determinants can be isolated from the others. Environment is no static dictator, but responds to technological treatment. Technologies generally depend upon economic feasibility, largely a matter of labor supply in the ancient world. Population is not a straightforward measure of available labor because a constellation of cultural traditions and historical circumstances affects the weight of per capita labor burdens.

Origins of Agriculture. Archaeological data relating to the origins of agriculture have mushroomed since Robert Braidwood's expedition to Jarmo in Iraq began a systematic gathering of botanical evidence for plant domestication (Braidwood, 1960). [*See* Jarmo.] The transition from the foraging cultures of the late Epipaleolithic (c. 11,000–9000 BCE) to the farming cultures of the Neolithic (c. 9000–5000 BCE) is documented by vegetal and animal remains recovered in excavations, by artifacts—prehistoric tools and facilities—and by human skeletal remains. Village life preceded farming. At sites such as Hayonim, Mureybet, and Abu Hureyra in the southern Levant and Syria, villagers gathered wild cereals and pulses. [*See* Hayonim; Mureybet.] Centuries of harvesting wild cereals altered their characteristics, selecting for larger heads that did not burst when harvested. So, too, generations of year-round communal life forged new forms of social organization. Early foragers paved the way for the development of agriculture.

Current models of the origins of agriculture diverge significantly from V. Gordon Childe's mid-century portrait of domestication driven by the opportunity and necessity of advancing aridity (Childe, 1969). One key element of current theory is the recognition that dense stands of wild cereals offered an attractive subsistence source for early foragers on a seasonal basis. Explanations of what motivated the shift from gathering bountiful wild harvests to conscious cultivation call upon climatic deterioration, more permanent and populous settlements and the resulting pressure on local resources, as well as the emergence of new social forms and cultural traditions. All explanations still suffer from an insubstantial database. Knowledge of ancient environmental conditions and preagricultural subsistence patterns has not stretched to the point of being able to tie the emergence of village life or the appearance of domesticated crops to local changes in environment and resource use.

Remains of domesticated crops first appear in the southern Levant in about 9000 BCE. Usually preserved through carbonization by fire, domesticated cereal seeds possess plumper kernels than their wild counterparts and less brittle ears that resist shattering when ripe. Such morphological indicators of domestication do not exist for lentils, peas, bitter vetch, and chick-peas. Yet, these pulses routinely join barley, emmer wheat, and einkorn wheat in the archaeobotanical material from this period of incipient farming villages (Pre-Pottery, or Aceramic, Neolithic, c. 9000–6000 BCE). Grains and legumes were complementary crops at an early stage of agricultural development. Botanical finds at Jericho (Jordan Valley), Aswad (near Damascus), Abu Hureyra (western Syria), Çayönü (southeastern Anatolia), Yiftaḥel (Galilee), and ʿAin Ghazal (near Amman) represent the spread of agricultural life. [*See* Jericho; Çayönü; Yiftaḥel; ʿAin Ghazal.] Though hunting mammals such as gazelle and gathering wild fruits and seeds continued alongside farming, settled life in these mud-brick villages was thoroughly committed to crop cultivation. A number of sites attain sizable proportions and show signs of social differentiation (e.g., ʿAin Ghazal). They witness technological developments as well, including the building of rectilinear houses, some employing lime plaster and timber in their construction. Flax, harvested for its fiber (linen) as well as its oil, also shows up in the plant medleys of Pre-Pottery Neolithic (PPN) villages. Many sites evidence herding sheep and goats as well. Because these animals were domesticated in the region of the Zagros Mountains, their place in the subsistence systems of the Levant manifests interregional exchange. Sheep and goats represent the other side of the exchange network that sent domesticated cereals northward from the Levant. [*See* Sheep and Goats.]

By about 6000 BCE, the agricultural village was well established in the Near East. Farming cereals and pulses and herding sheep, goats, pigs (sporadically), and cattle formed its economic basis, initiating an enduring pattern of mixed subsistence. [*See* Pigs; Cattle and Oxen.] Subsistence security was enhanced by the proliferation of free-threshing wheat (where the kernel is freed from its hull during threshing, obviating pounding before use) and six-row barley. Though data from the Pottery Neolithic (PN) period remain sparse, changes in the distribution of settlements reflected the increasing reliability of subsistence systems. A particularly important expansion of the population landscape occurred outside the rainfall agriculture zone in southern Mesopotamia. At the eastern edge of the Mesopotamian plain, Choga Mami has produced traces of an irrigation canal as well as botanical indicators—plump flax seeds—of crop irrigation. Sketchy data awkwardly cramp knowledge

of this period subsequent to the origins of agriculture and prior to the third-millennium BCE emergence of irrigation-based Mesopotamian civilization. [*See* Irrigation.]

In the Levant, the Chalcolithic period (5000–3500 BCE) added a crucial component to the subsistence repertoire: the cultivation of fruit trees. Fruit pips preserved outside the natural range of wild trees and vines offer the first signs of horticulture. The olive and the date palm appeared earliest. [*See* Olives.] The domestication of the fig, also a native species, probably waited until the Early Bronze Age. The same holds for the imported pomegranate and grape vine (Eurasian natives). Domestication of fruit trees required substituting vegetative for sexual propagation, and these five fruits—olive, date, fig, pomegranate, and grape—shared the capacity to be multiplied by simple cuttings, rootings, or transplanting of offshoots. More technically demanding grafting enabled the taming of apple, pear, and other trees, but only much later. The earliest examples of olives and dates materialized at the large fourth-millennium Jordan Valley site of Teleilat el-Ghassul. [*See* Teleilat el-Ghassul.] These same two fruits also showed up in the botanical remains excavated from the Cave of the Treasure (Naḥal Mishmar) in the Judean Desert. [*See* Judean Desert Caves.] While it is possible that the fruits were imported at both sites from zones where they grew wild, Chalcolithic sites in the Golan have produced numerous finds of olive wood, demonstrating the cultivation of the tree. [*See* Golan.] Spouted craters at the sites make sense as tentative separator vats for the production of olive oil. Fruits have not appeared among the Beersheba culture sites, where evidence points toward a greater commitment to pastoral pursuits. Animal kill-off patterns, multitudinous ceramic churns, and artistic motifs together portray communities devoted to animals not only for their meat, but for their secondary products as well. [*See* Beersheba.]

Agriculture in Urbanized Mesopotamia. The emergence of the world's first urban civilization in southern Mesopotamia's Uruk period is linked inextricably to the bounty of irrigated grain fields. Yet scholars of early Mesopotamia have moved away from the commanding hypothesis of Karl Wittfogel in *Oriental Despotism* (1957) that explained the rise of social complexity by the need to create administrative structures to manage the irrigation works. Because data place control of irrigation at the local rather than regional level, the administration of large-scale irrigation projects was not the prime agent in urbanization. The emergence of stratified society was nonetheless dependent upon the potential surplus in the reliable cereal harvests produced by the irrigation of this otherwise uncultivable alluvial plain. The increased conflict inherent in the landscape's burgeoning population density—clearly manifest in the settlement patterns—set the scene for the birth of a new political order. From multitiered settlement patterns to systems of writing, monumental art and architecture to delicately carved cylinder seals, an urban-based, rivertine civilization took shape.

A "managerial revolution" did overtake agriculture in early Mesopotamia. The interrelated complexities of bringing water to the fields, capturing it, draining away unwanted water, and protecting arable plots from floods called for management. The fact that the flow of the Tigris and Euphrates Rivers is not synchronized with the needs of farming (the rivers are low at planting time in the fall and reach flood stage after crops are well grown) exposes the need for careful coordination. Texts mention a local official, the *gugallum*, the "canal inspector," who may have served this function as well as seeing to canal maintenance. Construction of irrigation facilities would also require planning and collaboration and might entail the cooperation of one or more villages. Records and inscriptions advertise royal accomplishments in sluice construction, canal digging, and even alterations in river courses. The advantages of scale in irrigation agriculture—from planning to production—were apparently recognized early on and resulted in numerous grandiose state initiatives.

The third-millennium managers of this agrarian society left records outlining the farming system. One Ur III text, the so-called Farmer's Instruction, apparently intended to disseminate practicable information. It detailed fieldwork from initial preparation through harvest. Its outline of agricultural practice fits readily within the boundaries of ethnographically documented traditional irrigated cereal production. Flooding the bone-dry field from the adjacent irrigation ditch launched the agricultural year in the fall. The plot was grazed over and hoed to loosen the ground. Plowing followed. Use of the plow in the Near East dates to the Uruk period, as plow marks in the soil and representations of plows on seals attest; third-millennium cultivators were meticulous in its deployment. The Instructions specifies furrow spacing, signaling close attention to growing conditions and their effect on yield. Other records contained precise calculations of seed rates. The seed was planted, not sown, with the help of a seed drill attached to the plow. A timetable enumerated the ideal delivery of irrigation water to the field. Nearly one-third of the text's lines profile the harvest and crop-handling season. Harvest represented a crunch point in the farming calendar and was a time of economic reckoning. Landlord-tenant farmer contracts and loan documents took crop failure as well as pre- and postharvest price variation into account. [*See* Ur.]

Wheat and barley were the key crops, occupied the lion's share of the irrigated arable land, and figure most prominently in the documents. [*See* Cereals.] Contracts and administrative records also mention lentils, pea and bean species, onions and garlic, flax, and sesame. Non-native sesame was likely introduced from the Indus Valley during the third millennium. Grown for its oil, sesame became an extremely important commercial crop in this region outside the range

of olive-oil production. Gardens offered cucumbers, some root vegetables, and lettuce as well. Orchards boasted tall date palms, pomegranates, apples, figs, vines, and tamarisk trees cultivated for their timber. Of these, the date palm occupied the position of greatest importance, parallel to the olive in Mediterranean lands. The date produced a storable crop of great nutritional value as well as wood, fiber, and leaves used in roofing.

Sheep and goats dominated the animal holdings detailed by temple offering lists and household property inventories. Contracts between herd owners and shepherds specified flock compositions, terms of employment, and the expected productivity of the herd. [*See* Animal Husbandry.] The huge volume of texts continues to provide the primary source of information on the animal and crop inventory of early Mesopotamia. The strictly archaeological contribution of recovering botanical and zoological data remains minimal in comparison. Nevertheless, paleobotanists have identified a host of agricultural plants from third-millennium contexts: of the grains einkorn, emmer, and naked wheat and six- and two-row barley; lentil, pea, chick-pea, grass pea, horse bean, bitter vetch, date and grape; as well as tamarisk and willow trees.

Mediterranean Mixed Economy. Civilization sprinted ahead in Mesopotamia (and Egypt). By the Early Bronze Age (contemporaneous with the Mesopotamian Late Uruk through the Third Dynasty at Ur), Palestinian societies had decisively assembled all the elements of what has come to be known as the Mediterranean mixed economy. The emergence of full-fledged Mediterranean agriculture and pastoralism coincided with Palestine's first urban period. The region experienced fundamentally the same dynamic as in Mesopotamia: urbanization, intensification of agricultural production, and interregional trade. The population landscape showed the first signs of this transformation. Palestine witnessed a dramatic growth in the numbers of settlements and a conspicuous shift toward less arid plains and valleys, encompassing the highland region as well. Minimally two-tiered settlement patterns constellated villages around walled cities in the Levant as they had previously in Mesopotamia.

Botanical remains from Bab edh-Dhra' and Numeira on the eastern shore of the Dead Sea illustrate the changed economic regime. [*See* Bab edh-Dhra'.] The major crop, barley, included the bounteous six-row variety, which was better represented than the two-row. Figs and grapes joined the olive in the fruit assemblage. Flax was grown, and the large size of the preserved seeds suggests that it was an irrigated crop. Coupled with the large amounts of linen discovered in burials, the flax seeds suggest the appearance of a local textile industry. [*See* Textiles, *article on* Textiles of the Neolithic through Iron Ages.] Faunal remains extended beyond the predominate sheep and goats to include the donkey, a crucial pack animal.

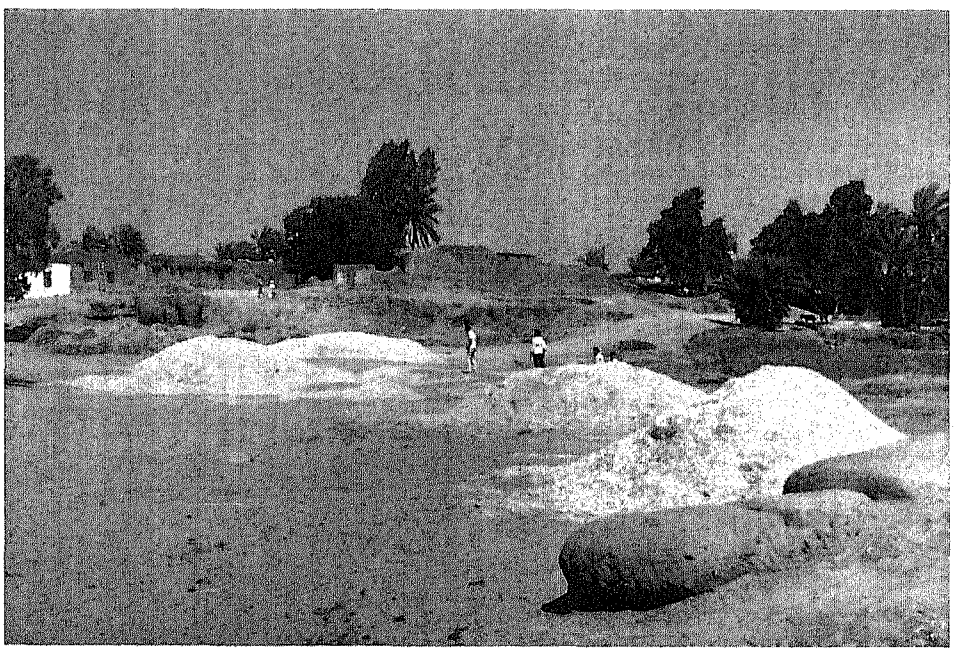
Increasingly productive grain fields, expanding investment in horticulture, intensified production of selected crops, local industry, and advancing trade—in sum, intensified agriculture yielding a greatly augmented total economic product—are in evidence throughout the Levant. The ceramic repertoire included transport containers for liquids—notably Abydos ware and metallic comb ware. Metallic comb ware has been associated with olive oil and wine production. Its particular clay and high temperature firing served to seal otherwise porous walls. Moreover, storejars of metallic ware have been found in conjunction with an elaborate oil press at Early Bronze Age Ugarit. [*See* Ugarit.] Abydos jugs were widely distributed, ranging from southern Egypt to the northern coastland of Syria. [*See* Abydos.] The vessels likely carried Palestinian oils and ointments for elite consumption. Trade connections were particularly strong between Egypt and the southern Levant. An impressive array of goods was already flowing by the initial phase of the Early Bronze period. To the north, the growth and strength and the exceptional durability of Levantine cities such as Byblos already demonstrate in the Early Bronze Age the central importance of seafaring and especially seaborne trade for the shape and conduct of agricultural subsistence. [*See* Byblos.] Cyprus and the islands of the Aegean were already participating in a Mediterranean maritime economic system. Cypriot copper ores were exchanged with the Near East and Egypt, as were manufactured goods and agricultural products from the Cyclades and Crete. Farming settlements spread widely on the islands, forming the foundations for the emergence of the palatial periods. [*See* Cyprus; Aegean Islands.]

AGRICULTURE. *Room with sixteen grindstones in situ.* Ebla. (Courtesy ASOR Archives)

The granary at Beth-Yerah (near the Sea of Galilee), with its capacity of approximately one and one-half tons of grain, illustrates the expansion of grain production. [*See* Beth-Yerah; Granaries and Silos.] Animal bone remains point to a likely contributor to this augmented capacity; the increased incidence of ox bones calls attention to the first widespread appearance of this draft animal in Palestine. The thousand-year old scratch plow (ard) must have cut furrows behind this source of traction. Although textual sources do not exist, the collection and distribution of such quantities of grain demands no less of a managerial revolution than transpired in Mesopotamia. The mechanisms by which this grain was produced for storage may have included elements of elite "stimulation" of increased production, such as was argued years ago by Childe, the "urban revolution's" original theorist (see above). More crucial were the growing abilities of an urban-based elite to "extract" or appropriate the product of subsistence cultivators, including the "normal" surplus produced as a buffer by village agriculturalists. During the Early Bronze Age, interaction between urban and rural spheres constituted the emergent economic context in which subsistence strategies developed over thousands of years bent to new urban-based demands. Typically for the Syro-Palestinian region, this process took place in the context of increasing relations with more highly organized and more powerful neighbors, in this case, a unified Egypt.

The basic structure of the Mediterranean mixed economy rests on the region's sharp climatic biseasonality. The beginning of the agricultural year finds the fields hard baked by five months of rainless summer, during which high insolation rates drain the soil of all its moisture. The winter rains must fall to inaugurate the plowing of the fields. Throughout most of the region precipitation is ample, above the 200 mm level necessary for dry farming. Yet, squeezed into the short rainy season (October–April, with most rain falling in three months), rain falls intensely and much precious water is lost to agriculture through runoff. Moveover, the precipitation is highly erratic both with respect to its annual accumulation and its pattern throughout the season. Because crops depend entirely on the rain that falls during their growth, they are vulnerable both to precipitation deficiencies and to skewed patterns that may delay the opening of the sowing season or strand germinated crops beneath rainless skies. The strictly limited possibilities of assuring water supplies to cereal fields through irrigation offer no relief from rainfall dependency.

To cope with the frustrating rainfall regime, farmers staggered their field preparation and broadcast sowing so as not to depend too heavily on any particular pattern of rainfall. The plowing and sowing season stretched well into the winter as the Iron Age "Gezer calendar" indicates by devoting four months to the operation. [*See* Gezer Calendar.] Beginning in early summer, the cereal harvest embodied the period of greatest labor intensity, a peak in the curve of annual labor demand. Arduous tasks and a high degree of attention were required to bring in the wheat and barley. Harvesting per se was accomplished by reaping with a hand sickle or hand picking. The harvested stalks were then transported to



AGRICULTURE. *Threshing floor with piles of grain.* East Delta region, Egypt. (Photograph courtesy J. S. Jorgensen)

AGRICULTURE. *Agricultural terraces.* (Courtesy Pictorial Archive)

the threshing floor, dried, and threshed to disarticulate the spikelets and remove the hulls. Winnowing and sieving separated the chaff from the grain, which was finally measured and stored.

Cereals were by no means the sole focus of agricultural energy. A variety of crops diversified the productive base, spreading risk and optimizing labor resources. Pulses (e.g., lentils and chick-peas) were planted predominantly as field crops, while other vegetables (onions, melons, leeks) were likely tended in garden plots near residential zones. Vine and tree crops provided the most significant spreading of risk without competing for the labor needed for field crops. Cultivators opened orchards and vineyards to the rain by hoeing and plowing during breaks in the field sowing season. Likewise, pruning was accomplished at in-between times. Most importantly, the harvest from grape vines, fig trees, and olive trees meshed advantageously with the cereal harvest. The fig ripened incrementally at both ends of summer. Grape harvest and processing were intensive. Grapes were tread or pressed in shallow, rock-cut depressions and the juice decanted through one or more basins, then ladeled off into ceramic jugs. Grapes had to be processed expeditiously, yet wine production occupied vintners after wheat and barley had already been put away. [*See* Viticulture.] Olive picking and oil manufacture were also concentrated and laborious. Ripe olives were picked or beaten from tree branches, pounded or crushed with some type of stone, and pressed. The resultant oil was decanted from the surface of the aggregate extracts. Though demanding, olive oil manufacture transpired before the onset of the winter rains and the return to grain field preparation.

All told, the annual agricultural calendar was a full one, as the Gezer tablet outlines:

line 1: two months of [olive] harvest;
line 1–2: two months of sowing;
line 2: two months of late sowing;
line 3: a month of hoeing weeds;
line 4: a month of harvesting barley;
line 5: a month of harvesting and [measur]ing;
line 6: two months of cutting [grapes];
line 7: a month of [collecting] summer fruit.

The diversification of the agricultural base accomplished especially by the cultivation of tree and vine crops served indispensably in a geographically fractured region with limited expanses of level land. Plains and valley bottoms—from the Madaba Plains of central Jordan to the basin of the Orontes River in Syria—had long been the focus of profuse agricultural efforts. [*See* Jordan Valley.] Farming must often manage in the sometimes mountainous highland terrain. This terrain was perfectly suited to horticulture. Heavier rainfall and hilly terrain, however, demanded attempts to preserve the highlands' nutrient-rich but easily eroded terra rossa soils. Terrace construction represents the chief strategy to stabilize hillside soils, and terraces offer the further advantage of controlling runoff and augmenting rainwater infiltration. Archaeological documentation of terrace construction, though still sporadic, stretches back to the Early Bronze Age. Yet, the widespread adoption of terraces was regularly limited by the high labor costs demanded by their construction and maintenance. Short-term challenges alone preoccupied subsistence-oriented agriculturalists, leaving

precious time left for investments in long-term stability. "Soil mining" often resulted: the terracing accomplished during the most intensive periods of agricultural development often faced the need to import colluvial soil from valley floors to fill hillside terraces above.

Terraced-based horticultural development held the key to any long-term highland agricultural tenancy. Like pastoralism, it complemented rain-fed grain cultivation. Many of its products were storable (wine and raisins, olive oil, and fig cakes) and made essential dietary contributions (e.g., sugar and fat). Horticulture provided a resource subject to a somewhat different set of environmental hazards than field crops, whose yields were not only erratic, but notably meager. With wheat and barley yields stagnant at ten to fifteen fold, the olives, grapes, figs, and pomegranates of the hillsides were indispensable. Moreover, the transportability of tree and vine products facilitated the creation of regional economies and interregional exchange.

Subsistence-Pattern Oscillations. The building, dismantling, and rebuilding of the Mediterranean mixed economy has stamped the ebb and flow of Syro-Palestinian civilization since it was achieved by the Early Bronze Age. Thus, after realizing a plateau of urban life and sway over the hinterlands, the collapse of Early Bronze culture opened a period of agricultural abatement. Over the course of several centuries, the relative proportion of agriculturalists decreased, and nomadic pastoralists multiplied on the landscape. [*See* Pastoral Nomadism.] The Middle Bronze reemergence of more intensive subsistence patterns is well illustrated in the Egyptian tale of Sinuhe (mid-twentieth century BCE), who testifies regarding his allotment of land somewhere in northern Syria-Palestine: "It was a good land, named Yaa. Figs were in it, and grapes. It had more wine than water. Plentiful was its honey, abundant its olives. Every kind of fruit was on its trees. Barley was there, and emmer. There was no limit to any [kind of] cattle" (*ANET*, p. 19, ll. 81–84). Such subsistence-pattern oscillations represent movements along an increasingly well understood and documented pastoral-agricultural continuum. At one end of this spectrum, periods of high-intensity agriculture manifest relatively higher population densities; settlement patterns with recognizable central places; specialization of production in agricultural, industrial, and pastoral pursuits, including the production of market-oriented goods; integration into interregional and international trading networks; and heightened investments in permanent production facilities, transportation, food storage, and water and soil management. [*See* Food Storage.] At the spectrum's other end, periods of agricultural abatement produce low-intensity constellations dominated by subsistence-oriented nomadic pastoralists. A relatively lower sedentary population density clings to a decentralized landscape with fewer settled towns and villages, while nonsedentary folk spread out in seasonal encampments. Regional isolation dampens trade, and production for autoconsumption produces few large-scale permanent facilities.

The basic principle underlying movement along this agricultural-pastoral continuum relates to contrast in the elasticity of the two modes of production. Pastoral productivity and its demands for land (pasturage) and labor fluctuate considerably: boom years see tremendous increases but are matched by the precipitous declines of bust years. Farming, on the other hand, is more inelastic: land and labor needs remain relatively constant and do not rise and fall with the success of each crop. These contrary tendencies provide incentives for the security-conscious integration of pastoral and agricultural pursuits. They also associate the florescence of agriculture with periods of well-organized central authority, which provides the stability, institutions, and capital necessary for agricultural growth. The predominance of pastoralism is associated with weak rule and disordered social conditions. Under such risky conditions, the selection of resilient and mobile pastoralism offers an adaptive advantage.

Many factors are associated with movement along this continuum. Agricultural intensification is propelled by population growth, centralization, expanding markets and international trade, bureaucratic direction, and innovation. Abatement is connected to environmental degradation, population decline, loss of trading opportunities, political disintegration, and military defeat.

Empire and Agricultural Intensification. The Iron Age in Palestine marks a particularly sharp and well-documented spike in the course of Levantine and Near Eastern agricultural history. Regional settlement patterns signal a throughgoing intensification of agricultural subsistence. The crucial context of this agricultural trajectory was the expansion of the Assyrian Empire and the florescence of Mediterranean trade. Galvanized by the maritime expertise and urban-oriented manufacturing advantage of the Phoenicians, trade connections began to weave a web of interregional exchange and regional specialization across the Mediterranean world. By the first two centuries of the first millennium, Tyrian and other Phoenician traders plied the main artery of east–west trade from Cyprus along the southern Anatolian coast to the Aegean, Crete, and the Cyclades, and as far west as Sardinia. The long-distance routes linked up with existing regional exchange networks, stimulating the growth of local centers. In the eighth century BCE, Assyrian expansion westward to the Levant sought to establish and control trade with the lands of the Mediterranean as well as with Egypt and Arabia. Assyria also aimed to enrich itself by gathering spoil and extracting regular tribute. Most of the tributary goods were not indigenous to subjugated regions: according to Assyrian sources, the Judean king Hezekiah's postrevolt tribute (mentioned in *2 Kgs.* 18:13–16) included gold, silver, gems, ivory-inlaid couches, elephant hides, African blackwood, boxwood, and human beings (*ANET*, p. 288).

The luxury goods demanded as tribute payments held more consequences for agricultural economies than short-term impoverishment; they incited the search for high-value materials. These commodities (preciosities) had to be procured on the international trade network. To enter this network demanded intensive investments in exportable agricultural products. Thus, Assyrian power pushed dependent polities to produce more and pulled them toward specific products. These influences were joined by increasing population densities, urbanization, and political centralization in spurring agricultural industrialization and commercialization. In Israel and Judah, the intensification of olive oil and wine production stands out. [*See* Judah.] Terrace technology advanced, reclaiming denuded hillside slopes. The terraces were accompanied by hundreds of rock-cut presses throughout highland regions where wine production progressed at both industrial sites (Gibeon north of Jerusalem) and dispersed farmsteads (e.g., Khirbet er-Ras). [*See* Gibeon.] The addition of a beam advanced existing pressing technology, adding leverage to extract grape juice and olive oil more proficiently. In Judah, signs of bureaucratic management of wine production and distribution took the form of royally stamped wine jar handles. The enormous concentration of olive-oil production facilities at seventh-century BCE Tel Miqne/Ekron on the southern Palestinian coast superbly manifested the economic benefits of proximity to the sea and the access it afforded into Mediterranean commerce. More than 100 olive-oil production units have been excavated or surveyed thus far, making the site the largest such constellation of industrial facilities in the ancient Near East (Heltzer and Eitam, 1987). The overall agricultural intensification stretched as far as the arid lands of the Negev desert, where runoff farming created costly wadi terraces, catchments, and even diversion systems to trap a meager rainfall. [*See* Miqne, Tel; Negev.]

With its emphasis on commodity production, Iron Age agricultural intensification supplies a signal instance of urban manipulation of the economy counter to the subsistence-oriented objectives of villages. Villages cope with the two major constraints of erratic environment (physical as well as political) and demographic fragility by diversifying their productive regimes. Farmers seek to spread the risk inherent in settled agriculture by planting a variety of crops in scattered locations and by a scattered timetable. Herds are maintained as part of the village enterprise, a complementary pursuit that adds greatly to household productivity as well as resilience. Such subsistence-oriented objectives are not sustainable when urban-based direction of the productive activities sets the agricultural agenda for rural life. The governors demanded the most readily exchangeable and exportable commodities—wine and olive oil in the Levant—and encouraged their production through polices of taxation and procurement, judicial regulation, and land development. These forces pushed village agriculture toward specialization. Rural life found itself making investments in long-term improvements (such as water reservoirs and terracing), producing marketable goods, and depending upon regional networks of exchange. Thus, agricultural intensification severed village life from its traditional subsistence moorings as urban rule fashioned a "command" or "mobilization" economy. Dependent upon maladroit administrative structures, tenuous politically secured access to maritime trade, and the erratic nature of the Palestinian natural environment, such a structured economic system was highly fragile.

Agricultural Data. Charting the dynamic relationship between urban and rural zones is one area that benefits from emergent archaeological strategies pursuing quantitative reconstructions of ancient agricultural economies. [*See* Paleoenvironmental Reconstruction; Paleobotany.] In the absence of ancient agricultural records, researchers turn to data from preindustrial economies to posit levels of yields, proportions of various crops (especially grains and fruits), and animals (sheep, goats, and cattle), as well as human dietary needs. These data are collected in ethnoarchaeological fieldwork or are mined from the census figures of the late premodern and even the earlier Ottoman periods. [*See* Ethnoarchaeology.] Admittedly relative and approximate, such data join with site-catchment analysis and other regional studies to offer assessments of field and pasture potential (carrying capacity). Placed next to other archaeological indicators (e.g., settlement patterns, site areas, and processing installations), such calculations fuel assessments of agricultural intensity and reconstructions of the relationship between agricultural production and its larger political and economic environment. Thus, for example, the olive presses at Tel Miqne might have produced 1,000 tons of oil each season. Based on yields from olive groves planted and tended under preindustrial conditions (kilograms per tree and trees per hectare), Miqne's demand for raw olives would have required orchards ranging over 5,000 ha (12,350 acres), encompassing a radius of 10–20 km (6–12 mi.) surrounding the site. The control of such a vast territory raises political questions and points to the role of the Assyrian Empire in creating conditions for or sponsoring the massive industrial center.

Paleoosteological analysis of faunal remains offers crucial assistance to reconstructions of ancient agricultural economies. Analysis of stratified bone refuse permits characterizations of animal production systems and their temporal development. [*See* Paleozoology.] Because of the interdependence between pastoralism and agriculture in the Near East, these data permit inferences about the nature of the agricultural systems. Thus, an increase in the relative frequencies of cattle and pig bones at the expense of sheep/goat bones may manifest the waxing of agricultural intensity. Land development around a site reduces the amount of small-animal pasturage available, forcing sheep and goat

pastoralism more into the periphery. Cattle can be kept more easily in close proximity to agricultural operations, and their traction is crucial for field crops. Pigs find their place as town scavengers. Among sheep and goats, kill-off patterns provide a complementary barometer of the delocalization of pastoral production: greater distances between the loci of consumption and herding spell higher ages at death, as nomadic pastoralists sell older animals to town dwellers. Increasing proportions of sheep/goats and younger ages at death may signal a less intensive economy with a less dichotomized agricultural-pastoral continuum. Thus, faunal remains offer the possibility of charting the ebb and flow of agricultural life.

[*See also* Farmsteads.]

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AHARONI, YOHANAN (1919–1976), Israeli biblical archaeologist and historical geographer. Born in Germany, Aharoni went to Palestine as a young man. His character and his desire to explore Israel were formed in the Zionist youth movement and the kibbutz. He earned his Ph.D. in 1957 at the Hebrew University of Jerusalem, where he studied under Benjamin Mazar. Aharoni's doctoral dissertation, almost unknown outside of Israel, outlined an important direction for biblical archaeology, which had been foreseen by the German biblical scholar Albrecht Alt in 1925: regional research combined with biblical-historical data in a critical synthesis. This was the first archaeological challenge to the "Albright-Glueck-Yadin school" of biblical archaeology.

[*See the biographies of Mazar; Albright, Alt, Glueck, and Yadin.*] Aharoni's untimely death left his regional research in the Negev desert unfinished. His emphasis on a regional approach was developed by his students, however—mainly by Moshe Kochavi and his students in turn—in projects in the Galilee, the Golan, Manasseh, Ephraim, and Judah. These projects have had a major impact on biblical history and the archaeology of Israel. Better-known outside Israel are Aharoni's syntheses (1962–1964) of the historical geography of the biblical period. These works are still among the main handbooks for this field. They combine a wide range of archaeological and historical data for the ancient Near East, with a semicritical use of biblical materials.

Aharoni excavated at Ramat Raḥel, Lachish, Arad, and Tel Beersheba. He developed an Israeli method of excavation that emphasizes the importance of digging large areas, in addition to recording sections, for a better understanding of a site. This strategy was a response to the Wheeler-Kenyon method. [*See the biographies of Kenyon and Wheeler.*] Aharoni published the Arad inscriptions, an important contribution to the history and paleography of late Iron Age Judah. Noteworthy also is his participation in the exploration of the caves in the Judean Desert and of Masada, his work at Hazor, and his study of Iron Age Megiddo.

In 1968 Aharoni founded the Institute of Archaeology at Tel Aviv University. He gathered scholars in archaeology, ancient Near East studies, and related disciplines, ensuring progress toward current interdisciplinary research. Along with Yigael Yadin, his everlasting adversary, Aharoni shaped the character of Israeli biblical archaeology.

[*See also* Arad Inscriptions; Beersheba; Biblical Archaeology; Historical Geography; Judah; *and* Ramat Raḥel.]

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AVI OFER

AHIRAM INSCRIPTION. The sarcophagus of Ahiram found in Byblos, in Lebanon, by French archaeologists in 1923 is one of the most important works of art from the Levant. [*See* Byblos.] Its inscription can be considered the oldest meaningful document so far known in Phoenician. The text, in two lines of unequal length, is carved on the lid of the sarcophagus. Words and syntactic units are separated by a small vertical stroke, but the technical execution of the writing leaves a bit to be desired. Analysis of the inscription shows that orthographic practice at the end of the second millennium BCE did not include the use of matres lectionis. The script presents a number of peculiar features: the *aleph*, the upright stance of *gimel*, the horizontal crossbars of *ḥet*, and the archaic *ayin*. The inscription is dated on paleographic grounds to about 1000 BCE. The text runs as follows: "Coffin which Itthobaal son of Ahiram, king of Byblos, made for Ahiram, his father, when he placed him in eternity: if a king from among kings or a governor from among governors or the commander of an army should come up against Byblos and uncover this coffin, may the scepter of his rule be broken, may the throne of his kingship be overturned, and may peace flee Byblos, and (as for) him, may his inscription be effaced (from) before Byblos."

The decoration on the lid portrays two figures, a father and son. The dead father holds a drooping flower in one hand and raises the other in a gesture of benediction. On the main body of the sarcophagus, the father is enthroned, and before him is a table laden with food; on the other side of the table a standing courtier is followed by two men with cups and four others with both hands raised. Mourning women, persons carrying baskets on their heads, and a single man leading an animal are carved on the narrow and long sides of the sarcophagus. The strong Egyptian influence in the iconography of these scenes reflects the connections this ancient city-state always had with Egypt. The decoration allows for a date at the end of the eleventh century BCE, which accords well with the paleography of the inscription. The royal name *Ahiram*, which means "My brother [god] is exalted," appears very frequently in Phoenicia, but less so the name *Itthobaal*, "Baal is with him."

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AHMAR, TELL. *See* Til Barsip.

AI, biblical site located east of Bethel (*Gn.* 12:8, *Jos.* 7:2). Three sites on the perimeter of modern Deir Dibwan, 3 km (2 mi.) east of Beitin (Bethel) have been suggested as the location of biblical Ai: Khirbet Haiyan, to the south, Khirbet Khudriya, to the east; and et-Tell, to the northwest. The first two have been excavated and found to be Byzantine settlements. Et-Tell (map reference 71385 × 53365), a polygon-shaped mound of 27.5 acres, situated on the south side of the deep Wadi el-Jaya, which leads east toward Jericho, has been extensively excavated. It yielded cultural material from as early as 3100 BCE. Et-Tell is generally accepted as biblical Ai; both the Hebrew and Arabic names for the site mean "the ruin heap."

The first excavations at et-Tell were undertaken by John Garstang for the Department of Antiquities of Palestine in 1928 but were brief and involved only eight trenches. The work yielded a three-page summary report and the sketch of a plan. Judith Marquet-Krause, with the support of Baron Edmond de Rothschild, directed the second excavation project in 1933–1935. Her work focused on the highest part of the mound and the Early Bronze Age necropolis east of it. The Rothschild expedition excavated several significant EB structures, including the temple-palace (Marquet-Krauser's *palais*) and the sanctuary on the acropolis with its splendid alabaster and pottery cult objects; the nearby Iron Age village, where finds demonstrated that the village had been built directly on top of the EB city; and the lower city, whose fortifications included a postern and towers.

The third excavation project at et-Tell was a joint expedition of several research institutions that was in the field for nine seasons (1964–1976) under the direction of Joseph A. Callaway. The joint expedition expanded the Marquet-Krause excavations to include the citadel fortifications; the expanded Iron Age village; the lower-city residential area; fortifications with gates; and a reservoir. In addition, it excavated three sites in the vicinity of et-Tell to address further the location of biblical Ai and to secure comparative materials from the region for the study of et-Tell. In 1964 and 1969, Khirbet Haiyan was excavated to bedrock and was found to be a Byzantine settlement. Tombs and a Byzantine settlement were also excavated at Khirbet Khudriya in 1966 and 1968. Both sites may represent the location of monasteries. The third site in the regional study was Khirbet Raddanah, at the northern perimeter of modern Ramallah. An unfortified village with pillared houses was excavated that is contemporary with the Iron Age village at et-Tell.

The major evidence from et-Tell points to five settlement phases with abundant cultural remains. The original settlement (EB IB, 3250–3100 BCE) is an unwalled village 220 m long and located on the upper terraces of the site. The artifacts indicate a mixture of local and foreign elements. Local Chalcolithic traits of the indigenous population include angular jar neck and rim forms, as well as angular bowl forms. "Foreign" influence has been seen in carinated platters, holemouth jars with their rims rolled inward, and painted designs of groups of lines. Callaway (1964) thought these new forms might have been the result of migrations of populations from Anatolia and Syria, but most scholars dissent from that view. The dead were buried in caves along the slopes of the hill, and the burial goods reflect the cultural varieties of the mixed settlement population.

The second settlement phase (EB IC, 3100–2950 BCE) was a well-planned, walled city enclosing 27.5 acres. Massive fortifications were constructed over the homes in the unwalled village, following the site's natural contours. Four city-gate complexes were discovered: three of them were one meter wide and went straight through the wall; the fourth, which appears to be larger than the others, was only partially excavated. All the gates were fortified by towers constructed on the wall's exterior. These fortifications enclosed significant functional areas, including the impressive acropolis complex, the citadel and sanctuary, and a market and residential area. A large building (25 m long) of uncut stones with structures attached may represent the temple-palace complex of the acropolis and the center of urban life. Callaway argued again that the changes in material culture and settlement plans suggest that the indigenous population was absorbed by newcomers, possibly from Anatolia and Syria (Callaway, 1972). These newcomers imposed new leadership forms and a changed lifestyle from village to urban life, with creative city planning for the new settlement. In any case, this settlement ended in destruction—a blanket of ashes being mute testimony to the violent event.

The settlement was rebuilt in the third major phase (EB II, 2950–2775 BCE) of its history. The inhabitants repaired and modified buildings and widened and strengthened the fortifications, all inferior to those of the original city. New pottery forms include a carinated bowl with an outward-curving rim and a jug with a tall cylindrical neck and high loop handles. A massive destruction of this city may have been caused by an earthquake, as evidenced by rifts in the bedrock and associated walls, with stones tilting into the fissures. The destruction was accompanied by an intense fire.

Egyptian involvement in the rebuilding of the fourth settlement (EB III, 2775–2400 BCE) is evident in the temple-palace and in the corner-gate area of the fortifications. Column bases in the temple-palace were reworked with copper saws like those used by Egyptian craftsmen. The walls were

built of hammer-dressed stones laid like bricks. The interior of the walls was plastered, and the rooms contained Egyptian imports of alabaster and stone vessels. At the southeast corner of the cities' fortifications, a kidney-shaped reservoir was constructed to capture rainwater from the upper city. [*See* Reservoirs.] Estimates of its capacity range from 1,800 to 2,000 cu m. Major changes appear about midway in this fourth period of settlement (c. 2550 BCE). Walls were rebuilt, the temple was redesigned as a royal residence, and a sanctuary was constructed against the citadel. Khirbet Kerak pottery and new objects seem to imply a new influence from the north of Canaan. This phase was ended by another violent destruction (c. 2400 BCE), and the site was abandoned and left in ruins for more than a millennium.

The fifth and final settlement phase (Iron Age I, 1200–1050 BCE) was established on the terraces below the acropolis by newcomers. The new villagers, probably "Proto-Israelites," did not fortify their settlement, and their houses were characterized by pillars or piers that supported the roof and divided the space. Streets were paved with cobblestones, and the houses shared common walls—suggesting that the population was made up of extended families. Two new technologies were evident: cisterns were dug for a water supply (see figure 1) and the hillslopes were terraced for crop planting. [*See* Cisterns; Agriculture.] These settlers were farmers and shepherds, as indicated by the stone saddles, querns, mortars, pestles, iron implements, and numerous bones of goats and sheep. [*See* Sheep and Goats.] Two phases of the Iron Age village are seen in the rebuilt houses and the different pottery forms. The original houses were modified by relocating their doors, repairing walls, and resurfacing floors. The long collared-rim storejar distinguishes the first-phase pottery form from the low collared-rim jar of the second phase. Slingstones were found on the floors of the rebuilt houses, suggesting that the settlement may have been abandoned after a minor battle. The excavator has suggested that this Iron I settlement represented the Early Israelite villagers described in the *Book of Judges*.

[*See also* Ceramics, *article on* Syro-Palestinian Ceramics of the Neolithic, Bronze, and Iron Ages; *and the biographies of Callaway, Garstang, and Marquet-Krause.*]

AI. Figure 1. *Three cisterns in the courtyard of a house.* (Erich Lessing/Art Resource, NY)

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AIA. *See* Archaeological Institute of America.

'AIN DARA', site located in Syria's 'Afrin valley, upstream from the 'Amuq plain, about 67 km (42 mi.) northwest of Aleppo and 7 km (4 mi.) south of the new city of 'Afrin (36°56′ N, 36°55′ E). It is not far from the archaeological site of Ha-za-za/A-za-za, modern I'azaz, about 25 km (15.5 mi.) to the northeast, and from Tell Rifa'at/Arpad, about 30 km (18 mi.) to the east. 'Ain Dara' is named after a spring about 700 m east of the mound. The tell is enor-

mous. Its citadel rises about 30 m from the level of the plain; its lower city covers an area of 24 ha (59 acres).

'Ain Dara' is not mentioned often in the scholarly literature. Some researchers passed through the area while studying the ancient city of Kunulua. It was generally ignored, however, until the chance discovery of a monumental basalt lion in 1955. The Department of Antiquities of Aleppo then initiated a series of seasons of excavation on the tell.

Excavations at its southern corner and on the northwestern edge of the summit were conducted in 1956, 1962, and in 1964 under the direction of Feisal Seirafe, assisted by the French archaeologist Maurice Dunand. [*See the biography of Dunand.*] In 1976 and again in 1978, an expedition from the Syrian Department of Antiquities and Museums, under the direction of Ali Abou Assaf, excavated at the site.

In seasons 6–11 (1980–1985) a temple was uncovered. In 1983 and 1984, Paul Zimansky and Elizabeth Stone made soundings in the lower city near the western and northern corner. From surface exploration and a sounding in the citadel and the lower city it appears that the lower city was settled from the end of the Late Bronze Age (c. thirteenth century BCE) until the Iron Age II (c.740 BCE). Except for the Roman period, the citadel was settled from the Chalcolithic through the Ottoman periods.

The following levels, dated by their artifacts, were distinguished in the area above and around the temple, which belongs to level VII (three phases: 1300–1000 BCE; 1000–900 BCE; and 900–740 BCE).

Level I: Seljuk period (1100–1400 CE)
Level II: Late Byzantine period (650 CE)
Level III: Umayyad and 'Abbasid period (650–900 CE)
Level IV: Hellenistic period (330–75 BCE)
Level V: Late Aramean and Achaemenid periods (530–330 BCE)
Level VI: Aramean and Neo-Babylonian periods (740–530 BCE).

The temple, oriented to the southeast, consists of six architectural components.

1. *Paved courtyard.* A well and a basin for washing hands before entering the sanctuary for prayers were found in the courtyard.

2. *Entrance.* Three basalt steps decorated with a guilloche pattern led to the entrance, which was a portico with two columns. Two huge limestone threshold blocks were situated in the successive doorways; there are impressions of two footprints on the first, and the print of a left foot on the second (97 × 31 cm). Two towers or rooms may have flanked the entrance. Through a room on the right a staircase between the anticella and the corridor was reached. Two sphinxes and four colossal lions flank the entrance, guarding the portico.

3. *Facade.* Reliefs of lions and sphinxes arranged in two levels decorated the facade. The upper level was comprised of huge lions in protome, and the lower of opposing lions and sphinxes.

4. *Anticella.* The decoration of the oblong anticella is very impressive. Above the floor on the lower part of the wall is a series of orthostats decorated with a pair of guilloches. Large basalt slabs are decorated with figures of mountain gods; the ornamentation above the orthostats is geometric.

'AIN DARA'. *Basalt bas-relief on a socle, depicting a mountain god and two bulls with human heads and arms.* National Museum, Aleppo, Syria. (Erich Lessing/Art Resource, NY)

5. *Stairway.* Three steps of a stairway join the anticella with the cella. The cella must have once have been very impressive. Only a few orthostats decorated with guilloches remain. The podium opposite the door was badly destroyed. Its profile is only suggested by the series of facing basalt orthostats, decorated with figures of mountain gods and geniuses (see below).

6. *Raised corridor.* In the latest phase of the temple the builder surrounded it with a raised corridor. Orthostats of opposing lions and sphinxes grace its exterior, and lions flank its entrance. On both sides of the corridor the builders originally erected thirty opposing stelae with different scenes (e.g., a throned king, a palm tree, a standing god, offerings).

The sculpture in the temple at ʿAin Daraʿ is integrated into the building's design: lions line the passage through the gates, lions and sphinxes are carved in protome on the slabs in the anticella and on the socle in the niche of the podium in the cella. The stelae on both sides of corridor exhibit the same technique: eighty-two reliefs form a dado around the sides of the temple terrace. The repertoire is very limited—only lions and sphinxes. It is well known that the lion is an attribute of the goddess Ishtar, and it is known from Phoenician works of art that the sphinx is an attribute of that goddess. Ishtar-Šawuška, the lover of the mountain god, ruled the mountains in northern Syria and southern Anatolia. [*See* Phoenicians.] Because the mountain god is depicted on the orthostats and socles in the cella and anticella, it can be assumed that the temple was dedicated to the goddess Ishtar. In its plan the temple at ʿAin Daraʿ repeats the main features of temples at Tell Chuera, Munbaqa, Emar, Ebla, Hazor, and Tell Taʿyinat. [*See* Chuera, Tell; Emar; Ebla; Hazor.] At ʿAin Daraʿ, however, the following principal changes appear: the platform is higher, a corridor is situated on three sides of the temple, the decorations include more than 168 reliefs and sculptures in protome, and a deep well and a large chalkstone basin opposite the east corner were found in the paved courtyard. The lions and sphinxes on the main facade and the facade of the cella resemble those guarding the gates at Boğazköy and Alaca Höyük and may be said to follow Canaanite and Hittite prototypes. [*See* Boğazköy; Hittites.]

[*See also* Temples, *article on* Syro-Palestinian Temples.]

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ALI ABOU ASSAF

ʿAIN ES-SAMIYEH, an exceptionally strong, perennial spring some 19 km (12 mi.) north-northeast of Jerusalem, at the northeastern foot of Baʿal Hazor, one of the highest peaks in the Judean mountains (31°59′ N, 35°20′ E). The spring arises in a deep ravine surrounded by cliffs pockmarked with caves and grottoes. William Foxwell Albright, Amihai Mazar, and others have suggested plausibly that this lush area was a sanctuary in antiquity. The spring irrigates a system of small valleys that converge into the Wadi Auja, which cuts all the way down from the Judean hills, at 457 m (1,500 ft.), to the Jordan Valley. The spring still provides copious water for the town of Ramallah, from the modern pumping station at the site.

It is not surprising that there are a number of archaeological sites of many periods in the vicinity. (1) Khirbet Samiyeh lies 275 m (900 ft.) to the southeast, apparently a relatively late ruin, mostly Byzantine and Arab. (2) Khirbet el-Marjameh ("Ruin of the Heaps of Stones") is a large, rocky ruin on a promontory just northeast of the spring, with sherds from the Early Bronze, Middle Bronze, and Late Bronze Ages, as well as major ruins from the Iron I–II periods. (3) The long, narrow Dhahr Mirzbaneh ridge, some 730 m (2,400 ft.) north-northeast of the spring, has a few remains from an EB IV settlement and a complex of much-robbed cemeteries that is known to have more than one thousand tombs.

The antiquities of ʿAin es-Samiyeh have long been known to topographers and archaeologists, but the area's settlement history was only elucidated recently. David G. Lyon acquired Early Bronze IV pottery from robbed shaft tombs while director of the American School of Oriental Research in 1906–1907, and similar material found its way into many other collections from Jerusalem and elsewhere. Albright surveyed Khirbet el-Marjameh in 1923, identifying it with biblical Ephraim (*2 Sm.* 13:23). Paul W. Lapp excavated forty-five Early Bronze IV tombs on the Dhahr Mirzbaneh in 1963–1964, but he failed to locate any settlement. Bakizah Shantur and Yusuf Labidi dug another forty-four Early Bronze IV tombs in 1970; and William G. Dever published still more material from robbed tombs in 1972. Z. Kallai surveyed Khirbet el-Marjameh in 1968, opposing Albright's identification and suggesting an alternative identification with Baal Shalisha (*1 Sm.* 9:4; *2 Kgs.* 4:42). Mazar cleared portions of the Iron Age town in 1975 and 1978. Finally, in 1987 Israel Finkelstein located many more Early Bronze IV tombs on the Dhahr Mirzbaneh, as well as a fairly extensive settlement from the same period.

The two best-known periods of occupation in the vicinity of ʿAin es-Samiyeh are the Early Bronze IV and Iron I–II. During the Early Bronze IV (c. 2300–2000 BCE), the site attracted large numbers of migratory pastoralists, as well as transitory settlements. The Dhahr Mirzbaneh shaft-tomb cemetery, with several differing groups of tombs, is the largest such cemetery known in Palestine, with eleven hundred tombs in evidence and many more no doubt yet undiscovered. The pottery belongs to Dever's Central Hills type but has clear links with Jericho, the Jordan Valley, and the south-

ern Hebron hills. One tomb produced a unique silver goblet of Syrian origin, with an embossed scene in the Ur III style. The settlement on the ridge at Dhahr Mirzbaneh, partly enclosed, covers some 4 acres and has remains of both crude dwellings and a possible cult area, possibly with two phases.

The Iron Age occupation, concentrated at Khirbet el-Marjameh, may extend from the tenth to the late eighth century BCE. The earliest phase of occupation at the 10-acre site may have been in the tenth century BCE, for there is material known from robbed tombs of that period in the vicinity. Somewhat later, in the ninth–eighth centuries BCE, a town grew up, with well-laid-out lanes and densely built-up courtyard houses of the "Israelite" type, surrounded by a stone wall 4 m wide with a massive tower, or citadel, at its northern end. The existence of a large fortified town during the Monarchy in such an isolated site may seem surprising, but it is explicable given the strategic importance of and attractive conditions for settlement at 'Ain es-Samiyeh.

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WILLIAM G. DEVER

'AIN GHAZAL, site located in the Wadi Zerqa, at the northeast edge of Amman, Jordan (31°59′ N, 35°58′ E). Highway construction in 1974 bared a continuous exposure of archaeological settlement. Six seasons of excavations and site survey were conducted under the auspices of Yarmouk University, the University of Kansas, San Diego State University, the Desert Research Institute of the University of Nevada, and the Jordanian Department of Antiquities from 1982 to 1985 and in 1988–1989 (cf. Rollefson, Simmons, and Kafafi, 1992), and a regional survey around the settlement was undertaken in 1987 by Alan H. Simmons and Zeidan A. Kafafi (1988).

More than forty radiocarbon dates from the site have shown that settlement was continuous for more than two thousand years. Coupled with major changes in architecture, ritual, economic base, and ceramic technology, four major stages of cultural development have been identified.

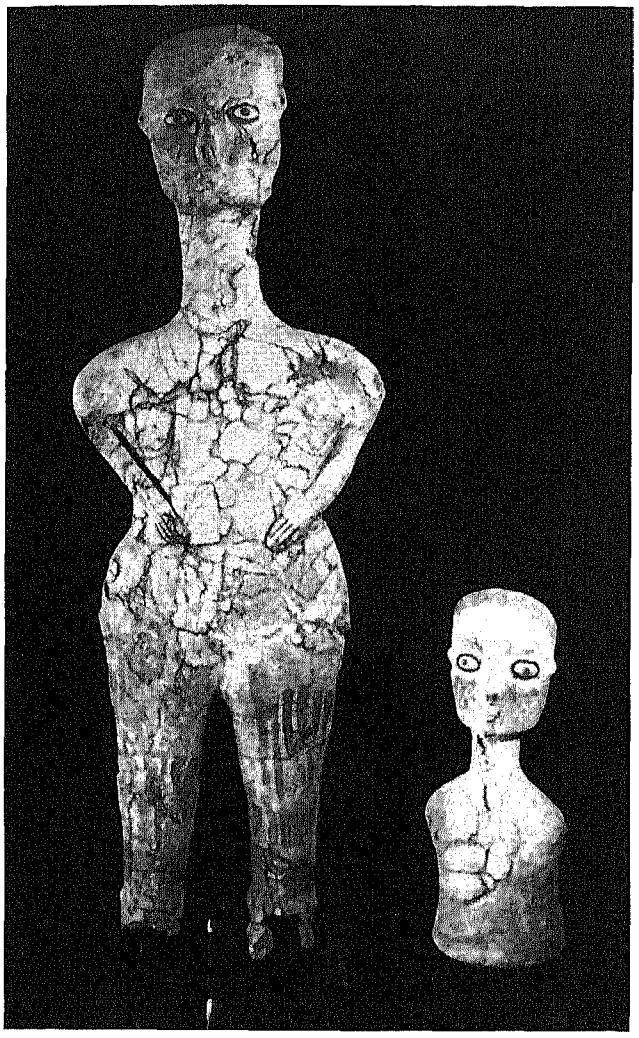
Middle Pre-Pottery Neolithic B (MPPNB) Period. In the earliest phase at 'Ain Ghazal (c. 7200–6500 BCE), cereals and pulses were farmed and goat husbandry developed. By the middle of the seventh millennium, the settlement had grown from a small hamlet of about 2 ha (5 acres) to a village of nearly 5 ha (12 acres). Hunting still played a vital role in the diet, contributing half of the meat protein; domesticated goats provided the other half. Houses were large (up to 40–50 sq m), with the number of rooms increasing from one at the beginning of the period to two and three rooms by the end of the phase. Walls were of undressed fieldstone, coated with mud mortar and finished with lime plaster. Floors were made of a fine layer of lime plaster applied over a lime-and-gravel base. Red pigment was used to decorate the floors and walls; a few fragments indicate specific designs: stylized birds and perhaps other animals among them.

MPPNB ritual practices were particularly striking at 'Ain Ghazal. Subfloor house burials of both adults and children were the norm, although courtyard burials were also common. All burials were individual (except for females with newborns or still births). The common regional MPPNB practice of decapitating the corpses of children and adults and interring their skulls elsewhere was followed (in some cases the skulls were treated with special reverence, see below). A significant number of "trash burials" of adults with skulls intact was also found, suggesting that social divisions existed in the early seventh millennium BCE.

Although the appearance of numbers of small baked and unbaked clay figurines of humans and animals is a characteristic of the MPPNB, only a few specimens of the economically important goats were found at 'Ain Ghazal. Cattle, on the other hand, dominated the identifiable animal figurines, including two examples of "ritually killed" cows buried beneath a house floor and several others with twisted fiber imprints behind their head that suggest halters. The human figurines are headless or lack a body, perhaps reflecting a close parallel to the predominant burial mode. Fertility figurines at 'Ain Ghazal are very distinct: obviously pregnant females with distended abdomens and enlarged breasts are also decorated with rocker-stamped "tattooing."

The most impressive aspects of ritual activity at 'Ain Ghazal are plastered skulls and plaster human statuary. Six plastered skulls and two caches of statues have been recovered. Three plastered skulls have been dated to before 7100 BCE, and a cache of twenty-five statues and busts dates to about 6750 BCE; a second cache of statues may date to about 6,500 BCE, at the transition of the MPPNB and the Late Pre-Pottery Neolithic B (LPPNB).

Late Pre-Pottery Neolithic B Period (LPPNB). At 'Ain Ghazal the Late Pre-Pottery Neolithic B period lasts from about 6500 to about 6000 BCE. Within this period the site more than doubled in size, reaching 10 ha (25 acres) in extent. House design changed radically, from the spacious



'AIN GHAZAL. *Human figurines.* (Photograph by Dorrell and Stuart Laidlaw; courtesy G. Rollefson)

two- to three-room MPPNB settings to multiple small cells (approximately 2 × 2 m each) around a central hall or chamber of unknown dimensions. Lime-plaster floors decorated with red ocher continued to characterize the buildings.

The site's economic base remained agricultural. Domesticated dogs are evident early in the phase, and at its close cattle and pigs were probably domesticated. It is clear that hunted wild species began to decline dramatically after 6500 BCE, signaling a major environmental change for the settlement and its vicinity. There appear to be no major ritual changes in human burials from those in the MPPNB; the number of human and animal figurines recovered from the restricted areas of excavation also was the same.

Pre-Pottery Neolithic C Period (PNNC). The end of the seventh millennium in ancient Palestine witnessed the demise of all known large agricultural settlements. However, during the Pre-Pottery Neolithic C period (6000–c. 5500 BCE) 'Ain Ghazal grew to more than 12 ha (30 acres; and, possibly, to more than 14 ha or 34 acres). Although details of that period's agricultural pursuits are lacking, a farming base for the settlement is undeniable. Hunting, on the other hand, was severely restricted to steppe and desert fauna, with domesticated goats, cattle, pigs, and sheep constituting the bulk (90 percent) of recovered animal bones.

Beyond differences in animal husbandry, hunting, and implied environmental change, the PPNC period at 'Ain Ghazal suggests in other critical ways that a major cultural change was underway. Architecturally, houses included semisubterranean structures founded on MPPNB and/or LPPNB lime-plaster floors, as well as similar surface structures that differed dramatically from MPPNB and LPPNB times. Buildings were smaller (approximately 3.5–4 m on a side), with small rectangular chambers (approximately 3 times 1 m) bisected by a central corridor that created cells too small for normal domestic functions, such as living or sleeping areas. Altogether, the PPNC structures suggest permanent storage features with flimsy superstructures.

The ritual aspects of the first half of the sixth millennium contrast with the LPPNB as strongly as the architectural elements. PPNC burials occur as subfloor and courtyard interments, but in every case the skull remains intact with the skeleton. The consistent occurrence of pig remains with PPNC burials is also a major departure from PPNB practices.

The appearance of pottery has long been taken to be a watershed of cultural development in the Levant, and in the south it has been conventionally assumed that this was a technological innovation introduced by populations migrating from the north (Mellaart, 1975, p. 238). The evidence from 'Ain Ghazal argues against this view however. Several examples of modifications of PPNC architecture are associated with crude fired pottery, followed soon thereafter by typical Yarmukian ceramics. This development indicates that the transition from the aceramic to the ceramic Neolithic was a local phenomenon (Rollefson, Kafafi, and Simmons, 1993).

Yarmukian Pottery Neolithic. The gradual changes from the PPNC to the Yarmukian Pottery Neolithic are also expressed in other ways. Hunting and herding evidence from animal remains is similar for both periods. The earliest Yarmukian inhabitants modified standing PPNC structures, but slightly later, Yarmukians built permanent rectangular structures very different from PPNC norms. These structures included large open spaces enclosed by stone walls, with floors made of puddled mud or *huwwar*, a "plaster" composed of mud and pounded chalk. The latest preserved Yarmukian architectural remains are curvilinear stone arrangements around the repeated appearance of puddled-mud floors. The indication is that 'Ain Ghazal had ceased to function as a permanent settlement, offering instead a seasonal camp for pastoral nomadic groups, probably during the dry summer months. The evidence from 'Ain Ghazal

(Köhler-Rollefson, 1988; Köhler-Rollefson and Rollefson, 1990), as well as from the eastern deserts of Jordan (e.g., Betts, 1986, p. 303) strongly suggests that an increasing reliance on pastoral nomadism began during the PPNC and that pastoral and agricultural economic systems were completely segregated shortly after the beginning of the Yarmukian period.

In its ritual practices the Yarmukian period differed vastly from its aceramic forebears: not a single Yarmukian burial has been identified at 'Ain Ghazal and animal figurines are rare, although a bird (?) has been found; human figurines are also few, but the head of a typical "coffee-bean" fertility figurine (Rollefson, Kafafi, and Simmons, 1993) was recovered (cf. Perrot, 1964, pl. XXIII).

Interpretation of the Data. The changes witnessed in the long, unbroken occupational sequence at 'Ain Ghazal can be understood in terms of responses to the demands of increasing population growth on what was a lucrative but delicate habitat. The MPPNB strategy of a combined hunting, goat herding, and agricultural subsistence base permitted an unprecedented population growth. By the onset of the LPPNB, the effects of these increasing demands is seen in the decrease of animal species variability. This decrease culminated during the PPNC period, when faunal diversity collapsed to a handful of wild species. Continued environmental degradation during the Yarmukian period finally led to the collapse of 'Ain Ghazal as a permanent settlement (Köhler-Rollefson and Rollefson 1990).

Climate change had little to do with the demise of 'Ain Ghazal (and other settlements in the southern Levant). The large demands on tree stands for fuel to produce MPPNB and LPPNB lime plaster deforested an area within a radius of several kilometers; exacerbated by the appetite of increasingly large herds of goats, the landscape around 'Ain Ghazal was exposed to continual erosion by the winter rains and summer winds. Logs and branches became scarcer for construction through time, and wood was increasingly difficult to collect for hearths. Agricultural fields within a reasonable distance from the spring at 'Ain Ghazal became so distant that it was no longer feasible to use the settlement as a home base. By the PPNC period the cultural degradation of the environment was probably already irreversible, and late PPNC and Yarmukian efforts to accommodate those changes were too little and too late for the long-term stable continuation of a permanent community.

[*See also* Cattle and Oxen; Paleoenvironmental Reconstruction; Pigs; *and* Sheep and Goats.]

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GARY O. ROLLEFSON

'AJJUL, TELL EL- (Ar., "the mound of the calf"), site located on the northern bank of Wadi Gaza, 2 km (1.2 mi.) from the Mediterranean coast and 6 km (3.6 mi.) southwest of modern Gaza (31°29′ N, 34°28′ E; map reference 0934 × 0976). The site is poorly preserved as a result of encroaching dunes and seasonal flooding; it is at least 8 ha (20 acres) in size and rectangular in shape.

William M. Flinders Petrie excavated Tell el-'Ajjul for the British School of Archaeology from 1930 to 1934. Ernest H. Mackay and Margaret A. Murray briefly continued the excavation in 1938. Less than 5 percent of the site has been excavated. Petrie claimed that Tell el-'Ajjul was ancient Gaza. However, Aharon Kempinski (1974) notes that ancient Gaza was probably located within the confines of the modern city and correctly suggests that Tell el-'Ajjul is the city of Sharuhen, mentioned in both biblical and Egyptian sources. The size of Tell el-'Ajjul, along with its great quantity of Hyksos scarabs and the wealth of its gold hoards, supports this identification. Petrie's excavation and publication of the site are, thus, problematic, and basic aspects of stratigraphy and chronology remain confusing and controversial. William Foxwell Albright (1938), James R. Stewart (1974), Kempinski (1993), and William G. Dever (1992) have all attempted to rework the dating of Tell el-'Ajjul. [*See the biographies of Petrie and Albright.*]

Except for the site's Early Bronze IV tombs, there are scant traces of early settlement. Tell el-'Ajjul reached its zenith during the Middle Bronze Age. In the Late Bronze Age, occupation was limited, but new cemeteries appeared. There are a few Iron Age II burials and a smattering of material that dates to the Hellenistic, Roman, and Late Arab periods.

Cemeteries. Cemetery 1500 (EB IV) is located west of the tell and includes approximately forty-two single, articulated burials in rectangular tombs with square shafts. [*See* Burial Sites; Tombs.] Grave goods were often limited to a single bronze dagger. [*See* Grave Goods.] Kathleen M. Ken-

yon (1956) suggests that only the earliest tombs contained daggers. Cemetery 100–200 (EB IV) is located east of the tell and contained approximately fifty burials. Its tombs shafts and chambers tend to be rounded. Grave goods included ceramic bowls and deep cups but very few daggers.

The earliest material from the tell itself comes from the Courtyard Cemetery. Its tombs were cut into the soft marl in the northern corner of the site. There is a total of twenty-five human burials and evidence of eighty animals. Burials were usually of single individuals. Six phases of burial types have been identified dating to MB IIA. Noteworthy is the burial of a child wearing gold jewelry found beneath palace II.

The Canaanite city ceased to function in the Late Bronze Age and a series of three large cemeteries began to develop to the north and east of the tell. The lower cemetery to the north of the site, the eighteenth-dynasty cemetery to the northeast, and the eastern cemetery to the east contained three hundred and five simple pit burials and eight elaborate pit burials. The pit burials were simple shallow rectangular or oval pits dug into the ground.

The practice of pit burials continued from the Middle Bronze Age, but the MB burials were intramural, whereas the LB cemeteries were not. However, there are a few LB intramural burials on the tell. The pit burials contain a high percentage of imported Cypriot pottery. Other grave goods include Mycenaean IIIA pottery, gold and bronze jewelry, metal objects (e.g., toggle pins, needles, daggers, arrowheads, a blade, razor, adzer, and axe), and Egyptian objects, especially scarabs. The cemeteries decline in use in LB IIB.

Eight elaborate pit tombs that include a dromos and a stone-lined cist are unique to Tell el-ʿAjjul and date to LB II. This evolution from simple pit burials probably accommodated elite families. Both the structure of the tombs and the grave goods are more elaborate. The grave goods included a great number of weapons, Egyptian objects (a gold ring, scarabs), and Egyptian-inspired objects (lead fishing-net weights, duck-shaped bowl). The "governor's tomb" is particularly outstanding and was reused several times throughout the Late Bronze Age. It has a stepped dromos, walls lined with sandstone slabs, and a gabled roof. Grave goods include a gold ring with the name of Tutankhamun, a scarab of Rameses II, thirty-five arrowheads, a bronze wine set, fishing weights, and an duck-shaped ivory bowl.

Other LB burial types include cave burials and loculi burials. Rivka Gonen (1992) considers the limited use of these burial types to be evidence of foreign populations, with pit burials reserved for the indigenous population. A group of loculi burials was found in the eastern cemetery. Each cave had a wide entrance and the loculi were carved into the walls. The caves measured at least 3.5 m in diameter, with the largest measuring 3.5 × 6 m. They may have had vaulted ceilings. Each loculus had the remains of at least two individuals and several contained the dismembered skeleton of an equid (tomb 411 contained the remains of an entire horse). A cache of limbs from a variety of species including ass, gazelle, horse, and ox, as well as human bones, was found near the entrance to these loculi. Gonen (1992; p. 131) compares the horse burials to one from Marathon in Greece. An odd use of a burial cave is one cut into the MB fosse: a shaft leads to a central chamber, off of which two burial niches contained the remains of four distinct burial groups. A total of fourteen people was found.

There is some indication of Phoenician-style cremation burials in cemetery 1000. Thirteen simple graves contained cremation urns along with metal (bronze and iron) and Egyptian objects (faience cup, scarabs, amulets). Cypro-Phoenician vessels, Cypriot vessels, and some Philistine pottery were also found. The cremation jar burials date to the tenth–eighth centuries BCE.

Fortifications. The site was protected by a fosse that surrounded the mound on three sides and was up to 6 m deep. The fosse was created by digging out the soft marl and sandstone, which in turn was used to build a steep rampart. The fosse and rampart date to late MB IIA. There is some evidence for a mud-brick wall crowning the rampart that would have been contemporary with palace III. Entrance to the site was from the northeast, where a strip of marl was left intact, acting as a causeway across the fosse. A series of enigmatic shallow tunnels emerged from the causeway and continued out to the coastal plain. Olga Tufnell (1993) suggests that these tunnels may be part of an irrigation system. [*See* Irrigation.]

Palaces. A planned city was constructed inside the ramparts in the MB IIB. A ring road encircles the inside of its fosse, and a major southeast–northwest road runs through the center of the tell. Palace I (43 × 55 m) is located in the northwest part of the mound. A rectangular structure, it consists of a large central courtyard surrounded by rooms and is constructed of large blocks of sandstone, probably cuttings from the fosse. Palace I bears some similarities in plan and construction to the MB palace at Lachish, including embedded orthostats in the lower part of plastered walls—a Canaanite architectural tradition. [*See* Lachish.] City III was partially destroyed in the early sixteenth century BCE.

City II was built along the same general plan as City III and dates to MB IIC. The residential quarter, in the southeast part of the mound, is divided by long streets that create an orthogonal plan similar to MB Megiddo. Houses had several rooms and often included a small interior courtyard. Patrician houses ranged in size from 190 to 270 sq m and sometimes had second stories; the houses belonging to individuals of lower status were one story and only 70–100 sq m in size. Palace II is built above palace I, but it is smaller and made entirely of mud brick, without orthostats.

Several very significant gold hoards were found in contexts most likely associated with City II prior to its destruction. These hoards suggest that Tell el-ʿAjjul was a wealthy city. These particular hoards may reflect the stress felt by

the inhabitants during Ahmose's campaign in Canaan, when the Egyptians besieged the city of Sharuhen for three years. The City II palace was thus probably destroyed in about 1530 BCE.

The city declined steadily in the Late Bronze Age, when a series of large cemeteries was in use. The palace, which was rebuilt several times throughout the Late Bronze Age, was converted into an Egyptian fortress that controlled the coastal road to Gaza. Palace III dates to LB IB, Palace IV to LB IIA, and Palace V to LB IIB. There is some evidence of an Iron Age occupation. Albright (1938) suggested that Palace V might date to the tenth century BCE. [*See* Palace.]

Material Culture. The use of bichrome decoration, the arrangement of motifs, and the vessel morphology at Tell el-'Ajjul all reflect Canaanite ceramic traditions. A bichrome ware sometimes referred to as 'Ajjul Painted Ware is distinctive because red and black paint were used to depict both geometric and anthropomorphic motifs. The decoration is frequently arranged in a frieze of metopes or triglyphs in which bulls, birds, and fish are depicted. Typical ceramic forms at the site include the krater, jug, and bowl. Some forms are more typically Cypriot, however, as are the anthropomorphic motifs.

Bichrome Ware begins in MB IIC and continues in use until LB IA. It has a wide distribution in the eastern Mediterranean but is found primarily along the southern coast of Palestine, in the Shephelah, along the Syrian coast, on Cyprus, in the Egyptian Delta, and in Cilicia. Neutron activation analysis has demonstrated that most of the Tell el-'Ajjul Bichrome Ware was produced in eastern Cyprus, which was a major production center for this ceramic type (Artzy et al., 1973). [*See* Neutron Activation Analysis.] Some of the Bichrome Ware from Tell el-'Ajjul was also produced locally. Other imported Cypriot pottery found at Tell el-'Ajjul includes Red-on-Black, Black-Slip II, Monochrome, Black Lustrous, Base-Ring I and II, White-Slip I and II, and White-Painted IV and V Wares.

Tell el-'Ajjul is well known for gold jewelry found in several hoards and in tombs. Unique gold crescents, pendants, earrings, toggle pins, and bracelets were made in a variety of sophisticated techniques such as granulation, cloisonné, and repoussé. [*See* Jewelry.] Gold-foil pendants with schematic representations of a fertility goddess, similar to examples from Gezer, were also found. [*See* Gezer.] The gold itself was probably imported from Nubia. [*See* Nubia.] The jewelry found is also made of silver, electrum, and lead. The floruit of jewelry production was in MB IIC.

Tell el-'Ajjul has produced scores of fifteenth-dynasty, or Hyksos, scarabs and eighteenth-dynasty scarabs. [*See* Hyksos.] Egyptian royal seals from several kings were found, including Amenemhet III, Neferhotep I, and Ma-ib Re Sheshi. Other Egyptian artifacts include a jar with cartouches of Hatshepsut and Thutmosis III, a gold signet ring with the name of Tutankhamun, and scarabs of Thutmosis III. The last royal name found is that of Rameses II, indicating that the cemeteries were used until 1200 BCE.

[*See also* Ceramics, *article on* Syro-Palestinian Ceramics of the Neolithic, Bronze, and Iron Ages; *and* Fortifications, *article on* Fortifications of the Bronze and Iron Ages.]

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J. P. DESSEL

ʿAJLUN, site located above Wadi Kafranja, one of three valleys between the two lakes which climb from the Jordan Valley up to the Transjordanian plateau (32°20′ N, 35°45′ E). ʿAjlun has the best preserved Ayyubid mosque in Jordan. An inscription of al-Malik al-Muʿaẓẓam (*RCEA* 3970) demonstrates that it was founded in or before 1218–1227. The minaret was built under Baybars I in 1264 (*RCEA* 4528), and the doorway was repaired in 1332 (*RCEA* 5618).

ʿAjlun castle, called *Qalʿat al-Rabaḍ* ("citadel of the suburb") after the suburb which grew up around it, occupies the last high point in the northern part of the valley. It was extensively restored by the Department of Antiquities of Transjordan in 1927–1929. The castle was founded in 1184–1145 by ʿIzz ad-Din Usama by order of Salah ad-Din (Saladin) to counter the threat posed by the Crusaders' Belvoir castle on the opposite side of the Jordan Valley. It may also have served to check Reynald de Châtillon, lord of Kerak, and to protect the region's rich iron ore deposits.

The nucleus of the castle was a four-towered keep on the site's highest point, flanked by two baileys on its eastern and southern sides. The main entrance lay beneath the southeast corner of the keep, protected by a machicoulis on two corbels (dismantled in 1927). The whole complex was surrounded by a deep rock-cut ditch.

The castle was extensively refortified in about 1214 by Aybak b. ʿAbd Allah, chamberlain (Ar., *ustādh al-dār*) to al-Malik al-Muʿaẓẓam ʿIsa. He built the south tower to protect the reflex angle between the two baileys (*RCEA* 3746), added a ward to its east, constructed two outer gates (one decorated with zoomorphic carvings), and heightened much of the older structure.

Some restoration to the east wall was carried out in about 1253–1260 (*RCEA* 4463), before the castle was surrendered to the Mongols (in 1260). Crude repairs to the keep and the southwest corner are postmedieval. The castle was still inhabited when J. L. Burckhardt visited it in 1812, and Ibrahim Pasha installed a small Egyptian garrison there in 1831–1841.

[*See also* Crusader Period; Kerak.]

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JEREMY JOHNS

AKKADE, capital city, location unknown, of the Akkadian Empire (c. 2290–2200 BCE), created and maintained by Sargon and his dynastic successors. The city of Akkade and the Akkadian Empire are at the nexus of several interrelated problems: the location of the city; why and how southern Mesopotamia underwent a centralization of regional power, passing from a loose urban confederation in the early third millennium to tight politicoeconomic imperialization under one city in the late third millennium; whether the third-millennium cities of southern Mesopotamia were self-sustaining or were dependent on adjacent regions for essential resources; the reason for the regional extensions of southern Mesopotamian political and economic power in the mid-third millennium; and how the empire functioned and the reasons for its collapse. These historical questions surrounding Akkade make the city the most important ancient West Asian site as yet to be located and excavated.

Knowledge of the city and the empire is mostly derived from settlements and material and epigraphic remains from regions imperialized by the Akkadians, and from Akkadian-period documents copied by later scribes. However, the earliest reference to Akkade occurs in a year date of Enšakušanna (second dynasty of Uruk), who probably ruled within the generation prior to Sargon, founder of the Akkadian dynasty. [*See* Uruk-Warka.] This singular datum indicates that Akkade was not founded *ab novo* by Sargon and suggests the limitations of data presently available for understanding the early history of the city and its rise to regional political power.

Contemporary Akkadian-period references, as well as later copies of historical inscriptions, describe Akkade as a bustling imperial capital with temples and palaces, a busy harbor, a large imperial bureaucracy, merchants traveling to distant realms acquiring and dispatching exotic goods, as well as an army capable of marches to the Mediterranean Sea, to the sources of the Tigris and the Euphrates, and the conquest of the urban centers in its path. The most famous of the Mesopotamian "city laments," the Curse of Akkade, composed within a hundred years of the Akkadian imperial collapse, describes the collapse and abandonment of Akkade as symbolic of the collapse of the Akkadian Empire.

Historical references indicate, however, that Akkade was occupied for seventeen hundred years following the collapse of the empire. In the Ur III period the city was the seat of a provincial governor, while the prologue to the Code of Hammurabi mentions the still-functioning Eulmaš Temple of Ištar (Ishtar) within "broad-marted" Akkade. Parts of the ancient city were still settled in the Kassite, Neo-Assyrian, and Neo-Babylonian periods, during which archaeological expeditions were repeatedly undertaken in search of Akkadian-period treasure. [*See* Kassites; Assyrians; Babylonians.] The most famous of these excavations, a program that lasted three years, was directed by a scribe of King Nabonidus of Babylon (r. 555–539) who took an impression of a commemorative inscription excavated within a palace of Sargon's grandson Naram-Sin; the excavator labeled the impression with its provenience as well as his name. The city

is last mentioned in a document dated to year 29 of the reign of Darius.

V. Gordon Childe's early characterization of the Akkadian Empire stressed its campaigns of conquest for the acquisition of resources unavailable in southern Mesopotamia, such as metals and timber. Childe's sketch, although still influential among archaeologists, could not consider the progression and the context of expansionary activities directed from Akkade that are now documented in the archaeological and epigraphic records, nor the still earlier sequence of repeated southern Mesopotamian expansions documented in the Late Ubaid, Late Uruk, and Late Early Dynastic II/early Early Dynastic III periods (Childe, 1951).

The detailed Akkadian data suggest that Sargon's long-distance military campaigns were but one stage of the Akkadian expansionary process. These early military campaigns focused on conquest of distant urban centers and the retrieval of plunder. Subsequent military campaigns led by Sargon's successors, particularly Naram-Sin, conquered and then imperialized both irrigation-agriculture southern Mesopotamia and dry-farming northern Mesopotamia. In this second stage of Akkadian expansion, the forces from Akkade first conquered local states and then constructed fortresses and temples for resident Akkadian administrators and functionaries.

Acting in each imperialized province, these Akkadian forces systematically implemented five imperial strategies on behalf of the capital:

1. Reorganized the administrative structure of agricultural production by establishing a streamlined administrative command responsible to authorities in Akkade;
2. Reorganized the spatial structure of regional agricultural production by vacating second-and third-level population centers; concentrated labor forces in urban centers; and constructed city walls to enclose relocated populations;
3. Intensified agro-production by creating imperial domains in Sumer and Akkad for the exclusive production of Akkade-directed taxes and by extended, and perhaps irrigated, cereal production in the imperialized dry-farming regions;
4. Introduced and enforced imperial-standard units of measure for ration-labor work gangs and for regional agricultural production;
5. Extracted imperial taxes, as much as 70 percent of the intensified agro-production, from each reorganized administrative unit, and shipped these agricultural goods by water transport to Akkade.

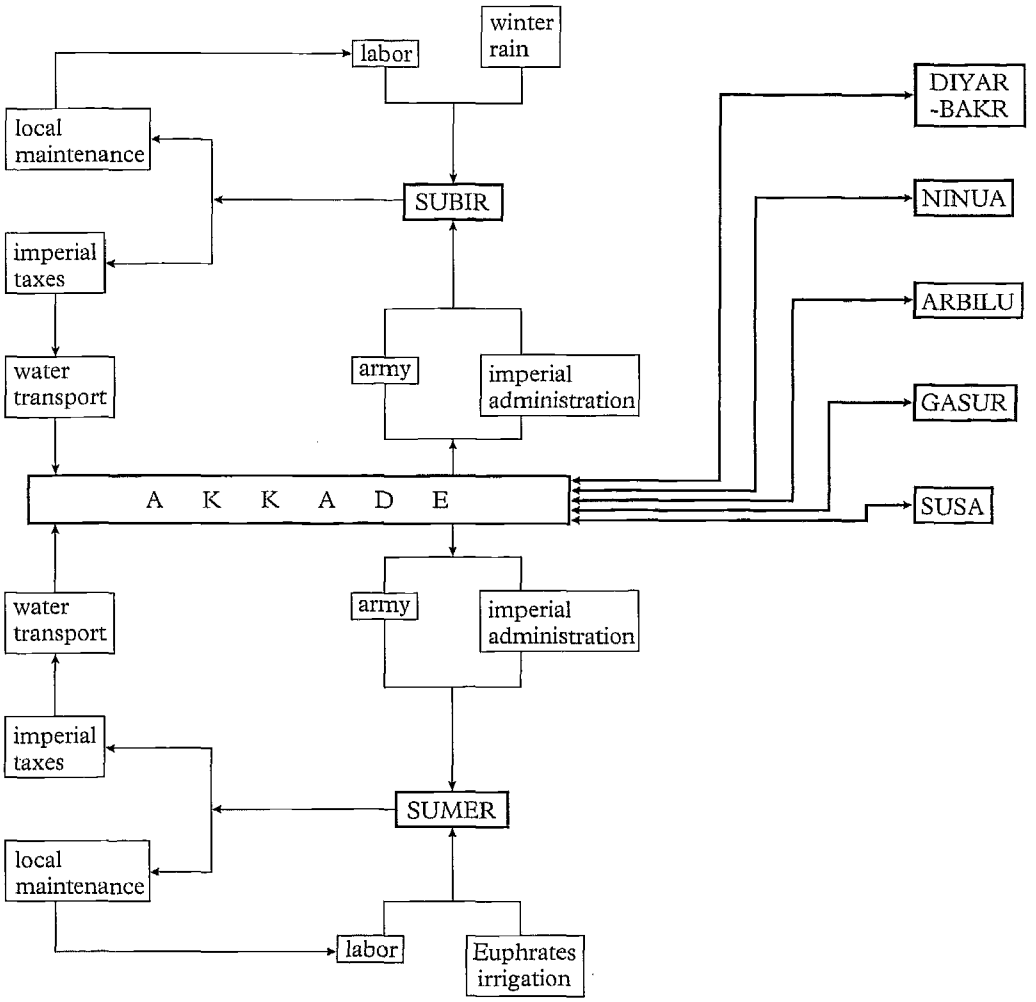
This flow of administrators, military forces, and imperialized agricultural produce into and out of Akkade can be modeled (see figure 1) to illustrate the imperial accumulation of agricultural wealth from both Sumer in southern Mesopotamia and Subir, the dry-farming Khabur plains of northern Mesopotamia. [*See* Sumerians.] Similar relationships were structured at the five other high-productivity dry-farming regions (Susa, Gasur/Nuzi, Erbil, Nineveh, Diyarbakir) surrounding Akkade, where urbanized polities with nucleated labor forces already comprised a preadaptation for Akkadian agricultural imperialism. [*See* Susa; Nuzi; Nineveh.]

The water-born course of imperialized and convertible agricultural wealth into Akkade from adjacent regions underlies the ideal of regional unification upheld by the Akkadians and successor Mesopotamian empires. It also emphasizes the still-problematic goals of the earlier southern Mesopotamian expansions into these same regions, although the form and regional structure of earlier expansions differed considerably.

The description of the fall of Akkade in the poetic Curse of Akkade portrays a city suffering from reduced Euphrates flow, desiccated irrigation fields, famine, and the incursions of neighboring "barbarians" into the Akkadian heartland. These descriptions have been understood as poetic metaphors by many Assyriologists, but a few have ventured that the descriptions, while poetic, are not necessarily metaphoric. Southern Mesopotamian irrigation agriculture was dependent upon the frequently variable flow of the Euphrates. The documentary evidence for Late Akkadian-period agricultural failure in southern Mesopotamia, and for extended drought in northern Mesopotamia, conforms to the independent data for hemispheric aridification, probably an abrupt climate change, beginning in about 2200 BCE. The gradual aridification and decrease in Euphrates flow that had begun about seven hundred years earlier may explain in part the stages of conflict, unification, and expansion that culminated in Akkade's ascension to regional and transregional power.

The publication in 1972 of two surface surveys of the region of Akkad raised anew the longstanding question of the location of Akkade. The associations of Sargon and Akkade with the city of Kish made these surface reconnaissance observations particularly important for locating the city. [*See* Kish.] These associations include the paramountcy of Kish within southern Mesopotamia in the pre-Akkadian period, Sargon's service as cupbearer to Ur-zababa, king of Kish, and the historiographic traditions of Sargon's construction of a new city opposite Babylon, which is adjacent to Kish. [*See* Babylon.]

Ishan Mizyad, one site identified in the Akkad surveys, is located between Kish and Babylon, beside the ancient course of the Euphrates River. It presents several locational, topographic, and settlement-history features that can be associated with Akkade. Recent Iraqi government soundings at the site produced evidence for the Ur III settlement there, and cuneiform texts mentioning Bab-Ea, but did not extend to the site's Akkadian levels (Mahdi, 1986). Bab-Ea, an otherwise unknown toponym, is a likely name for an urban



AKKADE. Figure 1. *Flow chart schematizing Akkadian agro-imperialism.*

quarter or "gate." More recent reviews of historical occurrences of the city strongly suggest a location about 50 km (31 mi.) to the northeast, at or near the confluence of the Tigris and the Diyala Rivers. These locational suggestions, if accurate, may require a major reconsideration of the role of the Tigris River in third-millennium southern Mesopotamian history.

[*See also* Agriculture; Akkadians; *and* Mesopotamia, *article on* Ancient Mesopotamia.]

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HARVEY WEISS

AKKADIAN. The language of the ancient Assyrians and Babylonians of Mesopotamia, Akkadian, subsumes both Assyrian and Babylonian dialects within it. The earliest attested Semitic language, Akkadian comprises the more important member of the eastern branch of the Semitic family (the other member being Eblaite). The name *Akkadian* (*akkadû*) derives from Akkad(e), the capital city built by king Sargon in about 2300 BCE. It is not known when speakers of Akkadian or its linguistic predecessor(s) first arrived in Mesopotamia, nor is it known when the last speakers of the language died out; the first written attestations date to the 26th century BCE (in Semitic names; connected texts somewhat later) and the latest to the first century CE. Several hundred thousand texts have been discovered in excavations, many of which remain unpublished.

Dialects and Genres. Old Akkadian refers to texts from the earliest attestation of Akkadian down to about the beginning of the second millennium, thus including documents dating to the reigns of Sargon and Naram-Sin of Akkad and to the Ur III period; although the term is used collectively for all such texts, dialectal distinctions, both geographical and chronological, are evident within this corpus. Old Akkadian is attested in letters, legal texts, economic dockets, royal inscriptions, and a few literary texts (such as a love incantation). To the middle of the Old Akkadian period as well date the thousands of texts found recently at Ebla, in Syria, some of which are also partly written in a Semitic language, referred to as Eblaite or Eblaic. Formerly thought to be an early representative of West Semitic, Eblaite is now considered to be a close linguistic relative of Akkadian (or even, though this is less likely, a dialect of Akkadian). [*See* Ebla Texts.]

In the second and first millennia, two major geographical dialects are attested, Assyrian in northern Mesopotamia and Babylonian in the south. Linguistically these are distinguished by a number of phonological differences, by minor morphological variations, and by certain lexical items. The Assyrian and Babylonian scripts also developed somewhat independently of one another. As is true in all languages, numerous linguistic changes occurred over the many centuries in which Assyrian and Babylonian were spoken, and these appeared (eventually) in the texts. Although these developments arose continuously, so that there are no neat chronological divisions, scholars refer for the sake of convenience to the following subphases, which correspond roughly with political periods:

Old Assyrian	2000–1500	Old Babylonian
Middle Assyrian	1500–1000	Middle Babylonian
Neo-Assyrian	1000–600	Neo-Babylonian
	600 BCE–100 CE	Late Babylonian

Old Assyrian is known from approximately fifteen thousand letters and legal and economic documents dating from the mid-twentieth to the mid-eighteenth centuries BCE, most of which have been found in Cappodocia (eastern Turkey) at the site of Kaneš (modern Kültepe), although other sites in Anatolia and Assyria have also produced a few similar texts. The majority of these documents concern the business activities of Assyrian merchant houses and their trade with outposts in Anatolia. (The majority of these texts are unpublished.) Also attested are a number of royal inscriptions of rulers of the city of Aššur, commemorative and dedicatory in nature, and a few magical texts. [*See* Kültepe Texts.]

Middle Assyrian is sparsely attested, although it is known from a variety of genres, including letters, legal texts, economic texts, and inscriptions of the early kings of the nation and nascent empire of Assyria, and a set of harem decrees. Perhaps most famous, however, are the fourteen tablets containing the Middle Assyrian laws, discovered in the city of Aššur.

Neo-Assyrian is the spoken language of the period of the Assyrian Empire in the first millennium until its demise late in the seventh century BCE. There are a great many letters and administrative texts, of both the court and private individuals. Many royal inscriptions and scholarly writings are also attested; as in all periods, literary texts exhibit considerable linguistic influence of the more prestigious Bablyonian dialect.

Old Babylonian is the language of several tens of thousands of texts, dating to the first half of the second millennium, from the first dynasty of Babylon, from the Isin and Larsa dynasties, and from other southern Mesopotamian sites, as well as from sites outside Mesopotamia, such as Mari and Susa. Not surprisingly, texts from such a range of sites exhibit numerous minor dialectal differences. The best-studied form of Old Babylonian is that of the court of King Hammurabi of Babylon. An extremely diverse variety of genres has been preserved; in addition to thousands of letters, contracts, economic texts, and royal inscriptions, these include the famous "code" of laws of Hammurabi (the longest single Old Babylonian document), and many kinds of scholarly and school texts such as medical, mathematical, and grammatical texts, encyclopedic lists of words (lexical texts), and omens. There are also hymns, prayers, and epic and mythological works of literature, of which the best known are Gilgamesh, Atraḫasis (the flood story), and Anzû (the theft of the "tablets of destiny"); these latter texts, as well as royal inscriptions, are often written in a high literary language full of archaic forms and archaisms.

In later times, Old Babylonian was regarded as the clas-

sical period of Akkadian language and literature, and scribes in both Babylonia and Assyria attempted to duplicate it in a purely literary (i.e., unspoken) language called Standard Babylonian (though usually with mixed results, as their own linguistic forms frequently intervened). This is the dialect in which such important works as *Enuma elish* and the later version of Gilgamesh are written—indeed, all of the literary texts of the first millennium, as well as many royal inscriptions.

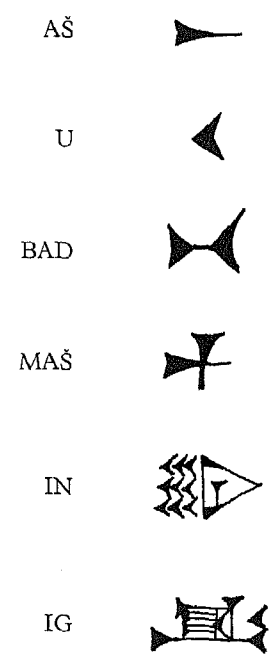
Middle Babylonian is the language of texts from the Kassite period. Like Middle Assyrian, it is less well represented than the dialects that precede and follow it. It is known from letters, legal texts, economic texts, a few royal inscriptions, and inscribed boundary stones (*kudurrus*).

Already in the Middle Bronze period, but especially in the Late Bronze, Akkadian, particularly Babylonian, was used as an international lingua franca; Akkadian texts have been found at a great many sites outside Mesopotamia, including Alalakh, Emar, and Ugarit in Syria, Ḫattuša in Anatolia (modern Boğazköy, the capital of the Hittite land), and el-Amarna in Egypt, to name a few. The language of these texts, which was written by non-native speakers, is usually termed Peripheral Akkadian; the texts vary considerably in their fidelity to normative grammar and frequently betray the influence of the scribes' own languages. [*See* Emar Texts; Alalakh Texts; Ugarit Inscriptions; Amarna Tablets.]

Neo-Babylonian refers to the spoken, nonliterary language of southern Mesopotamia until the end of the Assyrian Empire, after which the term Late Babylonian is used for the final period of texts written in Akkadian. These dialects comprise large numbers of letters and administrative documents. For literary and monumental texts, Standard Babylonian (see above) was employed.

Writing System. Akkadian was written in cuneiform, a system of wedge-shaped characters usually pressed into moist clay tablets with a reed stylus. (Other media for inscriptions were wax, metal, and, especially for monumental texts, stone.) The system was borrowed from Sumerian, the other language of Mesopotamia and the language for which it was devised. The writing was at first pictographic, with fairly representational drawings; early on, however, it became more and more stylized until the pictographs ultimately became unrecognizable. As the Old Babylonian (code of Hammurabi) forms in figure 1 show, individual signs may consist of one wedge (such as AŠ and U), of a few wedges (such as BAD and MAŠ), or of many wedges (such as IN and IG). As already noted above, forms of signs continued to change throughout the history of Akkadian, and Assyrian and Babylonian forms differed from one another: the histories of a representative sample of signs appear in figure 2. There are three types of signs:

1. *Phonetic signs.* Syllables or parts of syllables to be pronounced are indicated by phonetic signs that may represent a simple vowel (such as "a"), a consonant plus a vowel



AKKADIAN. Figure 1. *Cuneiform writing (Old Babylonian Code of Hammurabi).* (Courtesy J. Huehnergard)

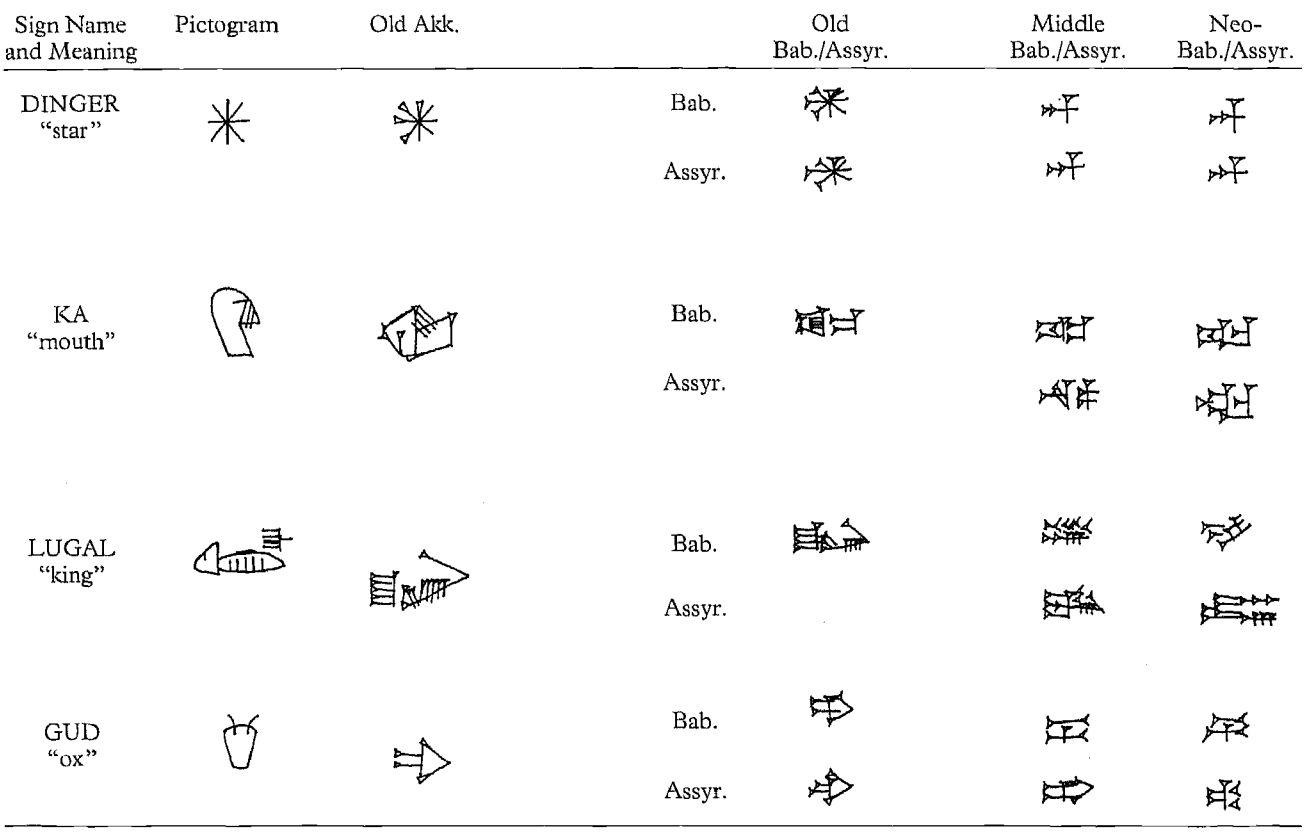
("ba"), a vowel plus a consonant ("ab"), or a consonant-vowel-consonant sequence ("bad"). Individual consonants cannot be written.

2. *Logograms.* These may be used to represent whole words.

3. *Determinatives.* A few signs that serve as classifiers indicating semantic ranges are known as determinatives. One determinative, for example, may precede words for items made of wood, while another precedes names of gods.

The three types of signs are formally indistinguishable and, in fact, some signs are used in all three ways; an example is the sign KI, which, in any given context may, among other possibilities, represent the (part-)syllable "ki," denote the word for "earth," or indicate that the word preceding it is a place name. To illustrate the writing system, the beginning of Law 8 of Hammurabi's code is reproduced in figure 3 with a standard Assyriological transliteration, in which phonetic values appear in italics, logograms in roman capital letters (with their Sumerian pronunciation), and a determinative in superscript letters. As the sample in figure 3 indicates, cuneiform is written from left to right.

Two additional complicating aspects of the writing system are homophony and polyphony. Homophony describes the fact that several discrete signs may have the same phonological value, such as /sa/; these are distinguished in transliteration by diacritical marks as follows: the most common sign found for a particular value receives no special mark, the second an acute accent over the vowel, and the third a grave accent, whereas the fourth and following receive sub-

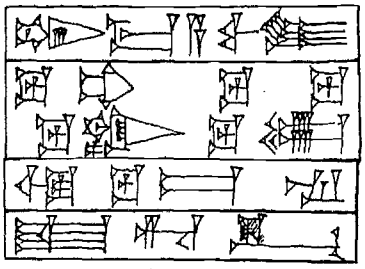


AKKADIAN. Figure 2. *Comparison of Old Akkadian, Assyrian, and Babylonian Cuneiform Signs.* (After Labat, 1988)

script numbers (thus, *sa, sá, sà, sa*$_4$, etc.; called sa-one, sa-two, sa-three, sa-four, etc.). Many signs are polyphonous—that is, they may represent more than one phonetic value; for example, the sign used to write the value *ud* may also be used to write the values *tam* and *pir*.

Grammatical Summary. The original number of twenty-nine Proto-Semitic consonants was considerably reduced in Akkadian, probably through constant contact with Sumerian, to only twenty, as shown in table 1. Naturally the precise pronunciation of these phonemes is unknown; modern scholars base their pronunciation on parallels with living Semitic languages. The phoneme *š* is pronounced as "sh" and *ḫ* as "ch" in the German *ach* or Scottish *loch*; the so-called "emphatic" consonants *q*, *ṣ*, *ṭ* were either pharyngealized (as in Arabic) or, more likely, glottalized (as in Amharic and modern South Arabian languages). It is likely that Old-Akkadian preserved more of the original Semitic consonants, especially the interdental **Θ* and some of the so-called guttural phonemes, such as *ḫ* and *ʿ*; the writing system was poorly equipped to expressed such sounds, however.

Early Semitic had three short vowels, (*a, i, u*) and three corresponding long vowels (*ā, ī, ū*); most dialects of Akka-



Šum-ma a-wi-lum	if man
lu GUD lu UDU	or ox or sheep
lu ANŠE lu ŠAḪ	or donkey or pig
ù lu ^{giš} MÁ	or else ^{wood} boat
iš-ri-ig	stole

"If a man stole an ox, a sheep, a donkey, a pig, or a boat,..."

AKKADIAN. Figure 3. *Sample Akkadian text from Code of Hammurabi.* (Courtesy J. Huehnergard)

TABLE 1. *Akkadian Consonants*

	Bilabial	Dental	Palato-Alveolar	Velar	Glottal
Stops					
Voiced	*b*	*d*		*g*	
Voiceless	*p*	*t*		*k*	ʾ
Emphatic		*ṭ*		*q*	
Fricatives					
Voiced		*z*			
Voiceless		*s*	*š*	*ḫ*	
Emphatic		*ṣ*			
Nasal	*m*	*n*			
Trill			*r*		
Approximant	*w*		*l, y*		

dian preserve these and add a fourth vowel quality, *e* and long *ē*. Most Assyriologists distinguish two types of long vowels, marking those inherited as long vowels with a macron (*ā, ē, ī, ū*) and those that result from the contraction of two adjacent vowels with a circumflex (*â, ê, î, û*). It has recently been proposed that Akkadian also had a fifth phonemic vowel quality, *o* (Westenholz, 1991).

Akkadian phonology is marked by a number of sound changes vis-à-vis common Semitic, in addition to the loss of consonants and the addition of the vowel *e* already described. All dialects exhibit a phenomenon called vowel syncope, in which the second of two short vowels in open syllables is deleted, as in *damqum*, "good (masculine)," from **da/mi/qum* (cf. the feminine counterpart, *damiqtum*) or in *napšātum*, from **na/pi/šā/tum*, the plural of *napištum*, "life." Also common to Akkadian is Geer's law, according to which two emphatic consonants may not cooccur in one word: thus, for example, Semitic **qaṣārum* became Akkadian *kaṣārum*, "to bind"; Semitic **ṣabāṭum* became Akkadian *ṣabātum*, "to seize"; and Semitic **qaṭārum* became *qatārum*, "to billow (of smoke)." In Barth's law, the initial *m* of noun prefixes became *n* in words in which a labial consonant (*b, m, p*) followed: *narkabtum*, "chariot;" *narāmum*, "beloved"; *našpakum*, "storage area." Both Assyrian and Babylonian forms of Akkadian also exhibit distinctive types of vowel harmony: in Assyrian, short *a* in an unaccented open syllable is replaced by a short-vowel that mimics the vowel of the following syllable, as in *iṣbat*, "he seized," but *taṣbitī* (vs. Babylonian *taṣbatī*), "you (feminine) seized," and *iṣbutū* (vs. Babylonian *iṣbatū*), "they (masculine) seized"; in Babylonian, the presence of an *e* vowel tends to cause an *a* vowel in the same word to become *e*, as in *bēlētum*, "ladies" (from *bēlātum*; cf. *šarrātum*, "queens").

The basic morphological categories of pronouns, nouns, and verbs generally exhibit two genders (masculine and feminine) and three numbers (singular, dual, and plural), although the use of the dual is considerably circumscribed after the Old Akkadian period.

As in other Semitic languages, there is a set of independent personal pronouns and there are also sets of pronominal suffixes that indicate possession (when used on nouns and prepositions) or direct or indirect objects (on verbs); the Old Babylonian and Old Assyrian forms are shown in table 2. Indirect object forms are also attested in Eblaite but are not found in other branches of Semitic; they probably represent an innovation within East Semitic (Akkadian and Eblaite).

In early dialects of Akkadian (Old Akkadian, Old Babylonian, Old Assyrian), as in other morphologically conservative Semitic languages, nouns and adjectives exhibit three cases, marked with distinct vowels: nominative, for the subject of a clause (marked with *u*; in the dual with *ā*); genitive, indicating possession and also used after prepositions (marked with *i*); and accusative, for the direct object and various adverbial uses (marked with *a*). In dual and plural forms the genitive and accusative merge into a single form, termed the oblique (marked with *i*). In addition to endings that indicate the case, the regular, or free, forms of nouns also bear a final *-m* in the singular and the feminine plural (but not in the masculine plural) and a final *-n* in the dual.

TABLE 2. *Old Babylonian (OB) and Old Assyrian (OA) Pronoun Forms* (1, 2, 3 = first, second, third person; m = masculine; f = feminine; c = common gender; s = singular; p = plural; dual forms are omitted).

	Independent		Possessive	Direct Object		Indirect Object	
	OB	OA	OB/OA	OB	OA	OB	OA
1cs	*anāku*	*anāku*	*-ī,ya*	*-ni*	*-ni,-ī*	*-nim*	*-nim*
2ms	*atta*	*atta*	*-ka*	*-ka*	*-ka*	*-kum*	*-kum*
2fs	*atti*	*atti*	*-ki*	*-ki*	*-ki*	*-kim*	*-kim*
3ms	*šū*	*šūt*	*-šu*	*-šu*	*-šu*	*-šum*	*-šum*
3fs	*šī*	*šīt*	*-ša*	*-ši*	*-ši*	*-šim*	*-šim*
1cp	*nīnu*	*nēnu*	*-ni*	*-niāti*	*-niāti*	*-niāšim*	*-niāti*
2mp	*attunu*	*attunu*	*-kunu*	*-kunūti*	*-kunu*	*-kunūšim*	*-kunūti*
2fp	*attina*	*attina*	*-kina*	*-kināti*	*-kina*	*-kināšim*	*-kināti*
3mp	*šunu*	*šunu*	*-šunu*	*-šunūti*	*-šunu*	*-šunūšim*	*-šunūti*
3fp	*šina*	*šina*	*-šina*	*-šināti*	*-šina*	*-šināšim*	*-šināti*

Feminine nouns and feminine forms of adjectives are usually marked with either *-t-* or *-at-* after the base and before the case vowel: *bēlum*, "lord"; *bēltum*, "lady"; *šarrum*, "king"; *šarratum*, "queen"; *ṭābum* (masc.) and *ṭābtum* (fem.), "pleasant"; *dannum* (masc.) and *dannatum* (fem.), "strong." Besides the regular, or free, form of the noun there is also the bound form (or construct form), used when a noun syntactically governs another noun or a pronominal suffix; the bound form generally lacks both the final *-m/-n* and the case vowel: *šarratum*, "queen," and *mātum*, "land" (both nominative case); but *šarrat mātim*, "queen of the land" (with "land" appropriately in the genitive case), and *šarratni*, "our queen." Adjectives are for the most part declined like substantives, although they exhibit a distinctive ending in masculine-plural forms. Table 3 shows the regular (free form) declensions of the substantives *šarrum*, "king," and *šarratum*, "queen," and the adjective *ṭābum*, "pleasant," in Old Babylonian. Final *-m/-n* were lost in the late stages of both Old Assyrian and Old Babylonian, so that in later phases of Akkadian the singular *šarru/šarri/šarra* is found, for example. Still later in the history of Akkadian, the case system itself became defunct as final vowels were lost. (In the literary dialect called Standard Babylonian, the nominative and the accusative are both usually written *šarru*; one form, the earlier oblique, is usually written for plurals regardless of case.)

In addition to their free and bound forms, substantives and adjectives also enter into a syntactic construction called the predicative form (also called the stative, with adjectives), in which the base of a substantive or adjective is followed by a special set of pronominal suffixes; the two elements constitute a verbless clause, with the substantive or adjective as predicate and the pronominal suffix as subject: *šarrāku*, "I (*-āku*) am king (*šarr-*)"; *ṭābat*, "it (feminine; *-at*) is pleasant (*ṭāb-*)"; *rabiānu*, "we (*-ānu*) are great (*rabi-*)." That this is an ancient construction is suggested by the appearance of a similar construction in Old Egyptian; in other Semitic languages, however, it fell out of use except in restricted circumstances.

TABLE 3. *Old Babylonian Noun Declension*

			"PLEASANT"	
	"KING"	"QUEEN"	Masc.	Fem.
Singular				
Nominative	*šarrum*	*šarratum*	*ṭābum*	*ṭābtum*
Genitive	*šarrim*	*šarratim*	*ṭābim*	*ṭābtim*
Accusative	*šarram*	*šarratam*	*ṭābam*	*ṭābtam*
Dual				
Nominative	*šarrān*	*šarratān*		
Oblique	*šarrīn*	*šarratīn*		
Plural				
Nominative	*šarrū*	*šarrātum*	*ṭābūtum*	*ṭābātum*
Oblique	*šarrī*	*šarrātim*	*ṭābūtim*	*ṭābātim*

Akkadian verbal morphology is complex, as in other Semitic languages. The verbal "root" usually consists of three consonants, as in *r-k-b*, "ride." There are four main finite forms (or tenses, or aspects): (1) an imperfective form denoting the present, the future, the habitual or circumstantial past, and a variety of modal functions, that is characterized by doubling in the second of the three root consonants, as in *arakkab*, "I ride/am riding/will ride/used to ride (etc.)," in which the prefix *a-* denotes "I" (cf. *nirakkab*, "we ride," with *ni-* for "we"); (2) a punctive form called the preterite, for the past, as in *arkab*, "I rode, did ride"; (3) the perfect, a form in which *-t-* is infixed after the first root consonant, as in *artakab*, "I have ridden"; and (4) the imperative *rikab*, "ride!". The imperfective form *arakkab* and the preterite *arkab* were undoubtedly inherited essentially unchanged from common Semitic. Akkadian shares the *arakkab* form with Ethiopian and modern South Arabian Semitic languages (compare classical Ethiopic *'ərakkəb*, "I attain"), but the form was lost in the Central Semitic languages (such as Arabic, Hebrew, and Aramaic). The preterite form *arkab* is found in most other Semitic languages in restricted uses, but has been replaced as the main past-tense form by a conjugation in which the subject pronouns are indicated by suffixes rather than prefixes (derived ultimately from the predicative form of Akkadian, discussed above), as in Arabic *rakibtu* or Hebrew *rəḵaḇti*, "I rode." The form called the perfect is not found in other Semitic languages and is generally considered an Akkadian innovation. Finite verbs may be marked with a morpheme called the ventive, which indicates motion or activity in the direction or proximity of the speaker: *illik*, "he went," but *illikam*, "he came"; *tuṣi*, "you went forth," but *tuṣiam*, "you came forth." The ventive is unknown in other Semitic languages and its presence in Akkadian may reflect the influence of Sumerian.

In addition to the finite forms there is a verbal noun or infinitive, *rakābum*, "to ride"; an active participle *rākibum*, "riding, rider"; and a verbal adjective *rakbum*, "ridden." These forms have analogues or parallels in the other Semitic languages.

In common with other Semitic tongues, Akkadian exhibits the modification of verbal roots, by means of prefixes or other changes, to produce a series of augmented stems with meanings derived more-or-less predictably from that of the basic stem; for example, from the basic form *parāsum*, "to separate," are derived a passive verb with a prefixed *n*, *naprusum*, "to be separated"; a causative verb with a prefixed *š*, *šuprusum*, "to cause to separate"; and an iterative verb with an infixed syllable, *pitarrusum*, "to separate repeatedly." The last of these is an Akkadian innovation, unknown elsewhere in Semitic.

In many features of syntax Akkadian resembles other Semitic languages closely. For example, attributive adjectives follow their head nouns and must agree with them in gender, number, and case; and verbs must agree with their subjects in gender and number. Akkadian makes frequent use of a

genitive chain involving juxtaposition of two nouns to indicate governance of one by the other, the lead or governing noun appearing in the bound (construct) form, as in *šarrat mātim*, "queen of the land" (see above); but a pronominal form, *ša*, also evolved for the expression of the same relationship, as in *šarratum ša mātim*, "queen of the land" (a similar development occurred in many other Semitic languages).

In other syntactic features Akkadian deviates markedly from its Semitic relatives. In all prose dialects and texts, the verb occupies the final position in the sentence, a feature undoubtedly borrowed from Sumerian: *šarrum ekallam ina ālim ibni*, "king-palace-in-city-built" (i.e., "the king built a palace in the city"). Already noted above was the use of the predicative construction in verbless sentences in which the predicate is an adjective or a noun: *Ḫammurapi rabi*, "Hammurabi is great"; *šarrāku*, "I am king." There are two main clause coordinators: *u* (Semitic *wa-*) connects nouns in phrases (*šarrum u šarratum*, "king and queen") and clauses that are not semantically connected (*abni u arkab*, "I built and I [also] rode"), whereas the enclitic particle *-ma* connects clauses in which the first is logically subordinate to the second (*allikam-ma abni*, "I came and then built" or "having come, I built"). The use of *-ma* is so common that the wide range of subordinating conjunctions is used only infrequently (subordinate clauses, like other parts of speech, usually precede the main-clause verb). The syntax of the infinitive is complex; for example, the phrase "on reaching the town" may appear in the following three forms: *ina kašād ālim* (lit., "in the reaching of the town"), *ina ālim kašādim* ("in town-reaching"), *ālam ina kašādim* ("the town in reaching").

The majority of the lexicon in all Akkadian dialects is inherited from common Semitic. In the earliest period, however, there are already many loanwords from Sumerian, nearly all of which are nouns, covering a wide semantic range. Beginning in the Neo-Assyrian and Neo-Babylonian periods, many Aramaic words begin to enter the language as well.

[*See also* Akkadians.]

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AKKADIANS. Although the origin of the term is unknown, *Akkadians* refers to a Semitic-speaking people living in northern Babylonia in about 2400–2100 BCE. The term may derive from a city and its surrounding territory, for which the earliest spellings are Agade or Aggide, later Akkade or Akkad. By the end of the third millennium, the land of Akkad meant northern Babylonia, from north of Nippur to Sippar. However, during the early second millennium BCE, the name *Akkadians* broadened to mean the indigenous population of all of Babylonia, as opposed to Amorites. By the first millennium BCE, Akkad had become a literary synonym for Babylonia. Modern scholars call the language of the Akkadians Old Akkadian, to distinguish it from *Akkadian, the ancient name, used from the early second millen-

nium onward, for the Semitic language of Assyria and Babylonia and its numerous dialects. The term *Akkadian period* usually refers to the 150 years (c. 2334–2193 BCE) defined by the reign of five kings of the Akkadian, or Sargonic, dynasty (hence also called the Sargonic period). Some scholars add another fifty years to this to include later kings of the city Agade (Akkade), thus overlapping the Late Akkadian and Post-Akkadian, or Gutian, periods. The broader meanings of *Akkad* and *Akkadian* were consequences of political and military expansion of the Sargonic dynasty. *Babylonian* and *Assyrian* expanded from local to regional terms, with their respective empires, are later examples of the same process.

Prior to the Sargonic dynasty, northern Babylonia was part of a larger Semitic-speaking cultural horizon that stretched west into northern Syria from its Mesopotamian center at Kish, perhaps as early as the Early Dynastic I period. The Akkadians may have been an eastern group of this population, perhaps centered around the confluence of the Diyala and the Tigris Rivers. This is only a hypothesis, for, according to surface surveys, the Diyala region was only sparsely populated in the Akkadian period. The relationship between the Akkadians and the earlier, more widely distributed Semitic-speaking population of greater northern Mesopotamia remains obscure.

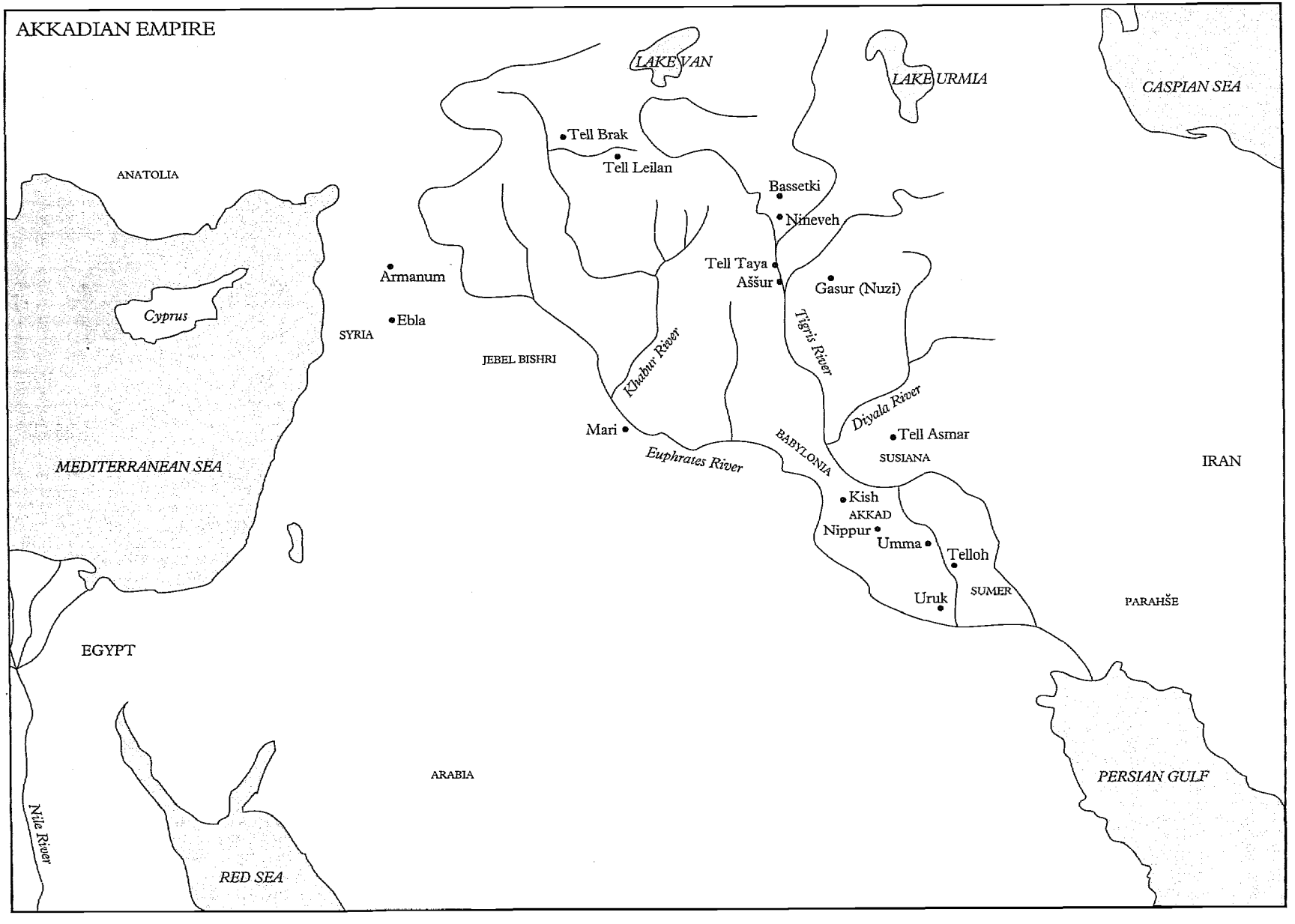
In the absence of epigraphic data, Akkadian period sites are often difficult to distinguish from those of earlier or later periods; as a result, analysis of settlement patterns may be based on sketchy evidence. Archaeological surveys suggest that during the Akkadian period the population of northern Babylonian cities and towns increased at the expense of villages. These findings could imply centralization of government and production. In contrast, the central Euphrates floodplain witnessed a decline in the number and size of large urban centers but an increase in the number and size of medium-sized towns and smaller villages (Robert McC. Adams, *Heartland of Cities*, Chicago, 1981, p. 139). Although this can be viewed as a long-term natural development, a contributing factor could have been aggression by the Akkadian dynasty against the older city states in this region, with the creation of extraurban administrative centers. The resulting pattern—centralization of rural landscapes and decentralization of potentially competitive urban landscapes—needs verification.

Topographic lists of northern Babylonian settlements permit reconstruction of nine important waterways branching southward from the area of Sippar, between the modern courses of the Euphrates and Tigris Rivers, with a string of towns along each and a sparsely populated hinterland between (Douglas Frayne, *The Early Dynastic List of Geographical Names*, American Oriental Series; vol. 74, New Haven, 1992). Communication northwest followed the Euphrates upstream; one route east led to the Iranian plateau through the Hamrin Valley, where extensive remains of the Akkadian period have been found.

Northern Babylonia depended on a mixed economy of agriculture and husbandry. During the Akkadian period there is substantial epigraphic evidence for control of production through local centers of collection, preparation, and redistribution of food for workers; production, storage, and distribution of implements; and coordination of agriculture. Fields were allocated to plowing teams; seed and feed used for draft animals and the collection, distribution, and transport of the harvest, locally and to the capital, were recorded; and flocks and herds were maintained (shearing, culling, counting, fattening).

The history and culture of the Akkadians are mostly associated with the Sargonic Empire, a military, political, and cultural unification of Mesopotamia and North Syria that is often considered the first of the great empires or territorial states in Mesopotamian history. The founder of the dynasty was Sargon (Sharrukin) of Akkad (so called to distinguish him from the two later Assyrian kings referred to as Sargon I and II). According to one legendary account, he was cupbearer to a king of Kish. Thwarting a murder plot by his master, Sargon made himself king, taking the title "king of Kish," which implied suzerainty over northern Babylonia and perhaps beyond. He defeated the principal ruler in Sumer, Lugalzagesi king of Uruk, and thereby united Babylonia under one rule. He invaded southwestern Iran in several campaigns and turned north and northwest to Syria and Anatolia, stating in his inscriptions that Mari and Ebla became subordinate to him. He is credited with building up a capital city, Akkade (often spelled Agade in modern books, to distinguish it from the region of Akkad). The city's location has not been identified, but it may lie east of the confluence of the Tigris and Diyala Rivers, although a location near Kish has been proposed. In an inscription he boasts that he made Akkadians governors throughout his conquered lands. Sargon's life, reign, and exploits became the subjects of a richly embroidered literary tradition in later Mesopotamia, including epic poetry and a tale that he was born in secret to a priestess and set adrift in a basket. A stela, now in the Louvre, is the major surviving monument of his reign; his commemorative inscriptions are best known from copies prepared by Babylonian scholars centuries after his death. Sargon was remembered in later ages as the archtypical successful warrior-king; it is for him that the dynasty is named Sargonic (to be distinguished from Sargonid, referring to Sargon II of Assyria and his successors).

Sargon's son and successor, Rimush, devoted much of his nine-year reign to suppressing revolts in Sumerian cities. His inscriptions claim the execution and enslavement of tens of thousands of people. Fragmentary stelae showing marching soldiers, parading and killing captives may date to this reign or later (e.g., the Victory Stela from Telloh at the Louvre, a fragment at the Boston Museum of Fine Arts, and the Nasiriyyah stela, the last perhaps commemorating an Anatolian campaign by a later king). Rimush was murdered in


AKKADIAN EMPIRE
LAKE VAN
LAKE URMIA
CASPIAN SEA
Tell Brak
Tell Leilan
ANATOLIA
Bassetki
Nineveh
Armanum
Tell Taya
Aššur
Gasur (Nuzi)
Cyprus
Ebla
SYRIA
JEBEL BISHRI
Khabur River
Tigris River
Diyala River
Mari
Tell Asmar
MEDITERRANEAN SEA
Euphrates River
BABYLONIA
SUSIANA
IRAN
Kish
AKKAD
Nippur
Umma
Telloh
Uruk
SUMER
PARAHŠE
EGYPT
ARABIA
PERSIAN GULF
Nile River
RED SEA

a palace conspiracy and succeeded by his brother, Manishtushu.

Manishtushu restored his father's control over southwestern Iran, where an expansionist state, Parahše (Marhaši), had established itself. He also launched a naval campaign in the Gulf, among the results of which was the importation of blocks of diorite. A group of statues from his reign carved in this hard medium marks the emergence of what is called the Akkadian style in sculpture: life-sized or larger naturalistic, but idealized portraits of the ruler that convey a sense of serene muscular strength and unchallenged power. The style and medium were imitated for centuries thereafter. Another important monument of his reign, called the Obelisk of Manishtushu, records the king's purchase of large tracts of land from families in western Babylonia, presumably for redistribution to his officers and household in return for their service. He too was murdered in a palace conspiracy after a reign of fifteen years, to be succeeded by his son, Naram-Sin.

Like Sargon, Naram-Sin became the subject of legendary and monitory literature after his death, so that the events of his thirty-seven(?)-year reign are difficult to interpret. He was a successful warrior-king whose conquests established his hegemony over the upper Gulf, southwestern Iran, Assyria, the Upper Euphrates and Tigris into Anatolia, and North Syria to the Mediterranean coast. In his inscriptions he claims to be the first to destroy Ebla and Armanum, the latter a heavily fortified city in the same region, perhaps modern Aleppo. Major religious and administrative structures of this period at Tell Brak in the Khabur region show that his policy was one of direct rule in this area, perhaps intending to develop its agricultural potential. Mass production of standardized pottery at Tell Leilan, also in the Khabur, suggests the use of a rationed labor force or garrison there at about this time; changes in local settlement patterns could be the result of enforced centralization. [*See* Brak, Tell; Leilan, Tell.]

Throughout his reign, Naram-Sin faced important rebellions and external attacks, some on a scale that gained supernatural character in later literature. One was led by a Sumerian city, the name of which is uncertain, and included Amorite tribesmen and perhaps the land of Magan (Oman and the Iranian coastline opposite); it thus seemed a worldwide event to Mesopotamian contemporaries. Another rebellion was centered on a pretender at Kish, with support at Nippur, Uruk, and elsewhere. In nine battles, Naram-Sin defeated a coalition of foreign rulers and Mesopotamian allies. These dramatic events were retold as cautionary tales in later literature, while in his own lifetime they resulted in his deification as savior of his city, Agade. He led an expedition to the sources of the Tigris and reconquered Susiana, imposing a treaty on the ruler there. His reign marks the apogee of the Sargonic state. A standardized bureaucracy spread throughout Mesopotamia, where former city-states were reorganized as provinces and Naram-Sin's progeny served as governors and priestesses. His rebuilding of the Temple of Enlil at Nippur may have inspired a Sumerian narrative poem called the Curse of Agade, which attributes the later fall of the empire to Naram-Sin's hubris and falsely projects it to his reign.

The art of this period is exemplified by a stela of Naram-Sin, now also in the Louvre, that shows the deified king invading a mountainous region. Its brilliant design and execution make it one of the most significant works of art of its millennium to have survived. [*See* Stelae.] This and various other rock reliefs projected the authority of the ruler and the death and enslavement in store for his enemies. Cylinder seals used by courtiers were exquisitely engraved with combat scenes and representations of wild beasts in heraldic poses. A mutilated nude male figure, found at Bassetki, was

AKKADIANS. Figure 1. *Bronze head from Nineveh.* Iraq Museum, Baghdad. (Scala/Art Resource, NY)

cast in more than 160 kg of copper, proof of the extraordinary artistic and technical achievements of the period, further exemplified by a bronze head of an Akkadian ruler found at Nineveh (see figure 1). A later poetic narrative speaks of the treasures accumulated in the capital; the wealth and resources available to the royal establishment are reflected in administrative documents of the period as well, some of which list magnificent gifts to the royal family.

Naram-Sin was succeeded by his son, Sharkalisharri, the events of whose twenty-five-year reign are obscure. He may have faced a rebellion at his accession. As crown prince he directed the reconstruction of the Temple of Enlil at Nippur, whose work he may have completed as king. His territories shrank, although he claimed victory over the Elamites in the Diyala region. Sargonic administrators must have left Susiana by this time and the former governor of the area, Epir-mupi, may have set up an independent kingdom. Sharkalisharri also fought the Amorites near Jebel Bishri, as well as the Gutians, a people of uncertain origin whom the Mesopotamians considered barbarians. The picture is of an embattled state falling back toward its capital. Its final collapse may have been the result of internal weaknesses, rebellion, and foreign attack, especially, according to Sumerian tradition, by the Gutians. Dessication and abandonment of former Akkadian centers in the Khabur, such as Tell Leilan, may also have been a significant factor (Harvey Weiss et al., "The Genesis and Collapse of Third Millennium North Mesopotamian Civilization," *Science* 261 [1993]: 995–1004).

There followed a short interregnum: a letter, apparently from a ruler of this period, asserts "There is a king in Agade," whereas the Sumerian King List says "Who was king, who was not king?" A local dynasty was established at Agade that ruled for about forty years. One of its kings, Dudu, campaigned against Umma and Susa, but Agade was thereafter an unimportant place, although attested into the Achaemenid period.

One major legacy of the Sargonic dynasty to Mesopotamia was the realization of the political and economic possibilities of a territorial state, transcending the city-state pattern typical of Sumer previously. Along with this came political vocabulary, military and management strategies, and a grandiose ideology of the ruler that were to be emulated, denounced, and admired for fifteen hundred years.

Prior to the Sargonic dynasty, the Akkadians presumably shared the religious convictions of the Semites of northern Mesopotamia and Syria, which often accorded special veneration to the sun (Shamash), the moon (Sin), and the planet Venus (Ishtar), especially as "lady of combat" (Annunitum). The inclusion of Sumer in the Sargonic state brought with it the Sumerian city-states' pantheon, including Enlil, chief god of Sumer, thereafter used as a term for "supreme deity." Sumerian Inanna, a goddess of reproduction and fertility, was fused with Ishtar to create a complex, contradictory persona. Some deities important in North Syria, such as Adad (the thunder god) and Dagan (popular in the Upper Euphrates region) were less important in northern Babylonia, suggesting greater Sumerian than Syrian influence there. A deity referred to simply as God (Il or Ilum) is sometimes compared to the western El or the later Babylonian Ilum, in the sense of "personal god." Local deities in northern Babylonia included Zababa (at Kish); Ilaba, a patron deity of the dynasty; and Nergal (at Cutha). Save for Nergal, little or no mythology is known of these figures.

The most important religious compositions of the period are attributed to Enheduanna, daughter of Sargon and high priestess of the moon god Sin at Ur. These include a cycle of Sumerian hymns in honor of important Sumerian sanctuaries, perhaps with the intent of promoting Sumero-Akkadian syncretism. Among her other works is a narrative poem describing her personal humiliation at the hands of a local pretender and her appeal to Ishtar, who reinstates her and destroys her enemies. This is but one example of many where Ishtar is regarded as holding the royal family in special favor: both Sargon and Naram-Sin are said to have been loved by Ishtar, and the Sargonic dynasty is sometimes referred to in later sources as Ishtar's period of ascendancy.

Mesopotamian religious architecture of this period is poorly known, and, where identified, shows no significant changes in plan from previous phases of established temples. A religious structure at Tell Brak contained a large courtyard that may have been used for some important public event. Naram-Sin introduced religious veneration of the living ruler by proclaiming himself god of his city, Agade.

Secular architecture is also poorly known, for various buildings formerly considered Sargonic in date, such as the northern palace at Tell Asmar, the palace at Tell al-Wilayah, and the Old Palace at Aššur, are now generally dated to earlier or later periods. A large building at Tell Brak, which incorporated some bricks stamped with the name of Naram-Sin, remains the most securely dated building of the Akkadian period. Tell Taya is a town-sized settlement of this period, allowing the reconstruction of house and street plans and a group of administrative buildings.

Akkadian society may originally have been articulated by extended families reckoning their descent from a common male ancestor and holding large areas of arable land in communal ownership, with shares allotted to individuals and nuclear families. An innovation of the Sargonic dynasty was the creation of royal estates and their distribution to members of the royal family and ruling elite. These elites in turn leased and subleased parcels for rental payments in cash and kind. Akkadian estates have been identified at Gasur (Nuzi), in Akkad (Umm el-Jir), in Sumer (Mesag Estate, near Umma), and Susa. An Akkadian stela from Girsu (Telloh) records distribution of an immense area of land to Sargonic officials, including towns and villages.

Records of internal commerce show the free circulation

of silver in private hands and government establishments and its use as a standard of valuation and medium of exchange. Commodities bought and sold included foodstuffs, slaves, real estate, aromatics, metals, and finished products such as wagons and boats. There are hints of international venture trade by commercial families that took advantage of the Sargonic occupation of such entrepôts as Susa to purchase foreign commodities such as copper, tin, and semiprecious stones. Sargonic weights and measures spread, with the empire, to Syria and Anatolia. Foreign trade is known to Dilmun, Magan, and Meluḫḫa.

Extensive archival remains from all parts of Mesopotamia and from Susa illuminate management and recordkeeping techniques, using a distinctive calligraphy for official purposes. These archives shed light on such subjects as labor, animal husbandry, fishing, agriculture, and production (sometimes on a gigantic scale); on commodities such as pottery; and on comestibles such as bread and beer. These archives mostly date to the reigns of Naram-Sin and Sharkalisharri and include records of Akkadian estates, as well as urban and regional administrative centers. Family and private archives include records of buying, selling, and leasing land; making loans at interest; depositing valuables; managing livestock; and contracting to carry out government services. Sargonic letters make requests and orders for goods and services, bring news, and make complaints and petitions.

The Akkadian rulers drew from their northern environment traditions of statecraft dating to the earliest kings of Kish. These they introduced to Sumer, along with Akkadian ideas of nobility, land tenure, and military organization. On the other hand, much of Akkadian literate and scholastic tradition was drawn from Sumer, either directly through conquest, or indirectly through long-standing Sumerian cultural influence in the north. This means that a north–south influence went in both directions over many centuries.

The Akkadian achievement was to be an important ideological concern in later Mesopotamia. The rulers of the successor state of the third dynasty of Ur distanced themselves from it, although they adopted its management techniques, whereas the dynasty of Eshnunna adopted Sargonic royal names. To the Mesopotamians, the Sargonic, or Akkadian, period was a turning point in their history.

[*See also* Akkade; Diyala; Ebla; Kish; Mari; Mesopotamia; *article on* Mesopotamia; Nippur; Taya, Tell; Ur; *and* Uruk-Warka.]

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AKKO (Ar., Tell el-Fukhar), a prominent 50-acre tell on the northern bank of the Naʿaman River in Israel, near its debouchment into the Mediterranean Sea at the medieval-modern port of Akko (map reference 1585 × 2585). It was excavated from 1973 to 1989 by Moshe Dothan on behalf of Haifa University, with the participation of the University of Marburg, Germany. Occupation levels from the Middle Bronze Age to the Roman era were revealed.

Tel Akko was evidently a major port in the Middle Bronze Age, heavily defended by a massive *terre pisée* embankment and glacis connected with a cyclopean wall 3.5 m wide with towers. A large fortress with a nearby elite tomb is associated with those early defenses, all dated by the excavator to the late MB I. To this horizon apparently belong sherds of Cypriot White Painted III–IV pottery, among the earliest such imports known in the Levant.

Early in MB II the embankment and ramparts were augmented, and a three-entryway sea gate, was constructed down along the northwest slopes. In MB III, Akko seems to have declined, and some of the defenses, including the gate, were abandoned. However, a number of tombs belonging

to this period have been found, both constructed and pit burials, as well as a rare type of stone-vaulted tomb. These tombs produced ceramic imports (some from Anatolia), weapons, scarabs, and jewelry.

In the Late Bronze Age some of the ramparts were reconstructed. From the first phase, in the early fifteenth century BCE, there is an elaborate tomb of ashlar construction, with Bichrome and Chocolate-on-White pottery. The phase seems to end in a destruction. LB II is witnessed by large, well-planned buildings, as well as numerous Cypriot and Mycenaean imports that point to prosperous trade. The site remained largely unfortified, although, according to a relief at Karnak, Rameses II destroyed a gate at Akko. The final LB levels are characterized by burials found in the abandoned fortress (building A), followed by silos and industrial installations of several types. Late Cypriot and Mycenaean IIIB pottery places this phase in the late thirteenth century BCE.

The beginning of the Iron Age appears to be marked by new settlers, although the remains consist largely of pits and workshops, with flimsy dwellings. Late Mycenaean IIIC: 1b pottery, as well as a scarab of Tawosert, queen of Egypt in about 1207–1200 BCE, places this occupation mainly in the early twelfth century BCE. The excavator suggests that the inhabitants were the Sherden, one group of the Sea Peoples known from the onomasticon of Amenemopet (c. 1000 BCE), who are said to have occupied the coast north of the *škl*. The eleventh and tenth centuries BCE are poorly attested.

There are more extensive remains from the Iron II period, including residences and several large public buildings. The site was destroyed by fire, probably by the Assyrians in the late eighth century BCE. Only scant remains survive from the Babylonian period, but in the Persian period Akko recovered, probably as a port again and an administrative center. Attic imports and some Phoenician inscriptions belong to this era. The Hellenistic period reveals a well-planned town, preserving the Persian building technique of ashlar construction interspersed with rubble fill: Roman, Byzantine, and Crusader remains have either been severely disturbed or have largely disappeared.

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ALALAKH (modern Tell 'Aṭchana), site located in the Turkish province of Hatay, near the mouth of the Orontes River, in the 'Amuq plain (36°19′ N, 36°29′ E). The site commanded the area's principal trade routes and was selected by C. Leonard Woolley in 1936 as a link between the early cultures of the Aegean and the Asiatic mainland.

The mound (750 × 300 m) is an oval, its axis being roughly northwest by southeast. The elevation slopes from about 9 m at the northwestern end to the level of the plain on the southwest. Horizontal excavation was concentrated in the north and northwestern parts of the mound, with several deep soundings providing a continuous sequence of seventeen architectural levels reaching back to the early second millennium BCE. The succession of temples, palaces, and town defenses confirmed the city's prominence, particularly during levels VII and IV. Those periods are noted for their royal archives, which identify the ancient site as Alalakh, capital of the province Mukish, vassal to the kingdoms of Yamḥad (modern Aleppo) in the eighteenth–sixteenth centuries BCE and Mitanni in the fifteenth–fourteenth centuries BCE. [*See* Alalakh Texts; Aleppo; Mitanni.] Providing key synchonisms with the kings of Yamḥad, Mari, Babylon, Ḫatti, Mitanni, and Egypt, these archives are central to discussions of absolute chronology for the second millennium BCE and have been cited, in particular, in support of the "middle" chronology. [*See* Mari; Babylon.] The two archives also reveal changes in social structure and ethnic composition that, combined with the material remains, bear, in particular, on the problem of Hurrian infiltration and culture. [*See* Hurrians.] Subsequent spells under Hittite suzerainty between levels III and I ended in the city's final destruction, tentatively correlated with the onslaught of the Sea Peoples. [*See* Hittites.] Level O represents a brief attempt at recolonization in the twelfth century BCE.

History of Excavation. Woolley, on behalf of the British Museum in London, conducted eight seasons of excavation between 1937 and 1939 and 1946 and 1949. His first exploratory soundings, begun as an offshoot of the excavations at the Mediterranean port of Tell al-Mina, were followed in 1937 by more extensive investigations of the level I–IV residential houses and associated citadel wall. The level IV palace and archives, discovered at the end of this season, were fully excavated in 1938, when investigations along the northern and northwestern ridge of the tell exposed older fortifications of VI and V as well as the city gate of VII. The fourth season (1939) was marked by the discovery of palace VII

and its archives beneath the private houses of IV–VI. Directly west of the palace. Woolley encountered the temple precinct, which became the focus of the first postwar season in 1946. By the end of the fifth season, most of levels I–VII had been uncovered, and a sounding below palace VII exposed precursors in levels VIII and IX. Extended down to the water table in 1947, this deep sounding produced seven further levels, X–XVI; a second sounding in the temple precinct reached virgin soil below level XVII, under the present water table. The last two seasons were devoted to problems of stratigraphy in the temple sounding and the fortifications of levels I–VII. [*See the biography of Woolley.*]

The finds were divided mainly between the British Museum in London and the Hatay Museum in Antakya, but some also went to the Ashmolean Museum at Oxford University and to the Universities of Sydney and Melbourne, Australia. The field notes and negatives are stored at the Institute of Archaeology, London. The results of the excavations were published in preliminary reports between 1936 and 1950. Woolley's final publication in 1955 followed two volumes on epigraphy by Sidney Smith (1949) and Donald J. Wiseman (1953). Much of the secondary literature is devoted to problems of stratigraphy and chronology.

Stratigraphy and Chronology. The absolute chronology at Alalakh hinges on the dating of the archives in levels VII and IV. That dating, in turn, depends on the reconstruction of the local genealogy and on synchronisms with external king lists as well as ceramic and glyptic assemblages.

Level VII constitutes an architectural phase represented by a city gate, ramparts, a temple, and a palace. Archaeologically, level VII is considered coterminous with the palace, whose archive of 175 tablets spans at least two rulers at Alalakh, coinciding with at least five rulers at Yamḫad. Both the palace archive and architecture suggest a short occupation of fifty to seventy-five years. Originally, Smith (1940), followed by Woolley (1953, 1955), fixed the time span of VII at 1780–1750 BCE. In his assessment, based on ceramic and glyptic evidence as well as the Venus tablets of Ammiṣaduqa, Smith assumes a synchronism between Yarimlim of level VII, Hammurabi of Babylon, and Zimrilim of Mari.

Following the publication of the texts in 1953, it transpired that the contemporary of Hammurabi and Zimrilim was Yarimlim of Yamḫad, grandfather of Yarimlim of Alalakh to whom the oldest palace records pertain. The dates were revised to about 1720–1650 BCE by advocates of the "middle" chronology (see above). Following Benno Landsberger ("Assyrische Königsliste und 'dunkles Zeitalter,' " *Journal of Cuneiform Studies* 8 [1954], p. 8), Albrecht Goetze (1957, p. 23) linked the destruction of VII with Muršili I and the sack of Babylon during the reign of Samsuditana. However, texts found at Boğazköy in 1957 reveal that it was Ḫattušili I who destroyed Alalakh during his second Syrian campaign. [*See* Boğazköy.] Proponents of the "low" chronology question the accuracy of the Venus tablets and dispute the glyptic and ceramic parallels between Alalakh VII and Egypt's twelfth dynasty. Instead, they would correlate them with Middle Bronze IIB/C material in Palestine. The introduction of Bichrome ware, Base Ring I, and Cypriot Monochrome in VIB suggests a destruction date of about 1575 BCE or later for VII, which would thus span the late seventeenth–early sixteenth centuries BCE. Despite reservations about the dating of Bichrome Ware based on its presence in Megiddo stratum IX, which ended in destruction supposedly at the hands of Thutmose III in 1468/67 BCE, recent evaluations of historical and archaeological data support the "low" chronology.

Woolley's proposed hiatus between the destruction of level VII and the beginning of level VI is also questioned. Levels VI and V were associated by Woolley with two rebuildings of the fortress, each of which comprised two distinct phases: VIA and B, VA and B. The correlation of VI–V with the MB IIC and Late Bronze I period (c. 1575–1460 BCE) is supported by ceramic parallels from recent excavations at Tell Hadidi and Mumbaqat. [*See* Hadidi, Tell.]

The beginning of level IV, according to Woolley, is marked by the construction of the Niqmepa palace, which was destroyed in the reign of Niqmepa's son, Ilimilimma, before the end of level IV. Because, contrary to Woolley's assumption, six of the three hundred tablets in the palace archive pertain to Idrimi (once considered to be Niqmepa's grandson but now recognized as his father), it is uncertain who built the palace. Idrimi's date derives from his inscribed statue, although the text, if composed posthumously, has little historical value. Vassal to Parrattarna, king of the Hurrians, and indirectly linked with the Hittite king Zidanta, Idrimi is now dated to about 1470 BCE. In recent studies (Gates, 1981, pp. 8–9; Gates, 1987, p. 76; Heinz, 1992) he is associated with the southeastern wing (C1–9) of the palace and the triple *serai* (Tk. [orig., Pers.], "palace") gate, both assigned to level VB. Woolley's 1460/50 BCE date for the start of level IV conforms with the relative dating of the Mitannian rulers and the dates of Mediterranean imports in IV. Niqmepa is vassal to Sauštatar, king of Mitanni, whose seal occurs at Nuzi, where it may have been used as an heirloom. [*See* Seals; Nuzi.] The absence of Bichrome Ware in Alalakh IV, combined with the presence of Cypriot Base-ring II Wares and a Mycenaean IIIA sherd, places the destruction of palace IV after 1425 BCE. The end of level IV, attributed to an invasion by Šuppiluliuma I, was once dated 1370 BCE but might be as late as 1340 BCE, according to the "low" chronology.

Level VII provides an end date for levels XVII–VIII encountered in two deep soundings. Woolley's correlation between these two soundings, however, was based on the sequence of structures below VII and is currently challenged by a comparative study of the pottery (Heinz, 1992). In both soundings, levels IX–VIII represent subphases of VII. Whereas in the palace sounding, levels XVI–XIV = XIII, in the temple sounding, levels XVI–XV = XIV and XI = X.

Woolley's original fourth-millennium date for the beginning of the "Archaic" levels was questioned as long ago as 1957 by Machteld J. Mellink (review of Woolley, *Alalakh*, in *American Journal of Archaeology* 61 [1957]: 395–400). Her observation that the uniform ceramic assemblage of XVII–VIII matches the early MB repertoire has since been confirmed by several studies drawing on comparative evidence from recent excavations, in particular at Tell ed-Dab'a in the Egyptian Delta, and Tell Mardikh/Ebla, Tell Habuba Kabira, Tell Hadidi, and Mumbaqat in Syria. [*See* Dab'a, Tell ed-; Ebla; Habuba Kabira.]

The uppermost levels, III–I, share ceramic elements. The destruction following level II, which contained Late Cypriot IIB ware, signals the end of a period of Hittite domination (c. 1350/40–1275 BCE). Level I is dated by the presence of Late Minoan IIIB pottery to the late thirteenth–early twelfth centuries BCE, preceding the arrival of the Sea Peoples.

Architecture. A circuit wall, city gate, and fortress enclosed a palace, a temple, and residential houses. Of these, only the palace and temple were traced down through the Archaic levels. While the temple location remained more or less fixed, the palace moved from the temple area to the city gate in the mid-second millennium BCE.

Middle Bronze IIA (levels XVII–X). The temple was traced back to level XIV, but best known is the temple plan of XIIA–B. Considered a precursor to the Neo-Hittite *bit ḫilani*, this multistoried temple included a cella and an anteroom fronted by a courtyard. In the palace sounding, level XII also produced the earliest remains of a monumental building with a colonnade, followed in levels XI–X by an imposing structure with a stairway and courtyard.

Middle Bronze IIB (levels IX–VII). The sparse architectural remains of levels IX–VIII are considered subphases of the temple and palace of level VII, which also includes a rampart, gate, and "fortress." The so-called Yarimlim palace is built in three sections on a terraced terrain along the city wall. The official quarter (rooms 1–13), embellished by basalt orthostats, contains the main entrance, courtyard, audience chamber, and archive room. It rises to the central block in which a stairway leads to the living quarters above. Both the audience chamber and the upper living room were divided by wooden columns on basalt bases between two projecting piers, a feature that recurs in levels IV–I. The walls were decorated by frescoes of architectural and naturalistic designs of Cretan inspiration. Stairs lead down to a possible hypogeum, which remains an enigma. The southern section probably served a domestic function.

The adjoining temple contained related tablets. Its unusually thick walls suggest an upper story; its plan, which consists of a shallow antechamber and deep cella with an altar aligned on a central axis with the entrance, is related to third-millennium North Syrian prototypes.

Also typical of Syria and Palestine in the MB II period is the "three-entrance" city gate framed by lateral towers crowning an earthern rampart or glacis. The gate's association with level VII is based on its relative position below the fort/fortress of level IV.

Middle Bronze IIC–Late Bronze I (levels VI–IV). Although the remains of levels VI and V were encountered in all areas of excavation, their subphases, A and B, were less apparent outside the fortress. The first major construction is the nine-room palace and triple (*serai*) gate of level VB, now associated with Idrimi, that were later incorporated as the south wing in Niqmepa's level IV palace. The separation of the palace from the temple and its relocation near the city gate indicate major social or political change. Its plan, comprising a central hearth room surrounded by smaller utility and storage rooms, is in the tradition of contemporary houses. Its main distinguishing feature is its monumental entrance with stairs and a columned portico. Polished basalt orthostats line the walls of the entrance and anteroom leading to stairs and an upper story. Like temple XII, this arrangement is seen as a precursor of the earlier *bit ḫilani* plan. Columned porticoes also mark two ceremonial rooms of the later extension built by Niqmepa's son, Ilimilimma, and recur in the fort. The level IV temple, superimposed on the sunken cella of temple V, resembles the axial plan of temple VII, which conformed to a local North Syrian tradition.

The town defenses, traced to levels V and VI, were only partially remodeled in level IV. The entrance leads through a narrow passage with two right-angle turns. It opens into a courtyard bordered on the northwest by the fortress, which is integrated with the gate buildings and contains formal rooms with columned porticoes.

Late Bronze IIA–B (levels III–I). Following the destruction of level IV, the fort and temple were rebuilt on a massive scale by the Hittite conquerers. It occupied the entire northwest quarter of the citadel, including the old palace area. Its destruction at the end of level II was succeded by a rebuilding on a smaller scale.

Temple III comprised two double-storied shrines with opposite orientations. In shrine A, the altar is located in the courtyard, with the cella, presumably, upstairs. Temple II marks a reversion to the axial plan of levels IV and VII. Temple I is a one-story building consisting of a large cella, antechamber, and courtyard. Apart from porticoed doors, its distinguishing features include a triple-niched cella in phase A and an annex in phase B.

Pottery. The ceramic evidence comes from all levels at Alalakh and supplements the tablets from levels VII and IV as a chronological index. Attempts to subject this material to statistical analysis have been thwarted by lack of information in the final report (McClellan, 1989), but comparative studies of the pottery assemblage have led to adjustments in Woolley's correlation between levels at Alalakh and their association with dated assemblages in Mesopotamia, Palestine, and the Aegean.

Middle Bronze IIA (levels XVII–X). The type index of levels XVII–X is "'Amuq-Cilician" ware, with its characteristic trefoil-mouthed jugs, carinated bowls, and high-footed

vessels decorated with a painted triglyph-metope frieze containing geometric, plant, and animal motifs. Dated parallels from northern Syria, Cilicia, and Anatolia range within the MB IIA period. From level XII comes a solitary "red-cross bowl," whose far-flung analogs date to the EB III period. Level X saw the introduction of Khabur Ware and gray burnished Ware, both characteristic of the MB IIB period.

Middle Bronze IIB (levels IX–VII). The burnished gray ware that began in level X is characteristic of IX–VIII but also occurs in levels VII–V. Khabur Ware, too, continues through VIII. The ceramic assemblage of VII is marked by the absence of painted pottery and by bowls and handleless pots with carinations and flaring rims.

Middle Bronze IIC–Late Bronze I (level VI A–B). The main feature of VI is the abrupt influx of Syro-Palestinian wares (black lustrous juglets, painted craters, and footed goblets), which together with Cypriot imports (Bichrome, Red-on-Black, and Monochrome ware in VIA; White Slip I and Base Ring I in VIB), provide a chronological indicator of the transition from the Middle to the Late Bronze Age.

Late Bronze IA–B (levels V–IV). Level V is marked by imported White Slip I and II, Base Ring I, late Khabur Ware, and Black Impressed Ware. The disappearance of Bichrome Ware and Khabur Ware in level IV and the introduction of Nuzi Ware have long overshadowed the transitional character of this level. In it, Cypriot imports (White Slip I and II, Base Ring II) increased, while new types appeared that became more common in levels III–I.

Late Bronze IIA–B (levels III–I). The white-painted Nuzi Ware blends into "Atchana Ware," a local variation whose shapes and decoration show strong Aegean affinities. In level II, the fashion for Cypriot wares is superceded by Mycenaean IIIA and B imports, the main ceramic element of level I.

Glyptic. The glyptic material from Alalakh comprises cylinder seals mainly but also scarabs. Actual cylinder seals span a broader time range and show greater variety. They are, however, qualitatively inferior to the seal impressions, which occur mainly on envelopes in VII and on tablets and jars in IV. These include seal impressions of the rulers of Alalakh, Yamḫad, and Mitanni. In VII, the standard compositional scheme comprises an inscription and three standing figures: the king/seal owner, a deity, and an interceding goddess. The style evolves from solid, delicately modeled figures (baroque) toward thinner, elongated figures executed in flat relief (rococo). Although locally produced, the designs show Egyptian, Babylonian, and Cappadocian as well as Aegean and Cypriot inspiration. The seal impressions from IV are in contrast with contemporary seals. Whereas the former reveal a preference for recut older or foreign products with distinctive designs, the latter, made of sintered quartz, are uniformly drill decorated, which characterizes the widespread Mitannian Common Style. There are local variations, of which the Alalakh group appears to be one.

The oldest cylinder seals belong to the late fourth–early third millennia. Once cited as evidence for the early dating of the Archaic levels, they are now recognized as antiques. The latest seals, showing figures with raised arms supporting the winged disk, are related to Hittite iconography, which, ultimately, however, derived from northern Syria.

Small Finds. As a result of numerous violent destructions followed by looting, few of the small finds were found in situ and their dates are largely open to debate. Composite statues were popular during VII, to judge by the stone heads and fragments from the floor of the temple. Most remarkable is the black diorite "head of Yarimlim," a priestly figure, whose beard and moustache may have been highlighted by paint or incrustation. Two crude basalt figures found in the northeast gate tower of level V belong to a growing number of statuettes from Syria, northern Mesopotamia, and the Levantine coast. They date to the middle and late second millennium BCE, and their contexts suggest a guardian function. The well-known seated statue of Idrimi, identified by its autobiographical inscription, was found broken and buried in the temple IB annex. Thought to have survived several centuries as an object of veneration, it is unclear whether the statue was ever mounted on the basalt lion throne found nearby. Made of white stone, with eyes and eyebrows inlaid in black stone, the statue's striking frontality was once considered characteristic of Hurro-Mitannian art. However, its tall hat and wraparound cloak with its thick rolled hem place it firmly in the Old Syrian tradition. Egyptian influence is seen in the somber facial expression and the position of the hands. More puzzling is the abstract sculpture of a ram's head from palace IV, whose only parallel comes from Nuzi. Evidence of Hittite supremacy during level III is manifested by the basalt slab of a Hittite royal relief showing Tudḫaliya and his wife, which was found inverted as a paving slab in temple I. Also of this general period, but considered typically North Syrian, are two cornestone lion sculptures with the head, chest, and forelegs carved in the round; the body is rendered in relief.

Most noteworthy is a bronze god seated on an eagle from the level VII gate and a bronze goddess from temple V. A ritual spearhead with molded lions gripping the blade is considered to be of Hittite inspiration. This and a ceremonial sword with an inlayed hilt and a lunate handle were found in level I and are difficult to date.

Alalakh's location at the heart of the ivory trade network is evidenced by the store of elephant tusks found in palace VII. Used primarily for appliqué or inlay, the raw material was worked by local craftsmen, although Egyptian and Hittite inspiration is apparent. The repertoire of luxury products includes statuettes, toilet boxes, and bowls from the temple, palace, and graves.

The discovery of faience vessels and polychrome glass beads in the level VII temple and palace is consistent with the MB glass and faience industry in Syria and Anatolia. [*See* Glass.] These precede the earliest glass vessels and the

first vessels of glazed terra cotta found in level VI. The glaze is alkaline, not lead, as once thought. Woolley's discovery of sherds of polychrome, core-formed glass vessels in level VI must be cited with caution: examples found outside Alalakh date to the mid-fifth century BCE. Other cast or molded glass objects reported from level VI, notably a nude-female plaque, are in keeping with external finds.

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DIANA L. STEIN

ALALAKH TEXTS. British-led archaeological teams, directed by C. Leonard Woolley from 1937 to 1939 and again from 1946 to 1949, excavated more than 515 texts and fragments at Tell ʿAṭchana, in northwestern Syria, the site of the ancient city of Alalakh. Of the seventeen levels of occupation found, dated from about 2400 to about 1195 BCE, two yielded nearly all the texts: level VII (mid-eighteenth–mid-seventeenth centuries) synchronized with the First Dynasty of Babylon; and level IV (fifteenth century) synchronized with the kingdom of Mitanni. Almost two hundred texts date to level VII, about three hundred to level IV, and about twenty to the succeeding levels.

All but a few of the texts are written in Akkadian cuneiform on clay tablets. A letter and a lengthy divination text are in Hittite, and an inscription of King Idrimi is written in Akkadian on a statue (see below). Nearly all the Akkadian texts were written locally in a western form of the language that betrays a Hurrian influence and, to a lesser degree, of the local West Semitic languages.

A few of the Akkadian texts were published preliminarily by Sidney Smith in 1939. The Hittite letter was published by H. Ehelolf in the same year. The statue inscription of Idrimi was published in a separate volume by Smith in 1949; it has been reedited by Edward L. Greenstein and David Marcus, by Gary H. Oller, and by Manfried Dietrich and Oswald Loretz. More than 460 texts were cataloged and most of them published in a handwritten copy and/or transliteration by Donald J. Wiseman in a 1953 volume, which included Oliver R. Gurney's transliteration of a lengthy Hittite divination report, and in a series of subsequent articles.

Forty-three additional, fragmentary documents from level IV were published in transliteration by Dietrich and Loretz in three articles appearing in 1969–1970. One text, a name list, remains altogether unpublished. The majority of the tablets are held by the Antakya Museum in Turkey; most of the rest are held by the British Museum.

The level VII tablets, mainly from the reign of Yarimlim and his son Ammitaqum, were, for the most part, discovered in the palace archive and in the temple. Most of the level IV tablets were found in the palace of Niqmepa, but outside the archive, strewn about the floors as though they were being removed to safety at the time the palace was burned.

The majority of the texts are lists: censuses by name and in some cases also by place and occupation; inventories; ration lists; landholdings; and others. Two level IV texts list women. There are contracts of town purchases, mainly from level VII, and deeds of the exchange of villages, mainly from level IV. Several contracts, issuing loans or giving credit—many by the king or his agent—take persons as surety, as at Nuzi. The king serves as magistrate, but in level IV he must also appear as a litigant before the Mitanni overlord. The last king of level IV, Ilimilimma II, adopts a man as his "father," providing him a son's service in life and death in return for a father's inheritance. A level IV marriage contract permits a man to designate a son other than the firstborn as principal heir, in accordance with practices at Nuzi and Ugarit. The presence of parts of the Mesopotamian lexical series ḪAR-*ra*=*ḫubullu* attests to a Babylonian scribal tradition.

The texts furnish an excellent picture of level VII and IV societies with respect to ethnicity, economic structure, and size. A substantial Hurrian sector in level VII becomes the predominant population group in level IV. The latter society is stratified into a small aristocracy, a middle class of "free(d) persons," and a heterogeneous lower class, including peasants and rootless ʿApiru.

In the level VII texts we find references to a certain Abban (or Abba-'Il), king of the north-central domain of Yamḫad, who granted Alalakh to his son Yarimlim as part of a division of power to decrease the chances of revolt. Yarimlim's gifts to the temple, apparently upon his accession, are also documented. Two treaties governing the extradition of fugitives are present in the corpus, one from level VII and another from level IV. In the latter treaty the Hurrian overlord, Barrattarna, oversees the agreement between two vassals, Pilliya, apparently of Kizzuwatna (Cilicia) and Idrimi of Alalakh.

The pseudoautobiography of King Idrimi was inscribed in 104 lines across the front of a statue of the subject that had stood, enthroned, in the sanctuary, and was securely buried nearby, apparently to protect it from the coming destruction that took place in level I. The text, which was composed in the mid-15th century by a well-known scribe in the palace of Idrimi's son Niqmepa, provides invaluable historical information within a unique specimen of ancient Syrian narrative prose. Its closest parallels are the Egyptian tale of Sinuhe and the biblical stories of Jacob, Joseph, Moses, and David. It tells how Idrimi, who escaped calamity in his native Aleppo with his older brothers, went on to live among ʿApiru in northern Canaan until he could return to the land of Mukish and, by the assent of Barrattarna, assume the kingship of Alalakh.

This and other level IV Alalakh texts are of particular value, for they illuminate what would have otherwise been a continuation of the "dark age" created by the lack of epigraphic sources for the sixteenth century BCE.

[*See also* Akkadian; Alalakh; Hurrians; *and* Nuzi.]

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EDWARD L. GREENSTEIN

ALBRIGHT, WILLIAM FOXWELL (1891–1971), the acknowledged "dean of biblical archaeology." Born to self-supporting missionary parents in Chile, Albright grew up in a strict, frugal Methodist family as the oldest of four boys and two girls. At the age of five, on furlough with his parents at his grandmother's Iowa farm, the nearsighted William caught hold of a machine rope that drew his left hand up into a pulley, injuring it severely. Thus handicapped, the boy, on returning to Chile, and unable to engage in sports, devoured his father's history and theology books. By age eleven he wanted to become an archaeologist but feared that by the time he was old enough everything would have been discovered.

The family returned to Iowa in 1903, and William attended a regular school instead of being tutored at home. In 1912 he was graduated from Upper Iowa University and spent the next year as a teacher in and principal of a high school in Menno, South Dakota, a Volga-German farming community. Realizing that he had no gift for teaching young pupils, he sent an application to Paul Haupt at Johns Hopkins University in Baltimore, Maryland. He enclosed proofs of an article of his that had been accepted by a German scholarly journal. The article dealt with an Akkadian word—he had in college taught himself Akkadian as well as Hebrew, and knew Spanish, French, German, Latin, and Greek. Haupt granted him a modest scholarship that enabled him to begin four years of study in Baltimore that he was to pass with brilliance.

Albright won the Thayer Fellowship for study in Jerusalem but was unable to use it until the end of World War I. In 1916, after earning his Ph.D., he received research grants and taught in Haupt's Oriental Seminary at Johns Hopkins. Late in 1918, he endured six painful months as a clerk in the army. Returned at last to his beloved books and teaching, he met his future wife, Ruth Norton, who subsequently earned her Ph.D. in Sanskrit literature in the Classical Seminary at Hopkins.

Albright arrived in Jerusalem at the beginning of 1920 for a decade of fruitful study, teaching, exploration, and excavation. He made his home at the American School of Oriental Research, now the William F. Albright Institute of Archaeological Research, where he and Ruth Norton were married in 1921. His three boyhood years spent living in the Atacama Desert of northern Chile were excellent preparation for life in the Near East, the place that had so early become the focus of his interest, study, and lifework.

Under Paul Haupt, Albright had been trained in higher criticism and a mythological approach to biblical subjects. The impact of being in the land of the Bible, as he led his students on walking and horseback tours, convinced him of the Bible's basic historicity, changing his focus and his writing. The *Bulletin of the American Schools of Oriental Research* (*BASOR*) was begun the same month he arrived, and for years its main content was his reports of his explorations and excavations, written in a popular style to generate interest and support. He was its editor from 1930 to 1968.

Albright first excavated at Tell el-Ful, the palace of King Saul at Gibeah. He also excavated at Tell Beit Mirsim for four seasons (1926–1932), which he believed to be biblical Debir (Israeli and other scholars prefer nearby Khirbet Rabud). Tell Beit Mirsim proved ideal for ascertaining a pottery chronology for western Palestine, as its layers of occupation were clearly separated by destruction levels. Albright's chronology is still standard. From 1929 to 1935, he also conducted "shoestring" excavations at Bethel and Beth-Zur—while commuting half-yearly between Baltimore and Jerusalem—and later excavated in South Arabia. He was chairman of the Oriental Seminary at Hopkins from 1929 until his retirement in 1958. At Hopkins he produced a cadre of scholars who became specialists in the numerous fields in which this giant had pioneered and made himself expert.

Albright published prolifically—his lifetime bibliographic total is more than eleven hundred books and articles. He received medals and other awards, and about thirty honorary doctorates in the United States and in many European countries. In 1969, on his last visit, he was given the honorary title of "Worthy [One] of Jerusalem," which had never before been given to a non-Jew. He had played a part in such "revolutionary" (his word) discoveries as the Ugaritic tablets (1929) and the Dead Sea Scrolls (beginning in 1947) and was founding coeditor, with David Noel Freedman, of the Anchor Bible project.

Albright died from multiple strokes just a few months after celebrating his eightieth birthday and receiving his final *Fest-*

schrift. He had been a legend in his own time, a pioneer archaeologist, and a historian of ideas, especially of religion, in the ancient Near East, and truly a genius.

[*See also* American Schools of Oriental Research; Beit Mirsim, Tell; Beth-Zur; Dead Sea Scrolls; Historical Geography; Rabud, Khirbet; *and* Ugarit Inscriptions.]

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LEONA GLIDDEN RUNNING
and DAVID NOEL FREEDMAN

ALBRIGHT INSTITUTE OF ARCHAEOLOGICAL RESEARCH. The W. F. Albright Institute of Archaeological Research (AIAR) in Jerusalem is the oldest American research center for ancient Near Eastern studies in the Middle East. Founded in 1900 as the American School of Oriental Research (ASOR) by its parent organizations—the American Oriental Society, the Society for Biblical Literature, and the Archaeological Institute of America—its purpose was to create an institutional base in Palestine in which scholars could pursue more efficiently and productively their research on issues relating to the Levant. In 1970, under the leadership of then ASOR president G. Ernest Wright, the school was separately incorporated and renamed after its most distinguished director, William Foxwell Albright. Today, AIAR is one of three institutes affiliated with ASOR, the others being in Amman and Nicosia. Support for AIAR is provided by its trustees, alumni, and a large constituency within the ASOR consortium of 150 institutions.

The present AIAR facility, constructed in 1925 for ASOR, is located 500 meters north of the old walled city of Jerusalem. It is within walking distance of the École Biblique et Archéologique Française; the British, German, and Spanish Schools of Archaeology; the Institute of Islamic Archaeology; the Nelson Glueck School of Biblical Archaeology of the Hebrew Union College–Jewish Institute of Religion; the Hebrew University's Institute of Archaeology; the Rockefeller Museum; and the Israel Antiquities Authority. This grouping of scholarly resources is an unparalleled concentration of human, bibliographic, and artifactual resources in Near Eastern studies.

The main objectives of the institute, with its long-standing tradition of academic freedom and excellence in scholarship, are to provide a comprehensive scholarly environment for qualified students and scholars in ancient Near Eastern studies; to advance the study of the literature, history, and culture of the ancient Near East, with an emphasis on the disciplines of the archaeology of Palestine and biblical studies; and to help educate the next generation of American scholars in ancient Near Eastern studies, with an emphasis on the training of archaeologists.

The importance of AIAR is measured by its critical contributions to the development of the discipline of Syro-Palestinian archaeology, in particular the archaeology of ancient Israel. These include advancements in excavation methodology, archaeological periodization, and stratigraphic and material culture analyses. They also include the results of the institute's major excavations and surveys, its pivotal role in the study of the Dead Sea Scrolls, and the impact of its distinguished alumni on the fields of ancient Near Eastern, biblical, and Judaic studies.

The institute's most productive periods have been under its five long-term directors. William Foxwell Albright (1920–1926, 1927–1929, 1933–1936) is considered the father of the discipline of Palestinian, or biblical, archaeology. Albright's Tell Beit Mirsim excavation reports (1932–1943) produced a pottery dating sequence that gave the emerging field of Palestinian archaeology a chronological foundation that is still used. The framework for this new discipline and the stimulus for its growth were provided by Albright's synthetic volumes on the archaeology of Palestine and religion of Israel (1942; 1949), and by his seminal articles on Hebrew and Phoenician epigraphy.

Nelson Glueck (1932–1933, 1936–1940, 1942–1947) identified more than 1,000 sites in his survey of Transjordan and produced the first scientific demographic synthesis of Moab, Ammon, and Edom, published in four volumes (1934–1951). This is still a primary textbook of the archaeology of Jordan, as is his volume on the Nabateans (1966), based on his excavation of Khirbet et-Tannur.

Paul Lapp (1961–1965) made a major contribution to the study of Palestinian pottery in his pioneering volume on the Late Hellenistic and Early Roman periods (1961). Also, his excavations at 'Iraq el-Amir, Tell er-Rumeith, Wadi ed-Da-

liyeh, Dhahr Mirzbaneh, Tell el-Ful, and Tell Ta'anach produced significant results for the Bronze and Iron Ages and the Hellenistic and Early Roman periods.

William G. Dever (1971–1975) is best known for his work at Tell Gezer and on three of the Gezer report volumes (1970–1986). His long-term research projects and publications on the material culture of the Early Bronze IV (Middle Bronze I) period, the chronology of Middle Bronze Age II, the Late Bronze II/Iron I transition, and his integrative studies emphasizing new directions in archaeology have become a major focus of study in the archaeology of ancient Israel. Continuing one of Albright's legacies, Dever has trained many of the new generation of American archaeologists presently working in the Middle East.

The AIAR's current director, Seymour Gitin, appointed in 1980, was a student of both Glueck's and Dever's and is known for his publications on the first millennium BCE at Tell Gezer (1990) and on the Iron II period at Tel Miqne/Ekron (1981–1995). Based on the work of his predecessors, he has built an extensive program that offers pre- and postdoctoral researchers multicultural experiences spanning the broad spectrum of Near Eastern studies. The program provides a unique opportunity for the exchange of ideas between the forty annual AIAR appointees, primarily from North America and Europe, and hundreds of researchers living and working in Israel and in other countries in the eastern Mediterranean basin. For many, including Palestinian and foreign scholars working in Arab countries, the institute is their primary contact with colleagues in Israel. The program, which annually involves more than three thousands participants, includes a series of eighty lectures, reports, seminars, workshops, field trips (local and abroad) and social events, and support for twenty-one ASOR-affiliated excavation and publication projects, among which are the long-term projects at Ashkelon, Caesarea, Lahav, Sepphoris, and the institute's excavation at Tel Miqne/Ekron, jointly sponsored with the Institute of Archaeology of the Hebrew University of Jerusalem. The AIAR also has a publications program, an extensive research library, laboratories, and living accommodations for thirty-four people.

To further expand the scope of interregional scholarly collaboration, AIAR recently initiated an international research project, "The Neo-Assyrian Empire in the Seventh Century BC: A Study of the Interactions between Center and Periphery." Designed to investigate the growth and development of the Assyrian Empire, its participants include researchers who have worked on Cyprus and in Egypt, Greece, Iran, Iraq, Israel, Jordan, Spain, Syria, and Turkey. The institute has also created a long-term joint research, lecture, field trip, and fellowship program with the American School of Classical Studies at Athens, a program it plans to extend to other American research centers in the Mediterranean basin.

For almost one hundred years, AIAR has been at the forefront of archaeological and historical scholarship in the Middle East. It is this tradition that has made the Albright Institute a renowned international research center.

[*See also* American Schools of Oriental Research; Biblical Archaeology; *and the biographies of Albright, Glueck, and Lapp. In addition, all sites mentioned are the subject of independent entries.*]

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SEYMOUR GITIN

ALEPPO (Ar., Ḥalab), the second largest city in Syria, located in the northern part of the country (40°12′ N, 38°68′5″ E). It has been occupied since remote antiquity and played a very important role in Near Eastern history during the second millennium BCE.

It is likely that Aleppo has existed since at least the Early Bronze Age, although the evidence is indirect and uncertain. Excavations of a small site in the southwest part of modern Aleppo (al-Ansari) exposed Early Bronze IV levels and show at least that the outskirts of the area were occupied in the latter part of the millennium (see Antoine Suleiman, "Excavations at Ansari-Aleppo for the Seasons 1973–1980: Early and Middle Bronze Ages," *Akkadica* 40 [1984]: 1–16; and idem., "Fouilles d'Alep (Al-Ansari)," *Syria* 62 [1985]: 135). Aleppo may be mentioned under the name Ḫalam in tablets from Ebla and Early Dynastic Mari (see W. G. Lam-

bert, "Ḫalam, Il-Ḫalam and Aleppo," *Mari: Annales de Recherches Interdisciplinaires* 6 [1990]: 641–643.).

During the first half of the second millennium, Aleppo was the capital of the important state of Yamḫad, which played a leading role in the political development of northern Syria and Upper Mesopotamia. During the eighteenth century BCE, Yamḫad was the most powerful state in Syria and could resist the expansionist attempts of Shamshi-Adad I of Assyria. The Hittites, who rose to power in Anatolia during the seventeenth century BCE, referred to Yamḫad as having a "great kingship." Aleppo prospered until the opening years of the sixteenth century BCE, when Muršili I of Ḫatti attacked and destroyed the city.

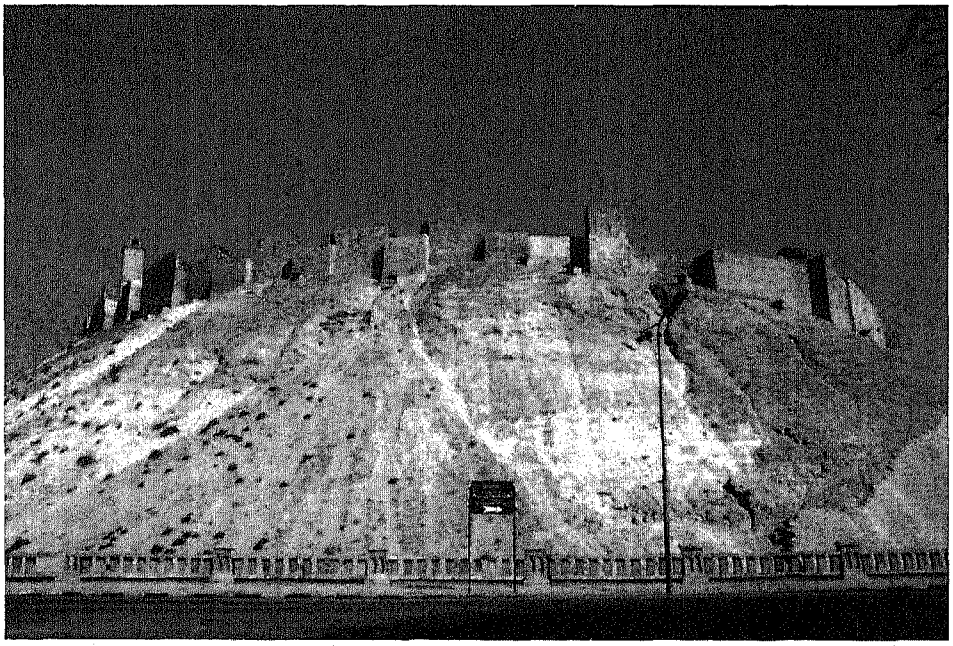
During the Late Bronze Age, Aleppo no longer held its previous, dominant position; instead, it became a strategic pawn in the imperial conflicts between Ḫatti and Mitanni over the control of northern Syria, eventually coming firmly under Hittite rule. During the first millennium BCE, Aleppo appears to have been reduced to political insignificance, but it retained its ancient religious status as a major center of the worship of Hadad, the storm god.

In the early third century BCE, Seleucus I Nicator settled a colony of Macedonians at Aleppo, renamed it Beroea, and rebuilt the town as a Hellenistic city, probably with a squarish city wall and rectilinear streets, some of which can still be discerned in the current layout of the "Old City." Evidence for the Roman period is extremely slim, but the city is likely to have prospered, as did most of northern Syria, although not as a major city. Aleppo remained a secondary city under the shadow of Antioch until the latter was destroyed in 539/40 CE. It is likely that Aleppo began to develop into a major trade center at this point.

In 636 CE, Aleppo came under Muslim control, and in the early eighth centuy CE, a major mosque was built by either al-Walid I (r. 705–715) or his successor, Sulayman (r. 715–717). Unfortunately, none of this mosque has survived the several destructions and disastrous fires that befell it. Following the demise of the Umayyad dynasty in the mid-eighth century, Aleppo, like most of Syria, slipped into a deep decline, from which it did not recover until the twelfth century.

Because the city has been continuously occupied for millennia, little archaeological work has been done in Aleppo. It is not yet certain where the earliest occupation of the town actually occurred, although most scholars believe that a tell in the western part of the current Old City, called el-ʿAqabe, represents the original settlement. It is assumed that the site expanded eventually to include the high hill now occupied by the great medieval citadel (see figure 1). Limited excavations early in this century by G. Ploix de Rotrou on the citadel showed that this high hill was occupied at least by the first millennium BCE. The excavators found the wall of a major public building, along with ornamented orthostats, two basalt lions, and a relief sculpture dating to the ninth/eighth centuries BCE.

Remains of the Hellenistic and Roman periods are few. As mentioned above, the area east and south of the tell, el-ʿAqabe, preserves the lines of the rectilineal streets of the Hellenistic city. The streets divided the area into rectangular blocks roughly 48 m north–south and 124 m east–west, the



ALEPPO. Figure 1. *Medieval citadel.* (Courtesy W. T. Pitard)

typical arrangement in cities founded during the Seleucid period. Nothing of the original city wall has been found, but scholars have generally thought that the preserved medieval wall runs along the ancient line. No building remains of the Hellenistic and Roman periods have been recovered on the citadel hill, although numerous small finds indicate a substantial occupation there during this time.

During the Byzantine period the city expanded outside the old walls, and records mention the construction of several churches. However, remains of only one church survive, the city's sumptuous and beautiful cathedral, located just south of where the great mosque was eventually built and the *madrasah Ḥalawiyeh*, an Islamic school, now stands. A few vestiges of the Great Synagogue built during this period by Aleppo's then large and prosperous Jewish community have also survived.

No overwhelming changes took place in the city during the Umayyad period. Its most significant building was, of course, the Great Mosque, whose construction began in about 715. It is not certain whether Caliph al-Walid or his successor Sulayman actually inaugurated the project. Although none of the original exists, records show that it was built on the same general plan as the Great Mosque of Damascus, but on a more modest scale.

From the mid-eighth until the mid-twelfth century, Aleppo suffered a significant decline. Repairs were made to the major structures of earlier periods, but little new development took place in the city.

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WAYNE T. PITARD

ALEXANDRIA, city in Egypt, the most important of many by that name founded by Alexander the Great (d. 323 BCE). Alexandria (Gk., Alexandreia) was built on a ridge of land between the Mediterranean Sea and Lake Mareotis at the western end of the Nile Delta (31°12′ N, 29°53′ E), where there was already a native Egyptian village, Rhakotis. Rhakotis was the name given to the quarter of the city occupied chiefly by native Egyptians and was later retained as a designation for the city as a whole in Coptic sources (Rakote, Rakoti). Its modern Arabic name is el-Iskandariya.

History. Alexandria was founded in the spring of 331 BCE. Its first architect was Deinokrates of Rhodes; Kleomenes of Naukratis was its first governor. In 323 Egypt came under the rule of the Macedonian Ptolemy I Soter, who had been a general and companion of Alexander. The city became the capital of Ptolemaic Egypt and quickly prospered, eventually becoming the cultural and educational center of the Hellenistic world. A multiethnic city, Alexandria became the home of the most important Jewish community of the Diaspora (Jews living outside of Palestine). Later, from the third to the fifth centuries CE, the Alexandrian church was the leading intellectual and theological center of Christendom.

Alexandria came under Roman rule in 30 BCE. After a series of disasters—riots and pogroms against the Jews in 38 and 66 CE; the Jewish revolt of 115–117; and attacks on the city by Caracalla in 215, Aurelian in 273, and Diocletian in 295—the city declined in population and in area. Further devastation was visited on the city by the Persians in 617 and by the Arabs in 641, after which Egypt as a whole came under Muslim Arab rule. Alexandria was then eclipsed by the new Arab capital at Fustat (Old Cairo) and by the maritime city of Rashid (Rosetta) on the mouth of the western bank of the Nile. In 1798 Napoleon and his forces encountered Alexandria as a small village of a few thousand inhabitants. The city's modern development began under Muhammad 'Ali (1805–1848), and it is now a major city with a population estimated as high as four million.

Topography. The dominant geographical feature of Alexandria was the bay formed by a promontory called Lochias (modern Silsila), protected by the island of Pharos offshore. A dike joining the island to the mainland, the Heptastadion (Gk., "seven stades" long), built soon after the city's founding, divided the bay into two main harbors. This structure has silted up over the centuries; by Napoleon's time the city's population was concentrated on the resulting land area.

The best and most extensive description of Alexandria at the end of the Ptolemaic period is that of Strabo in book 17 of his *Geography,* which was based on personal observations made during a residence about 24–20 BCE. Strabo begins his description by giving the dimensions of the city: 30 stades (5.5 km or 3.5 mi.) in length (east–west) and approximately 8 stades (1.5 km or 1 mi.) in width (north–south). Of the wide streets intersecting the city, the two broadest cut one another at right angles (17.1.8). The long one, Via Canopica (corresponding roughly to the modern Sharia el-Horreya) ran from the necropolis (cemetery) in the west to the Ca-

nopic Gate in the east. Strabo reports that up to a third of the city consisted of an area called the Palaces, resplendent with beautiful buildings, the most prominent of which were the Mouseion (presumably including the famous Library) and the Sema (the tomb of Alexander and some of his successors). Concentrated on and near Cape Lochias was a smaller part of the Palaces neighborhood called the inner palaces (17.1.9).

Strabo then describes the city as one would encounter it sailing into the "great" (eastern) harbor. To the right lay Pharos with its famous lighthouse (one of the seven wonders of the ancient world). To the left were the reefs and promontory of Lochias with its royal palace and private royal harbor. Opposite that harbor was Antirrhodos, an island with a palace and another small harbor. The Theater occupied a prominent place on the mainland above. An elbow of land extended from the shore on which was a temple of Poseidon. From there Mark Antony had extended a mole or breakwater out into the harbor, where on an artificial island he built a palace, the Timonium (17.1.9).

Structures further west included the Caesarium, which was a temple begun by Cleopatra VII for Julius Caesar and completed as a temple dedicated to Augustus. Nearby were the Emporium (market) with its warehouses and ship buildings extending as far as the Heptastadion. Beyond lay the western harbor, the Eunostos (now the main harbor of Alexandria) within which was a smaller harbor, the Kibotos, used for Nile traffic and connected to a canal leading to Lake Mareotis. A necropolis lay outside the city to the west. Within the city east of the canal were the Serapeum (temple of the god Serapis) and other sanctuaries.

In the central part of the city were the Gymnasium, a center for athletic training and education, which was situated on Via Canopica, and the Paneion (a sanctuary of the god Pan) on a hill nearby. Outside of the Canopic Gate to the east lay the Hippodrome (racetrack) and beyond that, 5.5 km (3.5 mi.) from Alexandria, the suburb Nikopolis founded by Augustus in commemoration of his victory over Mark Antony and Cleopatra (17.1.10).

Absent from Strabo's account is any mention of the city's walls, the older eastern necropoleis, the fortified acropolis, the city's agora, assorted other public buildings and temples, and its division into five quarters named for the first five letters of the Greek alphabet, details known from other ancient sources. Philo reports that two of the "letters" were predominantly Jewish (*Flaccus*, 55).

Archaeological History. Alexandria presents daunting problems for the archaeologist, because of geological factors and the results of urban development since the nineteenth century. Because the coastal area of the city has subsided some 4 m (15.7 ft.) over the centuries, the ancient structures along the coast have been swallowed up by the sea, leaving only foundations sometimes visible beneath the surface. This subsidence plus intensive building activity, with much cutting and filling, has resulted in the virtual obliteration of the contours of the ancient city. Numerous ancient structures were demolished at the time of the construction of the corniche (completed in 1906), and the present coastline facing the harbors is completely artificial.

The first modern archaeological excavation of any consequence was carried out by Mahmud Bey "el-Falaki," court astronomer of Khedive Ismail, whose goal was to prepare a map of the ancient city. On the basis of many soundings Mahmud Bey prepared a plan of the ancient streets and walls, published in 1872, which is still in use today. Unfortunately, he had no qualifications as an archaeologist, and the accuracy of his work has often been questioned. Where modern excavations have confirmed the existence of some of his streets, for example, at Kom el-Dik, these turn out to belong to the late Roman period. Their orientation differs in the main from the streets of the Ptolemaic era.

Scientific excavations began with the appointment of Giuseppe Botti in 1891 to the directorship of the newly formed Greco-Roman Museum. His work in the city and in the ancient necropoleis was published in numerous monographs and in several volumes of the *Bulletin de la Société (royale) archéologique d'Alexandrie.*

In 1895, the Egypt Exploration Fund of London sent D. G. Hogarth, E. F. Benson, and E. R. Bevan to Alexandria to carry out some excavations in the city and in the eastern cemeteries. Hogarth's report was very pessimistic, concluding that the city's greatest monuments stood within the area covered by the occupied quarters of Alexandria (then recently built) or by the encroaching sea, except for the Serapeum then under excavation by Botti. He expressed doubts as to the possibility of reaching Ptolemaic levels owing to the rise of the water table resulting from the city's subsidence. Hogarth advised against any further work by foreign societies in Alexandria, advice fortunately not heeded. A German expedition sponsored by Ernst von Sieglin worked in Alexandria from 1898 to 1902.

Botti was succeeded by Evaristo Breccia (curator of the museum, 1904–1933), who expanded upon Botti's efforts. Achille Adriani followed Breccia in 1932 (curator, 1933–1939; 1947–1953). Adriani's directorship of the museum was interrupted during the war years, when Alan Rowe served as curator (1941–1947) and worked during that time on the Serapeum hill and at the Kom el-Shogafa necropolis nearby.

Apart from the excavation of the Serapeum and the necropoleis of Alexandria, much of the archaeological work in the city until 1960 consisted of narrowly confined soundings or salvage work connected with innumerable building projects. The many artifacts that have turned up are housed mainly in the Greco-Roman Museum. Unfortunately much has also been destroyed.

The most extensive archaeological project ever mounted in Alexandria is that of the Polish Center of Mediterranean

Archaeology in the Kom el-Dik neighborhood, virtually in the center of the city. The excavations began under Kazimierz Michałowski in 1960 and are ongoing. A late Roman theater discovered in 1964 has been restored and now serves as the centerpiece of an archaeological park (see figure 1). Other finds at Kom el-Dik include a large bath complex (second–sixth century CE), a group of early Roman houses, a second-century school building, and a part of a Ptolemaic pavement.

It has not been possible to obtain a complete stratigraphic record of the city's archaeological history apart from the partial results obtained at isolated locations. Contrary to Hogarth's expectations, however, Ptolemaic levels have been identified, principally at four areas. In addition to the finds at Kom el-Dik, three areas associated with the ancient royal quarter have been excavated: (1) several sites in the area around the government hospital, (2) near the Medical Faculty of the University of Alexandria, and, most recently, (3) at the site of the new Alexandria Library, opposite Silsila. In addition, Ptolemaic foundations have been found just south of Horreya Street, near Kom el-Dik. Farther west along the same street foundations of a temple of Sarapis and Isis (identified as such by an inscription of Ptolemy IV and Queen Arsinoe III) were found already in 1895, but this find was not associated with a scientific archaeological excavation.

The only structure mentioned by Strabo that has so far been confirmed archaeologically is the Serapeum (Gk., Serapeion). Located in the Rhakotis district (modern Kharmuz), it is a temple that also served as a daughter library to the Mouseion. It is now covered over by a hillock dominated by a column 26.85 m (88 ft.) high referred to erroneously as "Pompey's Pillar"—it was actually dedicated to Emperor Diocletian (see figure 2). The Serapeum was excavated first by Giuseppi Botti (1894–1896) and then by Alan Rowe (1943–1945, 1956). Excavations revealed evidence of a major Ptolemaic temple built by Ptolemy III, and possibly an earlier one built by Ptolemy I. These structures were enclosed within a much larger sanctuary built in the early Roman period. The sack of the Serapeum by Christians in 391 apparently did not result in the temple's complete destruction at that time, contrary to an often-repeated claim.

The Pharos tower and lighthouse, which was built early in the third century BCE, was severly damaged by an earthquake in 956 CE and incurred further damage by subsequent earthquakes. By the fourteenth century it was in ruins. In 1480 Sultan Ashraf Qait Bey built a fortress upon its foundations. Traces of the temple of Isis Pharia (not mentioned by Strabo) and a colossal statue of Isis have been found by divers off the north coast of Pharos near the Qait Bey fort. Structures associated with Antirrhodos and Mark Antony's Timonium have been spotted by divers in the eastern Harbor, but no underwater excavations have been carried out there as yet. No remains of the Heptastadion have been identified, nor is its exact location known.

As for the famous Mouseion and Sema, no trace of these monuments has been found. There is a long-standing but unconfirmed rumor to the effect that Alexander's tomb is located under the mosque of Nebi Daniel, near Kom el-Dik. On the other hand, some have argued unconvincingly that

ALEXANDRIA. Figure 1. *Late Roman theater.* Fourth–sixth century CE. (Courtesy B. A. Pearson)

the "Alabaster Tomb" found in the Latin Cemetery is actually Alexander's tomb. It is a Macedonian-style tomb, originally covered by a tumulus, of the Ptolemaic period, but its original owner remains unknown.

The Theater described by Strabo was probably located near the modern government hospital, but the excavations in that vicinity have turned up no convincing traces. Remains of other Ptolemaic buildings have been found there. There is no archaeological evidence of the Gymnasium or the Paneion. The approximate location of the Caesarium is well known because the obelisks associated with it remained, one standing and one fallen, until the 1870s. (These obelisks are now located respectively in Central Park in New York City and on the Thames Embankment in London.) The lavish description of the temple and its precincts provided by Philo (*Embassy to Gaius* 151) has not been confirmed by archaeology, though it is not inconceivable that excavations begun in 1992 at the site of the old Majestic Theater may turn up some trace of it. The Caesarium was rebuilt as a church in the fourth century and was finally destroyed in 912.

Mention should be made of the synagogues and churches known from literary sources. Philo cites numerous synagogues (*proseuchai*) existing in Alexandria (*Embassy to Gaius*, 132), including one near the Gymnasium that he calls "the largest and most notable" (134–135), presumably to be identified with the double-colonnaded basilica described in rabbinic sources (Tosefta *Suk.* 4.6; J.T. *Suk* 5.1; B.T. *Suk* 51b) that also report its destruction under Trajan during the revolt of 115–117. No traces of this or other synagogues have been identified within the city, though an isolated dedicatory inscription of 37 BCE was found in Gabbari (part of the western necropolis area), and another of the second century BCE in Hadra (part of the eastern necropolis area).

Epiphanius of Salamis lists the churches in Alexandria known to him (*Panarion* 69.2), all of them datable to the fourth century except that of Theonas (bishop, 282–300). This, the earliest attested church in Alexandria, is said to have become part of the Mosque of a Thousand Pillars, damaged by the French in 1798 and destroyed in 1829. Another church-become-mosque is that built by St. Athanasius near a temple called Bendidion (or Mendidion), which was rebuilt as the Mosque of the Souq al-Attarin (destroyed in 1830). Hundreds of stone fragments from churches datable to the fourth–seventh centuries have been found—belonging to architectural features such as capitals, column bases, and decorative elements—but unfortunately none of these objects was found in situ. Thus, although locations of some ancient churches are well established, not one has ever been identified by excavation.

The best preserved evidence of Ptolemaic and Roman art and architecture is that associated with the necropoleis of Alexandria. The oldest of these cemeteries were located east of the early Ptolemaic city and were left unmentioned by Strabo, presumably because they were no longer in use. The city had extended eastward by his time. The most important necropoleis are in the Shatby district (fourth–third century BCE), excavated by Breccia; several areas of Hadra (mainly third–second century BCE, some later); Ibrahimiya; and, farther east, Mustafa Pasha. A small, late Ptolemaic hypogeum

ALEXANDRIA. Figure 2. *Pompey's pillar.* (Courtesy B. A. Pearson)

(subterranean burial chamber) was also found in the Antoniadis Garden. Of these only the Shatby necropolis can be visited.

The island of Pharos had a substantial native population in the Ptolemaic and early Roman periods, and several late Ptolemaic–early Roman hypogaea have been found there, that is, those of Ras el-Tin and Anfouchi. The latter is accessible. Probably the most remarkable of Alexandria's necropoleis is the magnificent three-level hypogeum complex at Kom el-Shogafa (mainly second century CE) near the Serapeum. A popular tourist attraction, it has carved tomb chambers featuring bas-relief decorations of mixed Egyptian and Greek inspiration.

The western necropolis mentioned by Strabo corresponds to finds made in the modern industrial areas of Mafrusa, Gabbari, and Wardian—hypogaea and other tombs datable to the late Ptolemaic and early Roman periods. Most of these burials have been destroyed, although some discoveries have been made by the Egyptian Antiquities Organization at Wardian, including a second-century BCE hypogeum with well-preserved wall paintings.

Thus, a hundred years of archaeological work in Alexandria has produced mixed results. Perhaps the richest possibilities for future work are underwater, principally in the eastern harbor and off Shatby beach east of Silsila. The latter area corresponds to Alexandria's main Jewish quarter in antiquity, as attested by Josephus (*Against Apion 2.33–36*).

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BIRGER A. PEARSON

ALEXANDRIAN EMPIRE. Under the hegemony of King Philip II of Macedonia and, later, his son Alexander III (the Great), the Greek city-states bound themselves to a military alliance (the League of Corinth) for the purpose of invading the Achaemenid Empire. This Pan-Hellenic crusade was meant to rescue the Aegean world from a long history of Persian influence and to avenge the fifth-century BCE invasion by Xerxes, which had destroyed much of Athens. In 336, Philip II was assassinated on the eve of the Greek advance, but his young son Alexander (356–323) took up the cause after securing his position on the Macedonian throne.

In 334 BCE the new Macedonian king led nearly 40,000 troops across the Hellespont into Achaemenid Anatolia. He quickly defeated a satrapal (Persian provincial) army at the battle of the Granicus River and then systematically captured the coastal strongholds of the Persian fleet from the Hellespont to Cilicia. The Achaemenid king, Darius III (r. 336–330), personally commanded his troops in a move to halt the Greek advance into Syria. At the battle of Issus (late 333), Alexander defeated, but did not capture, the king of Persia. While Darius regrouped in Mesopotamia, Alexander continued his coastal campaign down the eastern Mediterranean. The offshore fortress of Tyre resisted for seven months but fell in a brutal assault when Alexander's forces completed a 1,600-meter siege mole out to the island. After besieging the city of Gaza in late 332, the Greeks marched unopposed into Egypt.

Alexander was seen by the Egyptians as a liberator who respected their ancestral customs and religion. He undertook an arduous journey to consult the oracle of Zeus-Ammon at Siwah in the Libyan Desert, where he was supposedly assured of world conquest. Alexander's most enduring achievement in Egypt was the construction of a city, bearing his name (Alexandria) and destined to become an unrivaled intellectual and commercial success under the patronage of his successors.

In early summer 331, Alexander's forces marched back to Phoenicia and then east toward Mesopotamia for a showdown with Darius. The Persian king had not been idle. His forces numbered over 100,000, and he had carefully prepared a battlefield near Arbela. On 1 October 331 Alexander's army routed the Persians at the battle of Gaugamela. Again Darius escaped eastward, hoping to rally a defense of Bactria (Afghanistan), but he had lost the heart of his empire. The major cities of Mesopotamia lay open to Alexander, who marched triumphantly into Babylon, Susa, and finally Persepolis in January 330. The vast Achaemenid treasures were seized and the palace destroyed. The Greeks were avenged for the sack of Athens a century and a half before. [*See* Persians; Babylon; Susa; Persepolis.]

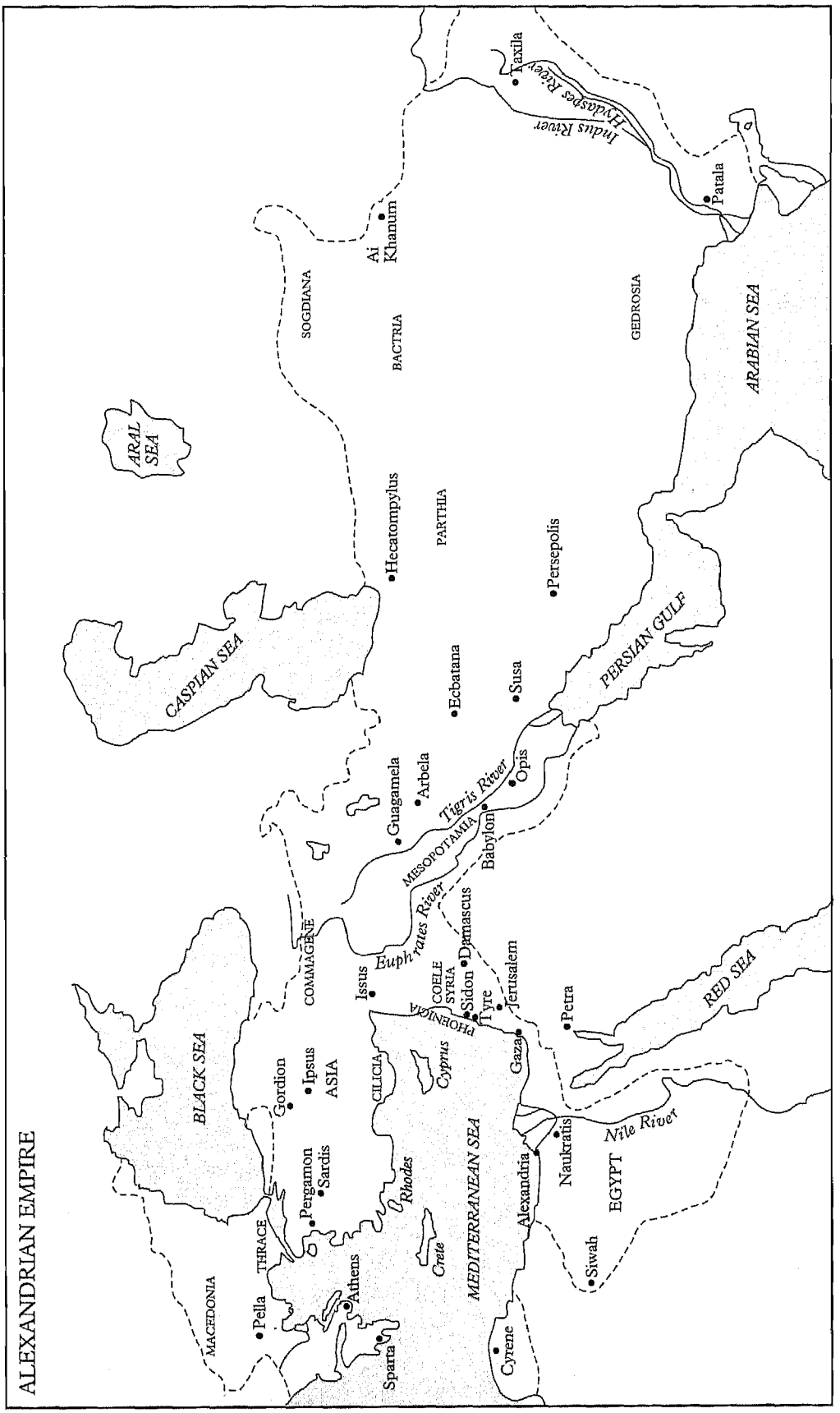
Alexander soon resumed his pursuit of Darius. Near Hecatompylos (modern Shahr-i Qumis), however, a desperate group of Iranian nobles led by Bessus, satrap of Bactria, assassinated Darius. As successor to the Achaemenid throne, Alexander gave Darius a royal burial, but Bessus tried to undermine Alexander's legitimacy by declaring himself the rightful Persian king. Thus, Alexander was compelled to continue his advance eastward against this new adversary. These next campaigns carried Alexander's army beyond the Near East into Central Asia (329–327) and the Indus Valley (326–325). On their return, a fleet commanded by Nearchus explored the coastline from Pattala to the Persian Gulf while Alexander led the land forces on a disastrous desert march through Gedrosia back to Babylon.

Alexander encountered many military hardships during these years in the distant east, and he faced a growing tide of related problems: opposition of his high command to acts of reconciliation with the defeated Iranian nobility, sagging morale of his troops because of physical and emotional strain, limited resources to occupy and administer the eastern empire, and misconduct among the senior officials in charge of the Near Eastern satrapies during Alexander's absence in India.

When Alexander returned to Mesopotamia in 324, he began to address the emerging crisis in his newly won empire. He punished some officials and pardoned others, paid his army handsomely from the revenues earlier stockpiled after the plunder of Susa and Persepolis. He arranged a massive wedding ceremony at Susa in which senior officers took noble Persian brides, and 10,000 Macedonian soldiers formalized their liaisons with native women. When Alexander then organized a force of indigenous soldiers to help meet his military needs, he had to face down at Opis in 324 the mutinous insubordination of his Macedonian veterans who opposed an ethnically mixed military system.

In the midst of plans for future conquests, including an expedition to Arabia, Alexander fell ill and died at Babylon in early June 323. The army and its officers soon quarreled over the issue of succession. A compromise provided for a dual monarchy shared by two nonentities: Philip III Arrhidaeus, Alexander's infirm half brother, and Alexander IV, Alexander's posthumous son. In truth, the empire was governed by ambitious generals down to 306/05. First, Perdiccas asserted authority as regent for the kings but was assassinated in 320. In Macedonia, the aging general Antipater served as the next regent until his death a year later.

The fragile unity of the empire endured as the *diadochoi* ('successors') competed for the regency, often in shifting coalitions sealed by marriage alliances and satrapal appointments. Until his defeat at the battle of Ipsus in 301, the lead in this struggle was taken by Antigonus the One-Eyed, along with his son Demetrius the City-Sacker. Those not aiming for supreme power staked out smaller domains for that day when the empire would splinter beyond a single man's grasp. As expected, the assassination of the two kings, Philip III (317/16) and Alexander IV (311/10), exhausted the bloodline of Alexander the Great and opened the way for


ALEXANDRIAN EMPIRE
ARAL SEA
CASPIAN SEA
BLACK SEA
MEDITERRANEAN SEA
RED SEA
ARABIAN SEA
PERSIAN GULF
SOGDIANA
BACTRIA
PARTHIA
GEDROSIA
MACEDONIA
THRACE
ASIA
COMMAGENE
CILICIA
PHOENICIA
COELE SYRIA
MESOPOTAMIA
EGYPT
Indus River
Hydaspes River
Euphrates River
Tigris River
Nile River
Cyprus
Crete
Rhodes
Taxila
Patala
Ai Khanum
Hecatompylus
Persepolis
Ecbatana
Susa
Opis
Babylon
Arbela
Guagamela
Damascus
Sidon
Tyre
Jerusalem
Gaza
Petra
Issus
Gordion
Ipsus
Pergamon
Sardis
Athens
Sparta
Pella
Cyrene
Alexandria
Naukratis
Siwah

the formation of new royal dynasties in the Near East headed by Ptolemy (Egypt), and Seleucus (Syria).

The political unity of the Alexandrian Empire had not long survived the fall of the Achaemenids, as the competition for greatness inspired by Alexander led to an unprecedented period of kingmaking among the Macedonians and, later, the local nobility of the Near East as well. Generally known as the Hellenistic Age, the three centuries following Alexander's death (323–30) witnessed the reigns of fourteen Ptolemies in Egypt, capped by the remarkable career of Queen Cleopatra VII (r. 51–30). In addition to the Nile Valley, the Ptolemies controlled a few Aegean ports, Cyprus, and Cyrene; they fought five major Syrian wars against the Seleucids for dominion over Coele-Syria (Palestine) down to 200. [*See* Ptolemies; Cyrene; Coele-Syria.]

The Seleucid dynasty produced over two dozen kings and numerous usurpers. In addition, the slow dissolution of this vast state, which under Seleucus I (312–281) had stretched from Anatolia to Afghanistan, allowed the rise of many local dynasties in areas such as Bactria, Parthia, Commagene, Pergamon, Judea, Iturea, Nabatea, and Characene; smaller principalities and numerous cities also gained their independence, most notably in Phoenicia. By the time that Rome annexed the remains of the Seleucid Empire in 63, only the region around Antioch was left in Macedonian hands. [*See* Seleucids; Pergamon; Antioch.]

This Near Eastern world gradually absorbed into the Roman Empire was very different from the Achaemenid world rapidly absorbed into the Alexandrian Empire some three centuries earlier. These differences give measure to the impact of Alexander the Great upon this region. We may here summarize that legacy in its archaeological context.

First, the rise of an Alexandrian Empire introduced a strong and lasting Hellenic influence into the rich cultural milieu of the Near East. This is not to say that Greek culture wholly dominated the area during the Hellenistic Age nor that some Greek influence had not already been felt in the Near East long before Alexander's invasion. Greek mercenaries had been recruited earlier into the armies of the Achaemenid kings, and Greek merchants had long plied their trade in the ports of the eastern Mediterranean. A Greek trading colony had existed at Naukratis (Egypt) since the seventh century. [*See* Naukratis.] The degree of Hellenic influence clearly intensified, however, no longer incrementally, but exponentially, in the wake of Alexander's wars. Rather than a few thousand Greek mercenaries, the Near East witnessed a wave of Greek military colonists (*klēroukoi*) that crested in the hundreds of thousands. Wherever there were permanent camps of Greek soldier-settlers, there were now islands of Hellenism in the Semitic Near East. Of course, non Greeks inhabited these "islands" as well, some as soldiers or support personnel, others as wives or workers. Recent excavations on Ikaros (modern Failaka) reveal a Seleucid military settlement where traditional Mesopotamian artifacts and non Greek graffiti exist side by side with dedications to Greek gods made by the garrison commander and his troops. [*See* Failaka.] From Anatolia as far east as Ai Khanum (Afghanistan), evidence of this type demonstrates how immigrant Greek soldiers introduced a new but not overwhelming cultural element in terms of their language, religion, art, and architecture. In Egypt, where papyrus documents tell the story more fully, we can follow the family histories of some of these settlers. In some cases, the colonists held doggedly to their Hellenic background and insulated themselves as far as possible from native influences; others married Egyptian wives, worshiped local deities, and raised bilingual children. Whatever the degree of cultural "fusion" in a given *klērouchia*, the rather sudden and sustained presence of Greek soldiers occupying the Near East contributed greatly to the changes wrought by Alexander the Great.

Second, the number of Hellenistic urban centers grew. The one Greek entrepôt at Naukratis was quickly supplanted by dozens of full-fledged cities founded throughout the Near East by Alexander and his successors. Alexandria in Egypt blossomed under the Ptolemies into a major Mediterranean city that attracted Greek artists, intellectuals, administrators, merchants, and many others into its population. Although non-Greeks certainly played a vital role in the city's history, the Hellenic element under Ptolemaic patronage enjoyed a privileged position both politically and culturally. [*See* Alexandria.] The same occurred at Antioch, one of the capitals of the Seleucid Empire, and many other places. The administration of these Hellenistic cities was generally Greek, though we can trace in the documentary sources the appointment of some officials bearing non-Greek names and titles; some city business was conducted in native languages and according to local customs. Babylon provides a well-known example of how traditional Mesopotamian temple and civic practices survived the intrusion of the Greeks. In the main, however, the Greek language and Hellenic political institutions took root in these new foundations. Care was often taken by the Macedonian dynasts to give these cities a Greek appearance to go along with their Greek names (usually dynastic, but occasionally transplanted place-names from Greece) and institutions (e.g., *boule* [council] and *agora* [assembly]). Though often adapted to local building methods and materials (e.g., mud brick), Hellenic structures such as gymnasia and theaters rose on Near Eastern soil. Greek terra cottas, column drums and capitals, *propylaea* [entrance structures], and Macedonian palaces could be seen in many of these cities, along with Greek pottery and other Greek domestic items in private houses built of Greek design. Even burial practices and tomb construction were influenced by Hellenic models, as at Jerusalem, Marisa (Mareshah), Deir ed-Derb in Samaria, Suweida in Syria, Hermel and Kalat Fakra in Lebanon, and of course Petra in the Negev. Clearly, places such as Bab-

ylon and Jerusalem did not become thoroughly hellenized, but a substantial Greek presence could easily be seen there by any visitor, and some cultural interaction and blending was inevitable over the course of three centuries. [*See* Jerusalem; Mareshah; Suweida; Petra.]

Through military occupation and city founding, then, Greek culture made a lasting impact upon the Near East. The Greek language, in the Koine (common Greek) dialect of the Hellenistic world, became the lingua franca of the Near East, a role previously played by Aramaic under the Achaemenids. Yet, when the Romans arrived on the scene in the first century BCE, they could still hear spoken a variety of Semitic languages and local dialects. They could see in the Seleucid archives recent cuneiform texts, or in Egypt the ongoing use of hieroglyphs and demotic script on monuments and inscriptions such as the famous Rosetta Stone from the reign of Ptolemy V (205–180). But the language of the Hellenistic rulers was Greek (only the last of the Ptolemies, Cleopatra VII (51–30), learned the Egyptian language), and court life required Koine for business and pleasure. The educated elite seldom strayed into the languages or literatures of the Near Eastern peoples. Native works of note had to be translated into Greek for further study, as in the case of the Septuagint, the Egyptian history preserved by Manetho, or the Babylonian lore translated by Berossos. When Alexander invaded the Near East, interpreters were required to make it possible for Greeks and non-Greeks to communicate. When the Romans arrived, Greek was a second language throughout the region, at least among the privileged classes. That did not change, even through centuries of Roman rule. The New Testament took form in Koine, Roman coinage in the Near East employed Greek inscriptions, and Byzantium inherited from the Alexandrian Empire an administrative system based on Greek rather than Latin. [*See* Greek.]

Third, the Alexandrian Empire increased the production of coins, which made trade easier. Greeks, especially merchants and mercenaries, were long accustomed to the convenience of coinage. The Achaemenids had established mints, therefore, in those regions where Greeks were normally recruited and stationed, but had not pressed to have a monetized economy replace traditional barter in other areas of their empire. Trading centers, such as Phoenicia and Egypt, had been compelled to import Greek coinage or to mint locally. Alexander and his successors changed this situation very rapidly, not so much as part of a grand economic scheme to stimulate the "stagnant" Near East (an old view that still holds too much influence), but rather to meet the immediate needs of a massive invasion and occupation. To pay his troops, Alexander operated nearly two dozen royal mints in Anatolia, Cyprus, Syria, Phoenicia, Egypt, and Mesopotamia. These mints produced a homogeneous, "imperial" coinage on the Attic Greek standard (see figure 1). Massive supplies of bullion came to hand when Alexander

ALEXANDRIAN EMPIRE. Figure 1. *Macedonian tetradrachm.* Figure of Alexander III is seated on right. Dated to 320 BCE. (Courtesy American Numismatic Society)

captured the treasuries of the Achaemenid palaces; Persepolis alone yielded some 120,000 talents' worth (more than 3 million kg or 6.8 million lbs.) of silver. Most, but not all, of this plunder was converted into coins to meet the military expenses of Alexander and the *diadochoi.* Over time, a monetary economy replaced barter in most parts of the Near East, particularly the urbanized areas. This is especially evident in the increased production of bronze fiduciary currencies, and the striking of Greek-style coinage in areas beyond the control of the Ptolemies and Seleucids. All of the native dynasties that broke free of the Seleucids minted Hellenistic coinage. Widespread monetary production facilitated trade. Archaeology confirms this development through coin finds, the diffusion of Mediterranean amphorae, and the luxury goods that flowed in and out of the Near East. From the death of Alexander down to 167 BCE, when punished by Rome with crippling economic sanctions, Rhodes served as the wealthy center of East Mediterranean maritime trade; its amphorae have been found from the British Isles to India. [*See* Coins.]

In spite of economic growth in the Hellenistic Age, war still provided the usual means of expanding royal wealth. Taxes, tolls, and tribute seldom met the exorbitant needs of the kings, for whom conspicuous consumption on a grand scale was a hallmark of Hellenistic monarchy. If not by trade, then by conquest, these kings sought luxury goods to put on parade. On one famous occasion, Ptolemy II (285/82–246) marched through Alexandria an astounding display of prestige items, including exotic animals from India, Ethiopia, and Arabia. There was also competition among the kings either to develop the largest warships or to field the largest elephant corps. Everywhere in the Near East, the Macedonian military system took hold. Beginning with Alexander, levies of local troops were armed and trained in the Macedonian manner, a practice expanded by the successors from the late third century BCE onward. Advanced siege engines and artillery, not to mention the counterforce of intensive fortification, became standard features of Near Eastern warfare. Hellenistic armies were naturally the heirs of the Al-

exandrian Empire rather than of the Achaemenid. In fact, all processes of hellenization were essentially military in origin, from colonization to monetization. The legacy of the Alexandrian Empire remained imperialist and colonial in nature.

When looking so deliberately for Alexander's impact on the Near East, we must not leave the false impression that earlier patterns of social, cultural, political, religious, military, and economic life were totally swept away. In many ways, the Hellenic customs of the conquerors were held at bay by the resilient and often better-suited traditions of the indigenous peoples. Recall that local languages were not effaced by Greek and that many Greeks adopted Near Eastern religious practices or, at the very least, adapted them to their own use through syncretism. Even in warfare, the Greeks grew fond of the elephants and scythed chariots employed by the Achaemenids. In fact, Seleucus I traded India to Chandragupta Maurya for five hundred elephants, which proved a good investment at the battle of Ipsus in 301.

No reign or region of the Hellenistic Near East was thoroughly Greek. The important political institutions of the Greeks, most notably those of the *polis* (city), functioned within an administrative system that was largely Achaemenid. Alexander had retained the successful bureaucratic structure of the Near East, with its diverse collection of "temple-states", semi-independent cities and tribes, tributary kings, and satraps. Before becoming kings, all of the eastern *diadochoi* had first been satraps. When, for example, the Seleucids later established their royal dynasty, they appointed satraps of their own, some of whom in turn became independent kings who straightaway divided their former satrapies into smaller satrapies. Clearly, the Greeks could find nothing better than the old Achaemenid structure within which to build their new Hellenistic states.

The hellenization of the Semitic East was, therefore, a long, complex process that did not touch all areas nor all classes with the same effect. The aggressive measures to compel cultural change in Judea under Antiochus IV (175–164), for example, sparked intensive resistance that, itself, divided many non-Greeks over the issue of hellenization. Everywhere in the Near East, Alexander's legacy was a patchwork of languages and cultures that included for the first time a substantial Greek element that clearly inspired some and incensed others.

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FRANK L. HOLT

ALI KOSH, a small prehistoric site located on the Deh Luran plain in southwestern Iran at an elevation of about 170 m (32°30′ N, 47°20′ E). The plain, covering approximately 169 sq km (100 sq. mi.) is enclosed by the Zagros Mountains on the north, a low line of hills and the vast Mesopotamian plain on the south, and by two small streams on the east and west.

In 1903 the French archaeologists, Joseph E. Gautier and Georges Lampre, representing the Mission Archéologique de Perse, excavated a small trench at the site that they called Tepe Mohammed Jaffar (the name of a local tribal leader). When they found only remains of "reed and branch huts," along with some flints and crude ceramics, they abandoned work. Nearly sixty years later, Robert Braidwood and Richard Watson of the Oriental Institute Prehistoric Project collected some flints there and, on their advice, in 1961 Frank Hole and Kent Flannery (Rice University–Oriental Institute) undertook a 3-by-5-meter excavation. The upper layers of the site were found to contain Early Neolithic pottery, but the lower layers were aceramic. According to local villagers, the site had two names, Bus Mordeh (Pers., "dead goat") and Ali Kosh (Pers., "the place where Ali was killed"). Unaware at the time that the French had named the site Mohammed Jaffar, the excavators called it Ali Kosh.

On the basis of the initial results, and especially on finding charred seeds in ashy material collected for radiocarbon dating, Hole and Flannery returned to the site in 1963 for more extensive excavations. Guided by Braidwood's previous research into the origins of domestication, the renewed excavation was focused on recovering plant remains and animal bones. Hans Helbaek, a Danish paleobotanist who had worked with Braidwood, an authority on ancient plant remains, joined the team in the field to study the samples as they were excavated. To extract seeds from the soil, the excavators used flotation (the first time the technique was employed in Southwest Asia). The technique separates charred organic remains from soil by immersing them in water with the aid of machines. At Ali Kosh, a tedious hand method was used, with water trucked to the site.

There are three archaeological phases at Ali Kosh, each given local site names: Bus Mordeh for the oldest, Ali Kosh for the second aceramic phase, and Mohammed Jaffar for the ceramic Neolithic. Fifteen radiocarbon dates were originally obtained for the site, but they gave highly variable and ambiguous results. On the basis of dates from other sites, as well as additional accelerator mass spectroscopy AMS dates on charred bone from the Bus Mordeh and Ali Kosh phases, it is now estimated that the site was founded in about 7000 BCE.

The first settlers at Ali Kosh lived near a permanent marsh from which they harvested fish, turtles, clams, and waterfowl. Hunters stalked wild gazelle, onager, cattle, and pigs that grazed the surrounding plain, and herders kept small flocks of domestic goats. [*See* Cattle and Oxen; Pigs; Sheep and Goats.] They supplemented these foods by harvesting seasonally abundant wild plant foods and cultivating wheat and barley. [*See* Cereals.] The successive layers at Ali Kosh document the increasing dependence on domesticated herds and agriculture until 6000 BCE, when the marsh dried and the villagers moved to one of the other sites on the plain, such as Chogha Sefid.

[*See also* Persia, *article on* Prehistoric Persia.]

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FRANK HOLE

ALPHABET. [*This entry treats the origins and development of what is traditionally termed the "alphabet," that is, the stages termed "abjad" and "alphabet." For definitions and further discussion, see* Writing and Writing Systems.]

The alphabet began as a system of symbols, each of which represented a consonantal phoneme. Because in the earliest attested stages the signs are quasi-pictographic and the form of the sign corresponds in several cases to the name of the letter known from later periods, it is plausible that each of the earliest sign forms bore a name beginning with the phoneme represented by the sign. For example, the name of the {b}-sign would have been *baytu,* the Semitic word for "house," and it would have represented the consonantal phoneme /b/. This is the so-called acrophonic principle.

More than a millennium after writing had come into use in Mesopotamia and in Egypt, the alphabetic principle was devised somewhere in the Levant between these two early centers of civilization. Because of the representational character of the earliest signs, the invention probably took place under Egyptian rather than under Mesopotamian influence, for hieroglyphs maintained pictographic forms for millennia, even while cursive scripts developed. [*See* Egyptian; Hieroglyphs.] On the other hand, although a system of quasi-alphabetic signs was developed in Egyptian, used principally to represent foreign names, each Egyptian sign continued to note one, two, or three consonants until the Greek alphabet was adopted for Coptic. [*See* Hieroglyphs; Greek; Coptic.] The earliest alphabet clearly did not originate in a simple borrowing of the Egyptian quasi-alphabetic signs, for no single correspondence between the two systems has been proven. Rather, even though the idea may well have been

born under the influence of the Egyptian usage (Sznycer, 1974; Sass, 1991), the true invention is the idea of noting the consonantal segment only, for that resulted in the radical reduction of the number of signs: from the large number required for a syllabic system to a much small number required for an alphabetic system. It is estimated that a working Mesopotamian scribe needed an active knowledge of approximately two hundred signs, but the earliest alphabets probably did not have more than twenty-nine signs at the most. The imitation of the Egyptian iconic principle of writing also resulted in a set of relatively simple symbols; the Mesopotamian cuneiform system, by contrast, included many signs that consisted of a large number of wedges (ten or more in the archaic period) and that required much practice to produce and to recognize. [*See* Cuneiform.] It can be debated whether the consonantal writing system merits the name *alphabet,* but the simplification of the writing process it represented makes it the decisive step toward the full alphabet as devised by the Greeks. [*See* Writing and Writing Systems.]

Because of the small number of extant early alphabetic inscriptions and the difficulties in dating them, it is uncertain just where the alphabet was invented. Because the earliest known examples are arguably the Proto-Sinaitic texts, it is tempting to see in them the texts for the writing of which the alphabet was invented. That temptation must be resisted, however, for it is presently impossible to determine whether the social conditions requisite for the invention of a writing system existed in the Sinai then—that is, the presence of a scribe of the language for which the alphabet was invented who was also well acquainted with Egyptian. It is in any case likely that the invention was only accomplished once and spread throughout the Levant. In theory, it could have occurred anywhere there was an Egyptian influence in the late Middle Kingdom—from Egypt itself through Canaan into Syria. The concentration of early texts in Sinai and the various inscriptions from sites in southern Canaan, however, make the most plausible hypothesis that of a southern origin.

If the hypothesis be accepted that the above Proto-Sinaitic and Proto-Canaanite inscriptions represent the earliest alphabetic writings, a necessary corollary is that the alphabet was invented to write a West Semitic language. [*See* Proto-Sinaitic; Proto-Canaanite.] Unfortunately, problems of overall decipherment and of the identification of individual signs and their variants make it impossible at present to determine the precise characteristics of the language(s) represented by the earliest inscriptions. The data available indicate an early dialect of Canaanite.

Ugaritic Alphabet. The earliest West Semitic language represented in an alphabetic script and with an important body of decipherable inscriptions is Ugaritic. [*See* Ugarit; Ugaritic; Ugarit Inscriptions.] These texts date to the fourteenth–thirteenth centuries BCE, although the greatest number are probably from the last few decades before the destruction of the site in the early twelfth century BCE.

Ugaritic made two major contributions to the early history of the alphabet: it is the only West Semitic alphabetic writing system that is cuneiform and a significant number of abecedaries exist (an *abecedary* is the conventional name for the writing out of an alphabet according to an established order).

For reasons presently unknown (the prestige of Mesopotamian cuneiform, a temporary shortage of papyrus?), the West Semitic alphabet was reduced to wedge forms and written on clay at Ugarit. [*See* Papyrus; Writing Materials.] Various considerations—chronological, formal, and structural—make it highly unlikely that the Ugaritic writing system represents a local invention of the alphabet: it appeared too late (fourteenth century BCE), there are several plausible correspondences of sign forms between it and the known linear writing systems, and it does not correspond perfectly to the Ugaritic phonological system.

The Ugaritic abecedaries have established several valuable reference points in the history of the alphabet.

- They prove that the order of the letters later known as the standard Northwest Semitic order (Hebrew, Phoenician-Punic, Aramaic) was in use in the fourteenth century BCE in Syria. [*See* Hebrew Language and Literature; Phoenician-Punic; Aramaic Language and Literature.] Abecedaries are attested in Palestine and in Phoenicia by the late thirteenth century BCE and on into the first millennium BCE (Cross, 1980, pp. 8–15; Lemaire, 1978). The early date of the Ugaritic examples and the wide spread of the later languages attesting this order make it plausible that the inventor of the alphabet had conventionally used this order for pedagogic purposes.
- Comparison between the Ugaritic abecedaries and the order of letters in the later Northwest Semitic languages shows that a "long" alphabet was in use in the fourteenth century BCE. The basic consonantal inventory of Ugaritic was represented by twenty-seven signs, whereas the basic southern Canaanite alphabet consisted of twenty-two signs. The five extra Ugaritic signs are interspersed among the signs known from the southern Canaanite alphabet as follows:

Canaanite	ʾ	*b*	*g*		*d*	*h*	*w*	*z*	*ḥ*	*ṭ*	*y*	*k*		
Ugaritic	*ʾa*	*b*	*g*	*ḫ*	*d*	*h*	*w*	*z*	*ḥ*	*ṭ*	*y*	*k*	*š*	

Canaanite	*l*	*m*		*n*		*s*	*ʿ*	*p*	*ṣ*	*q*	*r*	*š*		*t*
Ugaritic	*l*	*m*	*ḏ*	*n*	*ẓ*	*s*	*ʿ*	*p*	*ṣ*	*q*	*r*	*ṯ*	*ġ*	*t*	(*ʾi ʾu s*)

- If the inventor of the Ugaritic cuneiform system had been imitating a "short" alphabet, he would in all likelihood

have tacked the extra signs he needed on the end of the alphabet, as he did with the three extra signs that he did devise ({i̯, u̯, s̱})—and as the Greeks did when they borrowed and adapted the West Semitic alphabet; or he would have adapted existing signs in groups, as the Arabs did when they revised the Northwest Semitic alphabet. Rather, he seems to have been following an established order in which {ḫ} followed {g}, {š} followed {k}, et cetera. Because the Ugaritic phonological system does not perfectly match the writing system (e.g., is used inconsistently), it is likely that the alphabet was originally borrowed from a West Semitic language with a slightly different consonantal inventory and/or that the use of the long linear alphabet already had a history at Ugarit.

- The order of the long alphabet, as illustrated by the Ugaritic abecedaries, makes the hypothesis plausible that the short alphabet is a simplification of the longer one: that is, certain sign forms were dropped from usage when not needed (probably in the process of adoption from one language to another, rather than by alphabet reform in a given community), for alphabet usage tends to be conservative.
- The recent discovery at Ugarit of an abecedary in the South Semitic order and with variant sign forms (Caquot, forthcoming; Bordreuil and Pardee, forthcoming), and the earlier decipherment of a cuneiform tablet from Beth-Shemesh as an abecedary in the South Semitic order (Loundin, 1987; further bibliography in Bordreuil and Pardee, forthcoming), prove the widespread use of a different alphabetic order coupled with variant sign forms. [*See* Beth-Shemesh.] These abecedaries must reflect the use of a language of the South Semitic type in Canaan, although they and a few signs on sherds from Kamid el-Loz (Röllig and Mansfeld, 1969–1970) are the only present evidence for that usage. [*See* Kamid el-Loz.]

Spread of the Semitic Alphabet. The date of the earliest Phoenician inscriptions has been much debated. The Ahiram inscription is the earliest continuous text in a Phoenician dialect, but arrowhead inscriptions from about 1100–900 BCE and a few very brief inscriptions from Byblos and other sites illustrate the use of the alphabet in the Early Iron period. [*See* Ahiram Inscription; Byblos.] It is also clear that the Ugaritic cuneiform system was occasionally used to write Canaanite at the very end of the Late Bronze Age (the language of a late thirteenth-century BCE inscription from Sarepta in Ugaritic script has been classified as Phoenician: see Greenstein, 1976, and Bordreuil, 1979). [*See* Sarepta.]

By the late tenth–early ninth centuries BCE, inscriptions in Aramaic and Hebrew illustrate the spread of the Phoenician alphabet inland. It is clear that the Aramaeans borrowed the alphabet from the Phoenicians because the sign forms in the earliest inscriptions are Phoenician and because there were major phonological differences between the two languages that affected the development of Aramaic orthography. [*See* Arameans; Phoenicians.] For example, /ḏ/ and /ṣ/ had coalesced in Proto-Phoenician and only one sign remained; Aramaic, on the other hand, had a phoneme, /ḏ/, the scribes represented by means of {q}; at a later point, the pronunciation of /ḏ/ shifted and the scribes began representing it by {ʿ}: for example, "earth" {ʾrṣ} in Phoenician is written {ʾrq} in Old Aramaic, {ʾrʿ} in the Persian period.

Because /š/ survived as a phoneme in Hebrew but without a corresponding sign in the Hebrew alphabet, it is clear that the Hebrews borrowed the standard short alphabet from the Phoenicians or from speakers of another Northwest Semitic language who used the same alphabet. (For the possibility that other consonantal phonemes had survived in the Hebrew of the biblical period that were not noted in the writing system, see Kutscher, 1982, pp. 17–18.) All that can be said for the present is that the Hebrew alphabet does not represent an independent adaptation of the short alphabet to the peculiarities of the Hebrew language (cf. Cross, 1980, pp. 13–15).

Within the Levant the various linguistic/political/geographic entities adopted the alphabet, and the sign forms underwent local evolutions (Naveh, 1982/1987; Cross, 1980). The alphabet spread throughout the Semitic world and to its colonies (Phoenicians in the West). After Aramaic was adopted as a lingua franca by the Achaemenids, its usage spread throughout the Near East and beyond; Aramaic even seems to have been used logographically in areas corresponding to modern Turkmenistan and Georgia (Naveh, 1982/1987, pp. 127–130). The short alphabet was eventually borrowed by Arabic speakers and adapted in a different order to express the fuller consonantal inventory of Arabic—twenty-eight phonemes (Naveh, 1982/1987, pp. 153–162). [*See* Arabic.]

Contribution of Greek. There has been a long controversy about the date at which the Greeks borrowed the West Semitic consonantal alphabet, with proposals ranging over several centuries—from the middle of the second millennium BCE to the early eighth century BCE. Phoenician and Aramaic inscriptions from as early as about 900 BCE (Bisi, 1991) are rare in the West, and the earliest Greek inscriptions date to the early eighth century BCE; thus, a hypothetical earlier borrowing of the alphabet must be based on the typology of letter forms: the earliest Greek letters most clearly resemble West Semitic signs from what period? Viewed abstractly, denying a date significantly earlier than the first inscriptions is essentially an argument from silence: because no examples exist of Greek writing earlier than the eighth century BCE, the writing system was adopted relatively shortly before that date. Following Rhys Carpenter's 1933 article of fundamental importance, P. Kyle McCarter (1975) and Maria Giulia Amadasi Guzzo (1991) have made

very strong arguments from sign typology that essentially back up the argument from silence, to the effect that archaic Greek letters look like West Semitic forms from the late ninth/early eighth centuries BCE.

A less heated debate has been carried on with regard to the place where the alphabet was borrowed, with proposals tending to fit the date being argued. Because of the varieties of letter forms and alphabetic configurations attested among the Greeks, there are even those who favor multiple borrowings: while refusing to choose a particular place of borrowing, Amadasi Guzzo (1991, p. 309) makes an essential methodological point: the sophistication shown in recognizing phonetic equivalences between the Greek borrower's language, the Phoenician system being borrowed, and the adaptations to Greek needs requires that the place of borrowing be a metropolitan center with significant groups of both Greeks and Phoenicians, including well-trained scribes. [*See* Scribes and Scribal Techniques.]

The alphabet borrowed by the Greeks was of the Phoenician type, consisting of twenty-two consonantal signs. This is clear both from early Greek abecedaries and from the numerical value of the Greek letters (Piérart, 1991, pp. 571–573, figs. 1, 2). Most scholars assume that the Phoenicians themselves were the transmitters—in no small part because of the many contacts between Greeks and Phoenicians on their common Mediterranean waters. It cannot be ruled out that the Arameans were involved, but because the Arameans were not known as seafarers, this theory usually involves overland transmission across Asia Minor (Amadasi Guzzo, 1991). The strongest basis for this theory remains the Greeks names of the letters, such as *alpha* and *delta,* for they seem to reflect Aramaic pronunciation, not Phoenician (which would be *'alp* and *dalt*). It has been counterargued that forms like *alpha* only represent the Greek pronunciation of consonantal clusters such as /-lp/ at the end of the word, whereas some letter names, such as *iota,* presuppose a non-Aramaic origin (Naveh, 1982/1987, p. 183).

By inventing the notation of vowels, the Greeks made their own contribution to the history of the alphabet. On the Semitic side, a start in this direction had been made that has become systematized in Hebrew and in Arabic: the use of matres lectionis. The consonants *'aleph, hē, wāw,* and *yōd* were first used by Arameans and Hebrews to indicate a long vowel. The usage may have arisen by analogy from historical writings (e.g., if/bayt/becomes/bêt/, the tendency is to continue writing the word with {y}, even though the consonant is no longer pronounced). It never became a rigid system in any of the Hebrew or Aramaic dialects of the pre-Christian era, but in time more and more *matres lectionis* are found in the texts. They are used, for example, more frequently in the so-called sectarian documents from Qumran than in the received text of the Pentateuch, which represents a stage of the text dating a few centuries earlier than the Dead Sea Scrolls. [*See* Qumran; Dead Sea Scrolls.]

It is for the present a moot point whether the Greeks knew about such usages—they certainly did not if the alphabet was borrowed from the Phoenicians, for matres lectionis were not a part of normative Phoenician orthography in the eighth century BCE. What the Greeks did, in any case, was to give vocalic values to certain Phoenician consonants that did not correspond to consonantal phonemes in the Greek language, beginning with the first letter of the alphabet: the sign for the West Semitic consonant /'/ was used to represent the vowel /a/ by the Greeks. The signs for all the Semitic gutturals (/', h, ḥ, ʿ/) were so adapted, as were those for the two continuants /w/ and /y/.

The addition of vowel signs made the alphabet more explicitly expressive, for it provided a more complete pronunciation of a word than did the notation of consonants only. The notation of vowels made the Greek alphabet a stronger pedagogic tool, allowing for a decrease in the importance of oral tradition in teaching. This increased expressivity not only gave a more complete rendition of words in a given language, but also facilitated reading and understanding a foreign language. Greek also had a series of consonantal phonemes that did not have correspondences in Phoenician. New signs were invented or existing ones were transmuted for those sounds and they were added to the end of the alphabet—whence come several of the letters that occur in the English alphabet after {t}, the last sign of the West Semitic alphabet. The transmission of the alphabet to the Greeks permitted the writing down of Greek traditions that have by this means become part of modern culture. For example, the Homeric traditions plausibly began being committed to writing in the eighth century BCE, shortly after the full alphabet was devised (Amadasi Guzzo, 1991, pp. 307–308; Powell, 1991).

The invention of the consonantal alphabet by the Semites and its transformation by the Greeks for the notation of vowels are often cited as important factors in the democratization of writing. Although widespread literacy did not follow immediately upon the invention of the alphabet, a more rapid spread of literacy can be seen after the invention of the vowels. [*See* Literacy.] There is certainly a good deal of truth in linking democratization and the alphabet: to the extent that the growth of democracy required an educated middle class to deal with the complexities of growing societies, the ease of use of the alphabet may be thought to have facilitated, by the principle of efficient use of resources, this process.

Owing to the spread of alphabetic usage throughout the Mediterranean world and eastward during the last centuries of the pre-Christian era, the major writings of the three great Western religions have, with relatively few exceptions (e.g., Ethiopic), been transmitted in alphabetic scripts (e.g., Hebrew, Greek, Latin, Syriac, Coptic, Arabic, Armenian). [*See* Ethiopic; Latin; Syriac; Coptic; Armenian.]

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DENNIS PARDEE

ALT, ALBRECHT (1883–1956), Hebrew Bible scholar and founder of the discipline of historical geography. Alt was born in Stübach, near Neustadt/Aisch, in Bavaria. After finishing the gymnasium in Ansbach, he studied theology in Erlangen and in Leipzig. In 1909 he received a doctorate of theology for his thesis "Israel und Ägypten." In that same year, he received a promotion to lecturer at the University of Greifswald, where he served as associate professor of Old Testament studies. He became a full professor at Basel in 1914 and at Halle in 1921. He held the Old Testament chair at Leipzig from 1923 until shortly before his death. Alt was a very gifted teacher, and many of the most important scholars in the field of Old Testament studies were his pupils: Martin Noth, Gerhard von Rad, Herbert Donner, and Siegfried Herrmann. He was also closely affiliated with the Evangelisches Institut für die Altertumswissenschaft des Heiligen Landes. He made two long visits to Palestine in 1908 and 1912–1913 and directed the institute's scientific research and field trips there from 1924 until 1931. In 1925 he became president of the Deutscher Verein zur Erforschung Palästinas and in 1927 editor of the *Palästina Jahrbuch*.

Alt had a profound knowledge of the texts dealing with the history of Palestine in all periods, as well as an intimate knowledge of the country itself. He developed the history of its territories in the biblical period (*Territorialgeschichte*) as a special subject area in the discipline of the historical geography of the Holy Land, with far-reaching results. Although he never published a book summarizing his work, many of his papers became the focus of further research and advanced theories. His critical studies of the lists of the cities in the Hebrew Bible were used as primary sources for the many different periods of Israel's history. Developing the critical view of German scholarship toward the historicity of the *Book of Joshua*, Alt articulated a new theory of the conquest of the land by the tribes of Israel: the immigration, or

infiltration, theory. Even though some of his ideas are no longer accepted, many others remain of fundamental importance to the fields of archaeology and biblical studies, especially in the areas of biblical law and social development. He influenced not only his own pupils, but scholars all over the world. His collected papers appeared in 1953 and 1959 in three volumes, the last one edited by Noth. A selection of his work in English translation appeared in 1966 under the title *Essays on Old Testament History and Religion.*

Alt has been praised by those who studied with him as a stimulating teacher who encouraged his pupils to do original work. His knowledge of topographical and historical details exceeded that of all his colleagues and enabled him to develop new views for certain regions and whole epochs. Although he never participated in an excavation, Alt closely followed the progress of archaeological fieldwork. In his own work, he used pottery as a key indicator for chronology, combining surface exploration with text interpretation in a unique way. This new approach to the material advanced specialized research into the territories and regions of ancient Palestine.

[*See also* Historical Geography; *and the biography of Noth.*]

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VOLKMAR FRITZ

ALTARS. In the ancient Near East, altars are typically classified on the basis of their material and style of construction. However, the flexibility and comprehensiveness of a typology based on function and location allows altars to be described within an archaeological context useful in analysing written sources such as the Hebrew Bible. The term *altar* refers to any surface on which an offering to a deity is placed. The use of altars is widespread geographically and chronologically throughout the Near East, with types ranging from plain rock surfaces to elaborate installations within temple complexes. Although altars were associated with the presence of a deity, their location was not limited to the area of temples. Altars were often located on hilltops, raised platforms, and rooftops, as well as in a range of settings not characterized by height. The term *altar* should not be applied to the interior raised platform, or "dais," found opposite the entry to many temples, on which the image of the deity was displayed.

A distinction is made archaeologically between altars found outside structures (type I) and those found within structures (type II), both having a number of subtypes.

1. *Rock altars: type Ia.* An example of a rock altar is the stepped stone block with channels and cup marks found at Tel Sera', west of Jerusalem. This installation has been associated with the account of the sacrifice of Manoah in *Judges* 13. It is often impossible to verify the date or religious function of this type of altar because of the lack of associated artifacts. It should also be noted that seemingly "secular" installations, such as threshing floors, may have had religious/cultic connections in ancient times. [*See* Sera', Tel.]

2. *Open altars: type Ib.* Installations known as open altars had clear cultic functions but were not located within temple complexes. An example is the Early Bronze Age structure (4017) at Megiddo, in ancient Palestine, a large altar (8 m diameter) mounted via steps. [*See* Megiddo.] In later periods this type of installation is found surrounded by a number of temples (although it does not afford direct access to them). Other buildings sometimes found near open altars may have had a function within the cult, but they are not considered temples. Throughout the Near East evidence of open altars comes primarily from the Bronze Age.

3. *Enclosed altars: type Ic.* Found commonly throughout the Bronze and Iron Ages, enclosed altars were located within the forecourt of temple complexes. Examples of this type may be seen in the temple areas at Kition on Cyprus. [*See* Kition.] Another prominent example is the stone and earth altar of the Judahite temple at Arad. [*See* Arad.] Biblical evidence (1 *Kgs.* 9:25, for example) indicates a similarly located altar in the courtyard of the Solomonic Temple in Jerusalem, but this has not been verified archaeologically. Both the archaeological and written evidence identify open and enclosed altars (Heb., *mizbēaḥ*), often with "horns," as the site of burnt offerings. The written evidence suggests that the materials used in the construction of these altars included earth, stone, and metal, although there are no known excavated examples of metal.

4. *Incense altars: type IIa.* It is unlikely that altars found within buildings were used for the burning of animal sacrifices. It was the practice within temples, however, to burn several types of incense. A variety of stone and ceramic stands have been identified as incense altars, and a number of the former, which may have had a religious function, have also been identified in "secular" contexts. Incense altars became ubiquitous in the southern Levant during the Persian period.

5. *Presentation altars: type IIb.* The "presentation" altar is found within temples and related buildings but is not associated with burning. It is a surface upon which offerings to the deity, such as grain, could be placed. At times, presentation altars took the form of benches (often plastered mud brick); stone "tables" or ceramic stands also served this function.

6. *Libation altars: type IIc.* Offerings to deities also included liquids, such as water, wine, and oil. Installations with depressions—plastered mud brick or large stone basins (e.g., the Gezer stelae field), detached stone tables with carved depressions (e.g., Hazor, area H), or bowls placed

on ceramic stands—held such offerings. This type of altar is often found within the temple itself (cf. Lachish Palace Temple) or in its courtyard (e.g. 'Ein-Gedi). [*See* Gezer; Hazor; Lachish; 'Ein-Gedi.]

Altars were the focal point of communication between the human and divine realms and are ubiquitous in those areas of the Near East where religious practice included the transmission of foodstuffs to the gods.

[*See also* Cult; Incense; *and* Temples.]

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ROBERT D. HAAK

AMARNA, TELL EL-, site of the capital of the heretic Egyptian king Akhenaten, built to honor his sole god, Aten, located in Middle Egypt (27°38′ N, 30°53′ E). The large mud-brick and stone expanse of the city, as well as the cuneiform clay tablets found there within a state archival office, have made Tell el-Amarna important to archaeologists and essential to historians of the Near East in the Late Bronze Age.

Identification. The remains of Tell el-Amarna today stretch some 10 km (10 mi.) north to south on the east side of the Nile River. The ancient city and environs occupied nearly twice that distance on both sides of the river and were together called *Akhetaten*, "the Horizon of the Aten (sun disk)." The name was given by the city's founder, Akhenaten, on a series of stēlae placed to delimit Tell el-Amarna. The city within Akhetaten may have had a separate designation or more than one, and the monumental buildings that Akhenaten placed within the city likewise had discreet appellations (for some of these see below).

ALTARS. *Limestone incense altars.* Tel Miqne, Iron II period. (Courtesy ASOR Archives)

AMARNA, TELL EL-. Figure 1. *Limestone bust of Queen Nefertiti.* New Kingdom, eighteenth dynasty, Amarna period, c. 1340 BCE. Height, 50 cm. Egyptian Museum, Berlin. (Erich Lessing/Art Resource, NY)

The name *Tell el-Amarna* is a misnomer, for the site has no visible mound that characterize tells in the Near East generally. Modern names and spellings have shifted since Western expeditions arrived there in the late eighteenth century. First designated with the name of the village of El-Tell by the Napoleonic expedition of 1798, the site was called by several names, for example, Till Bene Amran, used by Robert Hay in 1829. European travelers conflated the villages of et-Tell (or Till) and el-Amariya with a tribe settled in the region called Ben Amran. The name *Tel(l) el-Amarna* first appeared on a publication by Sir John Gardner Wilkinson, who mapped the site and published his map in 1830.

Occupational History. Tell el-Amarna, or el-Amarna as it is now more commonly termed, consists principally of the capital built for King Akhenaten, about 1350 BCE, on land that he believed to be previously unsettled. (Son of Amenhotep III, Akhenaten had ascended the throne as Amenhotep IV, but changed his name a few years later.) A few areas of the site were occupied, however, during other ancient eras. Earliest remains are known from several Paleolithic sites with flint concentrations, and a few Neolithic (predynastic) artifacts suggest pre-third millennium occupation in the region.

Akhenaten's city within Akhetaten was largely abandoned within a dozen years of his death. The ruler who succeeded Akhenaten for a year or two, Smenkhkare, appears to have resided in el-Amarna, and Tutankhaten, who soon changed his name to the more familiar Tutankhamun, is well attested at the site for at least another two years. Building activity is documented also in a worker's village in the period following Tutankhamun's abandonment of Middle Egypt and return to the region of Thebes. The full seventeen years of Akhenaten's reign, together with the dozen or so years comprising Smenkhkare's, Tutankhamun's, and Ay's rules, are often referred to as the "Amarna Period," although el-Amarna was not inhabited during all of it.

In one region of southern el-Amarna, near the river, are the remains of a town that survived the abandonment of the main city. Fragmentary architecture of late New Kingdom date or later are mixed there with sherds of the Amarna period. Although originally identified as the "river temple," the bits of structures have recently been relabeled as house remains. A few burials of the twenty-second–twenty-third dynasties were found in the early 1920s near the worker's village, and in 1984 a burial of the twentieth–twenty-first dynasties was excavated in the same area. Sherds of the Late Period (end of eighth century–332 BCE) were found near the southern tombs of Akhenaten's nobles. These may have belonged to burials of a population living in the general vicinity (possibly the river town) or may indicate transient activity through the area for various purposes, possibly even illicit ones, that is, tomb robbery. In the Roman period several settlements existed at the site of el-Amarna, and Coptic Christians later converted tombs there for housing and worship.

Research and Excavation. The largest of the few preserved Egyptian cities, el-Amarna has been frequently explored and studied. Recent surveys and comparisons with the earliest maps of the region indicate that el-Amarna has always been visible to interested visitors. Areas destroyed by illicit digging appear to have been only slightly less disturbed 150 ago than today.

As early as 1714 Father Claude Sicard, a French Jesuit missionary, published a drawing of Amarna Boundary Stela A at Tuna el-Gebel. The Napoleonic scientific expedition visited the region in 1799, and Edmé Jomard produced a plan of El Tell in the pioneering study *Description de l'Égypte,* published in 1817. Sir John Gardner Wilkinson visited el-Amarna in 1824 and 1826 to draw, plan, and copy the buildings and tombs and he produced plans of the entire city. Other travelers in the 1820s and 1830s, such as Robert Hay, James Burton, and Nestor L'Hôte, made copies of the

tombs of Akhenaten's nobles. The royal Prussian expedition led by Richard Lepsius drew plans of the city of el-Amarna between 1843 and 1845.

The first modern archaeological work at el-Amarna took place in 1891–1892 when Sir William Matthew Flinders Petrie opened excavations in a variety of locations at the site. Several expeditions followed in rapid succession, culminating in the methodical survey and excavations of Ludwig Borchardt (1907, 1911–1914), carried out for the Deutsche Orient-Gesellschaft. Some of the best-known works of Amarna art were uncovered during this period, including the famous bust of Nefertiti (see figure 1), which is now in the Egyptian Museum in Berlin (Charlottenburg), and numerous other statues found in the house and workshop of the sculptor Thutmose in the main city/south suburb. The Egypt Exploration Fund (now Society) of London copied and published the private tombs and boundary stelae between 1901 and 1907. They resumed work at the site in 1921 under a succession of well-known directors, including Thomas Eric Peet, Henri Frankfort, Francis Llewellyn Griffith, and John D. S. Pendlebury. The EEF explored nearly all areas of the site, moving from peripheral regions such as the worker's village, the "river temple," and the northern palace to later extensive excavations in the central city lasting until 1936.

In the early 1970s Geoffrey T. Martin reinvestigated the royal tomb at el-Amarna and published in addition the numerous but fragmentary objects from the tomb associated with Akhenaten and Nefertiti. In 1977 the Egypt Exploration Society resumed work under the direction of Barry J. Kemp and has worked at the site since. Kemp commenced excavation at the worker's village that once housed artisans employed in the royal tomb. His team found that the village may have been abandoned and then reinhabited in the time of Tutankhamun by guardians of the royal and private necropoleis. Research has focused on identifying patterns of activity sited within the village, as well as the interdependence between the village and the central city. Kemp has moved his investigations into the main city area since 1987 but continues to be interested in the interrelationships between public and private buildings and their peripheral economic dependencies.

Remains. The fifteen boundary stelae of Akhenaten delimiting the territory of el-Amarna, like the remains of the city they describe, are important monuments. Some of these boundary markers consist only of a stela and others of an actual rock shrine containing statuary. They provide further information vis-à-vis the site, however, for three of them preserve the text of a proclamation made by Akhenaten in the first months of his fifth regnal year, in which he describes and names numerous buildings and complexes to be constructed at Akhetaten. Some of these (e.g., the great Aten temple, the "mansion of the Aten," the royal tomb) can be identified with excavated structures; some cannot with certainty (e.g., the "house of rejoicing and sunshade of the great queen"), and some others appear never to have been completed (e.g., the tomb of the Mnevis bull of Heliopolis). The identifiable buildings correspond to complexes and tombs built throughout much of the 10-kilometer north–south stretch of el-Amarna, a fact that confirms the original design of the city as a long narrow town accommodated to the Nile and the eastern bay of limestone cliffs by a royal road. This road was later redirected in part but remained the primary route linking north areas to the central city.

At its northern end, el-Amarna had a mud-brick northern river palace oriented on its west side to the royal road that travels southward for 6 km (3.7 mi). This palace may have been the principal residence of the king. A group of administrative buildings lies just south of it along with a residential quarter likewise oriented to the road. Farther south is the northern palace, also built to face the royal road and a tourist attraction today. Here, around courts with pools and shaded garden porticoes, lived at least two queens, including Meretaten, Akhenaten's daughter, who resided there after a predecessor, perhaps Nefertiti or Kiya.

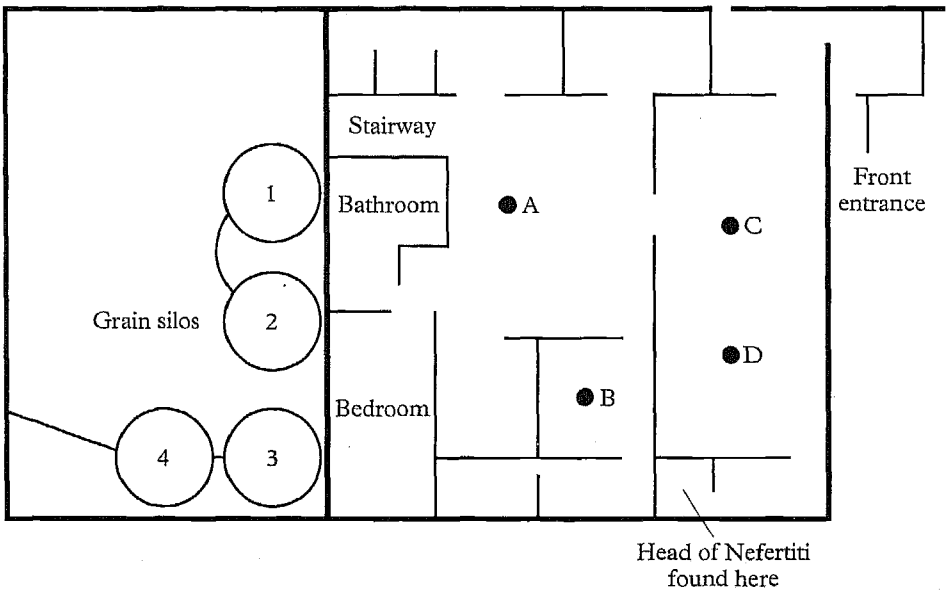
The northern suburb is located to the east of the royal road orientation, and the parts excavated (those farthest north from the central city) appear to have been a late addition. Areas of residence between the northern suburb and the central city have not been excavated but could reveal in time whether this is a natural northern extension from the central city or grew up later in a separate but parallel fashion.

The central city contains most of the buildings whose material remains, architecture, and preserved decoration may suggest a center planned for state administration and worship. Oriented to the royal road, it contained from north to south, the enormous precinct of the great Aten temple ("house" or "estate of the Aten"); the king's house, connected by a bridge to the great palace; the smaller Aten temple (the "Mansion of the Aten"); and the Smenkhkare hall. On the east side of the road, the king's house and smaller Aten temple were the westernmost of a complex of buildings that were crucial to state functions. Kemp considers the King's house to be the most likely siting for the "window of appearance" pictured in numerous private tombs of Akhenaten's officials (Kemp and Garfi, 1993, p. 59). A series of scribal offices lay east of the king's house, including one identified by stamped bricks as the "place of the pharaoh's correspondence." In this archival office were found the majority of the Amarna Letters, famous as the correspondence between the Egyptian rulers Amenhotep III, Akhenaten, and Tutankhamun with kings and city-state rulers from Mesopotamia and the Levant. To the east of the offices lies a garrison block with animal stalls and barracks, as well as separate storage areas for rations. This security complex is not oriented toward the royal road. Being on the eastern edge of the city, it may have had more association with the desert and the wadi due east leading to the royal tomb.

The best-known compound in the central city, the great Aten temple, likewise comprised several structures. The Gempaaten ("the Aten is found") was a multicourted stone building near the western end of the temple precinct. It was entered from a western gateway through high pylons giving on to stone colonnades that themselves led to a series of unroofed courtyards. Within and beside these courts were arranged bread-offering altars, made of stone (within the courts) or brick (south of the courts). More than 750 altars were placed within the Gempaaten, and some 920 brick tables lay to the south of the building. Another 920 may once have existed on the northern side. The formal colonnaded setting appears to have been the primary offering area for Aten state worship but not the actual sanctuary of the temple. Between Gempaaten and a second stone structure to the east, the sanctuary, was a "butcher's yard" with tethering stones and an enormous open area. A separate northern entrance to the open area before the sanctuary was elaborated as a gateway pavilion. A stela of quartizite, perhaps evoking the Heliopolitan *benben* stone, was set up on a line with this entrance. The sanctuary building was flanked to the north by more bread-offering altars, but excavations to the south of the building and just outside the enclosure wall have revealed indications of different ritual activities as well. In a dump Petrie and Pendlebury found plain everted rim bowls with burnt resins inside. In 1986 Kemp confirmed that the bowls with burned "incense" were common in the dump area along with "beer-jar" shapes and other offering vessel types (Kemp, 1989, vol. 4, pp. 116–121). He found fragments of storage jars, and Pendlebury had found seals and labels in the area. Kemp has identified this dump as a significant locale for the sanctuary's refuse. It provides evidence for the libations and offerings of incense made within the neighboring building. Kemp has noted the placement of large bakeries on the south side of the enclosure wall opposite the Gempaaten. The hundreds of altars there would have held loaves from those bakeries; Kemp believes that a segment of the city's populace offered to the Aten on the brick tables to the south of the Gempaaten while the king and family officiated inside the temple proper (Kemp and Garfi, 1993, p. 55). Despite Kemp's contributions, the ritual connection between the sanctuary and the Gempaaten, as well as the use patterns for the complex generally, remain uncertain.

In the main city or south suburb are residential and administrative quarters. Large-scale unexcavated complexes of undoubted administrative nature lie in this sector, largely to the west of more domestic structures. The state and temple institutions operated their own economies and necessarily housed the resources, both perishable and nonperishable. Kemp believes that government workshops may have been situated in these large centers, but he also notes that large institutions appear to have been made up of a number of complexes, often not located together. The designation of industrial centers without inscription as "royal," "temple," or "private" thus becomes problematic (Kemp and Garfi, 1993, pp. 67–69; Kemp, 1989, vol. 5, pp. 56–63).

The house and workshop of the sculptor Thutmose, famous for the many statues and plaster masks of royal family, are located in the south suburb near other sculptors' shops (see figure 2). Thutmose's precise economic and administrative association with his patrons is difficult to ascertain. Whether individual artisans were contracted directly by the court, through court-sanctioned patrons, or both is un-



AMARNA, TELL EL-. Figure 2. *Floor plan of the house of the sculptor Thutmose.* (After Kemp, 1989)

known. For example, some obviously nonroyal estates appear to have housed royal workshops, perhaps as a subcontract from the crown.

Architecture is not always a clear indicator of function. Archaeological research has demonstrated the often diverse patterns of use for both residences and specialized buildings, such as "magazines," which, as Kemp has found, were used both for production and for storage (Kemp and Garfi, 1993, pp. 67–69). Nearly all areas of el-Amarna held residences (royal, temple, private), and those residences nearly always contained separate storage facilities, wells, often industrial centers. The degree to which these separate facilities indicate independent economic behavior is unknown.

To the south of the main city/south suburb is Kom el-Nana, oriented to the original royal road as it was laid out before the growth of the main city. Kom el-Nana is a temple complex with supporting buildings for food production and storage. Kemp believes that this is the third of three major institutions described in the early proclamation, the "sunshade of the great queen" (Kemp and Garfi, 1993, p. 79). Even farther south and entirely isolated is the Maruaten, a site that houses enclosures with altars and shrines along with pools and surrounding gardens. It is clearly linked with queens, including Akhenaten's daughter Meretaten.

Other areas of southern el-Amarna include the abovementioned river settlement, which is a residential area and el-Hawata in the far south also near the Nile. Little remains in this sector. On the opposite end of the site are a number of architectural remains not part of the city proper. Three large desert altars in the northeastern desert, nearly opposite the north palace, are oriented toward the royal road. These mud-brick structures with ramps once held pavilions, perhaps for large-scale royal receptions of dignitaries, such as are pictured in two private tombs. Above these altars are the northern tombs of private residents of el-Amarna. A second set of such tombs exists in the southern cliffs. A total of forty-three tombs was excavated in whole or part. The most elaborate had colonnaded inner halls, and in those that were decorated (many were left incomplete) the royal family and the architecture of Akhetaten figured prominently in painted relief sculpture.

The royal tomb and a few uninscribed smaller tombs were located in a wadi reached through a larger wadi running eastward opposite the central city. Unusual relief scenes of mourning over corpses on beds appear on the walls of the royal burial chamber and on a side chamber used for the burial of Akhenaten's daughter Meketaten, who may have died in childbirth. The royal funerary goods left at the site were smashed into pieces, but remains of the royal sarcophagus and canopic box have been studied (Martin, 1974). At the mouth of eastern wadi was the worker's village, which was apparently used for the building of the royal tomb and later, during the reign of Tutankhamun, for guarding the same area. Residents at this village in the time of Tutankhamun had not only self-sufficient residences but also shrines where families gathered to eat and commune with recently deceased relatives. These shrines would also have been memorial chapels for a household or several related households. The second phase in the worker's village is one of the latest excavated, representing the later reign of Akhenaten through the reign of Tutankhamun, including the time after the court's departure from el-Amarna. The activity of the guards living in the village in the last phase therefore reflects a mixture of religious beliefs with various traditional gods reappearing in shrine images. Following the abandonment of the worker's village, the city of Amarna was both used as a quarry, especially for the Ramesside temple at Hermopolis, and deliberately mutilated. Statuary was destroyed in situ or dragged away and dumped. A similar pattern of reuse and destruction can be seen in the earlier complex at East Karnak, which Akhenaten built both before and after his change of name from Amenhotep.

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BETSY M. BRYAN

AMARNA TABLETS. Tell el-Amarna (ancient Akhetaten) in middle Egypt was, in the fourteenth century BCE, the capital city of Akhenaten, or Amenophis IV. In 1887 local inhabitants discovered cuneiform tablets there while digging in the mounds. The tablets eventually found their way to antique dealers and museums. Subsequently, more tablets were unearthed in organized excavations. The existing corpus consists of 380 tablets now primarily in the British Museum in London, the Vorderasiatisches Museum in Berlin, and the Egyptian Museum in Cairo.

The corpus of the Amarna tablets mainly includes letters sent to the courts of the Egyptian pharaohs Amenophis III and his son Akhenaten. The senders were other kings—namely of Babylonia, Assyria, Ḫatti, Mitanni, and Alashiya—and some minor princes and rulers in the Near East. The majority of the extant letters are from vassals of the Egyptian Empire in the Levant. Some copies or drafts of letters from the pharaohs are also preserved. Another part of the corpus consists of scholarly tablets (e.g., literary texts, vocabularies, and scribal exercises). Most of the Amarna texts were written in Akkadian, the diplomatic language of the ancient Near East in the second millennium BCE (two of the letters were written in Hittite and one in Hurrian). The letters from Canaan reflect a language that is a mixture of the Akkadian lingua franca and the local Canaanite, the mother tongue of their scribes. The Amarna letters from Canaan are thus a unique, and invaluable source for understanding the Canaanite dialects of the second millenium BCE.

The international correspondence is usually concerned with exchanges of gifts; some letters deal with diplomatic marriages and thus give the impression of a time of peaceful relationships among the great political powers of that period. However, the rising power of the Hittites was already threatening the northern border of the Egyptian Empire, which is clearly reflected in the letters from Egypt's vassals in the northern Levant. A considerable number of letters from Byblos (in Lebanon) tell of the pressure put on the coastal plain by Adbi-Aširta and his sons after him. These letters, along with others from the northern Levant, and letters from the Amurrite kings themselves, tell the story of the rise of the state of Amurru, and the shift of allegiance of Aziru, the Amurrite king and son of Abdi-Aširta, from Egypt to the Hittites. Letters from local kings in most areas of Syria and Palestine reflect an almost constant state of conflict and requests to the pharaoh to intervene. Inner-city rebels and pressure from the *ʿapiru*, a class of outsiders, are also commonly mentioned. For example, ÌR-ḫeba, king of Jerusalem, complains about a coalition of other southern Canaanite kings against him led by Milkilu, king of Gezer. Later, in Gezer, Yapaʿu, a successor of Milkilu, complains that his brother rebelled against him and joined the *ʿapiru*. Similar descriptions of unsteady situations come from all over the area dominated by Egypt.

Through the Amarna letters we learn about the relationship both between the empires and among the local Canaanite rulers; about the ways the Egyptian Empire dominated its territories in the Levant; about the social diversity in Syria-Palestine; and about the political structure and struggles between the Hittite and the Egyptian empires at their borders in the northern Levant. The Amarna letters constitute a unique corpus for studying the social and political structure of Syria-Palestine in the second half of the fourteenth century BCE, a time that has accordingly been termed, the Amarna age.

Shortly after their discovery, all of the Amarna texts were published in cuneiform copies, in transliteration, and in translation. Jørgen A. Knudtzon (1915) compiled a full edition of the texts that is still authoritative with regard to their Akkadian texts. The second volume of this edition includes a historical commentary by Otto Weber and an analytic vocabulary by Erich Ebeling. The texts discovered later were published by Anson F. Rainey in 1970 (revised edition, 1978). The language of the Canaanite Amarna letters posited many difficulties, but William L. Moran achieved a breakthrough in 1950 in understanding it as a mixed language. This breakthrough and subsequent research by Moran, Rainey, and others have established the study of the Amarna letters on solid philological grounds. A new, authoritative translation of the Amarna letters by Moran appeared in French in 1987 (English edition, 1992). Historical research has concentrated mainly on the relationships between the great powers and much less on the internal affairs of Syria-Palestine. The first major attempt to tackle the complicated chronological disposition of the letters was made by Edward F. Campbell (1964). This paved the way for Nadav Na'aman's pioneering history of Palestine in the Amarna period (1975). Horst Klengel (1965–1970) was the first to handle comprehensively internal affairs in Syria.

[*See also* Akkadian; *and* Amarna, Tell el-.]

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SHLOMO IZRE'EL

AMATHUS, city on the south coast of Cyprus, approximately 10 km (6.2 mi.) east of modern Limassol, capital of one of the small kingdoms of the island until the end of the fourth century BCE (34°41′25″ N, 33°12′5″ E). The principal part of the site occupies a small hill 88 m (289 ft.) high; toward the south the hill descends in a gentle slope to the sea, but on the other three sides the site is protected by a natural cliff. To the southeast of the acropolis there is the lower city occupied principally during the Roman period, and the port built at the end of the fourth century. The necropoleis extend all around these populated areas, but the unexcavated summit of the hill, called Viklaes, to the east of the acropolis, seems to have been occupied by a Phoenician sanctuary.

The Greek and Latin literary texts concerning ancient Amathus are not numerous. According to the historian Theopompos (fourth century BCE), the city was home to the descendants of the "companions of Kinyras who had been put to flight by the Greeks who accompanied Agamemnon." Pseudo-Skylax on the other hand describes the Amathusians as "autochthonous." The inscriptions discovered at the site confirm that until the beginning of the Hellenistic period the Amathusians wrote and very probably spoke a language that was neither Indo-European nor Semitic, but one that is conventionally called "eteocyprian." However, the dearth of available inscriptions makes translation impossible. Until 1975 the archaeological exploration of Amathus involved only the necropoleis: in 1874–1875 the American consul Luigi Palma di Cesnola had discovered a few spectacular pieces, such as a grand limestone sarcophagus at the New York Metropolitan Museum or a silver cup at the British Museum. The first scientific excavations were carried out in 1893–1894 by a British expedition, followed in 1930 by those of a Swedish expedition directed by Einar Gjerstad. Since 1975, an expedition from the French School of Archaeology in Athens has opened many sites on the acropolis, in the port, and in many places on the ramparts of the city; these excavations have been concluded by a survey of the territory of this small realm. For its part, the Department of Antiquities of Cyprus has taken charge of the excavation of the lower city and associated tombs, especially in those areas, where sites are threatened by constructions prompted by tourism. [*See the biographies of di Cesnola and Gjerstad.*]

Many sites located close to the city testify to an occupation of the region since the Pre-Pottery Neolithic but, curiously, no important settlement has yet been attested in the Late Bronze Period, when the south coast of Cyprus knew its most important development (despite Cesnola's claims to have discovered oriental cylinder seals and Mycenaean pottery at Amathus). The earliest evidence of occupation of the site dates to the eleventh century, but this consists of no more than a small deposit of pottery found on the slope of the acropolis and, perhaps, of the tomb situated at the very top of the hill, in the future sanctuary of Aphrodite. The other oldest tombs currently known date no further back than the late Cypro-Geometric I (i.e., the beginning of the tenth century BCE), and a more dense occupation of the site, characterized by the exchanges with Phoenicia and the Aegean world, is attested only in Cypro-Geometric II and III (end of the tenth–eighth century). On the acropolis, the first phases of the sanctuary of Aphrodite and the palace do not date back further than the eighth century.

Regarding the occupation of Amathus in the Cypro-Geometric II–III and at the beginning of the Cypro-Archaic, it is necessary to consider the problem of the identification of the kingdom of Qartihadasht, the Carthage of Cyprus, mentioned both in the dedication of a bronze bowl discovered in the last century in the area of Amathus/Limassol (object offered to Baal of Lebanon by a "governor of Carthage, servant of Hiram, king of the Sidonians," eighth century), and in the list of the Cypriot kings subject to Esarhaddon and Ashurbanipal (seventh century). Given the importance of the Phoenician influence on the material culture and religion of Amathus, it is altogether possible that this "Carthage of Cyprus" referred to Amathus, even if the Phoenicians exerted only a tenuous power there and the majority of the population was made up of "Eteocypriots." To the arguments that result from the studies already published one must add the discovery in 1992, in the west part of the necropolis by the edge of the sea, of a great mass of burials in vases placed on the bare earth. These hundreds of vases, which contain the remains of children or adults, seem to date between the end of Cypro-Geometric and the Cypro-Archaic. This was very probably the Phoenician necropolis of Amathus. In the fifth and fourth centuries, when Cyprus was a part of the Achaemenid Empire, the Phoenician presence at Amathus was visibly limited: all the kings had Greek names. In the absence of inscriptions, only isolated monuments such as anthropoid sarcophagi, brought to light in the

necropolis, and fragments of the "throne of Astarte" discovered on the hill of Viklaes, to the east of the acropolis, still testify to the role played in the city by the Phoenicians.

On the acropolis, two sites opened by the French expedition have revealed important information on the history and civilization of Amathus. The first, situated half-way up the hill, explored a large building of which the first two levels date to the end of the Cypro-Geometric and the Cypro-Archaic; these levels are followed by a reconstruction of the whole at the end of the sixth century or the beginning of the fifth and then a destruction around 300. At the moment only the area of the warehouses has been excavated, but there are numerous similarities with the palace of Vouni, on the north coast of Cyprus, excavated by the Swedish expedition of Gjerstad, and consequently there is a good chance that this building on the acropolis is the palace of the kings of Amathus, destroyed no later than the war between Ptolemy I and Demetrios Poliorcete. [*See* Vouni.] The pottery imported from Athens and the quality of the limestone sculpture (among which it is necessary to mention the Hathoric column capital dated around 480, the loveliest example of this type discovered at Cyprus) testify to the wealth of the local princes in the fifth century after the victory of their allies, the Persians, over the Cypriots who joined the revolution on the side of the Ionians (499–497).

Currently the best-known site at Amathus is the sanctuary of Aphrodite, situated at the summit of the acropolis. Cited by the Roman historian Tacitus (*Annals* 3.62) as one of the most important on Cyprus, it was definitely identified in 1979 owing to the discovery of two dedications made by king Androkles, a contemporary of Alexander the Great. These dedications were addressed to "the Cypriot" (Kypria) and to "the Cypriot Aphrodite" (Aphrodite Kypria). The sanctuary developed beginning in the eighth century, no doubt on the site of an older tomb, perhaps that of Ariana-Aphrodite mentioned by Plutarch (*Life of Theseus* 20.30–34, citing the Amathusian historian Paion). Although the ancient cities were devastated in the Roman period and, above all, in the early years of Christianity, some characteristics of the primitive sanctuary can be discerned. There was a large court open to the sky, into which a small natural cave opened. This area was dedicated to the cult down to the fifth century. Two large monolithic vases made of local limestone were also found here, one of which was taken to the Louvre in Paris in 1865; weighing approximately 13,000 kg (14 tons), it has four handles, one of which bears an Eteocypriot inscription. Beneath these handles the vase is decorated with bulls. The water that these vases contained was perhaps used in ablutions of the faithful during rituals practiced in the sanctuary. In the sixth to fifth century a fair number of figurines of the Greek Kore or of the breast-holding Phoenician "Astarte" type were offered. Furthermore, a Hathoric column capital made of limestone, which was found in a Christian wall near the vases, shows that the local goddess was equivalent to the Egyptian cow-headed Hathor, who was also a goddess of love and fertility. In the Hellenistic period, an inscription suggests that the cult of Isis and Serapis was associated with that of Aphrodite. This association was illustrated by the discovery just under the palace of many terra-cotta figurines, from the end of the Hellenistic period, representing Aphrodite and Isis. In the last quarter of the first century CE a monumental Greek temple was constructed, but with "Nabatean" column capitals of great quality. At the beginning of the seventh century CE the surviving pagan buildings were destroyed for the construction of a church and other Christian buildings. The site was abandoned at the end of the seventh century, when Limassol became the principal urban center of the region.

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Each year a report on the work of the French expedition and the Department of Antiquities is published in the *Bulletin de Correspondance Hellénique*. For monographs on the results of the French expedition, see Pierre Aupert et al., *Amathonte I. Testimonia 1: Auteurs anciens, monnayage, voyageurs, fouilles, origines, géographie* (Paris, 1984), which contains all the literary sources concerning Amathus; Antoine Hermary, with Veronica Tatton-Brown, *Amathonte II. Testamonia 2: Les sculptures découvertes avant 1975* (Paris, 1981); Robert Laffineur et al., *Amathonte III. Testimonia 3: L'orfèvrerie* (Paris, 1986); and Anne Queyel, *Amathonte IV: Les figurines hellénistiques de terre cuite* (Paris, 1988). Antoine Hermary provides a synthesis in French and English, with a detailed bibliography, in "Les fouilles françaises d'Amathonte/The French Excavations at Amathus," in *Kinyras: L'archéologie française à Chypre*, pp. 167–193 (Lyon, 1993). The excavations of the Department of Antiquities are covered in Vassos Karageorghis et al., eds., *La nécropole d'Amathonte: Tombes 110–385*, 6 vols. (Nicosia, 1987–1992). For the early periods and relations with the East, the reader should consult Antoine Hermary, "Amathonte de Chypre et les Phéniciens," in *Phoenicia and the East Mediterranean in the First Millennium B.C.*, edited by Éduard Lipiński, pp. 375–388 (Louvain, 1987); and Vassos Karageorghis and M. Iacovou, "Amathus Tomb 521: A Cypro-Geometric I Group," *Report of the Department of Antiquities of Cyprus* (1990): 75–100, pls. 4–11. A guide of the site, edited by Pierre Aupert, is in press.

ANTOINE HERMARY

Translated from French by Melissa Kaprelian

AMERICAN CENTER OF ORIENTAL RESEARCH. Located in Amman, Jordan, the American Center of Oriental Research (ACOR) was established in 1968, but its origins belong to the turn of the century. In 1900 the American School of Oriental Research (ASOR) was established in Jerusalem as a permanent research center that would facilitate regional biblical, historical, linguistic, and archaeological studies. After 1967 the school became known as the Albright Institute of Archaeological Research. In the aftermath of the 1967 War, because it is situated in East Jerusalem, it became logistically impossible to continue using the institute as a base of operations for archaeological

field projects in Jordan and neighboring Arab countries. Dr. G. Ernest Wright, then president of ASOR, called for the establishment of a new research institute in Amman, and in 1968 an apartment was rented near the first traffic circle on Jebel Amman. Like its predecessor in Jerusalem, the future of the Amman institute was very uncertain at its genesis. Funding was minimal and the new center had neither a library nor other assets.

In 1971 ACOR was legally incorporated and registered in both the United States and Jordan as a nonprofit educational and cultural organization. It is governed by a board of trustees in accordance with its charter and bylaws. Although ACOR is technically an independent organization, it has always maintained a close working relationship with its parent organization, ASOR.

For the first seven years of its existence, ACOR operated with a modest annual budget of less than $25,000 provided by grants from the U.S. Information Agency (USIA), ASOR, and private contributions. Its directorship was a one-year appointment that also carried with it the title "annual professor." In addition to facilitating the research projects of U.S. and Canadian scholars, the directors also taught courses at the University of Jordan and were instrumental in setting up the master's program in archaeology there. The ACOR directors in order of their terms of service between 1968 and 1975 were Rudolph Dornemann, Murray Nichol, Bastiaan van Elderen, Siegfried Horn, Henry Thompson, and George Mendenhall. During those early years a cook was the only full-time employee.

In 1971, the center moved to somewhat larger quarters near the third circle on Jebel Amman and a small library collection was established. The appointment of James Sauer as director in 1975 marked an important turning point for ACOR. Sauer was the first long-term appointment, serving from 1975 to 1981. During his tenure, a hostel was established to provide accommodations for visiting scholars, and the number of research projects working through the center more than doubled. The operating budget tripled and income generated from the hostel and equipment rental made the institute less dependent on external funding sources. By 1977 ACOR had outgrown the third-circle facility and a newly constructed two-story house was rented near the sixth circle on Jebel Amman. In 1980 new fellowships were established with funding from the National Endowment for the Humanities.

The rapid growth of ACOR's projects and program, along with rising rental costs in Amman, spawned a discussion in the late 1970s about the advisability of constructing a permanent facility for ACOR. Crown Prince Hasan ibn Talal encouraged this course of action, pledging his government's support in securing land.

The task of overseeing the fund-raising and construction projects was undertaken by David McCreery, who served as director from 1981 to 1988. Throughout the 1980s, the number of field projects working through ACOR, of long-term appointees, of library volumes, and of resident scholars continued to increase. The public lecture series and field trips to archaeological sites initiated by Sauer grew in popularity.

In June 1986 the new ACOR facility, located at the western edge of Amman, near the university and the British and German archaeological Institutes, opened its doors. The 25,000-square-foot facility comfortably accommodates thirty people, a library, private study carrels, a conservation lab, workrooms, storage rooms, and a lecture room.

Between 1988 and 1994, ACOR was directed by Bert de Vries (1988–1991) and Pierre Bikai (since 1991). Under these most recent directors a Cultural Resource Management program was established in cooperation with the Jordanian Department of Antiquities to protect and conserve endangered sites. ACOR works closely with Jordanian and U.S. governmental agencies to coordinate the interests of the international scholarly community and governmental agencies interested in developing archaeological sites for their touristic and economic value to the country. The ACOR library holds more than twenty thousand volumes, making it one of the best in the region. In 1994, a newly equipped conservation lab was inaugurated and immediately put to use by a U.S./Finnish/Jordanian team working on the fifth–sixth-century Petra papyri. [*See* Petra, *article on* Recent Finds.]

Approximately forty archaeological field projects are currently associated with ACOR. ACOR is today actively promoting the investigation of Jordan's prehistoric and post-classical (Islamic) periods. Although archaeological research has always been the focal point of the institute, throughout the early 1990s the scope of ACOR-sponsored research was broadened dramatically. The institute now offers fellowships in a variety of disciplines under the overall rubric of Near Eastern Studies. The institute houses up to thirty scholars and students on a regular basis and has an overflow capacity of up to seventy during the peak excavation season. ACOR has become a truly international institute.

In 1992 ACOR initiated a new program with the goal of producing high-quality archaeological publications in Jordan. With funding from the U.S. Agency for International Development, the first major ACOR publication—*The Mosaics of Jordan*—appeared in 1993, followed by volumes on the architecture of the Great Temple of Amman and the Jordan Antiquities Database and Information System. A publications endowment has been established to ensure the longevity of ACOR's publication program. In its brief twenty-five-year history, ACOR has undergone several transformations, to take its place, despite political and financial obstacles, as a dynamic research institute in the Near East.

[*See also* Albright Institute of Archaeological Research; American Schools of Oriental Research; *and the biography of Wright.*]

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DAVID W. MCCREERY

AMERICAN INSTITUTE FOR MAGHREB STUDIES. Founded in 1984 as a private, nonprofit association to foster research and promote scholarly cooperation between the United States and countries in North Africa known collectively as the Maghreb (Algeria, Libya, Mauritania, Morocco, and Tunisia), the American Institute for Maghreb Studies (AIMS) is supported financially by individual and institutional memberships, as well as by public and private grants. AIMS meets annually in conjunction with the Middle East Studies Association.

AIMS operates an overseas center, the Center for Maghrebi Studies in Tunis (Centre d'Études Maghrébines à Tunis, or CEMAT). CEMAT was established in 1985 under an agreement between AIMS and the Tunisian Ministry of Higher Education and Scientific Research. The ministry provides CEMAT's premises and administrative support, while AIMS contributes an American resident director. CEMAT assists visiting researchers in making contact with local scholars, gaining access to research resources, and securing permissions for fieldwork. It also sponsors lectures and seminars by local and foreign scholars and museum and archaeological site tours. CEMAT maintains a reference library of works in English on the Maghreb, especially American and British dissertations not otherwise readily available in the region. It also possesses a large collection of World War II–vintage topographic maps of the Maghreb.

AIMS sponsors an annual regional conference on a specific topic held on a rotating basis in one of the Maghreb countries. In developing its programs and planning its annual conference, AIMS and CEMAT work closely with an advisory commission composed of Tunisian, Moroccan, Algerian, and American members. AIMS offers grants for travel and research in the Maghreb, mainly for topics in the humanities and social sciences. AIMS also publishes proceedings of its annual conferences and occasional papers. AIMS is a member of the Council of American Overseas Research Centers (CAORC) and is associated with the Tangier American Legation Museum in Morocco.

[*See also* Council of American Overseas Research Centers; Libya; Middle East Studies Association; *and* North Africa.]

JOSEPH A. GREENE

AMERICAN INSTITUTE FOR YEMENI STUDIES. Until the early 1970s, Yemen, land of the fabled Queen of Sheba and a rich source for classical and Islamic Near Eastern history, was effectively closed to foreigners. In 1970, although a new modernizing government there changed this policy, Western scholars found that fieldwork was being severely hampered by the lack of research facilities and materials. In 1978 the American Institute for Yemeni Studies (AIYS) was founded in Toronto to provide such field support for international scholars in all disciplines and to act as an international clearinghouse for research related to Yemen. By the 1990s other national research institutes had been established in Yemen, notably by the Italian, French, and German governments. AIYS differs from them in its broad scope of disciplinary interest and deliberately international scholarly support.

AIYS is housed at the University of Chicago's Oriental Institute. Its individual membership as of 1995 was 190, drawing from scholars from around the world; there are thirty-six university and museum institutional members.

Archaeology has been a primary beneficiary of the institute. Its lead founding member and first and current president is McGuire Gibson, a Near Eastern archaeologist. The institute has undertaken archaeological projects on its own: in 1993 it carried out an archaeological survey of the proposed highway route between Marib and Shabwa and continued a second season of excavation in the vicinity of Shabwa. Its key role, however, is in providing logistic and liaison support for the numerous member teams working in the country. Several of these groups already figure prominently in the history of archaeology in Yemen. Between 1981 and 1986 the American Foundation for the Study of Man (AFSM), under Chief Archaeologist James Sauer, carried out the first modern excavation in northern Yemen (at Wadi el-Jubah) since the brief 1951 expedition of Wendell Phillips, the founder of AFSM. Under the direction of Edward Keall, in 1982 Toronto's Royal Ontario Museum began the broadest multiseason archaeological survey to date in Yemen, that of the coastal city of Zabid; excavation continued there in 1993.

AIYS also plays a major support role in UNESCO's efforts to conserve the Old City district of Yemen's capital, San'a. AIYS publishes both a Translations and a Development monograph series. Its semiannual bulletin, *Yemen Update* (Chicago, 1979–) reports on all on-going archaeological research in and concerning Yemen.

[*See also* Jubah, Wadi el-; Marib; San'a; Shabwa; Yemen; *and* Zabid.]

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JON MANDAVILLE

AMERICAN INSTITUTE OF IRANIAN STUDIES. Established in 1967 as a nonprofit educational organization to encourage and facilitate Iranian studies, the American Institute of Iranian Studies was founded by a committee composed of Robert H. Dyson, Jr., Richard N. Frye, and Jacob C. Hurewitz. The institute was supported by some twenty universities and museums, each of which nominated a trustee to the governing board, which elected officers to administer the institute.

From 1969 until 1979 the institute operated a center in Tehran, which served as a liaison between North American scholars and the Iranian government. The Tehran center also maintained a small library, issued a quarterly newsletter, hosted informal seminars on current research, and maintained a hostel to provide temporary housing for scholars. During the years the Tehran center was open there was a virtual explosion of research in Iran. Numerous archaeological excavations and regional surveys were conducted, and graduate students and established scholars in almost all humanistic and social science disciplines were well represented in the country. The center was a focal point for interdisciplinary discourse that created a remarkable sense of camaraderie.

Since 1979 the institute has continued to foster research on Iranian topics by offering dissertation grants, essay and translation prizes, and publication subvention. It has supported a bibliographic inventory of resources for Iranian studies in North American libraries and commissioned a survey of the state of Iranian studies in North American universities. In January 1989, the institute convened a conference on Iranian studies at the Arthur M. Sackler Gallery at the Smithsonian Institution in Washington, D.C. Papers were delivered on the state of studies in the following disciplines: literature, history, linguistics, economics, sociology, political science, geography, anthropology, archaeology, and art history. The proceedings of the conference will be published in a special issue of the journal *Iranian Studies.* The archives of the institute are held in the University Museum Archives at the University Museum, University of Pennsylvania.

WILLIAM M. SUMNER

AMERICAN PALESTINE EXPLORATION SOCIETY. A privately funded society for the geographical and archaeological exploration of the Holy Land, the American Palestine Exploration Society (APES) was founded in New York city in 1870. The society's leaders, including Roswell Hitchcock of Union Theological Seminary and J. Henry Thayer of Harvard University, highlighted the conservative theological orientation of the APES in their hope that archaeology would help verify the historical authenticity of the Bible. With that goal in mind, funds were solicited from American universities and church groups and an expedition was recruited to undertake a survey of Transjordan. The work was coordinated with the survey work of the British-sponsored Palestine Exploration Fund in western Palestine.

From the start, the American expedition was plagued by a lack of funds and poor communication with society headquarters in New York. Led by U.S. Cavalry Lieutenant Edgar Z. Steever and naturalist John A. Paine of New York, the American team proceeded to Moab from Beirut in spring 1873. The result was a preliminary (and only roughly triangulated) field map of approximately 500 square miles extending southward from Hesban (Heshbon). Following Steever's resignation in 1874, the APES turned to James C. Lane, a former railroad planner and Civil War hero, to command its subsequent exploration parties. Also appointed at this time was the Reverend Selah Merrill of Andover, Massachusetts as expedition archaeologist.

The second APES expedition departed from Beirut in September 1875 and was considerably more successful than the first. The goal of detailed mapping was abandoned; instead, the team took hundreds of photographs and collected thousands of artifacts and natural specimens. After Lane's resignation in a disagreement over funding, Merrill was placed in charge of APES explorations and led three more expeditions. These were the APES's final expeditions; the organization was never able to muster the resources or trained personnel of its British counterpart. The American Palestine Exploration Society published its last *Statement* in 1877.

[*See also the biographies of Merrill and Thayer.*]

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NEIL ASHER SILBERMAN

AMERICAN RESEARCH CENTER IN EGYPT. Founded in 1948, the American Research Center in Egypt (ARCE) is an organization that assists Ameri-

can institutions conducting archaeological projects in Egypt. Since 1951, an office has been maintained in Garden City, Cairo, where the staff assists resident scholars and fellows and manages ARCE's programs in Egypt. Over the years, many American archaeological projects, such as the Epigraphic Survey of the Oriental Institute of the University of Chicago and the Theban Mapping Project, have worked in Egypt under ARCE's aegis.

Although ARCE's attention first focused on ancient Egypt, its board soon recognized that Egypt had an important role in the modern Middle East. This realization led to a broadening of ARCE's agenda to embrace scholars interested in all aspects of medieval and modern Egypt, resulting, for example, in support for the American University in Cairo's excavations in Fustat, an early Islamic settlement. [*See* Fustat.] ARCE thus aims to provide its members with a better understanding of Egypt, both ancient and modern.

In the past three decades, ARCE has pursued several major initiatives: advancing American and Egyptian collaboration, encouraging research, and assisting scholarly publication. The importance of American and Egyptian cooperation is a high priority. An early and important example of such teamwork was ARCE's involvement in the Nubian salvage operation, and since then restoration of the Sphinx has been the subject of collaboration. The second goal is successfully addressed through the fellowship program, bringing both new and established scholars to Egypt under ARCE's sponsorship. Recently, ARCE has begun the reverse process, sending Egyptian researchers to the United States.

The initial step toward a program of scholarly publication was taken in 1951 when the first issue of the *Newsletter* appeared. It communicated to ARCE's members information about the recent responsibilities and travels of its directors and officers. Now ARCE fellows present the preliminary reports of their projects in this format. The initial volume of the annual *Journal of the American Research Center in Egypt*, a periodical presenting scholarly research on all Egypt's history and culture, was published in 1962. Since then ARCE has expanded its publication program to include monographs and catalogs.

ARCE's headquarters is located in New York City. Members of the board of governors include representatives from research-supporting institutions and scholars and non-academics, who are all elected from a membership that in the early 1990s stood at twelve hundred. In 1985, the first of five regional chapters was formed. These chapters have contributed to a growing membership and expanded ARCE's public programming in the United States.

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DIANA CRAIG PATCH

AMERICAN RESEARCH INSTITUTE IN TURKEY. Americans have participated in the archaeological exploration of Turkey since the 1881–83 excavations at Assos in the Troad, sponsored by the Archaeological Institute of America just two years after its foundation. Following the establishment of the Republic of Turkey in 1923, archaeologists were joined by scholars in many other disciplines, including historians of all periods, political and social scientists, philologists, anthropologists, and Turcologists. By the early 1960s, it was clear that an organization was needed to assist scholars conducting research in the country.

The American Research Institute in Turkey (ARIT) was founded in 1964 "to promote research on Turkey in ancient, medieval, and modern times in all fields of the social sciences and the humanities." ARIT, the primary representative of American higher education within Turkey, is supported and governed by a consortium of thirty-five universities, museums, and research institutions in the United States and Canada. ARIT's branches in Istanbul and in Ankara, each with a resident director, specialized library, and hostel, provide a wide range of scholarly support services.

From its inception, ARIT has concentrated its resources on a fellowship program that has enabled more than one thousand pre- and postdoctoral researchers to work in Turkey. This includes fellowships to Turkish scholars, awarded through ARIT's in-country counterpart, the *Türk-Amerikan İlmi Araştırmalar Derneği* (Turkish-American Academic Research Association). ARIT also administers an intensive summer program of advanced Turkish-language instruction at Bosphorus University.

Throughout its existence, ARIT has strongly supported archaeological research in Turkey, and four of its six presidents have been prominent in this field: Hans G. Güterbock, who guided the institute through much of its formative decade; Cecil L. Striker; Machteld J. Mellink; and G. Kenneth Sams. In 1993, at the request of the Turkish Ministry of Culture, ARIT assumed responsibility for conducting an annual primary review of all applications from the United States for archaeological excavations and surveys within Turkey.

TONI M. CROSS

AMERICAN SCHOOL OF ORIENTAL RESEARCH IN BAGHDAD. The idea of an American school of Mesopotamian archaeology in Baghdad was proposed in 1913 by George Aaron Barton to the Archaeological Institute of America (AIA). The AIA appointed a committee with Barton as chair to study the matter and, if

feasible, organize the school. In 1919–1920, Albert T. Clay, annual professor at the American School for Oriental Research (ASOR) in Jerusalem, was sent to Baghdad jointly by the AIA committee and the ASOR executive committee to prepare the way for the new school; he arranged for it initially to be sheltered by the American consulate. In 1921, the Mesopotamian committee of the AIA and the executive committee of ASOR in Jerusalem jointly incorporated as the American Schools of Oriental Research, the plural "schools" being an intentional recognition of the planned Baghdad enterprise and other possible undertakings elsewhere in the Near East. In that same year, Mesopotamian committee member Morris Jastrow, Jr., died, and his widow presented the Assyriological portion of his library to the planned school; it reached Baghdad in 1924, where it formed the core of the new school's library. An earlier bequest of books from pioneer Orientalist William Ward for an anticipated American school in Baghdad seems never to have gotten beyond Philadelphia.

On 2 November 1923, Albert T. Clay inaugurated the American School of Oriental Research in Baghdad in the presence of the American consul and officials of the Iraqi and British governments. The school's first-year's program included public lectures on Babylonian history, outreach sessions with Iraqi schoolmasters, and archaeological survey work.

The Baghdad school was always more a research concept than a place. In 1926, Gertrude Bell, honorary director of antiquities for Iraq, offered the school a room for its library in the new Iraq Museum; it remains in that museum, still serving, as ASOR intended in 1926, as "the first nucleus of an archaeological library in that part of the world" (Dougherty, 1926). Despite sporadic plans and hopes, the school would have no building of its own in Baghdad; yet, it managed, over a fifty-year period, to assemble an impressive record of scholarly achievement.

The school was led by a long-term director and staffed by a variety of annual appointees, the most important being the annual professor and the (more junior) fellow. Barton, the first director, (1922–1934), was resident in the United States; subsequent directors spent varying lengths of time in Baghdad when conditions permitted: Ephraim A. Speiser (1934–1947), Albrecht Goetze (1947–1956), Vaughn Crawford (1956–1968), and Robert McC. Adams (1968–1970). Annual professors and fellows included, among others, Adams, Robert Biggs, J. A. Brinkman, Giorgio Buccellatti, Briggs Buchanan, George Cameron, Edward Chiera, A. T. Clay, Crawford, George Dales, Raymond Dougherty, Richard Ellis, McGuire Gibson, Goetze, Cyrus Gordon, Donald Hansen, Alexander Heidel, Bruce Howe, Thorkild Jacobsen, Samuel N. Kramer, Theophile Meek, Albert T. Olmstead, Edith Porada, Speiser, and Leroy Waterman. Beginning in about 1931, the school was overseen by a standing committee of the ASOR board of trustees. The school's main source of income was an endowment fund bequeathed by James B. Nies.

The school was conceived as an engine for American archaeological activity in Mesopotamia. It played that role both by enabling its directors, annual professors, and fellows to be in Iraq participating in various digs and projects and by directly sponsoring excavations, preferably with other institutions. Between the wars, the Baghdad school jointly supported work at Nuzi with the Iraq Museum and Harvard University; at Tepe Gawra with the University Museum of the University of Pennsylvania and Dropsie College; at Tell Billa and Khafajeh with the University Museum; and at Tell ʿUmar with the University of Michigan. After World War II, the school sponsored, with the Oriental Institute of the University of Chicago, several campaigns at Nippur and the Iraq Prehistoric Project (together with related projects in Iran and Turkey) and the Iraq Surface Survey, as well as excavations at al-Hiba with New York University and the Metropolitan Museum of Art (New York City).

Publications sponsored or cosponsored by the school include numerous volumes of Nuzi tablets; the excavations of Nuzi and Gawra; Neugebauer and Sachs (1945); and the following AASOR volumes: Speiser (1941); Kramer (1944); Porada (1947); and Goetze (1956). In 1947, ASOR, at the urging of the Baghdad school committee, began publishing the *Journal of Cuneiform Studies*, which immediately established itself as a leading Assyriological journal. It was founded by Goetze and edited by him until his death in 1971; from 1972 to 1990 it was edited by Erle Leichty. Since 1990 the editor has been Piotr Michalowski of the University of Michigan.

After 1970, as access to Iraq became more restricted and the notion of an ASOR school (or center, as it had come to be called) and professor in Baghdad less tenable, the Baghdad school committee became the committee on Mesopotamian civilization, or, as it is more commonly known, the Baghdad committee. It awards an annual Mesopotamian fellowship to pre- and postdoctoral scholars for research on ancient Mesopotamian civilization, preferably involving some residence in the Near East. It continues to oversee the publication of the *Journal of Cuneiform Studies* and publishes a newsletter, *Mar Šipri*. For several years before the Gulf war, the Committee's McAllister Fund supported excavations at Mashkan-shapir, Abu Salabikh, Tell Hamida, and Deylam.

[*See also* Abu Salabikh; American Schools of Oriental Research; Khafajeh; Mashkan-shapir; Nippur; Nuzi; Tepe Gawra; *and the biography of Speiser.*]

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JERROLD S. COOPER

AMERICAN SCHOOLS OF ORIENTAL RESEARCH. The history and tradition of the American Schools of Oriental Research (ASOR) are linked to the parent societies that called for its founding more than a century ago. The first academic organization to press for the establishment of a new society with an archaeological focus was the Society of Biblical Literature (SBL), originally founded as the Society for Biblical Literature and Exegesis in 1880. On 13 June 1895, its president, J. Henry Thayer, a specialist in the New Testament at Harvard University, urged the society to establish a school in Palestine that would be able to promote the study of scripture in the very land in which it had taken shape. It was to be called an American School for Oriental Study and Research. Others, notably Henry W. Hulbert, wanted such a school to be located in Beirut and had referred to it as a school of biblical archaeology and philology in the East. [*See the biography of Thayer.*]

Thayer's suggestion to establish a school in Palestine was referred to committee, which consequently published a circular to win the support and confidence of both theological schools and universities. In that document Thayer's colleagues expressed the rationale for establishing an overseas center in this way: "The object of the school would be to afford graduates of American theological seminaries, and other similarly qualified persons, opportunity to prosecute biblical and linguistic investigations under more favorable conditions that can be secured at a distance from the Holy Land; . . . to gather material for the illustration of the biblical narratives; to settle doubtful points in biblical topography; to identify historic localities; to explore and, if possible, excavate sacred sites" (King, 1983, p. 26).

The tone and direction of SBL's 1895 circular clearly express the overriding interest of the founding fathers, which remains to this day, although ASOR's purpose was soon broadened to include nonbiblical aspects of Near Eastern studies. The circular also illustrates the Western bias of "Orientalism," a certain disregard of indigenous culture by those who study a region only in terms of Western and colonial values. At any rate, by 1890 eleven institutions had pledged one hundred dollars each annually, for a period of five years, until a plan for a new school could be implemented.

Another strong supporter of the idea of establishing an overseas research center in the Near East was the American Oriental Society, which formally endorsed the idea in 1896. In 1898 the Archaeological Institute of America (AIA) not only endorsed the proposal, but also pledged an annual subsidy. The AIA had established its own American School of Classical Studies at Athens in 1882 and a comparable school in Rome in 1895, which in 1913 was consolidated with the American Academy in Rome, formerly a fine arts school and enterprise devoted to humanistic research. The president of the AIA in 1899 was Charles Eliot Norton, professor of Fine Arts at Harvard; he pledged his complete support to a school of biblical studies that would soon be established in Jerusalem on the model of the American institutes in Athens and Rome.

By 1900 twenty-one institutions of higher learning—colleges, seminaries, and universities—had been organized into ASOR's first academic consortium. Although most of those institutions were secular universities, theological interest and support were key from the outset. The organizing committee's restatement of goals and objectives, which became the basis of ASOR's future bylaws, reflected a broadened intellectual horizon that would enable ASOR to extend its purview beyond the Levant into the greater Near East and to extend its historical reach and interest beyond the mere "biblical." Its charter also contained an inclusive statement that resonates with an entirely modern spirit: "The School shall be open to duly qualified applicants of all races and both sexes, and shall be kept wholly free from obligations or preferences as respects any religious denomination or literary institution." ASOR's ties with the AIA and SBL were so strong that in the early years all research studies conducted under ASOR auspices were to be published in the journal of either affiliated society—the former publishing archaeological and nonbiblical material, the latter the biblical.

Jerusalem. ASOR's first overseas institute was opened in 1900 in Jerusalem, with Charles C. Torrey, an Old Testament scholar at Yale University, serving as its first director for that year. Torrey, supported by the U.S. consul in Jerusalem, Selah Merrill, himself a distinguished Orientalist, established ASOR's first headquarters in a large room in a hotel in the Jaffa Gate area, launched a lecture program, and began his own series of field explorations. These activities became hallmarks of ASOR institutes' future programs. Without a permanent ASOR facility, American scholars in Jerusalem at the time were dependent on other institutes for library resources. [*See the biography of Merrill.*]

Palestine's unstable political situation at the beginning of the twentieth century, with the emergence of Arab nationalism clashing with Zionism and signaling the collapse of the Ottoman Empire, made significant progress for the Jerusalem school difficult. The political instability, lack of a permanent facility, and annual rotation of directors meant that a program of activities along the lines established by Torrey

and his successors was the correct and most stable course for the school. The character of the program, except for excavation, remained intact until 1920, when William Foxwell Albright became the school's first long-term director, serving until 1929, and then again from 1933 to 1936. ASOR's first major field project in the years prior to Albright was the expedition to Samaria (1908–1910) led by George A. Reisner, Clarence S. Fisher, and David G. Lyon, and in 1908 by Gottlieb Schumacher. The report of this project, delayed by World War I, appeared in 1924. [*See* Samaria; *and the biographies of Albright, Reisner, Fisher, and Schumacher.*]

During those years, the Jerusalem school was managed in the United States by committee. Reports on the school's activities and research were given at special meetings or at ASOR meetings held in conjunction with the annual meeting of the SBL or AIA. To all intents and purposes, ASOR and the Jerusalem school were one and the same. In 1907 the Ottoman government recognized the school in Jerusalem as the "American School of Archaeology at Jerusalem." In 1910 the managing committee changed its official name to The American School of Oriental Research in Jerusalem. In 1917 Torrey announced the promise of a gift of $50,000 by Jane Orr Nies to erect a permanent facility in Jerusalem on land that had been purchased in 1909. James A. Montgomery of the University of Pennsylvania and the Protestant Episcopal Divinity School, the Jerusalem school's annual director in 1914–1915, became the chairman of ASOR's managing committee in 1918. At its annual meeting the committee voted to reopen the Jerusalem school the following year (it had been temporarily closed during the war from (1916 to 1918). At that 1918 meeting, Albright was elected Thayer Fellow for 1919. The school reopened in October 1919, with William H. Worrell as director. The first issue of the *Bulletin of the American Schools of Oriental Research (BASOR),* the journal that was to become the central organ of scholarly communication for ASOR, also appeared in that year. The first issue of ASOR's *Annual* appeared in 1920, edited by four former directors of the Jerusalem school.

The legal incorporation of ASOR in the District of Columbia in 1921 reiterated the plural "Schools" in the title, correctly anticipating the future of other institutes in the Near East, but specifically the imminent start of the school in Baghdad. In 1923 the Egyptian ankh, the symbol of life, inside of which was the eight-pointed Babylonian star, the sign of deity, became the logo of ASOR.

ASOR Presidents. ASOR's presidents form an illustrious group. The work of these individuals represents the height of scholarship in their respective fields.

1921–1933	James A. Montgomery, University of Pennsylvania
1934–1948	Millar Burrows, Yale University
1949–1954	Carl H. Kraeling, University of Chicago
1955–1965	A. Henry Detweiler, Cornell University
1966–1974	G. Ernest Wright, Harvard University
1975–1976	Frank Moore Cross, Harvard University
1976–1982	Philip J. King, Boston College
1982–1988	James A. Sauer, University of Pennsylvania
1988–1989	P. Kyle McCarter, Johns Hopkins University
1990–1996	Eric M. Meyers, Duke University
1996–	Joe D. Seger, Mississippi State University

[*See the biographies of Montgomery, Burrows, Kraeling, and Wright.*]

Baghdad. With the long-term appointment of Albright as director in Jerusalem in 1920, archaeological activities there expanded and the school's future was secured in a way that had not been possible before. Such stability also allowed ASOR to enlarge its horizons to Mesopotamia, where the Baghdad school, originally called the American School of Mesopotamian Archaeology, opened officially in 1923. That school was the first American academic institution in Baghdad; it was housed in a space provided by the American consulate. The Baghdad school, although not a full-fledged institute, had an outstanding library, and from its inception provided an important base from which researchers conducted field surveys and on-site examination of the most important sites in Mesopotamia. Among the best-known excavations conducted from the school were the ASOR-Harvard excavations at Nuzi, particularly from 1925 to 1931. [*See* Nuzi.] Other noteworthy excavations include Tell Billa, Tepe Gawra, Tarkhalan, and Tell Oman. [*See* Tepe Gawra.] Baghdad's first publication, Edward Chiera's *The Joint Expedition with the Iraq Museum at Nuzi,* appeared in 1927.

It soon became clear that there were not sufficient financial resources to support a permanent facility in Jerusalem and a new one in Baghdad. Hence, ASOR's academic managing committee was reorganized in 1929 to include nonacademic, lay members on a board of trustees to broaden its financial base.

The Baghdad school attracted a series of distinguished scholars as annual professors until 1970. Then, for political reasons, it was no longer possible for Americans to be in residence there. Among those who worked out of Baghdad were Ephraim Speiser (1926–1927, 1931–1932), Nelson Glueck (1933–1934, 1942–1946), Samuel Noah Kramer (1946–1947), Thorkild Jacobsen (1953–1954, 1968–1969), Robert McC. Adams (1968–1969), Albrecht Goetze (1955–1956), and McGuire Gibson (1969–1970). [*See the biographies of Speiser, Glueck, and Jacobsen.*] From 1947 to 1956 Goetze served as director of the school; among his most notable achievements was the founding of the *Journal of Cuneiform Studies* in 1947. The 1967 Arab-Israeli War made any future significant ASOR presence in Iraq doubtful. ASOR's last field project prior to the war had been in 1963,

but it renewed its fieldwork there in the 1980s. The 1991 Gulf War ended that activity as well.

The annual professorship in Baghdad was converted to a Mesopotamia fellowship following the termination of a physical presence at the school in Baghdad. Today, a committee supervises ASOR's interests in the region and oversees publication of the *Journal of Cuneiform Studies*.

Interwar Period (1919–1945). A remark made by Millar Burrows when he served as director of the Jerusalem school (1931–1932) provides insight into the period between the world wars and is remarkably relevant. Noting the dearth of American archaeologists and the plethora of archaeological activities in Palestine, he observed that most of the funding was American, that most of the leadership of excavations was non-American, and that chief among ASOR's goals was to raise a cadre of "young Americans who would like to take up the fascinating work." The interwar years produced a new generation of leaders in the field in the Near East, yet there was a genuine shortage of qualified Americans to carry forward the aims of ASOR's founders, as well as a shortage of funds to carry them out. Despite the considerable achievements of the Jerusalem and Baghdad schools, politics soon again interfered in the progress of the first half of the twentieth century.

A major figure to emerge during this period was Nelson Glueck, explorer par excellence. Trained in biblical studies at Jena in Germany, Glueck came under the influence of Albright in the late 1920s while digging at Tell Beit Mirsim. There he learned the essentials of stratigraphic archaeology and the basis of ceramic typology. Glueck succeeded Albright as director of the school in Jerusalem in 1936, a position he held three times, first in 1932–1933, again from 1936 to 1940, and finally from 1942 to 1947.

Glueck's major contribution to work in the region was his extensive explorations in Transjordan and the Negev desert. As a result of this enterprise he became fascinated with the history and material culture of the Nabateans. Glueck conducted his surveys while serving as director of the Jerusalem school. He developed his expertise in Nabatean studies from 1952 to 1964, while based at Hebrew Union College (HUC) in Cincinnati, Ohio; he had been a faculty member there since 1928 and became president in 1948. One of his major accomplishments as an administrator was the building of the HUC campus in Jerusalem, which opened in 1963 with an archaeological component he envisioned as the successor to ASOR's Jerusalem school, which had been cut off from Israel as a result of the 1948 War of Independence.

The irony of the situation cannot be overstated. Glueck, president of a theological school for training American Reform rabbis, had explored the territories that largely became part of the Kingdom of Jordan. He founded an archaeological school in Israeli Jerusalem largely because Arab lands had been cut off from Jewish archaeologists after 1948. However, following the 1967 war and the reunification of Jerusalem, there were two schools in the city devoted to archaeological work, ASOR's Jerusalem school and HUC, later to be renamed the Nelson Glueck School of Biblical Archaeology. [*See* Nelson Glueck School of Biblical Archaeology.] The 1967 war, however, had even far greater implications for ASOR.

ASOR and Its Overseas Centers: 1967–1978. One of the major results of the 1967 war was the Arab boycott of all scholars working in Israeli territory, former territory or newly held, which effectively meant that archaeologists and Near Eastern specialists in other disciplines had to decide whether to continue to work in Israel. If they had worked in Israel they could choose to work in Arab lands, especially in the Hashemite Kingdom of Jordan or in Syria, but could not then continue to work in Israel as well. Because the Baghdad school was defunct, to all intents and purposes, the ASOR board of trustees, headed by G. Ernest Wright of Harvard University, president at the time, decided that the only way for ASOR scholars to continue working on both sides of the Jordan River was to create separate institutes: a separately incorporated Amman center in Jordan administered by its own board of trustees, so that ASOR's historic aims and goals could continue to be pursued unimpeded, and the Jerusalem school to be reorganized along these same lines. The ASOR trustees approved the move in December 1969. The Jerusalem school was renamed the W. F. Albright Institute of Archaeological Research (AIAR); it still occupies the building whose construction was begun in 1924, completed in 1931, and designated a historical landmark by the State of Israel. The Amman center was named the American Center of Oriental Research (ACOR); it moved into a spacious, state-of-the-art facility in 1986.

Both institutes, newly constituted with their own boards of trustees, began their operations in spring 1970. The ASOR board continued to subsidize in part the activities at both schools, but increasingly turned its attention to generating funds for new overseas field projects, publications, and other programmatic activities relating to its annual convention held in conjunction with the SBL and the American Academy of Religion (AAR).

In creating a decentralized ASOR, Wright and the trustees had averted the political repercussions of the Arab-Israeli conflict. The parent organization was, however, still expected to seek and secure funds as before for both centers and to fund field projects on both sides of the Jordan River. ASOR subsidies to the centers continued through the 1980s, but responsibility for raising funds for the overseas centers, their programs, and their buildings began to shift to their own boards.

During the tumultuous period in the region between the 1967 and 1973 wars, ASOR entertained the idea of establishing a center in Beirut that would focus scholarly attention

on Lebanon's special heritage of Phoenician culture, in addition to other aspects of its rich material remains. Although the Civil War in Lebanon and ASOR's increased financial responsibilities ultimately precluded undertaking the project, interest in Phoenicia led ASOR scholars to look to two of Phoenicia's principal colonies, Cyprus and Carthage, for the recovery of new data through archaeological excavation. [*See* Cyprus; Carthage.]

At Carthage, ASOR fulfilled its field objectives from 1975 to 1979 by sponsoring a series of excavations, financed with U.S. federal funds, at Punic and Roman Carthage. During this limited period ASOR supported a new center nearby, the Carthage Research Institute, which served as a base for the excavation and survey work at the site. The western Mediterranean region could not maintain its hold on ASOR's historic constituency, however, which was far more oriented to the east, and the institute closed upon the completion of fieldwork.

Cyprus, the other important Phoenician colony, attracted ASOR's attention in the early 1970s. Encouraged by Wright to engage in fieldwork that would shed further light on Phoenician culture and also establish a definitive typology of Cypriot ceramics, ASOR scholars began excavations at the Cypriot site of Idalion in 1971. Preliminary work at Idalion had involved Wright and three of his former students: Paul Lapp, until his untimely death in 1970; Lawrence Stager; and Anita Walker. Wright's interest in establishing a permanent ASOR facility away from the center of the ancient Near Eastern mainland was further stimulated by his own work at Idalion. Wright died in 1974, four years before the founding of the most recent of ASOR's overseas centers, the Cyprus American Archaeological Research Institute (CAARI), in Nicosia. [*See* Idalion; *and the biography of Lapp.*]

Establishing a research center on the island of Cyprus enabled ASOR at long last to enter institutionally into the world of classical archaeology and to provide a bridge between it and Near Eastern archaeology. In fact, Near Eastern sites are replete with remains from the classical period, and ASOR field projects had long dealt with material originating in or influenced by Aegean cultures. The new institute in Nicosia brought formal recognition to ASOR's broader interest in the classical and pre-classical Aegean worlds, for Cyprus in nearly all its periods of human occupation exhibits a meeting or synthesis between Near Eastern and Aegean cultures. Because there was no university on Cyprus until 1993, CAARI had and continues to have a special role in the intellectual life of the country. Like ASOR's other institutes, CAARI cooperates closely with the local department of antiquities and invites scholars of all countries to use its library and facilities. Although ASOR-sponsored excavations on Cyprus have thus far been few, CAARI's presence has nonetheless been influential. The institute's facility is a meeting ground for scholars from all over the world. CAARI moved into elegant renovated quarters in 1991 and, like AIAR and ACOR, is managed by an independent board of trustees and received subsidies from ASOR until 1990.

The establishment of ACOR in 1970, initially a way of continuing traditional patterns of Near Eastern archaeology with a strong biblical focus, also led to a significant widening of ASOR's perspective on archaeology in general and on several subfields in particular. Far more digs were carried out in Jordan at prehistoric sites by Americans than in Israel (where the biblical focus remained a constraint), a reality paralleled also on Cyprus. Archaeology in Jordan began to prosper in new and unanticipated ways. The Late Antique floruit of Transjordanian Christianity, for example, which extended well into the Early Islamic period, has become a special field along with Islamic archaeology, which is also flourishing. With its abundance of U.S. federal funding, ACOR has also enabled cultural resource management—the excavation and restoration of antiquities sites for national and touristic purposes—to set the standard for the entire region. [*See* Restoration and Conservation; Conservation Archaeology.]

New Directions: 1978–1995. With the decentralization of ASOR and with the operations and programs of the overseas centers run entirely by separate boards, ASOR's historic role in fostering excavations and scholarship has changed. ASOR's home office continues to assist the overseas centers in building their libraries through book and journal exchanges, in communicating with U.S. trustees and scholars, in some banking activities, in preparing and auditing federal grants, and in some fund raising. The approximately 150 colleges, universities, seminaries, and museums that constitute the ASOR consortium of corporate members are by and large the same institutions that send volunteers and students to digs and that support scholars in their academic pursuits at each of the centers.

ASOR's annual convention and its publications are the two major vehicles for facilitating interaction among scholars in the field of ancient Near Eastern archaeological studies. ASOR remains the premier international scholarly organization dedicated to fostering research in the modern Near East. Its record of sustaining its projects through periods of war and political tension has won it valued admiration in the region. The realization of peace treaties between Israel and its neighbors makes the future seem brighter than ever before and should result in new projects in Near Eastern research. Current developments within ASOR and its overseas centers can be followed in its quarterly *Newsletter,* or more generally in its quarterly journal, *The Biblical Archaeologist.* ASOR's home office was located on the Johns Hopkins University campus in Baltimore, Maryland; as of July 1996 the office, together with those of

the three overseas centers, was relocated to the campus of Boston University, adjacent to the headquarters of the Archaeological Institute of America.

[*See also* Albright Institute of Archaeological Research; American Center for Oriental Research; American School of Oriental Research in Baghdad; Archaeological Institute of America; Cyprus American Archaeological Research Institute; Periodical Literature; *and* Society of Biblical Literature.]

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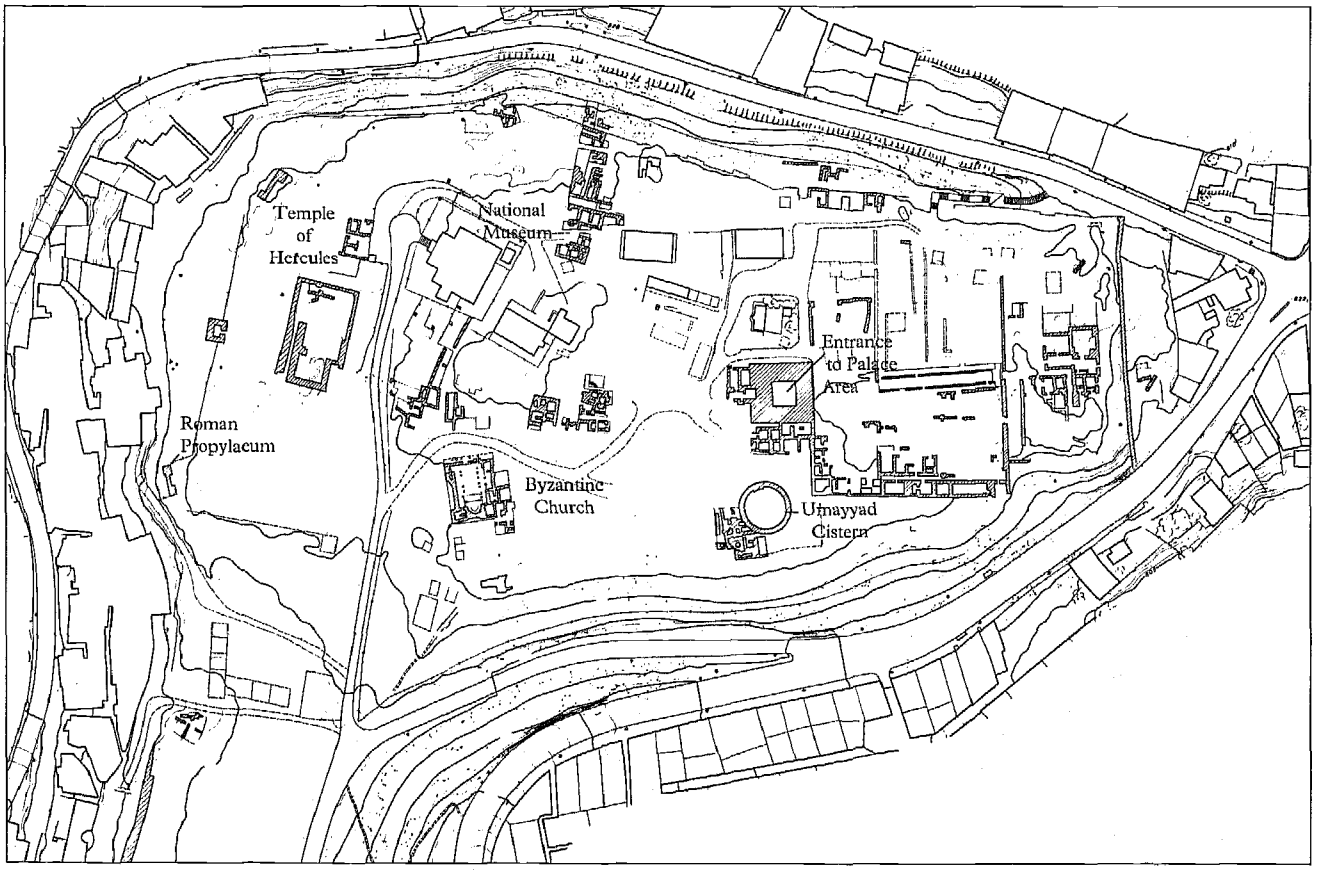
ERIC M. MEYERS

AMMAN, capital city of the Hashemite Kingdom of Jordan, located about 88 km (55 mi.) east of Jerusalem, 206 km (128 mi.) south of Damascus, and 335 km (208 mi.) north of ʿAqaba (31°57′ N, 35°56′ E; map reference 238 × 152). In the earliest references, it is designated as ʿAmmān of the Benē ʿAmmôn or as Rabbat Benē ʿAmmôn and is referred to as Bit Ammānu in Assyrian texts. It was renamed Philadelphia at the time of Ptolemy II Philadelphus (283–246 BCE); its earliest name was revived as ʿAmmān in the Islamic period. The Amman district is a fertile area that drops down through rough terrain and occasionally forested hillsides to the Jordan Valley to the west and merges gradually into the steppelike desert to the east. [*See* Jordan Valley.]

The city has a long history dating back to the sixth millennium; remains found in its vicinity date back even earlier, to the Paleolithic period. Jebel Qalʿa, Amman's citadel, was the focus of settlement for thousands of years (see figure 1); numerous sites occupied in many different periods are scattered around the city. Some—Sahab, Tell el-ʿUmeiri, ʿAin Ghazal, and Ṣafut—were significant settlements in size, strategic location, and preserved artifacts. Amman was still flourishing in the tenth century CE according to the Arab historian al-Muqaddasi, but by the fifteenth century it was described as a field of ruins.

Amman was a spectacular Roman, Byzantine, and Umayyad ruin for many centuries until late in the Ottoman period, with impressive stretches of fortification walls, colonnaded streets, and many substantially preserved buildings. Although adventurers made the trip to ancient ruins



AMMAN. Figure 1. *Plan of the citadel, Jebel el-Qalʿa.* (Courtesy R. Dornemann)

east of the Jordan River late in that period, serious surveys of sites such as Amman were not initiated until the nineteenth century. Claude R. Conder visited Amman in 1880 and Howard Crosby Butler published the results of the Princeton Archaeological Survey there in 1921. The survey included the careful mapping and examination of ruins in Amman and elsewhere in Transjordan. The gradual resettlement of Amman began in 1878, as a small village among the ruins, with a group of Circassians relocated by Ottoman Turkish authorities. The village expanded after Prince Abdullah chose Amman as the seat of government in 1921 and the Hashemite Kingdom of Jordan was established in 1946. Another expansion of the city took place in the 1970s and 1980s. It now covers more than 900 sq km (558 sq. mi.), with a population approaching two million.

Throughout history, the communication essential to the prosperity of Amman and the surrounding area traversed the desert highway and the Kings Highway. Nelson Glueck's extensive Transjordanian survey (1932–1949) has recently been augmented by surveys connected with the Cultural Resource Management program in Jordan and by the Madaba Plains Project. This has led to a better understanding of land-use patterns and the interrelationships between remains in the countryside (farmsteads, storage towers, and forts) and occupation on the region's tells.

Earliest Remains. The earliest major settlement around Amman is the Neolithic village of ʿAin Ghazal. [*See* ʿAin Ghazal.] Its occupation extended from the Natufian and Pre-Pottery Neolithic (PPN) periods through an early pottery phase of the Yarmukian culture. The site's most remarkable remains are rectilinear structures with plastered walls from the PPNB that are associated with burials of plastered skulls and caches of the earliest known reed-and-plaster human statuary.

Occupation on the citadel, Jebel Qalʿa, can be traced to the Neolithic as well, but, except for Chalcolithic pottery found in a cave on its second plateau, remains are extremely scanty for any period before the Middle Bronze Age. Early Bronze Age tombs have been found on Jebel Qalʿa, Jebel et-Taj, Jebel Abdali, and other nearby sites like Umm el-Bighal. The traditions recorded in the biblical accounts of Lot and Abraham indicate an early political Ammonite entity (*Gn.* 19:28).

Walls of substantial MB buildings and stretches of the fortifications have been excavated on the citadel, but the remains are scattered and do not provide information about how the site was organized then. The importance of the MB settlement is demonstrated by the many rich tomb groups excavated on Jebel Qalʿa and in the nearby hills. The assemblage includes distinctive, well-made vessels; scarabs; cylinder seals; metal pins and implements; ivory inlays; beads; and alabaster jars. The chocolate-on-white wares and the white burnished wares from the end of the period and the beginning of the Late Bronze Age are exceptionally finely made. Bronze Age remains have been found on the highest and second plateau of Jebel Qalʿa, indicating that the city (at least 20 ha [49 acres] in extent) was probably as large and important as the Iron Age city (see below). Little is known about the periods of occupation on the lowest, or third, plateau in any period because it is covered with modern houses.

The richest remains from Late Bronze Age in the Amman district come at present from the temple at the old airport, northeast of the city. [*See* Amman Airport Temple.] Excavation of this substantial, isolated building yielded significant quantities of foreign, Cypriot and Mycenaean and luxury wares, and important small finds such as cylinder seals, jewelry, Egyptian scarabs, amulets, and alabaster vessels. Similar artifacts have been found in lesser quantities in Amman-area tombs. An architecturally similar structure was discovered nearby at el-Mabrak (Yassine, 1988, pp. 61–64).

Iron Age. Remains of the Iron Age occupation on Jebel Qalʿa have been excavated in more areas and in larger exposures than for earlier periods, but still not enough to reveal a coherent plan. Several centuries of Iron II occupation are represented, but they only give limited insight into the nature of the settlement. Portions of fortification walls and a possible gateway were excavated from the tenth and ninth centuries BCE (Dornemann, 1983, pp. 90–92) and sections of defense walls have been found in several other areas (Humbert and Zayadine, 1992). A large building of late Iron II date has been excavated on the second plateau (Humbert and Zayadine, 1992). The first excavators, an Italian expedition in 1934 (Bartoccini, 1933–1934), suggested that temple remains existed in what was later the precinct of the Roman Temple of Hercules. However, the "temple" was badly destroyed by the Roman construction, making the designation questionable. A large number of rich Iron Age tombs have been excavated in Amman and its vicinity. A tomb near the royal palace provided evidence that spanned the end of the Bronze Age and Iron I and II. This supplements the meager evidence from Jebel Qalʿa for the beginning of the Iron Age. The early pottery traditions of the Iron Age show limited examples of the decorated pottery with an Aegean influence that is so characteristic in coastal assemblages from the period. Although a variety of painted pottery is present, the assemblage is dominated by plain wares that show a transition in form and technique from the Bronze Age to Iron II materials. A long list of neighboring sites has now been investigated to help develop a picture of the area's material culture in the Iron Age. Excavation has now been carried out or tombs excavated at Tell el-ʿUmeiri, Tell Jawa, Tell Ṣafuṭ, Tell Siran, Khilda, Khirbet el-Hajjar, Meqabelein, Rujm el-Malfuf, and Tell Saḥab. [*See* ʿUmeiri, Tell el-; Ṣafuṭ, Tell; *and* Saḥab.]

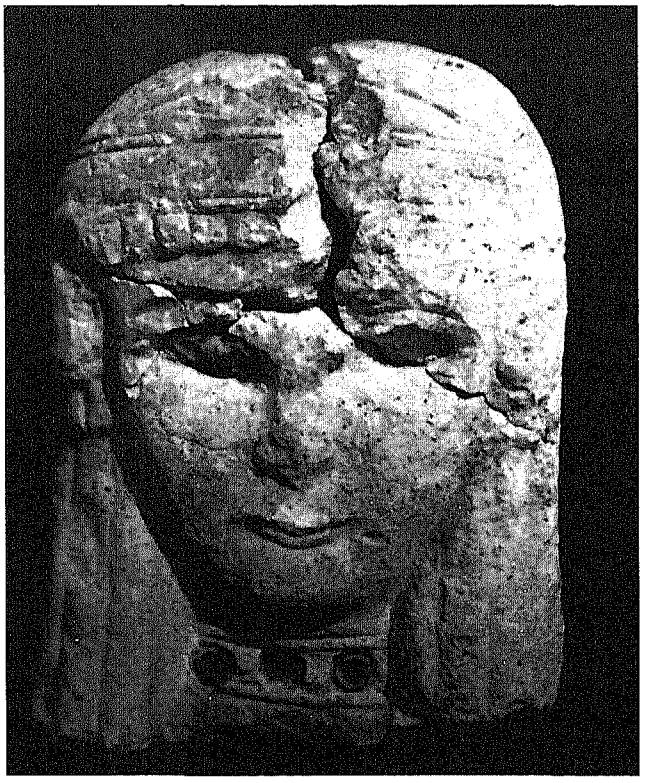
Many of the excavated tomb groups and much of the pottery encountered on the site date to the seventh and sixth centuries BCE. The pottery tradition is impressive for its sophistication. Red-burnished ware is the most distinctive Iron

II feature, with some very sophisticated, finely made examples of bowls and jars. These traditions can be established in a broader regional context with examples that rival the best production in neighboring lands, particularly the Phoenician coast, if they are not examples of imports. A characteristic corpus of simple painted pottery also exists. The tombs demonstrate a burial tradition that includes anthropoid coffins. One of the Ammonite kings, 'Ammi-Nadab, is mentioned on the seal of one of his officers that was found in one of these tombs, in a rich assemblage that also contained gold and silver jewelry and decorated seals. Handmade and mold-made figurines illustrate the period's artistic conventions, with horse and rider figurines predominating that apparently enjoyed special significance locally, at least in the Amman District.

Rabbat Ammon was the capital of an Iron Age state that at times stretched from the modern Wadi Mujib (biblical Arnon River) to the Wadi Zerqa (biblical Jabbok River), from the Jordan River to the desert, and at times beyond. Its relationships with the neighboring states of Moab and Israel, as well as the mighty Assyrian, Neo-Babylonian, and Persian empires shifted constantly and dramatically from peaceful and cooperative to hostile. Amman is first mentioned as a state in the Jephthah stories in *Judges* 3 and 11 and played an important role in the time of David and Solomon. It fought as a member of a coalition of Syrian and neighboring states against Assyrian advances in the ninth century BCE but eventually was incorporated into the Assyrian provincial administration under Tiglath-Pileser III. Two Ammonite rulers of the seventh century BCE are mentioned in an inscription on a Bronze bottle from Tell Siran, adding to the still incomplete series of royal names that extends from the late eleventh through the sixth centuries BCE. Amman came successively under Neo-Babylonian and then Persian rule (under the Persian governorship of Arabia). The Tobiad family, powerful Jewish landowners in the Ammonite area connected with the Jerusalemite priesthood, was influential in Amman in the Persian and Hellenistic periods.

A small corpus of Ammonite inscriptions and an extensive collection of inscribed seals exist. The Amman citadel inscription and the inscribed bottle from Tell Siran are the longest texts. They illustrate an Ammonite language, but it is difficult to translate because the corpus is so limited. Ammonite script is related to Hebrew, Phoenician, Aramaic, and Moabite. [*See* Ammonite Inscriptions.]

A rich collection of sculpture and other small finds indicates many elements incorporated from a variety of sources, particularly Egyptian, Phoenician, Syrian, Assyrian, and Cypriot. The corpus of Ammonite limestone and basalt sculpture continues to grow and is quite distinctive: small freestanding sculptures in the round with unusual and unrealistic proportions, frequently with oversized heads, feet, and other body parts. Some pieces are very polished in their rendering and others heavily stylized (see figure 2).

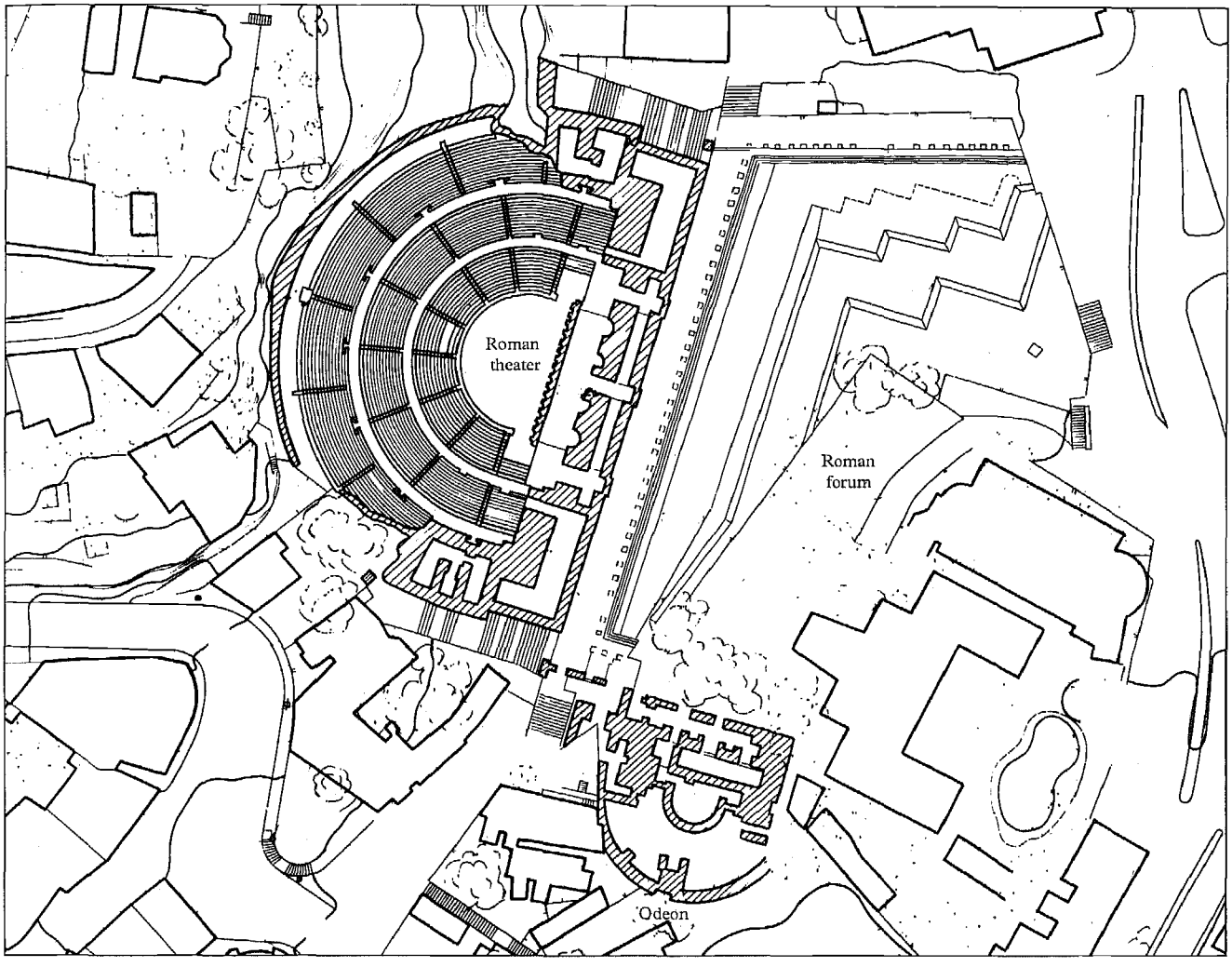


AMMAN. Figure 2. *Double-faced stone female head.* Iron Age. (Courtesy R. Dornemann)

Hellenistic, Roman, and Early Islamic Periods. Following the conquests of Alexander the Great, Amman was included in the sphere of control of the Ptolemies. Ptolemy II Philadelphus (285–247 BCE) rebuilt the city and renamed it Philadelphia. Amman later came under the control of the Seleucid dynasty of Syria. Only scattered building remains of this period have been encountered so far on the two upper plateaus of the citadel, but the ceramic remains, coins, and other small finds again indicate a rich and prosperous city.

Amman became part of the Roman Empire in the first century BCE, a result of Pompey's victories. Marcus Antonius took the Ammonite area from Nabatean control and gave it to Egypt. With his defeat at Actium (31 BCE), the city regained its independence in the Roman world. A new height in the city's prosperity was reached in the second century BCE, when Trajan's annexation of the Nabatean kingdom reduced competition for trade. Amman was associated with the Decapolis league of cities and was an important stop on a newly established road system, the Via Nova Trajana. [*See* Decapolis.]

Amman's expansion and prosperity in the Roman period (second century CE) entitled it to all of the trappings of a major city in the empire: temples adorned its acropolis and a theater/odeum complex and other impressive structures,



AMMAN. Figure 3. *Plan of the Roman theater and forum area.* (Courtesy R. Dornemann)

such as the nymphaeum on the banks of the stream, the Seil Ammon, adorned the downtown area (see figure 3). A system of colonnaded streets organized the city's areas: its *cardo* ran down the main wadi along the Seil Ammon, which was vaulted; its *decumanus* intersected the *cardo* near the present-day Husseni mosque in the downtown area; and another street extended up the slopes of the citadel through a monumental gateway. The partly restored temple on the citadel is now securely attributed to Hercules by two fragments of an inscription on the architrave of the portico that dedicates the building to the emperors Marcus Aurelius Antonius and Lucius Aurelius Verus (161–169 CE), during the governorship of P. Julius Geminius Mercianus (see figure 4).

Philadelphia was the seat of a bishopric in the Byzantine period. Remains of several churches were recorded on early twentieth century maps of the downtown area and a church dedicated to St. Elianos (a third-century Christian martyr from Amman) stands excavated on the citadel. The traditional location of the Cave of the Seven Sleepers, on the outskirts of Amman, at Rajib, near Saḥab, still venerated, traces its origins to Byzantine legends. The Roman city was rebuilt in both the Byzantine and Islamic periods. The ancient name *Amman* was again given to a burgeoning city substantially renewed by walls, streets, and an impressive palace complex on the citadel in the Islamic period. Amman prospered under the Umayyad dynasty and was the granary of the 'Abbasid province. Following the Islamic period, the city waned in importance, its decline hastened by the shift of major administrative functions to other cities—to Kerak, Heṣban, and Salt, in turn. By the fourteenth century, Abul Fida, an Arab writer, described the city as a ruin.

[*See also* Amman Airport Temple.]

AMMAN. Figure 4. *Temple of Hercules.* (Photograph by Gaetano Palumbo, courtesy ACOR)

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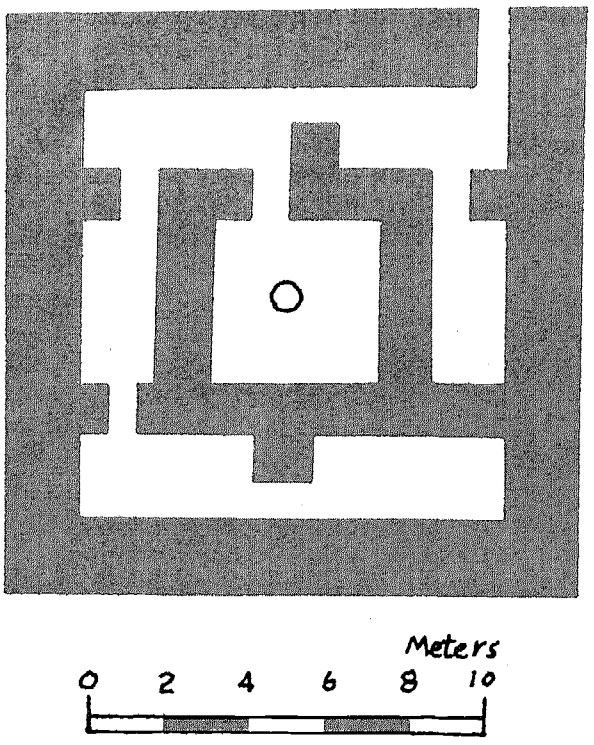
AMMAN AIRPORT TEMPLE, located at the former Amman Civil Airport in Markeh, Jordan, a northern suburb of Amman. The site lies immediately east of the apron runway, where it joins the first of the main runways, and about 300 m south of the terminal. This single-period site was discovered in 1955 while bulldozers were expanding the runway area. A salvage excavation by M. Salih cleared a square structure to its stone-paved floor; G. Lankester Harding reported on it in 1956 (*Annual of the Department of Antiquities of Jordan* 3:80). Later, Harding identified the structure as an isolated Late Bronze Age temple (*Palestine Exploration Quarterly* 90 [1958]: 10–12). J. Basil Hennessy (1966) subsequently excavated beneath the floor and in probes outside the structure. He interpreted the site as a temple where human sacrifice had taken place and confirmed the structure's isolation (Hennessy, 1985). In 1976, when the site was again threatened by expansion, Larry G. Herr expanded Hennessy's probes in the north. Herr uncovered a square stone structure he interpreted as a platform for cremation, used with the main building, which he suggested had functioned as a mortuary temple ("The Amman Airport Structure and the Geopolitics of Ancient Transjordan," *Biblical Archaeologist* 46 [1983]: 223–229).

The plan of the building was virtually a perfect square, approximately 15 m on a side (see figure 1). A narrow door led through the two-meter-thick north wall to a series of six interconnected, rectangular rooms, of roughly the same size, surrounding a central square room. In the middle of the central room was a circular pillar base or platform/incense altar. All the rooms were paved with flat stones. A shallow earth surface extended about 2 m north of the structures



AMMAN AIRPORT TEMPLE. Figure 1. *Plan of the Amman airport temple, based on* 1966 *excavation plans.* At the northeast is a very small entrance. In the center room is the circular "incense altar" or "column base." (Courtesy ASOR Archives)

doorway, but no other external surface could be distinguished. Six meters to the north was a square stone structure measuring about 4 m per side.

The finds from inside and outside the structure comprised an extremely large proportion of imported finds, including Mycenaean pottery, Egyptian stone vessels and scarabs, and Cypriot pottery. Other objects included hundreds of beads made of semiprecious stones, small strips of gold, bronze and silver jewelry, and bronze weapons. Such items are normally rare at contemporary sites in Jordan. Moreover, in 1976 Herr (1983) collected a total of 1,127 burned adult human bone fragments. Hennessy (1966) had also collected burned human bones in foundation deposits beneath the floors of the structure.

The imported remains span the late Middle Bronze Age through the Late Bronze Age (c. 1700–1200 BCE). Many of them must have been curated in antiquity and preserved through generations as special objects because the local pottery seems to date exclusively to the 13th century BCE, the end of the Late Bronze Age.

Because the burned bones were from adults, the practice of cremation has been suggested, not human sacrifice because that usually involved children. Furthermore, the curated imported objects are typical of Late Bronze tomb deposits, suggesting that the whole site was dedicated to mortuary activities, which would have included, among other possible activities, cremation and the storage of tomb offerings. Although Semites did not generally practice cremation, Hittites apparently did, which suggests their presence in the region at the time.

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LARRY G. HERR

AMMON. Ammon and the Ammonites make up one of the national groups east of the Jordan River mentioned by the Bible as enemies or subjects of Israel during the time of the Israelite monarchy, the Iron II period. They are best known from the seventh and sixth centuries BCE, when a large portion of the biblical and Assyrian sources that mention them were written and when their material culture flourished in the archaeological record.

History. According to the Bible (*Gn.* 19:38), the eponymous ancestor of the Ammonites was the son of Abraham's nephew Lot, who had an incestuous relationship with his daughter while fleeing from the destruction of Sodom and Gomorrah. They probably first appeared toward the end of the Late Bronze Age or in the Early Iron I period (c. 1300 BCE), however, when a cluster of sites in the Amman region began to be settled by them or by others perhaps related to them (Amman, Baqʿah Valley, ʿUmeiri, Jawa, Ḥesban, Jalul, Madaba). [*See* Amman; Baqʿah Valley; ʿUmeiri, Tell el-; Jawa; Ḥesban; Madaba.] More such sites will probably be found in the future. These and subsequent settlements display a continuity of material culture throughout Iron I, Iron II, and the Persian period that indicates an ethnic and national continuum (Herr, 1992). National awareness reached its height in the seventh century BCE, when the Pax Assyriaca allowed the greatest intensification of settlement before Roman times and the development of a distinctive material culture that can be called Ammonite.

Several Ammonite kings (or chiefs) are known from a variety of literary evidence. The Israelite chief Saul fought with a corresponding leader in Ammon whom the Bible calls Nahash ("snake"), perhaps in the late eleventh century (*1 Sm.* 11:1–12); and King David dealt with an insult from Hanun the son of Nahash (*2 Sm.* 10:1–4). Tiglath-Pileser III mentions a Shanib as king in a text dated to about 733 BCE (*ANET* 282), and two statues from Amman dated to the eighth–seventh centuries BCE, now in the Amman Museum, may represent kings: they claim to be of Zakur the son of Shanib and Yarih-Ezer. The Assyrian kings Sennacherib and Esarhaddon (early seventh century BCE) mention Budu'il (Assyr., Pudu-Ilu; Riekele Borger, *Die Inschriften Asarhaddons Königs von Assyrien,* Graz, 1956); and Ashurbanipal lists ʿAmmi-Nadab in about 667 BCE (*ANET* 294). A small bronze bottle from Tell Siran near Amman lists several kings, including ʿAmmi-Nadab I, his son Hiṣṣal'il, and ʿAmmi-Nadab II, the son of Hiṣṣal'il. Finally, a seal impression from Tell el-ʿUmeiri was made from a seal belonging to a royal official who served a king named Baʿalyashaʿ, undoubtedly the Baʿalis of *Jeremiah* 40:14, who appears in a story dated to about 582 BCE (Herr, 1985).

Probably as a result of Ammonite complicity in the murder of Gedeliah, the Babylonian-appointed governor of Judah, the Babylonians conquered Ammon and made it a part of their empire, but retained the Ammonite king (Josephus, *Antiq.* 10.9:7). The monarchy seems to have lasted through the Babylonian period but was replaced by a Persian provincial system similar to the one in Judah (Herr, 1993). The biblical reference to Tobiah (e.g., *Neh.* 2:10) as a Persian official in Ammon has created the mistaken assumption by some that he was an Ammonite ruler of the Persian government—however, no Ammonite would give his child a Yahwistic (Hebrew) name. Based on the occurrence of the name in two Aramaic tomb inscriptions at ʿIraq el-Amir, the presence of a dynasty of Tobiads in the well-watered Wadi es-Sir west of Amman must be accepted. [*See* ʿIraq el-Amir.] They may have been descendents of Nehemiah's Tobiah. It is possible that this family descended from the renegade prince of Judah, Ishmael, who escaped the Babylonian destruction of Judah by fleeing to Ammon and soon thereafter murdered Gedeliah (*Jer.* 40). The Ammonite presence apparently continued behind the scenes during the classical and Islamic periods, remembered in the name of modern Jordan's capital city, Amman.

Geographical Borders. The territory of Ammon centered around its central city, called Rabbat Ammon in the Bible. The ancient city is still preserved in downtown Amman, Jordan, on the hill called el-Qalʿa ("the Citadel"). Although the Iron Age I and Early Iron II territory of Ammon may have had slightly different borders, a common material culture—including pottery, script, and language—has been found at sites from Wadi Zerqa in the north to the southern edge of the hilly region north of Madaba and from the eastern desert to the Jordan Valley (late seventh and sixth centuries BCE), undoubtedly representing the Ammonite culture at its greatest extent (Herr, 1992). Biblical evidence suggests that Moab may have controlled the southern edge of this territory for a time (Hübner, 1992, pp. 131–157). Ammonite holdings in the Jordan Valley may have occurred only during the seventh and early sixth centuries BCE as well.

Settlement Pattern. For most of its history, Ammon was probably little more than a city-state—that is, the capital city ruled a small territory on the central Transjordan plateau with satellite towns and villages in a relatively small hinterland. The finds from small excavations on the citadel of Amman reflect a major urban center (Geraty and Willis, 1986, pp. 11–17). Stone statues of kings or divinities, royal inscriptions such as the Amman Citadel Inscription (Horn, 1969), many small finds of superior quality, and the large size of the site all point to its central importance. Smaller towns in the surrounding hinterland fed the capital with agricultural produce gathered from their own territories. Several have been excavated: Tell Ṣafuṭ, Umm ad-Dananir, Saḥab, Jawa, Tell el-ʿUmeiri, and Ḥesban. [*See* Ṣafuṭ, Tell; Saḥab.] Throughout the region are many small, isolated structures often built of megalithic stones. Early explorers interpreted them as towers for the defense of the capital, but the location of most of them (on spurs of hills with poor visibility above agricultural fields) suggests they were farmsteads. [*See* Farmsteads.] The few larger ones on hilltops may have served as military watchtowers.

The scores of farmsteads in the Ammonite region seem to have produced grain in the valley bottoms and fruit on the slopes. Strong evidence for wine production was found at several farmsteads in the ʿUmeiri region. [*See* Viticulture.] Together with an administrative center dating to the seventh–fifth centuries BCE at Tell el-ʿUmeiri, the Ammonite monarchy seems to have helped farmers construct these farmsteads to produce wine for tribute to Babylon. The farmsteads continued into the Persian period. Along with agriculture, most families kept mixed flocks of sheep and goats, some cattle and a few donkeys and horses.

Social and Political Organization. As was true of most of the tribal groups in the southern Levant during the early stages of the Iron Age, when they originated, individual loyalties were stronger to family and clan than they were to a cohesive "national" entity. The name *bĕnê ʿammôn,* "sons of Ammon" (e.g., *Gn.* 19:38), seems to suggest an allied group of tribes or clans that, by Iron II, when the biblical name was used, had coalesced into a coherent and permanent tribal confederation with a chief or "king" as head (LaBianca and Younker, 1994). By that time national awareness was developing rapidly, facilitated by a national deity, Milkom, and the development of an Ammonite script out of Aramaic and a dialect (or language) related to other Northwest Semitic language groups (Phoenician, Aramaic, Hebrew, Moabite, and Edomite). Ammon appears as the

name of a Persian province on three seals found at Tell el-ʿUmeiri (Larry G. Herr, "Two Stamped Jar Impressions of the Persian Province of Ammon from Tell el-ʿUmeiri," *Annual of the Department of Antiquities of Jordan* 36 [1992]: 163–166).

Ethnicity and Material Culture. Excavations have uncovered a strong similarity in the material culture within the boundaries mentioned above during the Late Iron II and Persian periods. Pottery forms frequently found in the Ammonite region are rare or unknown elsewhere (Lugenbeal and Sauer, 1972). Figurines, although similar to those found all over the southern Levant, have unique features that allow researchers to pinpoint them to the Ammonite region. Inscriptions are written in an alphabetic script similar to that of other Northwest Semitic peoples but with easily definable characteristics that can be isolated to Ammon (Herr, 1978; Aufrecht, 1989). Personal names from inscriptions found in Ammon also reflect typical patterns. Use of the theophoric element *'Il* (or *'El*) is almost universal, in spite of the practice elsewhere of using national deities most of the time. Certain personal names are found more frequently in the Ammonite region than elsewhere, such as Tamak'il or 'Ilnadab (Aufrecht, 1989, pp. 356–376; Hübner, 1992, pp. 125–129). Many short inscriptions allow a basic description of the Ammonite dialect (Jackson, 1983; Aufrecht, 1987). All of these cultural features indicate that, by the eighth and seventh centuries BCE, Ammonites saw themselves as a distinctive ethnos even though Ammonite pottery may be related more to regional technologies than to ethnic practices.

Religion. Ammonite religion can be characterized as a limited polytheism or heterotheism centered on the deity Milkom, who seems to have been an 'Il (or 'El) divinity based on the bull imagery in Ammonite iconography (especially the seals) and the use of 'Il in the Ammonite onomasticon (Aufrecht, 1989). The few Ammonite names with the theophoric title *baʿal* ("lord") probably refer to Milkom. The Ammonite deity should not be equated with Molek, as 1 Kings 11:7 seems to do (*mlk* is the result of a scribal error for *mlkm*); therefore, Milkom should not be connected with rites of child sacrifice, as the mistaken connection of Molek with Milkom has suggested to some.

The Ammonites were one of the few peoples of the southern Levant to depict deities in statues. Several stone busts wearing crowns formed of the Egyptian atef symbol may depict Milkom (Piotr Bienkowski, *The Art of Jordan*, Liverpool, 1991, p. 41). The large Roman Temple of Hercules on the Ammonite citadel has led some researchers to suggest an identification with that Greek deity (Hübner, 1992, p. 259). The primary goddess was Astarte, probably seen as the consort of Milkom. One seal in typical Ammonite script even mentions a pious worshiper of the goddess at Sidon (Aufrecht, 1989, pp. 145–148). Scores of figurines of nude fertility goddesses probably are meant to depict her.

[*See also* Edom; Moab; *and* Transjordan, *article on* Transjordan in the Bronze and Iron Ages.]

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AMMONITE INSCRIPTIONS. Ammonite texts are inscribed on various materials: stone (e.g., from the Amman Citadel), metal (e.g., on a bottle from Tell Siran), pottery (engraved, e.g., from Saḥab; or with ink on ostraca, e.g., from Tell Ḥesban), semiprecious stones (seals), and clay (seal impressions, known as bullae). [*See* Amman; Saḥab; Ostraca; Ḥesban; Seals.] An inscription may be defined as Ammonite according to several categories of criteria: geographic (i.e., the text was found in territory ascribed to the Ammonites), cultural (e.g., iconographic, religious), technical (e.g., paleographic), and linguistic (i.e., grammatical and lexical). Unfortunately, so few inscriptions of significant length are attested, the presently known linguistic features

differentiating the Ammonite language from Moabite and Edomite are rather few in number. Thus, other criteria have been used more extensively in defining the Ammonite corpus, for example, iconography and onomastics (Israel, 1979; Naveh, 1982/1987, pp. 105–111; Jackson, 1983; Aufrecht, 1987).

Seals. The largest number of extant Ammonite inscriptions are on seals (Hübner, 1993; pp. 154–155) and date to the eighth–sixth centuries BCE. The earlier ones are classified as Ammonite primarily on the basis of the script and the discovery site; the later ones are classified on the basis of language, onomastics, or iconography but not on the script, which is Aramaic. [*See* Aramaic Language and Literature.] Only a small number have been found in systematic excavations, and it is difficult without scientific analysis to establish which of the objects obtained on the antiquities market are authentic (Hübner, 1993, pp. 132–133; Bordreuil, 1992, pp. 13–38). The history of research and the criteria that directed the formation of the extant corpus of Ammonite seals are listed by Felice Israel (1991, pp. 227–231, and Pierre Bordreuil (1992, pp. 157–159).

Monumental Inscriptions. The circumstances of discovery of the Amman Citadel inscription (*CAI* 59) remain unclear. The beginnings and endings of all of its lines have disappeared but paleographic analysis indicates a date for it at the beginning of the eighth century BCE. Several tempting hypotheses regarding its purpose (bibliography in *CAI*) have been rejected because they are based on incorrect readings. Most probably the inscription refers to an order from the Ammonite national god, Milkom, to build some *mb't*, "entrances." A salvation oracle appears at the end of the inscription.

Because it was reused in Amman's Roman theater and probably conceived by its author as a building inscription, *CAI* 58 is known as the Amman Theater inscription. Unfortunately, the disappearance of the beginning and endings of its lines impedes understanding the text, which is dated only paleographically to the sixth century BCE.

A now damaged inscription of the eighth century BCE (*CAI* 43) is engraved on the base of the statue of *Yrḥ'zr*, the grandson of the Ammonite king Shanibu. The use of *br* for "son" indicates that the language of the inscription is Aramaic.

Produced as a part of monumental artworks, but nonmonumental in character, are letters and religious symbols engraved on the reverse of eyes fixed in the heads of female statues found on the Amman Acropolis (*CAI* 73). The purpose of these brief inscriptions was to indicate their correct placement to the builders or craftsmen. They have been dated to the seventh century BCE, but on archaeological evidence rather than by paleographic comparisons.

Inscriptions on Metal. An Ammonite inscription, probably royal, from Tell Siran near Amman (*CAI* 78), is engraved on a metal bottle (Hübner, 1992, p. 29). The text contains stylistic literary features known from other Northwest Semitic literature. A cup found in an Iron II tomb at Khirbet Udeinah, also near Amman (Hübner, 1992, pp. 30–31), is engraved with the name of its owner. The inscription is dated to the sixth century BCE on archaeological and paleographic grounds. Two inscribed weights are known whose Ammonite identification remains in doubt (Hübner, 1992, pp. 31–32).

Inscriptions on Clay. Ammonite ostraca have been found at Tell Ḥesban (*CAI* 65, 80, 94, 137), Tell el-Mazar (*CAI* 144–147), and Tell el-'Umeiri (Herr, 1992). [*See* Mazar, Tell el-; 'Umeiri, Tell el-.] Ulrich Hübner (1992, p. 136) disputes the classification of the Tell Ḥesban ostraca as Ammonite for topographic reasons. The validity of the geographic argument is doubtful, however, for the oracle of *Jeremiah* 49:1–3 shows that during the sixth century BCE Heshbon/Ḥesban was under Ammonite control (Lemaire, 1992). In any case, the language and script of these texts is not Moabite. They have been dated on paleographic grounds to the sixth century BCE by Frank M. Cross (1986, pp. 480–484). The Ḥesban IV ostracon (*CAI* 80) is noteworthy for its grammatical features, which are characteristic of the Ammonite language. Also of note are Tell Mazar ostraca no. 3 (*CAI* 144), a letter from the sixth century BCE that contains a typical epistolary formula, and no. 7 (*CAI* 147), a list of personal names dating to the fifth century BCE that demonstrates the continuity of the traditional Ammonite onomasticon (Heltzer, 1989). Other documents from the site refer to agricultural life and are to be ascribed to the Hellenistic period.

The ostraca from Tell el-'Umeiri remain undeciphered for the most part because of their poor state of preservation. One fragmentary inscription from that site may be classified as sacred (Herr, 1992, pp. 195–196). The ostraca from Deir 'Alla are still unpublished (see the list in Franken and Ibrahim, 1977–1978, p. 79). [*See* Deir 'Alla Inscriptions.] The scholarly consensus that ostracon no. 6231 from Nimrud (*CAI* 47) is a list of typical Ammonite personal names was recently rejected by Bob Becking (1988) and Hübner (1992, pp. 35–37). [*See* Nimrud.] However, the presence of Ammonites at Nimrud has been proved by the discovery of Ammonite pottery on the site (Israel, 1990, p. 234). The possibility of ascribing the document to the Ammonite world therefore remains open. Excavations at Amman (*CAI* 77), Ḥesban (*CAI* 81), Saḥab (Hübner, 1992, p. 39, no. 4), and Khirbet Umm ad-Dananir (Hübner 1992, p. 39, no. 5) have produced pottery engraved with personal names that are more or less fragmentary.

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FELICE ISRAEL

AMORITES. The term *Amorite* is the English rendering of the Hebrew word *'ĕmorî,* which is derived in turn from the Akkadian *Amurrūm* or *Amurr-ī-um.* This gentilic is derived from the term *Amurrum,* which corresponds to *mardú* in Sumerian (written MAR.TU), of unknown origin. The Hebrew form is a gentilic from a name such as **'emôr,* which is otherwise unattested in Hebrew. The English term *Amurrite,* derived directly from the Akkadian version of the word, is preferred by some scholars.

No distinctive archaeological evidence can be convincingly associated with the Amorites. The material culture found in the urban centers where they were active does not exhibit stylistic traits that could positively be identified with them; this holds true even for smaller provincial cities closer to their home ground, such as Terqa. [*See* Terqa.] Nor has any site been identified in the steppe that could even be dated to the period in question. What is left are only tantalizing textual clues that speak of weapons and garments fashioned in the Amorite style and that indicate that they were the suppliers of products associated with herding and with the steppe (salt and a special kind of truffle, both resources still being exploited).

The pertinent textual documentation falls into three major periods:

1. *Second half of the third millennium (2500–2000* BCE*):* The relatively few explicit references to Amorites are primarily from southern Mesopotamia and Ebla. [*See* Ebla.] The few individuals so identified are generally labeled in the texts by the Sumerian appellative MAR.TU.

2. *Old Babylonian period (c. 1900–1600).* Large numbers of individuals are mentioned in cuneiform texts of the Old Babylonian period (which corresponds in part to the Middle Bronze Age) who bear names identifiable linguistically as Amorite; they are not, however, explicitly labeled MAR.TU. Besides personal names there are also names for larger social groups and a few words referring to the landscape and the material culture. The majority of the texts were found at Mari. [*See* Mari; Mari Texts.]

3. *Late Bronze Age.* No trace is left of the Amorites in LB Mesopotamia, except that the term *Amurrum* is still in use to denote the west. In Syria there is an important kingdom that bears the name *Amurrum* (written as either MAR.TU or *A-mur-ri* in Akkadian texts from el-Amarna, Ugarit, and Boğazköy and as *'mrr* in Ugaritic texts). [*See* Amarna Tablets; Boğazköy; Ugaritic Inscriptions.]

Origin and Ethnolinguistic Identification. The widespread opinion among scholars is that the Amorites spoke a West Semitic language and were essentially a nomadic population interacting with the urban centers of Syro-Mesopotamia. The nature of this interaction has been variously defined as representing a gradual infiltration (Kupper, 1957; Anbar, 1991) or a symbiosis based especially on economic factors (Rowton, 1987). Their origin would be in the Syrian steppe, and this would have shaped their ethnic identity as essentially nomadic, whatever nuance is placed on this definition.

An alternative interpretation views the Amorites as peasants originally at home in the narrow valley of the Middle Euphrates River (Buccellati, 1992; a preliminary suggestion in this sense was advanced by George Mendenhall and by

his student, John T. Luke [Luke, 1965]). From their restricted home base, they would have moved toward the steppe in a successful effort to gain control of the vast steppe rangeland for their flocks. In the process, they would have acquired nomadic traits and developed considerable social and political autonomy. In this perspective, their language represents the rural Semitic counterpart of urban Semitic (Akkadian/Eblaite), vis-à-vis which it retained more archaic traits.

The Amorite language is known almost exclusively from personal names (more than four thousand text occurrences; Gelb, 1980). Like all Semitic names, they consist of recognizable sentences and noun phrases, so that much can be said about phonemics and morphology. Some traits are most distinctive, in comparison to Akkadian, the other Semitic language with which it is contemporary in (Buccellati, 1966; Huffmon, 1965).

1. The phonemic inventory includes more consonants than Akkadian, which is most likely the result of the retention of archaic traits (rather than an innovation); see, for example, the retention of ʿayn, as in *ʿammu-rapi,* "the paternal uncle has healed."

2. Several morphophonemic alternations are also indicative of archaism: the retention of the middle vowel in *śalamatum* (compare Akk. *šalimtum*), "well-being."

3. The third person of the verb retains the original vowel in first position: *Yasmaʿ-Dagan,* "Dagan hears" (compare Akk. *Išmē-Dagan*).

4. A possible innovation in the verbal system is the development of a perfect with suffixed pronominal elements: *Mutu-malaka,* "the man has ruled."

5. The word order retains for the most part the sequence verb–subject, as in *Yantin-Erah,* "the moon god gives" (compare the semantically equivalent Akkadian name *Sīn-iddinam* where the word order is inverted).

The few Amorite words that have survived outside onomastics include some toponyms that refer to the local landscape. Thus, *nawū* connotes the specific perception of the Syrian steppe, dotted with wells and herding camps. As such, it may be an Amorite word (borrowed in Akkadian), while *sērum* is the proper Akkadian term for the southern steppe, more sharply differentiated from the irrigated agricultural areas. Similarly, the Amorite term *yamina* refers to the "right (bank of the river)," looking at the Euphrates flowing downstream (only secondarily did it acquire the meaning "south"). Also Amorite are the terms *ʾaḫaratum/ ʾaqdamatum,* which refer, respectively, to "the region behind" or "in front," looking at the river from the western side, where the major cities were located.

Geographic Background. The Amorites represent one of the better-known nonurban societies of the ancient Near East. The question about their origin has a bearing on a proper understanding of their socioeconomic institutions. If they were nomads, or seminomads, on their way to sedentarization, a well-established social organization would have to be assumed that had developed apart from urban civilization and came to face it full blown from a position of outright distinctiveness—and from a distant location that did not allow contact. As indicated above, some scholars prefer to see them instead as peasants in an incipient stage of nomadization, with a persistent geographic and institutional link to the urban setting from which they originated. Like the other rural classes more directly under the sway of city influence, they were essentially "paraurban" at the same time that they were developing antiurban tendencies. It is this perspective that is followed here.

The area of the Middle Euphrates is well within the arid zone (below the 200-millimeter rainfall line), so that agriculture is impossible without irrigation. [*See* Irrigation.] However, the bed of the river has cut a deep trough in the steppe, and the irrigable area is limited to a narrow strip that is for the most part no more than 10 km (6 mi.) wide; it is called *zôr* in Arabic, and in Akkadian *aḫ Purattim.* The urban density in the area of the Middle Euphrates is correspondingly much lower than either in the irrigable alluvium to the south or the rain-fed plains to the north and the west. As a result, a single political center (Mari, for most of the Amorite period) controlled a much vaster territory (comprising valley floor and steppe) than any other Syro-Mesopotamian kingdom.

The exploitation of the steppe as a rangeland for herding turned out to be of major economic benefit: this was possible through the development of a network of wells that provided water for animals (not for cultivation, much less for humans, because it was too brackish). The peasants of the valley floor seized on this opportunity and expanded immeasurably the territorial boundaries and the economic base of the kingdom to which they belonged. Even though it remained without urban settlements until the latter part of the second millennium BCE, the entire steppe was the domain of the Mari herders, who were in direct contact with the cities from the Orontes valley to the Khabur plains.

Social and Economic Institutions. The peasant-herders acquired a high degree of autonomy, simply because the steppe, however temporary a residence it might have remained for them, provided a safe distance from the forces of the central government, which was aiming to enforce regulations pertaining especially to military conscription and taxation. Certainly the government never undertook the task of imposing direct central controls in the steppe: it is significant that of the several military confrontations between the urban government and the various Amorite groups, only those initiated by the kings of the Old Akkadian dynasty speak of battles in the steppe; those involving the kings of Mari take place at or near the cities by the riverbanks.

From this perspective it may be said that the Amorites extended beyond the limits of territorial contiguity the ties that, in the urban and rural settlements, had grown to be

intimately dependent on just such contiguity. The *'ibrum* is the smallest unit to transcend the village and function as an extended nonterritorial neighborhood, a "clan." (The term *'ābirum,* could then be understood as "the one who joins the *'ibrum,*" referring to an individual escaping from a city to a clan and in this respect it would be semantically, though not morphologically, equivalent to the Hebrew gentilic form *'ibr-ī*). The clustering of clans into higher units would result in a tribe, to which the Amorite term *gayum* seems to apply.

The larger tribal families were defined by proper names: Amorites in the earlier periods and then, as a result of demographic increases, a variety of other names, including especially the Ḫaneans and the Suteans. (Mention is found of the "dynasty of Amurrum," referring to the Hammurabi line in Babylon.) The term *mārū yamina,* on the other hand, which is generally interpreted as the name of an analogous tribal family, can best be interpreted as the generic, and potentially derogatory, term for tribal people—literally, "sons of (the steppe on) the right (bank)"—much as *mārū ugārim* and *mārū ālim*—literally, "sons of the irrigation district" and "of the city"—mean, respectively, "peasants" and "urban dwellers." Only clans and tribes were associated with specific geographic areas, but not the larger tribal families.

Political Consolidation. The development of a tribal structure had significant political ramifications. In the first place, the tribe became the major alternative to the territorial state as a factor in providing political cohesion. In other words, while the city had been the first major state organization, which built on the solidarity deriving from territorial contiguity, the tribe achieved similar goals without presupposing such contiguity. What little is known about Amorite tribal history is, therefore, of great consequence in typological terms. The development of putative kinship ties (as evidenced, among other things, by the prominent role played in the onomastics by kinship terms such as *'ammu,* "paternal uncle") bears evidence to this. More important, however, is the ability to retain the cohesion of a large human group over the vasteness of the steppe, which was the last region of the Near East to become urbanized. The term *chiefdom* might be used, but such political units had very special dimensions. It is out of this experiment with tribal institutions, which the Amorites were the first to undertake, that the political configuration of a national state eventually arose (as distinct from city-states and expanded territorial states).

A clear indication of the degree of political autonomy achieved comes from the titulary of the leaders. The office of village headman *(sugāgum)* was extended to provide leadership, beyond the village, to the clan. The title *king* (LUGAL or *šarrum*) was used for the leader of the tribe *(gayum).* It is important to note that only the name of an individual tribe, and never the name of a major tribal family, appears in the royal titulary of these tribal "kings," with the following qualifications.

1. The plural "kings of Ḫana" and "kings of the sons of *yamina*" (alternating with "fathers of . . .") is not properly a royal title, but rather a descriptive designation for the leaders of individual Ḫanean or nomadic tribes.

2. The title "king of Ḫana" (assumed by the rulers of Mari and possibly Terqa, but never used by individual tribal leaders) may be understood as programmatic in that it proclaimed the broad authority of the king of the city-state over the entire tribal family, rather than over any single tribe.

3. The Old Babylonian title *wakil Amurrim,* "leader of Amurrum" (translated as "general"), may be a carry-over into the urban sphere of the position of the minor tribal kings after their political and military integration had taken place: a "king of Amnanum," for instance, would be called leader of Amurrum after he was absorbed within the military cadre of Babylon. From there the title would have assumed the generic connotation of "military leader, general."

4. The title "king of Amurrum," as found at a later date in Syria, would represent a parallel development, with the added dimension of political independence.

The situation may be summarized as shown in table 1.

Expansion and Assimilation. The tribal entities under the rule of these kings acquired sufficient military strength to pose a threat to the established territorial states. Eventually, in fact, most of these kingdoms of ancient Syro-Mesopotamia were overrun by Amorites. The full dimension of this danger became apparent by the end of the third millennium, when Shulgi and Shu-Sin of the third dynasty of Ur built a defensive system called—presumably in a mixture of Sumerian and Akkadian—BÀD-*murīq-Tidnim,* "the wall (or fortress) that repels Tidnum" (another general name for the Amorites). This may have been a line of watchtowers stretching "like a net" into the steppe on either side of the Euphrates and Tigris Rivers, for a length of some 280 km, or 174 mi. (cf. Wilcke, 1969, p. 9). By the second century

TABLE 1. *Socio-political Categories*

	Generic	Tribal Family	Tribe	Clan
Group	*Amurrum, mārū yamina*	*Ḫana, Sutū*	*gayu*	*ḫibrum*
Leadership				
Tribal			*šarrum*	*sugāgum*
Urban		*šar Ḫana*	*wakil Amurrim*	

of the following millennium, most of the royal dynasties of Syro-Mesopotamian city-states were Amorite, least in terms of the linguistic affiliation of the names of their kings. Because it is unlikely that this was purely on account of stylistic preferences, it can be assumed that the name bearers were Amorite not just onomastically, but ethnically.

The counterpart of the political takeover was a thorough "urbanization" of the Amorites—a complete assimilation into the culture of the Syro-Mesopotamian cities. It may not be necessary to speak of the Amorites becoming Mesopotamians if it is accepted that, as a local rural class, they had in fact been Mesopotamian all along. Thus, it may be assumed that those Amorite elements who established themselves as the new ruling dynasties simply became fully urban, from the paraurban that they were, while other segments of the same population remained just as rural and paraurban as they had been. This is the picture that the Mari texts, in particular, paint.

In the area of the Middle Euphrates, the steppe remained the exclusive domain of the peasant population, without the urban leadership ever trying to intervene there directly. After the fall of Mari and then of Terqa as the capital of the Middle Euphrates (by the middle of the second millennium BCE), the entire region underwent a devolution process of deurbanization. The tribes moved their geographic focus to the west, where they eventually established (by about 1300 BCE) the first true steppe-based state, the kingdom of Amurrum. Because of its unique typological traits, this final efflorescence of the Amorites may be regarded as their first true state formation; the other kingdoms called Amorite are so only in terms of the origin of their dynasties and part of the population, but not institutionally.

Ideology and Intellectual History. In the early stages of the confrontation between the Amorites and the southern city-states, Sumerian characterizations are found of the Amorites as nomadic: they "do not bend their knee" (no organized temple cult), they "do not bury their dead" (no permanent cemeteries), they "do not grow grain" (no agriculture—at least at the point of contact in southern Mesopotamia). However, no convincing, independent trace of their culture, and in particular their ideology, was transferred to the urban culture into which they became assimilated.

It is only in the west that such traces may be found, possibly transmitted over the intermediary of the kingdom of Amurru. It has long since been argued that the patriarchal tradition of the Bible can be understood against the setting of Amorite expansion. Because several scholars tend to accept a much later date for the patriarchal tradition, this interpretation is now generally downplayed. There are still, nevertheless, good reasons in its favor, such as the close parallels in onomastics (e.g., Amorite *Yaʿqubum* and Hebrew *Yaʿqob*) and institutions (e.g., the agropastoralist economic base, the rejection of the urban milieu, the significance of wells).

There is also, however, a more generic argument that bears mentioning. The figures of the patriarchs are relatively modest from the point of view of the court and temple that sanctioned their introduction in the canon. A later process of literary invention would have been likely to present grander figures and more heroic events. If that is not so, it is very likely because the Amorite conquest of the steppe was indeed perceived as epic in its proportions by those who had carried it out in the first place. Similar echoes are found in Mesopotamia—in, for example, the Assyrian king list, which gives the names of earlier kings "who dwelt in tents" and in the retention of Amorite personal names for rulers who had long since lost their nomadic identity. These are, however, no more than echoes; the interaction of the pastoralists with urban culture was too close, and the cultural weight of urban tradition too massive, to allow for the crystallization of any true internal Amorite ideology. The distance (in time and space) resulting from the relocation in the west, and the eventual establishment of a culturally autonomous steppe kingdom, that of Amurru, were possibly the catalysts for such crystallization. If so, the "Amorite" steppe, having remained the last empty, nonurban space of the Fertile Crescent, was to prove, by virtue of its very barrenness, one of the most fruitful bridges across space and time in ancient Near Eastern history.

[*See also* Akkadian; Hebrew Language and Literature; Mesopotamia, *article on* Ancient Mesopotamia; *and* Syria, *article on* Syria in the Bronze Age.]

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GIORGIO BUCCELLATI

ʿAMRIT (ancient Marathus), site located 7 km (4 mi.) south of Tartus, Syria, and 700 m inland from the Mediterranean Sea, behind tall sand dunes, where recent discoveries from the Hellenistic and Roman periods were made. East of the dunes the plain is dominated by a rocky plateau. The dimensions of the ancient town were 3 × 2 km (2 × 1 mi.). Two springs, 1,300 m apart, about 1.5 km from the sea, feed the Nahr ʿAmrit to the north and Nahr al-Qubleh to the south. Both flow toward the sea, the first one directly; the second one, which forms an angle to the north, runs along the coast before it joins Nahr ʿAmrit close to its estuary.

ʿAmrit served as the continental port for the island of Aradus/Phoenician Ruad (Arwad). Recent excavations recovered a simple harbor that had sheltered ships. The rocky and arid island of Aradus faces the continent 2.5 km (1.5 mi.) away; it has two large, well-protected deep-water bays that form a natural harbor. When Ugarit declined, Aradus became the principal commercial and naval power on the Syrian coast, as important as Phoenician Sidon to the south. Until Roman times, the entire region depended on the harbors of Aradus and ʿAmrit. Ancient historians recount that Alexander the Great spent four days at Marathus while his army conquered Damascus. [*See* Arwad.]

Prior to excavation, the only visible monuments were from the Persian period: funerary towers, two of them called the spindles by the local population and a third that is cube shaped (see below). In addition, two temples were built around a spring: the Maʿabed and a temple at the "spring of the serpents." The latter, although visible long ago, has disappeared entirely: early visitors to the site, M. Maundrell (1697), Richard Pococke (1743), and Ernest Renan (1860), described two sanctuaries there. A small archaeological investigation was undertaken by Maurice Dunand in 1926 at the Maʿabed, but it is only since 1954 that major explorations of the tell and stadium have taken place. The Maʿabed was partly excavated in 1957 and a hypogeum in 1976. [*See the biographies of Renan and Dunand.*]

Led by Dunand, excavations were begun at the tell east of the Maʿabed and south of Nahr ʿAmrit. The tell is rectangular, measuring 110 m at its north–south axis and 140 m at the east–west axis. The summit platform is 16.25 m above sea level and the bedrock about 10–11 m. The archaeological occupational layer is about 7–8 m thick. At the northern side of the tell, a main building came to light that is preserved on 24.2 m east–west and to a width of 21.8 m; only the southern wall is preserved in its entire length. The most significant objects from the building date to the end of the Persian period (end of the fifth and the first half of the fourth centuries BCE). During the excavations on the tell, a deep test trench indicated the earliest levels (dated by the ceramics) to be from the end of the third millennium: jugs with small handles and short necks that are decorated with clear, closely spaced horizontal lines.

In the excavated area, eight corbeled tombs were discovered. Small stones formed a circular dome that closed a pit 2.5–3.5 m deep. The skeletons found in the better-preserved tombs were folded over on themselves because the tomb's diameter was not large enough to accommodate an extended body. Among the grave goods were a bronze pin, a fenestrated ax, a semicircular ax, a dagger blade, a terra-cotta cup, a spearpoint, a jug, cream-colored goblets with incised lines, and decorated jars. [*See* Burial Techniques; Grave Goods.]

These silo tombs can now be added to the known forms of burial in Phoenician Syria: their dates vary between the Middle Bronze III and Late Bronze I or II. [*See* Tombs.] These dates are interesting for their potential connection with the Amorite invasion of Phoenicia. ʿAmrit lies at the maritime outlet of the Eleutherus valley, which served as one of the main routes of the Amorite invasion.

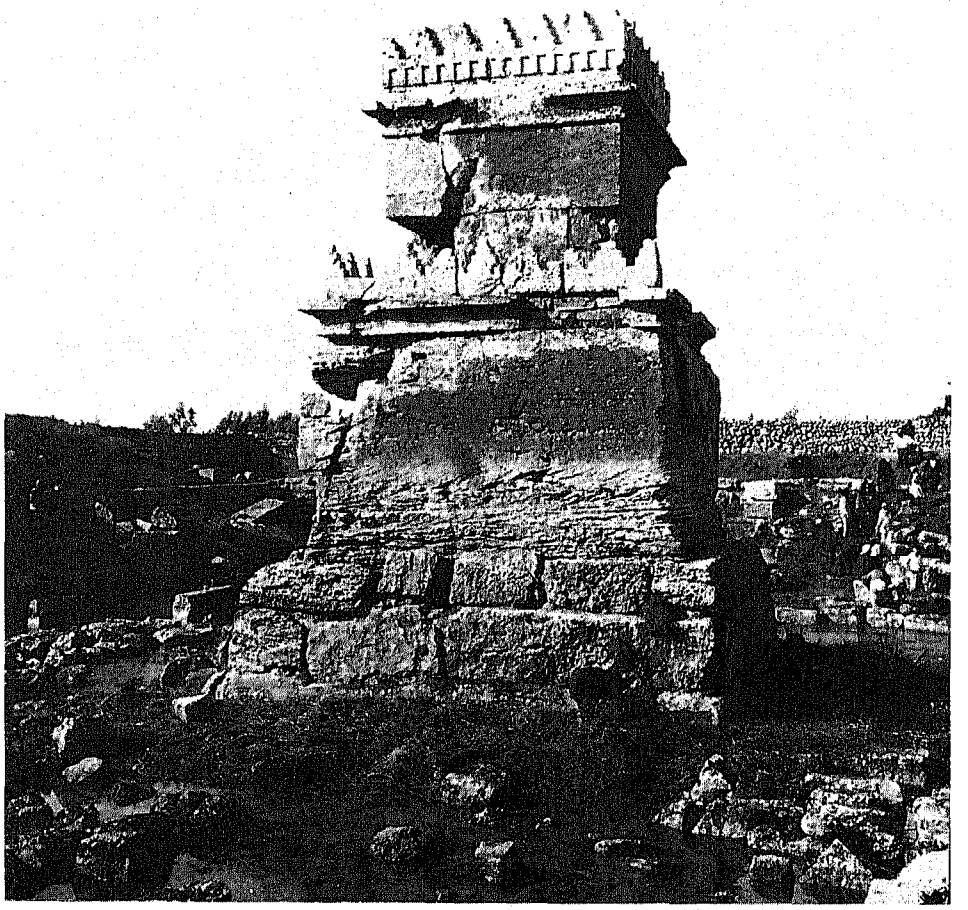
The site's porticoed temple is known to the local population by the name *Maʿabed.* Excavations were undertaken in 1955 to clarify a few problems resulting from Renan's *Mission de Phénicie* (1864). The Maʿabed was excavated from the rocky slope of gravel near Nahr Marathus. The temple site was completely covered with rubble; only the T-shaped corner pillars and the sanctuary at the center of the building were visible. The 1957 excavation reached the bot-

tom of the basin at a depth of 3 m below the floor level of the portico. The temple's maximum dimensions were 56.23 m in length and 49.5 m in width; the basin was 46.7 × 38.5 m; the total height is 7.7–8 m at the northwestern corner. A channel running northwest carried the water out of the basin.

The excavation removed massive architectural fragments that had rolled into the basin: all were portico elements—pillars, architraves, friezes, and leonine gargoyles—in the Achaemenid Persian style. Among the recovered pottery were fragments of amphorae from Rhodes, stamped handles, and large Megarian bowls as well as incised Pergamon pottery; in the northern section were found numerous fragments of globe-shaped flat-bottom jugs with a small pouring lip on the shoulder and a short neck ending in a strainer, usually with two–five holes, sometimes seven. These jugs may have been receptacles for holy water from the temple.

The pillars recovered are 3 m tall, 1 m × 55–60 cm in section. In addition, blocks of architrave and blind merlons from the crowning, as well as bossage from the covering, were recovered. These fragments permitted a reconstruction of the *naos* in the center of the basin, where it would have served as a shelter for the idol (see figure 1). This temple, with its wide entrance, flanked by two square towers on the north, and an altar in its middle, is unique. It dates to the time of the Achaemenid expansion into Syria after Cyrus the Great conquered Babylon (539 BCE). It was dedicated to the savior gods Melqart and Eshmun.

The remains from the favissa Dunand discovered in 1926 also date to the two centuries of Persian rule. The favissa is situated 100 m west of the Maʿabed, where it forms an embankment (70 m × 60 m). Until very recently, the local population exploited the favissa for building materials. Dunand found several limestone statues, some of them dressed in the style of the time of Rameses II; others represent Heracles and are similar to the statues at the stairs at Persepolis (Dunand, 1944–1945; 1946–1948). The 1957 excavation added a number of fragments that could be joined to the statuary found in 1926. The statues date to the sixth–fourth centuries BCE. [*See* Persepolis.]



ʿAMRIT. Figure 1. *The sanctuary after restoration.* (Courtesy N. Saliby)

The stadium at ʿAmrit has been known since Renan's excavations (see above). It stands at the northern bend of the Nahr and is 230 m long and 30 m wide. There are seven tiers of seats (each 55 cm deep) on both sides that end in a semicircle with two corridors for passage. On the southern side were foundations for small houses. Stamped handles from Rhodian amphorae were found in test trenches. Roman tombs were hollowed out of the rock. The stadium dates to the fourth century BCE, with continued use through the third century BCE.

The spindles are hypogea topped by funerary monuments. The pyramidal hypogeum consists of a cubic base on which stands a cylinder topped by an eight-sided pyramid. Two irregular steps descend into it, followed by three more leading to the bottom. The interior consists of two chambers, the first with loculi and the second meant to hold the founder of the hypogeum. The pyramidal hypogeum is contemporary with the ʿAmrit temple, but the objects found in it date to the period between the fourth and first centuries BCE, indicating that the hypogeum was in use for a long period of time.

The dome hypogeum is a 5.5-meter-high cylinder flanked by four lions and topped by a dome. The upper part has decorative friezes similar to those from the temple. It is 9.5 m high, plus the base. The interior is reached via a slope ending in three steps before the entrance. The internal organization is similar to that of the pyramidal hypogeum. A plan and a section executed during the 1976 restoration rectified the results previously published by Renan (1864).

Across the centuries the builders of the town of ʿAmrit found their stone at a quarry whose material is golden in color. The ruins of the town later served as a quarry for construction at Ruad and Tartus. ʿAmrit was destroyed in the first century BCE. What remains constitutes a unique Phoenician site, which clearly shows the assimilation of Orient and Occident in its architecture and ceramic artifacts.

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Translated from French by Ulla Kasten

AMULETS. The Latin term *amuletum* ("an object used as a charm to avert evil") was possibly derived from the Arabic word *hamilet* (something "carried, worn") by the first century CE because the term first appears in the work of Pliny the Elder (*Nat. Hist.* 29.66, 83; 37.50, 118). Amulets are objects made of various types of material, either uninscribed or inscribed, and supposedly charged with supernatural power. The magical properties believed to be inherent in particular plants, animals, stones, and metals often determined the selection of a certain material for an amulet. Amulets function like prayers; they are intended to offer protection from disease, misfortune, or attacks from supernatural beings or to guarantee wealth, success, and victory. In the ancient Near East, they were usually worn on the neck on a cord or chain, but some types of amulets were affixed to houses and places of business. *Lamellae,* a special type of amulet, are thin pieces of inscribed tin, lead, bronze, silver, or gold that were rolled up, placed in small tubes, and then worn on a cord around the neck. Frequently magical letters, words, symbols, or pictures were engraved on semiprecious stones (e.g., hematite, chalcedony, quartz), which are generally called "magical gems." Amulets were also made of perishable animal and vegetable material, such as leather, bone, wax, wood, herbs, roots, linen, and papyrus, and many of these have also survived because of the very dry climate.

Amulets of various types were widely used throughout the ancient Near East, although it is frequently difficult to determine whether small uninscribed objects and statuettes actually functioned as amulets. Furthermore, some items may have had dual functions, serving as amulets in addition to their original function. For example, cylinder seals (en-

graved with designs, inscriptions, or both), sometimes worn suspended on a cord around the owner's neck occasionally functioned as amulets. Mitannian faience seals from the last half of second millennium BCE probably functioned as both jewelry and amulets. On the other hand, the function of two small seventh-century BCE rectangular limestone plaques with Aramaic inscriptions from Arslan Tash (between Carchemish and Harran in Syria) is clear. One depicts a winged sphinx and a crouching lioness with a serpent's tale swallowing a man and is inscribed with an incantation to protect the house of the strangling nocturnal demons, while the other depicts a person with big eyes and scorpion feet and has two inscriptions, one for protection against the evil eye, and the other to obtain rain. (translations in Beyerlin, 1978, pp. 247–250; pictured in Pritchard, 1969, p. 216, no. 662). During the Persian period (539–330 BCE), many glass amulets in the shape of human heads (both bearded male and female), have been found in tombs in Cyprus, Egypt, and the Syro-Palestinian coast (as well as Spain, Carthage, and Sardinia). This distribution suggests that they were produced and distributed by Phoenicians.

Egyptian Amulets. More amulets are preserved from ancient Egypt than from anywhere else in the ancient Near East. Three Egyptian terms for amulet are *sa* ("protection"), *meket* ("protector") and *uedjau* ("health-maintaining object"). Amulets for the dead were essential features of Egyptian funerary practice. The *Book of the Dead* contains incantations that, when recited, were thought to endow the amulets with magical powers. Sometimes larger than amulets worn by the living, funerary amulets were found on different parts of the body, not just around the neck. Many amulets were wrapped under the bandages. There was an appropriate amulet for each limb of the deceased. There were at least 275 types (Petrie, 1914).

Ushebtis were small funerary statuettes inscribed with the name of the deceased and a magical spell from the *Book of the Dead.* These statuettes were intended to take the place of the deceased when the gods desired work in their fields to be performed. *Scarabs,* representing a type of beetle, made from many materials but typically stone or faience (glazed blue, green, or turquoise), were symbols of the god Khepri (the rising sun), promising the renewal of life in the next world. Other Egyptian amulets represented various parts of the human body and were intended to protect those parts from misfortune or disease.

Greco-Roman Amulets. The three general Greek terms for amulets are *phylakterion* ("safeguard," "preservative" *periapton,* and *periamma* (both meaning "attached," "tied on"). Thousands of Greco-Roman amulets from the first few centuries CE have survived, primarily inscribed on gemstones. These gemstone amulets have been frequently, though mistakenly, called "Gnostic" amulets in the past because of the use of bizarre images (such as a commonly occurring rooster-headed, snake-footed figure) and of *voces magicae,* that is, "magical words" made up of meaningless, though traditional, strings of vowels and consonants that make no sense in Greek (e.g., "ablathanalba"). These gemstone amulets were worn in rings, bracelets, or as parts of necklaces (Bonner, 1950; Delatte and Derchain, 1964). Some of these amulets consist of an incised image on the obverse and a magical inscription on the reverse, and others have only a magical inscription. The strong influence of Egyptian religion on Greco-Roman magical practices meant that gods like Osiris, Sarapis, Isis, Anubis, and Horus occur frequently on amulets. Favored by magical practitioners were the rooster-headed, snake-footed god and a headless figure variously identified as Iao (a divine name derived from Judaism), Seth, Atum, or Osiris (the last three of Egyptian origin). This iconography is not known from ancient cults. The strong influence of Judaism on ancient magic had a profound effect on the divine names inscribed on amulets, including Iao, Adonai, Sabaoth, and Elohim. The Greek magical papyri contains many spells in which careful instructions are given regarding how to prepare amulets properly and what should be inscribed on them.

Jewish Amulets. The primary Hebrew term for amulet, *qmᶜ* comes from a root meaning "to bind", "to tie." The Hebrew Bible has surprisingly few real or imagined references to amulets (*Gn.* 35:4; *Ex.* 32:3; *Jgs.* 8:21, 26; *Is.* 3:18–20; *Zech.* 14:20); only in the fourth reference are they viewed pejoratively, but nowhere are they forbidden. Although most surviving Jewish amulets are from the Roman period, two silver amulets dating from the late seventh century BCE were found at Ketef Hinnom in the vicinity of Jerusalem (Davies, 1991, p. 72, 4.301, 302). [*See* Ketef Hinnom.] One contains the entire priestly blessing in *Numbers* 6:24–26, and the other has an abbreviated form of the same text, which contains the divine name YHWH three times, a text often used or alluded to on later Jewish amulets (Schrire, 1966, pp. 82, 97).

According to *2 Maccabees* 12:40, when Judas examined the bodies of Jews who had fallen in battle, he discovered that "all" of them were wearing *hieromata,* "sacred objects" or "amulets" consecrated to the idols of Jamnia. Phylacteries (from the Greek word *phylakterion,* "means of protection") or *tĕfillîn,* from *tĕfillâ,* "prayer" (*Ex.* 13:9, 16; *Dt.* 6:8; cf. *Mt.* 23:5) are containers holding four Biblical passages: *Ex.* 13:1–10, 11–16; *Dt.* 6:4–9, 11:13–20. The phylactery that is placed on the upper part of the left arm contains just one roll of parchment on which all four passages are written, and that put on the upper forehead contains four separate rolls of parchment. They are traditionally worn by Jewish males during prayer, except on Sabbaths and holy days. Although *tĕfillîn* are distinguished from amulets in the Mishnah (*Shab.* 6.2; 8.3; *Sheq.* 3.2), they are called phylacteries, and they were assumed to exert protective powers on the wearers. The *mĕzûzôt,* which still function as apotropaic amulets, are small containers fixed on doorposts (*Dt.* 6:9). They contain

the Biblical texts *Deuteronomy* 6:4–9 and 11:13–20, which mention the name of God ten times, including the tetragrammaton (the four consonants of the Hebrew name for God—YHWH) seven times. Two Jewish magical handbooks, the first from the Talmudic era and the second not later than the eleventh century, are the *Sefer ha-Razim* ("Book of Mysteries"), and the *Harba de Mosheh* ("Sword of Moses") containing instructions for the preparation of amulets.

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ʿAMUQ, a well-watered and extremely fertile plain more than 1,400 sq km (868 sq. mi.) in area, bounded on the north by the Taurus Mountains and on the west by the Kızıldağ extension of the Amanus Mountains. To the northeast the Kürt Dağı rises to the Anatolian plateau; on the east and south the hills of Jebel Sima'an and Jebel ʿAla rise to the Aleppo plateau; and on the southwest, behind the ruins of Antioch on Orontes, rises Jebel Akra. The ʿAfrin and Kara Su Rivers flow into the ʿAmuq from the east, where they reach a marshy area around the Lake of Antioch. That point is north of a major bend in the Orontes River that flows for more than 644 km (400 mi.) from the south and makes a sharp bend there to the sea. Major connecting roads traverse the area and are well documented throughout history—from the Aleppo area and points south and east, to the coast along the course of the Orontes River. Connections to the Anatolian plateau and Cilicia are made possible through the Bailan Pass through the Amanus Mountains.

The ʿAmuq plain is dotted with numerous tells, a strategic selection of which have been investigated. Archaeological remains before the Neolithic period are not well documented at present, but a series of rich cultural sequences continues from that period to the present. The archaeological sequence has been blocked out in phases by the excavations of the Oriental Institute of the University of Chicago carried out between 1933 and 1937 at the important sites of Tell Taʿyinat (36°15′ N, 36°22′30″ E) on the Orontes 2 km (1 mi.) northwest of Tell ʿAtchana and 20 km (12 mi.) east-northeast of Antioch (36°17′ N, 36°22′11″ E); Tell el-Judeideh; Çatal Höyük, Tell Dhahab, and Tell Kurdu. The excavators designated phases A–Q from the Neolithic through the Hellenistic periods. The ancient capital of Alalakh was excavated by a British expedition in 1937–1939 and 1946–1949 that highlighted the occupation of the Middle and Late Bronze Ages (within phases K–L of the Oriental Institute excavation sequence). [*See* Alalakh.] The British expedition also excavated at Tabara el-Akrad, Tell esh-Sheikh, and al-Mina on the Mediterranean coast. The classical periods were documented primarily through the efforts of the Princeton University excavations at Antioch. [*See* Antioch on Orontes.] Excavations farther south along the Orontes at Qarqur and at ʿAin Daraʿ to the east on the Afrin have yielded by assemblages very closely related culturally to the ʿAmuq in the specific periods that have so far been investigated there. [*See* Qarqur, Tell; ʿAin Daraʿ.]

The Neolithic sequence in the ʿAmuq begins with the Pottery Neolithic. The flint inventory and such pottery as

coarse simple wares; dark-faced burnished wares with incised, impressed, and washed variants; and brittle and other painted wares characterize the assemblage. It is further articulated by period-typical pendants and stamp seals, stone tools, and worked bone.

The sequence continues through the Halaf and Ubaid periods, again well documented by rich ceramic traditions. A tremendous variety of monochrome and bichrome painted wares, characteristic of these phases, represents strong local traditions as well as typical Halaf and Ubaid painted traditions. The latter have wide-ranging connections to well-documented cultures across northern Syria, into the Assyrian heartland, and reaching south into southern Mesopotamia. The long tradition of dark-faced burnished ware ended in phase E, at the end of the Ubaid period. Small finds include both chipped and ground-stone tools, in a decreased quantity from before, and includes a significant quantity of well-made stone bowls, as well as stamp seals, beads, and pendants.

New ceramic and stone-tool traditions are present in ʿAmuq phase F, and metal objects are present for the first time and in significant quantities. Flint tools characteristic of the Canaanean industry occur from phase F through phase H. Characteristic ceramic indicators of foreign connections are included among the rich local assemblage of the fourth millennium. The beveled-rim bowls, triangular-lug handles, bent spouts, and other distinctive features of the Late Uruk–Jemdet Nasr period in Mesopotamia are clearly represented in ʿAmuq phase F and continue to be present at the beginning of phase G. In phase G the variety of pottery increases, as cultural connections become broader. In addition to the Mesopotamian ceramic influences already mentioned, there are cylinder seals and reserved-slip wares. In addition to the local stamp seals, locally produced cylinder seats also show Mesopotamian influence. Similar definitive features are found in a Gerzean context in Egypt, including multiple-brush painted pottery, incised and impressed wares, and 'Syrian bottles.' Palestinian connections are demonstrated with platter forms, red-surfaced wares with simple and patterned burnished decorations, and comb-impressed surface treatment on hard, high-fired wares.

The third-millennium sequence is represented in exceptional detail. The plain simple wares of phases G–J, including a variety of cup or goblet forms, are established with basic similarities but some geographic variation over a broad area of northern Syria. Red-black burnished ware with connections to southeastern Turkey, also known as Khirbet Kerak ware, is well represented in phases G–I. In phase I, and particularly in phase J, a new, sophisticated painted tradition, characteristic of the end of the Early Bronze Age, is well represented. A good sampling of small finds was also excavated in these phases, ranging from beads, a variety of stone tools, metal implements, and terra-cotta figurines to surprisingly sophisticated human figurines from phase G that were cast in copper by a lost-wax process.

A drastic change occurred in the ʿAmuq at the beginning of the second millennium BCE with radical political and cultural shifts. The flourishing EB cultural tradition, well represented at Tell Taʿyinat, ended, and the nearby site of Tell ʿAṭchana rose to prominence. The ceramic traditions changed significantly at that time. Comb-incised decoration became the most commonly used, though beautiful pieces of painted "Cilician ware" jars, jugs, and bowls are present in limited quantity. Spectacular remains from the middle of the second millennium BCE were preserved at Tell ʿAṭchana, the site of ancient Alalakh, capital of a region within the kingdom of Yamḫad that had its capital at Aleppo. [*See* Aleppo.] Palace complexes were excavated in levels VII and IV. The level VII palace dates to the end of the Middle Bronze, primarily to the eighteenth century BCE and is attributed to Yarimlim by C. Leonard Woolley (1955), the site's excavator. The level IV palace dates to early in the Late Bronze Age, primarily in the late fifteenth and early fourteenth centuries BCE, and was labeled the palace of Niqmepa by Woolley, (1955). Rich artistic remains were preserved in the palaces and associated temples, as well as significant archives of cuneiform tablets and the inscribed statue of the seated king Idrimi. This written documentation gives an insight into the history, diplomacy, trade, administrative structures, and many other details of the culture of the period. [*See* Alalakh Texts.]

The long, continuous sequence of temples was located adjacent to the palaces and not far from a major city gate that is best preserved in level VII and covered by a fortress in levels III–II. Interestingly, the architectural traditions represented in the temple plans changed radically in its rebuildings. Typical Syrian direct-access temples occur but others, including some that seem to have Anatolian inspiration, are also present.

International connections are also demonstrated in the decorated Nuzi and "ʿAṭchana" pottery found in levels IV–II and in the imported Mycenaean and Cypriot wares in the same time range and later. Also, imported Egyptian, Cretan, and Anatolian objects were found in these contexts. The well-built palaces once stood several stories high and were decorated with frescoes. Basalt or limestone orthostats faced the walls of major rooms and courtyards, and wood was heavily used in the construction. The half-timber construction in the level IV palace is particularly well documented.

When Alalakh was destroyed at the end of the Late Bronze Age, political power in the region shifted and again became established at nearby Taʿyinat, as it had apparently shifted from Taʿyinat to Alalakh earlier. The transition period in the twelfth–eleventh centuries BCE is not well represented at either site but is well documented at Tell el-Judeideh and Çatal Höyük. Aegean influence is very clear in the painted

pottery of phase N, particularly in its very distinctive shapes and painted designs. There is some development within this pottery tradition down to the eleventh century BCE, but another tradition, characterized by red-washed and burnished pottery, became dominant in about 1000 BCE. That new tradition is also well documented to the south at Tell Qarqur and to the west at ʿAin Daraʿ. At Taʿyinat it occurs through several phases of a citadel complex characterized by a series of typically Syrian *ḫilani* buildings and a small temple of direct-axis type but proportioned longer than wide. Luwian hieroglyphic and other inscriptions date the complex to the Neo-Assyrian period, continuing well beyond the reign of Tiglath-Pileser III. Eight- and seventh-century BCE Egyptian, Greek, and Cypriot pottery are better documented in the latest layers of this complex than earlier. In another area of the site a palatial Assyrian building of the seventh and sixth centuries BCE was excavated by the Oriental Institute expedition (Haines, 1971, pp. 61–63, pls. 84, 85, and 109) and "Assyrian palace ware" was among the ceramic materials found in its remains.

The British expedition to Alalakh also excavated a site on the coast that was considered to be the outlet to the sea for the ʿAmuq area in the Iron Age. This site, al-Mina, was occupied primarily from the mid-eighth century BCE until the beginning of the Hellenistic period, but also subsequently in the Byzantine and later periods. Iron Age storerooms at al-Mina contained quantities of imported Aegean and Cypriot wares that are also represented in the ʿAmuq, but not in the same quantities. As in the ʿAmuq, the sequence continues unbroken into the Hellenistic period.

The founding of the city of Antioch by Seleucus I in 300 BCE caused a major political shift in the area. As the city grew to become one of the most important in the ancient world, the ʿAmuq plain clearly shifted to a supporting but integral role in its success. The ʿAmuq plain was now known by a new designation, the plain of Antioch. The rich culture of the area relied on the newly constructed ports of Seleucia and Laodocia. Antioch was renowned for its beauty in antiquity, though its physical appearance was altered several times by major earthquakes. The Princeton Expedition to Antioch has provided a hint of the greatness of this center in the rich architectural and artistic remains that are part of the cultural materials that were uncovered (Downey, 1961). Antioch continued beyond the classical period as an important Byzantine and then Crusader city. Its fortunes only declined drastically after the destructions suffered at the hands of Muslim and Mongol forces in the thirteenth century.

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ANAFA, TEL, small site in the northeastern corner of modern Israel (map reference 2105 × 2869). The site was first excavated between 1968 and 1973 by the Museum of Art and Archaeology of the University of Missouri, under the directorship of Saul Weinberg. These excavations revealed evidence for occupation from the Early Bronze II period through the first century BCE. The remains of the Late Hellenistic era were the best preserved and were striking for the numbers of imported luxury products—fragments of thousands of cast-glass bowls and the red-gloss pottery known as Eastern Sigillata A, as well as hundreds of mold-made lamps and coins of Tyre and Sidon. The principal building uncovered was lavishly decorated with gilded and painted stucco in the manner of the Hellenistic buildings on Delos. Indeed, the variety of finds led Weinberg to speculate that the Late Hellenistic settlement might have been a trade emporium providing amenities for those plying the caravan route from Damascus to Tyre and that was abandoned, never to be reoccupied, when the campaigns of Alexander Jannaeus made the area too dangerous for trade. Study seasons between 1974 and 1977 cast some doubts on these hypotheses and led to the reopening of the site for a second series of excavations between 1978 and 1986. This series was jointly sponsored by the Missouri Museum and the Kelsey Museum of the University of Michigan with Sharon Herbert and Weinberg serving as co-directors. The excavations were funded by the sponsoring universities, the Smithsonian Institution, the National Endowment for the Humanities, and private donors. The first of three projected volumes of final reports on the site appeared in 1994 (Herbert et. al., 1994). There is still no evidence for the ancient name of the settlement. G. Fuks (*Scripta Classica Israelica*, 1979–1980, pp. 178–184) has argued it to be Arsinoe of

Coele-Syria. Arguments against this identification appear in *Tel Anafa* (vol. I.i, p. 10, note 25).

The second series of excavations at Tel Anafa focused on two issues: the form and function of the Late Hellenistic stuccoed building, only a corner of which had been exposed in the first series; and the date of the final phase of occupation in antiquity. Study had shown substantial numbers of early Roman artifacts at the site but no clearly Roman buildings. With the exposure of more than 50 percent of the stuccoed building by 1986, it was established that this structure was modeled after Greek peristyle private houses. Significant variations from the prototype include Phoenican masonry techniques, an elaborate bath complex, and its large size. All these variations might be attributed to lingering Phoenician customs of the residents of nearby Tyre into whose territory the Late Hellenistic site can be argued to fall. Tyrians are, in fact, the most likely candidates to have built and lived in the structure now thought to be a private country villa rather than a trade center. The Roman occupation was also clarified with the exposure of eleven small dwellings datable to the first century CE. Unlike the Hellenistic remains, the Roman levels showed little evidence of contact with Tyre but were much more closely connected with the economy of the Galilee and Herod Philip's nearby capital of Caesarea Philippi. In summary, the richness of the site and controlled stratigraphic contexts of the finds allow Tel Anafa to serve as a Hellenistic type-site for the Levant, presenting a broader and more closely dated range of Hellenistic artifacts than ever before possible. Its location in the border area between Phoenicia, the Galilee, and the Golan also makes it an important site for studying changing interactions between Greeks, Phoenicians, Ituraeans, and Jews in the Hellenistic and Roman eras.

[*See also* Galilee, *article on* Galilee in the Hellenistic through Byzantine Periods; Golan; Phoenicians; *and* Tyre.]

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SHARON C. HERBERT

ANALYTICAL TECHNIQUES. The traditional archaeological methods of classification and seriation were developed on the basis of the physical appearance of archaeological artifacts, but it is increasingly acknowledged that the material of the artifact also carries information. There is usually no difficulty, for example, describing pottery by its color and texture; it is, however, more difficult to describe artifacts made of rock or metal in this way without being inaccurate (e.g., "green stone") or even wrong. The possibility of identifying the nature of certain materials only by scientific analysis inevitably arises. To extract the maximum information locked in the material of archaeological remains it is often necessary to proceed one step farther to employ a variety of scientific techniques to establish, for example, the identity and geographic sources of the raw materials used or the techniques of manufacture. Thus, applying scientific methods to archaeological objects can simply be regarded as an extension to the sort of visual examination the magnifying lens or binocular microscope do.

Determining chemical components (or elemental analysis) is nowadays rarely accomplished by the classical wet chemical methods (i.e., gravimetric or volumetric quantification by chemical reactions in aqueous solution); it is carried out rather by applying physical techniques based on the properties of molecules, atoms, and atomic nuclei. The common principle of these analytical techniques is the exposure of the sample to some form of energy input (thermal or by irradiation with photons or particles). Exposure results in the excitation of molecules and atoms that either emit, scatter, absorb, or reemit various forms of radiation analyzable with spectroscopic methods.

The choice of any method usually depends on a variety of factors such as sensitivity, selectivity, precision, accuracy, speed, availability, or cost of analysis. Their applicability may depend on the sample matrix, sample size, or on another specific component being absent. Even more important is the sampling step. It has to be ascertained that the sample is truly representative of the whole that it represents. With archaeological objects it is often not possible to remove a sample, so that the application of nondestructive techniques becomes necessary. Sometimes it may not be possible to obtain a pure sample from a heterogeneous object. In this case, it is better to apply a microanalytical method with high lateral resolution. On the other hand, if knowing the average composition of a heterogeneous sample will suffice, the bulk analysis of a relatively large sample may provide more reliable results than any microanalytical method.

Optical Methods. The range of colors to which the human eye is sensitive is only a very narrow range of the electromagnetic spectrum of radiation. Of progressively decreasing wavelength and, hence, increasing energy are the ultraviolet, X-ray, and γ-ray regions of the spectrum, while the infrared and microwave regions have longer wavelengths

than visible light. All these regions are used in chemical analysis.

UV-VIS spectroscopy (also called colorimetry) involves measuring the intensity of absorption of visible light. It is therefore restricted to colored substances, usually in solution. Often, not the substance itself but a colored derivative is measured by comparison with standard solutions. Concentrations of elements can be determined in the parts per million range in solutions (1 ppm = 1 $\mu g/g$ = 0.0001%) as well as their valency states and complex species (speciation). This method is regaining importance because it is rather inexpensive and can be applied in the field (e.g., for environmental monitoring and phosphate analysis).

In optical emission spectrometry (OES) the sample to be analyzed is vaporized at high temperatures by means of combustion flames, an electric discharge between electrodes, a laser beam, or a plasma torch. Such a treatment breaks most chemical bonds and excites the outer electrons of some atoms to higher energy levels that emit light in the visible and near ultraviolet region on their return to the ground state. This light consists of a number of sharply defined wavelengths or spectral lines that are characteristic of the particular element excited. Consequently, the determination of the constituent wavelengths in the light emitted by the sample provides the basis for identifying the elements present in the sample while the intensity of the light, at a particular wavelength, provides an estimate of the concentration of the associated element. By comparison with standards of known composition it allows, in principle, the simultaneous determination of up to seventy elements in the range of between 1 ppm and 10 percent with detection limits varying between 1 and 100 ppm in the solid sample.

Although some materials, like metals, can be used directly as electrodes, the method cannot be regarded as nondestructive. For analysis, a small sample, typically 10 mg, has to be removed from the object. The sample is either dissolved or mixed directly with pure graphite powder and placed in a graphite cup, which forms the lower electrode. An electric arc or a spark discharge is struck between this and an upper graphite electrode, thus completely volatilizing the sample and exciting its constituent atoms. A more elegant method of direct analysis is the excitation with an intense laser beam of about 100 μm in diameter. A brief burst of intense light is sufficient to vaporize a few micrograms of material and leaves behind only a very small and hardly visible crater on the surface of the object. The small cloud of sample vapor needs an auxiliary spark discharge to excite the emission spectrum used for analysis. Although this laser-induced OES may appear to be a much better technique than the first one, it has the decisive disadvantage that its reproducibility is much lower and that it can only be used for qualitative or semiquantitative analyses.

Further improvement of the technique has been made by the introduction of a plasma torch for the vaporization and excitation of the sample instead of the electric discharge. It has only relatively recently been possible to obtain a stable plasma (a completely ionized gas) under laboratory conditions. The most widely employed plasma for analytical purposes consists of argon flowing through a quartz tube placed with its upper end into a high-frequency (about 30 MHz) magnetic field. Once ignited to plant a "seed" of electrons in the gas, the electron are accelerated by the oscillating field and obtain enough energy to ionize all other argon atoms within a very short time. The result is a very high-temperature flame (up to 10,000°C) through which the solution of the dissolved sample is transported as an aerosol. This technique is called inductively coupled plasma-OES (ICP-OES) and is a highly reliable method for the analysis of many elements in the parts per billion (ppb) range in solutions (1 ppb=1 ng/g=0.0000001%). Because solids have to be dissolved for analysis, elemental concentrations in the ppm range can be determined in the solid sample. A disadvantage is that the dissolution step is very critical for the accuracy of the method and the sample is lost on analysis.

In atomic absorption spectrometry (AAS) the sample, usually in the form of a solution, is also volatilized and atomized with combustion flames or by electrothermal heating in a small graphite tube. This method utilizes the fact that free atoms can absorb radiation at the same wavelength that they would emit on excitation. If copper is being determined, a copper-containing light source is used to pass a beam through the atomized sample. The amount of light absorbed can be detected electronically and is directly proportional to the number of atoms present. Comparison with standard solutions yields elemental concentrations. The instrumentation of AAS is cheaper than that of OES and the method is less sensitive to interelement interferences. Detection limits are roughly comparable. However, only one element can be determined with one measurement, whereas with OES all detectable elements are measured simultaneously. Only elemental concentrations can be determined with both methods.

The methods discussed so far are based on the fact that electrons of the outer shells of atoms can be excited, which results in absorption and emission of light in the visible and UV range of the electromagnetic spectrum. The energy of infrared radiation is too low for such processes, but it can excite oscillations and vibrations in molecules. Certain specific wavelengths that depend on the structure of the compound being tested are absorbed when a beam of infrared radiation is passed through a suitably prepared specimen of almost any inorganic or organic compound. The greatest use of this technique (IRS) is in the qualitative identification of organic compounds. Structural information on the presence or absence of certain functional groups is obtained. It is thus a typical method for species analysis. Many compounds exhibit typical infrared spectra that can be used as a "fingerprint." Resonance raman spectroscopy (RRS) is a

complementary technique to IRS in that the radiation scattered and partly reemitted in a direction perpendicular to that of the incident beam is measured.

X-Ray Methods. When an element is irradiated with X-rays of appropriate wavelength, X-rays of different but smaller wavelength, characteristic of the element, are emitted. The underlying process is the displacement of an electron of one of the inner shells of the atom followed by filling of the vacancy by one of the outer electrons combined with simultaneous emission of a photon. Complex mixtures can usually be analyzed without prior separation of the components by the spectroscopy of the secondary radiation with diffracting crystals or semiconductor detectors and—most important—the method is virtually nondestructive (only some glasses and gemstones may change color on irradiation with X-rays, but this can be reverted by gentle heating). However, the depth of analysis is only in the range of 0.1 mm in silicates and even less in metals, so that the surface of an object has to be representative of the bulk composition, which is not always the case. Therefore, it may often be better to take a representative sample and perform the analysis on that.

The sensitivity of the method depends on the matrix and the element to be analyzed, but typical detection limits are around 10–100 ppm. XRF is the standard method for rock analysis in geology, and it is also widely employed for analyzing metals and alloys. The analyzed area is usually about 1 cm in diameter but can be reduced with appropriate slits; however, these also reduce the intensity of the primary beam and accordingly extend the necessary measurement time.

X-rays can also be excited by energetic electrons that can be focused with magnetic lenses. In the electron probe microanalyzer, a fine electron beam is focused on the surface of the sample (approximately 1 μm in diameter); the position of the beam can be changed systematically. Thus, it is possible to obtain information on the concentrations and distribution of the elements within a small area of the sample. For quantitative analysis the sample is mounted in a resin and the surface polished. Accordingly, strictly nondestructive analysis is not possible, but small objects like coins can be investigated with little damage. Electrons induce more background radiation in the sample. Therefore, detection limits are somewhat higher (> 100 ppm) than with XRF.

Protons produce much less background and can also be focused so that proton-induced X-ray analysis (PIXE) combines lower detection levels and high lateral resolution. However, the instrumental effort to produce a proton beam is much larger than for electrons. Accordingly, this method is rarely available and comparatively expensive.

With X-ray diffraction analysis (XRD), crystal structures (and thus mineral compounds) can be identified. This method is very useful to complement chemical analysis when different materials have similar chemical composition.

Nuclear Methods. While the preceding methods make use of physical processes taking place in the molecules or in the electron shells of atoms, nuclear methods are based on reactions that occur between nuclei and neutrons or charged particles. Such reactions are usually accompanied or followed by the emission of radiation that is phenomenologically largely identical with the radiation emitted by the electron shells—with the difference that it originates from the nucleus. The most important of these techniques is neutron activation analysis (NAA), in which a sample is irradiated with thermal neutrons to interact with the atomic nuclei of the constituent elements, transforming them into unstable radioactive isotopes. The decay of these isotopes is often accompanied by the emission of γ-rays, which can be used for identifying and quantifying the elements in question. The spectroscopic techniques for γ-rays are similar to the ones used for X-rays. Because radioactivity can be measured very sensitively, this method offers an unparalleled combination of selectivity and sensitivity for simultaneously determining many elements. Typically, about 40 elements can be determined in rock samples from major components to the ppb range. For several elements this is the most sensitive method of analysis altogether. Depending on their major compositions, small objects can be analyzed nondestructively, if no long-lived isotopes are produced. In any case, the sample is preserved and can be used for other investigations after the decay of the radioactivity. The major disadvantage of this method is the low and diminishing availability of strong neutron sources—that is, nuclear research reactors.

Analogous to AAS, Mössbauer effect spectroscopy (MES) involves the absorption of γ-rays of characteristic energies within a very narrow energy range by specific nuclei in the sample. This method is mainly used for the speciation of iron in various matrices or, more generally, provides information on the immediate crystallographic environment of the isotope under investigation. Typically, it is the ratio of Fe^{2+}/Fe^{3+} in minerals that is of interest because it bears on the ambient conditions during the formation of iron-containing minerals.

A mass spectrometer is an instrument that will sort out charged gas molecules (ions) according to their masses by accelerating them electrically to form a beam that is deflected magnetically into separate beams according to the mass-to-charge ratio of the ions involved. These beams can be made to pass through a series of slits to reach separate detectors where they are individually counted. In thermal-ionization mass spectrometry (TIMS) the element sought has to be separated from the sample and is then evaporated and ionized from an array of hot filaments. Quantification is achieved by adding known amounts of different isotopes

of the same element (isotope dilution). For many elements this is the most sensitive technique available, but it is rather time consuming and usually only one element can be measured at a time. The major advantage is that not only the concentration of an element can be determined, but also its isotopic composition—which is especially important for elements with varying abundances of their constituent stable isotopes. Most elements on Earth have a uniform isotopic composition regardless of their location or chemical form. Variations can be induced in light elements (from hydrogen to sulfur) by physical processes such as diffusion that are sensitive to isotopic differences (e.g., "heavy" water, D_2O can be enriched by repeated evaporation of ordinary water) or by the decay of radioactive elements occurring in nature. A typical example is the decay of uranium and thorium to lead, so that the isotopic composition of lead varies according to which geochemical environment it derives.

There are also alternative ways to produce ions from the sample: One is the direct atomization and ionization by an electric spark similar to OES (spark-source mass spectrometry, or SSMS) or the introduction of a sample solution into a plasma torch (ICP-MS). Both combine the high sensitivity of MS with multielement detection. However, especially SSMS can only be regarded as a semiquantitative method unless a tedious multielement isotope dilution technique is applied. If a sample is directly evaporated by a narrow laser beam and then introduced into an ICP-MS, high lateral resolution is also possible. Even better resolution is achieved by ionization with a primary beam of ions (secondary-ion mass spectrometry, or SIMS), so that the features of the EMPA are combined with high sensitivity and isotopic analysis. Unfortunately, precision and accuracy of all these methods is not yet competitive with conventional instrumental methods (e.g., XRF or NAA) because of interelement effects that are as yet difficult to correct. However, with their increased use, these new techniques will certainly become powerful and reliable analytical tools.

The main field of application of MS in analytical chemistry is actually the analysis of complex organic molecules. To increase its selectivity, it is now common practice to separate the individual components first in a gas chromatograph (GC) by differential adsorption on a solid stationary phase (GC-MS). Because of these differences, each component diffuses at a different speed through a narrow column packed with, for example, silica gel, so that at the end of the column the components are completely separated and introduced into a MS one after the other.

Selected Archaeological Applications. OES was the first widely employed physical method of chemical analysis; thus, most of the analytical data published since 1930 was, until recently, derived from this technique. Most noteworthy are the many thousands of analyses of prehistoric metal objects from Europe, the eastern Mediterranean, and the Near East carried out at the Württembergisches Landesmuseum in Stuttgart, Germany. These data are still the primary source for studying the development of alloying techniques in various regions and have frequently been discussed in terms of the provenance of raw materials. The method is still in use but XRF, AAS, NAA, and ICP-OES are replacing it increasingly in determining major and trace elements. A significant methodical extension has been the introduction of TIMS for determining lead isotope ratios not affected by production processes.

Obsidian, a naturally occurring volcanic glass that has been used widely for blades from Paleolithic periods through the Bronze Age, is a much better material for provenance studies because the production of artifacts does not alter its chemical composition in any way and it is also very resistant to chemical weathering. OES has been used to characterize many obsidian sources in the Aegean, in central and eastern Anatolia, in Armenia, and in Ethiopia, as well as obsidian artifacts from Near Eastern sites. It appears that the Levant was mainly supplied from Cappadocian sources, whereas obsidian from eastern Anatolia was dominant along the Zagros flanks. Today, the most widely applied analytical methods for this purpose are NAA and RFA, although the latter is not applicable for very small samples. So far, TIMS has offered little advantage over these methods.

In a similar approach, OES has also been used for the chemical analysis of pottery; however, characterizing clay sources presents more difficulties than obsidian. There is a very large number of potential clay sources, and the variation within a source is likely to be larger than with obsidian. On the other hand, for mineralogical reasons, the variation between sources is rather small; as a result, they can hardly be distinguished with the relatively low precision of OES. Progress, thus, came only after the introduction of NAA, which is now the standard method for pottery analysis.

Stone artifacts have also been studied extensively, particularly marble, starting with isotope analysis of carbon and oxygen. As with all studies where many sources have to be considered, various overlapping parameters prevent the unique assignment of an artifact to any source. Better resolution between sources can only be achieved by increasing the number of geochemical parameters. Hence, isotope analysis is now routinely complemented by trace element and petrographic analysis.

Of organic materials, amber has been the most extensively studied, especially by IRS, with the aim of localizing raw-material sources and establishing trade routes in the Late Bronze Age. A promising field seems to be the analysis of food residues by GC-MS.

[*See also* Dating Techniques; Microscopy; Neutron Activation Analysis; Spectroscopy; *and* X-Ray Diffraction Analysis.]

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ERNST PERNICKA

ANATOLIA. [*This entry provides a broad survey of the history of Anatolia as known primarily from archaeological discoveries. It is chronologically divided into four articles:*

Prehistoric Anatolia
Ancient Anatolia
Anatolia from Alexander to the Rise of Islam
Anatolia in the Islamic Period

In addition to the related articles on specific subregions and sites referred to in this entry, see also History of the Field, *article on* Archaeology in the Anatolian Plateau.]

Prehistoric Anatolia

V. Gordon Childe places the origins of his Neolithic Revolution in hypothesized "nuclear zones" where climate, environment, and human experience came together to catalyze the transition of human society from a food-gathering organism to a food-producing one (Childe, 1952, p. 23). These nuclear zones were limited to an arc of land from Egypt to Mesopotamia, the so-called Fertile Crescent. Although later scholarship considered Anatolian sites such as Çatal Höyük and Çayönü to be peripheral developments of the Levantine Neolithic tradition, the growing evidence from sites such as Aşıklı Höyük points to an autochthonous development within Anatolia. [*See* Çatal Höyük; Çayönü.] As a result, Anatolia has begun to take its place as one of the primary areas of prehistoric investigation in the Near East. It was in the Neolithic and Chalcolithic periods that humans acquired the capacity to manipulate their surroundings in ways still observable in the archaeological record.

Climate, Environment, and Domestication. Much of Anatolia is situated along a broad plateau that stretches from the Aegean Sea to Iran. While this plateau may seem, at first glance, to be little more than monotonous highlands, careful inspection reveals a complex landscape composed of numerous microenvironments, each with its own peculiar set of ecological features (Yakar, 1991). Within the context of this ecological framework, the basic elements of soil, temperature, and precipitation had much to do with the success or failure of human habitation on the plateau (cf. Gorny, 1995b). Environmental studies indicate that the climate of Anatolia in the era preceding the Neolithic may have differed significantly from what it is today, with large areas inhospitable to human habitation (Butzer, 1970, 1982; Cohen, 1971). Climatic conditions seem to have ameliorated in Anatolia during the eighth millennium, making it conducive to settlement at sites such as Hacılar and Çatal Höyük. [*See* Hacılar.] Whether this climatic change was the prime catalyst behind the innovations of the Neolithic period is still uncertain, but what stands out is the dramatically different direction human culture took from that point onward.

Although humans had already begun to observe and experiment with the plants (and animals) in their environment, it was not until this moderating change in climate occurred that the "incipient agriculture" of the Epipaleolithic period finally gave way to a more formalized system of settlement and cultivation. [*See* Agriculture.] The system was characterized by dry-farming communities in which the inhabitants practiced cereal cultivation and animal husbandry. [*See* Cereals.] While village communities apparently sprang up before the development of plant domestication, there are indications that, in at least some cases (see below), animal domestication also preceded that of plants, especially in central Anatolia (cf. Yakar, 1991; M. Özdoğan, 1995). [*See* Vil-

lages.] Other developments in social organization, ideology, architecture, and craftmanship followed on the heels of the food-producing revolution; exchange is also evident, even from earliest times. These cultural developments, however, represent only a small segment on a long and not necessarily straight continuum.

Neolithic Period (c. 11000–5500 BCE). The earliest evidence of settled life in Anatolia dates to the Neolithic period (Singh, 1974; Mellaart, 1975; Todd, 1980; Yakar, 1991; Joukowsky, forthcoming), with settlement divided into two phases based on the absence or presence of pottery technology. Prepottery or aceramic settlements have been identified at Çayönü, Hallan Çemi, Nevalı Çori, Gritille, Aşıklı Höyük, and Suberde, with additional evidence coming from surveys (cf. Voigt, 1985; Todd, 1980; Meriç, 1993; Algaze, 1994; M. Özdoğan 1995). [*See* Nevalı Çori.] Together they provide a broadening vista of Neolithic settlement in Anatolia.

Radiocarbon dating of the evidence of the Neolithic at Hallan Çemi places it in the ninth millennium, making it the oldest known permanent settlement in Anatolia (Rosenberg, 1994). Circular houses appeared in each of the two levels of occupation, whose economy was typical of a food-collecting site. Nearly all the faunal and botanical remains appear to have come from wild species—the exception being the pig, which may have been domesticated. [*See* Pigs.] This suggests that, contrary to earlier opinions, animal domestication probably occurred here (in the form of pig domestication) prior to the domestication of plants. Querns, grinding stones, and pestles, many of which were festooned with zoomorphic decorations, demonstrate that wild grains were processed. Other evidence points to fishing and nut and legume gathering supplementing the diet. [*See* Fishing.] While most of the chipped-stone industry is to be attributed to obsidian derived from the Van region, the microlithic repertoire has little in common with contemporary cultures—which may point to outside influences. Obsidian, copper (or perhaps just copper ore), and Mediterranean shells suggest that exchange also formed part of the Hallan Çemi economy.

The well-documented settlement at Çayönü (c. 8000 BCE) provides revealing data regarding the shift from a hunter-gatherer society to a village-farming economy (cf. Braidwood and Braidwood, 1982; A. Özdoğan, 1995). Four phases of settlement cover some five hundred years and display unusual standardization in their plans. The phase I prehistoric settlement covered approximately 30,000 sq m at its peak and was occupied by several thousand inhabitants. The earliest structures in subphase I were primarily oval and set on virgin soil. Subphase II showed evidence of town planning, with a central square and buildings on a south–southeasterly axis. The dominant building style is the so-called grill building, which encourages ventilation. A terrazzo floor found in subphase III represents another innovation of the Çayönü inhabitants, and the "cell building" is the featured architectural type. The advanced style and arrangement of these architectural types may eventually provide some of the first real evidence of stratification and specialization (their architectural antecedents are still to be discovered).

Phases I and II at Çayönü yielded wild cereals, vetch, and nuts, supplemented by wild pig, goat, sheep, and deer. [*See* Sheep and Goats.] Evidence of domestication begins to appear by phases III–IV, with plants such as peas, lentils, and emmer joined by domesticated animals such as sheep, goat, and pig. The economy of Çayönü may have been augmented by copper production from a nearby mine. The site's pins, awls, and fishhooks represent the first known use of copper for fashioning tools; whether this copper was used in trade is unclear, but the increased use of obsidian from the Nemrud Dağı region in phase IV does suggest that it could have been imported in the exchange.

Evidence regarding mortality for the site's inhabitants comes from the remains of more than five hundred individuals found at Çayönü. Of interest are the skeletal remains found associated with the so-called skull house, where the discovery of numerous skulls suggests a cult in which the skull played an important role. [*See* Cult.] Additional evidence revealing the religious and artistic sensibilities of the inhabitants is demonstrated by clay figurines found at the site, especially those that are early manifestations of the mother-goddess motif so prominent in later cultures. Although true pottery was absent, white plaster vessels occurred in the upper levels.

Nevalı Çori is the site of an aceramic village whose excavation was occasioned by the Atatürk dam project on the Euphrates River (Hauptmann, 1993). [*See* Euphrates.] Four levels of aceramic remains were recovered. Many of the twenty-seven tripartite structures excavated are of interest, but several are of particular note. House 13 yielded a terrazzo floor with several limestone stelae, one of which is 2.50 m high and portrays a human figure. The preceding level of the house produced several more carved stelae. The monumental sculptures are said to indicate the presence of a sanctuary. Several other buildings were constructed with cross channels running under the walls. Cattle was domesticated and cereals cultivated. [*See* Cattle and Oxen.] Flint was the stone of choice, but no obsidian has been discovered. Artistic motifs on several stone vessels may link the site with Pre-Pottery Neolithic B sites on the Levantine coast.

Farther to the west, in the heart of the plateau, is Aşıklı Höyük, one of Anatolia's most important Neolithic sites (Esin, 1991, 1995). The settlement displays thickly clustered houses and a double wall, one of stone and one of mud brick. Faunal remains indicate that wild sheep and goat were consumed, but there is no evidence of agriculture in the 15-

meter-deep deposit. Ceramics were introduced in its later levels. The sophistication of the Aşıklı assemblage is evidence that Neolithic settlement in Anatolia was more than just an afterthought of Levantine developments.

The appearance of pottery at Neolithic sites in Anatolia is dated to about 6500 BCE. Çatal Höyük (East), perhaps the best-known site of the Ceramic Neolithic (Mellaart, 1967), was composed of buildings with contiguous walls and entryways through the roof. The solid exterior face of the village probably served as a simple defensive device. Utilitarian pottery is found in all thirteen of its excavated levels. Aceramic levels were not found but are thought to lie beneath the ceramic levels. The chipped-stone assemblage from Çatal Höyük is notable because the inhabitants made exclusive use of obsidian from local sources. The importance of this obsidian resource cannot be overemphasized, as discoveries of central Anatolian obsidian in places such as Jericho in Syria-Palestine are indicative of Early Neolithic exchange. [*See* Jericho.] Mediterranean shells, metal ores, and pigments not found locally provide additional evidence of an exchange network. Animal husbandry appears to have been important to the town's overall economy, with most of its meat coming from cattle. Hunting was still an important factor, however, as indicated by the bones of wild animals and hunt scenes depicted on the walls of buildings. [*See* Hunting; Wall Paintings.] Cult figurines, shrines with bucrania, plaster reliefs, and wall paintings reflect the town's religious disposition. The site comes to an end in about 5400 BCE but is succeeded by a settlement in the Early Chalcolithic period.

Hacılar (Mellaart, 1970) illustrates a Late Neolithic tradition somewhat farther west of Çatal Höyük and provides a key link with other Late Neolithic traditions. The Early Aceramic period (of which there were seven sublevels that ended in about 6700 BCE) ended with an abandonment of approximately one thousand years. The succeeding six levels (IX–VI), which span a period from about 5700 to 5600 BCE) represent typical Neolithic agricultural settlements that cultivated wheat and barley along with lentils. Only the dog was domesticated, and hunting still provided a supplement to the local diet. Pottery appears for the first time in level IX, and exquisite clay figurines, probable domestic cult statues, appear in Neolithic levels IX–VI.

In Cilicia the sites of Mersin and Tarsus maintained their close links with the Syro-Mesopotamian plain. [*See* Cilicia.] Central Anatolian obsidian found at Mersin illustrates the contact between Cilicia and the plateau. Köşk Höyük, located near Niğde, is again close to the obsidian sources (Silistreli, 1989). Not surprisingly, 90 percent of its chipped-stone assemblage is composed of obsidian. Its strategic situation leading to the Cilician gates, along with the obsidian and crafted pottery and figurines that parallel the Çatal Höyük assemblage, suggests an exchange of materials and ideas among Cilicia, the ʿAmuq, and the Levant. [*See* ʿAmuq; Levant.] Höyücek, near Lake Burdur, is important as a site that was a predecessor to the Late Neolithic (levels IX–VI) at Hacılar (Duru 1993). In the northwest, the earliest levels at Hoca Çeşme Höyük in Thrace also show connections with Hacılar levels IX–VI and provide clues about the widespread character of the Anatolian Late Neolithic (Özdoğan, 1993).

Neolithic innovations occurred in Anatolia over an extended period and in widely differing regions—establishing a tradition that was both rich and complex. Early on, settlements practiced a mixed economy composed of food gathering, food production, and exchange, with surplus goods leading to social complexity at places like Çayönü and Çatal Höyük. Pyrotechnological industries were in their initial stage of development, as evidenced by metals and pottery (Esin, 1995; Schmandt-Besserat, 1977). Artistic representations at Çatal Höyük and Nevalı Çori provide evidence of religious sensibilities and the ability to think in the abstract. Evidence of exchange provides a window to a complex extraregional perspective that must already have been taking shape at this early date (Yakar, 1991).

Chalcolithic Period. The innovations and technologies that originated in the Neolithic period were expanded in the Chalcolithic period. Excavations and surveys bear witness to a widening network of settlements across a broad range of environmental settings (cf. Yakar, 1985; Summers, 1993; Efe, 1993; Parzinger, 1993; Algaze, 1994; Gorny et al., 1995c). The Chalcolithic is generally delineated into three chronological phases: Early (5500–5000 BCE), Middle (5000–4500 BCE), and Late (4500–3000 BCE). The emergence of the Anatolian plateau as an important center of settlement in the prehistoric period means that discussions regarding the Anatolian Chalcolithic must take into account not only chronological factors, but an expanded geographic range in which contemporary developments occur alongside each other on both the Syro-Mesopotamian plain and in the Euro-Anatolian regions.

Anatolia and the Syro-Mesopotamian plain. The three phases of the Chalcolithic period in the Syro-Anatolian region developed gradually from the Neolithic period onward, with no indication of cultural upheaval. Hacılar I–V (Mellaart, 1970) remains the principle site for the Anatolian Early Chalcolithic. Animal husbandry probably existed at Hacılar just as it did at Can Hasan, where sheep, goats, cattle, and perhaps pigs were kept (French, 1972). The dog is the only animal for which there is evidence of domestication. Paleobotanical research discovered emmer and einkorn wheat, along with barley, lentils, pea, bitter vetch, pistachio, and almond. What set Chalcolithic Hacılar apart from other Anatolian settlements, however, was the red-on-cream pottery of levels II–V; its quality is unparalled throughout both Anatolia and the ancient Near East until much later times. In addition to the ceramics, a later phase of figurines was uncovered at Chalcolithic Hacılar. They lack the creativity

and zest found in the earlier Neolithic examples and eventually degenerated into schematized violin-shaped examples in level I. The early levels remained unprotected, but a defensive perimeter was formed in level II by the construction of a fortification wall 1.5–3 m thick. The village showed evidence of specialization, with various industries located in their own sectors. Shrines in the site's northeast corner, along with the presence of mother-goddess figurines, indicate continuing religious sensibilities. The settlement was destroyed and then resettled. Its new inhabitants built an even stronger fortification wall. Hacılar I came to a violent end in about 4800 BCE and appears to have left no heirs to its rich traditions.

The Cilician towns of Mersin and Tarsus again represent the northernmost extension of the Syro-Mesopotamian cultural zone and provide a potential interface for connecting the Syro-Mesopotamian and Euro-Anatolian worlds. Early Chalcolithic Mersin (levels XXIII–XX) shows Halaf inspiration in its ceramic sequence, but the Middle Chalcolithic is poorly represented. The ceramic repertoire begins to show Ubaid influences in the Late Chalcolithic (level XVI), when the town was defended by a wall, a fortified gate, and a glaci (Garstang, 1953). A large residence and outbuildings give the settlement the appearance of a military quarters. The town was leveled by attack in about 4300 BCE.

The Middle Chalcolithic, is best represented by a string of settlements stretching along the Euphrates River from Lower Mesopotamia to the Middle Euphrates. Late Ubaid evidence found at sites along this route, such as at Değirmentepe, suggests that Mesopotamians expanded into the area in order to exploit the resources of the Middle Euphrates (Esin, 1989; Hendrickson and Thuesen, 1989). While the Taurus Mountains are generally considered to have been a barrier to intercourse between the Syro-Mesopotamian and Euro-Anatolian cultural zones, the presence of Ubaid pottery at Fraktin suggests that Mesopotamian influences could have penetrated into central Anatolia at this very early date. [*See* Taurus Mountains.]

In northeastern Anatolia there is increasing evidence of Trans-Caucasian culture by the end of the Late Chalcolithic (Sagona, 1984). The group's unique red-black polished pottery provides a reliable means of tracing this culture from the Caucasus into Anatolia; however, the sparcity of secure data makes it difficult to provide assess the group's impact on Anatolia's cultural development. The Late Chalcolithic period is best documented by another Mesopotamian intrusion. Following the lead of their Ubaid predecessors, Uruk elements settled in Anatolia as far north as the Middle Euphrates, at numerous sites along the river: at Habuba Kabira, Carchemish, Kurban Höyük, Samsat Höyük, Hacinebi Tepe, Noršuntepe, and most notably at Arslantepe (Frangipane, 1988–1989). [*See* Habuba Kabira; Carchemish; Arslantepe.] The widespread Uruk system collapsed suddenly in about 3000 BCE (Algaze, 1993; cf. Stein, forthcoming).

Euro-Anatolian zone. Some studies postulate that at roughly the same time in which important developments were shaping Neolithic and Chalcolithic traditions on the Syro-Mesopotamian plain, intensive interaction between Europe and Anatolia was establishing independent links between the two regions. Prehistoric connections between Anatolia and the Balkans assume internal development rather than external influence, with a geographic range extending from the Hungarian plain to the southeastern stretches of Anatolia, where it is effectively cut off from contact with Mesopotamia by the Taurus Mountains (Özdoğan, 1993).

Evidence suggests two phases of contact: the first, beginning in about 5500 BCE (Thissen, 1993; Todorova, 1993)—or roughly contemporary with the Early Chalcolithic of the Syro-Mesopotamian region—and continuing until the beginning of the fourth millennium, when several elements may have been responsible for a cultural break. Among these elements were tectonic activity, higher temperatures resulting from climatic change, long periods of drought, erosion, changing sea levels, and/or nomadic invasions (Todorova, 1993; Lichardus-Itten, 1993). The resulting breakdown of existing social structures lasted approximately eight hundred years, during which time the affected areas witnessed mostly local development (Makkey, 1993; Todorova, 1993). The second phase, beginning at the end of the fourth millennium, saw a stabilization of environmental conditions, which led to the renewal of cultural interaction between southeast Europe and Anatolia (Todorova, 1993).

Evidence for the spread of Euro-Anatolian culture into central Anatolia comes first from sites in the northwest, such as Yarımburgaz (Özdoğan, 1991) and Ilıpinar (Roodenberg, 1993). It is also apparent at central Anatolian sites such as Alişar Höyük and Gelveri, where curvilinear-decorated pottery of the so-called *fruchenstich* technique is dated to between 4000 and 3500 BCE (Esin, 1993; Thissen, 1993; Gorny, 1995a). Graphite-slipped pottery found at Çadır Höyük and Alişar is linked with the Karanova VI Vinça D culture and provides a date between 3000 and 3500 BCE for settlement at both Alişar and Çadır (Thissen, 1993; Gorny, 1995a). Further evidence for the breadth of Late Chalcolithic culture comes from southwestern sites such as Elmalı (Eslick, 1992), Beycesultan (Mellaart, 1962), and Aphrodisias (Joukowsky, 1986), where cultural development may have some connection with earlier influences from Hacılar. [*See* Aphrodisias.]

The Chalcolithic period witnessed the dramatic development of earlier Neolithic themes. Food production began to take on a standard appearance across the plateau, with most of the major categories of plants and animals domesticated. Horticulture, however, does not seem to have made its appearance until the third millennium (Gorny, 1995a). The hunting and gathering of foodstuffs still augmented the Anatolian diet, but they were declining. Artistic expression reached a height in the pottery of Hacılar, and cosmological themes are recognizable in such religious motifs as mother-

goddess figurines. Increasing social complexity seems to have fueled the competition for limited resources, which may account for the evidence of fortifications and major defensive systems at Mersin and Hacılar—evidence that betrays an ability to coordinate massive amounts of labor and capital.

By the beginning of the third millennium (Early Bronze Age I) there were increasing points of contact along the Euro-Anatolian and Syro-Mesopotamian interface. That barrier gradually broke down, however, and an increasing orientalization of the Anatolian plateau took place that greatly influenced interaction between Anatolia, Syria, and Mesopotamia in the historical periods.

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RONALD L. GORNY

Ancient Anatolia

Archaeological discoveries in the modern era have brought to light a remarkable series of indigenous civilizations that arose in Anatolia during the Bronze Age (c. 3000–1200 BCE) and in subsequent centuries before the conquests of Alexander the Great in the 330s BCE. Nourished by the region's rich subsistence base and coveted metal resources, these civilizations developed distinctive forms of material culture, religion, and writing. At the same time, they were influenced and enriched by ongoing contacts with their neighbors. As with other areas of the Near East and Aegean, the initial impetus for exploring Anatolia's pre-Roman past came from European and American interest in tracing civilizations known from the Bible or from Greek epic and historical tradition. Organized archaeological investigations thus began in the nineteenth century with searches for Homer's Troy, the Greek cities and Anatolian kingdoms of Herodotus's accounts, and the biblical Hittites. The rediscovery and documentation of other native and of prehistoric cultures followed during the twentieth century, together with efforts to explore areas once considered peripheral or provincial.

Writing, and hence the earliest evidence for linguistic, ethnic, and historical labels, is first attested in Anatolia shortly after 2000 BCE. [*See* Writing and Writing Systems.] These records, the archives of Assyrian merchants from northern Mesopotamia, document several ethnic and linguistic groups residing in central Anatolia, and they also tie the archaeological sequences of the region to Mesopotamian absolute chronologies. For the Early Bronze Age (c. 3000–2000 BCE), dates in years are obtained by radiocarbon dating and by cross-dating sites using isolated artifacts that supply synchronisms with the absolute chronologies of Mesopotamia, Syria, and Egypt. Throughout the period, archaeological sequences recovered from stratified sites furnish relative chronologies.

Bronze Age metal technologies had a profound impact on the location and organization of settlements, material culture, and commercial networks in Anatolia. [*See* Metals, *article on* Artifacts of the Bronze and Iron Ages.] Bronze, silver, and gold were highly prized for weapons, tools, and personal ornaments, and the influence of these prestige materials can be seen in the metallic shapes, colors, and highly burnished surfaces of contemporary ceramic vessels. Stimulated by the demand for metals, trade in both raw materials and finished goods supplemented the settled subsistence economy based on dry farming and animal husbandry already established in Neolithic times.

Sites of this period display distinctive regional styles in architecture, ceramics, metalwork, and burial customs, perhaps reflecting different ethnic groups organized in small states. The site of Hisarlik, near Çanakkale, illustrates the material culture of northwestern Anatolia in this period. Long identified as the Troy of Homer's *Iliad,* the site is located in rich farmland, with access to the sea; its fortified citadel enclosed several buildings of a particular plan known as a megaron. [*See the biography of Schliemann.*]

Quantities of gold and silver vessels and jewelry preserved in a number of "treasures" testify to a highly developed metalworking industry and a wealthy elite. [*See* Jewelry.] Many of Troy's important commercial and cultural contacts were clearly by sea, for similar forms of architecture, ceramics, and metalwork are found at sites along the western coast and on offshore islands. On the southern coast, at the site of Karataş-Semayük near Elmalı, west of Antalya, a fortified citadel enclosed structures of megaron plan. In contrast to Troy, where no third-millennium burials have yet been found, Karataş yielded an extensive cemetery of inhumations placed in large ceramic storage jars, or pithoi. This form of burial was also customary in west-central Anatolia, where it continued into the early second millennium BCE. [*See* Jar Burials.] Still farther east, at the coastal site of Tarsus (Gözlü Kule), near Adana, architecture, ceramics, and metalwork similar to styles attested at Troy and Karataş demonstrate the range and importance of seagoing contacts in this period. [*See* Seafaring.] In north-central Anatolia, at the site of Alaca Höyük, stone-lined cist burials richly equipped with metal vessels, jewelry, and weapons probably belonged

to the ruling elite. Elsewhere in central Anatolia, as at Alişar Höyük and Kültepe, fortification walls enclosed settlements with modest architecture and simple inhumation burials; large-scale buildings served as residences and administrative centers for the rulers or communal functions, such as temples. In eastern Anatolia, little-known archaeologically in this period, ceramics and metalwork reveal links with northern Mesopotamia and the Caucasus Mountains.

No written records explain the religious beliefs or practices of EB Anatolian cultures. Ceramic or metal sculptures of bulls, stags, and felines, among other animals, are often interpreted as representations of deities or of animals associated with particular deities. Illustrations of deities and their animals, or textual descriptions of such images, are found in central Anatolia in the second millennium BCE. Some of the same animals appear to have been worshipped in central Anatolia in Neolithic and Chalcolithic times, indicating a remarkable continuity in cultic expression over a period of several millennia.

A series of destruction levels at sites in western Anatolia from the mid- and late third millennium has been thought by some scholars to indicate the arrival of peoples speaking Indo-European languages, whose presence in central Anatolia is first documented by personal names mentioned in the Assyrian merchants' archives. [*See* Indo-European Languages.] However, where the homeland of the Indo-European speakers was located, and hence the route or routes by which they entered Anatolia, and when, are issues currently under debate.

Beginning in the Middle Bronze Age (2000–1600 BCE), and continuing into the Late Bronze Age (1600–1200 BCE), written records supplement archaeology in documenting political and economic organization, as well as ethnic and linguistic makeup. The earliest written records found in Anatolia are the commercial archives of merchants from northern Mesopotamia. Written in the Old Assyrian dialect of Akkadian, one of the Semitic languages of Mesopotamia, in cuneiform script, the records consist of small clay tablets and the clay envelopes in which they were originally enclosed. [*See* Cuneiform.] By far the largest merchant archives have been excavated at Kültepe, ancient Kaneš, near Kayseri in central Anatolia, furnishing evidence for the organization of the trade. [*See* Kültepe Texts; Kaneš.] Private, family-based firms established in Aššur, the capital of the Assyrian state of northern Mesopotamia, arranged for the export via donkey caravan of textiles and garments and a metal, probably tin, in exchange for silver and gold. [*See* Aššur; Textiles; Transportation.] This trade was conducted by Assyrian commercial representatives, who established permanent residence at some twenty centers in central and southeastern Anatolia and northern Syria; the trade continued for at least three generations. [*See* Assyrians.] The texts also provide a glimpse of the local communities with whom the foreign merchants did business and occasionally intermarried. References to local Anatolian rulers suggest a political framework of small, independent states, occasionally united in temporary alliances through the efforts of a powerful individual. The merchants and their families lived in houses and used furnishings and utensils indistinguishable from those of the local residents.

Imported from Mesopotamia, the Akkadian language and cuneiform script seem not to have been adopted for use by native Anatolians. Many documents are sealed with cylinder seals, however, a Mesopotamian invention that spawned a native Anatolian style depicting local deities and scenes of worship. [*See* Seals.] Impressions of these seals are found on clay envelopes alongside those of Mesopotamian and North Syrian glyptic styles. The indigenous form of seal was the stamp, which was used along with the cylinder, and continued after trade with Assyria ended.

In about 1750 BCE, the merchant settlements and local communities were destroyed and abandoned. Perhaps a century later, a people known as the Hittites established a new political order from their capital city, Ḫattuša, today called Boğazköy. [*See* Hittites; Boğazköy.] Earlier the site of an Assyrian merchant colony and local settlement, Ḫattuša served as the capital of the Hittite Old Kingdom (1650–1400 BCE) and Empire (1400–1200 BCE) almost continuously for more than four hundred years. From this regional base, the Hittite kings gradually expanded their domain by frequent military campaigns and came to rule over most of central and southeastern Anatolia.

The language of the Hittites has been preserved in extensive cuneiform records on clay tablets recovered from Ḫattuša. Known in the texts as Neshite, it belongs to the Indo-European family of languages. Two other languages preserved in the archives, Luwian and Palaic, are closely related to Hittite. [*See* Luwians.] The archives also include texts written in Akkadian, the Semitic language of Mesopotamia; Hurrian, a non-Indo-European language spoken by the Hittites' neighbors to the southeast; and Hattian, another non-Indo-European language apparently spoken by the pre-Hittite inhabitants of central Anatolia. [*See* Akkadian; Hurrian.] Among the contents of the archives are royal laws, decrees, edicts, treaties, and letters; annals; literary works, epics, and myths; and a vast number of religious texts relating to festivals, rituals, and incantations. The cuneiform script continued as the principal writing system until the end of the empire. In addition to cuneiform, the Hittites also employed a hieroglyphic writing consisting of pictographic signs. A writing system of Anatolian invention, the hieroglyphic script was used on personal seals and on stone monuments carved with figured scenes. The language of the hieroglyphic script was not Hittite but Luwian, its close kin also written in cuneiform script on texts found at Ḫattuša.

From their political heartland in north-central Anatolia, the Hittite kings ruled over an ethnically and linguistically diverse empire. At its maximum extent, in the thirteenth

century BCE, Hittite influence—if not outright political control—reached far into west-central Anatolia. In this region, the Hittites came into conflict with a power called the kingdom of Arzawa, which seems to have occupied the coastal regions of western and southern Anatolia, and whose language was Luwian. Arzawa was destroyed by the Hittites in about 1350 BCE. Farther west lay the state known in Hittite texts as Aḫḫiyawa, which has long been identified by some with the Mycenaean (Achaean) Greeks. The Hittite kings maintained active diplomatic exchanges with the great empires to the south and east: the Mitanni, centered in northern Syria and Mesopotamia; Egypt; Babylonia; and Assyria. Egyptian doctors and Babylonian sculptors were invited to the Hittite court by the king himself, and diplomatic marriages were arranged among the immediate members of these empires' ruling families. The close relationships the kings enjoyed with their counterparts in neighboring empires are richly illustrated by the Amarna letters, royal correspondence written in Akkadian and found at the site of Amarna in Egypt, dating principally from the reigns of pharaohs Amenhotep III and Akhenaten (c. 1360–1330 BCE). [*See* Amarna Tablets.] Yet, at the same time, the Hittites fought with Egypt over control of Syria's rich farmlands and thriving coastal ports. Finds of raw materials, such as ingots, together with luxury finished goods, demonstrate that extensive trade and perhaps also diplomatic contacts flourished in the Aegean region. The Hittite Empire, through its important port at Ugarit, was an active participant. [*See* Ugarit.]

Ḫattuša housed impressive buildings of administrative and religious function, surrounded by monumental fortification walls pierced by a few elaborate gates with carved sculptural decoration. Massive stone foundations, hewn with harder stones or iron tools, also secured mud-brick walls with timber framework for palace structures, in which the extensive archives mentioned previously were found. On higher ground, above the palace-citadel, a religious precinct housed some thirty temples almost identical in plan, probably built in one massive phase of construction during the thirteenth century BCE. Below the palace-citadel a monumental temple adjoined by extensive storage facilities was apparently dedicated to the Hittites' chief deities, the storm god, Tešub, and sun goddess, Hepat (see below). Outside the capital few sites have been intensively excavated, but at least several smaller cities boasted architecture and sculpture emulating imperial fashions: modest palaces, city walls decorated with figural relief sculptures, and guardian gate figures. Ceramic styles throughout the empire are virtually identical to those found at Ḫattuša, perhaps suggesting a centrally administered industry.

Texts found in the Ḫattuša archives, together with remains of temples and other cult sites, furnish information on the religion of the Hittites. Their pantheon consisted of male and female deities personifying forces of nature, but it also included deities of the Syrian and Mesopotamian religions. The iconography of the pantheon is known from relief preserved at cult sites, especially the rock sanctuary of Yazılıkaya, near Ḫattuša. The deities were often associated with a particular animal, whose image could be worshipped as a representative of the deity. Iconographically, some are closely related to deities depicted in the native Anatolian seals of the Assyrian merchant colonies (see above). Cult sites, usually consisting of a stone monument or rock face carved with a scene of worship, have been found over a wide area of Anatolia, supplementing textual documentation for an extraordinarily active calendar of religious festivals celebrated by the Hittite king and queen throughout the empire.

In about 1200 BCE, Ḫattuša was destroyed. The reasons for the destruction of this and other Hittite cities, and the subsequent collapse of the empire, are not well understood. Presumably, there were significant movements of peoples throughout Anatolia that succeeded in disrupting the empire's established political and military authority. Whatever the cause, the site of Ḫattuša was virtually abandoned for some time and never again supported a major city.

For the period beginning in about 1200 BCE, known in archaeological terms as the Iron Age, almost everywhere in Anatolia a "dark age" followed the end of the Hittite Empire. Yet, many imperial traditions lived on in southeastern Anatolia and northern Syria, formerly border provinces. There, small kingdoms were established, probably by 1000 BCE, when hieroglyphic inscriptions in the Luwian language again appeared on stone monuments. As with the hieroglyphic script of Hittite imperial times, these texts were mostly official and highly restricted in content, consisting primarily of commemorative and dedicatory inscriptions, boundary markers, and land grants. The Neo-Hittite states also continued imperial traditions of monumental stone architecture and reliefs decorating city walls and gates. Also beginning in about 1000 BCE, the Arameans, a Semitic-speaking people, moved into northwest Syria and established neighboring, and sometimes rival, states. [*See* Arameans.] The Arameans wrote their language using the Phoenician alphabetic script, but drew on Hittite traditions for monumental stone architecture and sculpture. [*See* Phoenician-Punic.] Located on or near the Euphrates River and in control of the lucrative trade routes between Mesopotamia and the Syrian coast, the Neo-Hittite and Aramean states were well suited to prosper. Beginning in the ninth century BCE, they came under the influence and then the political control of the Neo-Assyrian Empire centered in northern Mesopotamia. By the end of the eighth century BCE, the states were forced to pay tribute to the Assyrians.

In eastern Anatolia, the Bronze Age traditions of cuneiform script and interaction with Mesopotamia and Syria continued in the first millennium BCE in the kingdom of Urartu. [*See* Urartu.] Centered around Lake Van, this kingdom came to power in the early first millennium BCE, a rival state

on the northern frontier of the Neo-Assyrian Empire. Its non-Indo-European language, apparently related to Hurrian, was written in cuneiform and has survived in many official and commemorative inscriptions. At its greatest extent, in the ninth century BCE, Urartu extended well into the regions occupied now by the Republic of Armenia and Iranian Azerbaijan. Like the Neo-Hittite states, Urartu was conquered and destroyed as a political entity by Assyrian armies in the eighth century BCE. Urartu also engaged in diplomatic and commercial exchanges with Phrygia, and perhaps also with North Syria.

By contrast, in the first millennium BCE, the kingdoms of central and western Anatolia borrowed alphabetic scripts to write their Anatolian languages. Inscriptions in Phrygian, Lydian, Lycian, and Carian are mostly dedicatory or commemorative, and for narrative accounts scholars depend on the writings of Herodotus (fifth century BCE), a native of the Greek town of Halikarnassos on the southwest coast of Anatolia. [*See* Lycia.] During the early first millennium BCE, settlers from mainland Greece established colonies on the western and southern coasts of Anatolia, and later along the Black Sea coast. While closely tied to their mother cities, these colonies prospered through their economic interaction with Anatolian states, with whom they were also linked culturally.

West-central Anatolia came under the control of the Phrygians, an Indo-European-speaking group that seems to have migrated there from the far northwest, probably originally from Thrace, reaching central Anatolia perhaps in about 1100 BCE. Phrygian inscriptions, mostly votive, are found on rock facades, altars, and small objects. Excavations at the Phrygian capital of Gordion, west of Ankara, have uncovered remains of fortifications, monumental buildings, and impressive tumulus burials whose rich contents suggest that their occupants were members of the ruling family. [*See* Gordion; Tumulus.] Cremation seems to have been the more typical burial form. Herodotus and later Greek tradition are the principal written sources on the Phrygians and their kings, especially Midas, who may also be the ruler, Mita, mentioned in Neo-Assyrian records. In outdoor cult places and in city temples, the Phrygians worshipped above all Cybele, an earth goddess of longstanding Anatolian tradition. Gordion was destroyed in about 700 BCE, apparently by invading Cimmerians from the north, whose attacks on Anatolia were recorded in both Greek and Neo-Assyrian sources.

The downfall of the Phrygians enabled another Anatolian kingdom to extend its domination toward the plateau. Until its conquest by the Achaemenid Persians in the 540s BCE, the Lydian kingdom of western Anatolia was ruled from its capital at Sardis, east of Izmir. [*See* Sardis.] During the seventh century and into the first half of the sixth century BCE, the kings of Lydia, especially Croesus, acquired wealth and status that became legendary in later Greek tradition. The history of Lydia and its links with the coastal Greek cities under its control are known principally through Herodotus's accounts; inscriptions in the native language are few and mostly votive in content. Lydia also exchanged diplomatic envoys with the Neo-Assyrian court.

After Croesus's defeat by Cyrus, king of Persia, the Achaemenid Empire acquired the vast and rich region of Anatolia. The Achaemenid domination of Anatolia introduced new cultural elements, including languages and scripts, religion, and artistic traditions. Aramaic, the bureaucratic language of the Achaemenid Empire, has been preserved in the form of inscriptions carved on grave stelai or on small objects such as cylinder seals. [*See* Aramaic Language and Literature.] Inscriptions naming Iranian deities or their amalgamations with Anatolian or Greek counterparts demonstrate that Iranian religious beliefs were also introduced into the region. Under Darius (r. 520–486 BCE), the empire was organized into provinces called satrapies, ruled by a governor, or satrap, usually a member of the royal family. In western Anatolia, the satrapies centered at Sardis and Daskyleion are known in part through Greek accounts describing the conflict between the Greeks and Persians. Archaeology has contributed additional information, showing that the satrapal capitals fostered a rich and varied artistic mix combining Greek, native, and Iranian traditions. Farther south, in Lycia, inscriptions in Lycian, Greek, and Aramaic, together with extensive archaeological remains, document a similar cultural flowering under local dynasts who ruled for the Achaemenid Empire.

The invasion of Macedonian armies led by Alexander the Great, which began with the empire's westernmost possessions in Anatolia in the 330s BCE, brought the Achaemenid Empire to an end. In his sweep through western Asia, Alexander attacked and burned many of Anatolia's great cities. In 333 BCE he defeated the last Achaemenid ruler, Darius III, at the battle of Issus, near modern Iskanderun.

[*See also* Alexandrian Empire; *and* Persia, *article on* Ancient Persia.]

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ANN C. GUNTER

Anatolia From Alexander to the Rise of Islam

The Hellenistic age in Anatolia opens with the arrival of Alexander the Great, king of Macedon, at Troy in 334 BCE, from whence he launched his conquest of the Persians and united the Greeks, or Hellenes, on both sides of the Aegean Sea. Final victory against Darius III was achieved at the battle of Issus, near Syrian Antioch, in 333 BCE. [*See* Antioch.] Henceforth, Greek culture and institutions, already established to some extent in the western cities, predominated in Anatolia. A uniform culture and the Greek language supplanted local styles and dialects. Predominant was the foundation of cities governed by Greek political institutions, a council, popular assembly, and college of magistrates. The *gymnasion* was the key cultural and educational institution. The Persian oligarchy was supplanted by principles that were democratic by the standards of the day.

Alexander died in 323 BCE. Within twenty years his empire was divided into four kingdoms ruled by his successors *(diadochoi)* and Hellenistic monarchy emerged. The attributes of kingship appear on coins and sculpture. [*See* Coins.] Anatolia north of the Taurus Mountains was ruled by the Seleucids, descendants of Seleucus, one of Alexander's generals. [*See* Seleucids.] The ruler of Thrace, Lysimachos, rivaled Seleucid control in Anatolia until he was defeated by Seleucus I at the battle of Korupedion in 281 BCE. South of the Taurus, Lycia and Pamphylia belonged to the Ptolemies, who ruled Egypt. [*See* Lycia; Ptolemies.] The cities on the Aegean coast, descendents of the Greek colonies, remained nominally free. Cappadocia, Pontus, and Bithynia remained independent kingdoms. [*See* Cappadocia.] In the early third century (c. 280 BCE), a semi-independent kingdom arose in the west, ruled by the local Attalid dynasty established at Pergamon. [*See* Pergamon.]

These changes had profound cultural effects strongly elucidated by the archaeological record. Inscriptions, many collected before the era of controlled excavation and published in a systematic corpus, *Monumenta Asiae Minoris Antiqua,* are as important as historical texts in revealing the major players, social and political organization, and changes in religion and occurrence of festivals. The network of roads the Persians established was expanded both for the movement of troops and for travel and trade. [*See* Roads; Transportation.] Coins were minted by kings and by cities. A single standard for silver and gold prevailed over much of the Hellenistic world, and the issuance of bronze coins in small denominations led to a monetary economy. Coins were also used as propaganda: for example, coins show Alexander with the power and attributes of Zeus. Patterns of overseas trade have been established through analysis of ceramics, their stamps, and graffiti.

A Celtic tribe from Europe, the Gauls, or Galatians, invaded Anatolia in 278 BCE. Within ten years the Galatians had acquired extensive territories and wealth through plunder and extracting protection money from cities. In the mid-third century BCE, the Galatians and their allies in Bythinia were defeated in a decisive battle by the king of Pergamon, Attalus I. In celebration of this victory, a great altar decorated with reliefs and two sculptures—a dying Gaul by Epigonus and a warrior and his wife committing suicide—were set up in the precinct of the Temple of Athena at Pergamon, establishing it as an artistic center that rivaled Athens and extended far-reaching influence into the Roman imperial period.

The majority of the Gauls moved into Phrygia, which was renamed Galatia. Although partially hellenized, they retained their own material culture, a distinctive political and social organization, and their own language, still spoken in Late Antiquity. Their customs included human and animal sacrifice, which has been graphically confirmed by skeletal finds at Gordion. [*See* Gordion.]

Hellenistic Cities. In the Troad, Alexander instructed that Ilyum be rebuilt. It was later overshadowed by Alexander Troas and joined in the Ilian foundation with Assos, Parium, and Lampsacus. Cyme, Myrina, Gryneum, and Elea (the port of Pergamon) were established. The Ionian cities of Ephesus, Smyrna, Priene, and Colophon were moved, largely because silt had filled in the harbors and created unhealthy marshes. [*See* Assos; Ephesus; Priene.] The new cities show the development of planned complexes in which individual buildings were designed to fit a visually unified whole and the streets followed the rectilinear grid plan named for Hippodamus of Miletus. Open spaces were provided by sanctuaries, the palaestras of the gymnasia, and rectilinear agoras with stoas, often two-storied, on all four sides, except where they were built into the hillside, as at

Assos and Pergamon. In some cases shops were built behind the colonnade; the east stoa of the South Agora at Miletus has back-to-back shops and at Alinda and Aigai shops and storerooms were built below the colonnade on the downhill side of the agora. [*See* Miletus.]

The classical orders were used freely for nonstructural decoration. [*See* Architectural Orders.] The Temple of Zeus at Olba in Cilicia, begun in about 170 BCE by Antiochus IV, ranks with the Olympeion in Athens as the earliest Corinthian temples. The Council House at Miletus exemplifies the new secular architecture and the use of composite orders. All cities had a theater with stage buildings and a stadium with seating supported by stone vaulting. [*See* Theaters; Stadiums; Building Materials and Techniques, *article on* Materials and Techniques of the Persian through Roman Periods.] Portrait statues stood in the theater, in the agoras, and along the streets, a reversal of earlier custom, which prohibited the representation of an individual before death. [*See* Architectural Decoration.] Although few statues have survived, many bases and dedicatory inscriptions remain to tell of the benefactions of individual citizens. [*See* Inscriptions, *article on* Inscriptions of the Hellenistic and Roman Periods.]

As a wealthy class of merchants and officials arose, grand residences were built, typically focused on an inner court and decorated with mosaic pavements, painted walls, and marble statues and furnishings. [*See* Mosaics; Wall Paintings.] These are known best through the well-preserved houses excavated at Priene. Furnishings were lavish, with marble stands and tables, ivory inlay, and bronze and silver embellishment. Terra-cotta figurines were much favored as ornaments and as dedications, and they reveal a great deal about styles of dress and daily activities (Myrina).

Post-and-lintel construction remained basic, but the arch and vault were introduced. [*See* Arches.] Sloping vaults covered the interior passages in the Temple of Apollo at Didyma. [*See* Didyma.] The tradition of fitted stone masonry without the use of mortar persisted.

A new style of city planning developed that was rooted in the ancient Anatolian acropolis palace. [*See* Palace.] It featured vertical planning and conformity rather than resistance to the topography. Pergamon demonstrates the most adventurous and dramatic development of this new concept of exploiting the terrain but regularizing it with terraces supported by retaining walls of large ashlars—once believed to be a Hellenistic innovation but now known to have occurred much earlier, at Sardis. [*See* Sardis.]

The deification of kings and the heroization of nobles and local potentates gave rise to the building of grand tombs. [*See* Tombs.] The most splendid is the tomb at Belevi, near Ephesus, begun after 300 BCE, possibly for Lysimachos. The tomb was reused by Antiochus II. In Lycia, rock-cut tomb chambers are faced with Greek facades, some showing Persian burial customs combined with Greek figural styles. [*See* Burial Techniques.]

Each city controlled the surrounding territory with farms, towns, sanctuaries, and landed estates. On the coast and along the east–west river valleys these territories were contiguous, but the density of urbanization diminished inland. Although many surveys have been carried out, analysis of country life is the area least elucidated by archaeology.

Hellenistic Temples and Religion. Temples and their estates were central to the religious and economic life of Anatolia; temple states, ruled by priests, became strong centers of settlement in the interior and in the south, where cities were slow to develop. Temple estates were not secularized until the Roman period, but under Seleucid rule land was often taken from them to found cities. The ancient fertility gods worshiped at these cult centers gradually acquired Greek names and associations: for example, Attis at Pessinus, Zeus of Olba, and the many shrines to Artemis. [*See* Cult.]

In the west, cult centers flourished, some traditionally attached to the cities. One of the largest building projects was the Temple of Apollo, patron deity of the Seleucid kings, at Didyma (see above). The rebuilding of the huge Temple of Artemis at Ephesus was to make it one of the Seven Wonders of the World.

Roman Rule. The pressure of the expanding power of Rome was felt as early as 200 BCE, and by the first century BCE, after the conquest of Pompey, the remaining Hellenistic kingdoms were vassal states. Augustus annexed most of Anatolia to Rome, and under his reign the growth of urban institutions, a permanent military presence, and radical changes in the pattern of land ownership were witnessed. The institutions and ideals of the Hellenistic monarchs were continued and evolved as Anatolia was integrated into the social and economic organization of the Roman empire. Although Latin was the language of empire, the language of the educated classes in which official notices and dedications were inscribed remained Greek. [*See* Latin; Greek.]

From 25 BCE to 235 CE, Anatolia was organized into five major provinces—Asia, Bithynia and Pontus, Galatia, and Cappadocia, from which Tres Eparchiae was split in 140 CE—with the Euphrates River forming the eastern frontier. [*See* Euphrates.] The boundaries of the province of Asia remained firm, but the others, especially Galatia's, fluctuated. Administration depended on a network of cities and their dependent territories. Tax collection, provision of supplies, and transport for the armies and officials were all organized through the administration of the cities. Urbanization spread through the imperial foundation of cities and the consolidation of their territories. By the end of the Julio-Claudian period (68 CE), a network of cities was established in central Anatolia for the first time. For two centuries thereafter, the Anatolian cities grew in size and importance and became the wealthiest in the empire.

The wealth of the Anatolian cities was, however, always derived from the land and the expansion of agriculture and stock raising. [*See* Agriculture.] Timber was brought down

from the mountains and marble was one of the principle exports throughout the empire. Both the sculptors and sculpture from the workshops at Aphrodisias were found at Rome and other centers. [*See* Aphrodisias.] Salted fish (tunny), olives, grapes, and wine (Cappadocian wine rivaled that from Greece), grain, wool and skins from stock raising, and flax and linen woven in Cilicia were all widely exported. [*See* Olives; Viticulture; Cilicia.] Additional wealth was derived from silver and iron deposits, semiprecious stones, mica, and other mineral resources. [*See* Metals, *article on* Artifacts of the Persian through Roman Periods.] The huge harbor buildings at Aegean and Mediterranean ports bear witness to the extent of maritime trade. Underwater archaeology has just begun to reveal rich information from shipwrecks and submerged harbors. [*See* Seafaring.]

In the Taurus/Pisidia, the Julio-Claudian emperors built roads to link the highland cities with the coast. By the end of the first century CE, a network of paved roads that was maintained until the fourth century crisscrossed the peninsula. The roads were built primarily by Vespasian for the military, but they facilitated travel and trade. In the second and third centuries, a system of rest houses and post stations developed. Vespasian established the limes on the frontier—forts linked by paved highways and auxiliary forts between them—and established garrisons, the most important at Ancyra.

Roman cities. There was absolute continuity of the Hellenistic tradition in architecture and city planning under Roman rule, but the emphasis was more on secular than religious building. [*See* Cities, *article on* Cities of the Hellenistic and Roman Periods.] Changes in construction materials especially the use of vaulting and concrete, were not as dramatic as in the West. The notable contribution of Roman planners was to connect urban spaces with colonnaded thoroughfares that transected the city between well-defined gateways. Sagalassos exemplifies the Roman embellishment of the city with monumental entrances added to both agoras under Tiberius and Claudius, the building of a sanctuary of Apollo Clarius, probably under Augustus, and the building of triumphal arches, symbolic of Roman rule.

In 17 CE, an earthquake leveled twelve of the great cities in the west; hardest hit was Sardis. Rebuilding was on a strictly Roman plan under imperial direction. As the cities grew, new buildings and neighborhoods were connected by major streets having colonnaded sidewalks with shops behind them. The streets opened into colonnaded plazas that served as the commercial agoras and as gathering places. Statuary in every conceivable context—along the roadways, on facades and monuments, and on tombs and sarcophagi—celebrated the power of the emperor and the prestige of rich citizens. [*See* Sarcophagus.] Portrait sculpture became a major industry (e.g., at Aphrodisias). Recent evidence suggests Sagalassos was an equally important center for sculpture. Stonecutters of all types were required to chisel inscriptions and elaborate architectural ornament and to cut marble and other colored stones to be set in patterns on walls and floors. Schools of painters and mosaicists appear to have moved from city to city.

By the end of the second century every throughway had a fountain, some set in exedras (as at the great *nymphaion* at Miletus), some with elaborate aedicular buildings (e.g., at Hierapolis, Side). The bath-gymnasium became the architectural symbol of imperial culture. [*See* Baths.] Baths and fountains required vast amounts of water, which were provided by aqueducts. [*See* Aqueducts.] Placing the water supply outside the fortification walls was only made possible by the *pax romana.* Adequate drainage and waste disposal were the responsibility of the civic administration.

Entertainment was taken for granted by the populace. Theaters were modified to accommodate animal contests and many cities had an amphitheater. The best-preserved theater, at Aspendos, has a seating capacity for seventy-five hundred spectators.

Housing, needed for a vastly increased population, is best studied at Ephesus, where terraced houses reached five stories and were arranged in blocks, or insulae. They were richly furnished and decorated with mosaics, paintings, and cut-marble inlay.

Inscriptions document some key aspects of city life. Patriotism is revealed by dedications to the *patris.* Family members were celebrated through the naming of privately donated buildings, as the libraries at Sagalassos and Ephesus demonstrate. [*See* Libraries and Archives.] Pre-Roman cultural heritage was often celebrated: Tarsus and Aigai in Cilicia claimed Perseus as their founder, Nicaea was founded by Herakles, other cities claimed relationships with Argos, Athens, and Sparta. Under the Severan emperors building reached a zenith, and the network of cities attained its maximum geographic extent.

Imperial cult. The imperial cult played an important role in the development of urbanism. In newly annexed areas the cult provided traditions that unified the populous: public sacrifices, festivals, games, wild-animal fights *(venationes),* and gladiatorial shows at which feasts were enjoyed and corn and oil distributed. Before taking the name of Augustus in 27 BCE, Octavian authorized dedications to Rome and the deified Julius Caesar at Ephesus and Nicaea and to himself at Pergamon and Nicomedia. At Aphrodisias the Sebasteion, the most elaborate temple complex to the imperial cult presently known, was established during the reign of Claudius (41–54 CE) through a private donation. The temple itself and the public buildings connected to it were often the first Greco-Roman buildings in the new cities of the interior.

Later Empire. In the mid-third century, incursions by the Goths from the north and the Sasanian Persians and breakaway dynasts of Palmyra from the east and south caused the collapse of the empire's frontiers. [*See* Sasanians; Persians; Palmyra.] Throughout the peninsula hasty fortifications were built around the cities, often with material taken from public buildings. Widespread plague also con-

tributed to an economic crisis. In response, Diocletian, who ruled from Nicomedia (284–305, instituted radical administrative changes: he created smaller provinces composed of the contiguous territories of the cities. Frontiers were strengthened and troops, who were paid in kind as well as in coin, were stationed in and near the cities. The authority of the city councilors gradually diminished under the strain of increased taxation, and the ancient autonomy of the cities was gradually lost. The transfer of lands to the church and consequent loss of taxes also contributed to urban decline.

The countryside, with its villages and landed estates, became the key factor in economic recovery in the fourth century. [*See* Villages.] When grain supplies from Egypt were inadequate, the capital was supplied from Anatolia, especially from Bithynia and Phrygia. Stock raising continued to be the predominant use of land on the central plateau. Neither erosion nor deforestation from the overexploitation of the land appears to have altered settlement patterns—the only geomorphological change to have done so was the silting up of the great harbors.

Scholarship has relinquished the old concept of "decline and fall," largely as a result of the archaeological evidence, which shows continued urban life and even growth during the fourth and fifth centuries. The survival of classical culture is seen in writing and in the arts, especially sculpture (e.g., at Nicomedia, Nicaea, Ephesus, and Sardis). In the sixth century, the picture changed. Plague struck again and pressure from the Persians intensified. Treaties with them were made at an enormous price in gold. Justinian's building programs caused a further strain on local economies and manpower, while earthquakes disrupted the water supply and the aqueducts fell into disrepair. In general, the subdivision of and encroachment on monumental buildings and thoroughfares was widespread (e.g., at Sagalassos, Sardis, Ancyra). However, streets were repaired late into the century and a lively local commerce and small industry continued with the manufacture of pottery, glass, gilded jewelry, and utilitarian metal items—albeit often from recycled materials (e.g., at Sardis, Sagalassos). [*See* Glass; Jewelry.] Of continued scholarly debate is whether the evidence demonstrates an actual decline in society or a new pattern of settlement that was concentrated less in the city, foreshadowing the medieval society that emerged after the dark age that followed the Persian invasions in the seventh century (see below).

Judaism and Christianity. The single most provocative development in Late Antiquity was the rise of Christianity, which was introduced into Anatolia by St. Paul in the first century CE. After the Christian church was legalized in the early fourth century, churches and other ecclesiastical buildings were built rapidly, sometimes preempting civic space such as the agora (e.g., at Sagalassos). [*See* Churches.] Pagan temples slowly went out of use or were converted to churches (e.g., at Aphrodisias). Burials were made in and around the churches, a change from the Roman prohibition of burial within the city. [*See* Burial Sites.] Political power transferred from the civic centers to the ecclesiastical realm. Excavation has enhanced the picture of personal piety through rich finds of seals and amulets, small flasks from pilgrimage sites, and Christian symbols on domestic pottery, glass, metal, gravestones, and sarcophagi. The material culture also demonstrates the persistence of pagan cult and superstition, especially the practice of magic.

The conditions under which Christianity spread so rapidly in Anatolia are complex. Archaeological evidence has illuminated the size and civil status of Jewish communities (e.g., the great synagogue at Sardis, an inscription at Aphrodisias, coins from Apamea in Phrygia showing Noah's ark). Jews had been resettled in Lydia and Phrygia by Antiochus III at the end of the third century BCE, and imperial directives had protected Jewish law and customs since the reign of Caesar. As is clear from the story of Paul's visits to Galatia, related in *Acts,* the status of the Jewish communities was undoubtedly basic to the spread of the Christian message. Concurrently, a strong tendency to monotheism had developed in paganism with the rise of a "super god" (*Theos Hipsistos,* a term used also by the Jews to describe their God). Thus, the worship of an abstract god who dwelt above or replaced the anthropomorphic pantheon was fertile ground for the spread of Christianity even before Constantine, when it was accepted as the official religion, supplanting the imperial cult.

End of Antiquity. The Sasanian Persians, under Chosroes II, took Antioch and Jerusalem in 614 CE, Alexandria in 617, and then turned on Anatolia. [*See* Jerusalem; Alexandria.] Coin finds at several Anatolian cities stop with the issues of 616/17, and there is evidence of destruction, burning, and population dispersal. Heraclius counterattacked and reestablished the eastern frontier, but the cities of Anatolia had suffered to such an extent they never recovered.

The history of central Anatolia during the seventh and eighth centuries is little known; excavation shows that churches were repaired and enlarged (e.g., at Amorium, Sardis, Aphrodisias), but little is known about the life of the inhabitants. A genuine dark age apparently ensued until the ninth century, for which some evidence is available. When recovery did occur, the cities that survived had retracted to walled *acropoleis.* The vast urban culture established under Greco-Roman domination was to some extent a thin veneer that disappeared after imperial rule was weakened and Anatolia became once again a land of villages and country estates.

[*See also* Alexandrian Empire; *and* Roman Empire.]

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Anatolia in the Islamic Period

Three phases mark the history of medieval Anatolia. From the seventh to the ninth century CE urban life and economic exchange shrank drastically; from the tenth until the twelfth century recovery occurred in towns, cities, and the countryside until the disruptions of Turkish immigration; and from the twelfth century onward an influx of pastoral nomads, a growth of regional trade, and the processes of conversion to Islam accompanied the splintering of political authority and the end of Byzantine power in the peninsula. During the first era, Byzantium ruled the peninsula supreme; in the second, central Anatolia became the home of the Seljuks of Rum; and in the third, Byzantium lost control over the coastal lands and the Seljuks ultimately disappeared before the Mongols and the Turkish *beyliks* (area ruled by a *bey*).

Despite the utility of such public works as the great bridge over the Sangarius (completed in 560) and the church of St. John at Ephesus of the emperor Justinian (527–565), the cost of his campaigns, as well as outbreaks of plague (beginning in 542), burdened his subjects and led to a pause in the prosperity of towns and cities. This prosperity came to an end following the destructive invasions of the Persians (613–626), who practically ended classical urban life in this corner of the Mediterranean. Once prosperous cities (Sardis [c. 616] Ephesus [c. 614], Ankara [622], Pergamon, for example) shrank to fortifications and villages, occasionally on nearby hills. Coin finds and the evidence from such sites as have been excavated or surveyed point to a substantial decline in economic life and the end of public works and social services.

A full recovery from the Persian devastation remained impossible for two full centuries because of Muslim raids that began in 641. Ankara in the center and Amorion in the southwest became centers of Byzantine defense, and many cities became walled or had their existing walls strengthened. The raids were disruptive but did not result in Muslim occupation of lands north and west of the Taurus range, and in areas untouched by Muslim raids there was a relative continuity, as in the monastic communities in Bithynia. Nonetheless, there is little Byzantine construction on the plateau beyond repairs that may be securely dated to the period from the Persian invasions to the Macedonian dynasty, and thus the era is justly termed a "dark age." Cities became fortified, housing shrank in size and quality, and many settlements removed to better defensible hills: external threat and internal defense became key concepts.

Beginning in the mid-ninth century, the emperors of the Macedonian dynasty managed to stop the raids (after 863 they went on the offensive) and to restore peace and predictability to life on the plateau. Consequently, there is evidence of economic expansion and urban revival. A broad recovery may be posited from the restoration of the church of the Dormition at Nicaea (after 843), the church of St. Nicholas at Myra, the building, perhaps in the late ninth century, of the (pilgrimage?) church at Dereağzı (Lycia), a very large building for a remote hill country, and the tenth- or eleventh-century church of Üçayak. In the ninth century there also began an era of construction and elaboration of the rock-cut churches and monasteries of Cappadocia, in the Peristrema valley near Aksaray and the area centered on Göreme, where new building flourished from around 900 to about 1060.

Turkish migration into Anatolia began in the mid-eleventh century, and after the Seljuk sultan Alp Arslan (1063–1073) defeated the Byzantines at Manzikert (1071) no line

of defense prevented the Turks from raiding the plateau and even establishing a short-lived emirate at Nicaea. During the First Crusade, Alexios Komnenos (1081–1118) managed to reconquer Nicaea and to retrieve the coastal plains and the hill country of western Anatolia for Byzantium. During the twelfth century Seljuk and Danishmend leaders warred over the possession of central Anatolia, and only after the defeat of the Danishmendids (1178) and the crushing of a Byzantine army at Myriocephalon (1176) were the Seljuks, now established at Iconium/Konya under the leadership of Kılıj Arslan II (1155–1192), able to devote themselves fully to the elaboration of Perso-Islamic civilization in the peninsula; in 1156 the construction of the ʿAla ed-Din mosque at Konya began, but no great resources were available for monumental building. The Seljuks began to strike silver *dirhams* in the 1180s, and their silver coinage, of a fineness superior to other Muslim coinages in the Levant, continued to expand until the end of the thirteenth century. To their west, during the early and middle years of the twelfth century the Komneni built a number of fortifications and walled many of their Anatolian towns (e.g., Achyraous 1139, Dorylaion 1175, Laodikeia [Laodicea] c. 1119, Lopadion 1130), and as the frontier stabilized on the western confines of the plateau after the Fourth Crusade, there was further economic development, including the growth of long-distance trade throughout the peninsula and across the political frontiers. Even during the period of Byzantine exile in Anatolia, from 1204 to 1261, there is evidence of an increase in wealth both in the "empires" of Nicaea and Trebizond: building of churches (e.g., Nicaea) and fortifications (such as Nymphaion, Pegai) resumed on a modest scale. There was, however, much more Turkish than Byzantine construction in Anatolia.

The fullest flowering of Seljuk civilization in Anatolia occurred in the generation before the Mongol defeat of the Seljuk armies at Köse Dağı (1243). The monumental constructions of the Seljuks, superior in number, quality, and size to Byzantine Anatolian architecture, reflect the wealth of their society; indeed, no fewer than ten Anatolian silver mines were in operation (and were Seljuk mint sites) during the century. The Seljuks conquered important ports (Antalya in 1207, Sinope in 1214) that allowed them to establish and reinforce commercial routes. The extent of trade, and its extension across the peninsula from Constantinople to Konya and from Konya to the Mediterranean or to Sivas and the east is best measured by the forty or more caravanserais built during this era (no Byzantine caravanserai is known). There was a great deal of mosque and tomb construction, and excavation of the country palaces of the Seljuks at Kubadiya and Kubadabad has begun (M. Zeki-Oral, 1949–1951; Katharina Otto-Dorn and Mehmet Önder, 1965–1966). The Rum Seljuk constructions of this era are known for their extensive use of calligraphic ornamentation and "stalactites" *(muqarnas)*. During the entire century much of the monumental architecture was ordered by high officials of the government, and there was a good deal of building (besides at Konya) in Sivas, Tokat, Amasya, and Erzurum. The patronage of the sultans was either military or devoted to commercial use; and there was some patronage from the women of the royal family. The Mongols extracted an enormous tribute from the Seljuks, and after 1277 administered eastern Anatolia as a province of the Ilkhanate, but the economic expansion of the peninsula did not suffer greatly; in 1299 there were well over thirty mints striking silver *dirhams*, a figure not attained before or since. After 1243, however, there is little architectural patronage from the sultans, and most comes from the officials of state; there was, then, no letting up in construction. The Mongols were able to control eastern Anatolia into the fourteenth century, but the collapse of Byzantine defenses at the edge of the plateau after the recovery of Constantinople in 1261 led to the Turkish infiltration of the entire coastal areas, except for Trebizond and the eastern shores of the Marmara, by 1300, and the division of Anatolia into a number of *beyliks*, usually founded by independent chiefs, which lasted until the later Ottoman conquests. The mosques and other structures of the early *beylik* era are small, and among early Ottoman monuments they display Byzantine influence in building style ("Byzlamic," in the terminology of Clive Foss).

Despite the political, cultural, and religious changes during this era, there were some constants. The incursions of the Turks before and with the Mongols strengthened the pastoral segment of Anatolian agriculture, but it had long been polycultural. Agricultural technology remained based upon earlier practices. By 1300, the conversion of Greek Christians to Islam was well under way but by no means complete, and there were inheritances from Christianity in the form of Islam practiced in the countryside.

[*See also* Byzantine Empire.]

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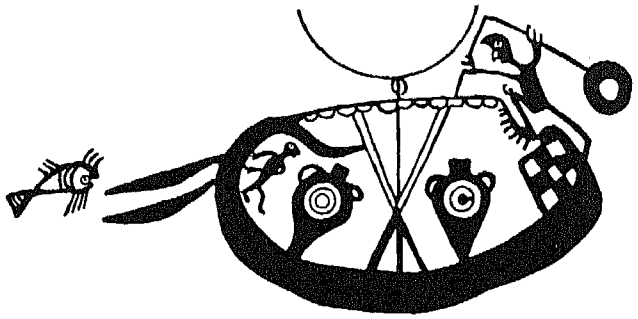


ANCHORS. Figure 1. *Depiction of a figure on a ship handling a stone anchor.* Painting from a seventh-century BCE Cypriot jug. (After Karageorghis and des Gagniers, 1974, p. 123, no. 11.2)

ANCHORS. In antiquity, those who sailed utilized stones as the earliest anchoring devices. As anchors found on the seabed assume the passing of a ship, these stones provide valuable clues about ancient routes and seafaring practices. Defining the nationalities of stone anchor types can thus lead researchers to determining the range and directions of ancient seafarers. A ship's home port also may be identifiable from the anchors it carried.

As the last hope for a storm-tossed ship, anchors also took on a religious significance—and many have been found in temples and other cultic locations. Because anchors found on the seabed are unlikely to have a stratigraphic context, their dating depends largely on anchors found at archaeologically excavated land sites.

Stone Anchors. Along the shores of the eastern Mediterranean during the Bronze and the Iron Ages, anchor stones were pierced to secure the hawsers (ropes). Typologically, pierced-stone anchors fall into three categories: weight anchors, in which the stone's weight acts as the anchoring device; sand anchors, which are relatively lightweight and contain one or more additional piercings to secure wooden slats that grasp the seabed; and composite anchors, which hold the seabed both by means of their weight and by wooden "arms" inserted through additional piercings.

Stone anchors are often asymmetrical. Erect anchors positioned at the bow are sometimes depicted in illustrations of seagoing ships in Old Kingdom Egypt. This design may have permitted the anchors to stand upright on a tilting deck. If so, bars must have been used to lock them in place against the bulwarks to prevent their shifting in heavy seas.

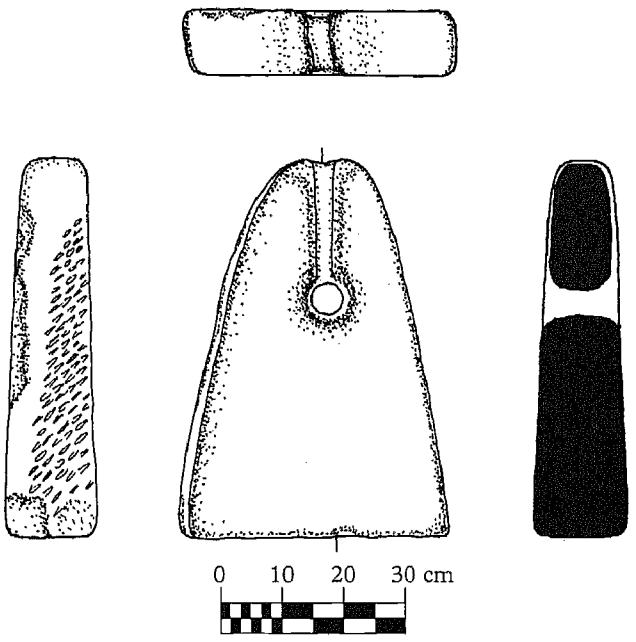
Although the heaviest recorded Bronze Age stone anchor, from Kition, weighs 1,350 kg, it is unlikely to have been used at sea. [*See* Kition.] Half-ton stone anchors found on the Mediterranean sea floor probably indicate the upper limits of functional weight. How such heavy anchors were raised without a capstan is unclear. Two seventh-century BCE Cypriot jugs depict the handling of stone anchors (figure 1). One scene shows the anchor's hawser going through a sheave at the top of the mast, while the other seems to be an exploded view of a similar operation. Alternately, cargo derricks may have been used for maneuvering anchors.

Ancient ships employed a complement of anchors. The Uluburun shipwreck off the coast of Turkey carried twenty-four weight anchors, totaling more than 4 tons. Two-thirds of the ship's anchors were stationed at the bow, while the remainder had been stowed amidships. [*See* Uluburun.] A group of fifteen Byblian anchors, undoubtedly from a single ship, were found in Israel at Neveh Yam. Curiously, only one anchor has been found on the Cape Gelidonya shipwreck off Turkey, perhaps indicating that not all of the ship has been located. [*See* Cape Gelidonya.]

Studies in the typologies of Bronze Age stone anchors have permitted the differentiation of several regional types. Egyptian anchors often have a second, L-shaped piercing near the anchor's base, perhaps for the attachment of a line with a float to indicate the anchor's location on the sea bed (see below). Examples have been found at Mirgissa on the Upper Nile River, at Wadi Gawasis on Egypt's Red Sea coast, and as far afield as Byblos in Lebanon and Ugarit in Syria.

Stone anchors abound underwater along Israel's Mediterranean coast. Several anchors from the Carmel coast bear markings, some in relief. The earliest datable stone, anchorlike objects in the Near East are *shfifonim* (Heb., "vipers"), found in the region immediately south of the Sea of Galilee. [*See* Shfifonim.] Numerous stone anchors have also been found at Byblos and Ugarit. Among those found at Byblos were several that have a distinctly triangular shape. Although anchors with this shape are commonly termed Byblian, the majority have been found in Israeli waters (figure 2).

Cyprus is rich in stone anchors—147 were found at Kition alone. Few stone anchors have been recovered from Turkish waters, however, and they are so rare in the Aegean Sea that a different form of anchoring device may have been in use there. Aegean Bronze Age cultures may have employed kiliks—devices that use undressed stones as weights for



ANCHORS. Figure 2. *Stone anchor.* Byblian anchor found in the ancient harbor of Dor, in Tantura Lagoon, Israel. (Courtesy S. Wachsmann)

wooden anchoring devices. Once the wood disintegrated, the anchor-stone would be indistinguishable from other stones (see below). On Crete, some stone anchors have been found at Mallia and Kommos. An anchor-shaped porphyry stone from Knossos, with a relief carving of an octopus, may have been a weight, or a cultic object. It is unlikely to have ever been employed at sea.

Small stone anchors have continued in use into modern times. Large stone anchors—those that required more than one person to handle them—apparently went out of use as new types of anchors were introduced, toward the end of the Iron Age.

Wooden Anchors. Dramatic changes in anchor shape probably occurred toward the end of the seventh century BCE when the word *ankura* ("bent") first appears in Greek texts (Kapitän, 1984; pp. 33–36). Four types of wooden anchor stocks were used in the Greco-Roman period (figure 3): stone (type I); wood with lead cores (II); lead (III), occasionally with wooden cores (C), and removable lead stocks (IV). Lead stocks continued to be known as stones long after their typological forebears fell into disuse (Durrbach and Roussel, 1926–1935, vol. 1, 443.92, vol. 3;1417, pp. 163–65).

In general, Greeks used stone-stocked anchors (type I), whereas Romans used solid lead (type III) stocks. Type II represents a transition from stone to lead stocks, and type IV a more drastic change from wooden anchors to iron anchors. Both transitions were products of historical and technological developments. Stone stocks often broke on rocky sea bottoms. Lead-cored wooden stocks were not as fragile, but their number was directly linked to the supply of lead. Lead was in short supply until the late third-century BCE, when the Romans gained control of rich Spanish silver mines and produced silver, and its by-product, lead, on a grand scale. When the price of lead fell, type-III solid-lead stocks appeared almost simultaneously. Type-IV removable stocks are frequently found in the eastern Mediterranean. These collapsible anchors were designed for an economy of space and suggest the use of smaller ships. The versatile removable-stock wooden anchors heralded increasing use of removable-stock iron anchors.

Greeks called anchors hanging gear (probably because they hung from bows and sterns [Casson, 1971, p. 265]), stays (Athanaeus, *Diepnosophists* 3.99D), or even holders (Lucian, *Lex.* 15). The largest anchor was the "sacred anchor" which was thrown in times of desperation (Lucian, *Jup. Trag.* 51). Roman authors made more specific references to anchor parts. Arms (figure 3.3) or even entire anchors were known as hooks (Virgil, *Aeneid* 1.169.3). The conical iron or bronze caps that reinforced arm ends (figure 3.2) were called teeth (Livy 37.30.9–10), because of their toothlike shape, or claws (Plutarch, *de mul.* 8.247E).

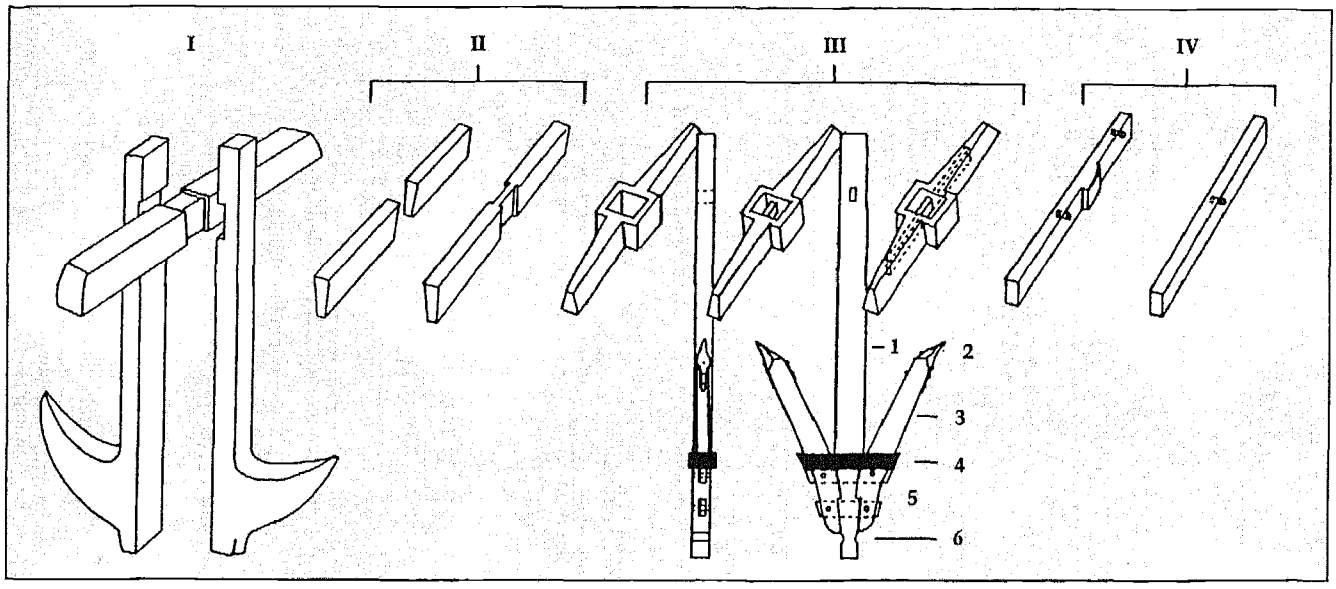
Pliny credited invention of the one-armed anchor to Eupalamus and of the two-armed anchor to Anacharsis (*Nat. Hist.* 7.56.209). References like Pliny's were thought apocryphal until a reinforcement collar (figure 3.4) for a one-armed anchor was found near Brindisi, Italy (Kapitän, 1984; Rosloff, 1991). One-armed iron anchors also existed (*P. Lond.* 1164h 11.7–11).

Scholars learned more about anchor arm construction with the discovery of a fragmentary anchor on the Chrétienne "C" wreck (Joncheray, 1975). Arms were bound fastened to anchor shanks with Z-shaped hook joints that were, in turn, secured by mortise-and-tenon joints (figure 3.5). Pegs placed perpendicularly through tenons in anchor arms locked them in position. When arm/shank joints loosened with wear, reinforcement collars (figure 3.4) poured onto anchors held the anchor arms in position (Haldane, 1986).

Pliny records cork floats on lines used to mark an anchor's location on the sea bottom (*Nat. Hist.* 16.13.34). These lines, tied to wooden-anchor crown notches (figure 3.6) or iron anchor crown rings, also freed anchors stuck in the seabed.

Iron Anchors. Herodotus (9.74) makes the first recorded reference to iron anchors in the early fifth century BCE. Iron was scarce, however, and iron anchors do not commonly appear on shipwrecks until the first century CE. As iron-working technology developed in the Mediterranean, the use of wooden anchors diminished.

The first conclusive evidence of anchor manufacture to predetermined specifications can be seen in iron anchors. The first-century CE iron anchor found at Lake Nemi, Italy,



ANCHORS. Figure 3. *Wooden anchors.* Stock types for wooden anchors. Type I is a stone stock; Type II is a wood stock with a lead core; Type III stocks are lead; Type IV stocks have removable lead cores. The pieces of the Type III anchor are numbered: (1) shank; (2) teeth; (3) arm; (4) reinforcement collar; (5) mortise and tenon joints; (6) crown. (Courtesy ASOR Archives)

has its weight inscribed in Roman pounds on its shank (Speziale, 1931). The anchor complement of the seventh-century CE Yassiada Byzantine shipwreck found off the coast of Turkey may have ranged from smallest to largest in increments of 50 Roman pounds (Bass and van Doorninck, 1982, p. 134). [*See* Yassiada Wrecks.]

Anchor arm configurations also show a progressive evolution. Iron anchor arms first imitated the sharp V pattern of wooden anchors but gradually relaxed to the lunate shape of the Nemi iron anchor (B); they continue to open from the first to the fourth centuries CE in the Dramont D and F anchors. The cruciform shape of the seventh-century Yassiada anchors reflects the christianization of the Roman Empire. Anchor arm angles relative to shanks increased until they reached the Y shape of the eleventh-century Serçe Limanı anchors. [*See* Serçe Limanı.]

Increasingly unstable economic and political conditions in the medieval Mediterranean dictated the use of smaller, faster ships. Deck space was at a premium, and the use of durable, removable-stock iron anchors aboard ships became the rule.

[*See also* Ships and Boats.]

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SHELLEY WACHSMANN and DOUGLAS HALDANE

ANDRAE, WALTER (1875–1956), archaeologist, scholar, and museologist. Andrae was born in Anger, near Leipzig, Germany. After finishing school at Gimma (the school of the princes of Saxony), he studied architecture for four years at the Technical University in Dresden. Andrae was only twenty-three when, in 1898, he set off for the Near East with the Deutsche Orient-Gesellschaft's Babylon Expedition. In Babylon Andrae learned excavation techniques from the expedition's leader, Robert Koldewey, the most prominent excavator of that time. In 1903, Andrae undertook the first excavation of his own, at Aššur, the capital of Assyria. He worked there until 1914. Andrae also worked at Shuruppak (modern Fara) and Kisurra (Abu Hatab), both south of Babylon, and at Hatra, the Parthian city of the sun god northwest of Aššur.

During World War I, Andrae served as a German army officer in the Near East. After the war he was employed by the Berlin Museum, where he succeeded Koldewey as curator of the Near East collection. In 1928 he became director of the Near East department of the State Museum of Berlin, a position he held until the 1950s. After World War II, Andrae became a professor of the history of architecture at the Technical University in Berlin. Toward the end of his life, an accident caused his almost complete blindness.

At Aššur, Andrae first introduced the system of examining levels: in the area of the Temple of Ishtar, the oldest building at Aššur, he named building levels by letter, designating A for the uppermost and H for the lowest level. He also developed Koldewey's methods of archaeological work for the coming generations. At the Berlin Museum, Andrae was responsible for the reconstruction work on the Procession Street, the Ishtar Gate, and other monuments from Aššur and Uruk.

[*See also* Aššur; Deutsche Orient-Gesellschaft; *and the biography of Koldewey.*]

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BARTHEL HROUDA

ANIMAL HUSBANDRY. The domestication of animals is a component of the "Neolithic Revolution" and a process that had an impact both on the biology of the tamed and the culture of the tamers. One of the main centers for the evolution of husbandry was the ancient Near East, where its beginnings, in the early Holocene c. 9000 BCE, can be found in Iran, Iraq, Anatolia, Syria, and the Levant, within the hilly zones adjacent to the Fertile Crescent. There, within a relatively short period of time—a few thousand years at most—mobile hunting and gathering, a strategy that had been successful for millennia, was replaced by sedentary farming and animal husbandry as the primary mode of subsistence for most communities. These three aspects of the Neolithic Revolution—sedentism, husbandry, and agriculture—are interwoven but independent components of the process; thus, evidence for the presence of one is not certain proof for the existence of the others. For this reason, the primary evidence for animal husbandry is to be sought in the bones of animals recovered at archaeological sites.

Bones reflect domestication in two ways. One is the impact the process had on the wild species that came under human control; the other is its impact on human values and social organizations. Shifts in the selective forces affecting the small populations of animals initially tamed gradually changed the appearance of their descendants: most became smaller, neotenous features were retained, and coat color and texture as well as other morphological features became more variable. These changes were likely not intentional goals of the first herders but emerged from the process of selecting animals who were easiest to manage and maintain. Some novel morphological and behavioral features did come to have economic significance: the wooly coat of sheep or a

more docile personality in cattle; others, such as the corkscrew horns of goats or the shortened faces of pigs, although perhaps culturally salient, did not contribute obvious material benefits to the husbanders' new adaptation to the environment.

Morphological features produced through unconscious human intervention are visible in skeletons and can be used to demonstrate the presence of domestic stock at an archaeological site. At Ali Kosh, in southwestern Iran, the presence of domestic sheep c. 7500–7000 BCE is evidenced by the skull of a hornless ewe; domestic goats are deduced from horncore morphology (the horns of bovids, which are not shed like antlers, are keratinous sheaths covering bone spikes that project from the frontal bone of the skull). At Hallan Çemi, in eastern Anatolia, domestic pigs can be demonstrated in about 8000 BCE on the basis of the discovery of teeth smaller than their wild ancestors'. The existence of domestic cattle in central Anatolia in the late sixth millennium has been argued on the basis of the small overall size of the animals. Morphological evidence alone, however, is insufficient to trace the process of domestication. The earliest stages of husbandry—those that occurred before morphological changes appeared—will be missed. Moreover, the remains of domestic stock at a site is not certain proof that the people who slaughtered and consumed the animals also raised them. Thus, the second way in which bones reflect domestication is crucial.

Domestication is the incorporation of living animals into human society. Domestication not only produces domestic animals, it encourages the adoption of different values and social organizations by the societies that employ it. A major adjustment is required: an increased sense of property becomes a measure of social status. The term *husbandry* means to conserve, keep, and alienate resources. The route to success is through resisting the impulse to slaughter stock so that herd growth can be encouraged. This way of thinking is anathema to many foraging societies in which there is strong pressure to share the game from a successful hunt across the whole community. The demographics of pastoral societies are shaped by the ratio between the number of herders and the size of the flock, a relatively rigid relationship that fosters segmentation within communities on household lines and discourages the free flow of personnel between camps or settlements that is characteristic of hunters. The events of the early Holocene in the Near East therefore produced significant changes in the values and social organization of the emergent communities. The new attitudes can only be inferred indirectly. A key component of husbandry is the decision to cull. The proportions of the different ages and sexes in the animals that herders choose to slaughter to feed their families are distinct from those seen in the animals hunters are likely to kill. Thus, evaluation of the mortality of potentially domesticable animals at a site is a key technique in determining whether the human behaviors associated with pastoralism are present. Though other information is supportive, demographic information is central to the conclusions that sheep were domestic by about 8500 BCE at Zawi Chemi and Shanidar cave in northern Iraq and goats husbanded at Tepe Ganj Dareh in western Iran by 7000 BCE.

What motivated the incorporation of animals into human society? Most theories have argued that the reliable production of meat was the incentive. It is widely agreed that human population was increasing in the Early Holocene, forcing marginal habitats (from a hunter-forager perspective) to be occupied—lands with less game, where those communities with domestic herds would more easily survive. Because some of these marginal habitats are outside the range of the wild ancestors of sheep, the discovery of their remains at such Pre-Pottery Neolithic sites as Jericho in the Jordan Valley, Beidha in Jordan, and Abu Hureyra on the Euphrates River in Syria has been taken as direct evidence of domestication. For what, then, were they being raised? At the same time marginal habitats were being invaded, the environment of the Early Holocene was both spatially variable and temporally erratic—conditions ethnology tells us promote storage as a buffering mechanism, and husbandry is a form of storage on the hoof. The difficulty with these models has been the lack of an explanation for how hunters can avoid killing the animals they encounter and instead treat them more like gathered resources—which, again ethnology reports, are shared within the household, not the community at large. One controversial explanation for the motivation is the milk even wild caprines yield. Small numbers of tame stock maintained by households for dairy products could have served as the basis for the development of larger herds capable of producing meat. A second factor is the behavior of two of the wild species first domesticated—sheep and goats. Both of these animals are "vertical migrators," adapting to the change of the season by moving up and down precipitous terrain. They contrast with "horizontal migrators," such as gazelles and equids, which deal with variable climate by traversing great distances. Sheep and goats also have a considerable attachment to their home ranges. Exploiting them, rather than the horizontal migrators, would have given a new definition to the concept of hunting territory because sheep and goat habitat is productive year-round rather than just seasonally. It is more worth defending. Game-management techniques, which mimic some herding strategies and so are hard to distinguish in the archaeological record, would have had value and offered another potential pathway to more intensive husbandry.

Although husbandry was underway by about 9000 BCE, it took nearly eight thousands years for the list of Near Eastern domesticates to be complete. Sheep, goats, and probably pigs were first, domesticated across southwest Asia by 7000 BCE. By 6000 BCE, the first sites with multiple species of domestic livestock are recorded (e.g., Erbaba in Anatolia and

Jarmo in Iraq, among many others). At about the same time or a little earlier, a figurine found at the western Iranian site of Sarab indicates that woolly sheep were known. Hunting had not died out as an important subsistence pursuit—though at sites where the important domesticates belonged to the same species as the wild animals hunting might also have been pursued—but there is presently no way to estimate its contribution accurately. However, at the site of Umm Dabaghiyeh, a sixth-millennium settlement in Iraq, onagers (a wild relative of the horse) were hunted intensively. A scattering of domestic donkeys is found in various parts of the Near East in about 3000 BCE, in Mesopotamia often in ritual contexts. Shortly thereafter, the animal became a mainstay as a beast of burden. The horse was domesticated in central Asia by the fourth millennium and seems to have appeared in the Near East by the third millennium, although a Chalcolithic horse bone has been found in Israel's Negev desert. Cattle entered the barnyard at the end of the sixth millennium and were used for motive power and milk by the fourth.

The centuries just before 3000 BCE have been referred to as the period of the Secondary Products Revolution—a time when donkeys not only entered the work force, but sheep, goats, and cattle began to be managed for their fiber and dairy products. In fact, the management for secondary products probably began much earlier; it is more correct to say that the effort invested in these forms of husbandry increased with the advent of complex society.

The complex political organization associated with the rise of the state reshaped animal husbandry in the Near East. One development was specialized nomadic pastoralism, an adaptation dependent on the economic infrastructure the state provides. It is not, as some would have it, a simpler subsistence mode into which people slip during the intermittent periods of social disintegration brought on by the collapse of states and empires. Nomadic pastoralism has the capacity to generate considerable political power. Though it is counterintuitive, the successes and failures of individual pastoralists do not even out over time. Instead, some succeed enormously and are able to employ or otherwise attach their luckless fellows to manage their ever-increasing herds. These arrangements are capable of multiplying to produce nomadic "kingdoms" of considerable power. Under the state, animal production was managed either through bureaucrats or the action of markets. In either case, husbanders were encouraged by the demands made or the opportunities provided by these institutions to redirect their efforts away from household production and toward the creation of animal products for exchange. For example, in the Levant, at Tel Ḥalif, donkeys were produced on a large scale, presumably to serve a regional need for transport animals. This principle also is visible in the transformation of culling strategies for sheep and goats. Effective multipurpose management of these animals for household consumption focuses on dairy production as the most efficient method of producing calories. Evidence for herding techniques aimed at the production of meat or wool implies that the exchange value associated with these products was sufficient to outweigh the overall decrease in total production. These are recorded in all parts of the Near East. In Mesopotamia, cuneiform documents indicate that by the end of the third millennium extensive centralized sheep herding was underway. Unfortunately, the documentary record refers almost exclusively to state-directed activities and provides no picture of the rural domestic production of animal products, which must have been enormous.

The textual record also indicates that local "breeds" had developed. It is a mistake to view these as distinctive morphologies produced by deliberate isolation and selection, as is practiced in modern husbandry. Instead, subregional economic, political, and physical boundaries produced isolated populations of domestic stock that, either through adaptation to local conditions or the effects of genetic drift, attained distinctive and recognizable qualities. In these circumstances, local herds, even though named, actually contain a wide range of morphologies. *Genesis* 31 provides a clear example of the principle. While Jacob believes that the characteristics of the male goats in his flock will turn up in the next generation of kids, the flock itself is very diverse in appearance, hardly the modern idea of a breed.

In Egypt, domestic sheep and goats seem to have been imports from southwest Asia. In the case of cattle, the case is not settled. A center of domestication, independent of the one in Anatolia and southeast Europe, may have existed in northeast Africa. Certainly in the pharaonic era, extensive experimentation with a wide range of animals was practiced. While most ventures never went beyond taming, some birds, notably geese, became significant domesticates, as they did in Mesopotamia.

The date the camel entered the register of domestic stock is unknown. Though most authorities would place the event in Arabia and eastern Iran sometime in the third millennium or a little earlier, the evidence is extremely thin and subject to alternative explanations. As important contributors to the economy, however, the evidence for camels points certainly to the early first and perhaps to the middle of the second millennium BCE.

Other animals deserve some mention. The humped Zebu cattle, especially well adapted to arid conditions, is present in Jordan by the Late Bronze Age, although the difficulty associated with identifying its remains means that it may be present elsewhere earlier, but unrecognized among the bones of the more common taurine cattle. The same problem faces the identification of the contribution of the water buffalo, presumably wild examples of which have been found in Halafian deposits. Faunal evidence shows that the animal was domesticated in the Indus Valley by the third millennium, and a seal impression places the animal in Mes-

opotamia at about the same time. Little more is known. The indigenous hare of the Near East was not domesticated, and rabbits were not introduced until Roman times. Fish were raised in ponds in Mesopotamia but do not seem to have been true domesticates. Bees were kept in Egypt beginning in the Old Kingdom (third millennium), but the technology does not seem to have spread to Asia.

The elephant presents an especially complex problem. The discovery of ivory at such workshops as Bir es-Safadi in the northern Negev indicates the presence of the animal in the Chalcolithic period. Scattered bone and tusk finds together with textual records of imperial hunting suggest that a relict population of an as yet undetermined species of elephant was present in Syria as late as the beginning of the first millennium BCE. However, at least one authority has argued that these animals were actually transported from India for royal sport and so technically would be domesticates.

Finally, the chicken has been reported from occasional finds as early as the Early Bronze Age. The scarcity of these reports and the possibility of contamination associated with most of them contrasts with the explosion of chicken husbandry that begins in the Persian and particularly the Hellenistic period. The evidence now points to an original domestication of the chicken in China during the Neolithic, followed by an extremely slow diffusion west.

[*See also* Camels; Cattle and Oxen; Equids; Paleozoology; Pigs; *and* Sheep and Goats.]

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BRIAN HESSE

ʿANJAR (ʿAndjar, ʿAin al-Jarr), site located in Lebanon, in the eastern foothills of the Biqaʿ (Bekaa) Valley, south of Baalbek, halfway between Beirut and Damascus (35°56′ N, 33°44′ E). Some ruins in the area of ʿAnjar, in particular a quadrangular fortification wall, were described by nineteenth-century travelers and biblical scholars, such as Johann L. Burckhardt and Edward Robinson. The first exploration of the site, carried out by the German Archaeological Expedition excavating at Baalbek, was published in 1938 by Daniel M. Krencker and Willy Zschietzschmann. In 1939, Jean Sauvaget identified the ruins as Umayyad ʿAin al-Jarr. In 1953, Maurice Chéhab began to excavate ʿAnjar, publishing preliminary reports in 1957 and 1963. In 1967, Solange Ory published the site's Arabic inscriptions and graffiti, and Jean-Paul Rey-Coquais published the few Greek inscriptions excavated. In 1969, K. A. C. Creswell included ʿAnjar in his second edition of *Early Muslim Architecture* (1969). In 1993, Hafez K. Chehab commented on Greek and Syriac texts that attribute the construction of ʿAnjar respectively to al-Walid I (r. 705–715 CE), and his son al-ʿAbbas (in 709 CE); Chehab also discussed ʿAnjar's identification with Chalcis ad Libanum, its pre-Islamic origin, and the problems created because the material culture excavated at ʿAnjar has not been studied. It is still unclear whether the site is an Islamic foundation reusing architectural structures from nearby Roman and Byzantine sites, or the Islamic reconstruction of a previous settlement. It is even less certain that the Iturean and Herodian Chalcis was at ʿAnjar.

The excavations at ʿAnjar carried out by Maurice Chéhab cleared a quadrangular defense wall (310 × 370 m) that was buttressed with semicircular towers and had a monumental gate in the middle of each side. Two colonnaded avenues link the gates and intersect at right angles under a monumental tetrapylum. Two palaces, a mosque (with a *mihrab* added later), and two baths (the larger with mosaic and marble floors) were cleared and partially rebuilt. The foundations of three other palaces with inner courts were found along the east-west colonnaded avenue. The overall plan of this walled town, which recalls plans of Roman and Byzantine castra, appears to have been laid out all at once: the foundation masonry, using a hard mortar, is of the same type for all the large structures. The southwest quadrant is

covered with smaller dwellings. Drainage channels were found all over the site, converging toward sewers built under the colonnaded avenues. Reused architectural structures, in particular capitals of Roman and Byzantine types, were found in the larger palace and along the porticoes. A column with a Greek Christian inscription that belonged to a church dedicated to "Our Lady Mother of God" can be seen in the court of the larger palace. Many stone elements of archivolts and friezes (with vegetal, floral, and geometric motifs) and pillar and pilaster capitals (some with figures) were uncovered in the palaces. It remains to be seen whether this part of the architectural decoration is Islamic or pre-Islamic. It is certain, however, that ʿAnjar, called ʿAin al-Jarr in Islamic sources, was inhabited from at least 741 CE until its destruction, reported by the Muslim geographer Abu al-Fida', in 1321.

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HAFEZ CHEHAB

ANTIOCH ON ORONTES, site identified with Antakya, modern Hatay, founded on the course of the Orontes River (36°12′ N, 36°10′ E). One of the greatest cities in the ancient world, Antioch is now a town of moderate importance, incorporated into Turkey in 1938. Antioch was originally founded in 330 BCE by Seleucus I. Henri Seyrig has demonstrated that the cities that preceded it on the plain of Antioch, Alalakh, and later Antigonia, the short-lived city founded by Antigonus I (the One-Eyed), were situated within the plain and drew the bulk of their resources from the fertility of the ʿAmuq and the proximity of inland Syria. In contrast, Antioch is on the Orontes River, where its channels run into the sea. It was located directly on the great trade route that runs from the Persian Gulf to the Mediterranean Sea by way of the Euphrates River valley. It is notable that among the three cities founded in the same period by Seleucus, two—Seleucia of Pieria and Laodicea—were sited on the sea and served as trading outlets. It may seem that the true capital of the Seleucid Empire was Seleucia of Pieria rather than Antioch. Seleucia, however, was exposed and occasionally succumbed to external threats which gave the advantage to Antioch.

Of ancient Antioch, nothing remains on the surface except for a few traces of walls. The city suffered numerous earthquakes and was reconstructed each time upon the ruins of the preceding epoch. Thanks to ancient authors, principally Libanios and Julian in the fourth century and Malalas in the sixth, its topography is known with such precision that the German philologist Carl Otfried Müller gave a fairly precise view of the city in his *Antiquitates Antiochenae* published in 1839. The excavations carried out between 1932 and 1939 by Princeton University updated and refined what was known of the city. The earliest levels occur at a depth of 11 m; the city of Justinian (sixth century CE) was found at 6 m. Because of the continuous occupation of the city, it was not possible to proceed with extensive excavations. In addition, the rise in the level of the Orontes and the surrounding water table as a result of alluviation has resulted in the submersion of the earliest Hellenistic levels. The great north-south road that traversed the city could be thoroughly excavated, however. Because all the city streets connected to the main road, the excavators were able to advance our understanding of the city's general organization and evolution.

Our knowledge of the city founded by Seleucus is restricted to a record of its modest size. Situated entirely on the left bank of the Orontes, it was surrounded by a wall that extended to the east along a cart track on which a great colonnaded road was later installed. According to the texts, it included a Greco-Macedonian and an Aramean quarter. As the capital of the Seleucid kingdom, which, at the end of the third century, extended as far as India and included Asia Minor, Antioch experienced rapid growth. Its area more than doubled under Antiochus IV, with the construction of the Epiphania quarter to the east. The city did not yet have the wealth it later acquired. The ancient road that ran along the wall of Seleucus certainly existed in the center of the city, but it was unpaved and remained so and without a gate until the beginning of the first century.

Antioch participated in the urban expansion that resulted from the Roman annexation of Syria. Under Augustus, thanks to the intervention and financing of Agrippa and Herod, the city's great road was flanked by broad walkways. Tiberius installed the colonnade. The road was transected by alleys and lined with shops, at least on its east side. The city was destroyed by the terrible earthquake of 115 CE. Trajan, who was present in the city, escaped by taking refuge

in the Hippodrome. Reconstruction was planned on a grand scale and completed in the time of Antoninus. Land was expropriated on both sides of the roadway, and a new, wider (33 m) road was constructed that was more monumental than the preceding one. The roadway was 9 m wide, each lateral gate was 9 wide, and the shops were 6 m deep. It was the most impressive road in all the Syrian cities, except for the one at Apamea.

No major modification of the city plan was undertaken until the sixth century. Libanios and Malalas and a mosaic executed in about 460 at Yakto inform us that the city enjoyed a continuous increase in its population and monumental ornamentation. For several decades, the city's growth was interrupted only by its capture by the Persians (in 256 and 260) and the deportation in each case of a portion of the population. At the end of the fourth century, suburbs were built outside the city walls. After the Edict of Milan, several churches were constructed, including an octagonal building notable for its scale and gilded wood cupola. It was attributed to Constantine and called the *domus aurea*, the "house of gold." The city was lighted through the night. Even though the population was known as boisterous, pleasure loving, and argumentative, Julian the Apostate displeased the people with his paganism and his lack of interest in games.

The wealthy inhabitants of Antioch had country houses in the vicinity of Daphne. In the third century, this little town, celebrated for the abundance of its waters, acquired an urban organization: narrow lanes appear to have separated the modest properties, and subterranean channels supplied them with water. A number of pagan sanctuaries were installed at Daphne, including one dedicated to oracular Apollo. The Christians succeeded in dislodging them.

In the fifth and sixth centuries, the life of the city was marked by the contests that opposed the factions of the Blues and the Greens in the Hippodrome, but especially by the confrontation of the Chalcedonians and the Monophysites. The sixth century was marked by great disasters. Earthquakes struck Antioch in 526 and 528 that killed between 250,000 and 300,000 victims; another earthquake struck in 551 and at Daphne in 577. In 528, el-Mundhir the Lakhmidian, a Persian ally, captured and sacked the city and deported a significant portion of the population. Antioch suffered a similar attack by the Persians in 540. Epidemics of plague struck from 542 to 573. After the destructions of 526 and 528, well documented by excavation, Justin and then Justinian reconsecrated the city as Theopolis and dedicated considerable resources to its reconstruction. In spite of what Procopius says, the destruction debris could not be completely cleared away. In the reconstruction of the new city, most of the rubble was reused. The great road was reconstructed one meter higher, with basalt paving. Some monuments were restored and others were newly constructed. The city wall, which had been destroyed several times, was rebuilt but with a shorter perimeter. In sum, the city was restored—if not to its ancient splendor, at least approaching it.

Disasters were renewed in the seventh century. Antioch was captured by the Persians in 606, 607, and again in 611 and remained occupied until 622. Earthquakes followed the pillage. When the Arabs arrived in 636, the city was in a pitiful state and was taken without resistance. The city never recovered her former metropolitan role. Antioch reverted again to Byzantine control in the second half of the tenth century. It fell to Philarete, the Armenian adventurer, in the last third of the eleventh century, and then to the Franks, at the very end of the same century. Taken by the Crusaders in 1098, Antioch ceased to be the capital of Syria because of the decline in the number and activity of its inhabitants and its status. In the twelfth and thirteenth centuries, it again became a capital, but of a state much reduced in size, the principality of Antioch.

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GEORGES TATE

Translated from French by Nancy Leinwand

APAMEA (Gk., Apameia; Lat., Apamea; Ar., Afamiya, Famiya; Old Fr., Fémie), Hellenistic, Roman, Byzantine, and Early Islamic city in the Middle Orontes valley, one of the four main cities of the North Syrian *tetrapolis* (Strabo 16.2.10). Once thought to be at Hama (Epiphaneia) because of an erroneous identification with the Syriac Euphemia, *ʿwpymyʿ* (P. della Valle, 1614), it has been located at Qalʿat el-Muḍiq in the province of Hama, Syria (35°25′ N, 36°24′ E) at least since Carsten Niebuhr's visit in 1766, C.-F. Volney's from 1783 to 1785, and Johann L. Burckhardt's in 1812. [*See* Hama.] The city was founded in 300/299 BCE by Seleucus I Nicator with the dynastic name *Apamea,* related to that of the sovereign's wife, Apama. It was the head-

quarters of the Seleucid army, with five hundred war elephants, a pay corps checking office, and a stud farm that comprised no fewer than thirty thousand mares and three hundred stallions. "Riding masters, masters-at-arms and anyone who was paid to teach the art of warfare were also stationed there" (Strabo 16.2.10). The town, like Antioch, which also lies in a seismic region, suffered many earthquakes in its history, among which those of 115, 526, 528, 1157, and 1170 CE were the most disastrous. Definitively abandoned after these last two, the town was superseded by the citadel on the tell, was reconstructed by Nur ad-Din, and encloses the modern village.

Foreign travelers to the site noted some scattered Greek and Latin inscriptions, the remains of a magnificent colonnaded street that once crossed the site, and an agora, a cathedral, and a theater. Cumont, who visited the ruins on his way to Dura-Europos (1922), recommended the site to the Belgian Fonds National de la Recherche Scientifique for excavation. After a survey in 1928, F. Mayence led seven campaigns there (1930–1938), with the help of the architect H. Lacoste. The work was interrupted by World War II, resumed for two years (1947, 1953), and then resumed every year from 1965 onward, with a new staff, in cooperation with the Syrian Directorate General of Antiquities and Museums, which is responsible for restoration.

Although especially interested in the city's wide spectrum of historical periods, the Belgian expedition has also surveyed Middle Paleolithic encampments and workshops where flints were knapped, collected Neolithic material that fell from the top of the tell, and excavated rich Bronze Age tombs. It has systematically uncovered and studied various monuments belonging to the later periods of occupation. Soundings made on the southern slope of the tell in 1970 revealed Late Ubeid sherds (square A 1) and some thirty successive strata of the Middle Bronze Age and the transitional phase to the Late Bronze (square B 1). Inaccessible until now on the slopes of the medieval citadel, the second millennium BCE and the first half of the first millennium BCE remain mostly unknown. However, the discovery of a Neo-Hittite stela of King Urhilina of Hama (c. 850–840 BCE) in the foundation of a Christian church on the plateau attests to the city's importance at that time.

By comparing Apamea to the other Seleucid towns of the tetrapolis and making soundings on the main street and at the foot of the city wall, the Hellenistic town planning is now better understood. Unearthing the rampart on its northern, eastern, and southern sides (1984–1986) confirmed that the city wall, perhaps not earlier than the end of the third century BCE, enclosed a city of about 230 ha (568 acres). The town developed within this framework, divided into quarters of varying importance and character, in a cross-of-Lorraine pattern, of its main *plateiai*. The insulae seem to have measured approximately 55 × 110 m, just as at Antioch and Laodicea, its sister cities. [*See* Antioch on Orontes.] Recent discoveries at the northern gate have shown that in the Hellenistic period a colonnaded avenue, in a "Dorico-Toscan" composite style, preceded the Corinthian porticoes built after the earthquake of 115 CE (some of these capitals were found reused in private houses). In the center of the city, west of the main axis and between the two principal east–west arteries, was the huge peribolos of a temple dedicated to Zeus Belos, the oracular god of Apamea. The monument stands on a high podium that occupied the highest point on the urban landscape, in front of the citadel, exactly where the temple of the *poliad* goddess Artemis dominates the city of Gerasa/Jerash. [*See* Jerash.] It is not possible to recover anything of the Hellenistic buildings because they were extensively rebuilt in the second century CE.

The Corinthian colonnaded avenue (north–south), where smooth columns alternate with columns with vertical and sometimes rare spiral fluting, attests to the grandeur of the restored city (3,750 m wide and about 1,850 m from its northern to its southern gate). Hundreds of shops and workshops, monumental baths (e.g., the North Baths, dedicated by L. Julius Agrippa, 116/17 CE), a large public latrine, a two-story nymphaeum decorated with statues of gods and heroes (?), the courtyards of some temples and a synagogue, and, later, the entrances to many churches (Northwest Basilica, Atrium Church, and Rotunda) opened onto the avenue. Private houses (excavated since 1973) are numerous on the other streets. Of special interest, because of their spectacular proportions (from 1,500 sq m sometimes to 4,500 sq m), the houses, with their peristyles with wide openings and their beautifully ornamented reception halls (paved with mosaics or opus sectile), confirm that an aristocracy of rich landowners lived in the city. Apamea had been, since Numenius settled his school there in the second century CE, the seat of various philosophic schools—Epicureans and especially Neo-Platonists—whose importance ceased only as a consequence of the Theodosian edicts, when the Belos Temple, the oracle Hadrian, Septimius Severus, and Macrinus had earlier consulted, was destroyed by Bishop Marchellus (c. 376 CE). A marvelous series of mosaics, found under the pavement of the cathedral that was to seal the Neo-Platonic school (now in the Musées Royaux d'Art et d'Histoire in Brussels and in the local museum at Apamea) reveals much of the temples iconographic program: Socrates as one of the Seven Wise Men of Greece, the return of Ulysses to Ithaca as a symbol of the soul recovering Philosophy at the end of its life, the crowning of Cassiopeia as Beauty itself in the competition with the Nereids. The mosaics may have been commissioned in the time of Emperor Julian by Sopatros II, in the very last years of the school's life. [*See* Mosaics.]

Apamea's proximity to Antioch, where Roman emperors so often prepared their eastern campaigns against the Parthians and later the Sasanians, led to its being the winter quarters of the Legio II Parthica in the third century CE. This special elite corps accompanied Caracalla, Severus Alex-

ander, and Gordian III to the East and was stationed near the city for a few years each time. Numerous gravestones of its soldiers, reused in one of the towers of the city wall, are incomparable documentation of these events and their participants, as are the stelae of riders of two cavalry alae (Ulpia Contariorum and Flavia Britannica) dispatched there from the Balkans in 252 CE to stop the first Sasanian raid into the empire's territory.

Churches were built throughout the city, as elsewhere in the province (Tell Arr, 374 CE; Hass, 388 CE; Khirbet Muqa, 394/95 CE). Bishops were known there as early as 325 CE (Council of Nicaea). The monuments date mainly from the fifth and especially the sixth centuries, from the Justinianic rebuilding of the town after the earthquakes of 526 and 528 CE. This is true for the Atrium Church, where the cult of the martyrs developed around reliquaries of Sts. Cosmas and Damian and of St. Theodore; for the Rotunda; for the Cathedral (for whose decoration Archbishop Paul is responsible); and for a pillared basilica recently excavated at the northern gate.

Apamea was not destroyed when Chosroes I invaded Syria in 540 CE, and it was taken but also not destroyed in 613 CE by Chosroes II. The town suffered during the raid of Adaarmanes in 573 CE, who sent some 292,000 captives into exile in Persia. The city opened its doors to the conquering Arabs in 638 because of the Monophysite inclination of a great part of the population against Byzantine fiscal oppression. The city did not suffer any damage, but some of its richest inhabitants appear to have abandoned their houses. Their flight was not temporary, as they may have believed it would be, and the servants they left to protect their property retained it. As a result, deep social changes ensued. Ceramics and coins date this last phase in the city's history to the seventh–tenth centuries.

Apamea was retaken and reoccupied by the Byzantines in 975; it fell to the Fatimids in AH 388/998 CE and then to the Crusaders, who held the citadel between 1106 and 1149. At that time, the plateau was already mostly abandoned as a result of the period's increasing political instability. The severe earthquake of 1157 struck Apamea off the map. It is mentioned in Arabic sources in the list of the cities destroyed then but does not appear as one of the cities destroyed in 1170.

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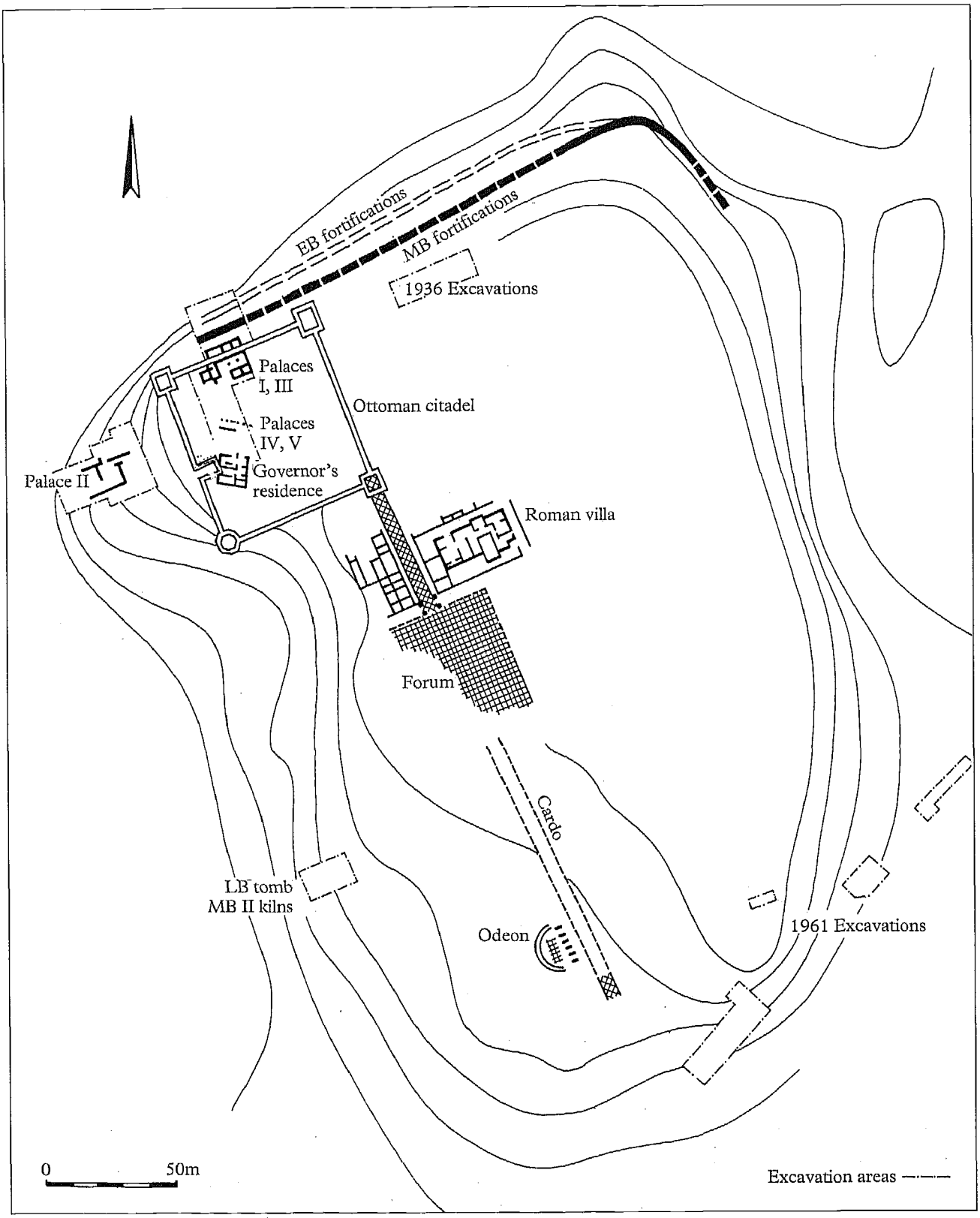
JEAN CH. BALTY

APHEK (Gk., Antipatris; Ar., Tell Ras el-'Ain), site located in Israel at the headwaters of the Yarkon River on the Sharon plain (32°06′ N, 34°56′ E; map reference 143 × 168). Tel Aphek, one of five different places by the name of *Aphek* (Heb., *'aphik,* "riverbed") mentioned in the Hebrew Bible, is situated on one of the country's most important ancient crossroads. It is about 30 acres in size and was continuously inhabited from the Chalcolithic to the Ottoman period.

Aphek is first mentioned in the Egyptian Execration texts of the nineteenth century BCE as 'APQM. In the topographical lists of Thutmose III it is mentioned as number 66, on the Via Maris, between Ono to the south and Socoh to the north. The location was instrumental in establishing its identification, first proposed by Albrecht Alt and William Foxwell Albright in 1923. Aphek is also mentioned in the annals of Amenhotep II as a city that surrendered to him on his march to the northern Sharon. In the Septuagint it is called Aphek of the Sharon in the list of conquered Canaanite cities in *Joshua* 12. It served twice as a base for the Philistines in their war against Israel (*1 Sm.* 4:21, 29:1). David covered



APHEK. *General plan of the site.* (Courtesy M. Kochavi)

the distance between Aphek and Ziklag in three days, a reasonable walking time between Aphek and southern Philistia (*1 Sm.* 30:1).

Aphek/Antipatris marked the border between the country's northern and the southern regions. It is mentioned in this context in Esarhaddon's campaign to Egypt; in an Aramaic letter from Egypt warning against Babylonian troops appearing as far as Aphek; and in several Jewish laws and legends in which Antipatris is the northernmost town of Judah. [*See* Judah.] The building of Antipatris by Herod the Great in 9 BCE, in memory of his father, Antipater, is reported by Josephus (*War* 1.21.9), as is its destruction during the First Jewish Revolt (*War* 2.29.1). [*See* First Jewish Revolt.] Late Roman Antipatris was one of the towns completely ruined in the 363 earthquake. An eighth-century Umayyad fort and an Ottoman fortress by the name of Binar Bashi, built in 1572, mark the only major later occupation of the site.

Two rescue excavations and a planned excavation project have been carried out at Aphek. The first rescue operation was conducted in 1934–1936 by Jacob Ory on behalf of the Palestine Department of Antiquities. The second one took place in 1961, under the direction of Avraham Eitan on behalf of the Israel Department of Antiquities. The Aphek-Antipatris Expedition, directed by Pirhiya Beck and Moshe Kochavi of Tel Aviv University, was carried out in thirteen seasons of excavation, from 1972 to 1985. The archaeology and history of the site are recounted here in chronological order, utilizing the results of all three expeditions.

Chalcolithic and Early Bronze Ages. A nodule of grayish soil containing Chalcolithic sherds was found in a section cut at the southeastern slope of the tell. It represents the earliest settlement at the site, near a large body of water formed by the Yarkon springs, one of several Chalcolithic settlements known in the vicinity. Remains from the Early Bronze Age were uncovered in all the excavated areas. EB IB private buildings were uncovered near the northern city wall. The wall (2.5 m wide), which also forms the northeastern corner of the tell in Ory's excavation, was laid in three even courses of fieldstones followed by layers of crushed-*kurkar* sun-dried mud bricks. A substantial building with rounded corners was uncovered at the southeastern edge of the site. At this early date the settled area already comprised all of the tell. A section of the EB II town at the northeast edge of the site contained several broad houses arranged on both sides of two streets. Very few EB III pottery sherds were detected, suggesting a decrease in the town's importance then. In the EB IV (Intermediate Bronze period), the site was totally deserted.

Middle Bronze Age. Aphek was rebuilt at the very beginning of the Middle Bronze Age. As in the earlier urban period, its remains were found in all areas of excavation, but far more of them were exposed, thus enabling their phasing into six stages of occupation.

Stage 1. Private buildings, tombs, and pottery were found in the acropolis fill. The pottery included simple bowls and whitewashed storage jars decorated with bichrome painting, incised decoration, or applied relief.

Stage 2. The first palace (palace I) was constructed on the acropolis fill. Exposure of its north wing revealed a large hall containing storejars and an adjacent courtyard with two cooking ovens. Intramural burials, typical of all the MB phases, were found beneath the courtyard floor. (The pottery resembles that found in the cist graves Ory excavated.) These burials may belong to Aphek's royal cemetery. The new MB city wall (3.5 m wide) was erected several meters uphill from the EB city wall.

Stage 3. Palace II, with its three large courtyards with plaster floors, was built on the western slope of the tell, not on the acropolis. A major restoration of the city wall took place during this phase. The pottery's elegant shapes and lustrous red slip (palace ware)—carinated bowls and jugs with perfect finish—represent a zenith in terms of style and craftsmanship.

Stage 4. Palace II was abandoned and a residential quarter with many infant burials in jars took its place. The pottery has MB II affinities.

Stage 5. Palace III, the largest of Aphek's palaces was built on the acropolis. Its 2-meter-wide walls, with foundations 2 m deep, enclosed an area of about 4,000 sq m. Its "reception hall" was 150 sq m in size; two one-meter-wide columns supported the ceiling.

Stage 6. Many modifications occurred in the palace III plan. The hall was divided into small rooms, one of which was a cultic area comprising a monolithic round altar and a cistern. The palace was destroyed in a huge conflagration at the end of the Middle Bronze Age.

Besides the acropolis and its vicinity, only the far southeastern part of the tell was excavated at MB levels. This area was first used to fire pottery in pottery kilns; three more or less complete kilns were excavated. The area was subsequently turned into a burial ground. During most of the Middle Bronze Age, Aphek was the central city in the southern Sharon.

Late Bronze Age. During the Late Bronze Age, three more palaces were built on Aphek's acropolis. Palace IV (fifteenth century BCE) was built on the remains of palace III, reusing its cultic installation. Palace V (fourteenth century BCE) was built on a new orientation, with large paved courtyards. A stone-lined family grave and two large plastered wine presses belong to the thirteenth century BCE. Palace VI, the last of Aphek's palaces was an Egyptian fortified residency, built on the southwestern wing of the previous palace. It had solid stone walls (1.4 m wide, 2 m high) and was 400 sq m in area. Its ground floor consisted of two small rooms, two storage halls, a corridor, and a stone and brick staircase leading to an upper floor. A monolithic trough was located at the main entrance. The residency was destroyed

APHEK. *Palace VI, the Egyptian governor's residence.* (Courtesy M. Kochavi)

by a fire that consumed its upper floor and sealed the ground floor with its debris. Several inscribed items were found under the debris:

Two unique cuneiform lexical tablets, one of which mentions kinds of liquids in Sumerian, Akkadian, and Canaanite; the second is bilingual, in Sumerian and Akkadian or Canaanite [*See* Sumerian; Akkadian; Proto-Canaanite.]

A fragmentary business letter, in cuneiform Akkadian [*See* Cuneiform.]

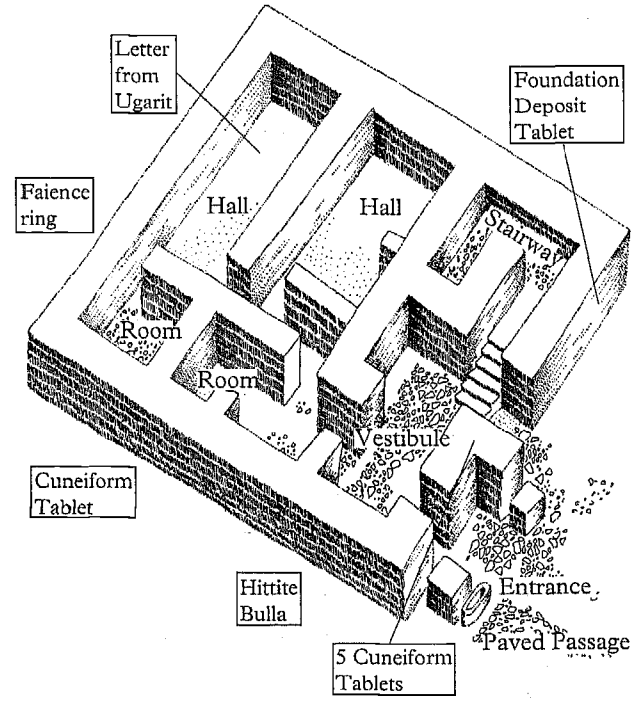
A Hittite seal impression with the name of a royal prince or princess [*See* Hittites; Seals.]

Three administrative fragments written in Akkadian

An Egyptian faience ring inscribed with a blessing to Amun-Re and an Egyptian faience foundation deposit plaque dedicated by Rameses II to the goddess Isis

A complete cuneiform clay tablet containing a letter from Takuhlinu, the prefect of Ugarit, to Haya, the Egyptian high commissioner of Canaan. [*See* Ugarit.] The synchronism between the careers of these personalities fixes the date of the destruction of LB Aphek to 1240/30 BCE.

Iron Age. After a gap in occupation, the acropolis of Aphek was resettled in the twelfth century BCE. Two residential quarters with different characters were uncovered: fine square buildings with paved courtyards—the elite section—and haphazardly built dwellings—the poorer quarter. Fishhooks, lead net weights, and turtle shells were found in



APHEK. *Plan of Palace VI, the Egyptian governor's residence.* (Drawing by Judith Dekel; courtesy M. Kochavi)

the poorer houses, indicating that their inhabitants were fishermen. [*See* Fishing.] Philistine pottery, several figurine heads of the Philistine goddess Ashdoda and a clay tablet inscribed in an as yet undeciphered script indicate a Philistine presence at Aphek in the eleventh century BCE. [*See* Philistines, *article on* Early Philistines.] Stone-lined silos typical at Israelite sites were dug into the debris of the first Iron Age strata which may indicate the arrival of the Israelites at Aphek. Several four-room houses from the tenth century BCE were also excavated. [*See* Four-room House.] Most of the later strata on the acropolis were wiped out during leveling operations to construct a fort in the Ottoman period.

Hellenistic and Roman Periods. Excavation south of the acropolis penetrated only to the Hellenistic level. Private buildings, arranged on both sides of a road, were excavated. The western part of a Hellenistic fort, erected on the acropolis, was saved from the Ottoman leveling operations. These remains suggest locating the Hellenistic town of Pegae at Aphek, rather than at the ruins of Fejja, its namesake, 2 km to the southwest.

Herodian Antipatris was built on the same plan as the Hellenistic town. A section of its marketplace, with shops arranged on both sides of a 9-meter-wide paved *cardo*, was excavated. The town's destruction by Vespasian in 68 is well attested. The shops and their merchandise were burned and hoards of coins and unused oil lamps were found on the floors.

The restoration of Antipatris during the second–third centuries nearly doubled the limits of the city toward the south. Several mansions, some with elaborately decorated mosaic floors, were built then; public buildings were added around the forum; and an odeum was constructed near the town's southern gate. [*See* Mosaics; Odeum.] This prosperous town was completely destroyed, probably in the earthquake of 363. Only fragmentary remains from the Byzantine period were found, and no town has been built on the tell since. The fort that crowns the tell today was built in the sixteenth century by the Ottoman Turks as a cavalry base, guarding that segment of the Via Maris between Gaza and the Megiddo pass. Its gate, mosque, and barracks have been excavated.

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MOSHE KOCHAVI

APHRODISIAS, site located in a fertile upland plain south of the Maeander River valley, about 200 km (124 mi) southeast of Izmir, in modern Turkey (37°43′ N, 28°44′ E). The city was part of ancient Caria and was best known for its cult of Aphrodite and the high-quality work of its sculptors in marble. The site was visited in the eighteenth and nineteenth centuries by such learned travelers as William Sherard, the Dilettante, and Charles Texier). Excavations were first conducted in 1914 by Paul Gaudin and in 1937 by Giulio Jacopi. Systematic investigation has been carried out since 1961 by New York University, led, until his death in 1990, by Kenan T. Erim.

The site's buildings and monuments, predominantly of the Roman period, are exceptionally well preserved and unusually well documented by inscriptions. This material gives a detailed picture of the city and its people from the first to the sixth century.

Aphrodisias was founded, according to a legend recorded by Stephanus of Byzantium, by the Babylonian king Ninos, husband of Semiramis. There are considerable prehistoric and Bronze Age remains, but fewer for the archaic and classical periods. The town grew up around its sanctuary of Aphrodite in the second century BCE and began rapid urbanization in the mid-first century BCE. Sulla and Caesar patronized the sanctuary, and in 39 BCE the city gained lasting favor and privileges through Octavian. Loyalty to Rome in the War of Labienus (41/40 BCE) was rewarded by the granting of autonomy, tax-free status, and new asylum rights for the Temple of Aphrodite. The nearby marble quarries were opened and, during the first and second centuries, the city saw continuous building.

Aphrodisias retained its urban vitality far into late antiquity, when it was the seat of the Roman governor of the new (Diocletianic) province of Caria. For a long period, Aphrodite and the old religion remained strong alongside rising Christianity. The city had a Christian bishop in the fourth century, and in the fifth century it was still home to a leading school of pagan Neoplatonic philosophy.

The North Agora and Portico of Tiberius were two great colonnaded piazzas that together defined the orthogonal center of the city's urban plan, laid out probably in the late first century BCE and under construction throughout the first century CE. The Council House (Odeion, first–second century CE) formed, with the North Agora, an agora-bouleuterion complex typical of civic planning of the early imperial period in Asia Minor. It was decorated with a *scaenae frons* and a rich display of marble statuary.

The Temple of Aphrodite, rebuilt in the 30s BCE as a prostyle temple, was surrounded during the first century CE with a great Ionic peripteral colonnade (8 × 13 m). It was later turned into a Christian basilica, with considerable care and economy, and is one of the best examples of such a temple-church conversion. A monumental columnar Tetrapylon (mid-second century CE), in the style of the Antonine baroque, formed the entrance gate to the sanctuary area. Its full restoration, using 85% of its original blocks, was completed in 1991.

The Sebasteion, built in the mid-first century CE, was a remarkable temple complex dedicated to Aphrodite and the Julio-Claudian emperors. It was excavated between 1979 and 1982. The complex consisted of a raised prostyle Corinthian temple approached by a narrow processional way flanked by two porticos 90 m long, each three-storied and decorated with a series of figural marble reliefs. The more than eighty surviving reliefs represent scenes both from Greek mythology and of Roman imperial subjects.

The Hadrianic Baths, built across the end of the Portico of Tiberius, were a massive construction and have been standing since antiquity. They are composed of five great barrel-vaulted parallel chambers, with an imposing colonnaded court in front. A stadium, built in the first–second centuries CE, was encompassed by the later city wall (mid-fourth century), and is virtually intact. It is 262 m long with thirty tiers of seats and could hold up to thirty thousand people.

The theater, built into the site's main prehistoric *höyük* in the later Hellenistic period, was equipped in the 30s BCE with an elaborate columnar stage facade donated by a powerful local benefactor, one C. Julius Zoilos, an ex-slave and agent of the emperor Augustus, as recorded in the inscribed dedication of the building. Marble seating and other monumental work were added in the first century CE. The building remained in use until the seventh century, when the theater hill was converted into a fort.

Aphrodisian sculptors were well known abroad—they provided sculpture for Hadrian's villa at Tivoli, for example—and held in high repute at home. A large sculptor's workshop has been excavated in the heart of the city (between the Council House and the Temple), and the range of fine statuary recovered from other buildings gives a complete cross section of the sculpture production of a Greek city in the Roman period. The sculptures range from second-century BCE grave reliefs to fifth-century CE statues of Late Roman governors.

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R. R. R. SMITH

APLIKI, important copper-mining and smelting site on Cyprus. Located approximately 6.5 km (4 mi.) south of the modern village of Lefka on the east bank of the Marathasa River in the foothills of the Troodos Mountains (35°04′39″

N, 32°50′34″ E), Apliki-*Karamallos* was a Late Bronze Age miners' village in the copper-mining region of northwest Cyprus. The discovery of Late Bronze Age ceramics by the Cyprus Mines Corporation led to limited excavations in 1938 and 1939 under direction of Joan duPlat Taylor on behalf of the Cyprus Department of Antiquities.

The site occupies an area of perhaps two ha (5 acres) on a high plateau. Several trenches were opened, designated areas A–H. Architectural remains were uncovered in areas A (roughly 270 sq m or 2,905 sq. ft.) and B (125 sq m or 1,345 sq. ft.); other trenches were smaller and revealed fragmentary walls or pits and Late Bronze Age sherd material. The remains in area A comprise a well-built stone and mud-brick L-shaped structure of at least eight rooms opening onto a courtyard, some provided with benches and hearths. Taylor identified two periods of occupation, distinguished by two floor levels and architectural rearrangements. This complex was destroyed by fire. Area B revealed remains of at least five houses with one period of occupation, which were abandoned but not burnt. Principal pottery types from these buildings include White Slip II, Base Ring II, Plain White Wheelmade, imported Mycenaean, White-Painted Wheelmade III, Coarse Monochrome (Apliki) wares and large storage jars (pithoi). This ceramic evidence suggests that the site was constructed during Late Cypriot IIC (thirteenth century BCE) and destroyed and abandoned early in Late Cypriot IIIA (early twelfth century BCE).

The site is of greatest interest for its evidence for metallurgical activity. Quantities of black slag, with ropy surface, a type formerly thought to belong to the Roman period, were found in areas A and B, along with crucible fragments and tuyères (pipes for channeling air into a furnace), including D-shaped and elbow types, in stratified Late Bronze Age contexts within the houses. The location of the site and the massive size of the slag (blocks weighing up to 14 kg or 30.8 lbs.) and tuyères suggest that it was a major copper-mining and smelting center. Mine shafts and galleries noted in the nearby copper-rich hills may have been associated with this settlement, although independent archaeological dating evidence for them is lacking.

Other objects from the rooms include loom weights, spindle whorls, and wall brackets for hanging lamps; stone querns, pestles, and bowls; bronze chisels, drills, and knives; terra-cotta bull and female figurines; unengraved cylinders of ivory and steatite; fragments of a wooden comb; a gold lunate earring; and a large serpentine stamp seal carved with a bull's head and Cypro-Minoan sign. Burnt vegetable remains from area A include barley, wheat, horsebean, lentil, almond, grape, olive, and coriander. They were probably not cultivated at the site, which is badly suited for farming, but may have been exchanged for the copper produced there. A large slag heap and Late Roman–Byzantine remains have been found at the foot of the hill.

[*See also* Mines and Mining.]

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BARBARA KLING

ʿAQABA, port in modern Jordan overlying the ancient cities of Roman Aila and early Islamic Ayla (29°31′ N, 35°0′ E). The biblical sites of Eilat and Ezion-Geber were presumably also located somewhere in the vicinity. Situated at the north end of the Gulf of ʿAqaba, on an arm of the Red Sea, ʿAqaba lies at the nexus of important trade routes. The port serviced sea traffic with Egypt, South Arabia, Africa, and India. Several land routes intersected at ʿAqaba, including roads northeast through Transjordan to Syria, north via Wadi ʿArabah to the Dead Sea and Jordan Valley, northwest via the Negev to Gaza on the Mediterranean, west across Sinai to Egypt, and southeast into the Arabian Peninsula. Copper from important mines at Feinan and Timnaʿ, just to the north in Wadi ʿArabah, was transshipped via this port. Several Chalcolithic sites are attested in the region. One, the small mound of Tell Maquss near the modern ʿAqaba airport, was excavated by Lufti Khalil in 1985 and yielded evidence of copper processing from the mid-fourth millennium (Khalil, 1987, 1992).

The biblical tradition asserts that Eilat was the port of departure for Solomon's merchant fleet to Ophir (*1 Kgs.* 9:26–28; *2 Chr.* 8:17–18). A later king of Judah, Jehoshaphat, also planned to send a fleet to Ophir, but it was wrecked at Ezion-Geber (*1 Kgs.* 22:48; *2 Chr.* 20:36–37). Eilat was later ceded by Judah to the Edomites in the late eighth century BCE (*2 Kgs.* 16:2). [*See* Judah.] Inspired by the biblical traditions, Nelson Glueck excavated Tell el-Kheleifeh (1938–1940), a low mound just northwest of modern ʿAqaba. [*See* Kheleifeh, Tell el-.] Glueck (1965) claimed to have found Eilat/Ezion-Geber, but his results were never adequately published. A reexamination by Gary Pratico (1993) of Glueck's evidence suggests, rather, an Edomite settlement occupied from the late eighth through the fourth centuries BCE. The walled site, apparently a caravanserai,

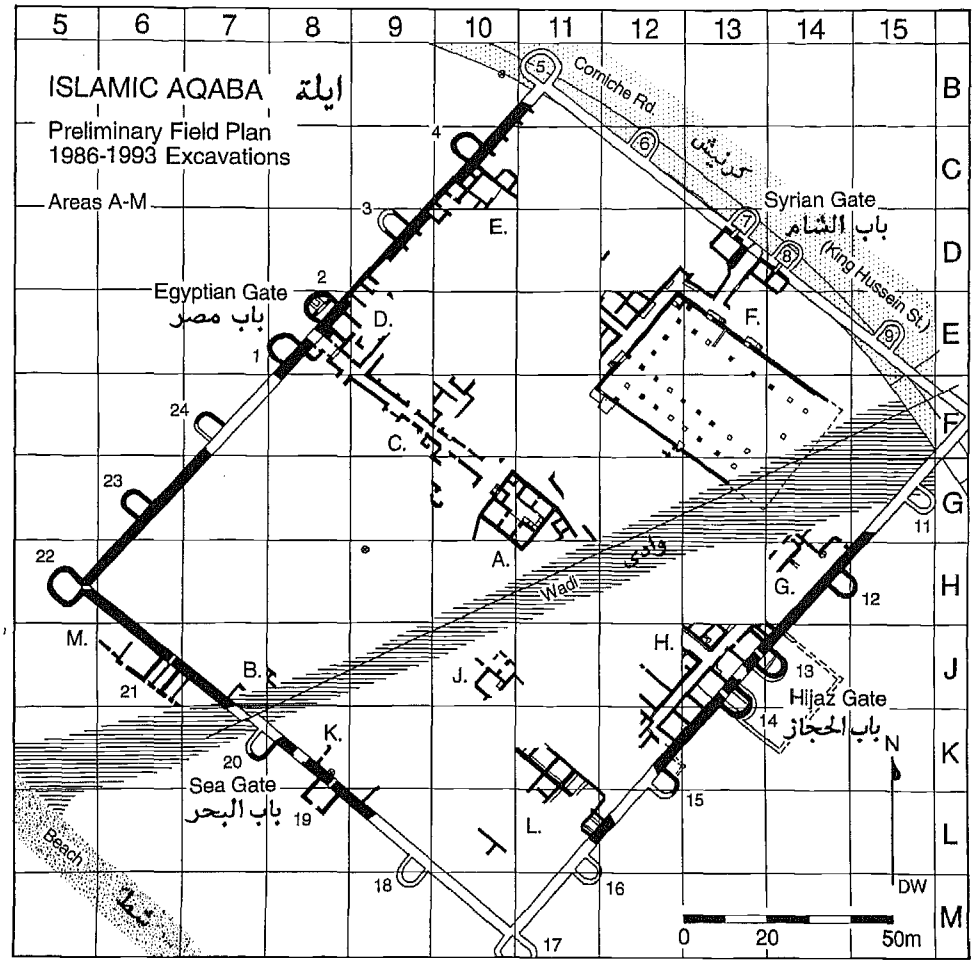
yielded evidence of grain storage, copper smelting, and trade with southern Arabia. [*See the biography of Glueck.*]

The next major ancient settlement was Aila, a city at the head of the gulf attested in various literary sources during the Roman and Byzantine periods. Its origin is unclear, but presumably Aila began as a Nabatean settlement in the first century BCE. [*See* Nabateans.] Strabo (*Geog.* 16.2.30), writing in the early first century CE, already refers to Aila as a city (polis). Merchants from Aila traveled to South Arabia to obtain frankincense and myrrh (*Geog.* 16.4.4). The city passed under direct Roman rule with the annexation of Nabatea as the Roman province of Arabia in 106 CE. Aila then became the southern terminus of the Via Nova Trajana, a major trunk road between southern Syria and the Red Sea completed in 111–114 CE. The strategic importance of the city is suggested by the transfer of the Legio X Fretensis from Jerusalem to Aila in about 300 CE (Eusebius, *Onomasticon* 6.17). A fragmentary monumental Latin building inscription of the early fourth century may relate to this legion, which remained garrisoned until at least the turn of the fifth century (*Notitia Dignitatum Oriens* 34.30). Christian bishops from Aila are attested beginning in 325. Various sources suggest that significant seaborne trade continued between Aila and the Indian Ocean littoral through the Byzantine period. The city made a treaty with the prophet Muhammad himself in 630 that guaranteed protection of its commerce at the beginning of the Muslim conquest.

Richard Burton identified the remains of Nabatean and Roman Aila in 1878. The classical site, now within the modern city of ʿAqaba, was rediscovered by John L. Meloy in 1989. An excavation launched by S. Thomas Parker of North Carolina State University in 1994 uncovered significant portions of Aila. The earliest excavated evidence dates to the first centuries BCE/CE, including amphorae from the western Mediterranean, terra sigillata, and painted Nabatean fine ware. This Early Roman pottery was associated with mud-brick domestic structures. Farther south, the city wall was erected in stone in the late fourth century. The excavated segment is about 30 m long, survives to nearly 2 m in height, and was defended by a projecting rectangular tower. The wall was built over an earlier massive mud-brick structure, apparently once vaulted. Just north of the city wall was a mud-brick domestic complex consisting of rooms built around a paved courtyard. The complex was apparently occupied from the sixth/seventh to the eighth centuries. North of the domestic complex was a cemetery of mud-brick tombs. [*See* Tombs.] Three excavated tombs each contained a single articulated skeleton and date to the fourth century. Continued international trade during the Byzantine period is evidenced by fine glossy red pottery imported from North Africa, the Aegean, Cyprus, and Egypt. South of the Byzantine city wall (i.e., within the city walls), two other areas yielded substantial evidence of Early Islamic occupation. This suggests that the Byzantine city survived for a time alongside the new Early Islamic city founded just to the southeast.

Archaeological investigation of the early Islamic city at ʿAqaba began in 1986 and continued through 1993 under Donald Whitcomb. T. E. Lawrence (Lawrence of Arabia) provided the earliest description of the site in 1914 as a "settlement of some luxury in the early Middle Ages" (Woolley and Lawrence, 1936). The Early Islamic city was probably founded under ʿUthman ibn ʿAffan (c. 650). Beneath the slightly mounded surface is about 4.5 m of occupation from the mid-seventh century until the arrival of the Crusaders in 1116. The city wall is defended by U-shaped towers and was entered via four gates, now named the Egyptian, Syrian, Hijazi, and Sea Gates. The plan of the city (165 × 140 m) is marked by axial streets dividing the town into four quadrants. The central crossing had a tetrapylon, like the early Islamic city of ʿAnjar in southern Lebanon. The plan may have been modeled on that of the fortress of the Legio X Fretensis, presumably located nearby. In addition to the streets and residences of the later periods (see below), several functional institutions have been discovered. The central pavilion became a wealthy merchant's residence, which might be associated with the governor's palace. The changes associated with the ʿAbbasid reorganization of the city after 750 included the use of the sea wall as the backdrop of an extensive *suq,* or "market," with numerous small shops (some composed of converted towers) lined up along the beach. During the 1993 season, the city's congregational mosque was discovered, a hypostyle hall in the Syrian style and an important addition to excavated mosques of the early Islamic period. [*See* Mosque.] This mosque is oriented southwest, possibly a misconception of the direction of Mecca (Ar., *qiblah*).

The stratigraphic evidence gives an artifactual sequence that amplifies the meager historical information on Aila. The most recent levels (phase E, 1050–1100 CE) belong to the Late ʿAbbasid or Fatimid period and are marked by the aftermath of the 1068 earthquake. The limited reconstruction amid the rubble ended with the arrival of a band of Crusaders; the people of Aila fled in their boats, returning much later to resettle around the ʿAqaba castle, one kilometer to the south. The century before this (phase D, 950–1050) was not much better. The Fatimids of Egypt established some control, but increasingly southern Palestine was a war zone where the Fatimids exchanged lands with Byzantines, Seljuks, and a local bedouin confederation. In 1024 the town was sacked by the Banu Jarrah, a catastrophe in which a hoard of gold was abandoned. The hoard, of thirty-two dinars, was composed mainly of issues from Sijilmasa in Morocco, suggesting a merchant's or a pilgrim's loss. The pottery may point to this social instability: fine luster, decorated, and other glazed wares occur with a crude, handmade pottery. The preceding phase C (850–950) is a mystery century at ʿAqaba, when apparently nothing dra-



ʿAQABA. *Plan of the site.* (Courtesy D. Whitcomb)

matic happened—neither political nor natural events marred its tranquility.

The ʿAbbasid period (phase B, 750–850) began with a catastrophe, the earthquake of 748; an energetic reconstruction and reorganization resulted in a new, more prosperous town that became an important center for the study of religious law. The pottery again reflects these changes: the transition introduced an unglazed cream ware (Mahesh ware), abandoning the earlier Byzantine/Umayyad tradition and revealing stylistic attributes typical of ʿAbbasid Iraq. Other artifacts reveal the cultural leadership of the Hijaz during this period, when Aila participated in the active commercial world of the Indian Ocean via South Arabia and Ethiopia. These patterns began in the initial phase A (650–750) and endured even though the most prominent cultural influence of that period was from Early Islamic Egypt. The earliest glazed ceramics at ʿAqaba (Coptic glazed ware) were produced in Egypt (probably at Alexandria) in the early eighth century; the finds at ʿAqaba have confirmed the identification of this ceramic tradition. The city plan and artifacts of this phase testify to the transformation from Late Byzantine to Early Islamic styles, paralleling the emergence of Islamic political and cultural identity in the time of the first caliphs and the Umayyad dynasty.

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S. THOMAS PARKER and DONALD S. WHITCOMB

ʿAQAR QUF (Dur Kurigalzu), site located about 30 km (19 mi.) west of Baghdad, Iraq (33°21′ N, 44°21′ E), and situated on an outcrop of the limestone terrace of the Euphrates River adjoining the Patti-Enlil canal in the east, connecting it with the Babylonian city of Sippar. It was identified by Henry Creswicke Rawlinson on the basis of bricks inscribed with the name of the Kassite residence/capital Dur Kurigalzu (H. C. Rawlinson, *A Selection from the Historical Inscriptions of Chaldaea, Assyria, and Babylonia,* The Cuneiform Inscriptions of Western Asia, 1, London, 1861, pl. 4.14). The town was founded by the Kassite king Kurigalzu I at the end of the fifteenth or the beginning of the fourteenth century BCE. There are traces of an older settlement from the fifteenth century. Following the fall of the Kassite dynasty during the twelfth century BCE, the site was abandoned and never reoccupied. It was, however, occasionally used for burials. The overall occupation area seems to have been about 225 ha (556 acres) with an enclosure wall, parts of which could be distinguished topographically in the east. Within this area several hills diversify the otherwise flat ground; the highest of those hills is ʿAqar Quf. Another hill, 1 km to the west, is Tell al-Abyad; a third mound, A, lies between them, but only 100 m to the west of the ziggurat at ʿAqar Quf. Excavation results point to a clear functional separation of the two main areas—ʿAqar Quf being the religious district and Tell al-Abyad the palace and administrative center. Both were excavated by a joint Iraqi-British mission directed by Seton Lloyd and Taha Baqir under the auspices of the British School of Archaeology in Iraq and the Iraqi Directorate-General of Antiquities between 1942 and 1945. [*See the biography of Lloyd.*]

The ziggurat, É-GI-KIL, is part of the temple quarter, which is devoted to the god Enlil, the main god in the Babylonian pantheon. Its ground plan is almost square, covering an area of 69 × 67.6 m. Three main staircases led up to the first terrace, which must have been about 33 m high. The two lateral staircases spread around the corners to meet the main central staircase. Only a small part of the temple complex was excavated. It consisted originally of three almost square courtyards, each of which was enclosed by a single row of rooms. The main temple is not preserved but must have been situated between the central courtyard and the main staircase of the ziggurat. According to inscriptions found in each unit, the central one was devoted to the god Enlil; the one on the northeast to his wife, the goddess Ninlil; and the one on the southwest to the war god Ninurta. On mound A another temple, possibly also dedicated to Ninlil, was discovered.

The palace consisted of several units, not all contemporary. In the main unit, A, four stages were distinguished. Unit H, with wall paintings in situ, was the latest addition. [*See* Wall Paintings.] The palace was in use until the end of the Kassite dynasty (mid-twelfth century BCE). Unit A consisted of three *mittelsaalhäuser* (a building with a large central hall flanked on each long side by a row of smaller rooms connected with it) adjoining a square courtyard. The ground plans of all but the one on the northeast are very similar; it seems to have been the throne room used in connection with a ceremonial room. Other remarkable features of the palace are a treasury on the east, which consisted of small vaulted rooms along a corridor. [*See* Palace.]

Many of the known major works of art of the Kassite period were found in the palace at Dur Kurigalzu. A sculptured terra-cotta head of a bearded man, an almost completely preserved sculpture of a hyena, a relief mace head of limestone, some glass inlays, gold jewelry, and gold ornaments and overlays are among the small finds. Only interim reports on the excavations at ʿAqar Quf have been published

(Baqir, 1944–1946). Much of the unpublished material is in the Baghdad Museum.

[*See also* Kassites; Mesopotamia, *article on* Ancient Mesopotamia; Sippar; Temples, *article on* Mesopotamian Temples; Ziggurat; *and the biography of Rawlinson.*]

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HARTMUT KÜHNE

AQUEDUCTS. In antiquity, aqueducts transported spring water or running water to communities, principally to cities, but also to palaces, fortresses, monasteries, and farms. These water systems supplied fresh water for individual everyday use, for pools in private residences, and for public use in bathhouses, fountains, and reservoirs. They transported water from a high place to a low place according to the law of gravity. Aqueducts begin at springs, a few of which were enhanced by built structures: at Jerusalem, Caesarea, Emmaus, Sebaste, Beth-Guvrin, and 'Ein-Boqeq in Palestine. At first, channels for the moving water were dug into the ground, but eventually they were hewn or built of field stone, sealed with waterproof plaster, and covered with flat stone slabs that prevented the water from becoming polluted. In a number of places, pits were dug, into which residue from the sediments in the water could settle. The channels in which the water flowed were generally cut in a rectangular shape; some narrowed at the bottom, to become trapezoidal. The dimensions of the channels were determined by the amount of water they were designed to carry: from 1.4 × 1.8 m long (the lower aqueduct at Caesarea) to 0.1 × 0.14 m long (the lower aqueduct at Emmaus) and generally about 0.3–0.5 m wide and 0.5–0.8 m deep. The aqueducts themselves were usually built from small stones that did not exceed 0.2 m in length; the stones were held together with mortar. In order to cross valleys and mountain chains, arched bridges were built and tunnels were dug. Tunnels first appeared in the Iron Age in Jerusalem in Palestine and at Erbil in Syria. Many were dug in the Hellenistic, Roman, and Byzantine periods, several of which had shafts 33–56 m apart. Such a system allowed the digging to be carried out simultaneously in all the shafts, so that work on the tunnel could proceed more quickly. Tunnels constructed in this manner were used at Akko, Beth-ha-'Emek, Gaaton, Jerusalem, Caesarea, and Sepphoris. Shorter tunnels without shafts were found at Susita, Sebaste, Jerusalem, Jericho, Qumran, and Hyrkania.

From the Hellenistic period onward, it was customary in deep valleys to use an inverted siphon to move water. This consisted of a lead or clay pipe that could be closed off. This important invention conveyed water to cities on high hills (at Pergamon the ridge was about 200 m high). To regulate the flow of water, pools and reservoirs were built along the path of the aqueducts. Near the city or inside it, the water entered a large reservoir (Sepphoris, Susita) or an enclosed pool (Sepphoris, Tiberias, Jericho, Petra, Ḥumeima) or entered into large water pits (Masada, Cypros, Sartaba, Hyrkania).

In the Roman period, an inverted siphon built of stone links was in use at Jerusalem, Susita, and Beth-Yerah. Linked stones were used in building the arched bridges that appear for the first time in the first century BCE. These bridges are considered the most impressive structures associated with the aqueducts; together with the inverted siphon (sometimes also in combination, as at Aspendos in Anatolia) and the tunnels, they mark the high point in the development of aqueducts.

The earliest aqueduct is Menua's canal dug at Urartu in Turkey, at the beginning of the eighth century BCE. It conveyed spring water for a distance of about 56 km (about 35 mi) to the foot of the settlement at the citadel of Urartu. Knowledge of this technology traveled from Urartu to Assyria, where, at the end of the eighth century BCE, Sennacherib built two aqueducts for the cities of Nineveh and Erbil. The aqueduct at Nineveh was about 55 km long and included a number of tunnels and bridges. Inscriptions glorifying Sennacherib have been discovered on the largest of the bridges (approximately 300 m long and about 12 m wide). A shaft tunnel was dug for the aqueduct at Erbil. Hezekiah's Tunnel (533 m long) was built in Jerusalem in the same period. It passed under the city, to the other side of the ridge, going east to southwest, in order to bring water into the city. The technique of conveying water by means of aqueducts also reached classical Greece, where, in the sixth century BCE, Eupalinos constructed a tunnel 1,040 m long to bring water to the city of Samos. Hezekiah's Tunnel and the tunnel of Eupalinos, both of which were built without trenches, are considered the greatest works of water-engineering technology in the preclassical period. The techniques developed by the Greeks for building aqueducts arose from the need to hide their water systems from their

enemies. As a result, they constructed underground tunnels. Just such a water system in Palestine brought water from a distance of about 14 km (8.75 mi.) to the city of Ptolemais/Akko, at the beginning of the third century BCE; it is the first aqueduct to bring water from such a distance.

In the second century BCE, in the desert of Palestine, aqueducts gathered floodwaters into gigantic water pits located in palaces and fortresses. These aqueducts are distinguished by a deeply cut channel. At Sartaba and Hyrkania, an inverted siphon was built that allowed water to be conveyed to the pits situated along the slope of the fortress, according to the principle that water in a pipe will always rise to its original height. An aqueduct was built from the springs at Wadi Qelt to the palaces of the Hasmoneans in Jericho; in it a clay pipe was installed that was used as an inverted siphon to raise water to the fortress. The lower aqueduct to Jerusalem is dated to this same period.

In the Roman period, aqueducts were built in most of the cities of the ancient Near East. The most important ones were in Palestine, at Caesarea and in Jerusalem. The upper aqueduct at Caesarea, first built either by Herod the Great or by his followers, rests on impressive arches to keep water at the desirable height. Thus, the water could reach every part of the city by force of gravitation. At the time of the emperor Hadrian, a second aqueduct was affixed to it that bears no fewer than nine imperial inscriptions glorifying the emperor for building the structure. Jerusalem's aqueduct in this period is an arrangement of four aqueducts whose total length is about 80 km (about 50 mi.). Additional aqueducts were built at Antioch, Tyre, Tadmor/Palmyra, Banias, Susita (three aqueducts), Gadara/Umm Qeis, Tiberias (two), Sepphoris (two), Beth-Shean (three), Abila (three), Dor (two), Legio, Shaʿar ha-ʿAmaqim (two), Sebaste/Samaria (two), Shechem, Emmaus (two), Beth-Guvrin (two), Ḥumeima, and Petra (two), among others. An inverted siphon built of stone links is found on the ridge (about 45 m deep) at Susita and in the valley of Bethlehem, on the high (about 40 m deep) aqueduct to Jerusalem. The aqueduct at Tiberias has a secondary water line (about 20 m deep) that leads to the bathhouse at Beth-Yeraḥ. Stone inverted siphons such as these are widespread in many Roman cities in western Anatolia.

Bridges support aqueducts in only a few places: at Cypros and Hyrkania and in Wadi Qelt, Samaria, Tiberias, Jerusalem, and Naʿaran, near Jericho. There probably was a bridge at Sepphoris, but it has been completely destroyed. In other places, high support walls were built to guard the aqueduct as it passed through low-lying regions: at Cypros, Hyrkania, and Sepphoris. Aqueducts were used late into the Byzantine period. In the Early Arab period, an aqueduct was built at Ramla, then the capital of Palestine.

Jerusalem's aqueducts continued to operate in the Mamluk and Ottoman periods. In the Ottoman period, two aqueducts were built at Akko; the later one dates to the reign of the Pasha Süleyman and operated from 1814 to 1948. The Biar aqueduct, one of the four aqueducts to Jerusalem, was repaired by the British and still operates, as do the ones in Wadi Qelt and Wadi Auja, which were built in the twentieth century on the foundations of aqueducts from the Hasmonean period.

[*See also* Baths; Cisterns; Dams; Hydrology; Pools; Reservoirs; Sewers; *and* Water Tunnels. *In addition, many of the sites mentioned are the subject of independent entries.*]

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TSVIKA TSUK

Translated from Hebrew by Eric S. Cohen

ARABIAN PENINSULA. [*This entry provides a broad survey of the history of the Arabian Peninsula as known primarily from archaeological discoveries. It is chronologically divided into three articles:*

The Arabian Peninsula in Prehistoric Times
The Arabian Peninsula before the Time of Islam
The Arabian Peninsula in Islamic Times

In addition to the related articles on specific countries, subregions, and sites referred to in this entry, see History of the Field, *article on* Archaeology in the Arabian Peninsula.]

The Arabian Peninsula in Prehistoric Times

The earliest hominoid finds from the Arabian Peninsula are fossil remains of dryopithecine type recovered in northeastern Saudi Arabia and dated to the Lower Miocene (c. seventeen–fourteen million years BCE). Eastern Arabia must have been a relatively lush environment then, for the fossil record contains evidence for the presence of various members of the giraffe, bovine, pig, crocodile, and rhinoceros families. A great quantity of important fossil remains has also recently been discovered in western Abu Dhabi, but thus far no remains of hominoids. The earliest traces of artifactual remains, possibly of hominid origin, come from a site north of Hail in Saudi Arabia, where a pre-Acheulean industry, thought to be related to Oldowan B in East Africa, has been identified. Much of northern, western, and southwestern Arabia, in what is geologically part of the Arabian

shield formation, has yielded remains of Lower Pleistocene date (c. 1.2 million–100,000 BP), where a population using a variety of Lower, Middle, and Upper Acheulean industries lived. Typical Acheulean handaxes, bifaces, chopping tools, and flakes have been found throughout this region. The Middle Pleistocene is equally, if not better represented by sites with Middle Paleolithic tools of Mousterian or Mousterian of Acheulean tradition, dating to about 75,000–30,000 BP. Sites in the Rub al-Khali were recently studied that contain an industry typologically related to the Aterian of North Africa, and that probably date to about 35,000–20,000 BP. The existence of human occupation in presently desertic areas such as this was made possible by considerably moister conditions during the Late Pleistocene, probably as a result of a northward displacement of the monsoon at that time. The Rub al-Khali was an area of savannahlike grassland then.

It is noteworthy, however, that Upper Paleolithic remains of Late Pleistocene date are rare in northern Arabia. No evidence of Lower, Middle, or Upper Paleolithic industries has yet been recovered anywhere on the Arabian shelf—that is, in eastern Arabia (Oman included), where the earliest industries found date to about 5000 BCE. Sites dating to this period were first identified in Qatar, where they were assigned to the so-called Qatar B group. More recently, contemporary and, to a limited extent, typologically related sites belonging to the Wadi Wutayya facies have been found on the coast of Oman. The blade arrowheads that characterize the Qatar sites show a clear affinity to Levantine types. This suggests that the southward spread of pastoral groups from the Levant, via northern Arabia, may have occurred then, perhaps coinciding with what has been described as an early/mid-Holocene "climatic optimum" in the region. Moister conditions throughout eastern Arabia probably prevailed through the fifth millennium, when a veritable explosion in the number of late prehistoric sites belonging to the "Arabian bifacial tradition" (i.e., characterized by stone tools flaked with fine retouch on two sides) occurred. Fine pressure flaking, and the use of tanged and/or barbed arrowheads in northeastern Arabia, Qatar, the Rub al-Khali, Yemen, and the coast of the United Arab Emirates (UAE), are common features, whereas arrowheads are absent on the coast of Oman proper in the so-called Saruq facies.

In spite of the fact that the prominence of the arrowhead in their tool kit might argue otherwise, the bearers of this culture were not exclusively or even primarily hunters. Sites in eastern Arabia of this period routinely contain remains of domesticated sheep and goat, neither of which was, in its wild state, native to the region. (They may have been introduced by those Levantine/North Arabian immigrants who brought with them the blade-arrowhead technology of the Qatar B sites.) Moreover, the coastal sites always show evidence for extensive shellfish gathering as well as fishing, routinely yielding ovoid and subrectangular stone crushing platforms, often deeply pitted in the center, that were probably used, together with a particular kind of stone chisel, to open shellfish. Various forms of net sinkers are also common on these sites. Thus, sites of the Arabian bifacial tradition probably represent the remains of pastoralists who moved seasonally between the coast, where they did some shellfish gathering and fishing, and the interior, where they could graze their herds during the winter. Hunting was an option and helped to conserve their herds (perhaps used principally for milk products, hair, and fleece) by providing another source of protein. [*See* Pastoral Nomadism; Sheep and Goats; Fishing; Hunting.]

Some of the coastal Arabian bifacial sites in Saudi Arabia, Qatar (Qatar groups A, C, D), Bahrain, and the UAE have also yielded small amounts of imported Mesopotamian pottery of Ubaid 3–4 type. Those sherds that have been analyzed come almost certainly from Ur and al-'Ubaid in southern Iraq, presumably from vessels traded to the local inhabitants by Mesopotamians in return for local products, perhaps pearls, dried fish, and copper. It appears, however, that this contact did not lead to the birth of an indigenous ceramic tradition in eastern Arabia. Some sites in eastern Saudi Arabia on which painted Ubaid sherds have been found also contained examples of a coarse, red, chaff-tempered pottery; however, as this tends not to occur on sites without the imported ware, it would not seem to be an indigenous product. Certainly there is no indication of an evolution of local ceramic technology postdating the period of Ubaid contact with the area. [*See* Ur; Ubaid.]

The archaeological record of Oman, northeastern Arabia, and Yemen shows conclusively that sites of the Arabian bifacial tradition continued to exist right down to the third millennium. The latest sites of this type on the coast of Oman (Bandar Jissa facies), although aceramic, do contain small amounts of copper or bronze but would never be classified as Bronze Age sites. Thus, the users of the Arabian bifacial tradition presumably represent a segment of the local population that coexisted with those other, sedentary groups, yet did not move down a social evolutionary path leading ultimately toward a complex, "Bronze Age" way of life. To what extent the Arabian bifacial groups were part-time agriculturalists is an open question. Some sites in the desertic regions of eastern Saudi Arabia have yielded grinding stones, though these need not have been used to grind domesticated cereals. The site of Ras al-Hamra 5, on the coast of Oman near Muscat, may have the earliest evidence of domesticated sorghum—during the fourth millennium—but this was recently disputed. At Hili 8, in the interior of Abu Dhabi, domesticated cereals and dates are present by about 3100 BCE, along with domesticated sheep, goats, and cattle; however, the origins of the cereals (the date [i.e., datepalm] was indigenous) is unknown.

[*See also* Agriculture; Cereals; Kuwait; Oman; Qatar; United Arab Emirates; *and* Yemen.]

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DANIEL T. POTTS

The Arabian Peninsula before the Time of Islam

Although a number of early European visitors wrote valuable descriptions of the visible ancient monuments on the Arabian Peninsula, it is only during the last generation that systematic archaeological research has been carried out there, and then only in limited areas. Compared with other parts of Southwest Asia, therefore, current knowledge of Arabia is meager and uneven; much of the archaeological map remains blank, and problems of chronology and interpretation abound. Many of the blanks are doubtless a true reflection of the absence of permanent settlement, both ancient and modern, in those vast barren areas of desert which occupy much of the central and eastern parts of Arabia. Even those areas, however, usually have sufficient vegetation to support nomads and their flocks (who leave little sign of their presence in the archaeological record). The desert is, after all, scattered with oases which form staging posts on the cross-peninsular routes. Other parts of Arabia are more fertile and attractive to human settlement, and it is in them that the major developments in pre-Islamic Arabian civilization took place: the mountains and valleys of Asir, Yemen, and Ḥadhramaut in the southwest (the Arabia Felix of the classical authors); Dhofar in the south and Oman in the southeast; and the lagoons and islands along the coast of the Arabian (Persian) Gulf in the east. [*See* Yemen; Ḥadhramaut; Oman.] Some of these same regions are also rich in natural resources: copper in Oman, aromatic gums (frankincense and myrrh) in Yemen and Dhofar; and fish and pearls from the Gulf. Probably the most important factor in the historical development of the Arabian Peninsula has been the exploitation of these natural resources by more powerful neighbors—first Mesopotamia and Egypt and then Greece, Rome, and Persia—from whom the Arabian peoples received cultural stimuli, both material and spiritual. They assimilated and refashioned those influences to suit their own needs and tastes.

Sporadic contact between the inhabitants of eastern Arabia and southern Mesopotamia began at least as early as the fifth millennium. It is demonstrated by the presence at a number of small Arabian coastal sites of the distinctive painted Ubaid pottery that was manufactured in Mesopotamia and brought to Arabia by seasonal fishermen. Archaeological evidence for this contact ceases for the early part of the fourth millennium but occurs again after about 3000 BCE, in the form of another type of Mesopotamian pottery, the Jemdet Nasr style, found at certain sites in inland Oman, such as Hafit. This distribution may indicate that the Omani copper deposits were already being exploited. By this time the advanced, literate Sumerian civilization had been established in Mesopotamia. [*See* Sumerians.] It was greatly dependent for its wealth and power upon foreign trade, both for the supply of those raw materials—metals, semiprecious stones, good building stone, and timber—Mesopotamia itself lacked and for the profits to be made from the export of the foodstuffs, textiles, and manufactured items it produced in abundance. The Sumerians were thus a trading people, and throughout the third millennium the gulf and the seas beyond, toward India, were the scene of intense commercial activity. As a result, eastern Arabia, the source of some of the raw materials in demand and well provided with harbors and fresh water, prospered. This is documented in the Mesopotamian textual sources, where two places in particular are mentioned in connection with this activity: Dilmun and Magan (or Makkan). [*See* Dilmun.] The former can confidently be identified with the island of Bahrain and neighboring parts of the northern gulf, while Magan is almost certainly Oman. [*See* Bahrain.] It was there

that, in the third and early second millennia BCE, what can be termed true civilization first developed on the peninsula.

Two distinct but closely related Arabian cultures emerged in this period. One, the Umm en-Nar culture, named for the island off the coast of Abu Dhabi, where it was first discovered, is spread throughout Oman and is clearly to be equated with Magan. Although many small settlements are known, most of the archaeological material comes from the distinctive Umm en-Nar tombs. The tombs are circular stone structures, often with excellent masonry, designed for multiple successive burials. [*See* Tombs.] It seems that Oman was then inhabited by a tall people who cultivated wheat, barley, dates, and sorghum (some form of simple run-off irrigation may have been practiced). [*See* Agriculture; Cereals; Irrigation.] They raised sheep, goat, and cattle, and the domesticated donkey and camel were probably also known. [*See* Sheep and Goats; Cattle and Oxen; Camels.] Hunting gazelle, oryx, and various birds was also important, while at coastal settlements fishing and the capture of large sea mammals such as the turtle and dugong were customary. [*See* Fishing.] The mining and smelting of the local copper ore appears to have been well established, and some sites (e.g., Maysar) have been interpreted as specialized industrial centers. Arsenic and tin found in some of the bronze objects were probably brought from Afghanistan or Iran.

Such mercantile contacts with the East are confirmed by some of the pottery, which is influenced by the ceramic tradition of those countries and even, occasionally, by that of the Indus River Valley civilization. Commercial contacts were probably strongest with Sumer, however, either directly or, more likely, indirectly, via Dilmun. Some pottery of the Umm en-Nar type has been found at the northern end of the gulf. The corresponding culture is that of Dilmun, probably originating in about 3000 BCE on the mainland of Arabia, but best known during the late third and the early second millennia BCE from excavations on the islands of Bahrain and Failaka (Kuwait). [*See* Failaka; Kuwait.]

At Qalʿat al-Bahrain a sequence of five "cities" has been uncovered between 1953 and 1969 by a team of Danish archaeologists, directed by Geoffrey Bibby, of which cities I (c. 2400–2000 BCE) and II (c. 2000–1600 BCE) are relevant here; the excavations produced a wealth of material, particularly distinct types of pottery and stamp seals (Bibby, 1969; Højlund and Andersen, 1994). [*See* Qalʿat al-Bahrain; Seals.] The finds have enabled archaeologists to establish cultural and chronological links throughout the region—from southern Mesopotamia and the Gulf of Iran, Baluchistan, and the Indus Valley—thus confirming the picture of widespread trade activity provided by contemporary Mesopotamian texts. Little architecture of this period survived at Qalʿat al-Bahrain, although city II was provided with a substantial town wall. For this aspect of Dilmun civilization, the sites of Barbar, Diraz, and Sar, all on Bahrain, are more informative. At Sar, recent excavations (Crawford, 1993) revealed a regular plan of standard houses lining a street. Their occupants (judging from the number of seals, seal impressions, and imported materials and objects) were engaged in commercial activities. However, the economy of the settlement seems, from a study of the excavated bones and plant remains, to have been mainly based on agriculture and fishing. A small temple was also excavated there and at Diraz. The major Dilmun sacred building known is at Barbar, though. It is a finely constructed of stone and incorporates a sacred well; it is itself enclosed by an oval perimeter wall recalling the temple ovals at Khafajeh and Ubaid in Mesopotamia. It has been suggested that the Barbar temple may have been dedicated to the Sumerian god Enki, whose special element was water. Nothing is known of the rituals conducted in these temples, or of the organization of religious life in Dilmun; however, the hundreds of burial mounds of this period with which Bahrain is covered, and which have produced large quantities of rich grave goods, testify to the amount of resources invested in provising the afterlife. [*See* Grave Goods.]

The precocious Umm en-Nar and Dilmun cultures, dependent as they were upon a thriving maritime trade, seem not to have spread very far inland from the gulf and the Oman peninsula. Nor did these regions continue to flourish to the same extent after about the middle of the second millennium BCE. Although the gap once thought to exist in the archaeological record there during the second half of that millennium and the first half of the next is gradually being filled, it is clear that gulf trade was in decline. Mesopotamian merchants increasingly favored the northern routes along the Tigris and Euphrates Rivers toward Anatolia, Syria, and the Mediterranean (where, e.g., Cyprus was then the main source of copper). Dilmun continued to be mentioned in the literary sources and was probably incorporated into the Kassite and, later, Neo-Assyrian Empires; Qalʿat al-Bahrain itself maintained its urban character (cities III, IV). Elsewhere, however, cultural standards seem to have declined, perhaps also partly because of a slight deterioration in the climate. For whatever reason, on present evidence it seems that it was not until the end of the first millennium BCE that a real cultural revival took place in eastern Arabia.

Until recently very little was known of conditions on the rest of the peninsula in the third and second millennium BCE. It was generally assumed that the area was mostly uninhabited except, perhaps, by a few survivors of the Stone Age hunters who had once lived there in climatically more favorable times. This picture has now begun to change. Recent surveys, particularly in Saudi Arabia (for preliminary reports, see the journal *Atlal* 1 [1977] and following years), have located the remains of many hundreds of small settlements and burial grounds. Although it is currently impossible to date most of these, archaeological research in Yemen indicates, on the basis of radiocarbon dating, that similar

sites there were occupied as early as the second or even the third millennium BCE. Little can be said as yet about the lifestyles of the inhabitants, although agriculture and stock rearing were practiced and simple copper metallurgy known. It is claimed (Maigret, 1990) that some of the pottery in use has similarities with that of contemporary Palestine. If this is so, it may point to the direction from which cultural influences, and perhaps elements of the population itself, reached southwestern Arabia.

The most important aspect of recent work in Yemen is that it has at last provided an acceptable background against which the spectacular cultural development there in the first millennium BCE may be set. The substantial architectural monuments of ancient southwestern Arabia—walled towns, temples, dams—have long been known. In addition, the many inscriptions associated with them or carved on natural rock faces indicate that this was an advanced, literate civilization. The inscriptions have enabled scholars to reconstruct, in outline, the complex political history of the region. It reflects the rivalries of the various tribal federations (each of which spoke and wrote a distinct branch of a Semitic language known as Old South Arabian) as they struggled for control of the trade routes. It was the export of frankincense and myrrh (which grew only there and in neighboring East Africa) which provided the chief source of wealth for the South Arabian states. There were four of these states, each centered on a city on the inland slopes of the high coastal mountains. These states were protected from the destructive summer monsoon and were close to the edge of the desert, where caravan travel was comparatively easy and the runoff could be utilized for agriculture. The date of the emergence of these states is the subject of intense debate (see K. A. Kitchen, *Documentation for Ancient Arabia, Part I,* Liverpool, 1994, chaps. 1–4). The earliest was certainly Saba' (Sheba), with its capital at Marib. [*See* Sheba; Marib.] The first reference to a king of Sheba, Yith'amara, occurs in an inscription of the Assyrian king Tiglath-Pileser III (r. c. 745–727 BCE). It was once generally agreed that this marked the approximate date of the beginning of a developed culture in the region. However, some scholars have accepted the account in the Hebrew Bible of the visit of Sheba's queen to King Solomon in the tenth century BCE as a reliable indication of its importance this early. Recent geoarchaeological work on the Marib dam and associated field systems has led scientists to conclude that major hydraulic engineering works were being built there at the beginning of the first millennium BCE, and that some form of irrigation had been in use a thousand or more years earlier (Jürgen Schmidt in Daum, 1988, pp. 55–62). A date no later than the end of the second millennium BCE for the appearance of an advanced civilization in South Arabia is now also supported by most epigraphists, on the grounds that the script in which the inscriptions are written could only have been derived from the Canaanite linear alphabet of the twelfth–eleventh centuries BCE—and not from later Phoenician or Aramean versions. Suggestions that it was inspired by the Greek script of the sixth–fifth centuries BCE have been completely discounted (see the discussion in Maigret and Robin, 1989).

So powerful and rich was Saba' that its name became synonymous in Greco-Roman times with all of southwest Arabia. Well before that, the kingdom had yielded pride of place to states which had once been its vassals: Ma'in, centered at Qarnaw in the north (fl. fifth–fourth centuries BCE); Ḥadhramaut in the east, where it controlled the main frankincense-producing region of Dhofar (fourth–second centuries BCE); and Qataban in the southeast (third–second centuries BCE). In the second century BCE, however, an important shift of power took place, away from the inland valleys and oases bordering the desert and toward the coast, closer to the sea lanes. After the discovery by western sailors of the value of shipping in the Indian Ocean during the monsoon winds, the sea lanes began to play a greater part in the transport of both the locally produced aromatics and of the spices and other precious commodities from India and Southeast Asia. This trade is vividly described in the sailors' handbook known as the *Periplus of the Erythraean Sea* (see the edition by Lionel Casson, Princeton, 1989) written in the middle of the first century CE. The beneficiary of this shift of power was the kingdom of Ḥimyar, whose capital, Ẓafar, is situated on the crest of the mountains at the head of routes running down to the coastal plain. [*See* Ḥimyar; Ẓafar.] It was under the Ḥimyarite kings in the fourth and fifth centuries CE that both Judaism and Christianity were established in Yemen, leading to internal religious strife as well as to conflict with the Christian state of Abyssinia across the Red Sea. It was for help against Abyssinia that the Ḥimyarites appealed successfully to the Sasanian Persians, who were in effective control of South Arabia at the time of its conversion to Islam in the mid-seventh century. [*See* Sasanians.]

Although tomb robbing and illicit excavations have filled the museums and private collections of the world with South Arabian antiquities (especially the small alabaster statues, votive plaques, and vessels in which the region seems to have specialized), very little scientific archaeology had been undertaken. Apart from the three capital cities of Timna' (Qataban), Marib (Saba'), and Shabwa (Ḥadhramaut) none of the major sites has been excavated, and very few have been even properly surveyed and recorded. [*See* Timna' (Arabia); Qataban; Shabwa.] That they were normally provided with massive stone fortifications is obvious on the ground, but none have been studied. Dams, both of stone and of earth, and associated irrigation works are also common, although only those at Marib have received attention. Domestic and minor public buildings seem mostly to have been of unbaked mud brick; one excavated house at Shabwa is of reinforced timber and several stories high, foreshadowing the typical tall houses of medieval and modern Yemen.

The most monumental and best-known buildings are the temples, which, in an essentially theocratic society, were not only the homes of the gods and places for cultic ritual, but also played an important secular role in administration, tax collection, and judicial activities. In their surviving forms, the temples are the result of long periods of renovation and elaboration. It is likely that the earliest cult place was little more than an open-air enclosure with a standing stone representing the deity, perhaps under a simple canopy. The most common basic plan of the later temples, particularly in the Sabaean region, remained that of an enclosed rectangular courtyard with a more elaborate chamber at one end, although regional variations are found. Particularly striking in these temples is the abundant use of square monolithic columns in the courtyard, either as an interior peristyle or completely filling the open area. Monumental entrance buildings (or gateways, reminiscent of the Greek/Roman propylaeum, and leading to a sacred enclosure, as at Marib) with similar massive columns are also found. Ornamentation is typically ascetic and abstract. Bull-headed gargoyles and friezes of ibex heads do appear, but always expressed in a rigid geometric style. The only concessions to naturalism are the simple vine scrolls and palmettes found on architraves and wall panels. Standards of craftsmanship are on the whole excellent, however, with the ashlar limestone masonry particularly noteworthy.

The origins of this advanced civilization remain uncertain, as do the dates of the appearance of its various components. Masonry styles have been compared with those of Phoenicia and Israel in the late second–early first millennia BCE, thereby reinforcing the links suggested by the script and by the story of the Queen of Sheba. Such styles had a long history in Assyria and Persia as well, however. The influence of Achaemenid Persia (sixth–fourth centuries BCE) has been seen in the prolific use of massive columns, especially in hypostyle halls, but this was also always a feature of Egyptian religious architecture. The austere, massive nature of the architecture and its decoration is also suggestive of Egypt, although no typically Egyptian motifs occur. The vine scrolls are undoubtedly of Mediterranean inspiration but could equally well have come by way of Hellenistic Egypt, the Levant, Mesopotamia, or Persia. South Arabia was inevitably brought into contact with all of these regions through the aromatic and spice trade. It would be natural for its material culture to reflect those contacts. Nevertheless, South Arabian civilization was not cosmopolitan—in the sense that it was an undigested mixture of foreign elements. Rather, it was a distinctive blend of Arabian and non-Arabian themes, selected and assimilated by what was clearly a highly creative people, and fully worthy of the fame it achieved in both the ancient and modern worlds.

With the notable exception of Abyssinia, where contemporary developments in institutions, religion, and material culture largely paralleled those in South Arabia, this flourishing civilization seems to have had little direct influence on the rest of the peninsula. Other parts of Arabia were certainly affected by the incense trade, however. As early as the thirteenth–eleventh centuries BCE, northwest Arabia—the Hijaz—had seen the establishment of urban settlements at oases such as Qurayyah and Tayma'. [*See* Qurayyah; Tayma'.] It is possible that these sites were already involved in the trade, perhaps under Egyptian (Midian) initiative. [*See* Midian.] If so, they must have been in contact with the producing regions of the south and played a role in transmitting those Syro-Palestinian elements (script and masonry and pottery styles) discernible in South Arabian civilization. Although this remains controversial, it is certain from the Assyrian and Babylonian texts that, by the mid-first millennium BCE, the inhabitants of northern Arabia were profiting from the aromatic trade and that Tayma' and al-'Ula/Dedan had become the centers of small kingdoms. [*See* Dedan.] At Dedan, Minaean inscriptions and sculptural fragments survive from a small colony founded there by merchants from South Arabia in the fourth century BCE. Of these North Arabian kingdoms the most important was that of the Nabateans, established at Petra, in modern Jordan, probably in the third century, and with a strongly hellenized material culture. [*See* Nabateans; Petra.] Nabatean pottery has been found in Yemen, and it may well have been through the southern Nabatean center of Meda'in Saleh that some of the Greco-Roman features of the later phases of South Arabian civilization arrived. [*See* Meda'in Saleh.]

The east–west routes across the peninsula were also assuming importance at this time. A few Nabatean sherds have been found at Thaj, probably the important emporium of Gerrha mentioned by classical authors, about 100 km (62 mi.) inland from the gulf coast between Kuwait and Bahrain. [*See* Thaj.] After what appears to have been a cultural decline throughout much of the first millennium BCE, eastern Arabia and the Gulf experienced an economic revival. It was brought about largely by the establishment of a wealthy Hellenistic (Seleucid) state in Mesopotamia and Persia following the death of Alexander the Great in 323 BCE. [*See* Seleucids.] The culture of the entire region became rapidly infused with Western elements, as shown by the discovery of a Greek temple at Failaka/Kuwait and Greek inscriptions, pottery, and jewelry there and at Qal'at al-Bahrain, Thaj, and many smaller sites.

Little is known of the effects of the substitution of Parthian for Seleucid power in the region in the mid-third century BCE. It is not until the Sasanian period (224–642 CE) that the picture becomes clearer—although even then only in the southern gulf. The Sasanians created a maritime empire encompassing virtually all the Indian Ocean. While it was naturally the eastern (Persian) side of the gulf which benefited mostly from this, Oman and its chief port, Mazum (modern Sohar), played a crucial strategic role also. [*See* Sohar.] Nor was Sasanian involvement restricted to the

coast; the interior of the Oman peninsula was colonized by the Persians, who, among other enterprises, began fully to exploit its copper deposits again and probably introduced new irrigation technology. Their political ambitions led them even farther west: Yathrib (modern Medina) was devastated by the Sasanian army in the fourth century CE and they were in effective control of southwest Arabia in the sixth (see above) [*See* Medina.] Most of the evidence for this comes at present from literary rather than archaeological sources. However, sites of the period are beginning to be investigated, especially in Oman and the Arab Emirates. Nevertheless, it is clear that Persia had a profound effect on the culture of eastern and southern Arabia, the legacy of which was to be an important factor in the history of the peninsula in the medieval period.

[*See also* Mesopotamia; *articles on* Ancient Mesopotamia *and* Mesopotamia from Alexander to the Rise of Islam; *and* Persia, *articles on* Ancient Persia *and* Persia from Alexander to the Rise of Islam.]

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PETER J. PARR

The Arabian Peninsula in Islamic Times

The mission of the prophet Muhammad ibn ʿAbd Allah of Quraysh was to unite a divided people through the force of a new monotheistic religion. He received divine revelations after 610 and assumed prophethood. His teachings aroused opposition by the conservative Meccans (Makkans), which led to the emigration of Muslims first to Abyssinia in 614 and then, in 622 (the beginning of the Islamic era), to Yathrib, renamed Medina (Madina al-Munawwara), capital of the first Islamic state. The state was a political community of people *(ummah)* bonded by the Constitution of Medina that had been laid down by the Prophet and held together by the religion of Islam under the Prophet's leadership. Gradually, the Prophet attempted to build a political and socioeconomic system among Muslims based on the divine revelations. The new Islamic order, or polity, forged under the principles of equality among all, the right to an adequate livelihood, courteous treatment, the security of life and property, and community stability, attracted groups of nomads. They accepted Islam and gave allegiance to the Prophet. Thus, Islam spread gradually and peacefully through far-flung Arabia, unifying the Arabs and establishing Islamic institutions. Mecca (Makkah) for instance, was

conquered without a struggle because Islam propagates peace, all-embracing tolerance, and social equality. The institutions of Islam, derived from the Qur'an and the Prophet's traditions, altered both the religious and domestic life of its believers. Some of its features are prayer five times a day, fasting, the pilgrimage to Mecca, circumcision, and almsgiving. Islamic law *(shari'ah)* abolished slavery, limits a Muslim man to four wives at a time, and prohibits usury, intoxicating beverages, certain types of food, and representational art. Islam has a particular system of taxation, contractual law, and inheritance rules, and its own calendar and rules of manners and moral conduct. In places where Islam was embraced, the Prophet allowed the existing official/governor to continue to rule. Thus, when Yemen accepted Islam in 628, the Prophet allowed Budhan, the fifth Persian governor, whose capital was San'a, to continue in this capacity. [*See* San'a.]

The Four Caliphs (632–661). The Prophet died in 632, without making provisions for a successor. Abu Bakr, one of his companions, who had represented the Prophet during his illness, was choosen as successor. The institution of the caliphate, which lasted for centuries, thus emerged. During Abu Bakr's caliphate, some tribal revolts, or apostasy *(ridda)*, arose and were suppressed. Before his death in 634, Abu Bakr urged his companions to elect 'Umar ibn al-Khattab as his successor, which they readily did. To the title *caliph* was added that of *amir al-mu'minin* ("commander of the faithful").

In addition to the conquest and expansion of Islam outside Arabia, 'Umar's greatest contribution during his ten-year tenure was to organize a form of government that was followed for centuries. Before his death 'Umar appointed an elective committee *(shura)* of six from Quraysh for selecting the caliph. They elected 'Uthman. After 'Uthman's twelve-year rule, 'Ali ibn Abi Talib succeeded him as caliph in 656. A struggle for the caliphate soon ensued that 'Ali suppressed.

Islam's expansion outside Arabia made control difficult from al-Medina. Thus, to administer the conquered lands properly and meet the challenge of his adversary Mu'awiyah ibn Abi Sufyan, the governor of Syria, 'Ali, in 657, shifted the capital from Medina to al-Kufah. Factions formed among the Muslims: one rebellious group from the Kharijis ("outgoers") assassinated 'Ali at al-Kufah in AH 40/661 CE. 'Ali's son al-Ḥasan was immediately proclaimed caliph, but for reasons of political expediency renounced his claim in favor of Mu'awiyah.

Umayyads (692–750) and 'Abbasids (750–1171). Under the Umayyads, Damascus became the capital of Islam, governors were appointed at Mecca and al-Medina, and nominal rule was extended to other parts of Arabia. [*See* Damascus.] The Hijaz became a separate province; Najd, al-Yamamah, al-Bahrain, and Oman became parts of the eastern province; and Yemen and South Arabia formed another province. Subsequently, for purposes of proper administration, the Hijaz, Yemen, and central Arabia were combined into a single province and were ruled by a viceroy of the caliph. Mu'awiyah, in order to maintain tribal support in the provinces, gave them a certain degree of autonomy. The factional rivalry between the 'Alids (descendents of 'Ali and Fatimah, the Prophet's daughter) and Umayyads continued for decades. The caliphate underwent a change from the prophetic to something like sovereignty. The hereditary principle of succession to the caliphate was introduced in 679, when Mu'awiyah nominated his son as his successor. Subsequently, this Umayyad practice was followed by the 'Abbasids and other Muslim dynasties.

Islamic coins (gold dinars and silver dirhams) were minted for the first time by Caliph 'Abd al-Malik in 695. Politically, life at Mecca and al-Medina then was tranquil; intellectuals gathered there to study and propagate the traditions of the Prophet. The expansion of Islam and the many pilgrims visiting al-Medina and Mecca brought great wealth from all parts of Arabia and neighboring Muslim countries.

The 'Abbasids ruled over Arabia from Baghdad for nearly five centuries, in two separate periods, beginning with Caliph Abu al-'Abbas in 750. [*See* Baghdad.] During the first century of their rule, an era of great prosperity, they maintained authority in Arabia by appointing governors at Mecca, al-Medina, Yemen, and the central and eastern regions. However, the second period, which began with Mutawakkil (847), was one of rapid decline. The reign of Harun al-Rashid (786–809) is reckoned as the golden age of the caliphate. The archaeological remains and finds along the pilgrim road (Darb Zubaydah), from al-Kufah to Mecca, established during his period, testify to the favorable socioeconomic conditions of the people in Arabia in general and Mecca and al-Medina in particular. [*See* Darb Zubaydah.]

Saudi Arabia is replete with Early Islamic monuments and sites, especially at Mecca and al-Medina and the pilgrim attractions in their vicinity. While the main mosque is at Mecca (Masjid al-Ḥaram), mosques are named after the companions of the Prophet: Bilal bi Rabah, Abu Bakr as-Siddiq, Hamza ibn al-Muttalib, ar-Raiya, al-Jin, and al-Ijaba. At al-Medina, there is the Mosque of the Prophet, Masjid Quba (the first mosque built after the Prophet moved to al-Medina), Masjid al-Juma, Masjid at Qiblatain, and Masjid 'Umar ibn al-Khattab, among others. The mountains associated with the prophetic revelations are Jebel Thor and Jebel Hara', or Noor, at Mecca. [*See* Mosque.]

Archaeological excavations in Arabia have brought to light Early Islamic settled sites with characteristic features. Traces of a Friday mosque have been found at Jawatha, near Hafuf, and dated to the first century of the Islamic era. Early and Middle Islamic sites are characterized by mud-brick architecture. Early Islamic sites are characterized by green-

glazed and incised wares. Slightly later sites display ʿAbbasid glazed, painted, and luster wares. Impressive Islamic architectural remains—pottery, soft-stone and glass vessels, bracelets, copper, and slag—have been recovered from several sites in central Arabia.

In the Ṭaʿif area of the Hijaz, dams were built during Muʿawiyah's reign (AH 58/677–78 CE), as attested by Kufic inscriptions. Dams (at Sadd al-Qusaybah, Sadd al-Hasid, and Sadd az-Zaydia) dated to the Early Islamic period are also found in the Khaybar area in northwest Arabia. Besides dams, several reservoirs from the ʿAbbasid period, especially along the pilgrim roads, have survived. Caliph ʿUmar's mosque at Domat al-Jendal is one of the earliest stone-built mosques with a towerlike minaret. It is dated to 634–644. ʿAbbasid-period towns (Khaybar al-Qadim, Rafhe-Linah) and forts (Qalʿat al-Muazzam) are found in northwest Arabia.

In the vicinity of Riyadh, near Ammariyah, well-planned buildings with courtyards date to the ʿAbbasid period. They are dated by their characteristic glazed ceramics and steatite and glass objects. Traces of settlements—including houses and mosques—have also been found in other parts of the peninsula—at Bahrain, Oman, and Yemen and in the United Arab Emirates.

In Bahrain, at Rasal-Qalʿat, remains of an Early Islamic city have been excavated that were built over cities of earlier periods. There, during the second–fourth centuries AH, a fort *(qalʿat)* was built whose remains are preserved. It is one of the oldest examples of Early Islamic architecture. Its square plan (each side measures 52.50 m) resembles the Umayyad residences in Syria and Palestine and the Qaṣr al-Kharanah in Jordan. Its features suggest that the building's function was military. Built of limestone, it has corner towers.

For the two decades following AH 317/930 CE, Bahrain had the privilege of housing the Black Stone of the Kaʿbah, after it was removed from Mecca by the Qarmatians. Tradition dates the building of the Masjid al-Khamis in Bahrain to 992, the time of Umayyad caliph ʿUmar ibn Abdul Aziz. However, an inscription found in the mosque dates it to the second half of the eleventh century and attributes it to Abu Sinan Muhammad al-Fadl Abdullah, the third ruler in the al-ʿAuni family that ruled Bahrain then.

The earliest Islamic monument in Yemen is the al-Jamiʿ al-Kabir (the Great Mosque) at Sanʿa, which was built on the orders of the Prophet during his lifetime. It was expanded by Ayyub ibn Yahya ath-Thaqafi, the Umayyad governor of Sanʿa, on the orders of Caliph al-Walid Marwan. However, it was the ʿAbbasid governor ʿUmar ibn ʿAbd al-Majid al-ʿAdwi who provided doors for the mosque for first time in the mid-eighth century. It has undergone several phases of renovation and rebuilding.

In the UAE, remains of many Islamic buildings survive in the al-ʿAin area (Hili, Qattara, Maʿsudi). In the emirate of Sharjah Islamic-period settlements are also found at Muwaylih, between the village of Falah and the eastern limits of the town of Sharjah.

[*See also* ʿAbbasid Caliphate; Bahrain; Kuwait; Mecca; Medina; Oman; Umayyad Caliphate; *and* Yemen.]

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ABDUL RAHMAN T. AL-ANSARY

ARABIC. The most widely spoken language in the Middle East and North Africa today, spoken by more than 160 million people, Arabic is the language of the Qur'an and is therefore used in the prayers of 800 million Muslims the world over. Arabic belongs to the Semitic family of languages; its closest relatives are South Arabian and Ethiopic.

Two varieties of Arabic are in use today—literary Arabic and colloquial Arabic. Literary is used for all forms of writing, such as fiction, nonfiction, and advertisements. This Arabic is remarkably uniform throughout the Arab world. The language used in a newspaper from Morocco is the same as that used in a newspaper from Iraq. Literary Arabic is also used for formal speech, such as news broadcasts, lectures, interviews, academic instruction, and sermons.

The Arabic used in everyday communication is colloquial Arabic and consists of hundreds of dialects. The closer two communities are geographically, the closer their Arabic; the farther apart, the more divergent their Arabic. Thus a Palestinian and a Jordanian can understand each other readily, but an Iraqi and a Libyan will encounter problems. When educated Arabs who speak fairly different varieties of colloquial Arabic get together, they shift their Arabic toward the literary mode.

The differences between literary Arabic and colloquial Arabic range from minimal to striking. The most visible difference is that literary Arabic utilizes a series of case markers

on nouns and mood markers on verbs that have disappeared in colloquial Arabic.

Such a situation, in which two divergent forms of a language exist, each with its own social function, is known as *diglossia*. Thus, literary Arabic has its role—writing and formal speech—and colloquial Arabic has its role—everyday conversation. The two roles are not mixed. Using the literary language in a taxicab would provoke amusement, and delivering a news broadcast in the colloquial form would get the announcer fired. The two forms of the language are also learned differently. Colloquial Arabic is a native, first language, learned by children from parents and friends. It is never studied at school. Literary Arabic is learned at school; there are no native speakers of this form.

Although literary Arabic and colloquial Arabic are frequently said to be polar opposites, the situation is actually more complex. Various forms of in-between Arabic exist. The literary and colloquial languages form two end points of a continuum; for this reason, the term *multiglossia* is sometimes used. A radio broadcast, for example, may include every case and mood vowel, whereas a lecture may be basically in the literary form but without most case vowels, thus verging toward the colloquial variety.

The term "classical Arabic" is here used for the Arabic written prior to Napoleon's invasion of Egypt (1798); the term "literary" Arabic is used for later written Arabic, and particularly for the modern period. Many scholars use "classical" to include what is here called literary. The use of the one term ("classical") stresses the continuity of the language, emphasizing that the grammar of the Qur'an is essentially the same as that of a modern newspaper. However, neither the stylistic differences over thirteen centuries nor the changes of vocabulary (including much borrowing from Western languages) can be denied. The use of only one term glosses over these differences.

History. Arabic is first attested in the form of proper names. At the battle of Qarqar (Carchemish) in 853 BCE, a few Arab chieftains allied themselves with some Syrian and Palestinian kingdoms (including Ahab of Israel) against the Assyrians, who were expanding south. The names of these chieftains, preserved in cuneiform script, are recognizably Arabic, for example, Gindibu. A number of such names occur in Neo-Assyrian and later annals.

The first written Arabic consists of thousands of graffiti written in a form of Arabic called Preclassical Northern Arabic, which is first attested in the seventh century BCE. The last inscriptions date to perhaps 500 CE or even later. The number of such inscriptions, in what must have been a largely illiterate society, is surprising. They consist mainly of personal and place names, but also include curses, reminiscences of the past, and memorials of the dead. Pre-classical Northern Arabic is not one language but comprises four or five closely related languages or dialects. It was not spoken throughout the entire Arabian Peninsula, but its exact geographical distribution is uncertain.

At the time of Muhammad's birth (570 CE), there was no unifying political structure in the Arabian Peninsula; rather, hundreds of tribes, varying greatly in size, lived throughout the area. Some tribes spoke forms of Preclassical Northern Arabic, but most tribes spoke other varieties of Arabic. Some of the linguistic features of these latter tribes are known because they have been recorded by medieval Arab and Persian grammarians.

Alongside these spoken varieties of Arabic, there existed a literary variety, the poetic koine. This was a supradialectal variety, which drew features (especially vocabulary) from all the various spoken dialects. It was used primarily for poetry, not for everyday speech. The origins of this koine are unknown, but it presumably originated with one of the spoken dialects, perhaps based on the dialect of a commercial or cultic center.

This interpretation means that at the time of Muhammad's birth, a type of diglossia already existed in the peninsula. However, it is very difficult to determine how the dialects of the time differed from the poetic koine. The basic question is: what was the status of the case endings at the time of, say, the birth of Muhammad? One view is that the case endings were still in use in both the poetic koine and the contemporaneous dialects but only disappeared later from the dialects through contact with languages lacking these grammatical distinctions (such as Persian). The opposing view holds that the case vowels had already disappeared from the spoken dialects and that they may indeed have disappeared centuries before the birth of Muhammad. They were, however, preserved in the literary language, primarily because of metrical considerations.

No literature from the pre-Islamic period is directly preserved. Society in the peninsula was largely nomadic. In such an environment, oral poetry developed as the art form par excellence. The custom of memorization played a key role in preserving this poetry. Composed in the two or more centuries preceding the birth of Muhammad, it was written down on a systematic basis in the middle of the eighth century; a vast array has been preserved. Because the poetic *koine* was the language regularly used for literary expression, the Qur'an was delivered in this language.

The poetic *koine* and the related contemporaneous spoken dialects are categorized as Northern Arabic. The relationship of Northern Arabic to Preclassical Northern Arabic is uncertain. Both coexisted as spoken languages for some time, but their geographical distribution is not known. Most likely, both Northern Arabic and Preclassical Northern Arabic go back to a common ancestor. Curiously, the medieval grammarians do not mention Preclassical Northern Arabic forms, and it appears to have died out soon after the Arab conquests.

The first text in Northern Arabic is a funeral inscription from Nemara in Syria dating to 328 CE. Only a handful of inscriptions in Northern Arabic from before 600 CE are preserved. Although written in prose, not poetry, they are in the same poetic koine used for pre-Islamic poetry and the Qur'an or in some spoken dialect close to it.

Northern Arabic had been largely restricted to the peninsula and the regions bordering upon Syria. The Arab conquests, however, carried Arabic throughout all of North Africa and most of the Middle East. The most widely spoken language in the Middle East (outside the peninsula) on the eve of the Arab conquests was Aramaic, which today is spoken in only a few places. Similarly, in Egypt Coptic became displaced as a spoken language. In some areas, such as Iran, the Arabic language did not take root, but the Arabic script (the script used for the Qur'an) did. Thus, Persian is today written in Arabic script. Several other non-Semitic languages have been written in Arabic script, such as Ottoman Turkish.

After the Arab conquests, the medieval Arab and Persian grammarians studied the language of the Qur'an and the language of pre-Islamic poetry. Using primarily these two sources, the grammarians defined the grammatical rules of Arabic. Classical Arabic is the language as specified by these grammarians. Because of the sanctity accorded the language of the Qur'an, the grammatical structure of classical Arabic became relatively fixed.

The Qur'an was the first large-scale prose composition in Arabic. The expansion of Islam brought the Arabs into contact with other cultures, and the resultant cross-fertilization of ideas along with the adoption by non-Arab Muslims of Arabic as a written language led to an explosion in scholarship and literary activity. There is a vast body of literature written in classical Arabic during the medieval and premodern periods. Much of this has not been edited or published. Every major Middle Eastern city has large collections of manuscripts, often only incompletely cataloged. A systematic but by no means complete catalog of published and manuscript works for the early medieval period (up to about 1050 CE) by Fuat Sezgin includes separate volumes for the following genres: (1) Qur'an, religious sciences, history; (2) poetry; (3) medicine, pharmacology, zoology, veterinary science; (4) alchemy, chemistry, botany, agriculture; (5) mathematics; (6) astronomy; (7) astrology, meteorology; (8) lexicography; and (9) grammar. Each volume comprises thousands of entries.

Contact with the West during the early modern period led to the importing of new literary genres, including the short story, novel, and drama. All three are actively practiced today. In 1988 the Egyptian novelist and short-story writer Naguib Mahfouz won the Nobel Prize in literature. A small amount of fiction is now written in colloquial Arabic, particularly in Egypt.

Origin of Colloquial Arabic. Since classical Arabic was purely a literary language (even if rooted in a spoken dialect), the modern dialects cannot be regarded as its lineal descendants. Rather, they are descendants of the Northern Arabic dialects spoken in the peninsula at the time of the conquests. Exactly how they came into existence is still unresolved. A process of leveling of dialects probably took place after the conquests as Arab soldiers from different tribes came together in the Arab military camps. There was also widespread contact with non-Semitic languages.

Because colloquial Arabic was not regarded with the same sanctity as the classical form, it was never subject to the normative forces of the grammarians and consequently has continued to evolve. The colloquial language of today is very different from that of a thousand years ago.

Script. The script used to write Arabic derives from that of the Nabateans, an Arabic-speaking people centered around Petra. Although ethnic Arabs, the Nabateans wrote in Aramaic because this was the prestige language of the time. Their form of the Aramaic script was adopted by the Arabs. The previously mentioned inscription from Nemara is Arabic in grammar but the script still looks Nabatean. As time passed, the external form of the script changed rapidly. Since Arabic had more phonemes than Nabatean, and since several letters had begun to fall together in shape, the Arabs had to develop new symbols. This was done by marking some letters with dots. [*See* Nabateans; Aramaic Language and Literature.]

Classical Arabic uses a series of super- and sublinear marks to indicate vowels; these strokes are not part of the consonantal text. They were developed to preserve the correct and full pronunciation of the Qur'an. They are not in everyday use but appear only in the Qur'an and occasionally in religious literature or poetry.

Since the dots distinguishing certain consonants can easily be misplaced or left out, and since the vowel marks are usually omitted, the Arabic script contains a certain measure of inherent ambiguity. Arab scholars have occasionally suggested modifications to the script, including the possibility of replacing it by the Latin script. Given the sanctity of the writing system, however, it is hard to imagine this happening.

The script used to write Preclassical Northern Arabic is quite different from that used for the classical form; it may have branched off from the paleoalphabet by the thirteenth century BCE. The same script was also employed for Epigraphic South Arabic and Ethiopic.

Future of Arabic. With its long and complex history, Arabic offers several interesting future scenarios. Many Arabs believe that with the spread of education, the literary form will take over the functions of the colloquial, which will thus disappear. Most Western linguists doubt this development will occur. They do believe, on the other hand, that

many of the village-level dialects will disappear and that dialects based on the capital cities will spread. Thus the colloquial dialect of Cairo will displace other Egyptian varieties. The state of diglossia, however, with all its attendant problems, may persist for a very long time.

[*See also* Semitic Languages; South Arabian.]

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ARAD. [*This entry comprises two articles treating the remains of the Bronze Age and Iron Age, respectively.*]

Bronze Age Period

Tel Arad lies 576 m above sea level, in Israel's northeastern Negev desert (map reference 162 × 075). The 10-ha (25 acre) tell is bowl shaped, facilitating the drainage of runoff into its center, where a reservoir was located in the Early Bronze Age II. At present, annual rainfall averages 170 mm at Tel Arad, classifying the climate as semiarid. However, there is much evidence to suggest a more humid climate for the Chalcolithic and Early Bronze Ages, up to the mid-third millennium.

The city was found to have five principal strata, with varying local sequences and sublevels. Because the main objective of the excavations at Arad was to obtain a comprehensive picture of the site in its uppermost urban phase (stratum II), the picture gained of the earlier strata (V–III) is more fragmentary.

Stratum V. The stratum V settlement (c. 4000–3400 BCE) resembled contemporaneous ones in the Beersheba valley: non-nucleated remains dispersed over the tell and its neighboring hills. Though assigned to the Beersheba culture, no cavelike, subterranean occupation was found—only pit dwellings—possibly because the loess layer at Arad is very shallow. The pits may be the lower sections of structures whose upper walls were made of perishable materials. Stratum V produced evidence of two phases. It now seems clear that a gap in occupation occured between strata V and IV because the material found in stratum IV belongs to EB IB, and EB IA finds are absent.

Stratum IV. An unfortified "village," whose remains were found wherever stratum III remains were removed, represents stratum IV (3200–3000 BCE). Its full extent is unknown. Finds under the subsequent stratum III city-wall foundations were of particular significance for chronological and urban development. Dated to EB IB, the settlement's traces were found both in rock caves and in building remains. No remains of larger, public buildings were discerned. This small community was one of several similar ones that coexisted in the Arad basin in EB IB. It is not clear whether Arad already served as a central place at this time.

The Egyptian pottery from stratum IV indicates that trade between Egypt and Canaan, well-known from the southern coastal plain, also involved Arad. The most important find of this kind was an Egyptian jar fragment bearing the *serekh* (the pharaoh's name in a rectangular frame) of Narmer, the last king of dynasty 0, at the end of the Egyptian predynastic period (Amiran, 1974, 1976). This inscription provided a synchronism of Canaanite and Egyptian chronologies: the EB I, coeval on the whole with the Naqada II and III periods,

ARAD: Bronze Age. *Excavations in progress.* (Courtesy O. Ilan)

included the reigns of the last pharaohs of dynasty 0 (Narmer and Hor-Aha). EB II began in the reign of Pharaoh Djer of the first dynasty. Trade with Egypt continued throughout the city's history (see below).

The only burial cave found at Arad so far belongs to stratum IV. Located northwest of (i.e., outside) the later stratum III city wall, the cave contained sixteen skeletons of men, women, and children; pottery, stone, and copper vessels; and beads of various materials. [*See* Burial Sites; Grave Goods.] One skull was trephinated (a small section of the skull was removed while the person was alive)—one of the earliest of such surgeries known (Smith, 1990).

Stratum III. There appears to be no hiatus between strata IV and III. The city wall, sacred precinct, palace, and other structures throughout the tell were erected in stratum III, the earliest "urban" stratum at Tel Arad. The reservoir was also installed, surrounded by a complex of public buildings. Thick conflagration layers found throughout the site, and the breaching and subsequent reconstruction of the city wall, attest to stratum III's destruction by enemy attack in about 2800 BCE.

Stratum II. The destruction of stratum III was probably followed immediately by the stratum II settlement. Its architectural style, building techniques, material culture, and social structure all show continuity. Below is a more detailed description of the finds from strata II and III.

Fortifications. The city wall, 1,176 m long, contained gates, posterns, and towers. It ran along the watershed and was founded partly on bedrock and partly on stone bedding. The wall was 2–2.5 m thick, constructed of twin stone courses filled with rubble, and estimated to have been 4–5 m high. The original stratum III towers were semicircular. Two of these were replaced in stratum II with rectangular ones. Their total number has been estimated at between thirty-five and forty, but the distances between them are not uniform. The two gates discovered were somewhat dissimilar, the western one having a wider opening and an adjoining semicircular tower on its north side, while the southwestern gate had a square tower flanking it. Posterns (narrow openings in the city wall) were also uncovered; they seem to have been additional openings that could be easily plugged when necessary.

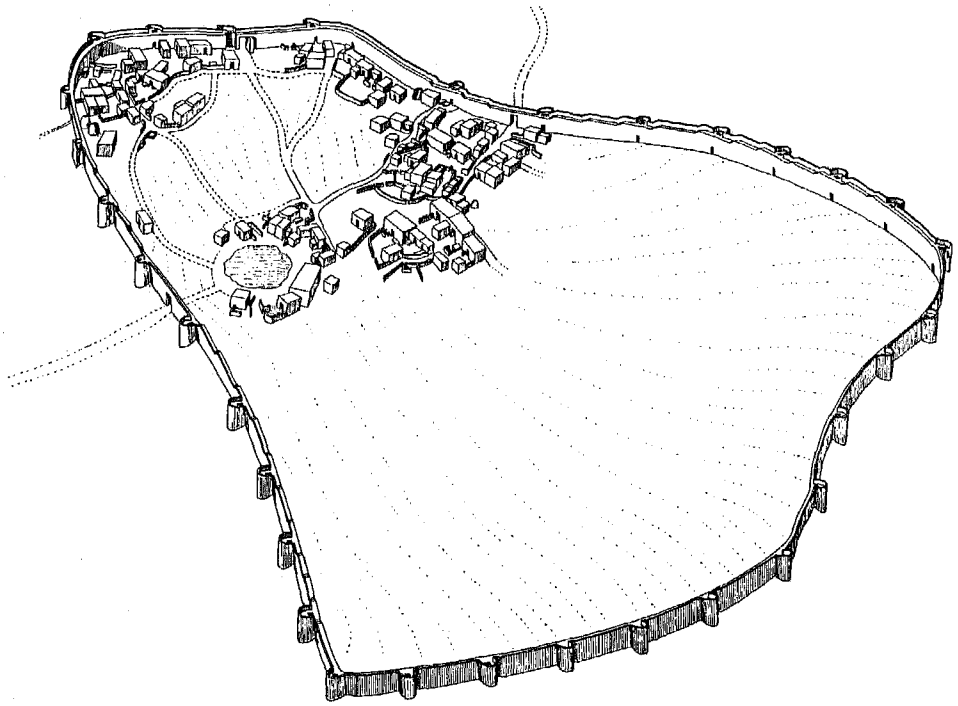
Domestic architecture. Now termed the Arad House in the archaeological literature, the typical building at Arad, for both public and private purposes, was a broadroom—a rectangular structure with an entrance in the long wall. Its features recur with great regularity: benches along the walls, a stone pillar base in the center to support the roof, one to three steps down from the street outside, and a stone doorpost socket to the left of the entrance to the house. The location of the pillar bases, together with a pottery model of an Arad House discovered in excavation, indicate a flat roof. This basic structure was usually one part of a walled compound that typically included a courtyard and a smaller subsidiary room or two that may have served as storage facilities. The courtyards contained square or round platforms used as silo bases or work surfaces. Residential compounds usually contained great quantities of restorable pottery vessels; implements of flint, bone, copper, and stone; and charred grain, flax and legume seeds, olive pits, and animal bones, all of which allowed for a detailed reconstruction of daily life. Clear residential quarters were identified in areas T-east, T-north, H, and K.

Public and elite areas. The tract between the western gate and the reservoir was designated for public and elite activities. Four distinct zones were discerned: the "market" area, the palace, the sacred precinct, and the reservoir district. This discussion proceeds from the western gate to the reservoir on the east.

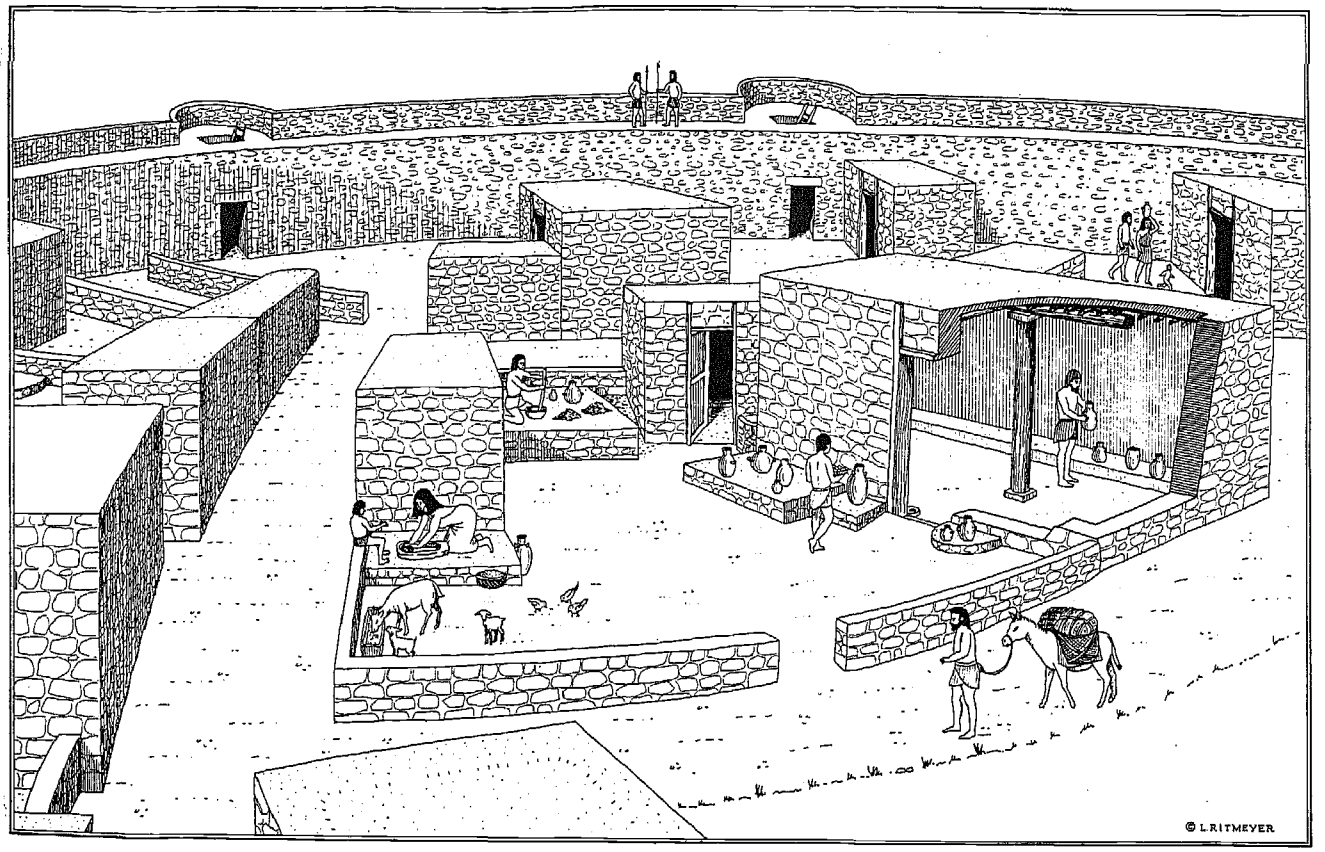
Market area. Located just inside the western gate, the market area was a large open space with two large, atypical buildings with flimsy walls. Fragments of mostly large pithoi (storage vessels) were recovered from the two buildings.

Palace. A large enclosed complex of interconnected rooms, courts, and passages, the palace had a large entrance on the north that provided access from the main street. Smaller entrances existed to the south and east. A large room appended by an antechamber and two courtyards formed the core of the palace. Numerous other rooms, cells, and courts contained considerable evidence for the storage, preparation, and cooking of food in large quantities. Other unusual features included large stone basins, monolithic "tables," and a cultic stela (see below). These elements and the location of the complex between the western gate and the reservoir, next to the sacred precinct, gave rise to the conjecture that this was the town's administrative center. [*See* Palace.]

Sacred precinct. Just below and across the street from the palace and separated from the reservoir complex by an open square was another self-contained complex. Three of its components were discerned in stratum II: a large twin temple, a small twin temple, and another large, single-roomed cultic structure. Several buildings and courtyards were only partially excavated north of the sacred precinct; their connection to the precinct remains unclear. The large twin temples each opened onto courtyards that themselves opened



ARAD: Bronze Age. *Reconstruction of the early Canaanite city.* (Drawing by L. Ritmeyer; courtesy O. Ilan)



ARAD: Bronze Age. *Reconstruction of domestic area K.* (Drawing by L. Ritmeyer; courtesy O. Ilan)

onto a type of piazza. One of the courtyards contained a large altar with an adjacent basin. The southern chamber contained a stone *maṣṣēbâ,* or stela. Large quantities of pottery and carbonized seeds were recovered there. The smaller twin temples were much like the large ones in plan. The courtyard of the northern hall contained another stone altar and a group of complete vessels, and chunks of bitumen found beneath the floor of the southern hall may have been a ritual offering. These twin temple units have much in common with the EB I twin temples at Megiddo, while the broadroom type itself is found at the Chalcolithic temple at 'Ein-Gedi and the EB acropolis Temple at Ai. [*See* Megiddo; 'Ein-Gedi; Ai.]

Reservoir quarter. Located in a depression in the town's center, the reservoir quarter was comprised of a ring of structures surrounding the reservoir on three sides. The reservoir was an open pool of approximately 1,000 sq m, into which runoff drained from all parts of the town by way of its radial streets. A dam must have existed on the east side, where no architectural remains were preserved. The surrounding buildings differ from those in the residential quarters; they can be divided into five blocks whose sequence of construction can be traced. Worthy of note are the Water Citadel, with its massive walls and unique plan of five parallel chambers, and the Water Commissioner's House, which includes the only true stone paving at EB Arad. [*See* Reservoirs.]

Religious beliefs. There are some clues to the religious beliefs held by the denizens of Arad, but they remain somewhat of a mystery. The stela in the main room of the palace was inscribed with two anthropomorphic figures with grain-like heads, one in a prone and the other in an upright position. The iconography is thought to represent the cyclical nature of the agricultural seasons and of life and death (cf. the Dumuzi/Inanna tales of Sumerian literature). [*See* Agriculture; Sumerians.] Cultic practice may also be inherent in the numerous stone and clay animal figurines found in various rooms. In general, it appears that the forces of nature were a dominant motif in the cult of Arad. [*See* Cult.]

Economy and urbanism. Considering its arid location, the economy of EB Arad was highly diversified. Sickle blades and a plethora of carbonized grain (barley and wheat), peas, lentils, chickpeas, flax seeds, and olive pits from all parts of the settlement testify to a thriving agricultural base. Sheep and goat bones were ubiquitous and represent the production of dairy products, meat, skins, and wool. Cattle bones indicate the use of the plow, and ass bones are indicative of the major form of transportation. [*See* Cereals; Olives; Sheep and Goats; Cattle and Oxen; Transportation.]

Food processing seems to have been the most common pursuit: grinding stones and mortars were found in almost every house. Evidence of other domestic activities exists as well: spindle whorls, shuttles, and needles for spinning, weaving, and sewing. Flint tools—sickle blades, tabular scrapers, drills, and awls—were still widely used in this period. Special flint objects, such as tabular scrapers and Canaanean blades, were imported to Arad as finished products, probably from the central Negev. Jewelry manufacture is indicated by beads and shells in various stages of modification, found with copper and flint awls and drills. The shells were from both the Mediterranean and the Red Seas. Two jewelry hoards were discovered—in a jug and jar, respectively—in a quarter that produced evidence for the existence of specialized artisans. [*See* Jewelry.] A number of cylinder and stamp seals were uncovered, all made of local chalk. Their style and technique are reminiscent of examples from North Syria and Mesopotamia.

Long-distance exchange relations were maintained with Sinai, Egypt, and the northern Canaanite heartland. The study of pottery fabrics (petrography) has revealed pottery exchanges between Arad and Canaanite centers to the north. Petrography has also documented ties with southern Sinai by disclosing that many of the cooking pots at Arad were made with minerals found exclusively in the former region. The material culture of contemporary sites in Sinai is also remarkably similar to that of Arad. The Sinai copper deposits seem to have been the underpinning for this interconnection and it is suggested that desert peoples used Arad as a trade emporium (Ilan and Sebbane, 1989; Finkelstein, 1990), bringing copper to exchange for northern products such as olive oil and grain. Arad seems to have been the main supplier of copper to the north throughout EB I and EB II.

Some kind of connection with Egypt is also attested to by the Egyptian pottery found at Arad. It is not known what Egyptian produce was sent to Arad in these vessels, but the Egyptians may well have imported copper, salt, and bitumen (the latter two from the nearby Dead Sea) from Arad. (In general, the Egyptians would have been primarily interested in olive oil and wine from Canaan.)

Archaeological survey has revealed that Arad was encompassed by small rural settlements it is assumed were economically and politically associated, and perhaps dominated, by the town (Amiran et al., 1980). Arad was, in fact, the only urban entity in the Negev during EB II and probably functioned as the focal point for much of the region's commercial and political activity.

The destruction of the stratum II city may be attributable to any combination of causes: a gradual decline in annual precipitation toward the middle of the third millennium, Egyptian encroachment in southern Sinai in the early years of the third dynasty (undermining Arad's primacy as a major trading center), or a version of the general political unrest and collapse such as afflicted the rest of Canaan somewhat later.

Stratum I. The stratum I settlement was much smaller and more sparse than the earlier ones, made up, perhaps, of squatters who occupied the ruined city after its destruction.

Following its abandonment in about 2650 BCE, Arad remained uninhabited until the Iron Age. Even then, most of the lower town remained unsettled and relatively undisturbed. This resulted in well-preserved remains near the surface, which have allowed for a wide exposure and a detailed reconstruction of the ancient town's economy and social life. The excavations at Arad are of paramount importance for understanding processes of urbanization, the nature of the relationship between the desert and the sown, patterns of exchange, and the nuances of everyday life in the Early Bronze Age.

[*See also* Building Materials and Techniques, *article on* Building Materials and Techniques of the Bronze and Iron Ages; Cities, *article on* Cities of the Bronze and Iron Ages; *and* Temples, *article on* Syro-Palestinian Temples.]

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ORNIT ILAN and RUTH AMIRAN

Iron Age Period

The Iron Age settlement at Arad was erected on the northeastern hill of the Early Bronze Age II city, following a gap of one and a half millennia. The excavation of the site's fortress and tell was conducted during five seasons (1962–1965, 1967) under the directorship of Yohanan Aharoni (in 1962, with Ruth Amiran). After 1977, limited excavations were carried out under the supervision of Ze'ev Herzog, in conjunction with the National Parks Authority, which is conducting restoration work at the site. Some of this summary includes reassessments of the work at Iron Age Arad—stratigraphic and chronological conclusions that differ from earlier views. The fortress and tell at Arad provide a unique archaeological sequence for the period of the Judean monarchy. The discoveries of the Judean temple and numerous Hebrew ostraca also contribute to the site's importance.

The site's Arabic name (Tell Arad) affirms its identification. It is also located at the distance from Hebron and Moleatha cited by Eusebius (*Onomasticon* 14. 1–3). Finally, the name *Arad* is inscribed four times (in mirror image) on a pottery sherd found at the site.

Arad is mentioned in the Bible: the Canaanite king of Arad foils the Israelite attempt to enter the country from the south (*Nm.* 21:1, 33:40); it is on the list of conquered Canaanite cities (*Jos.* 12:14); the Kenites settled in the wilderness of Judah at "Negev Arad" (*Jgs.* 1:16); it is listed (misspelled as Eder) among the cities of Judah (*Jos.* 15:21); and the name *Arad* is mentioned twice on Shishak's (Sheshonq) list of 925 BCE (nos. 107–112): *Hgrm ʿArad rbt ʿArad n-bt Yrhm.* The prevailing interpretation of the text is "the citadels of greater Arad and Arad of the house of Yeruham" (Aharoni, 1993). Another view recognizes three names in this text: *Hagraim, Greater Arad,* and *Arad* (of the family) *nbt* (Na'aman, 1985). "Greater Arad" is unanimously identified by scholars as Tel Arad.

Iron Age I Village: Stratum XII. The first settlement (stratum XII) was built over the deserted ruins of the EB II city. In fact, the new occupants reused some of the old houses. Most of the stratum XII remains were uncovered to the west of the citadel, buried under a later glacis. Pillared walls and storage bins were attached to two of the EB II broad rooms. A fence bordered the houses on the west, where a steep rock cliff is exposed. The preserved section, as well as sporadic finds uncovered under the later remains, allow the reconstruction of the small village in the form of an enclosed settlement. In some spots, several stratum XII living surfaces were noted. The objects recovered date to the eleventh century BCE. There was no sign of a violent destruction, and the same community may have erected the fortress of the succeeding occupational stage, in the tenth century BCE.

The initial publications of the finds from stratum XII presented a reconstruction of a cultic temenos in the center of the site, with an altar and a round high place (Herzog et al., 1984; Aharoni, 1993). These interpretations followed the view, first suggested by Benjamin Mazar, that the religious tradition at the site stemmed from the settlement of the Kenites, who had family ties (Hobab the Kenite) with Moses as mentioned in *Judges* 1:16 (Mazar, 1965). A more critical opinion suggests that these elements were ordinary domestic installations: a wall and a circular silo (Herzog, 1994). [*See* Granaries and Silos.]

First Fortress: Stratum XI. The fortress (55 × 50 m) was carefully planned: it was surrounded by a casemate wall and reinforced by projecting towers. The remains of four towers were detected on the western side. Except on the east, the casemate wall was rebuilt in the succeeding stage as a solid wall. The only exposed casemate room was at the northwest corner. The outer wall is 1.60 m wide and the inner wall 1.40 m wide. On the east, the casemate rooms were significantly wider, perhaps serving as barracks for the fort's guards. The citadels' gate was at the northern end of the eastern side (blocked by a later solid wall). The approach into the gate chamber was protected by two towers.

The assumed presence of a temple in stratum XI was not validated by the evidence. A probe under the sacrificial altar disproved the assumption that the step at its southern side belonged to an older altar. Remains of a substantial structure were observed in the northern part of the fortress, but they do not indicate a cultic use. It seems safer to attribute the construction of the temple only to stratum X.

Several domestic structures were uncovered on the southern side of the fortress. Some stone-lined granaries found to the west of the fort indicate that the glacis had been laid in stratum X, whose structures were destroyed in a conflagration. Numerous pottery vessels found in the destruction layer clearly date to the tenth century BCE, affirming the identification of the fortress with the one on Shishak's list (cf. Zimhoni, 1985).

Solid-Wall Fortress: Strata X–VI. The fortress rebuilt in stratum X was protected by a solid wall with only two gate towers. The builders filled in the space in the casemates on three sides, but on the east the new wall was constructed over the inner casemate wall. The wall was staggered at small angles in a sawtooth pattern. The fort was then square, with an area of 52 m (or 100 cubits). A new gate with two long halls inside the wall and two projecting towers was built in the center of the eastern wing. The fortifications were reinforced by a wide glacis laid around the fortress and retained by a low wall at its base.

An additional defensive feature was the construction of a water system. It consisted of underground cisterns hewn deep into the bedrock and plastered. [*See* Cisterns.] Water

was directed into the system through a channel cut into the rock on the western side of the hill. The channel was covered with stones and concealed by the glacis. The cisterns were intended for use during a siege, when water could not be drawn from the well outside the fortress in the lower city and carried by jars or waterskins to the channel opening. A passage in the solid wall, above the cover stones, may have served as a secret postern.

The casemate fortifications first attributed to this horizon were constructed of ashlars worked with a toothed chisel. Their attribution to strata VII or VI was strongly criticized by various scholars (Nylander, 1967; Yadin, 1965). A reexamination of the stratigraphic data leads to the conclusion that the casemates were, rather, part of a Hellenistic fortress that was never completed. The solid wall was thus utilized throughout the Iron Age II, in strata X–VI. Each stratum is represented by definite architectural alterations, such as the raising of floor levels, and by a large collection of pottery vessels found in destruction layers. The time span of these strata is between the ninth and early sixth centuries BCE.

Temple. The erection of the temple in stratum X in the northwest quadrant of the fortress was the only major modification made in the interior. The temple itself consisted of a main broadroom hall with plastered benches along its walls and a small compartment attached to the center of the western long wall. The compartment served as the naos, identified with the *debir* of the Temple in Jerusalem. A stela made from an oblong stone with rounded edges and showing traces of red paint was found lying next to a low stone podium. Four shallow steps led into the naos; flanking them were two limestone incense altars. These objects date to the latest use of the temple (in stratum IX), but their first use phase may belong to the early shrine.

In front of the sanctuary was a rectangular courtyard (12.00 × 7.50 m) with a stone pavement. Rooms flanked the courtyard on its other three sides, and a large sacrificial altar was found on the east. The altar (2.40 × 2.20 m) was raised approximately 1.50 m above the floor of stratum X. It was built from unhewn fieldstones laid in mud mortar. A stone step, or bench, had been placed at the foot of its southern side. A large flint flagstone, girdled by plastered channels, covered the top of the altar, and a small compartment was found adjacent to the altar on the west. A red-slipped clay incense burner, comprised of two parts, was found inside the room, attesting to the room's use as a storage area for ceremonial articles.

In stratum IX, the floor of the temple's courtyard was elevated by about 1.20 m, so that the sacrificial alter projected only 0.40 m. Another innovation related to the area's ceremonial role was the addition of a stone-built basin in the courtyard, 2 m south of the altar.

Unlike the other buildings, no indication of violent destruction is observable in the temple area. The vertical disposition of the altars and the stela and the superb preservation of the limestone incense altars and the top of the sacrificial altar indicate that the temple was intentionally dismantled. The upper parts of the walls were torn down and the whole area was buried under a thick layer of soil. The abolition of the temple is attributed to the cultic reform carried out by King Hezekiah in 715 BCE (*2 Kgs.* 18:22).

Dwellings, storerooms, and workshops. The remaining area inside the fortress was allocated to residential dwellings in the southern wing, storage units in the northern quadrant, and the workshops of craftsmen on the southwest. The house of Eliashib, the commander of the Arad fortress, was uncovered at the eastern end of the southern wing. His letters and personal seals were found in two successive layers. Crafts are evident from a hoard of unworked silver and broken jewelry that surely belonged to a local silversmith; the dozens of juglets recovered suggest the production of perfume.

Inscriptions. More than one hundred Hebrew inscriptions were uncovered at Arad. They comprise one of the largest epigraphic collections dating to the Iron Age II (Aharoni, 1981). Most of the inscriptions are on sherds (ostraca); a few are inscribed on whole pottery vessels. [*See* Arad Inscriptions; Ostracon.] The ostraca are administrative in character. Many are letters concerned with the delivery of the food supply (flour or bread, wine, oil) to military units or to *kitim,* apparently Phoenician merchants (originating from Kition on Cyprus) in the service of the kingdom. Others record taxes in kind sent from villages in southern Judah. Some historical information is hinted at the letters: the inauguration of a new king (no. 88), and threat of an Edomite attack on Ramot Negev (no. 25). Nineteen inscriptions were found in one room, in the house of Elyashib, the commander of Arad in stratum VI (see above). Three of his personal seals were uncovered in stratum VII, indicating a short time span between the end of both strata.

Post-Iron Age Phases: Strata V–I. Numerous pits, in which eighty-five Aramaic ostraca were found, characterize the Persian period (stratum V). A casemate fortress was initiated later, in the Hellenistic period, but was never completed (see above). Instead, a small fort was erected within a fenced-in camp (stratum IV). A new fort was erected in the Roman period (stratum III), in the first century BCE, and existed for about two hundred years. Following a long period of abandonment, the remains of the fort were partially reused and incorporated into a way station in the Early Arab period, in the seventh and eighth centuries CE (stratum II). A bedouin cemetery (stratum I) of the thirteenth–nineteenth centuries concludes the stratigraphic sequence.

[*See also* Fortifications, *article on* Fortifications of the Bronze and Iron Ages; *and* Temples, *article on* Syro-Palestinian Temples.]

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ZE'EV HERZOG

ARAD INSCRIPTIONS. The excavation of the citadel of Arad in the Judean Negev (about 32 km [20 mi.] south of Hebron), carried out between 1962 and 1967 by Yohanan Aharoni, was made famous by the discovery there of numerous inscriptions, most of them written on sherds in carbon black ink. Their preservation was made possible by the Negev's dry climate and the care with which they were excavated. This small site (about 50 sq m) produced 131 Hebrew, 85 Aramaic, 2 Greek, and 5 Arabic inscriptions.

Hebrew Inscriptions. All of the Hebrew inscriptions are from the Iron Age II and are written in Paleo-Hebrew. Those found in stratified contexts are said to come from strata VI–XI (c. 600 BCE–tenth century BCE). Inscriptions from earlier strata (XI–X) are rare and almost illegible; in addition, the stratigraphy of Iron Age II Arad is disputed. The final publication has not yet appeared, and the proposed dating, particularly for the earlier inscriptions, should be considered tentative. In any case, various groups of inscriptions can be discerned based on their date and content:

1. *Elyashib archives.* Ostraca 1–18 are short messages sent to the commander of the fortress, Elyashib son of Eshiyahu (cf. item 10, below, on seals), or to his lieutenant, Nahum (no. 17 in the corpus). Several are complete and most are orders to give food (flour/bread, oil, and wine) to people designated as Kittim (*ktym*)—probably Cypriot or Greek mercenaries in the Judean army. According to the quantity of food, there were probably about twenty-five Kittim who generally received their food every four or six days. These inscriptions offer clues about the bookkeeping done for the storeroom in the fortress. Apparently, these ostraca were kept for one month and, at the beginning of the next month, were registered on a papyrus scroll. The Elyashib ostraca seem to date to the tenth month—Tebet—starting on 16 January 597 BCE, when Nebuchadrezzar was either on his way to attack Jerusalem or was already besieging it. The month was probably the last in the fortress's existence.

2. *Two probable royal ostraca.* Ostraca 24 and 88 may be from the royal court in Jerusalem. Both are broken, but number 24, with at least nine complete lines, is evidence of the Edomite threat against Ramat Negev, the capital of the Judean Negev (probably Khirbet Ghara/Tel 'Ira). This ostracon contains an order to send soldiers from the small fortresses of Arad and Qinah (probably Khirbet Ghazza/Ḥorvat 'Uza) to the threatened town. Ostracon 88 is a royal declaration, probably of a new king of Judah ("I have come to reign/*'ny mlkty*") mentioning also the "king of Egypt/*mlk mṣrym.*" If it is not a schoolboy's exercise, it may be attributable to the new king Jehoahaz son of Josiah (*2 Kgs.* 23:31–32) or, more likely, to Jehoiachin son of Jehoiakim (*2 Kgs.* 24:8) and be dated to December 598 or January 597 BCE. In that case, both ostraca may also date from the last month(s) of the Judean fortress.

3. *Name lists.* Many ostraca from various strata are lists of names (nos. 22, 23, 27, 30?, 31, 35, 36, 38, 39, 41?, 42?, 49, 58, 59, 64?, 67, 69?, 72, 74, 76?, 80, 110), with or without symbols (of capacity?) and ciphers. It is very difficult to determine the precise purpose of these lists, although some may have been connected with the distribution of rations (cf. *ḥṭm,* "wheat," in no. 31). In the latest ostraca, most of the names are Yahwistic, with the theophoric element *yhw.*

4. *Military reports with a formulaic greeting.* A few ostraca contain some kind of a formulaic greeting: "Your son(s)" or "your brother" N . . . and "I bless you by *YHWH/brktk lyhwh*" (nos. 21, 40; cf. nos. 16 and 111?).

5. *Single personal names.* Eight ostraca (nos. 50–57) are small sherds with a single personal name (occasionally including the patronym). These ostraca may have been used as lots cast for priestly duties in the Arad sanctuary.

6. *Hieratic symbols.* A few ostraca are account notes with (hieratic?) symbols that are difficult to interpret (nos. 34, 112). The ostraca may be connected with the collection of grain (cf. *ḥṭm* in no. 33) from various towns (cf. no. 25: 'Anim and Ma'on).

7. *Inscriptions on whole jars.* Three inscriptions on whole jars mention a date, a personal name, and a place name (nos. 19, 20, 32?).

8. *Incised inscriptions.* Other inscriptions, on whole vessels usually, indicate the name of the owner (nos. 89, 91–98, 100, 101?). Two incised inscriptions on small plates (nos. 102–103, probably to be read *q<d>š*) and one preserved on a body sherd (no. 104, *qdš,* "holy") apparently connect these vessels with a sanctuary.

9. *Writing exercises.* Two inscriptions may have been a writing exercise: a plate incised several times with the name Arad (no. 99) and a small fragment of an incised abecedary (no. 90).

10. *Seals.* There are five Hebrew seals (nos. 105–109), among them three (nos. 105–107) with the name of the com-

mander of the fortress, Elyashib son of Eshiyahu/*'lyšb bn 'šyhw*, and one (no. 108) with three lines (name + patronym + name of the grandfather). They are all aniconic, conforming thereby to the general pattern of seals in Judah in about 600 BCE.

11. *Royal seals.* Nine royal seal impressions (*lmlk ḥbrn*; *lmlk šwkh*) from the end of the eighth century BCE were discovered, all on broken jar handles.

12. *Inscribed weights.* Thirteen inscribed weights from the seventh century BCE were recovered: two *pym* weights, a one-shekel weight, three two-shekel weights, and four eight-shekel weights.

All of the Hebrew inscriptions shed vivid light on the organization and life of a small Judean fortress in the late seventh century BCE. They are evidence that writing was in common use in a small fortress of the Negev before the first Nebudchadrezzar campaign.

Aramaic Inscriptions. Eighty-five Aramaic ostraca were found at Tel Arad. Most are very poorly preserved and half are practically illegible. Except for numbers 38?, 44, and 45, they are probably to be dated paleographically to the fourth century BCE and may be witnesses to the Persian political reorganization of the Negev at the beginning of that century (cf. André Lemaire, "Populations et territoires de la Palestine à l'époque perse," *Transeuphratène* 3 (1990): 31–74, esp. 51–53; and Lemaire, in *La Palestine à l'époque perse*, edited by E. M. Laperroosaz and A. Lemaire, Paris, 1992, pp. 29–30).

The ostraca frequently mention horses (*swsh*) or donkeys (*ḥmr*), barley, measures (in an abbreviated form), personal names, and sometimes a date (*b* + number). Ostracon 12 specifies that "donkey drivers?" came "from the province of . . . (*mdnt*)" and "belong to the regiment of Abdnanay (*ldgl ʿbdnny*)." It is thus clear that some of these inscriptions at least are connected with military organization; judging from the numerous occurrences of the name on other ostraca, the local commander may have been Yaddua (*ydwʿ*).

In addition to these ostraca there is an inscription on a bone (no. 33) and another on a jar (no. 43). The onomastic evidence from these inscriptions gives some hint of the ethnic composition of the settlement at Arad in the fourth century BCE: Hebrew names are in the majority, but there are also several Edomite (with the theophoric element *qws*) and Arabic (with the ending *-w*) names, as well as a Babylonian name.

Greek and Arabic Inscriptions. From later periods, there are inscriptions in Greek and Arabic. Two fragmentary Greek ostraca were discovered that are difficult to read and interpret. They are probably from the Roman period. Four of the fragmentary Arabic ostraca are probably to be dated to the ninth century CE. A fifth sherd is incised twice with the beginning of the formula: "In the name of Allah. . . ."

[*See also* Arad; Ostracon; Seals.]

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ANDRÉ LEMAIRE

ʿARAʿIR (Khirbet, ʿArāʿir), biblical Aroer (not to be confused with Aroer in Judea), site situated to the east of Dibon (Dhiban), 4 km (2.5 mi.) from the Madaba-Kerak road, following the path that borders the northern slope of Wadi el-Mujib (the biblical Arnon River). Its present location coincides with the references in the Hebrew Bible (*Dt.* 2:36, 3:12, 4:48; *Jos.* 12:2; *2 Kgs.* 10:33; *Jer.* 48:19) and in the Mesha inscription (l. 26). [*See* Moabite Stone.] From the site's relatively small size (50 × 50 m) and the durability of its structural remains, it appears that Aroer was built as a solid fortress to control the King's Highway crossing the Arnon. According to *1 Chronicles* 5:8, it was assigned to the tribe of Reuben after the Israelite conquest, remaining in possession of the Israelites until the reign of Solomon (*Jgs.* 11:26). King Mesha conquered and rebuilt it in about 850 BCE, annexing it to the kingdom of Moab (Mesha inscription, l. 26). Shortly thereafter, Aroer passes on to the kings of Damascus (*2 Kgs.* 10:33), until the conquest of Tiglath-Pileser III (732 BCE). Josephus (*Antiq.* 10.181) attributes its definitive destruction to the armies of the king of Babylon, Nebuchadrezzar (c. 582 BCE). Afterward, ʿAraʿir is inhabited only occasionally, during the Hellenistic and Nabatean periods.

Excavation at ʿAraʿir were undertaken by Emilio Olávarri for the Casa Santiago of Jerusalem from 1964 to 1966. Six archaeological levels were uncovered, corresponding to as many periods of occupation. Level VI, the earliest, has two phases: VIB (Intermediate Bronze Age I, c. 2250–2050 BCE), with remains of seminomadic occupation in which agriculture is practiced; and VIA (Intermediate Bronze Age II, c. 2050–1900 BCE), with very rudimentary stone houses.

After a long period of abandonment, corresponding to the Middle Bronze Age (c. 1900–1250 BCE), ʿAraʿir was again occupied at the end of the Late Bronze Age and the begin-

ning of the Iron Age I (level V, c. 1250 BCE), as a well-built fortress belonging to the Israelite settlement. King Mesha of Moab (c. 850 BCE) rebuilt the by then ancient structure as a solid new fortress, using monumental stones for the outers walls. The square building (50 × 50 m) was protected by three parallel walls: an interior wall that served as a buttress for the fortress's central area, an exterior wall 2 m wide, and an intermediate wall 1.5 m wide. The inner corridors running between each of these three walls were filled with the debris of earlier buildings. On the northwest side, which faces the surrounding plain and is therefore more vulnerable, was a double defensive wall and in front of it a reservoir to collect and store water from rainfall. Following another period of abandonment, ʿAraʿir was reoccupied, in the second and third centuries BCE (level III). A few houses were built inside the ancient fortress; they do not appear to have been constructed for permanence, suggesting that their inhabitants were seminomadic. The Nabatean occupation (level II) in the first century BCE and first century CE has little more consistency. To this period belong four houses excavated within the ancient fortress and several pits in the surrounding plain, some of them still in use. By this time, ʿAraʿir had already lost its strategic and military character. After the Roman conquest of the Nabatean kingdom by Cornelius Palma (106 CE), several more houses were built (level I), in the second and third centuries CE. They were scattered over the site and also do not appear to have been built for permanence.

[*See also* Dibon; Moab.]

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EMILIO OLÁVARRI

ARAMAIC LANGUAGE AND LITERATURE.

One of the two branches of the later Northwest group of Semitic languages, the other being Canaanite (Phoenician and Hebrew), "Aramaic" actually encompasses a number of closely related dialects. They probably emerged in Syria at the end of the Late Bronze Age; the first written traces date from the tenth century BCE. The Aramaic dialects have been in continual use since that time in some form. The importance of Aramaic lies in its long history and the geographic extent of its influence. Many of the cultures of the region employed Aramaic for civil, literary, or religious use even when the vernacular was another language. The formative periods of Christianity and Judaism occurred when Aramaic was in wide use, and it has left its mark on much of their literature. There is no consensus on the periodization of Aramaic, but the categories developed by Joseph A. Fitzmyer (1979) are widely used: Old Aramaic, the dialects of the Iron Age inscriptions from Syria, Palestine, and Mesopotamia (tenth–seventh centuries BCE), Imperial Aramaic (sixth–third centuries BCE), Middle Aramaic (second century BCE–second century CE), Late Aramaic (third–eighth centuries CE), and Modern Aramaic (present day).

Grammar. Aramaic grammar, the description of its phonology (meaningful sounds), morphology (formation and inflection of words), and syntax (meaningful arrangement of words in clauses and sentences), shares many features with the other Semitic languages.

Alphabet. The Arameans borrowed the twenty-two-letter Phoenician alphabet sometime in the eleventh or tenth century BCE. The letter forms of the earliest inscriptions are the same as contemporary Phoenician ones. Aramaic forms of the letters began to develop in the eighth century BCE. The intensive use of Aramaic in the Persian Empire (539–332 BCE) resulted in a widely used Aramiac cursive. The geographic extent of Aramaic writing triggered—by borrowing or imitation—the development of alphabetic writing in non-Aramaic languages such as Brahmi (in northwestern India), Armenian, and Georgian.

Local varieties of the script emerged in the Hellenistic period for writing the indigenous dialects, such as Palestinian, Nabatean, and Palmyrene. Jewish scribes modified each letter to fit within an imaginary square frame; this "square script" was eventually used for Hebrew as well as Aramaic, and much later was adapted for Yiddish. The Nabatean script eventually evolved into the Arabic cursive.

Orthography. When the Arameans adopted the alphabet, they had twenty-seven phonemes to fit to the twenty-two Phoenician letters. Several of the letters had to represent two phonemes (see table 1). This breach of the one-letter/one-phoneme principle may have expedited an important Aramaic innovation: using the letters /ʾ/, /h/, /w/, and /y/ to represent the long vowels /ā/, /ē/, /ū/, and /ī/, respectively. At first used mostly for final vowels, these matres lectionis ("mothers of reading") could also be used within a word, and conceivably for short as well as long vowels. Some later dialects fully exploit these possibilities; for example, Mandaic indicates every vowel by a *mater.* [*See* Mandaic.] However, the ambiguity inherent in a primarily consonantal system was not resolved until Syriac grammarians in the fourth century CE invented symbols written above and below the consonants to express the vowels. [*See* Syriac.] Jewish scribes adopted the principle (and some of the diacritics) for the various vocalization systems developed for the square script. The Tiberian Masoretic system is still in use.

Phonology. The consonants and vowels of Aramaic have undergone a number of important changes throughout history.

Consonants. The oldest Aramaic texts have a consonantal inventory little changed from Proto-Semitic. One peculiarity is the indication of etymological *ḏ* by /q/; for examples, the

TABLE 1. *Aramaic Phonemes.* The Aramaic phonemes are given, by point of articulation, in standard transcription. The square-script equivalent is also given, as well as the phonemic changes that become standard in later dialects.

	Old Aramaic	Later Dialects
Laryngeals		
Glottal stop	', written א	
Voiceless spirant	*h*, written ה	
Pharyngeals		
Voiceless spirant	*ḥ*, written ח	
Voiced spirant	*ʿ*, written ע	
Postvelars		
Voiceless spirant	*ḫ*, written ח	h (ח)
Voiced spirant	*ġ*, written ע	ʿ (ע)
Palatovelars		
Emphatic stop	*q*, written ק	
Voiced stop	*g*, written ג	
Voiceless stop	*k*, written כ	
Prepalatals		
Voiceless sibilant	*š*, written ש	
Lateral(?) sibilant	*ś*, written שׂ	s (ס)
Alveolars		
Emphatic sibilant	*ṣ*, written צ	
Voiced sibilant	*z*, written ז	
Voiceless sibilant	*s*, written ס	
Interdentals		
Emphatic spirant	*ṯ*, written ע	ṯ (ת)
Voiced spirant	*ḏ*, written ז	d (ד)
Voiceless spirant	*ṯ*, written ס/שׂ	t (ת)
Voiced emphatic stop	*ḏ* (?), written ק	ʿ (ע)
Dentals		
Emphatic stop	*ṭ*, written ט	
Voiced stop	*d*, written ד	
Voiceless stop	*t*, written ת	
Bilabials		
Voiced stop	*b*, written ב	
Voiceless stop	*p*, written פ	
Sonorants		
Lateral	*l*, written ל	
Flap(?)	*r*, written ר	
Dental nasal	*n*, written נ	
Bilabial nasal	*m*, written מ	

original **'arḏ*, "earth," is spelled /'rq/ (later dialects *'r*ʿ). The articulation is not known, but in later periods the consonant is written with ayin (/ʿ/). In Imperial Aramaic, the original interdentals (*ḏ*, *ṯ*, *ṯ*) become the corresponding dentals (*d*, *ṭ*, *ṭ*). All later dialects reflect this change. The merger of *ḫ* with *ṯ* and of *ś* with *s* occurred in the Middle Aramaic period. (See table 1.)

Vowels. By the time Old Aramaic emerged, all final short vowels had disappeared. The other vowels, only partially indicated orthographically, show some development away from the Proto-Semitic system of six vowels (long and short *i a u*): for example, unstressed final *î* becomes *ê* (written

TABLE 2a. *Inflection of Nouns*

	Masculine	Feminine
Singular Nouns		
Absolute	—	*-ā*
Construct	—	*-at*
Emphatic	*-â*	*-tâ*
Plural Nouns		
Absolute	*-în*	*-ân*[1]
Construct	*-ê*[2]	*-ât*
Emphatic	*-ayyâ*[3]	*-âtâ*

[1]Old Aramaic also *-ât*. [2]Syriac *-ay*. [3]Syriac, JBA, Mandaic *-ê*.

/h/). The position of word stress affected the vowels: During the Middle Aramaic period and after, short vowels in unstressed open syllables were eliminated or reduced to the semivowel shewa (ə). In some late dialects, unstressed final long vowels were dropped.

Morphology. Morphology is the analysis of word structure. Aramaic words can be analyzed according to their formation (the production of lexical items) or their inflection (elements added to words to indicate various nonlexical relations, such as number, gender, person, and so on).

Nouns: Inflection and formation. Nouns are inflected for three "states": absolute, construct, and emphatic (or determined). The absolute state is the unmarked state, while the emphatic state (indicated by final *-â*) signifies definiteness, similar to a definite article. (The Old Aramaic inscriptions from Zincirli, Turkey, and the Deir ʿAlla plaster text do not use the emphatic state; it may have been a later innovation that spread to all the dialects.) [*See* Deir ʿAlla Inscriptions.] In Syriac and Late Eastern Aramaic, the emphatic state is the normal state, while the absolute is used only in certain contexts. (See table 2a–b.)

Nouns in the construct state are the head words of genitive constructions (see below). In addition to the states, most nouns are marked for number (singular, plural, and sometimes dual) and gender (masculine, feminine). Most nouns are formed by combining a triconsonantal root and a vocalic or vocalic-consonantal pattern, as in other Semitic languages. Some of the nominal patterns have a regular func-

TABLE 2b. *Example Showing Inflection of* ṭâb, *"good"*

	Masculine	Feminine
Singular		
Absolute	*ṭâb*	*ṭâbā*
Construct	*ṭâb*	*ṭâbat*
Emphatic	*ṭâbâ*	*ṭâbᵉtâ*
Plural		
Absolute	*ṭâbîn*	*ṭâbân*
Construct	*ṭâbê*	*ṭâbât*
Emphatic	*ṭâbayyâ*	*ṭâbâtâ*

TABLE 3. *The Aramaic Verb.* A good impression of the similarities and differences between the dialects can be gained from a synoptic table of verb conjugations. This table presents the conjugation of the root *ktb*, "to write," in the G-stem (basic stem), perfect and imperfect tenses. The sample dialects are those for which dependable traditions of vocalization exist. "Proto-Aramaic," the putative ancestor language, is purely hypothetical. Superscript letters represent consonants written but not pronounced.

	Proto-Aramaic	Targum Onkelos	JPA	Samaritan	Syriac	Mandaic
Perfect, Singular						
3d masc.	*kataba*	*kətab*	*kətab*	*kātab*	*ktav*	*ktab*
3d fem.	*katabat*	*kətabat*	*katəbat*	*kātābat*	*katvat*	*kitbat*
2d masc.	*katabtā*	*kətabtā*	*kətabt*	*kātabt*	*ktavt*	*ktabt*
2d fem.	*katabtī*	*kətabt*	*kətabt*	*kātabt*	*ktavt^{y}*	*ktabt*
1st (com.)	*katabt(u)*	*kətabit*	*katəbet*	*katbət*	*kitvet*	*kitbit*
Perfect, Plural						
3d masc.	*katabû*	*kətabû*	*kətabu*	*kātābu*	*ktav^{w}*	*ktab, ktabyun*
3d fem.	*katabâ*	*kətabâ*	*katben*	*kātābi*	*ktav^{y}, ktaven*	*ktab, ktabyan*
2d masc.	*katabtuma*	*kətabton*	*kətabton*	*kātabton*	*ktavtun*	*ktabtun*
2d fem.	*katabtina*	*kətabten*	*kətabten*	*kātabt^{ʿ}n*	*ktavten*	*ktabtin*
1st (com.)	*katabnâ*	*kətabnâ*	*kətabnan*	*kātabnan*	*ktavn*	*ktabnin*
Imperfect (indicative), Singular						
3d masc.	*yaktubu*	*yiktob*	*yektob*	*yiktab*	*nektuv*	*niktub*
3d fem.	*taktubu*	*tiktob*	*tektob*	*tiktab*	*tektuv*	*tiktub*
2d masc.	*taktubu*	*tiktob*	*tektob*	*tiktab*	*tektuv*	*tiktub*
2d fem.	*taktubina*	*tiktəbîn*	*tektəbin*	*tiktābi*	*tektvin*	*tiktub*
1st (com.)	*ʾaktubu*	*ʾektob*	*ʾektob, nektob*	*iktab*	*ektuv*	*iktub*
Imperfect (indicative), Plural						
3d masc.	*yaktubûna*	*yiktəbûn*	*yektəbun*	*yiktābon*	*nektvun*	*nikitbun*
3d fem.	*yaktubnâ*	*yiktəbân*	*yektəban*	*yiktāban*	*nektvân*	*nikitban*
2d masc.	*taktubûna*	*tiktəbûn*	*tektəbun*	*tiktābon*	*tektvun*	*tikitbun*
2d fem.	*taktubnâ*	*tiktəbân*	*tektəban*	*tiktāban*	*tektvân*	*tikitbun*
1st (com.)	*naktubu*	*niktob*	*nektob*	*niktab*	*nektuv*	*niktub*
Infinitives						
G-stem	*katâb*	*miktab*	*mektob*	*maktab*	*mektav*	*miktab*
D-stem	*kattâbʔ*	*kattâbā*	*məkattaba*	*amkattaba*	*mkattâvu*	*katobi*
C-stem	*haktâbʔ*	*ʾaktâbā*	*maktaba*	*miktāba*	*maktâvu*	*aktobi*

tion, such as the adjectival pattern *kattîb* (e.g., *qaddîš*, "holy," from *qdš*; *rašš^{ʿ}*, "wicked," from *rš^{ʿ}*), or the *kâtôb* agentive (e.g., *pârôq*, "savior," from *prq*), but many patterns have no systematic function. Compound words are very rare.

Verbs: Inflection and formation. Verbs have two conjugations, one with suffixes (the "perfect") and one with prefixes and sometimes suffixes (the "imperfect"). The conjugational affixes indicate person, number, and gender. In Old and Imperial Aramaic, the imperfect distinguished between the indicative and jussive moods, but the later dialects made their paradigms uniform, leveling through the indicative type (Western Aramaic) or the jussive type (Syriac, Eastern). Infinitives and active/passive participles complete the system. (See table 3.)

Like nouns, root/pattern combinations form verbal "stems." Unlike nouns, the stems form a limited but productive system and differentiate certain kinds of action. The three principal stems are the simple, or G stem for simple or unmarked action; the D-stem (with a doubled middle root letter) for repetitive, factitive, or pluritive action; and the C-stem for causative action. Each stem has a corresponding stem with prefixed *ʾit-* (Gt, Dt, Ct), usually indicating the passive voice. Early Aramaic used an internal causative passive instead of the Ct-stem; it also had an internal G-stem passive. The verb stems in the perfect conjugation with the root *ktb* are as follows (using Biblical Aramaic):

G-stem	*kətab*	Gt-stem	*ʾitkətib*
D-stem	*kattēb*	Dt-stem	*ʾitkattab*
C-stem	*haktēb*	C-passive	*huktab*

In later dialects, the C-passive *huktab* was replaced by *ʾittaktab*.

Syntax. Syntax examines the combination of words into phrases, clauses, and sentences. Only a few important syntactic features are discussed here.

Genitive phrase. The oldest type is the construct chain, in

which a noun in the construct state is prosodically bound to a following noun to produce a genitive construction: *bayt*, "house" + *malkâ*, "the king" > *bêt malkâ*, "the house of the king." In Old Aramaic the construct phrase begins to be replaced, under Akkadian influence, by nouns joined by the particle *dî* (later *d-*): *bêtâ dî malkâ* (same meaning). Such constructions become the rule in the later dialects. A common subtype has a suffix on the head-word: *bêtēh dî malkâ*, "his house of the king," or "the king's house."

Verbal function. The perfect conjugation is commonly used for the historical past or the perfect. The imperfect has a more complicated development. In the older texts, it has an iterative, durative, future, or precative reference. When used as a precative, some dialects used a preformative *l-* instead of the usual *y-*. In Eastern Aramaic and Syriac, the precative came to replace the indicative (with the preformative *l-* becoming *n-* in Syriac and Mandaic). At the same time, the active participle came to be used as a present tense and, with the root *hwy*, "to be," to denote past or future continuous action. In Syriac and Late Eastern Aramaic, the participle often denotes futurity, and the imperfect, modality, while in the West a three-tense system formed: past (perfect), present (participle), and future (imperfect).

Word order. The oldest word order in the verbal clause is verb-subject-object (VSO), with a subject-verb-object (SVO) as a common variant; both orders are common in the later dialects. Some Imperial Aramaic texts, as well as Biblical Aramaic, also use an SOV order, apparently under Akkadian or Persian influence.

Vocabulary. Despite significant dialect differences, a pervasive unity is seen in common Aramaic vocabulary. The most frequently used verbal roots are shared by all dialects: *slq*, "to go up"; *nḥt*, "to go down"; *'ll*, "to enter"; *npq*, "to exit"; *'bd*, "to do, make"; *mll*, "to speak"; *'zl*, "to go"; *yhb*, "to give"; *ntl*, "to lift up"; and so on. The same is true of nouns, numerals, and adjectives—for example, *ḥad*, "one"; *rab*, "great"; *'ôraḥ*, "way"; *'atar*, "place"; *saggî*, "many." Such unity must derive from a common divergence from a single ancestor dialect, or from a convergence of dialects fostered by constant contact. Probably both elements contributed to Aramaic uniformity.

Contact with other languages. Aramaic was used alongside other languages throughout its history, and it both absorbed features from them and influenced them. Akkadian had great influence, particularly on the shape of Imperial and Eastern Aramaic (see above), and it borrowed freely from Aramaic as well. Persian also contributed many lexemes and some grammatical features. Greek loanwords and constructions became increasingly common in the Byzantine period, especially in Syriac. [*See* Greek.] In Jewish circles, Aramaic greatly altered Hebrew; postbiblical Hebrew owes many of its characteristic features to Aramaic, and Aramaic in turn borrowed various religious words from Hebrew. Finally, Arabic owes its alphabet and a significant number of loanwords to Aramaic. [*See* Hebrew Language and Literature; Arabic.]

Aramaic dialects. No texts in the hypothetical ancestor language of the Aramaic dialects ("Proto-Aramaic") have survived. From its earliest written appearances, Aramaic is characterized by dialect divisions.

Old Aramaic. The earliest Old Aramaic text is a one-line inscription on an altar found at Tell Ḥalaf on the upper Khabur River (*KAI* 231), possibly from the tenth century BCE. [*See* Ḥalaf, Tell.] From a nearby site and from a slightly later time is the Tell Fakhariyah bilingual, a statue bearing inscriptions in Akkadian and Old Aramaic. [*See* Fakhariyah Aramaic Inscription.] The oldest text from Syria is the Melqart stela (*KAI* 201), a votive inscription to Melqart from "Bar-Hadad, king of Aram," probably from the ninth century BCE. Although found north of Aleppo, it probably originated in the kingdom of Damascus. The longest texts, the Sefire treaty inscriptions (*KAI* 222–224), appear on three stelae discovered at Sefire, south of Aleppo. They contain the text of a treaty made between Mati'el of Arpad and a certain Bar-Ga'yah of KTK (the Assyrian Shamshi-Ilu, according to André Lemaire and J.-M. Durand, *Les inscriptions araméennes de Sfiré et l'Assyrie de Shamshi-ilu*, Geneva, Paris, 1984). The texts date from the mid-eighth century BCE. [*See* Sefire Aramaic Inscriptions.]

Two eighth-century BCE inscriptions, the Hadad and Panammu inscriptions (*KAI* 214, 215) were discovered at Zincirli (ancient Sam'al). The first is on a statue of Hadad dedicated by Panammu I of Sam'al; the second is on a broken statue, dedicated to Panammu II by his son Bar-Rakkab (c. 730 BCE). The inscriptions are the only evidence for the Sam'alian dialect of Aramaic, which evinces a number of archaisms and unusual features, leading some to doubt its classification as Aramaic. Bar-Rakkab also left six other texts, not written in Sam'alian, of which the so-called *Bauinschrift* (*KAI* 216), detailing his building activities, is the longest and best preserved.

From the ancient kingdom of Hamath comes the Zakkur stela (*KAI* 202), a fragmentary inscription from Afis south of Aleppo. [*See* Zakkur Inscription.] It narrates the rise to kingship of Zakkur, "a humble man" (l.2), and how, having fought off a coalition of foreign kings, he embarked on building projects to the glory of his god Iluwer. It probably dates from the early eighth century BCE. Two funerary inscriptions from Nerab probably date from the beginning of the seventh century BCE: the Sin-zer-ibni inscription (*KAI* 225) and the Si-gabbar inscription (*KAI* 226), commemorating two priests of the god Śahr. [*See* Nerab Inscriptions.]

Modern Jordan and Israel are the sites of two important recent discoveries. The most interesting (and perplexing) is the Deir 'Alla plaster text, an inscription in ink painted on plaster discovered in 1967 at Tell Deir 'Alla in Jordan. Only fragments are preserved, and the reconstruction of the text as a whole is provisional. It is certain, however, that it tells

of a vision seen by Balaam son of Beor, known from *Numbers* 22–24. The connections with the biblical text are intriguing. Equally as controversial is the classification of the language: despite some features that link it to the local Canaanite languages (Hebrew or Moabite), the language of the text should be considered Aramaic. The newest Aramaic discovery is the Tel Dan stela, a stone fragment containing 13 incomplete lines discovered in northern Israel in 1993. The fragments tell of the victory of an Aramean king, probably Hazael (eighth century BCE), over the "king of Israel" and the "king of the house of David"—that is, Judah—in what, apparently, is the first reference to David outside the Hebrew Bible. Additional fragments were discovered in 1994.

Imperial Aramaic. Assyria dominated the Near East in the 8th and 7th centuries BCE, and the texts from this period reflect a growing standardization of Aramaic—the beginning of "Imperial Aramaic," an Aramaic koine that left its mark on all subsequent dialects. The widespread use and influence of Aramaic dates to the period of Assyrian hegemony. A narrative from the Hebrew Bible depicts the knowledge of Aramaic at this time as a possession of the Israelite scribes but not of the common people. The emissary of Sennacherib of Assyria came to Jerusalem in 710 BCE to demand surrender. During the parley, the Judeans said, "Please speak to your servants in Aramaic, for we understand it. But do not speak with us in Judean in the hearing of the people" (*2 Kgs.* 18:26). Written and pictorial remains testify to the presence of Arameans and Aramaic scribes in official capacities throughout the region.

The extant Aramaic texts from the Assyrian period, however, are brief. They include 14 inscribed weights from Nineveh (*CIS* 1–14), dockets, labels, and brief records written or scratched into clay tablets from Aššur, Nimrud, Tell Ḥalaf, and elsewhere. The Aššur ostracon (*KAI* 233) is a fragmentary letter sent from Babylonia and dated to about 650 BCE. [*See* Nineveh; Aššur; Nimrud.]

Aramaic texts from the Neo-Babylonian period (612–539 BCE) are also few and brief, comprising a few dockets, and one fragmentary papyrus, the 6th-century Adon letter (*KAI* 266), from the ruler of Ekron (Tel Miqne) in Palestine to the Pharaoh. [*See* Miqne, Tel.] The original of the Uruk incantation may date to the same period. Its magical text contains an archaic form of Eastern Aramaic written in syllabic cuneiform on a tablet dating to the third century BCE.

The high point of Imperial Aramaic is in the Persian period (539–332 BCE). The Achaemenid dynasty continued the practice of using Aramaic as a lingua franca, and textual remains from every point of the far-flung Persian Empire attest to its use in law, administration, and literature. The largest and most significant remains have come from Egypt, where the climate is ideal for preserving writings on leather and papyrus. One of the most important manuscript finds of the century was the discovery in 1906 of the archives of the Jewish colony at Elephantine, comprising more than one hundred relatively intact papyri. Dating from the fifth century BCE, they include ten official letters to and from the head of the community, several family archives, and numerous administrative, legal, epistolary, and literary documents. [*See* Papyrus; Elephantine.]

The most important literary text is a copy of the Words of Ahiqar, later versions of which are known from other languages. It is the story of how the sage Ahiqar, advisor to Assyrian royalty, was betrayed by his nephew Nadan and later restored to favor. The "proverbs" of Ahiqar contained in the document are a significant example of Near Eastern wisdom literature. Also found at Elephantine was an ancient translation of the Bisitun inscription of Darius. [*See* Bisitun.] Other significant documents from Egypt are the correspondence of Arsham, the Persian satrap of Egypt; the Hermopolis letters, private letters written in a nonstandard dialect; papyri and inscriptions from Memphis Saqqara, Abydos, Giza, Luxor, Edfu, and elsewhere. [*See* Memphis; Saqqara; Abydos; Giza.] One of the most remarkable documents is the Amherst demotic papyrus, a long, fragmentary scroll of religious and narrative texts in Aramaic written in Egyptian demotic script. Still only partially published, the often idiosyncratic use of demotic characters makes the papyrus difficult to understand. Other Imperial Aramaic documents from Syria-Palestine, Mesopotamia, Asia Minor, Iran (especially Persepolis), Afghanistan, and Arabia (Tayma'), show its widespread use. [*See* Persepolis; Tayma'.] The Aramaic sections of the *Book of Ezra* in the Hebrew Bible, putatively dating from the Persian period, are written in Imperial Aramaic.

Middle Aramaic. When the Greeks came to power in the Near East in the fourth century BCE, Aramaic lost its official status. However, its long career as a lingua franca left its mark on every dialect, and the local vernaculars continued to play major roles. The "post-Imperial" period, during which the local dialects developed as literary standards in their own right, is called Middle Aramaic.

Nabatean was used in North Arabia, Sinai, and Petra in Jordan. Archaeologists have found thousands of Nabatean graffiti and burial inscriptions dating from the second century BCE to the fourth century CE. Several Nabatean legal texts have been discovered in caves in the Judean wilderness. In general, Nabatean is conservative, being much influenced by Imperial Aramaic. It contains a number of loans from Arabic, the region's principal vernacular. The Nabateans developed a highly individual cursive script that was the direct ancestor of the Arabic script. [*See* Nabatean Inscriptions; Sinai; Petra.]

To the west, Jewish Palestinian Aramaic is attested from the finds from the Dead Sea wilderness, principally Wadi Qumran. [*See* Qumran.] About 25 percent of the Dead Sea Scrolls were written in Aramaic, including the oldest targum (Aramaic Bible translation), the Targum of Job. Other im-

portant texts include the *Genesis Apocryphon* (a retelling of the patriarchal narratives), the *Book of Tobit*, the *Book of Enoch*, and the *Testament of Levi*. Other texts, including apocalypses, stories, and legal texts, have recently been published, and testify to a rich Aramaic literary culture in the centuries from about 200 BCE to the mid-first century CE. The Aramaic sections of the *Book of Daniel* probably belong to this period, although in some respects its language is more archaic than that in the Qumran documents. Inscriptional material is sparse, but there are some burial texts and graffiti on ossuaries. Letters and legal documents from the Second Jewish Revolt against Rome (132–35 CE) found in other cave sites near the Dead Sea include letters (some in Aramaic) written by the revolt's leader, Shim'on bar Koseba/Bar Kokhba. [*See* Judean Desert Caves; Dead Sea Scrolls; Bar Kokhba Revolt.] The Qumran dialect itself is conservative, but less so than Nabatean. By the time of the Second Revolt, the vernacular was beginning to shake off the influence of the old Imperial dialect, particularly in the Bar Kokhba letters. The legal texts often preserve the formularies of earlier centuries.

From the same period, the Greek New Testament preserves a few words and brief sentences in Aramaic; this, combined with other evidence, has given Aramaic a reputation as the "language of Jesus." Although Aramaic was commonly used, it is not certain that Jesus and the early Palestinian church used it exclusively because Hebrew and Greek were also widely spoken at the time.

The oasis of Palmyra (Tadmor) in the Syrian desert yielded thousands of inscriptions in its national script dating from 44 BCE to 272 CE, including the longest Aramaic inscription known, the Tariff Bilingual in Greek and Palmyrene (137 CE). [*See* Palmyrene Inscriptions.] Palmyrene is a transitional dialect sharing both Western and Eastern features. Farther north, about seventy votive and funerary inscriptions in Edessene (Old Syriac) survive from the first and second centuries CE. As its name indicates, this literary dialect originated in Edessa (modern Urfa). The oldest inscription is dated to 6 CE.

Finally, the Aramaic of the Parthian Empire is found on hundreds of votive inscriptions from Hatra, an oasis on the upper Tigris River, from Aššur and a few other sites. They date from the first–third centuries CE. The morphology of Hatran already displays the traits of the later Eastern dialects. [*See* Hatra Inscriptions.]

Late Aramaic. The late dialects (200 CE–700 CE) are generally associated with the national or religious groups that used them. They are typically divided geographically into Eastern (Mesopotamian) and Western (Palestinian) dialects. This division is simplistic and should be revised to include Central Aramaic (see below), which is comprised of classical Syriac and other dialects not clearly falling into the East–West categories.

Western Aramaic includes the dialects used by the three principal religious groups of Palestine in the Byzantine period: Jewish Palestinian Aramaic, Christian Palestinian Aramaic, and Samaritan Aramaic. Jewish Palestinian Aramaic (JPA) is used in the Palestinian targum, a translation of the Pentateuch preserved in various recensions, including texts from the Cairo geniza, liturgical selections known as the Fragment-Targum, and the virtually complete Targum Neofiti. A somewhat different (later?) dialect is used in the Palestinian Talmud and the Palestinian rabbinic commentaries (midrashim). Although JPA developed from dialects spoken in an earlier period, occasional efforts to study it simply as the first-century CE vernacular (and therefore the language of Jesus) have not been successful. Christian Palestinian Aramaic (CPA) is preserved in inscriptions and manuscripts of the Melkite Christians, primarily from the third–ninth centuries CE. Almost all of the literature is translated from Greek and includes biblical texts, liturgies, sermons, and biographies. CPA is written in a form of the Syriac script, and indeed Syriac was an important influence on it. Samaritan Aramaic was used by the Samaritan sect of Judaism. The Samaritans had their own targum (in two recensions) and religious literature, including chronicles, sermons, and liturgical poetry. [*See* Samaritans.]

Eastern Aramaic is comprised of Jewish Babylonian Aramaic (JBA) and Mandaic. JBA was the language of the Mesopotamian Jewish community. The Aramaic portions of the Babylonian Talmud are the most important witness to this dialect. Hundreds of bowls bearing magical incantations in JBA from excavations at Nippur and other sites in Lower Mesopotamia constitute crucial nonliterary evidence for JBA. Mandaic was used by the Mandaeans, a Gnostic sect living in parts of Iran and Iraq since Late Antiquity. Mandaic, used in their voluminous religious literature (also including incantation bowls and other magical texts), is very close to JBA in its grammar and vocabulary but has its own distinctive script and orthography.

Central Aramaic is virtually equivalent to Syriac, the written variety of the standard Aramaic of Syria-Upper Mesopotamia during the Byzantine period. There is more surviving literature in Syriac than in any other Aramaic dialect because it was used by a vast portion of Eastern Christianity for liturgy, translations of secular works, and religious literature, including one of the oldest Bible translations, the Peshitta.

Syriac Christianity, divided by doctrinal controversies, split into two groups during the fifth and sixth centuries CE. The Western (Jacobite) branch, centered on Edessa in the Byzantine Empire, and the Eastern (Nestorian) branch, centered at Nisibis in the Persian sphere, evolved their own scripts, pronunciation, and literary traditions. In both forms, Syriac continued to be a creative medium of literature until around the fourteenth century CE. It still survives in its classical form as a liturgical and scholarly language. The language of Targum Onkelos and Targum Jonathan, the most

widely used targums in Judaism, has proved difficult to classify. Although many consider it to belong to Middle Palestinian Aramaic, it may be a Jewish variety of early Central Aramaic.

Late literary dialects. Aramaic declined as a spoken language after the rise of Arab power and prestige under Islam, but the literary dialects continued in use. Syriac, as noted, endured as a literary medium to modern times. A number of Jewish Bible translations were written in late Jewish Literary Aramaic, a dialect combining Eastern, Western, and Syriac features. CPA's second principal literary period occurred during the eleventh–thirteenth centuries CE.

Modern Aramaic. Some forms of Aramaic are still spoken in various ethnic enclaves of the Near East. Western Aramaic is represented by the language of the Syrian town of Ma'lula and other nearby villages and Eastern Aramaic by a number of dialects spoken in parts of Turkey, Iraq, and Iran. The phonology and vocabulary of the modern dialects are heavily influenced by Arabic, Turkish, and Persian.

[*See also* Arameans; Imperial Aramaic; *and* Palestinian Aramaic.]

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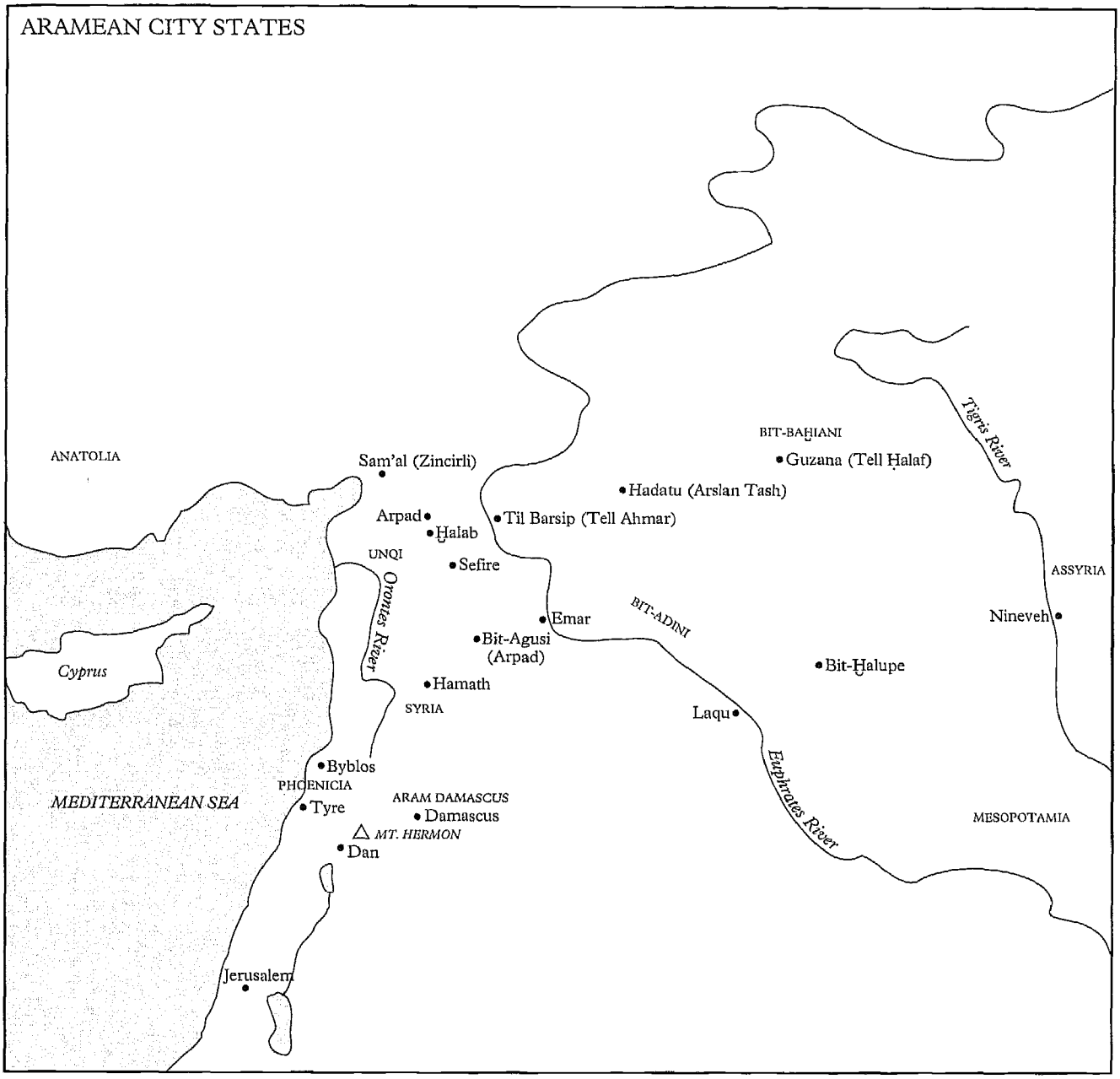
ARAMEANS designates a number of linguistically related ethnic groups who spoke the West Semitic language called Aramaic and who inhabited a considerable part of the Near East, particularly Syria and Mesopotamia, in the first millennium BCE. A number of Aramean nation-states developed in Syria in the late eleventh and the tenth centuries BCE that became influential in the political and cultural development of the Levant. Aramean tribes also became a major population element in both Assyria and Babylonia in the first half of the first millennium BCE, so that eventually Aramaic became the primary spoken language of the Fertile Crescent, largely replacing Akkadian in the east and the local West Semitic dialects, such as Hebrew, in the west.

The origins of the Arameans are obscure. They make their first certain appearance in historical texts only in the early eleventh century BCE. Some scholars believe that they were pastoralist tribes living on the borders of the Syrian desert who swept northward into northern Syria and Upper Mesopotamia during the last years of the second millen-



nium. After establishing themselves there, the tribes migrated both toward the southwest, into central and southern Syria, and southeastward, into central and southern Mesopotamia. Those scholars who disagree with this model suggest that the Arameans were simply the descendants of the West Semitic population of Syria, known from earlier second-millennium sources as Amorites and Aḫlamu. Although political power in northern Syria had been held by the Hurrians in the Late Bronze Age, the Iron Age saw a resurgence of Semitic aristocracies (i.e., Arameans) in control of many areas.

The Arameans never developed a unified culture or political entity. Numerous small states developed throughout Syria and flourished between the eleventh and the late eighth centuries BCE, alongside other states whose aristocracies belonged to Luwian-speaking groups that had migrated into northern Syria after the collapse of the Hittite Empire. The Aramean states were eventually demolished, both economically and ethnically, by the Assyrians, through brutal military suppression and mass deportation of populations.

Although dozens of Aramean tribes and states existed throughout Syria, only a few of them became politically significant and played major roles in that region's political history.

1. *Bit-Zamani, Bit-Baḫiani, Bit-Ḫalupe, and Laqu.* Four Aramean states developed quite early along the western border with Assyria, but they came under Assyrian domination by the ninth century BCE. The important city of Guzana (Tell Ḥalaf) was the capital of one of these states, Bit-Baḫiani. The excavations there provided significant evidence of early Aramean public art and architecture.

2. *Bit-Adini.* Located in the great bend of the Euphrates River, Bit-Adini was a formidable opponent to Assyrian expansion during the early ninth century BCE. Excavations have taken place at two important cities of Bit-Adini—Til Barsip (Tell Ahmar), which may not actually have come under Aramean control until the reign of Aḫuni, the last king of Bit-Adini, and Hadatu (Arslan Tash), which became an important Assyrian outpost in the region after Bit-Adini was annexed.

3. *Bit-Agusi.* In the region surrounding Aleppo, the state of Bit-Agusi was called Yaḫan early in the ninth century BCE, and, sometimes, Arpad, after its capital city, in the eighth century. This state, under vigorous kings, became a primary power in northern Syria in the ninth and eighth centuries BCE and was not fully subdued by the Assyrians until 743 BCE, during the reign of Tiglath-Pileser III. Limited excavations have been undertaken at Arpad (Tell Rifa'at), and an important Aramaic treaty between king Mati'el of Bit-Agusi and one Bar-Ga'ya of the land of *ktk*, inscribed on stone stelae, was found at the site of Sefire, in the southern part of the kingdom.

4. *Aram Damascus.* In southern Syria, Aram Damascus played a major role in the Levant in the ninth and eight centuries BCE, with the peak of its power occurring in the mid and late ninth century, under its kings Hadad-idri and Hazael. No excavations have reached Iron Age levels at Damascus.

5. *Sam'al (Zincirli).* Mention should also be made of the small city-state of Sam'al (Zincirli). Excavations at this site produced considerable sculpture, architecture, and inscriptions that are an important source of study for north Aramean culture.

6. *Other states in Syria.* There were certainly large populations of Arameans in other states in Syria, although they were often ruled by members of the Neo-Hittite aristocracy. Some states had both a Luwian and an Aramaic name, such as Pattina/Unqi. The important kingdom of Hamath was ruled in the tenth and ninth centuries BCE by dynasts with Neo-Hittite names, but by kings with Aramaic names in the eighth century BCE.

Literary remains of the Iron Age Aramean states are very limited. A few Aramaic inscriptions on stone are known, but most of the historical information available about these kingdoms comes from Assyrian texts and the Hebrew Bible. These two sources, while helpful, are of limited value, however, because they deal almost exclusively with the conflicts between their own nations and the Aramean states. They offer little or no insight into the internal structure of the Aramean kingdoms. In addition, remarkably little archaeological work has been done on the important sites, and most of the large-scale excavations that have taken place, such as at Arslan Tash, Tell Ahmar, Tell Ḥalaf, and Zincirli, were in the late nineteenth or early twentieth centuries, before reliable field and recording techniques were developed.

Not much can be said about Aramean culture because so little archaeological and literary data has been recovered so far. The Arameans do not appear to have made major contributions either to political or social practices in the Levant; and their styles of art and architecture are largely based on those of others. In northern Syria, the artistic and architectural traditions of the Arameans were heavily influenced first by the Neo-Hittite states, which preserved many cultural elements of the Late Bronze Age Hittite civilization, and later by the Assyrians. The few artistic pieces from southern Syria show a strong cultural influence from Phoenicia. The Arameans in Babylonia appear to have adapted to Babylonian styles.

Aramaic inscriptions indicate that Aramean religion descended from the West Semitic religion of the second millennium. The weather/fertility god, Hadad, appears to have been the head of the pantheon in several of the Aramean states, while the moon god Sin/Shahar, El, Rakib-el, Shamash, and Resheph seem to have played significant roles.

The major legacy of the Arameans was their language and script. Because they were probably the largest population group in Syria, their language came to dominate that area early in the first millennium BCE. The mass deportations of Arameans into Assyria in the ninth and eighth centuries resulted in the spread of the language into northern Mesopotamia; by the late eighth century it was being used as a diplomatic language by the Assyrians themselves. In the Neo-Babylonian period, Aramaic became the most common language in Babylonia as well. The Persian government adopted Aramaic as its international language, so that it came to be used commonly across southwest Asia. Thus, archives of Aramaic papyri from Egypt in the Persian period, Aramaic documents from Palestine in the fourth century BCE, and inscriptions from Turkey, Iran, and even Afghanistan have been found. Eventually, Palestine's local West Semitic dialects, including Hebrew, died away and were replaced with Aramaic. By the last two centuries BCE, Aramaic had become an important language for Jewish literature, and Syriac, an Aramaic dialect, played an important role in the Eastern church in the Roman and Byzantine periods.

The Arameans borrowed their script from the Phoenicians, probably in the late eleventh or early tenth century. However, they made a significant adaptation to Phoenician writing customs: they were the first to use some of the alphabetic letters to indicate vowel sounds (the so-called *matres lectionis*). This important contribution to orthography

was slowly adopted by other cultures, including Israel. Eventually, the Aramaic script itself came to replace the other national scripts of Syria-Palestine, including that of Hebrew. The square script commonly used in Judea (Judah) by the third century BCE, which is the ancestor of the Hebrew book script used today, is actually a descendant of Aramaic script.

[*See also* Aramaic Language and Literature; Damascus; Halaf, Tell; *and* Syria, *article on* Syria in the Bronze and Iron Ages.]

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WAYNE T. PITARD

ARARAT. *See* Urartu.

ARCE. *See* American Research Center in Egypt.

ARCHAEOLOGICAL INSTITUTE OF AMERICA. Founded in 1879 by Charles Eliot Norton, the Archaeological Institute of America (AIA) is a not-for-profit, scientific and educational organization chartered through the Smithsonian Institution by the U.S. Congress. The following act of incorporation was approved by President Theodore Roosevelt for the Archaelogical Institute of America on 26 May 1906: "[The Institute] shall have perpetual succession for the purpose of promoting archaeological studies by investigation and research in the United States and foreign countries . . . by aiding the efforts of the independent explorers, by publication of archaeological papers, and reports of the results of the expeditions. . . ."

The institute is the oldest archaeological institution in North America, whose governing board was elected in 1929 to safeguard its endowment. The AIA administrative offices are located at Boston University. The central mission of the AIA is to encourage and promote archaeological research and to increase public knowledge and awareness through the conservation, preservation, and publication of the world's patrimony for the benefit of all.

The institute remains a paradigm for combining both a professional and public focus on archaeology. Its programs and activities are designed to meet the needs and interests of its members and the public. The institute has initiated educational outreach in archaeology for schoolchildren through its Youth Education Program, which has successfully implemented programs in St. Louis, Minneapolis, Los Angeles, and Chicago. Since 1967, expert archaeologists have guided travelers around the world with the institute-sponsored tours.

The institute inaugurated its scholarly journal, the *American Journal of Archaeology (AJA),* in 1882. During World War II, the *AJA* published articles by European scholars, and the institute assisted in preparing maps of monuments it hoped would be spared from bombing raids. Published quarterly and with a circulation of four thousand, it is devoted to the archaeology and art of ancient Europe and the Mediterranean world, including the Near East and Egypt, from prehistory to late antiquity.

The institute actively promotes research and fieldwork and annually publishes the *Fieldwork Opportunities Bulletin* for students and amateurs; the publication lists opportunities and programs supplied by excavation directors and institutions. The institute's other publications include abstracts from its annual meeting (held, for ninety-three years, in conjunction with the American Philological Association) and its *Newsletter,* founded in 1989. Its annual report, the *Bulletin,* has been published since 1910. Between 1948 and 1973, the institute published thirteen monographs in the AIA Monograph Series; since 1944 it has supported the publication of the International Committee on the *Corpus Vasorum Antiquorum.*

The institute responded to the interests of nonspecialists by publishing *Archaeology* magazine (originally *Art and Archaeology*), beginning in 1914. Revitalized in 1948 (after the Depression in the 1930s), it has followed a steady rate of growth to a present-day circulation of 150,000. *Archaeology*

continues to inform the public about the latest discoveries in archaeology worldwide, with richly illustrated articles written by professionals.

In 1884, the institute established local societies in Boston, New York, Baltimore, and Philadelphia; by 1890 they were joined by societies in Chicago, Detroit, Madison, and Minneapolis. Today, with 11,400 members in 87 societies, the institute is one of the largest in the world. Members of the AIA who belong to a local society enjoy lectures, field trips, tours, and museum visits, as well as serve on local committees.

The institute founded the American School of Classical Studies in Athens in 1882. In 1895 it founded what became the American Academy in Rome and in 1899–1900 was instrumental in establishing the American Schools of Oriental Research. In 1907 the institute established the School of American Archaeology in Santa Fe, New Mexico, for the study of the Native American past, and in 1921 joined with the American Anthropological Association to create the American School of Prehistoric Research, devoted to Stone Age studies.

In 1951 the institute founded the American Research Center in Egypt and in the mid-1960s supported the founding of the American Research Institute in Turkey and the American Institute of Iranian Studies. In 1974, it supported the creation of the American Institute of Nautical Archaeology.

An annual Charles Eliot Norton Memorial Lectureship was founded in 1895 for presentations by a distinguished scholar. Three additional lectureships were established in 1986: the Anna Marguerite McCann and Robert D. Taggart Lectureship in Underwater Archaeology, the Homer A. and Dorothy B. Thompson Lectureship, and the George M. A. Hanfmann Lectureship. In 1990 the President's Lectureship was inaugurated. These special lectures are supplemented by prominent scholars who share their research results with the public by delivering a total of 250 lectures annually throughout North America.

The institute offers a placement service for archaeologists and scholars in related fields as well as direct support for research and travel to five students per year; the promotion and support of graduate fellowships began in 1961 with the Olivia James Travel Fellowship, followed by the Harriet Pomerance Fellowship in 1971 and the Anna C. and Oliver C. Colburn Fellowship in 1990. In addition, the institute also awards the Helen M. Woodruff Fellowship and the Kenan T. Erim Aphrodisias Fellowship.

The institute is committed to recognizing distinguished scholars and archaeologists whose research has made an outstanding contribution to the field. To this end, the institute established the James R. Wiseman Book Award, the Gold Medal Award for Distinguished Archaeological Achievement, and the Pomerance Award for Scientific Contributions to Archaeology. In addition, foreign scholars of distinction are nominated as Foreign Honorary Members to the governing board and council.

The AIA is at the forefront in shaping such national public policy issues as artifact ownership, ethics, the environment, and the future of archaeology. In a period of unprecedented looting of archaeological sites and dealing in stolen antiquities, the Professional Responsibilities Committee acts as the steward of the institute's mission. In 1990, the institute adopted a *Code of Ethics* now followed by many other organizations.

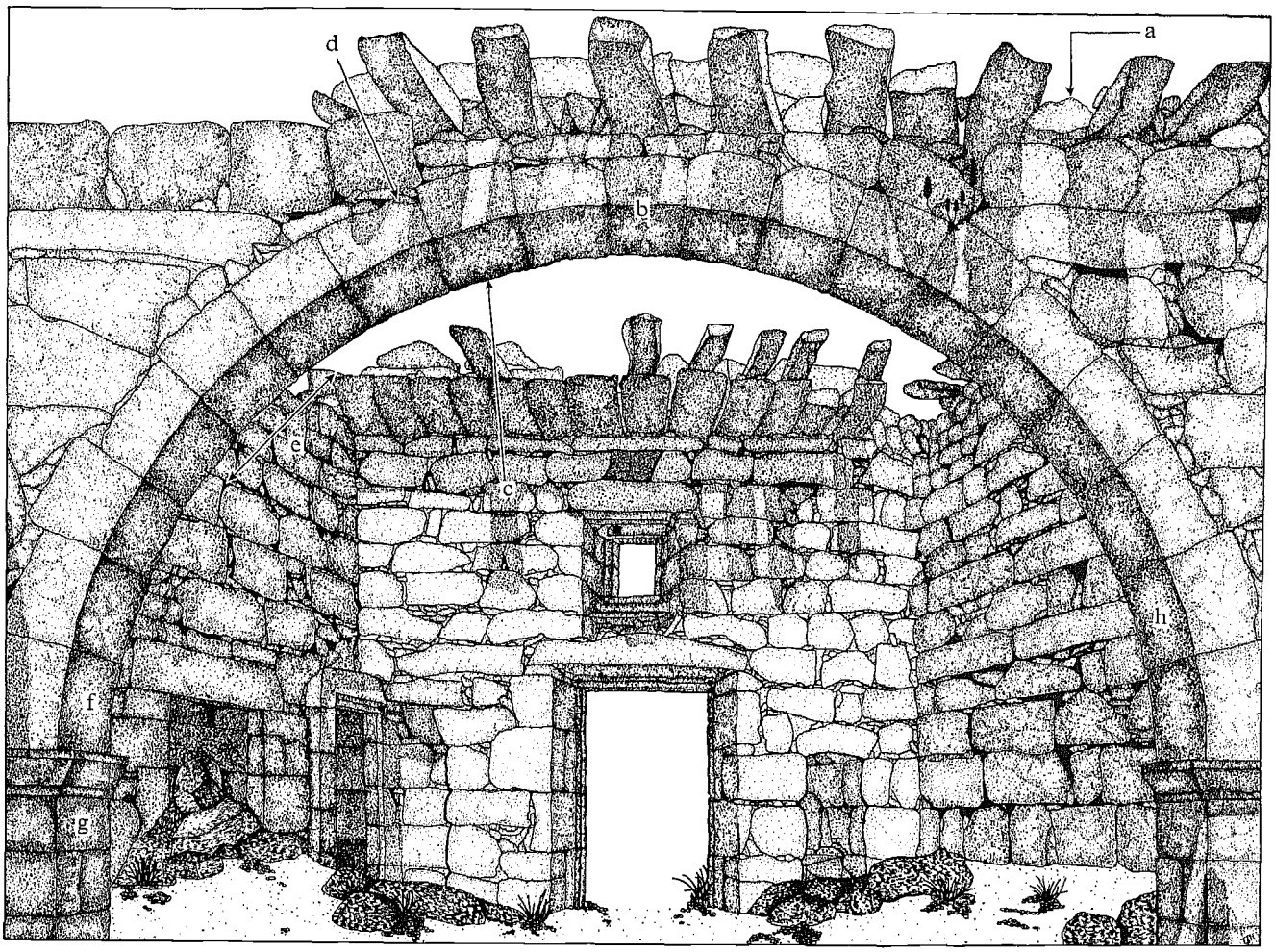
[*See also* American Schools of Oriental Research.]

MARTHA SHARP JOUKOWSKY

ARCHES. The arch is one of four basic structural devices for bridging architectural spaces. The other three are the corbel, post and lintel, and truss. Both corbeling and post and lintel rely exlusively on the vertical stacking of architectural members. Trussing and arching overcame this limitation. Trussing uses the principle of triangular distribution of vertical force in a horizontal direction, to enable the bridging of larger spans. Though this provided a solution for opening spaces in pedimented Greek temples and Christian and Jewish basilicas, the complex mathematics involved in truss design were not well understood until recently, and its use in antiquity remained tentative. [*See* Basilicas.] That leaves the arch, which uses the principle of the wedge to transpose vertical forces to horizontal planes. Arch construction is more cumbersome than post and lintel because it requires centering—erecting supportive filler on which to set the voussoirs until the keystone locks them in place. Nevertheless, it proved to be the most successful device of classical, Late Antique, and medieval architecture.

The basic arch is a semicircle of masonry with its center at the midpoint of the base line (see figure 1). Its component blocks are voussoirs, each of which is cut in a wedge shape, so that its joining side is aligned with the radius of the semicircle. The inner edge of a voussoir is usually dressed as an arc of the interior circle of the arch (the intrados or soffit). The upper edge, the extrados, may also receive circular dressing but may be left rough if the masonry above it is not smoothly dressed. The base stones of an arch are called springers and are sometimes set directly into a wall or onto a projecting pier. However, the transition from vertical to circular is often defined by placing the springer on an impost, a wall stone or pier cap with a molding defining the setting of the arch. The keystone is set at the top, or crown, of the arch and serves as the wedge that holds all the other voussoirs in position.

To have the components of the arch stably locked in place, it needs to be loaded, which means that the weight of the wall above firmly wedges the voussoirs into the arc of the circle. The thrust created by this weight onto the crown is deflected sideways through the lower components of the



ARCHES. Figure 1. *Arch for ceiling support in great room of house* 35 *at Umm el-Jimal.* (a) load; (b) keystone; (c) intrados or soffit; (d) extrados; (e) haunch; (f) springer; (g) impost; (h) voussoir. (Drawing by Tania Hobbs; courtesy B. de Vries)

arch. At the haunch, the area midway between the keystone and the springer, that thrust is directed about 45° downward and outward—namely, onto the vertical wall or pier and into the adjacent masonry. This is why an arch needs not only a strong vertical base, but also buttressing. Such buttressing may be achieved variously by thickening the wall into which it is built, having a balancing arch spring out of the opposite wall face (as in an adjacent room, or in the rows of arches in Roman raised aqueducts and the side aisle partitions of basilical churches and synagogues), or having a buttress brace the exterior wall face. In Roman commemorative arches (like that of Hadrian at Jerash in Jordan) the smaller flanking arches serve as buttresses for the huge central one. [*See* Aqueducts.]

When properly loaded, an arch is stronger than a solid wall. However, when it has lost its load, it becomes very unstable, and the voussoirs at the haunch, where the side thrust is the greatest, have a tendency to pop up and out. The crown then flattens and becomes lower, the keystone looses its grip, and the arch collapses.

The voussoirs of fallen arches are usually readily recognizable in collapse debris. They will appear in a regular order that differs from an ordinary wall because they form a single row of equal width "headers" that are not as neatly aligned as in situ masonry. Individual pieces are readily identified because of their wedge shape and circularity on the narrow side. This is true especially of Roman arches, which tended to be of very high quality. In later construction, that of the Crusaders, for example, some arches were constructed of a combination of undressed fieldstones, chink stones, and mortar. If an arched partition was bonded into the wall from which it was sprung, collapse of the arch would result in a vertical damage line in that wall. Evidence of its use can also be surmised from the surviving piers from which an arch was sprung.

The arch's bridging function was used in various ways.

Most simply it created openings like doorways and windows. The stepped arch, a series of arches with reduced heights (as in the vomitoria of the South Theater at Jerash) can be a graceful transition from one type of space to another. Rows of arches could be used to support superstructure when solid partitions were undesirable (curtain walls of Roman theaters, Ottoman railroad bridges). [*See* Theaters.] Transverse arches set in a parallel row were used to support the flat roofs over large auditoria (like the "hall" churches in Levantine villages) or over underground cisterns (Ḥumeima, Umm el-Jimal, the Negev). [*See* Cisterns.] Continuous arches in a linear direction form vaults, and those in a circular direction, domes. Relieving arches were commonly used over lintels (the gate at Qaṣr Bshir) to discharge their thrust or in solid walls to bridge weak areas in the foundation bedrock (north wall of the Ḥesban acropolis church).

Although the circular arch was known but used only slightly in ancient Egypt, Mesopotamia, and Greece, it was basic to Etruscan design and became the basic structural component (alongside the Hellenistic post and lintel) of Roman architecture. It remained a common feature of domestic house design from the Byzantine–Umayyad to the Ayyubid–Mamluk and Late Ottoman periods in the Levant. Islamic architects pioneered major innovations in various arch shapes, among them variations on the circular arch, but especially diverse forms of the pointed arch. Though the pointed arch may predate Islam, it became a regular feature of monumental architecture sponsored by Umayyad caliphs (like the Dome of the Rock in Jerusalem, where it occurs tentatively alongside the circular arch) and was the trademark of classical Muslim design. Thus, it may be considered a major technological breakthrough of the Late Antique and Early Islamic cultural eras, contributing greatly to ease of construction, structural simplification, and elaboration of design aesthetics.

[*Many of the sites mentioned are the subject of independent entries.*]

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BERT DE VRIES

ARCHITECTURAL DECORATION. In most regions of the Near East the local limestone is of good quality, especially on Syria's limestone massif and in Baalbek, Palmyra, Palestine, and Egypt, which allowed artisans to work in deep relief and with "light and shadow." [*See* Baalbek; Palmyra.] In the case of hard stone, such as basalt in the Golan and southern Syria and porphyry in the Sinai desert, decorative motifs were executed in bas-relief. [*See* Golan; Sinai.]

It was not until the beginning of the second century CE that the massive quarrying, working, and trading of marble and architectural elements in marble began. This became an important means for the distribution of a more or less uniform imperial art and architecture. Throughout the Roman and the Byzantine periods marble was imported into the Near East, mainly from Aphrodisias in Caria and Proconnesus in the Sea of Marmara. [*See* Aphrodisias.] Marble replaced the local limestone, enabling more impressive and finer achievements in architectural molding and sculpture.

Even before the conquest of Alexander the Great in 333–331 BCE decorations in a Greek style appeared in a funerary context on the Phoenician coast (the sarcophagi of the mourning women, of the satraps, of Alexander, and related finds in the necropolis at Sidon). [*See* Phoenicia; Sarcophagus; Necropolis; Sidon.] With the advent of the Hellenistic age, however, when a Greek regime was established in the Near East under the Ptolemies, these territories were open to the introduction and spread of Greek styles in architecture on a large scale. [*See* Ptolemies.] The styles, all of them trabeated, can be differentiated according to the shape of the base, column, capital, and entablature. Each component had a systematic set of moldings, and there was a correspondence between each molding and the motif carved on it in relief. Three were these styles, which go back to the Archaic and Classical Greek world: Doric, Ionic, and Corinthian. The last one, recognized mainly in the Corinthian capital and cornice and by the Attic base, became increasingly popular in the Hellenistic and Roman periods. Another common process in the Hellenistic period was a blend of orders: a Doric frieze above an Ionic or Corinthian capital was not unusual.

In the Hellenistic and Early Roman periods, decorated edifices were mainly temples, tombs, palaces, and the mansions of the wealthy: the rock-carved facades in Petra and Jerusalem, the painted tombs of Alexandria and Marisa/Mareshah, the palaces of the Hasmoneans and Herod. [*See* Tombs; Palace; Petra; Jerusalem; Mareshah; Hasmoneans.] Local traditions and Oriental influences—Egyptian, Syro-Palestinian, Mesopotamian, and Iranian—were always at work, forming undercurrents that emerged periodically in one region or another. They more and more took the lead in the Byzantine period, establishing the Coptic style in Egypt and the Greco-Syrian style. The religio-nationalistic response of the Jews and the Nabateans to foreign influences and their rejection of figurative art resulted in the emergence of two indigenous decorative approaches (Avi-Yonah, 1961; Hachlili, 1988; Patrich, 1990). [*See* Nabateans.] Everywhere in the region the city was more hellenized and romanized than the countryside.

During the Antonine and Severan periods (second and third centuries), with the large-scale spread of Roman ur-

banization in the Near East, stone-molded architectural decorations in the Greco-Roman spirit were found in all the cities. The main thoroughfares in a typical Roman city were colonnaded streets (cf. Gerasa/Jerash, Scythopolis/Beth-Shean, Apamea, Palmyra). [*See* Jerash; Beth-Shean; Apamea.] Fora and other public piazzas at the intersections of streets were surrounded by colonnades and adorned with tetrapyla (Gerasa, Bosra), *tetrakionia* (four columns on a common pedestal; Gerasa, Palmyra, Antinoe), "triumphal" arches with single or triple openings (Palmyra, Scythopolis, Jerusalem, Petra), memorial columns (Jerusalem), or pedestals with statues. Even city gates, incorporated in sober wall lines, were made to resemble triumphal arches. The steady visual rhythm of the street columns was broken by facades of a larger order of magnitude: the huge propylaea of temples, thermae, basilicae, and other public buildings. [*See* Basilicas.] The emphasis was on the exterior, on the facades. The *scena frons,* an inner wall in the Roman theater, inspired the decorations of the public nymphea: a decorative wall of two or three stories, adorned with niches holding statues and with an apse (Philadelphia/Amman, Gerasa, Bosra, Scythopolis, Petra). [*See* Theaters; Amman; Bosra.] This baroque system of niches arranged in several stories, inspired by Hellenistic Alexandria (see below), was carried even to the interior and exterior of temples (cf. the Temple of Bacchus in Baalbek, the Temple of Zeus in Gerasa). The inner courts of temples and the palaestra of thermae, gymnasia, and stadia were surrounded by a stoa with one or two rows of columns and by exedrae.

The first marble capitals appeared in the Near East in the late first or early second century CE. Later, during the second and early third centuries, Corinthian marble capitals of the "normal" type became widespread throughout the Mediterranean, forming an important common feature of imperial art and reflecting a renaissance of the Greek art. Above the two regular rows of acanthus leaves on the "normal" Corinthian capital are corner volutes and inner helices springing from an acanthus calyx, set on top of a fluted sheath known as a caulicole. The abacus is decorated with a central fleuron. Corinthian "normal" capitals (either in marble or in local stone) have been found throughout the Near East: at Gerasa, Bosra, Palmyra, Caesarea, Beth-Shean, and in Egypt (Fischer, 1990; Kautzsch, 1936; Pensabene, 1993). [*See* Caesarea.] Subtypes of marble capitals are defined based on the extent to which the leaves of the lower row remain independent, approach, or touch each other in a geometric pattern of rhomboids and oblongs—contributing to the light-and-shadow effect. With the increased touching zone between the leaves of the lower row, the calathus became covered, more and more, by a net of geometric patterns, causing the capital to lose its plasticity; the way was thus prepared to the schematically decorated Byzantine capital (see below).

Important production centers for marble were the workshops at Ephesus, Pergamon (active since Hellenistic times), and Aphrodisias; the latter was a new, and the most active, center in the Roman empire. [*See* Ephesus; Pergamon.] Their products were exported and served as models for local workshops in the Near Eastern provinces, where the details were then worked out on blocks of imported marble or imitated in local limestones. The crisis of the third century brought about a decline in marble architecture everywhere and a revival of local traditions expressed in local stone.

In the cities of the Byzantine period, architectural members were commonly taken from Roman structures and reused. Churches were the primary new addition to the urban landscape. As assembly halls, there is a clear tendency in their architecture to adorn the interior at the expense of the exterior. [*See* Churches.] Instead of decorated, stone-molded facades, the emphasis was placed on floor and wall mosaics, capitals in the colonnades or arcades of the basilicae, the triumphal arch, and the string course. [*See* Mosaics.] The liturgical furniture (e.g., the altar and its cyborium, the ambo, and the chancel screen) also received attention from artists and sculptors. Marble was the preferred material for these furnishings as well as for the plates used for wall revetment and paving. Yet, on Syria's limestone massif architectural stone molding continued, reaching a floruit in monuments such as Qalʿat Simʿan and the church at Qalb Louzeh (Strube, 1977; 1993). [*See* Qalʿat Simʿan.] The notion of an architectural order in its Greco-Roman sense was lost, however, and decoration was adapted to new architectural forms. On the exterior the emphasis was on the frames of doors and windows, rather than on the lintel alone. Cornices reappeared under roofs, and moldings underlined the stories on the facade and surrounded buildings. External apses were decorated on their exterior by attached columns, as at Qalʿat Simʿan and associated churches, such as at Turin and Fasuq on Jebel Wastani (Biscop and Sodini, 1984). A Greco-Syrian style developed and became established in which human and animal figures are almost entirely absent and whose vegetal motifs are never naturalistic. The acanthus in particular became just a decorative motif.

In the Near East in the Byzantine period, the Corinthian capital appeared in a rich variety of types and subtypes (Kautzsch, 1936; Pensabene, 1993, pp. 157–177). The components of the upper zone (six helices and volutes) are reduced in size or disappear, at the expense of the acanthus leaves. The leaves are variegated in treatment and shape. The fine dressing, done with a drill, of the so-called Theodosian capital is especially delicate. Tilted, or "windblown" leaves, first seen in the Severan period, reappeared. The bizone capital had variants, including wild beasts in the upper zone and a tendril or a basket in the lower zone. The Ionic capital with a springstone (an impost block) attached at the top became one unit—the Ionic impost capital. Its lower, Ionic member was greatly simplified and gradually reduced in size until it disappeared entirely. The impost became a

capital on its own, in either a trapezoidal or folded form, whose surface was covered with rich foliage, finely cut with a drill, or with ribbons arranged in a zigzag pattern.

Egypt. Alexandria and a few other urban centers were more receptive to Greek culture than the vast rural zone along the Nile River and in the Delta, where the pharaonic tradition had been preserved for centuries. [*See* Alexandria; Delta.] A final blending of traditions is reflected in the Coptic art and architecture of the Christian Byzantine period.

Ptolemaic Alexandria became a leading Hellenistic center of architectural decoration and painting. [*See* Wall Paintings.] Although the remains are very fragmentary and scattered, their features have been defined as baroque: they broke away from a post-and-lintel system, demonstrating a nontectonic use of structural members (Adriani, 1966; Breccia, 1926; McKenzie, 1990; Pensabene, 1993). Alexandria's Hellenistic architectural finds are mainly from its various necropoleis (Shatby, Mustafa Pasha, the Alabaster Tomb, Sidi Gaber, Minet el-Bassal, Mafrousa, Gabbari, Anfoushy, Ras el-Tine, Antonides Garden, Suq el-Wardian, Kom el-Shoqafa, Hadra) and from Tuna el-Gebel (the necropolis of Hermopolis Magna), and from temple remains (mainly the Serapea at Alexandria and Canopus, the Ptolemaic-cult sanctuary of Hermopolis Magna, and the Serapeum[?] there). [*See* Cult.] Many architectural fragments are preserved in the Greco-Roman Museum in Alexandria. Two other important sources of data are Kallixeinos's description of the pavilion of Ptolemy II, raised in Alexandria between 274 and 270 BCE to house a symposium held in connection with a great religious procession in honor of Dionysus (Athenaeus 5.196–197), and Athenaeus's description of the palatial Nile barge (Gk., *thalamegos*) of Ptolemy IV (Athenaeus 5.203–206).

All three Greek orders were represented in Hellenistic Egypt (Pensabene, 1993). The Ionic-Corinthian cornice, with modillions under the corona, appeared with both Doric and Ionic trabeation. The Alexandrian examples of a "free" (heterodox) Corinthian capital differed from the "Hellenistic" type found in Asia Minor (inspired by the capital of the tholos at Epidauros) and the "normal" type found in Italy. The last type did not appear in Alexandria until the second century CE. Most capitals were heterodox; "normal" capitals were very rare; and a mixed Greco-Egyptian group introduced lotus flowers, palmettes, and papyrus buds over the calathos. Sometimes the leaves were left plain, *en bosse*. Greek and Asiatic type marble capitals were imported only during the Roman period. The style of most bases was simple Attic. Bases on a square or an octagonal pedestal appeared only in the Roman period.

The structural features of baroque architecture recognized in Alexandria, all appearing before 100 BCE, include segmented, hollow, and broken pediments; the so-called Syrian pediment; entablatures broken forward, arched or curved vertically, or horizontal and curved inward; projected pedestals; engaged columns, pilasters, and quarter columns; coupled quarter columns; *tholoi*; and apsidal niches decorated with shells or coffering (McKenzie, 1990). Sculpted conchs were popular in Egypt down to the Byzantine period (Kitzinger, 1937; Török, 1990).

There were Hellenistic decorative elements other than the Corinthian capital: architraves of two fasciae and of even one fascia (unlike the three fasciae of later Roman architecture); new types of cornices with dentils or with flat modillions (without the consoles of Roman architecture); acanthus column bases (an example from the Roman period is preserved in the tetrapylon of Alexander Severus at Antinoe); floral or animal acroteria that slope to the side, unlike the vertically positioned Greek and Roman acroteria.

Most of the Ptolemaic features and elements mentioned above were carried into the first, second, and early third centuries, under the Romans, even beyond Egypt. They shaped Roman baroque architecture, like that seen at Baalbek (Lyttelton, 1974). Besides canonical entablature—composed of architrave, frieze, and cornice variants existed without an architrave or without a frieze especially in the Roman baroque. Hellenistic painting was influenced by the Alexandrian style (Brown, 1957).

Some surviving Hellenistic and Roman temples in Upper Egypt were constructed according to ancient pharaonic tradition (e.g., Dendera, Edfu, Kom Ombo, Philae), evidently a living practice. The influence of this indigenous architecture is also expressed in some types of bell-shaped capitals decorated with lotus flowers or papyrus buds, papyrus bases, and in the so-called Egyptian cornice (a cavetto cornice above a torus), prevalent also in the "Oriental" facade types at Petra, in some of the monumental tombs in Jerusalem (Tomb of Zechariah, Absalom's Tomb), and in some Late Persian and Early Hellenistic structures in Phoenicia. The pyramid, found in some monumental tombs in Jerusalem and in ʿAmrit (Phoenicia), is another motif derived from ancient Egyptian architecture. [*See* ʿAmrit.]

Israel and Jordan. The palace known as Qaṣr el-ʿAbd at ʿIraq el-Amir demonstrates a blend of Greek elements that are decisively Alexandrian in origin and Oriental elements of Mesopotamian or Iranian origin: a Greek interpretation of a monument in the Oriental tradition. Although unfinished, it is a well-preserved example of Hellenistic architecture in the Syro-Palestinian regime in the early second century BCE (Dentzer-Feydy, 1991). More than ten architectural orders have been counted, of different types and sizes, superimposed or set one next to the other. Yet, the decoration exhibits a homogenous character. The orders are composed of freestanding columns as well as quarter, half, and three-quarter engaged columns and engaged pilasters. The half columns may be engaged to a portal frame, window jamb, or wall face. There is a single model, in several variations, of the Corinthian capital and a single model of the Ionian capital. The Corinthian capitals are "free" (heterodox), related to the Alexandrian Corinthian capital. Pilasters had capitals of their own, with Attic bases; the col-

umns of the upper loggia had an acanthus base. There is a single model of Doric entablement and one of Ionic entablement. The Ionic one appears, as is normal, on top of a Corinthian column, while the Doric example exhibits a blend of orders common to the Hellenistic period and is placed on top of Corinthian as well as Ionic capitals. The inner walls had crown moldings. Figural motifs—of panthers, lions, and eagles—are superimposed on the architectural orders, as decorative accents, at the corners of the building and its fountains. Fragments of stucco work were found in the building as well.

The influence of Alexandrian architecture on the layout and decorations of the principal monuments at Petra, in Jordan, can be seen in the temples—the Qaṣr Bint Faraun and the Temple of the Winged Lions (McKenzie, 1990) and in the more recently excavated Southern Temple. Some of Petra's monumental tomb facades reflect a decisive Greco-Roman architectural influence. However, most of them are Oriental in style, crowned by one or two rows of crenellations (crowsteps) or by two sets of five corner steps that face each other. The crenellations, or merlons, are an Oriental motif of Assyrian origin, popular in Phoenicia in the Late Persian and Early Hellenistic periods, that survived in interior Syria up to the Roman period (cf. the square altars on Mt. Lebanon; the Temple of Bel in Palmyra; the peribolos of the great temple in Damascus; and the temple at Dmeir, in southern Syria). [*See* Assyrians; Altars; Damascus.]

The Nabatean plain-faced, blocked-out capital is derived from the Nabatean Corinthian capital—a heterodox floral capital (Patrich, 1984). Stucco work and frescoes of the First and Second Pompeiian styles decorated Petra's temples and houses (Kohl, 1910; Zayadine, 1987).

The art of decorative stucco work is of Iranian-Central Asian origin; it spread to the west and became popular there in the Hellenistic period. The stucco work on a mansion at Tel Anafa in Israel demonstrates the Late Hellenistic achievements in this domain in Syria-Palestine under the Seleucids (Gordon, 1977). Stucco fragments of a large, engaged Corinthian order and of an attic zone have been retrieved. The main order includes pieces of white fluted shafts, smooth red shafts, bases, capitals, and fragments of such entablature members as dentils, cornice, and cyma. The components of the attic zone include fragments of pilasters, colonnettes, small capitals, and a lozenge pattern. A limestone capital was found as well. Four variants of the Corinthian capital are of Syrian rather than Alexandrian Hellenistic stock, while the lozenges reflect an Egyptian influence. The Hellenistic masonry style of the stucco work reflected in the Tel Anafa finds survived on Masada in a better state of preservation (Foerster, 1995). [*See* Anafa, Tel; Masada.]

The masonry style (sometimes referred to as incrustation, or structural style) is characterized by its use of stucco as a medium for stimulating ashlars and other architectural elements by molding them in relief. A wall was divided into five horizontal zones: plinth (about 20–30 cm high); drafted orthostats (about 1 m high); frieze (string course); isodomic courses of drafted rectangular blocks—the largest portion of the wall; and a top zone, or wall crown. Generally, this stucco work was subsequently covered with polychrome paint, but at Masada, Herodium, and in a large mansion excavated in the Jewish Quarter in Jerusalem (decorated in the First Pompeiian style, closely related to, although different from, the masonry style), the wall, including the orthostats, was painted white. [*See* Herodium.] Painted surfaces, or frescoes, on flat, nonstuccoed walls have also been found on Masada, however, as well as in other Herodian palaces (Herodium, Jericho), sometimes in conjunction with engaged columns, or pilasters, and at Tel Anafa. [*See* Jericho.] Actually, the Northern Palace on Masada is considered to be an example of built architecture that inspired the Second Pompeiian style in painting. Its relationship to Alexandrian palace architecture, on the one hand, and to Augustan architecture in Rome, on the other, has been noted (Foerster, 1995). It may have been introduced into Judea (Judah) under the influence (if not by the very hands) of an Augustan Roman imperial workshop (Foerster, 1995). In addition to these survivals of the Hellenistic masonry style, the Second Pompeiian style in wall painting (fresco) is represented at the above-mentioned Judean sites as well, where fragments of ceiling stucco have been recovered.

The Masada columns are built of separate drums, covered by a thick layer of stucco in a fluted pattern. Columns in other Herodian palaces were constructed similarly. It has also been suggested that the entablature was partially made of wood and then stuccoed. The floors were of plaster, mosaic, or opus sectile (colored stone tiles). Opus sectile floors have also been found at Jericho, Cypros, Herodium, and in the Herodian quarter in Jerusalem. The orchestra floor of the Herodian theater at Caesarea was of painted plaster, depicting various geometric patterns.

The Herodian Temple Mount in Jerusalem is the most prestigious Herodian project of monumental architecture. The reliefs on the shallow domes of the Hulda Gates, depicting a network of geometric and vegetal patterns, are exceptionally elegant.

The "normal" types of Corinthian capital, introduced by Herod under Roman influence, replaced the heterodox capitals that predominated in the Hellenistic period. The Herodian Corinthian capital is built of two blocks, like the Augustan one seen in Rome (Fischer, 1990, pp. 12–20). The contemporary Nabatean floral capital is similarly built of two blocks, but it shows affinities derived from Alexandria (Patrich, 1984). At times, Hellenistic and Early Roman Corinthian capitals were plastered with a thin layer of stucco and then painted (e.g., at Tel Anafa, Masada, Cypros, Alexandria, Edfu). At Masada the colors used were white and purple, in addition to gilding. A peculiar feature of the Herodium capitals is a central leaf below the calyx that is worked as a detail *en bosse*. "Normal" Corinthian capitals,

with plain, *en bosse* leaves, were common in Jerusalem in the first century CE (e.g., on the Mount Temple, in the Jewish Quarter, in the Tombs of the Kings). The blocked-out Corinthian capitals found on Masada are derived from the Herodian Corinthian capital, which was a "normal" type. Plain-faced or blocked-out capitals have also been found on Cyprus and in Egypt.

Jewish art in the post-70 CE period is expressed mainly in funerary architecture (e.g., in the necropolis at Beth-She'arim) and in synagogues. [*See* Beth-She'arim; Synagogues.] It was influenced to a large extent by that of non-Jewish society: in the pagan Late Roman period it is extroverted and stone carved (Foerster, 1987); in the Christian Byzantine period it is introverted, appearing as floor and wall mosaics and wall paintings (Tsafrir, 1987). Components that were decorated were facades, portals, and windows; capitals and entablature; the Torah ark; floors (mosaics); and walls (frescoes). Three types of ornate portals, or entrance frames (Ionic, with moldings parallel to the opening frame and with two consols flanking the lintel; Attic, with lintel moldings wider than the opening; and a lintel supported by pilasters), and nine types of ornamental lintels have been documented (Hachlili, 1988). The Corinthian capital, of local manufacture, was the most prevalent type. Jewish motifs—mainly the menorah and other liturgical objects—may adorn one of its faces. Heart-shaped columns were crowned by heart-shaped capitals. The best-known synagogue paintings are the third-century frescoes at Dura-Europos in Syria. [*See* Dura-Europos.] Fragmentary frescoes and drawings of lesser quality have also been found in some Galilean synagogues (e.g., at Reḥov, Husifah, Ma'oz Ḥayyim, Hammath Tiberias, Beth Alpha). [*See* Hammath Tiberias; Beth Alpha.]

Syria. In geographic and cultural terms, Syria encompasses three different regions: the Phoenician coast; the interior, or central, region, including the Biqa'; and the Mesopotamian region, a transition zone between the western regions and Iran and Central Asia.

Excellent surveys have been made of decorative art throughout Syria in the Hellenistic and Roman periods (Dentzer-Feydy, 1989) and for the Byzantine period (Naccache and Sodini, 1989). What is known about the Seleucid period and the art of Antioch and of Seleucia on the Tigris is meager because their Hellenistic infrastructure has entirely disappeared—perhaps having been replaced by Roman imperial structures (as in Damascus and Apamea). [*See* Seleucids; Antioch on Orontes; Seleucia on the Tigris; Damascus.] The process by which Syrian decorative art developed can be traced for the periods following Pompey's establishment of the Roman province of Syria. However, it is only from the Flavian period onward that it shows signs of homogeneity and a coherent evolution, both chronological and regional. Architectural decoration at Baalbek and Palmyra is provincial; it demonstrates a virtuous and profuse combination of the Greco-Roman decorative grammar in use in the eastern Mediterranean basin: a fondness for geometric and vegetal surfaces or band covering, filled with figures, fruits, and flowers and arranged in endless patterning.

In addition to the three classical orders, a Tuscan order, with a particular capital type, was recognized. This form of capital often has a sharp-pointed leaf beneath each angle of the abacus and the astragal at the neck is often omitted.

Hellenistic period. Remains from the Hellenistic period in Syria are preserved mainly in the Mesopotamian zone—at Dura-Europos (lintels, moldings; Shoe, 1948) and Seleucia on the Tigris—and in the Phoenician zone. In Seleucia, where good building stone is rare, Seleucid decorative architecture in terra cotta (common in the Greek world since Archaic times), was replaced under the Parthians by molded stucco, which was popular in Central Asia. The recognized motifs are western (e.g., palmettes, acanthus leaves), eastern (geometric surfaces), and hybrid (heterodox capitals with human heads and busts).

Hellenistic remains in Phoenicia are few and diverse, reflecting a composite character of foreign origins. The use of crenellations, or stepcrow, to crown the Ma'abed at 'Amrit, the square altars on Mt. Lebanon, the Temple of Bel at Palmyra, and the Temple of Dmeir in southern Syria is Mesopotamian in origin and survived into the Roman period. An Egyptian influence on the Ma'abed can be seen in its cornice, while its dentils reflect a Greek influence. One of the aedicules at 'Ain al-Hayat has a uraeus frieze. An "Egyptian cornice" is found in the third-century BCE sanctuary at Umm el-'Amad, along with hellenized elements—Doric capitals, members of an Ionic order (including capitals with a collar decorated with palmettes that seem to be inspired by the ones on the northern portico of the Erechtheion in Athens), and an Ionic cornice resembling one at 'Iraq el-Amir.

Roman period (first–third centuries). Archaic decorated blocks found at Palmyra belong to the frames of niches in the Temples of Bel and of Ba'al Shamin. The blocks are covered with vegetal decorations arranged in bands of endless, repetitive patterns, a style derived from Iran and Central Asia (Seyrig, 1934; 1940). Most popular is a sinusoidal vine tendril with individual leaves, tiny vine bunches, and various interlacings and bundles of leaves; the upper bands contain figural reliefs. Hellenized motifs were apparently less popular—they are distorted and set on improper moldings. The Corinthian heterodox capitals at Palmyra, which lack helices also belong to this Archaic Palmyrene style (Schlumberger, 1933). The basalt heterodox capitals of the Hauran (e.g., at Si, Qanawat, and Suweida) have busts above the acanthus leaves, and the structure and motifs of the door frames recall the Archaic Palmyrene style (Dentzer-Feydy, 1985; 1990; 1992). The column bases in the Ba'al Shamin temple at Si have a corona of acanthus leaves.

The architectural decorations in the Temple of Bel at Palmyra (erected under Tiberius between 19 and 32 CE) were

cut in the local limestone. The temple is considered to reflect the magnificence of Seleucid architecture at Antioch (Will, 1975). The homogeneous and coherent Palmyrene style is distinguished in the Temple of Bel by a variety and abundance of decoration. Its motifs belong to the central Syrian tradition revealed in Archaic Palmyrene sculpture: rich geometric, vegetal, and figurative decorations, arranged in bands or as surface cover—as in the ceiling coffers of the peristyle, displaying an "endless pattern." These local motifs are a blend of elements and motifs from the classical repertoire. The decorative elements include Corinthian and Ionic capitals and fluted shafts; walls with an Attic base; three plain fasciae on the architrave, whose frieze is decorated with garlands held by putti; and a Corinthian cornice. The motifs include egg and tongue, Lesbian cymation, interlaces, bead and reel, dentils, modillions, rosettes, palmettes, laurel bunches, stems with leaves, bands of dressed leaves, and of floral scrolls (mainly acanthus, but vine and ivy as well). There are also indications of paintings and of metal decoration, including bronze capitals.

Baalbek/Heliopolis became a Roman colony in about 15 BCE under Augustus, thus opening it to direct influences from Rome. The temples of Baalbek represent the grandeur of Roman architecture in Syria. The Corinthian columns of the great Temple of Jupiter (first century CE) are monolithic and its Corinthian entablature is densely covered with uniform vegetal decoration: beads and reels on the architrave, palmettes on its crowning cavetto, a frieze with consoles and animal protomes, and a cornice extravagantly covered with ornamentation. A close look at its capitals, niches, and other decorative elements (Weigand, 1914, 1924; Schlumberger, 1933; Lyttelton, 1974) reveals a coexistence of western and eastern Syrian types: only some of its "normal" Corinthian capitals are derived from Rome; the others display affinities typical of the Oriental production seen at other sites in Syria and Asia Minor during the empire—affinities that seem, rather, to be derived from Late Hellenistic examples. Similarly, in the Temple of Bacchus at Baalbek (second century), several models of capital can be recognized: a Roman, pre-Flavian model, some of the Epheso-Pergamene school, and others in the Palmyrene style. A motif derived directly from Rome is the shell or conch shape that adorns the temple's semicircular niches. In the forecourt the shell is placed with its base upward (in the Roman style), while at other Syrian sites it is generally found with the base at the bottom. Examples of Roman types at Baalbek were isolated and do not appear to constitute a factor dictating the Syrian decorative style under the empire (Dentzer-Feydy, 1989). The coexistence of three decorative styles can also be seen in the ceiling coffers of the great altar at Baalbek (Collart and Coupel, 1951).

The Baalbek style is reflected at temples in the Biqa', on Mt. Lebanon, in the Anti-Lebanon range (Niha, Hosn Niha, Hosn Soleiman), and in southern Syria (Sleim). Ionic capitals, "peopled" or vacant acanthus scrolls, and other standard motifs of imperial decorative art in Syria (including the "Syrian gable"), also demonstrate similarities with motifs and types from Asia Minor rather than with those from Rome (Dentzer-Feydy, 1989, pp. 467–470; Lyttelton, 1974).

The traits of the Antonine and Severan periods that are peculiar to Syria include the meander motif placed in unusual locations, such as on the fasciae of the architraves; the vine motif that, in the second century, continued to cover—as a single or double tendril—portal frames, friezes, and pilasters; the excessive density of sculptured decorations framing the niches and portals of cult edifices; figural reliefs on the soffits or on the vertical surface of lintels; and ceiling coffers decorated with busts set in an intricate geometric pattern. This common cultural stock of interior Syria was already encountered at the beginning of the imperial period but may have much older origins.

In southern Syria, second-century portal lintels retained their figural decoration, which in the north had moved to the soffits, in order not to distort the Greco-Roman architectural order. The third century is represented mainly by the imperial building activity at Shahba-Philippopolis and adjacent sites. The simplification of decorative forms and a departure from the imperial models that were used in the other regions are evident. Ionic capitals with local traits became more popular, and there was a resurgence of local art in a domestic context.

Byzantine period. The cross, in a rich variety of forms, became a dominant motif in the Byzantine period. Otherwise, the decorative grammar and scheme were derived from the classical repertoire of the Roman period, combined with indigenous originality. In the basaltic region, sculpture underwent a process of schematization and simplification, while the local Syrian, Oriental decorative art in limestone flourished. Ecclesiastical decorative art affected domestic embellishment (doors, windows, porticoes), resulting in regional architectural homogeneity for the limestone massif, in which two local schools are recognized: the Antiochene in the north and the Apamene in the south. In porticoes, for example, a square monolithic pier was commonly used in the north, where a column would be employed in the south.

Two architects—Julianus and Markianos Kyris—were active in about 390 in Brad and at Jebel Sim'an and Jebel Barisha. They influenced the Syrian decorative art of later generations, creating new types of capitals decorated with ribbons or divided into two zones. Markianos Kyris built four churches in about thirty years (c. 390–420) and introduced new plans and decoration. He revived the Palmyrene Archaic architectural decoration after 450 years.

The imperial architectural project of Qal'at Sim'an was also very influential in the development of Syrian decorative art in the sixth century. It is rich with moldings and motifs, including new forms of the acanthus leaf and a windblown Corinthian capital, which reappeared two hundred years after it first emerged in Severan art. Among its most distin-

guished representatives are the basilica at Qalb Louzeh, and the capitals at Qaṣr Ibn Wardan (Strube, 1983).

Altogether, there is a large variety of Corinthian and Syrian Byzantine capitals. The Byzantine Corinthian capital is bell shaped, but shorter than the "normal" type. At times the volutes are omitted; in others, deeply carved, flowing leaves are twisted into a whorl. The most usual form is the uncut Corinthian, in which the leaves are only blocked out. This form continued to be used in sixth-century churches and was the most common form found in small churches of late date in the region.

The most popular form of molding was the cyma recta, with a fillet above and below. It was used for the cornices of all kinds of buildings throughout the period. The cyma reversa is rarely found in Syria and then only in the early dates. The moldings of doorways have a classic profile consisting of two or three narrow fasciae, an ovolo, a cyma recta, and a flat band; the position of the ovolo and the cyma is frequently reversed. The architraves were often perfectly plain and composed of two or three fasciae. Broad moldings carried vegetal bands and disks and narrow moldings were also often carved in patterns. Pulvinated friezes were usually ornamented with elaborate rinceaux of highly conventional and geometric acanthus leaves, interspersed with symbolic disks. The dated monuments of the fifth century nearly all have the same profile in their main cornices: a cyma recta with a beveled fillet at the top; dated buildings of the sixth century have a more S-shaped profile in the cymatium. Below this there are one, two, or even three narrow bands, a form also used in the string courses. After reaching an apogee in decoration under Justinian, further geometrization and a lessening use of moldings and motives are seen.

In many cases where an opening was rectangular, the moldings describe a semicircle on the lintel above it, giving the effect of a round-headed window. In Antiochene the window moldings were curved upward and carried over the next opening, presenting a wavy succession of curves, instead of being returned at a right angle on the string course at the sill level. These curved moldings were often terminated on either side of a window or at the end of a row of windows by two volutes.

[*See also* Arches; Architectural Drafting and Drawing; Architectural Orders; Building Materials and Techniques; Public Buildings; *and* Temples.]

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ARCHITECTURAL DRAFTING AND DRAWING. By providing scientifically measured graphic description and analysis to complement verbal and numeric recording, architectural drafting and drawing play an important role in the visual depiction of the human environment. The archaeologist's notebook usually includes lined and graph paper interleaved, and every field archaeologist must be skilled in both verbal and graphic recording.

In addition, well-staffed field projects include a team of specialists adept at using surveying instruments and trained in architecture and architectural drawing.

Although photography, like architectural drawing, provides a three-dimensional visualization of a site or building, the roles are quite different, but complementary. Photography presents structures from a perspective; architectural drawing presents them, not as seen, but as measured in horizontal (plan) and vertical (section, elevation) components. As a result, these components of three-dimensional shape can be reproduced accurately to a consistent scale on the flat plane of the drawing surface. A photographer is forced to record all the details within the image framed by the lens; the architect selects only those features salient to understanding the shape being represented. For example, a ruin whose masonry is overgrown with brambles may show up only as a wild thicket in a photograph. In a drawing, however, the brambles can be ignored and only the in situ masonry selected from among the rubble, so that a viable building appears on paper.

Hence, the best visual depiction of an object or structure is achieved by publishing both photographs and drawings: one gives a close approximation of what is to be seen, the other of what the original shape was or was intended to be. Artistic renderings and sketches, so popular before photography was commonly used, are, in a way, a middle ground, allowing the perspective of the camera and the selectivity of the drawing instrument. Good artistic renderings can add valuable insights that may be missed by the camera or architectural drawing. [*See* Photography, *article on* Photography of Fieldwork and Artifacts.]

Architectural drawing relies on precise measurement and scale reproduction of the features and objects on a site. A primary goal is to provide a three-dimensional framework in which everything excavated can be located, including both the site's stratigraphic features and the artifacts found within its strata. In this sense, architectural drawing is akin to mapping, and the various drawings are integral components of a master site map. Vertically, all features and objects are locatable on sitewide sections related to their distance above sea level (a.s.l.). Such a three-dimensional framework gives accurate locations for everything on the site in question and makes it possible to determine their comparative dimensional relationship to features at other sites.

In a broad sense architecture suggests the adaptation of space for human habitation. An entire site is therefore like a structure in which natural and hand-worked elements function to form a cohesive settlement. Considered in this way, the preparation of sitewide maps is an aspect of architectural drawing. In a narrow sense architecture is the art of building, the creation of enclosed spaces in which humans live and function (barns, houses, temples, palaces, forts). In this sense architectural drawing becomes the comprehensive assembly on paper of fragmentary building remains in order to understand their structure and function. This requires careful measurements and a knowledge of ancient building design and construction methods. As with pottery typologies, building typologies make it possible to identify styles, determine dates, and reconstruct the whole from fragments. As such, architectural drawing joins with other archaeological specializations to contribute to the overall interpretive process and to conservation.

Taking Measurements. Measuring techniques used on archaeological projects are identical to those used by surveyors for modern platting of a subdivision. They can be learned from a standard textbook on surveying or from chapters on surveying included in archaeological field manuals. [*See* Site Survey.]

The distance between two points is usually determined by taping, for which 20–50-meter steel or vinyl tapes are used for large areas and 3–5-meter steel tapes for small ones. All measurements must be taken in horizontal and vertical components in order to be able to record them to scale on the drawing board. For horizontal measurements the tape must be held level and a plumb bob used at the lower point. For distances longer than 30–50 m (the limit of the tape length), it is necessary to establish a "chain" of intermediate points. Such chaining requires the use of a transit or theodolite to align the survey pins set on the series of intermediate points.

A faster, but less accurate, alternative to taping is to use the 1:100 ratio between the transit's stadia hair readings on the leveling rod and the distance along the line of sight. On adequately funded projects both these methods have been obviated by the electronic distance meter (EDM), a device that gauges distance by measuring the time it takes to bounce a laser beam shot from point *a* off of a crystal target set at point *b*. Readings are correct to a fraction of a millimeter over distances of hundreds of meters. Vertical measurement, or leveling, is best done by using a dumpy level, transit, or theodolite with the telescope set level and a leveling rod (a 4-m pole with centimeter calibrations) held vertically on the points between which the difference in height is desired.

The final key element in measurement is triangulation, which allows the accurate position of three or more points to be determined in relation to each other. This process combines assessing linear distance (see above) with the measurement of angles between sets of points. For example, once the distance between points *a* and *b* and angles *abc* and *bac* is known, distances *ac* and *bc* and angle *acb* can be determined by geometric plotting or trigonometric solution. For long-distance measurement, horizontal angles are best read with a transit or theodolite. However, for small spaces, astute use of a measuring tape will suffice. For example, to determine the exact relationships among the four corners of a room, measuring the four sides and the two diagonal distances enables very precise plotting on paper.

For survey work in an excavation area, taping and trian-

gulation can be combined by using a plane table, a device that enables the plotting of both distances and angles directly onto a drawing as measurements are being taken. This traditional equipment has been replaced, for those who can afford it, by a combination of theodolite, EDM, and data recorder, which allows the direct transfer of data to a computer with computer-aided design (CAD) software. [*See* Computer Mapping.]

Activities in the Field. The architect's responsibilities during fieldwork can be divided into sitewide and excavation-related activities. Sitewide activities include producing a contour map with natural features and maps with artificial features, including ancient structures visible above ground as well as modern buildings. In many cases, much of this work has already been done, and the information is available on regional maps and aerial photographs from national land survey departments or geographic societies, municipal development maps from local municipal offices that will show existing houses and street systems on or near the site, maps done by earlier archaeological projects, and satellite photos from French (Spotimage) and American (Landsat) sources. The ground survey can also be greatly enhanced by low-altitude aerial balloon photos, such as those taken by Wilson Myers and Ellie Myers over Greece, Crete, Jordan, and Israel.

Excavation-related activities begin with the establishment of a predetermined excavation grid and the layout of the units (squares) to be excavated. In conjunction with the site contour survey, benchmarks with known a.s.l. elevations, from which the excavators take their levels, are established in or near excavation units. With the grid and benchmarks in place, it is possible to maintain a three-dimensional control for recording all finds. To ensure ongoing accuracy, this system needs regular maintenance (strings and benchmarks often get moved or disappear), and excavators need to be advised on and checked on the correct use of the survey information.

As an excavation proceeds, the architect serves as a consultant to interpret building features as they surface, to predict where still-unexcavated portions of a structure may be, and to develop excavation strategy accordingly. After sufficient masonry appears, detailed (stone-for-stone) field drawings are produced in plan and elevations. As the components of a building extending over several excavation units come together in a single drawing, the integral nature of the structure will usually emerge. It is then possible for the architect to advise the excavator on where other components of the structure may be located. Field drawing requires a portable drawing board and theodolite, or a plane table, and is most efficiently performed with a team of three people, with one drawing and two involved in taping and sighting. [*See* Excavation Strategy.]

Given the complexity of this set of field assignments, it is essential to have in place a well-organized and archivable recording and filing system to be adapted and followed for the duration of the field project. If a project goes on for a number of seasons, with possible changes in the staff of architects, these records are especially essential in reestablishing the grid and the benchmarks at the inception of each new season. Also, over multiple seasons the array of drawings will become cumbersome and confusing unless the drawings are carefully numbered and cataloged. It is even important to adopt a standard paper size for ease of transportation, storage, and future access. All the data produced in the field—survey notes, layouts of excavation units, benchmarks, calculations of levels preliminary sketches, architectural drawings—windblown and soiled though they may be, are considered primary information and should be cataloged and stored for subsequent interpretive work.

Interpretating Data. To enable the preparation of publication drawings, the goal is to come out of the field with a set of sufficiently complete data and drawings. This is a job that often continues beyond the field season, possibly an ocean's distance from a site, so that it is impossible to retake a missing measurement. To avoid such frustration it is recommended that at least the publication drawings to be used in preliminary reports be completed at the excavation camp during the field season. This adds a quality-control factor to the fieldwork because the process of tracing and assembling portions of different field drawings will lead readily to the discovery of missing data—which can then be easily supplied, especially if the camp is at the excavation site. This also puts the final product into the hands of the author of the preliminary report immediately. Doing the same work after the return home can stretch over months.

It is therefore necessary to have an adequate, dust-free work space equipped with tables and tools with which high-quality ink drawings and illustrations can be produced. With CAD and GIS (Geographic Information Systems) software, the computer drafting of maps and buildings can also be done on location. The use of CAD enables the instant production of publication-quality drawings and the reconstruction and manipulation of field drawings to create simulations, from any selected point of view, of buildings and sites as they may have looked in antiquity. GIS allows the use of a base map to store various layers (categories) of data that can be retrieved by using a mouse to "click on" a point of the map with which the data are associated. [*See* Computer Recording, Analysis, and Interpretation.]

The aftermath of the field season involves an array of follow-up research before the final publication of drawings and analyses of material culture: from analyzing construction techniques, finding parallels for the site's building designs and settlement plans, and determining the use and function of the buildings to preparing plans for site restoration. Drawings for final publication will include, among others, those of the actual remains (already completed during the field season), reconstructions showing the complete struc-

ture as it was in the various phases of its use, artistic renderings, and studies of construction methods, design techniques, and architectural details.

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ARCHITECTURAL ORDERS. The two types of Greek trabeation—Doric and Ionic—apparently were themselves created as adaptations of Near Eastern architectural ornaments in about 600 and 560 BCE, respectively (Doric as an adaptive imitation of the so-called Proto-Doric columns of type at Deir el-Bahari, Ionic as assemblage of Mesopotamian and Levantine motifs). Although they do exercise some influence on Near Eastern architecture after the sixth century BCE (especially Achaemenid and Cypriot), on the whole they do not appear in the Near East before the conquests of Alexander. The Greek colonies (e.g., Naukratis) and the Anatolian coastlands, which remain part of the Greek homelands proper throughout the Hellenistic period, are the exceptions. [*See* Naukratis.]

The principal conservative tradition of monumental architecture in the Anatolian coastlands is the Ionic tradition of temple design codified by Pytheos (Temple of Athena at Priene, c. 340 BCE) and later by Hermogenes (Temple of Artemis Leukophryne at Magnesia ad Maeandrum, c. 220/200 BCE). This consisted of a refined system of proportions (Vitruvius 3.3.1–13) based on a regular spacing of columns on a grid often determined by the plinth module. The principal monuments of this tradition are a number of peripteral and pseudodipteral temples (at Magnesia, Chryse, Teos, Alabanda, and Lagina, third–second centuries BCE). The other major monuments are the "Ionian" agoras and temple temene surrounded on all four sides by regularly spaced colonnades, usually one story with Doric on the exterior and Ionic on the interior and with the passage through the agora placed along one side rather than axially (Miletus, Magnesia, and Priene). [*See* Miletus; Priene.]

The other tradition in Anatolia centers around Pergamon in the second century BCE and involves the development of earlier innovations in the syntax of the orders, with the use of engaged pier columns for corners of colonnades and upper stories (Pergamene stoas at Athens and Aigai). There is also some use of screens of engaged orders as articulation for wall surfaces (the bouleuteria at Miletus and Termessos) and the development of buildings with real (the Maussoleion [Mausoleum] at Halikarnassos and Belevi) or engaged (the Lion Monument at Knidos) orders on a podium in the Greek and non-Greek lands of the southwest Anatolian coast. The earliest use of the engaged column on a projecting pedestal seems to be the Gymnasium at Stratonikeia (mid-second century BCE). [*See* Pergamon; Halikarnassos.]

The extent to which Hellenic types of columns supplanted native architectural forms in the Hellenistic period in the Near East, and the nature of their development, is very uncertain. There are almost no preserved interpretable architectural remains until the early imperial period, even in the principal centers, such as Antioch. [*See* Antioch on Orontes.] It has been speculated that the architecture of the Syrian coastlands was dominated by the East Greek (Anatolian) Ionic tradition because in the Roman period the Ionic rather than the Corinthian order predominates. It is clear that Doric and Ionic buildings were built by Greek colonists as far east as Ai Khanum.

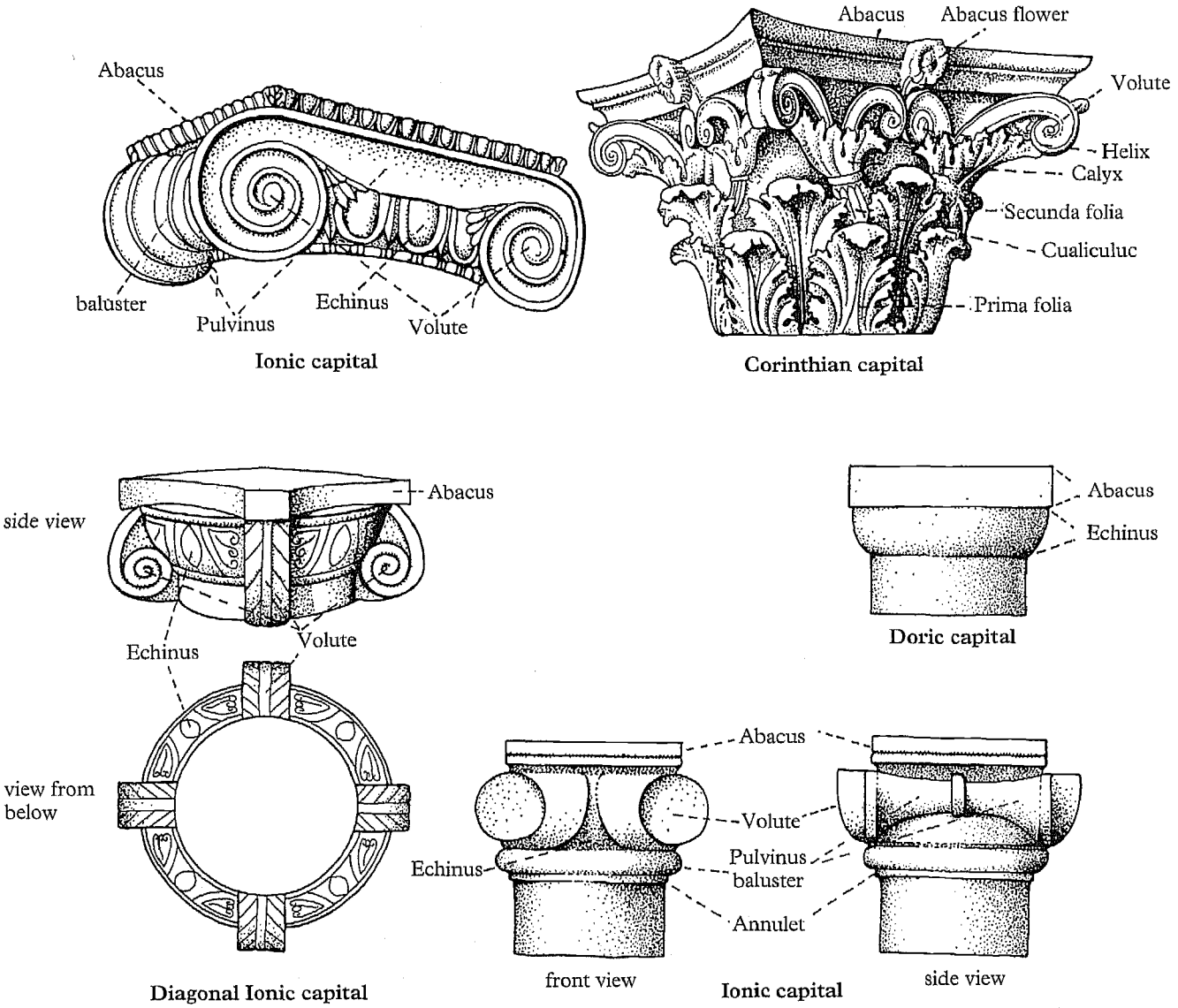
However, recent scholarship has largely settled the point that Hellenistic Alexandria was the major creative center in the development of so-called baroque aedicular screen architecture and that this is the architecture depicted in Second Style Pompeiian wall painting (McKenzie, 1990). This architecture must therefore have developed in Alexandrian palace architecture in the third and second centuries BCE. Individual features are noticeable in fragments in tombs in Alexandria and at the Alexandria Museum: pier columns (from Shatby, Mustafa Pasha, third century BCE); segmental pediments (from Anfoushy, Hypogeum 2, third century BCE); modillion cornices and coffered conches (Alexandria Museum). To some extent, the creativity of this architecture was clearly a product of the mixing of Hellenic and native forms (e.g., segmental pediments and foliate bases, the latter attestable for the Egyptian seventeenth dynasty). [*See* Alexandria.]

This architecture begins to appear in the evidence of preserved buildings at the end of the first century BCE and spreads rapidly across the entire Mediterranean in the course of the first century CE. The earliest preserved buildings with a complete repertoire of baroque aedicular screen facades (broken and hollow pediments, columns on pedestals, foliate bases, broken forward and curved entablatures, framed tholoi, coffered conch niches) are the temple tombs at Petra (e.g., the Khasne, now dated to late first century

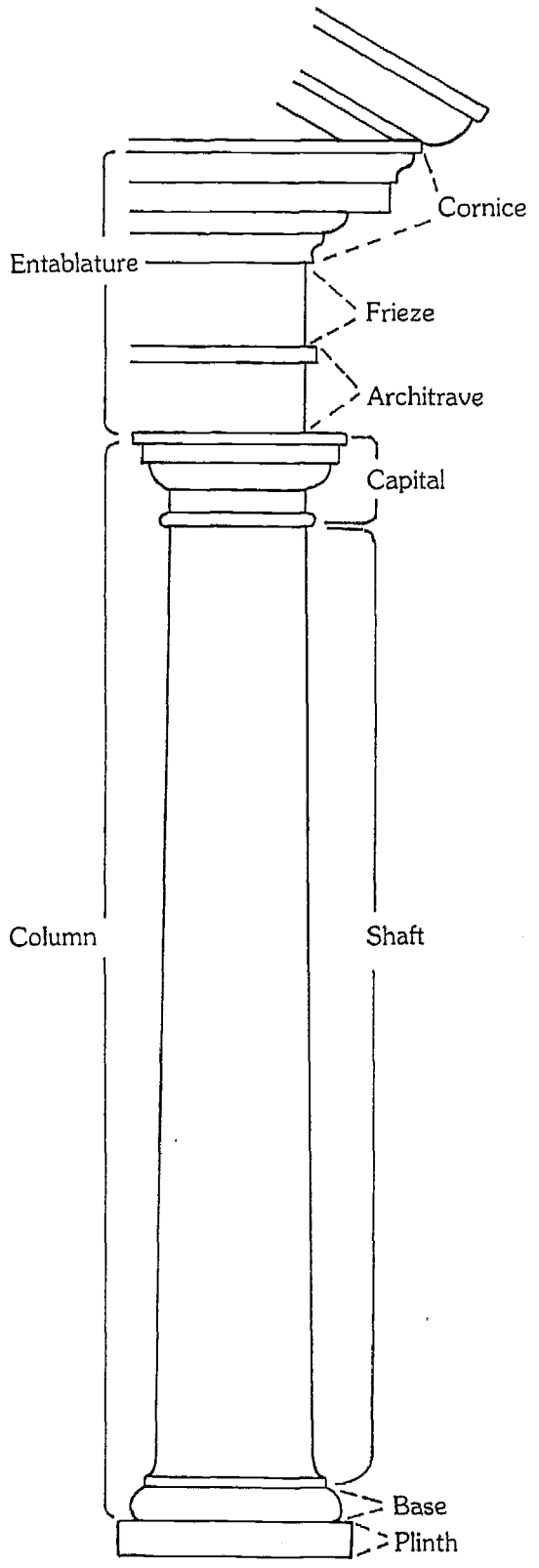
BCE) and the Palazzo delle Colonne in Ptolemais, Cyrenaica (first century BCE or first century CE). By the second half of the first century and the early second century CE in Anatolia, this is established as the basic formal vocabulary of theater scene buildings (e.g., the Domitianic scene at Ephesus); of screen walls in the imperial cult chambers of gymnasia (at Ephesus, Sardis, and Miletus); of nymphaea (the Trajanic nymphaeum at Miletus); and of other public buildings (the Celsus library at Ephesus, c. 117 CE). The conservative tradition of temple design derived from Hermogenes does persist in Asia Minor into the early second century (at Aizanoi) but seems to end by the time of the peripteral colonnade at Sardis (in Antonine baroque). [*See* Petra; Ptolemais; Ephesus; Sardis.]

The colonnaded street seems to originate in the Syrian coastlands in Augustan times (first attested in Herod's project at Antioch), as does the arcuated or "Syrian" pediment between twin towers (the Augustan Temple of Dushara at Si). Arcades (archivolts on columns) may exist in the Alexandrian-inspired repertoire before the imperial era.

Relatively little further change occurs in the use of the orders in Anatolia and the Near East in the second and third centuries CE. In the second century, the so-called marble style dominates the production of ornament in Anatolia, Syria, and North Africa, based on production from the Proconnesus quarries. By Severan times, the production of ornament is dominated by a type of brittle carving with simple faceted surfaces that create abrupt contrasts of light and



ARCHITECTURAL ORDERS. *Classical capitals.* Doric, Ionic, and Corinthian styles. (Courtesy T. N. Howe)



ARCHITECTURAL ORDERS. *Diagram of various architectural features of public buildings.* (Courtesy T. N. Howe)

shade; this aesthetic forms the basis of Late Antique and Byzantine ornament.

The hybrid use of Hellenic types of columns and Near Eastern elements continues throughout the Roman period. The Trajanic kiosk at Philae is in a fully traditional Egyptian form, whereas the temple tombs at Petra and the Temple of Bel at Palmyra combine canonical orders with "Assyrian" crowstep merlons and Egyptian cavetto cornices. At a number of centers, buildings with partially or fully native plans adapt the architecture of the edicular screen or arcade as engaged or low-relief surface patterning, but without the fixed relative proportions or syntactical rules of Hellenic types (e.g., the Temple of Gareus at Uruk; the "peripteros" and the "Freitreppenbau" at Aššur).

[*See also* Architectural Decoration.]

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THOMAS NOBLE HOWE

ARCHIVES. *See* Libraries and Archives.

ARMENIA. Any study of Armenian archaeology is hampered from the start by fundamental handicaps: the chronology remains insufficiently precise and not yet universally accepted, so that terminologies used by local and foreign scholars vary. Despite the extensive work done in eastern Anatolia and northwestern Iran, the majority of the evidence comes from the present Republic of Armenia, comprising, at best, one-fifth of historic Armenia, which covered all of

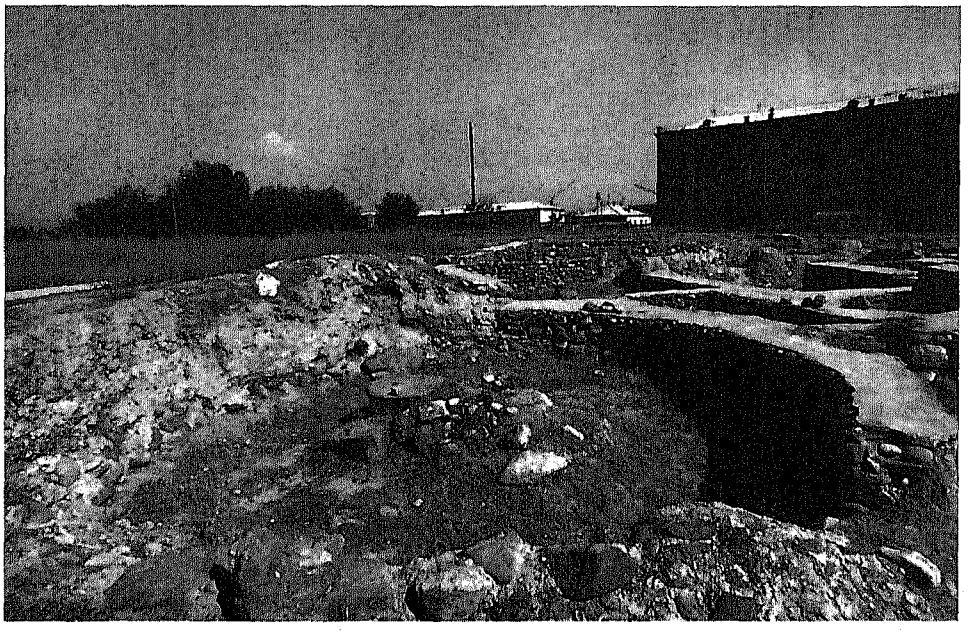
the Armenian plateau. Consequently, serious geographic and chronological lacunae remain, distorting our understanding of the existing material. This is especially so because the Armenian plateau at times entered into larger cultural units. Most conclusions are therefore rendered tentative and possibly inaccurate.

Archaeological evidence on the Armenian plateau begins with the Early Paleolithic period. The earliest finds in Armenia, and indeed in all of the former USSR to date, were made in 1946–1948 by S. A. Sardaryan and M. Z. Panichkina (Mongait, 1961, pp. 56–57; Panichkina, 1950) at Satani dar on the southwestern slopes of Mt. Aragac, near the Armeno-Turkish border. These consisted of typical Chellean and Early Achulean artifacts, made of obsidian, which is plentiful in this volcanic region. Somewhat later, more developed Middle and Late Paleolithic sites also occur in the gorge of the Hrazdan River, just north of the present Armenian capital of Erevan on the Middle Araxes River. A number of petroglyphs representing long-horned animals and hunting scenes, found on Mt. Aragac and elsewhere in Armenia and neighboring Azerbaijan, may also go back to the Paleolithic period, although their chronology remains uncertain.

The stratigraphy of more permanent settlements—rather than mere encampments—found on the southwestern slopes of Mt. Aragac demonstrates a direct succession from food-gathering to food-producing levels not yet attested elsewhere in Transcaucasia. A local evolution derived from the neighboring hills (and leading to Neolithic settlements in the plain of Erevan as early as 6000 BCE) has consequently been postulated (Burney and Lang, 1971, p. 34). The agricultural basis of the economy in the earliest level of these new settlements is clearly attested by the presence of querns, mortars, obsidian sickle blades, and storage jars; stock raising is reflected in rock reliefs of domesticated animals. Various forms of round-bottomed vessels and cups made of sand and straw-tempered clay, occasionally decorated with an incised motif, mark the appearance of pottery. These early settlements apparently shared a common tradition with those of mid-sixth–fifth-millennium Georgia: a small, circular house plan occurs both there and at Telut, west of Erevan.

The transition from stone to metal late in the fourth millennium is still obscure, but the period from about 3250 to about 1750 BCE is of particular note in Armenia. Called Kuro-Araxes by local scholars, but also known under a variety of other names (e.g., Early Transcaucasian), it spanned both the Chalcolithic (Soviet Eneolithic) and Early Bronze Ages. Geographically, its culture reached from the Caucasus to eastern Anatolia, northwestern Iran, and beyond to Syria-Palestine. Its remarkable stability and uniformity, despite a gradual evolution and the development of local particularism in its last phase, led Charles Burney to conclude that "Never again was there a culture in the highland zone both so far-flung and so long-lived" (Burney and Lang, 1971, p. 85).

The hallmark used to identify the Kuro-Araxes culture is a distinctive, high-quality, dark-monochrome (usually black or red) burnished pottery in various shapes that is decorated with grooved, or occasionally raised, hatched triangles, sin-



ARMENIA. Figure 1. *Round house at Šengavit' displaying the base of a central post.* Third millennium BCE. (Courtesy N. G. Garsoïan)

gle or double spirals, zigzags, or incipient floral or bird motifs. The superior technical level and sophistication reached by this style in the Araxes valley during the third millennium has lent credence to the hypothesis that this may well have been its center. Variations of the type can be traced throughout the cultural area—particularly in the slightly later Khirbet Kerak ware of Syro-Palestine, whose style seemingly originated in Transcaucasia. With some tendency toward more elongated forms, the Kuro-Araxes tradition lasted through the Early BronzeAge and even beyond the mid-second millennium BCE in some areas.

Šengawit', a southern suburb of Erevan on the high left bank of the Hrazdan, has often been selected, among many others, as a typical Kuro-Araxes site, although it was probably founded even earlier. It was a permanent settlement, surrounded by a protective wall of large, undressed stones, with an underground passage to the river. Within it were grouped numerous, usually single-room, round houses some 7–8 m in diameter. They are similar to ones found in Georgia, in Karabagh, and near Naxčawan on the lower Araxes. Composed of several stone courses surmounted by thin wattle and clay walls, their inward curvature suggests a beehive shape. According to Arak'elyan (1976, p. 14), the interiors were usually painted blue. Rectangular annexes often flanked the central room, and the larger houses had a central wooden post (see figure 1). All examples included a storage bin for grain and an elaborate and highly ornamented clay hearth (some ram shaped or with ram heads and movable parts) that may have served religious as well as practical purposes. The growing importance of animal husbandry is reflected by petroglyphs and multiple figurines or amulets of tiny bulls, probably also with a religious significance. Burials from this period are rare, but Šengawit' had a largely intramural cemetery, with early communal burials in rectangular graves containing up to ten bodies. Grave goods included stone and copper weapons, amulets, personal ornaments, bone implements, and fragments of textiles. [*See* Burial Sites; Grave Goods; Weapons; *and* Textiles, *article on* Textiles of the Neolithic through Iron Ages.]

Certain regions display signs of stagnation in the last, EB phase of this culture, beginning in about 2300 BCE. However, the activity in northern and central Armenia did not abate. Many new settlements developed in the hill country (Garni, Elar, and Lčašēn in the north, Hařič in the west) as the predominance of animal husbandry and population pressure began to require additional space. Of particular importance is the appearance of a major metallurgical center at Mecamōr, west of Erevan. Even though the technique used had probably been brought from Mesopotamia, and Mecamōr did not reach its apogee before the second half of the second millennium BCE, it may be the earliest such center in Transcaucasia. Bronze slag, together with casserite ore and animal-matter briquettes containing the phosphorus required to extract tin from this ore, were found in Mecamōr's earliest phase, together with Kuro-Araxes pottery.

Considerable continuity from this culture can be traced in the subsequent Middle Bronze (twentieth–fourteenth centuries BCE) and Late Bronze (thirteenth–tenth centuries BCE) periods, though some sites were temporarily abandoned. Even so, Armenia in the second millennium BCE presents a complex picture, continually supplemented by ongoing excavations and the identification of new western sites through recent air surveys and the work by Philip Kohl and Hermann Gasche under the auspices of the Institutes of Archaeology of the Academies of Sciences of the Armenian and Georgian Republics. Most of the material for this period derives from burials and shows a fairly unified culture, including both Transcaucasia and northwestern Iran by the end of the fourteenth century BCE. Numerous barrows of the northern steppe type, similar to those from Trialeti in southern Georgia, have come to light in the Armenian Republic: at Kirovakan (c. 1500 BCE) and Tazekend in the north, as well as at Karabagh in Azerbaijan. In 1950, at Lčašēn, the lowering of the water level of Lake Sevan revealed a major cemetery in use from the third millennium to about 1200 BCE. Its richest tombs, however, approached by dromi and lined as well as roofed with massive stone slabs, have been attributed to the thirteenth century BCE. [*See* Tombs.] Near Artik, on the western slopes of Mt. Aragac, a vast complex of some 640 catacomb tombs with vertical shafts and oval burial chambers filled with stones and earth was uncovered beginning in 1959 by T. S. Xačatryan (Khachatrian, 1963). These have been dated to between the fourteenth and the tenth centuries BCE, with the majority of burials belonging to the middle phase (twelfth–eleventh centuries). In both types of cemeteries, single burials (the contracted body lies on its side with no particular orientation) are the norm, although twin and even some communal burials occasionally appear in the last phase.

The great development of metallurgy, evidenced by the presence of some twenty-four smelting furnaces at Mecamōr dating to before 1000 BCE, is also reflected in the diversity and wealth of the grave furnishings. The richest and best known are those from Kirovakan: a gold bowl decorated with pairs of repoussé lions, silver cups similar to those found in the Trialeti barrows, a wooden couch with silver-plated ends, bronze bowls and weapons, and a gold and carnelian necklace adorning the corpse. Similar bronze tools, weapons, and ornaments—daggers with openwork pommels, spearheads, axes, swords with decorated blades (some with a copper-snake inlay), bronze and obsidian arrowheads, horse bits and wheeled cheek pieces, decorated belts, bracelets with spirals and granulation, earrings, hairpins with decorated heads, and pendants with openwork bells and birds were found with bronze, glass paste, and carnelian beads at Artik, Lčašēn and elsewhere. All testify to the mastery of Armenian metalwork in this period. [*See* Metals, *article on* Artifacts of the Neolithic, Bronze, and Iron Ages; Jewelry.]

Foreign influences on Armenia have been argued for the

late second millennium BCE. Parallels are manifest in the northern barrow-type burials, in the ceramics with corded decoration (similar to those of the later steppe kurgans found in the earlier MB burials at Lčašēn), and perhaps in the remarkable group of open and covered wooden vehicles with disk and spoked wheels also recovered from Lčašēn. These correspond to examples in Trialeti, though Mitannian influence from the south has also been postulated. [*See* Mitanni.] The profusion of polychrome ceramics occurring at numerous sites—Tazekend (with which a red-on-black type has been identified), Garni, Mecamōr, and Lčašēn, among others—points southward, to northwestern Iran. The same holds for the Mitanni-type cylinder seals discovered in the earlier Artik tombs. Even so, most artifacts are of local origin, as is the gold. The earlier Lčašēn tombs are characterized by their own monochrome pottery with a punctuated decoration. Similarly, all levels at Artik contain only black-decorated ceramics, at times crude, at times burnished to a nearly mirrorlike luster.

The bulk of the MB and LB evidence is, then, derived from cemeteries. However, cyclopean fortresses, known as *berdšēn,* dating to the millennium preceding the eighth-century BCE appearance of the Urartians in the region, have increasingly been detected throughout the Armenian Republic and in neighboring Karabagh (four in the immediate vicinity of Garni). [*See* Urartu.] Large groups of LB megalithic monuments have also been recorded near Sisian, in the eastern region of Zangezur. Of special interest are those known as *višaps,* "monsters, or dragons." Up to 2–3 m long, with large fish mouths and eyes, as well as crude indications of scales and gills, and erected upright in the mountains at the head of springs, *višaps* may well indicate widespread water worship, just as the presence of small amulets point to the probability of fertility cults. [*See* Cult.] Shrines with curious clay altars with hearths and multiple cups, presumably for libations and sacrifices, found near the metalworks of late second-millennium BCE Mecamōr, must have some religious significance. An artificial open-air platform at Mecamōr is marked with hieroglyphic signs, for which an astral significance has been suggested.

With the opening of the first millennium BCE, iron objects begin to appear in graves. The new technology may have caused the gradual decline of Mecamōr, even though evidence demonstrates the survival of second-millennium BCE Transcaucasian culture to the ninth century BCE at least. Elegant bronze belts with running spiral borders framing lively animal figures, chariots, and hunting scenes have been attributed to the immediately pre-Urartian period (c. 1100–900 BCE). Hence, for millennia, and down to the Urartian conquest in the early eighth century BCE, the Araxes valley and much of north-central Armenia had already experienced a continuous, and at times brilliant, evolution—of which it may even have been the center during the long Kuro-Araxes period.

In sharp contrast to the growing wealth of evidence from earlier periods, material securely datable to the millennium from the sixth century BCE to the fourth century CE is puzzlingly meager. Its scarcity presents one of the major unsolved problems in Armenian archaeology. Some Urartian survivals occur at Armawir/Argištihinili and at Erebuni, within the limits of modern Erevan; except for a few silver rhyta, a hypostyle hall and a fire altar at Erebuni, and the unfinished inscription of King Xerxes at Van, however, the period of Achaemenid domination of Armenia (sixth–fourth centuries BCE) must still be reconstructed from literary sources, primarily Xenophon.

Alexander the Great himself never visited Armenia, and the Seleucid hold on the plateau ruled by a native dynasty was precarious. [*See* Seleucids.] By the late third–early second centuries BCE, eponymous cities appeared, presumably modeled on the ubiquitous Alexandrias: Artaxata/Artašat, the northern capital on the middle Araxes founded by Artaxias/Artašēs; Zarišat; Zarehawan; and Arsamosata in southwestern Sophene; eventually the new capital of Tigranakert. Only Artašat and Armawir have been excavated to date, and even the site of Tigranakert remains disputed. Nevertheless, preliminary work shows generally Hellenistic urban plans with an acropolis, a temple at Armawir, hypocaust baths, shops, and dwellings. [*See* Baths.] Greek inscriptions, or rather graffiti, from Armawir show a familiarity with Greek classical literature. [*See* Greek.] A small statuette of the Praxitelean Aphrodite type was found in the excavations at Artašat (Arak'elyan, 1976, pl. xxii–xxiii), but the dating of the material from this city destroyed by the Romans in 59 CE and reconstructed with the permission of the emperor Nero (whose name it briefly took after 66) is not clear.

The apogee of Greek influence came during the reign of Tigran II (95–55 BCE). Literary sources describe the Hellenistic character of his capital, Tigranakert, and of his court. Handsome silver tetradrachms celebrating his taking of Antioch on the Orontes River in 84 BCE follow the Hellenistic model: they represent the profile of the king on the coin's obverse and the city's Tyche as a crowned woman enthroned above the Orontes River on its reverse, and they display Greek legends. [*See* Antioch on Orontes.] Similar coins of lesser quality continued this type in Sophene until the first years of the Christian period. Under the Romans, a few inscriptions of Trajan and particularly from the reign of Marcus Aurelius at Vałaršapat/Kainē Polis ("new city") west of Erevan, attest the presence of Roman troops.

The major classical monument in Armenia is the complex at Garni. Its fortress was begun in the third/second century BCE. It was rebuilt in the eleventh year of King Trdat (c. 77), according to a Greek inscription discovered there in 1945. Within it the ruins of a palace and of a small Ionic peripteros on a high podium were found. They are now reconstructed as a temple, though this identification has been challenged. Despite some attributions to the third century, derived from later literature, this structure is usually dated to the first cen-

tury on the basis of its style and use of a dry-masonry technique with swallowtail clamps, rather than the later mortar binder. A hypocaust bath nearby produced a floor mosaic of classical sea gods and creatures in a somewhat crude opus vermiculatum and sectile (Aṙak'elyan, 1976, pl. xxiii–xxvii). [*See* Mosaics.]

Iranian aspects continued to manifest themselves beyond the fourth century BCE in clay plaques representing a Mithraic heroic rider found at Artašat and in the pearl diadem worn by Tigran II on his coinage. The mixed Greco-Iranian type of this coinage similarly characterizes the classical bronze head of the Iranian goddess Anahita now in the British Museum and in small statuettes of birds and stags on a stepped pedestal discovered at Sisian. Most interesting of all are boundary stones of Artašēs I (189–c. 160 BCE), whose Aramaic inscriptions confirm the continuation of the local Orontid dynasty in this period, and the hunting scenes that decorate the hypogeum of the Christian Arsacid kings at Ałcḳ', northwest of Erevan. [*See* Aramaic Language and Literature; Hunting.] The presence of Iranian fire altars under the main altar of the patriarchal cathedral of Ējmiacin and at Kasax, farther north, mark the Sasanian occupation of Armenia in the late fourth century. [*See* Sasanians.]

ARMENIA. Figure 2. *Kars stele showing a male figure in Parthian dress.* (Courtesy N. G. Garsoïan)

The long hiatus of the Armenian archaeological dark ages came to a close with the appearance of Christian monuments, probably in the fifth century. Numerous single- and three-aisled basilicas, seemingly related to Syrian or Anatolian types, were built throughout Armenia and in Georgia. [*See* Basilicas.] Some of these were monumental and of remarkable quality, such as the one at Ereruk, on the western border of the Armenian Republic, which has been compared to the one at Qalb Louzeh in northern Syria. By the early seventh century, a multitude of domed basilicas, and especially cruciform churches with a central dome on squinches, appeared in both Armenia and Georgia, together with a few circular and polygonal types, of which the best known is the one at Zuartnoc', near Ējmiacin. [*See* Churches.] Historiated stelae, often depicting figures in Parthian dress, were erected—alone or within double-arched monuments, such as the one at Ōjun, in the north, and possibly at Ałudi in the east (see figure 2). [*See* Parthians.] Some of the churches (e.g., at Pṭni, Mren, Ōjun, and Aṭ'eni in Georgia) have figured relief decorations, but most rely on the harmony of their proportions and the perfection of their dressed-stone surfaces enclosing a mortar inner core and minimal architectural decoration around windows and cornices for their effect. They range in size from the minute princely chapels at Aštarak, T'alin, and Bǰni (belonging to the parafeudal aristocracy of the period) to the vast domed basilicas of St. Gayanē at Ējmiacin, Aruč, T'alin, and Ōjun to the monumental cruciform churches of Gaṙnahovit, St. Hṙip'simē, and Sisian. The endless variety and sophistication of their types and proportions, as well as the subtlety of their decoration, testify to the mastery of the artists and the wealth of their patrons, the ruins of whose palaces are still visible in the countryside. The earlier cities, unsuited to contemporary military and aristocratic society, did not revive, except for the administrative center of Duin near Artašat. Recent excavations there have uncovered a patriarchal residence and cathedral from the seventh century built over earlier structures. Steady architectural activity continued through most of the seventh century, despite the Arab conquest of the Armenian plateau. It was halted for nearly two hundred years, however, along with most cultural activity, when the occupation became more oppressive later in the eighth century.

[*See also* Armenian.]

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ARMENIAN. Although sharing many of the linguistic features and characteristics of the contiguous Indo-European dialects that once spread between Greek in the south and Balto-Slavic in the north, the position of Armenian among the Indo-European languages appears to be highly archaic, judging from the phonetic system of stops. The prehistory of Armenian is invariably connected with the spatial linguistic interrelationships of the ancient Indo-European dialects and the geographical origin of the Armenians and their migration. However, there is no scholarly consensus on this subject. Some favor the traditional view that Armenians reached Asia Minor from Europe, a view based on the testimonies of the classical Greek historians and the linguistic affinities with the Pontic branch of Indo-European, that is, Greek and the Paleo-Balkan group (Thraco-Phrygian in particular). Others hold that the very cradle of Proto-Indo-European is to be found in eastern Anatolia and the southern Caucasus in or near Armenia. Whether or not Proto-Armenian originated in the area where we find it later, the language retains some one thousand words of Indo-European origin, making it an important source for the study of Indo-European roots.

The early development of the language seems to have included considerable borrowings from neighboring languages: from Hitto-Luwian and Hurro-Urartian proper names (theonyms, anthroponyms, and toponyms) to Indo-Iranian words of everyday life. The archaic contacts among the various peoples of the Armenian highlands account for a rich stock of common terms, and this development has given rise to passionate debates over etymologies and loan words from one or another of the languages of the region—from the Kartvelian family and other Caucasian languages farther north to the various Iranian languages. There is also some lexical evidence suggesting possible early contacts with Semitic languages. The complexity of the question of influences and counterinfluences notwithstanding, the early impact of Armenian on neighboring lands, such as Georgia and Albania, has long been recognized. Many Iranian loanwords also made their way into these regions through Armenian. Yet Armenian possesses with Kartvelian and Albanian components such as consonant shifts that go back to one or another of the ancient dialects found in the Balkan languages as substrata.

The subsequent history of the language can be divided into four major periods: (1) preliterate, that is, prior to the formulation of the Armenian alphabet early in the fifth century; (2) Old Armenian, which is known through the classical sources of early Armenian literature in the fifth–tenth centuries; (3) Middle Armenian, as developed primarily in the Cilician kingdom in the eleventh–fifteenth centuries, a period to which most of the current dialectal phonetic splits can be traced; and (4) Modern Armenian, which is divided into Eastern and Western Armenian following two major dialectal groupings. One has flourished in and around Armenia and Iran with substantial literary development in Tbilisi since the beginning of the nineteenth century and in Erevan since the beginning of the twentieth century. The other has flourished simultaneously among Armenian communities in Anatolia, the rest of the Middle East, and the Western world with its literary capital at Istanbul in the last century and Beirut in the twentieth century. The Eastern dialect retains the pronunciation of Old Armenian, and the Western dialect its orthography. The grammars differ throughout.

Before the introduction of the Armenian script by broad modifications of the Greek alphabet and to a lesser extent of the Syriac alphabet, Armenians used Greek and Aramaic for coinage and inscriptions. The coins of the independent Armenian kingdom of Sophene, founded by Aršam (260–228), and those of the Artaxiads, widespread after the con-

quests of Tigran II (95–55), have Greek legends. However, the landmark inscriptions from the reign of Artašēs I (190–159), the founder of the Artaxiad dynasty, are in an unusual form of Aramaic script. A royal dedicatory inscription at Garni, from the eleventh year of Trdat I (66 BCE–c. 100 CE), the founder of the Arsacid dynasty in Armenia, is in Greek. There are few Latin inscriptions from the Roman occupation of the second century CE. The earliest Christian texts used in Armenia were in Syriac, and the ecclesiastical correspondence in the early decades of the Armenian Church was primarily in Greek. Very little of this correspondence survives in later translation. Unfortunately, in their zeal for Christianity and as the native historians of the fifth century attest, Armenians made a conscious effort to eradicate every relic of their pagan past. This was accomplished under the leadership of Grigor the Illuminator, the saint largely responsible for the conversion of the nation to Christianity in 314. Under his descendants the nascent church took an increasingly pro-Byzantine stance and did away with much of the early Syriac elements in Armenian Christianity. Moreover, natural conditions and constant ravages by hostile invaders also had a devastating effect. Consequently, there are no documentary remains from this period; a few lines of epic songs survived orally and were committed to writing by later generations, the last being in the eleventh century.

From the first four centuries of scribal activity employing the Armenian script there are only fragments that are preserved for the most part as end gatherings used to reinforce the binding of later codices. The oldest surviving Armenian manuscript is a set of the Gospels from the year 887, now in Erevan (Matenadaran Library, no. 6200). As for the epigraphic evidence, few Armenian inscriptions survive from these early centuries. The oldest is the late fifth-century inscription of the Tekor basilica. The best examples of sixth-century script and iconography come from mosaic floors found in and around Jerusalem. Numerous fine inscriptions from churches and monuments built in Armenia in subsequent centuries and other texts in the form of graffiti, are found throughout the land. Graffiti are found also in distant places like the Sinai, left by pilgrims en route to the monastery of St. Catherine. Numerous graffiti were left in Cilicia and Palestine during the Crusades. Before the eleventh century, writing was only in uncials. Thereafter, a significant paleographical development occurred with the introduction of minuscules. The earliest inscriptions of this period have a mixed script, partly uncial and partly minuscule, but uncials continue to be the common script for inscriptions. Prior to the use of minuscules Armenian paleography may be described as somewhat uniform; its study, however, is not firmly established.

Uncials	Minuscules	Transliteration	Uncials	Minuscules	Transliteration
Ա	ա	a	Մ	մ	m
Բ	բ	b	Յ	յ	y
Գ	գ	g	Ն	ն	n
Դ	դ	d	Շ	շ	š
Ե	ե	e	Ո	ո	o
Զ	զ	z	Չ	չ	č
Է	է	ē	Պ	պ	p
Ը	ը	ě	Ջ	ջ	ǰ
Թ	թ	t'	Ռ	ռ	r
Ժ	ժ	ž	Ս	ս	s
Ի	ի	i	Վ	վ	v
Լ	լ	l	Տ	տ	t
Խ	խ	x	Ր	ր	r
Ծ	ծ	c	Ց	ց	c'
Կ	կ	k	Ւ	ւ	w
Հ	հ	h	Փ	փ	p'
Ձ	ձ	j	Ք	ք	k'
Ղ	ղ	ł	Օ	օ	ō
Ճ	ճ	č	Ֆ	ֆ	f

ARMENIAN. Figure 1. *The Armenian alphabet.* The last two letters are Middle Armenian additions. The vowel ու / ու is transliterated u. The transliteration follows the standard international practice, that of Hübschmann-Meillet-Benveniste.

The invention of the native script in 405 CE is credited to Maštoc' (d. 439), a learned cleric who was determined to have the Bible translated into Armenian. Maštoc' experimented briefly with a script that had been developed by a Syrian bishop named Daniel, but rejected it for its insufficiency and also excluded the use of a predominantly Semitic alphabet. Other existing alphabets must have been inadequate for transcribing certain Armenian consonants by a single sign; hence, there is no evidence for writing Armenian in either Greek, Syriac, or Latin script prior to Maštoc'. His alphabet of thirty-six characters, which was refined by a calligrapher named Rufinus at Samosata permitted a phonetically perfect transcription of the language (see figure 1). Pupils were sent to Edessa and Constantinople to study Syriac and Greek, to acquire choice manuscripts, and to translate. Later on, in keeping with his missionary endeavors, Maštoc' devised alphabets for the Georgians and the Caucasian Albanians.

Koriwn, a pupil of Maštoc', details the efforts of his tireless teacher in *The Life of Maštoc',* the first work composed in Armenian (c. 443). The work conforms to the requirements for encomium in the classical tradition (a later, shorter version omits the essential proem). Another pupil, Eznik of Kołb, later bishop of Bagrewand, wrote *Refutation of the Sects.* This four-part polemic, employing traditional arguments on Divine Providence vis-à-vis evil and free will, was directed against what the author considered to be false religious movements because of their rivalry with Christianity—paganism in general, Zoroastrianism, Greek philosophy, and Marcionism. A collection of twenty-three homilies and a few hymns have been traditionally attributed to Maštoc' himself. Likewise, another collection of liturgical compositions, especially for the Holy Week, together with a

six-part *Constitution* governing the hierarchy of the church, has been ascribed to the patriarch Sahak, who held the hereditary leadership of the Armenian Church for about fifty years (386–428, 435–438), the last of the lineage of Grigor the Illuminator to hold that office. According to Koriwn, Sahak was the foremost patron of the activities pursued by Maštocʿ and his pupils and was the translator of numerous patristic works. He was also responsible for the revision of the first translation of the Bible.

The Old Testament was translated from Greek, and the New Testament was translated apparently from the Old Syriac version first and then revised by the same translators, following a Caesarean-type Greek text (traces of a later revision prior to the eighth century are also discernible). The Armenian version, however, offers more than the usual contribution to the understanding of the development of the textual tradition of the Bible. Numerous Armenian manuscripts containing the Old Testament preserve many of Origen's Hexaplaric signs (asterisks, obeli, and metobeli), which are important elements for Septuagintal studies. New Testament manuscripts yield traces of the mostly lost Old Syriac version, attested also in certain patristic quotations. As for the textual tradition of the Old Testament Pseudepigrapha (noncanonical works), the Armenian often preserves readings superior to those extant in Greek, as in the case of the *Testaments of the Twelve Patriarchs*. Certain of the New Testament apocryphal works have peculiar versions in Armenian, such as the amplified *Gospel of the Infancy*.

With the exception of the Latin Vulgate, there are more Armenian biblical manuscripts than of any other early version. Such manuscripts, whether whole or partial Bibles, constitute nearly a tenth of all medieval Armenian manuscripts. There is but one Armenian-Greek bilingual text, containing *Acts*, the Pauline corpus, and the Catholic epistles (Paris, Bibliothèque Nationale, Arm. 9, c. eleventh–twelfth century). Altogether there are more than thirty thousand ancient Armenian manuscripts, two-thirds of which are at the Matenadaran Library in Erevan. Other major collections are at the St. James Monastery in Jerusalem and the Mekhitarist monasteries in Venice and Vienna. Lesser collections are found in several national and university libraries in Europe, the Middle East, and the United States. Scores of biblical commentaries also exist, covering almost every book of the Bible.

The most popular primary source on the conversion of Armenia from Zoroastrianism to Christianity very early in the fourth century is the *History of the Armenians* by Agathangelos. The importance of this work is attested by early translations into several languages—Greek, Georgian, Arabic, Latin, and Ethiopian, with two distinct versions in each of the first three languages. The fifth-century Armenian author purports to be a Roman scribe and an eyewitness of the conversion of King Trdat III (298–c. 330), at whose command he wrote the *History*. Notwithstanding his use and adaptation of earlier sources, the pseudonymous author seems to have transmitted some reliable information regarding the events surrounding the conversion of the King and the life and teachings of Grigor, the Illuminator of Armenia. Among the earlier sources used by him are Koriwn's *Life of Maštocʿ* and the anonymous collection of oral histories of Greater Armenia during the fourth century, compiled in the year 470 and transmitted under the title *Epic Histories (Buzandaran Patmutʿiwnkʿ)*. It contains earlier and conceivably more trustworthy traditions. A clear evidence for the latter is the observation that Grigor is called neither "saint" nor "illuminator" in the *Buzandaran*, thus reflecting a very early period of the tradition—when such titles were not yet in vogue. The *Buzandaran* in its own way chronicles the history of Armenia during the long reign of Shapur II of Persia (309–379) and concludes with the official partition of the land under his successor, Shapur III, in 387. The compilation attempts to fill the historical gap between the conversion of Armenia at the hand of Grigor and the formulation of the alphabet by Maštocʿ. The author makes ample use of the Armenian Bible with which he was thoroughly familiar.

The next century, from 387 to 485, is covered by Łazar Pʿarpecʿi and Ełiše Vardapet. In a letter to a noble friend, and overseer for the Sasanian overlords, the *marzpan* Vahan Mamikonean (485–505), Łazar defends himself against rival clergy because of whom he had sought exile in Amid (modern Diyarbakir). Thereupon, he was called by Vahan to head the monastery at Vałaršapat and was commissioned by him to write the *History*. In it he acknowledges the works of the shadowy Agathangelos and the *Buzandaran* and considers his own contribution as the third historical writing (Koriwn's encomium is deemed sacred biography). Łazar is the first Armenian historian of the fifth century whose identity is known. The central part of his *History* focuses on the revolt of 451 and the ensuing battle against the Sasanian king Yazdgird II (438–457) for pressing the Armenians to return to Zoroastrianism. Łazar gives no details of the battle led by Vardan Mamikonean, the hero of the patron's clan, and is often less elaborate than Ełiše, the other exponent of the event. The *History of Vardan and the Armenian War* by Ełiše amplifies that event, especially the battle. There are numerous other differences between the two accounts, however, beginning with the circumstances leading to the conflict that led to the revolt and to war. These differences notwithstanding, Ełiše's more passionate retelling has endeared his version to the point of allowing little hearing for the other account on which he depends. He wrote at the request of the priest Dawitʿ Mamikonean likewise to glorify the hero of the patron's clan. There is some doubt about Ełiše's claim to have been an eyewitness to the events recorded by him. He employs well-established martyrological elements, especially when recounting the speeches he attributes to Vardan and the priest Łewond just before the fateful battle.

The most noted historian, however, is the enigmatic Movsēs Xorenac'i, whose *History of the Armenians* is deemed extremely valuable especially for providing a coherent and systematic view of the nation's history from mythical times to the Persian period (Book 1) and an apologetic interpretation of the Armenian dynastic history from the time of Alexander the Great to the early fifth century in favor of the patronizing Bagratids (Books 2–3). Book 1 includes some rare examples of pre-Christian oral poetry. In it the author reflects keen awareness of the Hellenistic historiographical emphasis on antiquity as found in the national histories of Eastern historians writing in Greek: Berossus, Manetho, Josephus, and Philo of Byblos (these he encountered in the works of Eusebius of Caesarea—his major source—and followed their apologetic commonplaces). In Books 2 and 3 he relies on various other literary and historical sources, including the earlier histories of Łazar and the *Buzandaran* collection, which he modifies as necessary for his transparent intentions.

Following the religious awakening brought about by the early translations and the literary-historical development started by Koriwn, there came yet another period of enlightenment, generated by the translation of philosophical works from the classical period and late antiquity. This was achieved by the "Hellenophile School" of the sixth–eighth centuries noted for its retention of Greek syntax. Collectively, these translations are an outgrowth of the classical curriculum consisting of the seven liberal arts that fell into two groups: the *Trivium,* consisting of grammar, rhetoric, and dialectic; and the *Quadrivium,* consisting of music, arithmetic, geometry, and astronomy. The first comprised the elements of general liberal education, the best representative of which in the Armenian literary tradition is the late sixth-century Neoplatonist philosopher Dawit', surnamed "Invincible." Because of his contemporaniety with the early activities of the school, he may have been instrumental in its founding. Four of his works were translated from Greek into Armenian, possibly during his lifetime (*Definitions of Philosophy, Commentary on Porphyry's Isagoge, Interpretation of Aristotle's Analytics,* and *Interpretation of Aristotle's Categories*). Indicative of these grammatical, rhetorical, and philosophical/theological interests are the numerous elaborations on the *Ars grammatica* of Dionysius Thrax and the more than three hundred Aristotelian and almost one hundred Philonic manuscripts (thanks to these translations, several philosophical and theological works now survive only in Armenian, including a fifth of the works of Philo of Alexandria). The second curricular division consisted of the technical disciplines or the sciences, the best representative of which is Anania Širakac'i, a prolific author of the seventh century. He wrote some twenty treatises, covering every aspect of the sciences known in the early Middle Ages.

History, however, continued to dominate the literary output for the rest of the millennium. The rise of Islam and the extent to which Arab rule affected Armenia is the subject of several historical works, the foremost of which is ascribed to a certain Sebēos. In his *History of Herakleios* the seventh-century author accounts for the Byzantine-Persian wars from the reign of Maurice (582–602) to the accession of Mu'awiyah as caliph (661–680). Łewond (c. 730–790), an apologist for the princely Bagratids (soon to become a royal dynasty, 885–1045), covers the years 632–788. T'ovmas Arcruni (c. 840–906), an apologist for the princely Arcrunis, describes life under the caliphate in the ninth century. Throughout, however, he shows dependence on all earlier Armenian historians. His younger contemporary, the patriarch Yovhannes V Drasxanakertc'i (897–925), follows Xorenac'i rather closely both in his *apologia* for the Bagratids and in his beginning from mythical times. The ethos of the time, however, is depicted best in the national epic *Sasunci Dawit'.* Later historians limit themselves to chronicles of current events, such as Aristakes Lastiverc'i (c. 1000–1073), who tells of the fall of the Bagratid capital, Ani, and Mat'eos Uṙhayec'i (i.e., Edessene, c. 1070–1140), who details the coming of the Turks and of the Crusaders. There are also poetic laments over the fall of Edessa to Nur ad-Din in 1146 (by the patriarch Nerses IV Šnorhali, 1166–1173), Jerusalem to Salaḥ ad-Din in 1187 (by the patriarch Grigor IV Pahlawuni, 1173–1193), and Constantinople to Mehmed II in 1453 (by Aṙak'el Bałišec'i, c. 1390–1454).

In spite of the dominance of the historical genre in literature, the Bible continued as the primary source of inspiration, as evidenced by the mystical soliloquies of Grigor Narekac'i (c. 945–1003) and the first literary epic, a recounting of the Bible in verse by Grigor Magistros (c. 990–1059), a work that inspired the more elaborate *Jesus the Son* by the patriarch Nerses IV Šnorhali a century later. Nerses was the most prominant figure of a new era of literary enlightenment that characterized the Armenian kingdom of Cilicia in the eleventh–fifteenth centuries. Thousands of illuminated manuscripts, mostly Bibles, and scores of commentaries on various books of the Bible survive from this period. Most of these biblical commentaries were inspired by the earlier translations of such works from Syriac and Greek. Some of these early commentaries now survive only in Armenian: Ephrem the Syrian's *Commentary on the Acts of the Apostles* and his *Commentaries on the Epistles of Paul,* John Chrysostom's *Commentary on Isaiah,* and Hesychius of Jerusalem's *Commentary on Job.*

Lexicography likewise thrived with increasingly expanded compilations when Middle Armenian was the current stage of the language. By far the most exhaustive of the Armenian lexica is the somewhat later *Nor Baṙgirk' Haykazean Lezui* (New Dictionary of the Armenian Language), published in two volumes by the Venetian Mekhitarists (1836–1837). The work encompasses all words found in medieval Armenian literature, from the fifth to the fifteenth century. Although the coverage of the earlier literature is thorough, the coverage of works written after the tenth century is rather sketchy, perhaps intentionally, to avoid what was perceived

to be Cilician corruptions. No lexicon of Middle or Cilician Armenian exists. Such a work should necessarily include words found outside published religious texts and should account for unpublished manuscripts with secular contents.

[*See also* Armenia.]

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ABRAHAM TERIAN

ʿARO'ER (Ar., Arʿarah), site located on a low ridge overlooking a broad wadi in Israel's Negev desert, some 22 km (13 mi.) southeast of Beersheba (map reference 1479 × 0623). In *1 Samuel* 30:28, David sends the spoils of war to ʿAroʿer's elders. It appears also in *Joshua* 15:22, defining the borders of Judah. It is written *Adada* in the Masoretic text. Guided by the Arabic pronunciation, the site was first identified as ʿAroʿer by Edward Robinson in 1838. Excavations were carried out between 1975 and 1982 by Avraham Biran of the Nelson Glueck School of Biblical Archaeology of the Hebrew Union College in Jerusalem and Rudolph Cohen of the Israel Antiquities Authority.

Six areas were opened: areas A, B, D, and Y on the mound's summit; area C at the base of its southeastern slope; and area F on a terrace in the Naḥal ʿAroʿer drainage at the southwest foot of the tell. The tell, or acropolis, occupied an area of approximately 1 ha (2.5 acres), but in the Iron Age the settlement also occupied another hectare or so outside the early acropolis wall (stratum IV). Four main strata were identified:

Stratum I: Herodian (50 BCE–135 CE)
Stratum II: Iron III (late seventh–early sixth centuries BCE)
Stratum III: Iron III (mid- to late seventh century BCE)
Stratum IV: Iron II–III (late eighth or early seventh–mid-seventh centuries BCE)

The founding layer, stratum IV, featured a solid offset-inset wall as the dominant feature. Its surfaces were plastered, and an earthen, stone-lined glacis was built against it from the outside. Some indications point to a gateway on the southwest. Structures were erected against this wall along its inner face and toward the interior of the settlement. The area outside the walls was also occupied by architectural remains dating to this phase over an area of approximately one hectare. This stratum has been attributed by the excavators to a fortification project ostensibly carried out by Manasseh, king of Judah, which included a number of sites.

However, the pottery and certain other artifacts—three *lamelekh* seals in particular—suggest a possible earlier date, perhaps during the reign of Hezekiah.

In stratum III the acropolis wall and gateway went out of use; structures were built over it and the upper mound's area was expanded by terracing. The lower slopes were also built up intensely during this period, and many round, stone-lined silos were constructed. In stratum II, the last Iron Age stratum, a small fort was built over the remains of the stratum IV gateway on the acropolis. The settlement was reoccupied around this fort, much as before, often using existing walls.

The cosmopolitan nature of strata III and II is accented by Edomite epigraphic material and pottery, as well as by pottery, glass, and a commercial weight in the Assyrian style—all of which coexisted with the dominant Judahite material: pottery, pillar figurines, a shekel weight, and three *lamelekh* impressions. Located on a prominent transversal route between the King's Highway on the Transjordan plateau and the coast, ʿAroʿer was probably a major trade center and provisioning station. For most of its history it seems to have been controlled by Judah (under the larger Assyrian umbrella), though at a later stage the area may have come under Edomite dominion. [*See* Edom.]

Stratum I was comprised of two phases: the earlier dated to the late Second Temple period (first century BCE–first century CE) and the last to the period between the destruction of the Temple and the Bar Kokhba rebellion (c. 70–135 CE). The settlement was confined to the acropolis and featured a small square, two-story fortress to which a large square courtyard was appended (in area D) and domestic structures with bread ovens in areas H and B. The finds include a well-preserved and diagnostic pottery assemblage; Nabatean wares; a moratarium with the potter's name stamped on its rim; an Aramaic inscription listing workers' salaries; chalkstone vessels; glass vessels, including an inscribed Sidonian cup; and a bronze *umbo,* or "shield boss." This small settlement may have been established under Herod the Great, or, more likely, in light of the numismatic evidence, Agrippa (38–44 CE). The excavations at ʿAroʿer resulted in three significant contributions to the field.

1. The three Iron Age strata (II–IV) represent discrete, well-defined material-culture assemblages that show typological development and changing cultural affinities over a relatively short time (about 100–150 years). The ceramic repertoires of these strata can be used as points of reference and comparison for more poorly defined assemblages in southern Judah, Edom, and Moab. [*See* Moab.] Relative chronologies can thus be fine tuned to within approximately fifty years.

2. The combination of Judahite, Edomite, and Assyrian attributes in the material culture allows scholars to make inferences about economic ties, cultural affiliations, and political control in the Negev in the Iron Age.

3. The stratum I artifactual assemblage is a classic one of much utility for comparative purposes. The final phase, closely dated to about 70–135 CE, is also significant for pinning down the dating and historical context of contemporary settlements at other sites.

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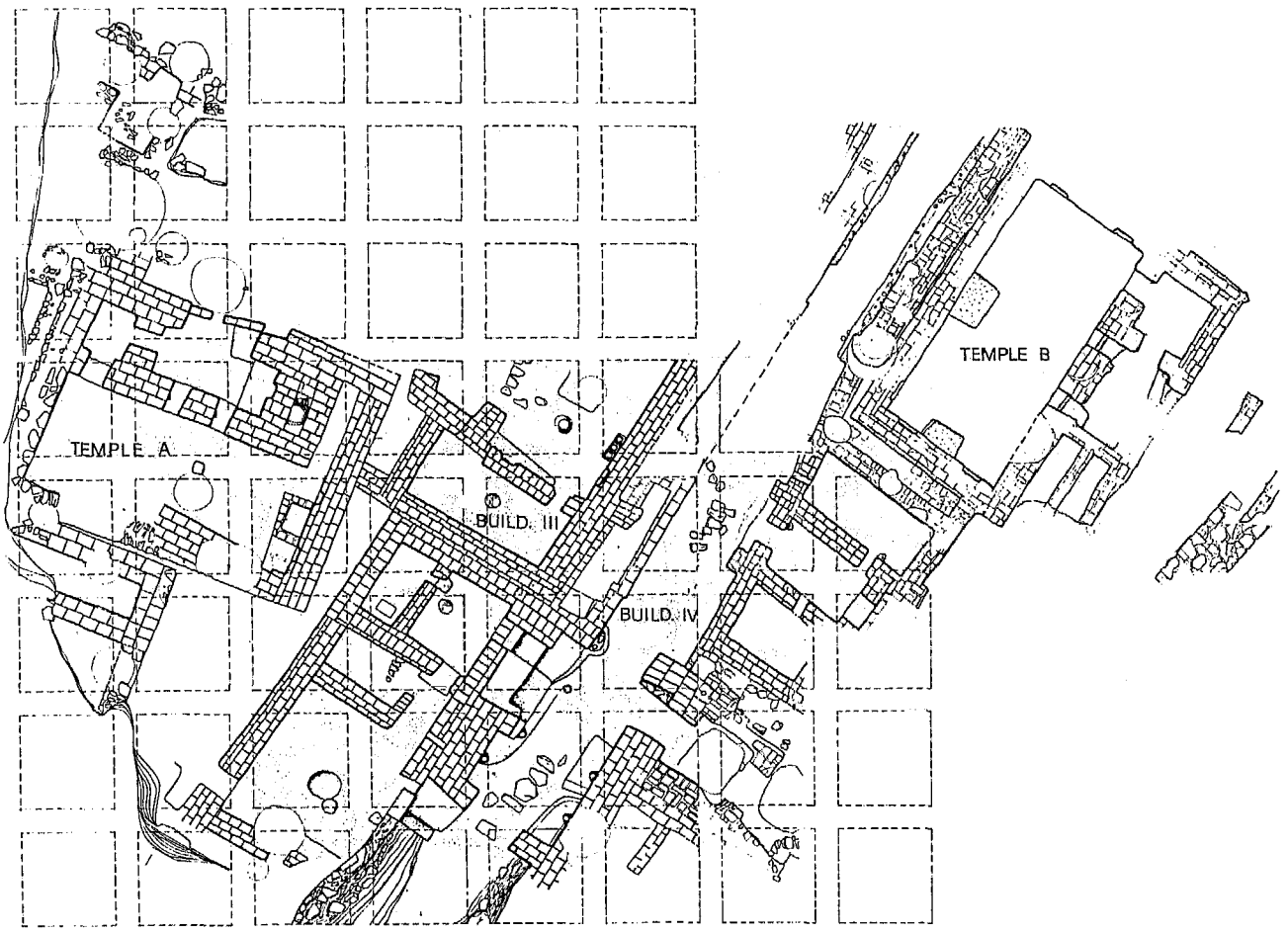
DAVID ILAN

ARSLANTEPE, tell *(höyük)* located in eastern Turkey, 6 km (4 mi.) northeast of the town of Malatya and 4 km (2.5 mi.) south of the town of Eski Malatya (Old Malatya), the ancient Roman settlement, in the modern village of Orduzu, 15 km (9 mi.) from the right bank of the Euphrates River. The site, which is about 30 m high, dominated the Malatya plain from the fifth millennium to the Neo-Hittite age (1200–700 BCE), evident from the interrupted succession of many settlement levels, some with monumental architecture. After the conquest of the Assyrian king Sargon II in 712 BCE, the site declined for the first time in millennia. However, it seems to have been occupied as a simple rural village in Roman times, between the fourth and sixth centuries CE, even once the main center had moved to Eski Malatya, the ancient town of Melitene.

The earliest historical reference to the town, known as Mal(i)dija, was in the final phase of the Middle Hittite Kingdom in about 1400 BCE, when it submitted to a Hittite king. When it appears in later Assyrian, Neo-Assyrian, and Babylonian sources, the name *Mi/Melidia, Mi/Melidu,* or *Mi/Melid* is used (see Hawkins, 1993, pp. 35–36) for one of the flourishing Neo-Hittite centers that sprang up in the eastern regions following the breakup of the Hittite Empire. [*See* Hittites.]

It is the Neo-Hittite period stone reliefs, identified on the mound by late nineteenth- and early twentieth-century travelers, that led the French scholar Louis Delaporte to conduct



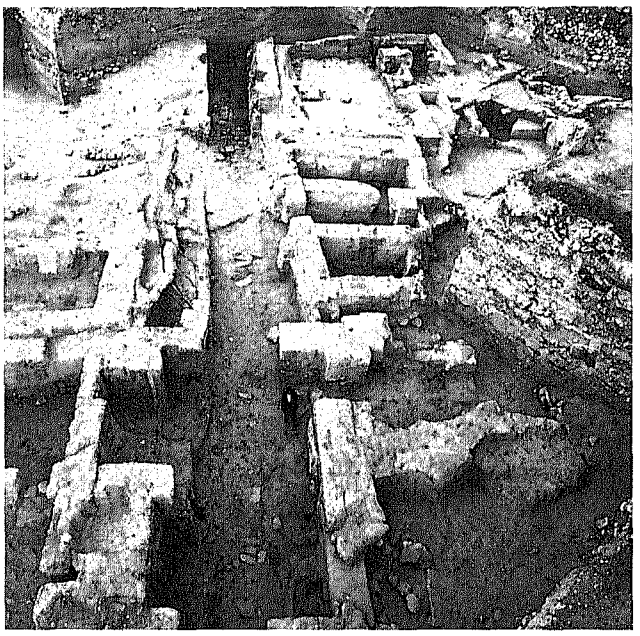
ARSLANTEPE. *Plan of the site.* (Courtesy M. Frangipane)

the first archaeological work there (1932–1939). Delaporte's excavations unearthed a tenth-century BCE palace with an entry gate flanked by two sculpted lions (the Lion Gate) and a paved courtyard, both with limestone bas-reliefs decorating their walls. Together with the large statue of a ruler erected after the construction of the gate, this is one of the most important Neo-Hittite art complexes.

Claude F.-A. Schaeffer carried out some deep soundings at the site in the early 1950s. An Italian archaeological mission has been systematically excavating there since 1961. Begun by Piero Meriggi, from Pavia University, the excavation was directed initially by Salvatore Puglisi and then by Alba Palmieri, both from Rome University. [*See the biography of Schaeffer.*]

The Italian mission began excavating on the northeast part of the mound, where the structures Delaporte brought to light lay. In addition to identifying other Neo-Hittite and imperial Hittite buildings, a sequence of walls and town gates belonging to the various phases of Hittite influence from between 1500 and 900 BCE were identified, superimposed on the outermost parts of the Late Chalcolithic and Early Bronze Age settlements. In the early 1970s, the mission began work in the southwest zone, where the main nuclei of the third- and fourth-millennium settlements seemed to be. Extensive excavations in this zone, and more recently on the western part of the mound, have revealed wide areas of many superimposed settlements. As a result, it is now possible to reconstruct thoroughly the history of the site and the region from the late fifth to the early second millennium BCE.

The earliest level reached so far, which is carbon-14 dated to the end of the fifth millennium (4300–4000 BCE; period VIII in the site's internal sequencing), refers to a little-known cultural aspect of the region from the end of the Ubaid period. (Schaeffer seems to have reached a typical Ubaid horizon with painted pottery in a deep sounding.) While this aspect was represented by domestic structures, at least in the small area excavated, it was in the later period (VII), in the first half of the fourth millennium, that monumental structures were built. The settlement, which covered the whole area presently occupied by the tell, had functionally different sectors: the northeast zone was covered by dwell-



ARSLANTEPE. *Excavated site.* (Courtesy M. Frangipane)

ings with varying floor plans, and domestic structures such as ovens, basins, and burials under the floor; the western zone contained large, imposing buildings, with thick mud-brick walls coated in white plaster and distinctive floor plans and decorative features, built at a much higher level, on what must have been the top of the ancient mound. A building with several adjacent rooms had some of the walls painted red and black, with what were probably geometric designs, and mud-plastered mud-brick columns arranged along the walls. Whatever activities were performed there, the building must have been important and used by the emerging elites.

This community's handicrafts show an increasingly complex organization of labor, judging from the abundant mass-produced pottery, the widespread use of the wheel and potters' marks, and the many metal slag and copper ore fragments and finished copper objects (pins, awls, chisels) found on the site. This Late Chalcolithic aspect belongs to a broader cultural horizon that, with significant local differences, covers all the Upper Euphrates valley and the 'Amuq plain (Antiochia), where it is represented by phase F. [*See* 'Amuq.]

A central power became fully established in the next period (VIA), between 3300 and 3000 BCE, when the Late Uruk Mesopotamian culture expanded northward, and Arslantepe entered an extended exchange network. In this period, a new large building was erected on the ruins of the Late Chalcolithic building in the western area of the mound, in a topographically preeminent position; at the same time, a large public area with monumental buildings was constructed on the southwest slope. Three buildings were unearthed there whose function was religious, in addition to being used for centralized economic and administrative activities. The oldest of these (building IV) was also the most complex and most monumental: it comprised a large bipartite temple (temple B) surrounded by wide corridors and bordered on the south by a row of adjacent storerooms. Entrance was through a monumental rectangular gate. The walls around the openings and in the most interior part of the main corridor leading to the temple were decorated with red and black wall paintings. Particularly noteworthy are the paintings, covering two of the walls in the central room leading to the storerooms, where a stylized human figure with raised arms standing before a table or an altar under a kind of canopy is repeatedly depicted. The corridor and the rooms surrounding the cella of the temple were decorated with plastic concentric lozenges applied with a stamp, very similar to a related decoration in one of the Uruk-Warka level III temples. [*See* Wall Paintings.]

Apart from the ideological-religious sphere, the central institutions, which were certainly very powerful by this time, probably controlled most economic activities through a sophisticated administrative system. This is evidenced from the thousands of clay sealings found both in situ in one of the storerooms in building IV and piled in a set order in a kind of dumping place in one of the walls in the large corridor, where they had been discarded, probably after being checked and recorded. [*See* Seals.] The system must have been quite complex, which the great many officials inferred from the repeated impressions of more than 150 different seals suggest. These consist mainly of stamp seals with rich figurative motifs depicted in different styles, evidence of flourishing local glyptics. A few cylinder seals, sometimes bearing motifs of Mesopotamian style, are also present. Metallurgy was considerably developed at this time, as well. Twenty-one weapons of arsenical copper, swords and spearheads, plus a quadruple spiral plaque in another cult building (building III) to the west of building IV, on a higher terrace, were discovered.

Another temple (temple A) was built later toward the western edge of the mound. It also was bipartite and followed almost the same floorplan as temple B, showing that there existed a typical Arslantepe temple design at the end of the fourth millennium. The walls in one of rooms adjacent to the cella also were decorated with plastic geometric motifs, in this case concentric ovals. Again, a large number of discarded clay sealings were found, even though activity was evidently on a much smaller scale. The decreasing dimensions of the public buildings and the declining scale of activities performed are perhaps indications of the crisis that was to strike. The public area was abandoned and this early state system, which had been strongly influenced by the Late Uruk culture, while remaining markedly original, collapsed.

Following the destruction of temple A, at the beginning of the third millennium (period VIB1), the site was inhabited

by groups of an Eastern Anatolian/Transcaucasian culture using a typical handmade red-black ware; they built a village of huts on the ruins of the late fourth millennium monumental buildings. The close links with the south were severed, except for a short period of contact with the northern Syro-Mesopotamian area immediately afterward (VIB2). The evidence at Arslantepe is of a village of mud-brick houses, with plain, wheelmade pottery in the Late Uruk tradition.

The new links with northeastern Anatolia underlay the development of a new local culture throughout the whole of the third millennium, beginning in 2700 BCE (Early Bronze II and III period, phases VIC and VID), which was restricted to the regions of Malatya and Elazig, with characteristic handmade painted pottery in addition to a more abundant red-black ware. During the second part of this period, a new urban structure of Anatolian tradition was established at Arslantepe. A walled town with a well-planned urban layout was constructed, exploiting the sharp slope of the tell with impressive terracing works.

This local cultural characterization remained almost unchanged even during the Middle Bronze Age (phase VA, 2000–1700 BCE). New links in pottery production with the areas south of the Taurus Mountains and, to a lesser degree, central Anatolia, are evidence, however, of the new international relations then being established between the emerging political entities on the Anatolian highlands and the states of Upper Mesopotamia. Soon, though, the eastward expansion of the Hittite kingdom brought the region of Malatya into the sphere of influence of central Anatolia.

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MARCELLA FRANGIPANE

ARTIFACT CONSERVATION. Archaeological artifacts provide a unique record of human behavior. As the tangible remains of past societies, reflecting their ideas, beliefs, and activities, artifacts can be regarded as primary documents of human behavior. At all times, their integrity and research potential must be kept in mind. Preservation, or stabilization, rather than restoration, should be the primary and ethical aim of archaeological conservation. Whenever possible, noninvasive procedures should be selected and intervention kept to a minimum because intervention can lessen the research potential of artifacts. Each subsequent treatment moves the artifact farther from its original state.

Treating an artifact is not necessarily restricted to preserving its appearance or its essential material(s). The technological information an artifact embodies such as repairs or modifications made in antiquity, must also be preserved.

Conservation consists of two main functions: preservation and restoration. The goal of preservation is to stabilize, or arrest, damage to and the deterioration of artifacts. It usually

involves controlling an artifact's immediate environment and the conditions of its use, but can also involve treatment when done to stabilize an object. The purpose of restoration, a term frequently but erroneously used interchangeably with conservation, is to return an artifact to its original or a previous appearance. Restoration involves carefully considering the modification of an object's material and structure. While generally done for exhibition or educational purposes to aid in the process of interpretation, restoration can also be used to stabilize an artifact.

The underlying precept guiding all conservation work is respect for an artifact's aesthetic, historical, and physical integrity. For most archaeological materials, historical and physical integrity may be of greater concern than the aesthetic. An artifact's history should be preserved and not sacrificed in returning it to its original condition or in restoring it for solely aesthetic reasons. For example, if a vessel was repaired with rivets in antiquity, those modifications should not be removed today, no matter how unsightly. Respect for an object's integrity also involves not imposing on it the conservator's own cultural values and assumptions about how it should look.

Conservation treatment includes examination, analysis of the materials used to create artifacts, active treatment involving stabilization and restoration, passive treatment involving environmental controls, and documentation. Conservators strive to use only reversible materials when they actively treat artifacts. Reversibility means that any treatment applied must be capable of being reversed or removed at a later date, without damaging or changing the object. The idea of reversibility recognizes that conservation knowledge is constantly developing. Future analytical methods will surpass current techniques, perhaps enabling the extraction of new information from uncompromised artifacts.

Some treatments by their very nature are not reversible. For example, if an object has lost so much of its cohesiveness that it cannot be lifted out of the ground safely, it may be necessary to strengthen it by adding a consolidant, even though this process is not fully reversible. Thus, the concept of reversibility is of particular significance to on-site conservation, where often procedures must be carried out under less than ideal conditions. What is done in the field more often than not has to be redone in the laboratory.

Striving for reversibility ensures that conservators use only quality materials that will endure. Pure materials are used rather than their proprietary equivalents, which contain, potentially harmful additives that extend their shelf life or modify their properties.

Minimal intervention has become a realistic tenet in conservation work: treatment should not be more extensive than absolutely necessary, and it should leave an artifact as close to its original condition as possible. If an artifact appears to be sound and has a good chance of survival without treatment, then nothing should be done. When treatment is necessary, the conservation materials applied should be used minimally. Minimal intervention is particularly important when treatment may alter or destroy technological information.

Documentation is a vital part of any conservation treatment. Written and photographic records maintain all the technological data gleaned about an artifact during treatment, fully describing the materials and methods involved for future researchers and conservators.

Minimal intervention and full documentation take on particular importance when treating artifacts to be analyzed. Any treatment an artifact receives, including mere cleaning, can contaminate it and invalidate subsequent analysis, whether for dating, elemental analysis, or identifying use residues. While most of the added treatment material can be removed to the extent that it may no longer be visible, traces will always remain to compromise it. Thus, artifacts to be analyzed are often best left untreated. At the very least, part of the artifact should be left untreated or samples taken before treatment.

There are other ways in which conservation treatment can invalidate research potential. Frequently, valuable information is embodied in the dirt or encrustations on the surface of an artifact, and, removing them can be just as damaging as adding foreign materials. Even handling can compromise future analytical work, as is the case with samples taken for carbon-14 dating. The conservator must work closely with the archaeologist to ensure that research potential is not compromised.

Conservation efforts have shifted in favor of passive, or preventive, techniques. The concept underlying this approach is that deterioration can be reduced by controlling its causes. The proper handling, storing, and exhibiting of artifacts can prevent deterioration and thus reduces the need for active, or remedial, treatment.

While most active treatment in archaeological conservation should be done by a trained conservator, preventive conservation techniques can be performed effectively by the archaeologist, particularly on site. Proper handling procedures, for example, prevent breakage and damage. The natural deterioration processes of materials can be forestalled or reduced by ensuring that artifacts are properly packed with suitable materials.

The examination of objects is an important aspect of archaeological conservation. Its goal is to extract as much information as possible to elucidate ongoing research about technology, provenance, and authenticity. A background in materials science, along with extensive experience with a wide variety of materials and artifacts, invests conservators with the knowledge and skills they need to recognize materials and determine an artifact's components. While they do not themselves undertake sophisticated analytical tests, they are familiar with the capabilities of different analytical techniques and can act as liaisons between archaeologists and other scientists.

Most archaeological conservators understand ancient

technological procedures and can thus provide information about objects that might otherwise be missed. For example, evidence of organic materials is frequently preserved by or in corrosion products on metal artifacts. In cleaning these artifacts, an experienced conservator can recognize, document, and preserve such evidence, where chemical cleaning by a nonconservator might inadvertently destroy it.

Restoration is generally not an important aspect of archaeological conservation, but at times it is appropriate. For example, restoring the missing parts of an artifact can increase its educational value or facilitate its interpretation. Restoration should be done as obviously and honestly as possible, making a clear demarcation between what is original and what has been added. Repairs or restoration should be visible and not make the artifact appear to be in better condition than it actually is.

In restoring artifacts, conservators must be careful not to impose their own aesthetic or cultural values. Missing elements, such as handles, should not be added unless there is unassailable evidence for their shape and position. Neither should the extent of decoration on an object be left to guesswork. If, for example, the decoration on an object is repetitive and symmetrical, the conservator must have clear evidence that the design continues in the same way before restoring large sections of it. Similarly, if an object's decorative elements appear randomly or are asymmetrical, only its basic shape can then be restored. Even when an artifact is part of a group, it cannot be assumed that it is just like the others. For all of these reasons, restoration is a conservation procedure that requires the collaboration of conservator and archaeologist to maintain the ethics of restoration and the information the artifacts contain.

[*See also* Conservation Archaeology; Field Conservation; *and* Museums and Museology.]

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CATHERINE SEASE

ARTIFACT DRAFTING AND DRAWING.

Field archaeology is a destructive endeavor in the sense that the removal of occupational debris and material culture destroys certain of a site's physical features and remains. An essential component of modern excavation methodology is careful recording, so that what has been removed can be reconstructed and studied with a view to historical and cultural interpretation.

In that context, one of the important tasks of architectural drafting and drawing is to create, and thereby preserve, a visual record of the archaeological features or structures that have been partially or completely removed. The terms *feature* and *structure* have specific connotations in archaeology. A feature is a major coherent element on a site, such as a room, courtyard, or an industrial installation. A structure is a group of features that, taken together, constitute a major architectural unit in one of its phases (such as a city gate, house, or water system). The component element(s) that define a physical feature or structure are called loci (sg., locus). Most loci are real structural or architectural features.

On a daily basis, archaeologists are occupied with creating this visual record through drafting numerous plans (top plans and phase plans) and sections that record all layers and loci in horizontal and vertical relationship with one another. A top plan documents the excavation's progress, and each one is a record of the excavated area at a point in modern time during the excavation. A phase plan documents the loci and features of a given occupational level, thereby creating a record of the excavated area at some point in its history. A section drawing documents vertical relationships and represents a scale drawing of one of the sides or balks of an excavated area. This three-dimensional and descriptive recording is the basis of modern recording methodology. In theory, if plans and sections accurately reflect an excavation, it should be possible to reconstruct, with a high degree of precision, what has been removed.

Architectural drafting also plays a crucial role in the final phase of a project because plans, sections, and drawings of archaeological features and structures are published in preliminary and final reports. The architectural drafting may take one or more of three basic forms: flat line drawing, pictorial drawing, or orthographic projection. Plans and sections usually appear as flat line drawings. Features and structures are usually presented in this format but may be represented three-dimensionally in a pictorial drawing. There are three types of pictorial drawing: axonometric (including isometric projections), oblique, and perspective

projections. Orthographic projections are not often used in field recording and publication.

[*See also* Architectural Drawing; Artifact Conservation; *and* Photography; *article on* Photography of Field Work and Artifacts.]

GARY D. PRATICO

ART SITES. Isolated monuments, most frequently paintings and relief sculpture, for which there is no known context are designated art sites. The best known are found in Iran and date from the Elamite period (c. 1925–1120 BCE) through the third century CE. Four groups of Elamite reliefs are carved into the rocky ravines at Izeh (formerly Malamir), east of Susiana. The Kul-i Farah ravine has six reliefs, the principle one representing King Hanni and his minister, Shutruru, attending a sacrifice in the presence of musicians. A twenty-four-line inscription runs along the width of the relief. The Shakaf-i-Salman ravine has four reliefs, two of which represent King Hanni and his spouse. A similar relief was carved into the rocky face of the mountain at Naqsh-i Rustam, four miles north of Persepolis, during the Neo-Elamite period. Naqsh-i Rustam, which became the royal necropolis of the Achaemenids in the time of Darius I (522–486 BCE), has four tombs cut into the vertical rock that are adorned with reliefs. In the third century CE, the Sasanian king Shapur I (241–272 CE) had a victory relief carved in the rock below the Achaemenid tomb, where other reliefs also celebrate Sasanian victories. [*See* Izeh; Naqsh-i Rustam; Elamites; Sasanians.]

Less sophisticated in style and conception are the thousands of rock drawings and rock inscriptions in the southern Sinai Desert. The rock drawings, which are impossible to date, were probably engraved by desert people and pilgrims. Their subjects are predominantly local animals, mostly camels and ibex, but occasionally more exotic ones, such as oryxes and ostriches. A few hunting scenes are known. The most extensive of the rock paintings is one found in Jordan, east of Amman, that depicts an antelope hunt inside an enclosure, or desert "kite." A rock drawing representing a man with his arms raised over his head, perhaps a cultic gesture, has been found at Timnaʿ in the Negev. [*See* Timnaʿ (Negev).]

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ARWAD, a small island located 2.5 km (16 mi.) from Syria's Mediterranean coast, facing the city of Tortose ancient Antarados. The city of Arwad was built on the largest island of a chain of very small islands extending south to Tripoli. Oval in shape, it measures 800 × 500 m. As noted by Strabo (16.2.13), its surface area was so limited that houses had to be built several stories high. The site's name in Phoenician, *'rwd,* means "refuge." The name also appears in Eblaitic as *A-ra-wa-ad* in the Ebla archives of the second millennium BCE; in Akkadian as *Ar-wa-da, A-ru-da, A-ru-ad-da* in the Alalakh and Amarna tablets; as *Arados* in Greek and Latin; and as *Arwad* in Arabic.

The island has probably been inhabited since the Neolithic period (occupational remains of this period have been found on the mainland), but continuous human occupation at the site has erased all remains except for those belonging to the Roman period. In the fifteenth century BCE, the people of Arwad reached Ugarit and other Palestinian and Phoenician cities (Astour, 1959, 70–76). According to the Amarna letters (fourteenth century BCE), the sailors of Arwad frequently traveled to Egypt and the eastern Mediterannean. At the end of the second millennium BCE, with the invasion of the Sea Peoples, the concept of unity among Phoenician cities developed. Mutual interest led to their occasional alliance under the authority of one or the other of them for a limited period in order avoid the rivalry of the great powers. These cities, however, remained basically independent city-states. [*See* Phoenicia; Phoenicians.]

The cuneiform sources related to the campaigns of Tiglath-Pileser (1115–1077 BCE) mention the continental area of Arwad, which probably provided food for the island and also served as its cemetery. This idea is strengthened by the recent discovery of a necropolis of royal character southeast of Tortose dating to the fifth century BCE. (The cemetery is not yet published, but the sarcophagi are in the Tortose Museum.) Toward the mid-ninth century BCE, Arwad was only a small city-state, compared with the large neighboring kingdoms of Siyannu and Irqata (Tell ʿArqa). Arwad and Ushatu sent two hundred soldiers each to Qarqar against Shalmaneser III in 853 BCE, while Siyannu and Irqata each contributed ten thousand. (Pritchard, *ANET,* p. 279). It is also at about this time that the Greeks established their settlements south of Arwad (Riis, 1970, p. 161). At the beginning of the eighth century BCE, Arwad flourished as a result of its shipbuilding trade. The skill of its builders helped expand the kingdom onto the mainland; the Aramean presence marked Arwad's inland boundaries. [*See* Arameans.] Arwad soon lost its continental provinces to Sumur, however, which became the capital of Amurru.

In 701 BCE, Abdil'ti, king of Arwad, paid tribute to Sennacherib. His successor, Matanbaʿal, is mentioned among the twelve kings of the seacoast who were ordered by Esarhaddon (680–669 BCE) to transport "building material" to Nineveh (Pritchard, *ANET,* no. 297). In administrative

documents found in Babylon, the king of Arwad is mentioned among others who belonged to the court of Nebuchadrezzar II (605–562 BCE), where carpenters from Arwad were employed. The shipbuilding craft continues on Arwad to the present day. [*See* Ships and Boats.]

During the Persian period, the Persian king owned a sumptuous palace on the island, and the Aradian navy, led by Merbal son of Agbal, joined Xerxes's expedition against the Greeks. With Alexander the Great's conquest of Syria, Gerastratos, king of Arwad, surrendered his kingdom to the conqueror. Later, however, the Seleucids offered the Aradian confederation autonomy.

Documentation related to Arwad in the Roman period is scarce. Silver coins disappear in 46/45 BCE, and gradually Arados ceases to be mentioned. The few remaining monuments on the island include a huge rampart built to protect it both from its enemies and from stormy winter seas. This wall dates to the Hellenistic or Roman period.

[*See also the biography of Seyrig.*]

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ASHDOD, large mound of some 70 acres, located on the Mediterranean coast north of Ashkelon, that was a major seaport in the Late Bronze and Iron Ages (map reference 118 × 129). The site was excavated from 1962 to 1972 for the Israel Department of Antiquities, under the direction of Moshe Dothan. Twenty-three strata were discerned, from the late Middle Bronze to the Byzantine period.

The first fortified city began in MB III (stratum XXIII), with defenses that included city walls, an earthen glacis, and a rare two-entryway gate (rather than the usual three-entryway type). There follow five ephemeral LB phases (strata XVIII–XXII).

The main LB phase (LB IIA–B) is represented by strata XIV–XVII, all showing strong continuity. Its substantial mud-brick buildings may even be fortified. One large, multiroomed courtyard structure may be an example of the Egyptian-style "residences" known at other Amarna Age sites in Canaan. A fragmentary doorpost that may have originated in this building is inscribed with a name that may be that of an Egyptian governor. There are also imports from Cyprus and the Mycenaean world. The city of stratum XIV was violently destroyed by fire toward the end of the thirteenth century BCE and covered by a thick ash layer, apparently by the "Sea Peoples."

Stratum XIIIA–B marks a major change at Ashdod. Stratum XIIIB is transitional, with new constructions, some partially built over the earlier fortifications. Characteristic imported Mycenaean IIIC:1 sherds date this brief occupation to about 1225–1175 BCE. Stratum XIIIA represents the first substantial Philistine settlement, which then continues through to its main phase in strata XII–XI. Ashdod was one of the five cities of the Philistine Pentapolis known from the Bible (the others being Gaza, Ashkelon, Ekron/Tel Miqne and Gath/Tel 'Erani). [*See* Ashkelon; Miqne, Tel; 'Erani, Tel.] A large fortress constructed in stratum XI in area A, marked by Philistine Bichrome ware, continued in use into the early tenth century BCE. In area G, stratum XII was represented by heavy structures, some forming a "casemate" line of defense. Several of the rooms were used as workshops. In one of them, stacks of painted bowls of Mycenaean IIIC type were found, some possibly imported, the forerunners of the full-blown Philistine Bichrome ware. In area H a distinctive apsidal structure belonging to stratum XII may have had a cultic function, to judge from a terra cotta representing a female goddess seated on a couch, similar to the well known Mycenaean "mourner" figurines. There were also two seals, one with signs similar to the Cypro-Minoan script used on Cyprus and in the eastern Mediterranean in the thirteenth–twelfth centuries BCE, the other with signs and a pictorial representation in the Aegean style. [*See* Seals; Minoans.] These are so far the only examples of a possible Philistine script. In area M, there was evidence of the expansion of Philistine occupation beyond the acropolis to the lower city in the mid-eleventh century BCE (stratum XB). A two-chambered mud-brick city gate attached to a section of city wall is attributed by the excavator to stratum XA; it is thought to have been destroyed in the early tenth century BCE, in the campaigns of King David.

The Iron II period is represented by strata IX–VI, mostly in the lower city. Near the area M gate a new city gate was built, of the four-entryway type familiar at Israelite sites of the tenth century BCE (e.g., at Hazor, Megiddo, Gezer) connected to a solid rather than a casemate wall. [*See* Hazor; Megiddo; Gezer.] A variant of the typical Israelite red-burnished pottery now begins to appear at Ashdod—red burnished but with bands of black; Philistine Bichrome ware is now extinct. A fortress was built in stratum IX that is connected with this pottery. In stratum VIII a small temple with several rooms was found with a considerable number of anthropomorphic and zoomorphic figurines, many of them from Kernoi. The scattered skeletal remains of some three thousand humans were also found, some with funerary offerings, most in secondary burials. The excavators suggest that these remains testify to the destruction by Sargon II in

711 BCE, known from both Assyrian and biblical texts. Two fragments of a basalt relief of Sargon were recovered, similar to victory stelae found at Khorsabad. [*See* Khorsabad.] Stratum VII belongs to the early seventh century BCE. Ashdod is probably best understood then not as a Judean site, but as part of the "Neo-Philistine" culture that still flourished along the southern coast—as Late Iron Age Ashkelon, Miqne/Ekron, and several other sites also seem to be. Yet, some Hebrew ostraca, inscribed weights, and a few royal stamped jar handles attest to trade with Judah. Stratum VI lasts until the end of the seventh century BCE and the rise of Babylon.

Stratum V has remains of a large public building of the Persian period, some fine jewelry, and an Aramaic ostracon reading "wine delivered in the name of Zebadiah." Hellenistic remains (stratum IV) reveal a well-planned town. Strata III–I represent the Roman, Byzantine, and Early Arab periods at Ashdod. Following the First Jewish Revolt against Rome and the destruction of Jerusalem in 70 CE, Ashdod was of little importance, however.

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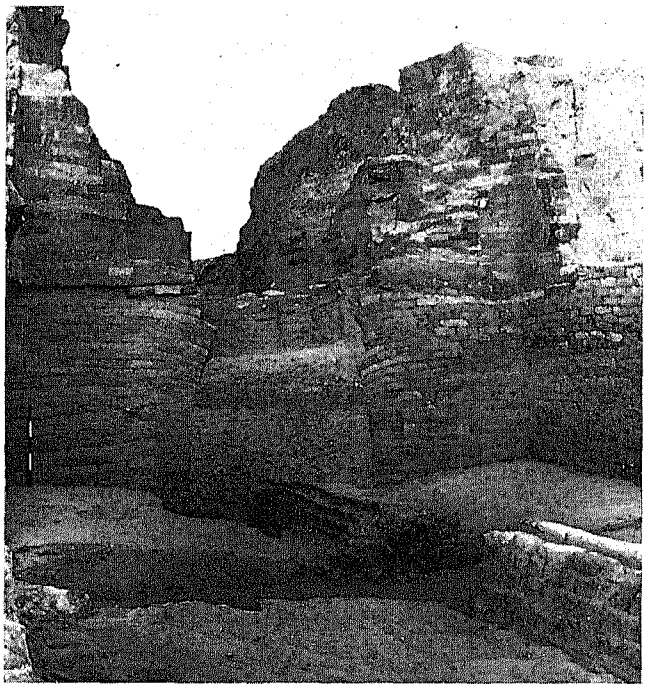
ASHKELON, site located on Israel's Mediterranean coast, some 63 km (39 mi.) south of Tel Aviv and 16 km (10 mi.) north to Gaza (31°40′ N, 34°33′ E; map reference 107 × 119). The ruins of the ancient city, now a national park, form a 150-acre semicircle that faces the sea. Archaeological excavations have revealed evidence of occupation beginning as early as the Neolithic period and ending with the final abandonment of the site in Crusader times. The aquifer running under the site made it a favored spot for settlement, and it became an important seaport at an early date. The name Ashkelon itself is attested in historical records (the Egyptian Execration texts) as early as the nineteenth century BCE. It probably reflects the Semitic root **tql*, "to weigh," and so is related to the Hebrew word *shekel*. Ashkelon flourished as a center of trade under this name—transmuted to Ascalon during the Hellenistic period—from about 2000 BCE (if not earlier) until its demise in 1270 CE.

During the Late Bronze Age, Ashkelon was part of the Egyptian Empire in Canaan. Several letters from its ruler to the pharaoh were found in the el-Amarna archive. Toward the end of the Late Bronze Age (c. 1200 BCE), Pharaoh Merneptah commemorated his suppression of a revolt by Ashkelon and other groups in Canaan. Ashkelon did not remain in Egyptian hands much longer, however; it fell to the Sea Peoples in about 1175 BCE. Ashkelon became a member of the Philistine pentapolis, along with Gaza, Ashdod, Gath, and Ekron. This is how it is known in the story of Samson (*Jgs.* 14:19) and in other biblical texts dealing with the period of the Judges and the rise of David in Israel (*Jos.* 13:3; *Jgs.* 1:18; *1 Sm.* 6:17; *2 Sm.* 1:20).

Ashkelon is not mentioned again in historical sources until the time of Tiglath-Pileser III of Assyria, who conquered Philistia in 734 BCE (cf. *Am.* 1:6–8). Some years later, at the time of Sennacherib's campaign against Jerusalem in 701 BCE, the Assyrian army suppressed a rebellion in which Ashkelon was involved. For the remainder of the Neo-Assyrian period in the seventh century, we hear only that Ashkelon paid tribute to Esarhaddon and Ashurbanipal. The Philistine period at Ashkelon finally came to an end in 604 BCE, when the Neo-Babylonian army under Nebuchadrezzar destroyed the city and deported its rulers (cf. *Jer.* 47:4–7).

During the Persian period, Ashkelon was ruled by Phoenicians from Tyre (according to the fourth-century BCE Greek geographer Pseudo-Scylax) under ultimate Persian suzerainty. It prospered under this arrangement as one of the major ports of Palestine. After Alexander's conquest of the Persian Empire, Ashkelon (now Ascalon) became a thoroughly hellenized city and flourished as a center of commerce and of the arts throughout the Hellenistic and Roman periods. Under both the Maccabees and the Romans, in fact, Ascalon enjoyed autonomy as a free city, even minting its own coins. Eventually, the pagan city of Ascalon became a Byzantine Christian stronghold, the seat of a bishopric. In 636 CE it passed from Byzantine to Muslim rule, but it remained a prominent and wealthy seaport. The Crusaders managed to capture Ascalon in 1153 but lost it to Saladin in 1187, who ordered its destruction in 1191, lest it fall intact into the hands of a new army of Crusaders led by Richard the Lion Heart. The city was partially rebuilt and served for a time as a Crusader fortress; its fate was sealed in 1270, however, when it was destroyed for the last time by the Mamluk sultan Baybars. Since then the site has been uninhabited.

Lady Hester Stanhope, an Englishwoman living in Syria, mounted a treasure-hunting expedition to Ashkelon in 1815. Her workmen found no treasure but did unearth a Roman-era building, probably a basilica, and a large headless statue. Proper excavation of the site was not attempted until 1920–1921, when John Garstang, under the auspices of the Palestine Department of Antiquities and the Palestine Exploration Fund, uncovered more Roman architecture and his assistant, W. J. Phythian-Adams, dug two step trenches in the southern part of the tell, revealing a cultural sequence extending back into the Iron and Bronze Ages. Some fine



ASHKELON. Figure 1. *The Middle Bronze Age gate.* (Photograph by Carl Andrews, courtesy Leon Levy Expedition to Ashkelon)

examples of Philistine pottery came to light at this time. [*See the biographies of Stanhope and Garstang.*]

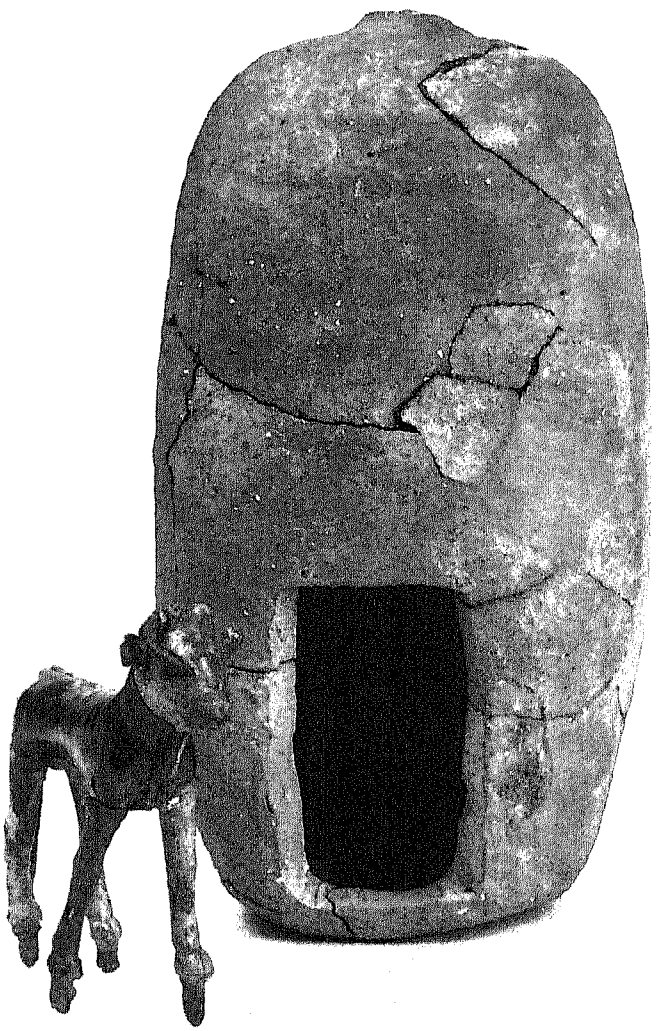
It was not until 1985, however, that extensive excavations were begun on the tell of ancient Ashkelon by the Leon Levy Expedition, sponsored by the Semitic Museum of Harvard University, under the direction of Lawrence E. Stager. The project, still underway, has made significant discoveries from all periods of occupation in various parts of the site. The following summary of excavation results is based largely on this expedition's findings.

Neolithic and Chalcolithic Periods. A small Neolithic settlement was excavated on the beach in 1955 by Jean Perrot and John Hévesy. No architectural remains from the Chalcolithic period have yet been discovered, but a number of cornets were found during the recent excavations in a secondary context in the southeastern part of the tell.

Early Bronze Age. Ashkelon continued to be inhabited throughout the Early Bronze Age I–III, judging by pottery from this period found in later fills. Part of an EB II–III mud-brick building has been excavated at the north end of the tell. During the EB IV period there appears to have been a gap in occupation at Ashkelon, as at other urban sites in Palestine.

Middle Bronze Age. The most striking remains of the Middle Bronze Age found so far are the massive fortifications discovered at the north end of the tell. During the MB I alone, at least four cumulative stages of construction are evident in the earthen rampart that encloses the city. The glacis, or outer face, of the rampart initially consisted of mud bricks, but it was later composed of *kurkar* fieldstones sealed with clay. Contemporary with the earliest phases of the rampart is a 7-meter-wide street (resurfaced several times) and a gate possessing the oldest monumental arch yet found in the Near East. Two phases of construction are evident in the gate (the earliest in c. 2000 BCE), which enclosed a passageway 2.5 m wide and had a second-story superstructure flanked by mud-brick towers preserved to a height of 6 m (see figure 1).

By the end of the Middle Bronze Age (in about 1550/BCE), the rampart was 15 m high and 30 m thick at its base, with a 40-degree slope on its outer face. Contemporary with the last phase of the rampart is a structure the excavator named the Sanctuary of the Silver Calf; it lies near the bottom of the outer slope, along a roadway leading up from the sea



ASHKELON. Figure 2. *Bronze bull calf and shrine.* (Photograph by Carl Andrews, courtesy Leon Levy Expedition to Ashkelon)

into the city. In it was found a finely crafted bronze statuette of a bull calf (originally covered with silver) 10 cm long and 11 cm high and weighing about 400 gm (see figure 2).

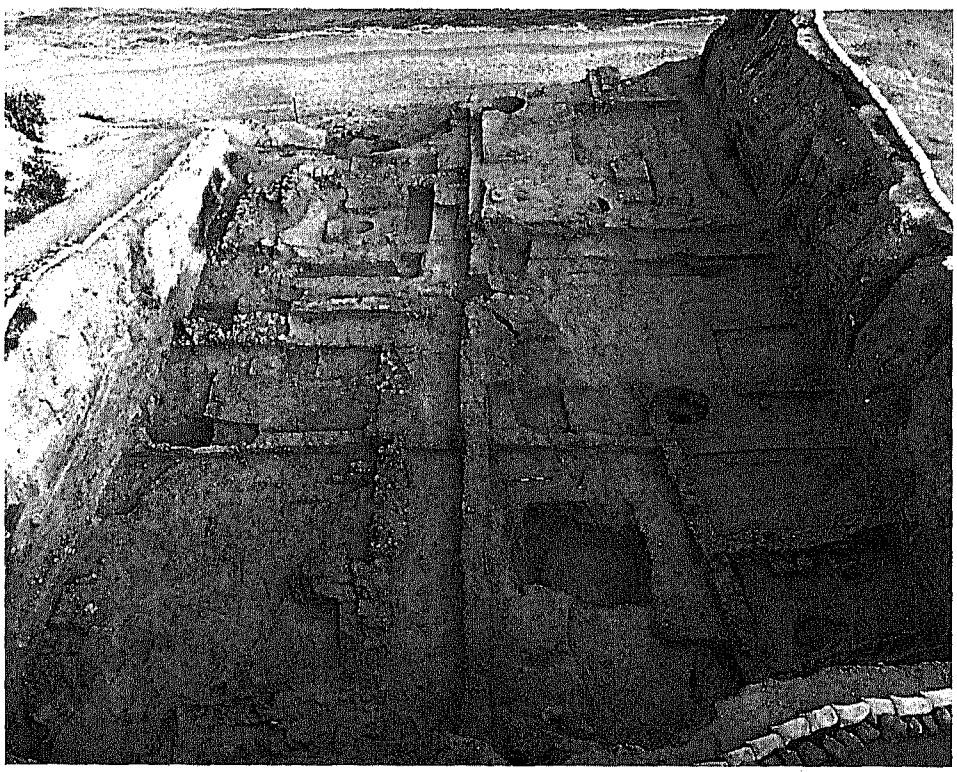
Middle Bronze Age pottery has also been found on the southern part of the tell, suggesting that Canaanite Ashkelon already occupied the entire area (about 150 acres) within the arc of the earthworks surrounding the site. Excavation at the north end of the tell has shown that the MB rampart was reused in later periods, which may be the case elsewhere along the perimeter of the tell, where only the final, Crusader fortifications are now visible.

Late Bronze Age. Remains from the Late Bronze Age are so far confined to a small area on the southern part of the tell and consist of a few courtyard surfaces and silos and, more notably, two burials in brick-lined vaults dating to about 1500 BCE. These vaults are reminiscent of an earlier "Hyksos" burial tradition, now known also at Tell ed-Dab'a (ancient Avaris) in the Nile Delta. One of the burials at Ashkelon is that of an adolescent girl surrounded by imported pottery, including two bowls that once contained food offerings; in the other, a small child was interred.

Iron Age. The Philistine period at Ashkelon lasted from about 1175 BCE until Nebuchadrezzar's destruction of the city in 604 BCE. A Philistine mud-brick tower was in place on the northern rampart by 1100 BCE, indicating that the Philistine city was not confined to the southern part of the tell, as had once been thought. On the south tell evidence has been found of the earliest Philistine pottery sequence, involving a transition from a monochrome style based on Mycenaean antecedents to the familiar Philistine bichrome decoration. Another indication of Mycenaean or Aegean connections is the presence of a large number of unperforated cylindrical loom weights made of unbaked clay, quite different from the common Levantine type but known from Cyprus and Greece during this period.

Finds from the latter part of the Iron Age include an architectural complex containing several shallow, well-plastered vats, most likely used in wine production. Evidence has also been found of the final fiery destruction of Philistine Ashkelon in 604 BCE, including the complete skeleton of one of the victims of the disaster lying amid the burnt debris.

Persian Period. The excavated remains of the Persian period at Ashkelon are 2–3 m thick on the southern part of the tell. In most places there is evidence of several phases of construction, ending in a large-scale destruction in about 300 BCE. A sequence of large warehouses (see figure 3) built successively in one area near the sea was interrupted for a time in the fifth century BCE by an unusual burial ground that contained hundreds of individually interred dogs, most of which apparently died of natural causes. These animals



ASHKELON. Figure 3. *View of the excavated Persian-period warehouses.* (Photograph by Carl Andrews, courtesy Leon Levy Expedition to Ashkelon)

may have had a role to play in some local cult and may therefore have been regarded as sacred. [*See* Dogs.]

The material culture of Ashkelon in the Persian period reflects imports and influences from both Phoenicia and the Aegean, including Attic black-figured and red-figured wares. As for Persian imports, little has been found except for a carved ivory comb depicting a hunting scene.

Hellenistic and Roman Periods. A number of impressive Greco-Roman buildings were erected at Ashkelon. Garstang excavated a large, rectangular, columned structure near the center of the tell that Stager identifies as a forum from the third century CE. A basilica found by Lady Hester Stanhope lies just north of the forum and dates to the same period. The recent excavations have uncovered, in addition to these public buildings, private villas occupying three insulae that were built early in the Hellenistic period but whose architectural plan remained unchanged until Byzantine times.

Byzantine Period. The Roman villas were replaced by a bathhouse in the fourth century. Here the excavators found nearly a hundred skeletons of newborn infants in the sewer of the bath, grisly evidence of the practice of infanticide. Another notable aspect of Byzantine Ashkelon was the trade in wine, shipped in distinctive amphorae (including the so-called Gaza jar) to destinations all over the Christian world, where wine from the Holy Land was highly prized.

Arab and Crusader Periods. Ashkelon was fortified for the last time under the Fatimids (who ruled from the tenth through twelfth centuries), and parts of those fortifications are still visible. At the north end of the tell, near what would have been the Jaffa Gate (it opened to the route leading to Jaffa), a lengthy Arabic inscription, engraved on a limestone slab (now broken) measuring 149 × 63 × 10 cm, was recently fished from debris filling a stone-lined dry moat. It commemorates the construction of a tower and bears a date 2 March 1150. Three years later the Crusaders captured the city and defaced the inscription, engraving five heraldic shields over the Arabic text.

Elsewhere on the tell, evidence of the prosperity of the Arab period at Ashkelon is found in well-built private houses, near one of which four pieces of gold filigree jewelry were unearthed. On the east side of the city, just inside the Jerusalem Gate, excavators uncovered a church that was constructed as a basilica in the fifth century, converted into a mosque under the Fatimids, and restored as a church by the Crusaders in the twelfth century.

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DAVID SCHLOEN

ASHUR. *See* Aššur.

ASOR. *See* American Schools of Oriental Research.

ASSOS, Greek city in Anatolia rising a precipitous 234 m (768 ft.) from the sea to the summit of a volcanic citadel on the southern coast of the Troad (modern Turkey; 39°29′ N; 26°21′ E). The site is unequivocally identified by Strabo's description of a naturally fortified, well-walled city with a steep ascent from the harbor, set between Cape Lekton and Gargara (*Geography* 13.1.51, 57–58). Pliny notes that it was also called Apollonia (*Natural History* 5.32). Attempts to assign to Assos a Bronze Age name and history remain unsubstantiated by the literary and archaeological record. Proposals include Heinrich Schliemann's suggestion that the

site was the original Chryse of the *Iliad*, and Joseph Thatcher Clarke's conviction, followed by Walter Leaf, that Assos was Homeric Pedasos (contra Strabo 13.1.59; see Clarke, 1882, pp. 60–63; Leaf, 1923, p. 295). Assos acquired its Turkish name, Behram (also Mahram, Menherein, or Préheram), at the time of the Ottoman conquest (c. 1330), as a corruption of the last Byzantine leader's name, Machrames. Today the village is called Behramkale.

According to Myrsilos and Hellanikos (Strabo 13.1.58), colonists from Aeolian Methyma on Lesbos founded Assos in the seventh century BCE. The city served as the strategic and commercial center of the southern Troad for it commanded a superb view of the Gulf of Adramyttium and Lesbos, was naturally defensible, and had the best harbor on the northern side of the Gulf. Just inland of the citadel stretched fertile wheat plains watered by the Touzla River (possibly the Homeric Satnioeis). The physical remains document vigorous activity from the early Archaic through the early Christian periods (seventh century BCE to fifth century CE). Assos remained a viable Byzantine city, despite serious assault and occupation by the Seljuk Turks in 1080 CE, the Franks in the first quarter of the thirteenth century, and finally the Ottoman Turks in the first quarter of the fourteenth century. Its significance declined rapidly thereafter.

The ruins of Assos (identified as Behram) were first noted from the sea by the Turkish cartographer Piri Re' is in 1521. The English chaplain John T. Covel, stopping at Assos in 1677, wrote a fairly detailed account of the agora and western necropolis, and the French count Marie-Gabriel-Auguste-Florent Choiseul-Gouffier included a hasty description of the site in his geographical survey of the Turkish coast made in 1785. During the first third of the nineteenth century, a steady stream of European aristocrats, archaeologists, and architects visited Assos, writing descriptions that document the dramatic situation of the city and its then remarkably well-preserved civic structures and monuments. Based on its setting, urban plan, and architectural remains, Colonel William Martin Leake declared that Assos gave "the most perfect idea of a Greek city that anywhere exists" (Leake, 1820, pp. 253–255).

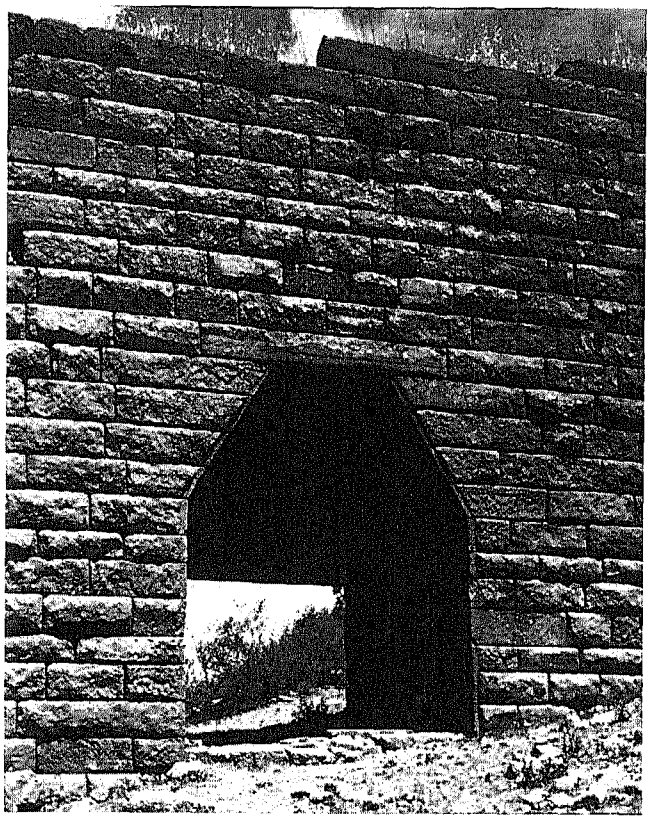
The French architect Charles Texier carried out the first brief excavations on the acropolis in 1835, where he unearthed part of the archaic Doric temple's foundation. Désiré Raoul-Rochette returned three years later to take thirteen architectural reliefs and one capital from the temple to the Musée du Louvre in Paris. Systematic quarrying of monuments to provide cut stone for the docks of the arsenal in Istanbul during the 1860s left the city gates, gymnasium, and theater greatly diminished.

The first excavations sponsored by the Archaeological Institute of America were conducted at Assos between 1881–1883. American architects Joseph Thatcher Clarke and Francis Henry Bacon, aided in the second and third seasons by German architect Robert Koldewey, exposed most of the major monuments of the city. [*See the biography of Koldewey.*] The archaic temple on the acropolis received greatest attention, but enough excavation was conducted in the lower city to reveal the plan of the agora, gymnasium, city gates, and many funerary monuments. Finds from the excavation were deposited in the Archaeological Museum in Istanbul and the Museum of Fine Arts in Boston.

A hiatus of nearly one hundred years followed the American excavations. An international team under the direction of Ümit Serdaroğlu resumed archaeological work in 1980, concentrating on the acropolis and western necropolis. Additional sculpture from the archaic temple has been recovered, and finds from the necropolis, including seventh-century pottery, confirm early activity at the site.

The urban plan of Assos follows the contours of the site with monuments set on a series of partially excavated terraces on the seaward-facing side of the citadel. All of the buildings are constructed of local volcanic andesite. The mid-sixth-century temple crowning the acropolis remains the only known archaic Doric temple in Asia Minor and is distinctive for the program of architectural sculpture decorating its architrave. Below, two multi-storied stoas, one built into the scarp of the acropolis and the other with one story facing the agora and two additional stories reaching to a lower terrace, frame a long, trapezoidal agora with a prostyle temple at one end and a bouleuterion (council chamber) at the other. A gymnasium with cisterns lies between the agora and the chief city gate. The theater, as well as numerous smaller buildings not fully excavated, occupy lower terraces to the south and east. The city walls of the fourth century encircling the acropolis and southern region of the city, as well as a Hellenistic northern extension with salient round and square towers, are of excellent workmanship and have well-preserved main and lesser gates (see figure 1). Early archaic burials have been found in the same region as the elaborate Hellenistic and Roman funerary monuments that line the streets leading to the eastern and western city gates. Both within and outside the walls, several early Christian churches have been identified. Good evidence exists for Roman and Byzantine domestic quarters to the southeast of the akropolis, but the civic and domestic quarters of the archaic and classical town have not yet been located. Numerous architectural elements presumably belonging to moles of the ancient harbor lie underwater at the port.

Famous sons of Assos include the stoic philosopher Kleanthes. Aristotle and Xenokrates resided in Assos (c. 348–345) upon the invitation of the ruler Hermias, himself a student of Plato; Theophraster probably joined them. St. Paul stopped there en route from Alexandria Troas to Mitylene. Important ancient sources noting Assos include



ASSOS. Figure 1. *The city gate.* (Erich Lessing/Art Resource, NY)

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BONNA D. WESCOAT

AŠŠUR (also Ashur; modern Qal'at Šerqat), site located approximately 110 km (68 mi.) south of Mosul, on the west bank of the Tigris river in northern Iraq (35°28′ N, 43°14′ E). The ancient settlement is situated some 40 m above the alluvial plain of Šerqat on a natural, nearly triangular eminence at the junction of two branches of the Tigris. This location provided the site with natural protection on two sides. On the third, the landward side, its defenses were completed by a crescent-shaped array of mighty walls enclosing an area of nearly 65 ha (161 acres). Inside the fortification walls the settlement was subdivided into two parts: the Old City (about 40 ha or 99 acres), with temples, palaces, and some "private" buildings in the north, and the so-called New City (about 15 ha or 37 acres) whose function has not yet been identified but which is most probably a dwelling area. It is adjacent to the Old City in the settlements' extreme southeast.

The first archaeological investigations at the site were carried out in the nineteenth century by Austen Henry Layard, Hormuzd Rassam, and Victor Place. Although hardly scientific, their work was of considerable importance in identifying Qala'at Šerqat with the first Assyrian capital, Aššur. Well-known objects associated with these early excavations are a statue of Shalmaneser III (854–824 BCE) and a clay prism of Tiglath-Pileser I (1115–1077 BCE). The latter was of considerable importance in deciphering cuneiform writing. [*See* Cuneiform.] What is known of the city's archaeology, however, belongs almost exclusively to the work of the German excavators who began their investigations at Aššur in 1903. From then onward, until 1914, Walter Andrae carried out large-scale excavations at the site on behalf of the Deutsche Orient-Gesellschaft. Andrae's combined achievements, in recovering historical information and perfecting archaeological method, have since come to be generally recognized. No further work took place at the site until 1945. Apart from some investigations in the following decades by the Department of Antiquities of Iraq, two more German campaigns, but on a much smaller scale, took place in 1988–1989, conducted by the Free University of Berlin under the direction of Reinhard Dittmann, and in 1989–1990, by the University of Munich under the direction of Barthel Hrouda. In attempting to resolve specific details and problems, the recent work has provided new topograph-

ical plan and, for the first time, a ceramic sequence ranging from the Ur III-period (2112–2004 BCE) down to Parthian times (250 BCE–256 CE).

Andrae's principal excavations took place in the elevated part of the Old City to the north and northwest, where most of its temples and palaces are situated. Because, successive kings had contributed to the restoration and multiplication of these public buildings and fortifications, the chronological sequence of their building levels could only be determined with the help of associated inscriptions. These showed, for example, that many of the excavated buildings continued to be rebuilt over a period of some two thousand years, even after the city had ceased to be the administrative capital of Assyria (beginning of the first millenium BCE).

The latest architectural remains Andrae encountered in his excavations date to the final phase of the Parthian period (c. 250 CE). The main excavated buildings of this period are the so-called Parthian Palace in the southern part of the city and an Aššur-Šerua Temple in the extreme north. The most important buildings of the Assyrian era (c. 1813–614 BCE), the city's main occupation level, are the Aššur Temple, Aššur Ziggurat, Old Palace, Temple of Sin and Shamash (the moon and sun gods), Temple of Ishtar, Temple of Anu and Adad (the sky and weather god's), New Palace, and a full circuit of fortification walls including gates, riverside quays, and other features. The deepest levels reached during the 1903–1914 campaigns were in a sounding that revealed the "pre-Sargonic" (before 2300 BCE) foundation of the Ishtar Temple. However, traces of "pre-Assyrian" occupation there, as well as in other parts of the city, are very scarce. The origin of the settlement is still unknown. Some traces of handmade (?) pottery found below the Aššur Temple may be of Early Chalcolithic (c. 5500 BCE) date. Hrouda's claim of an Ubaid sherd (c. 4000 BCE) in Aššur has to be considered with caution as well. [*See* Ubaid.] Indications of an Uruk or Ninevite V horizon (c. 3500–3000 BCE)—the latter present at a small tell in the modern city of Šerqat—have never been found in excavations or on the surface at Aššur. [*See* Uruk-Warka; Nineveh.]

The earliest remains, excavated in level H of the Ishtar Temple sounding, belong to the Early Dynastic III period (c. 2500 BCE). Material from this period is also present below the Old Palace, dated to the second millenium BCE. The style of the few sculptural remains found in these levels is comparable to artifacts from Mari and Kish. [*See* Mari; Kish.] For the Akkadian period (2334–2154 BCE) which followed, the city of Aššur is known to have been under the hegemony of the Akkadian Empire. [*See* Akkade; Akkadians.] Only level G of the previously mentioned Ishtar Temple sequence, with its sculptural finds, and, according to Olof Pedersén, the so-called archive O1 found below the *schotterhofbau* (a building with a gravel courtyard) can be dated to this period with any certainty. An Akkadian date for the so-called Old Akkadian house below the later Temple of Sin and Shamash is possible but not proven. The dating of two fragments belonging to one sculpture, one a male torso found next to the later Temple of Anu and Adad and the other a male head found by the Iraqis in 1982 in the area of the Aššur Temple, also remains uncertain. Although an early second-millennium BCE date should not be excluded, Evelyn Klengel Brandt dates this sculpture to the Akkadian period, either to King Rimush or to Manishtushu. According to Peter A. Miglus (1989) the *schotterhofbau* itself, which is part of a large structure underneath the foundation trenches of the Old Palace, should be dated to the following Ur III period. Levels F and early E of the Ishtar Temple sounding most probably date to the same period of time. Zariqum, a local ruler of Aššur, probably represented by a fragment of a sculpture, calls himself a servant of Amar-Suen, one of the kings of the third dynasty of Ur. [*See* Ur.] In the latest phase of Ishtar E, a sealing was found of a servant of the *šakkanakku* (an official of the state) Isi-Dagan of Mari, who, according to Jean Marie Durand, is a contemporary of Ishbi-Erra (c. 2017–1985 BCE) of Isin, the founder of the Isin I dynasty. [*See* Isin.]

In the beginning of the second millennium BCE, Assyria was officially declared a state, and the city of Aššur was transformed into the religious and administrative center of the so-called Old Assyrian Empire. It was at that time that merchants from Aššur organized a long-distance trade with Anatolia known as the *kārum* trade. Brick inscriptions of the third and fourth king of the local Puzur-Aššur dynasty already mention the Aššur Temple. Even the existence of fortification walls and Adad and Ishtar temples is not out of the question for this early period of Assyrian history. Nevertheless, the first really notable Assyrian king was Shamshi-Adad I (1813–1781 BCE), a prominent rival of Hammurabi of Babylon. [*See* Babylon.] After he defeated the local king and usurped the throne, he extended the territory of Assyria and created a formidable kingdom. Among other things, this ruler is known for his intense building activities in and around Aššur. Important buildings founded by Shamshi-Adad I are the Enlil Ziggurrat which was later also identified with the god Ashur and, according to Miglus, the Old Palace. The first entirely recorded ground plan of the Aššur Temple, which was not much altered by later kings, was created by him. Also associated with his reign is a special kind of painted pottery, the so-called Khabur Ware found in northern Mesopotamia as well as in northwestern Iran. The end of Shamshi-Adad's reign is more or less unknown.

After the fall of the Babylonian Hammurabi dynasty (c. 1595 BCE), which, in its later days, controlled much of Assyria, the political vacuum was filled by the Mitanni rulers, who controlled major parts of Syria and northern Mesopotamia. [*See* Mitanni.] Not much is known about the history and archaeology of Aššur for this period. Only the Temple of Sin and Shamash, which was erected in the reign of Ashurnirari I is notable. According to the inscriptions,

this local ruler of Aššur was also engaged in building activities in the Aššur Temple area.

It was only with Eriba-Adad I (1392–1366 BCE) and his successor Ashur-Uballit I (1365–1330 BCE) that Assyria, still with its capital at Aššur, freed itself from Hurri-Mitannian domination. An interesting archaeological find dating to this period is the so-called *stelenreihe* ("row of stelae"), a kind of Assyrian calendarium. Starting with Eriba-Adad I and continuing to a wife of King Ashurbanipal (668–667 BCE), each stela mentions an Assyrian king or the name of a state official. As one able ruler followed another, Assyria began to reappear as a major power at the beginning of the thirteenth century BCE; by the end of that century it was again one of the strongest powers in the Near East. The Assyrian kings associated with the emergence of the so-called Middle Assyrian Empire are Adad-Nirari I (1307–1275 BCE), his son Shalmaneser I (1274–1245 BCE), and his grandson Tukulti-Ninurta I (1244–1208 BCE). All of them contributed to the restoration and rebuilding of Aššur.

Under the reign of Adad-Nirari I, the Old Palace was rebuilt and restoration work was performed at the Temple of Sin and Shamash. Shalmaneser I is known to have rebuilt the partly burnt Aššur Temple, and Tukulti-Ninurta I initiated a completely new building program. During his reign a deep moat was dug around the fortification walls and its old posterns, some kind of tunnel, were abandoned. In the northwestern angle of the Old City he erected an artificial terrace (some 29,000 sq m) which was used as a foundation platform for his New Palace. Unfortunately, because of later building activities, only traces of the stone foundations remained of the structure built on top of it. He also built a new Temple of Ishtar, now called Ishtar-Ashuritu ("Ishtar of the city of Aššur"). In contrast to the earlier Ishtar temples, the alignment of the ground plan, which dated back to archaic times, was altered by approximately 90 degrees, and a second, smaller shrine of a goddess called Dinitu was added to the temple. Even though the previously mentioned building activities at Aššur were considerable, it is assumed that early in his reign Tukulti-Ninurta I built a new residence, called Kar-Tukulti-Ninurta, on the opposite side of the Tigris, some 3 km (2 mi.) north of Aššur. [*See* Kar-Tukulti-Ninurta.] Among the finds at Aššur associated with the Middle Assyrian period are an altar of Tukulti-Ninurta I with a relief in which homage is paid to the symbol of a god and some cylinder seals carved in a characteristic Middle Assyrian style.

The period following Tukulti-Ninurta I's violent death is, archaeologically speaking, almost terra incognita. Although Aššur most probably did not lose its importance, it is only with Ashur-resh-ishi I (1133–1116 BCE) and his successors that further building activities are attested at Aššur. It was Ashur-resh-ishi I who built a new Ishtar Temple—but neither on top of the early structures founded by Ilushuma in the nineteenth century BCE, nor on Tukulti-Ninurta I's construction. The Temple of Anu and Adad as well was most probably founded by this king. A characteristic feature of this temple are two small ziggurats, towerlike constructions, attached to the sanctuaries. According to Miglus the extensive building activities evidenced at the Aššur Ziggurat should be attributed to the largely unknown kings Ashurnasirpal I (1049–1031 BCE) and Shalmaneser II (1030–1019 BCE). In a gate between the Anu-Adad complex and the Old Palace, which was devoted to the dispensation of justice, several unfortunately heavily damaged fragments of sculptures, perhaps parts of winged and human-headed bulls or lions guarding an entrance, were found. Apart from fragments like these, evidence concerning the facade ornament and external appearance of buildings at that time is very scarce. Occasional clues are to be found only among contemporary seal designs. In general, the account of buildings at Aššur must be confined, at least for the Old and Middle Assyrian periods, to variations in their ground plans.

Early in the tenth century BCE at Aššur, a new dynasty was founded by a king called Ashur-Rabi II. In a sense the founding of this dynasty marked the beginning of a period at the end of which Assyria was at the apex of its power. From an archaeological viewpoint, however, it was only with Ashurnasirpal II (883–859 BCE) and his successors that the so-called Late Assyrian Empire (c. 883–609 BCE) was born. It was Ashurnasirpal II who transferred the center of government from Aššur to Kalḫu/Nimrud, the Calah of the *Book of Genesis*. [*See* Nimrud.] It was also this king or one of his predecessors who rebuilt and converted the Old Palace, still in use at the time of Tiglath-Pileser I, into a mausoleum, in which some of the elegant tomb chambers and monolithic sarcophagi of the Assyrian kings were found. Although Aššur ceased to be the administrative capital, the subsequent kings did not cease their building activities in the city. Shalmaneser III (858–824 BCE), for example, strengthened the fortifications, rebuilt the Temple of Anu and Adad, and erected a new Ishtar Temple, now dedicated to Belitnipha. In contrast to his predecessors, his plan of the latter was again in the tradition of the archaic sanctuaries. From the archaeological objects associated with his reign and that of his predecessors and successors, the glazed and colorfully decorated tiles (Assyrian, *zigatti*) and clay orthostats, both used as some kind of facade ornament, are notable.

While the administrative capital of the ever-growing Assyrian Empire was transferred for a second and third time from Kalḫu/Nimrud to Dur Sharrukin/Khorsabad by Sargon II (721–705 BCE) and finally to Nineveh/Kuyunjik by Sennacherib (704–681 BCE), not much is known archaeologically about Aššur itself in the eighth–early seventh centuries BCE. It was only with Sennacherib that the so-called *Neujahrsfesthaus*, a cultic building situated west of Aššur outside the city walls, and the Prince Palace, a structure dedicated to his son in the southeast, were founded. Fundamental changes in the ground plan of the Sin-Shamash and

Aššur temples are attributed to this king as well. On the other hand, fragments of a large, heavily damaged water basin (?) recovered in the Old Palace are the only noteworthy archaeological finds associated with his reign at Aššur. The Aššur Temple as well as the Aššur-Enlil Ziggurat are known to have been subject to some restoration work by his successors Esarhaddon (680–669 BCE) and Ashurbanipal (668–627 BCE). During the reign of Sin-shar-ishkun (623–612 BCE), the last of the Late Assyrian kings, the Ishtar Temple became part of an adjacent sanctuary dedicated to Nabu, the god of writing and writers, and his wife, Tashmetu. Finally, in 614 BCE, a Median army invaded the Assyrian homeland and destroyed the city of Aššur completely.

Traces of a post-Assyrian occupation at Aššur are scarce. It is only with the beginning of the first century BCE that Aššur regained some significance as a residence of a Parthian satrap. The Parthian name of the city is still unknown, but, according to the most recent investigations by Stefan Hauser (1994), it was not Libanae, as hitherto assumed. Some of the main excavated buildings dating to this period are the Aššur-Sherua Temple erected on top of the former Aššur Temple and the Parthian Palace in the south decorated with colored paintings on plaster. After the destruction of "Aššur" in the third century CE by Shapur I (241–272 CE), the former Assyrian capital was neither rebuilt nor resettled.

[*See also* Assyrians; Deutsche Orient-Gesellschaft; Ziggurat; *and the biographies of Andrae and Layard.*]

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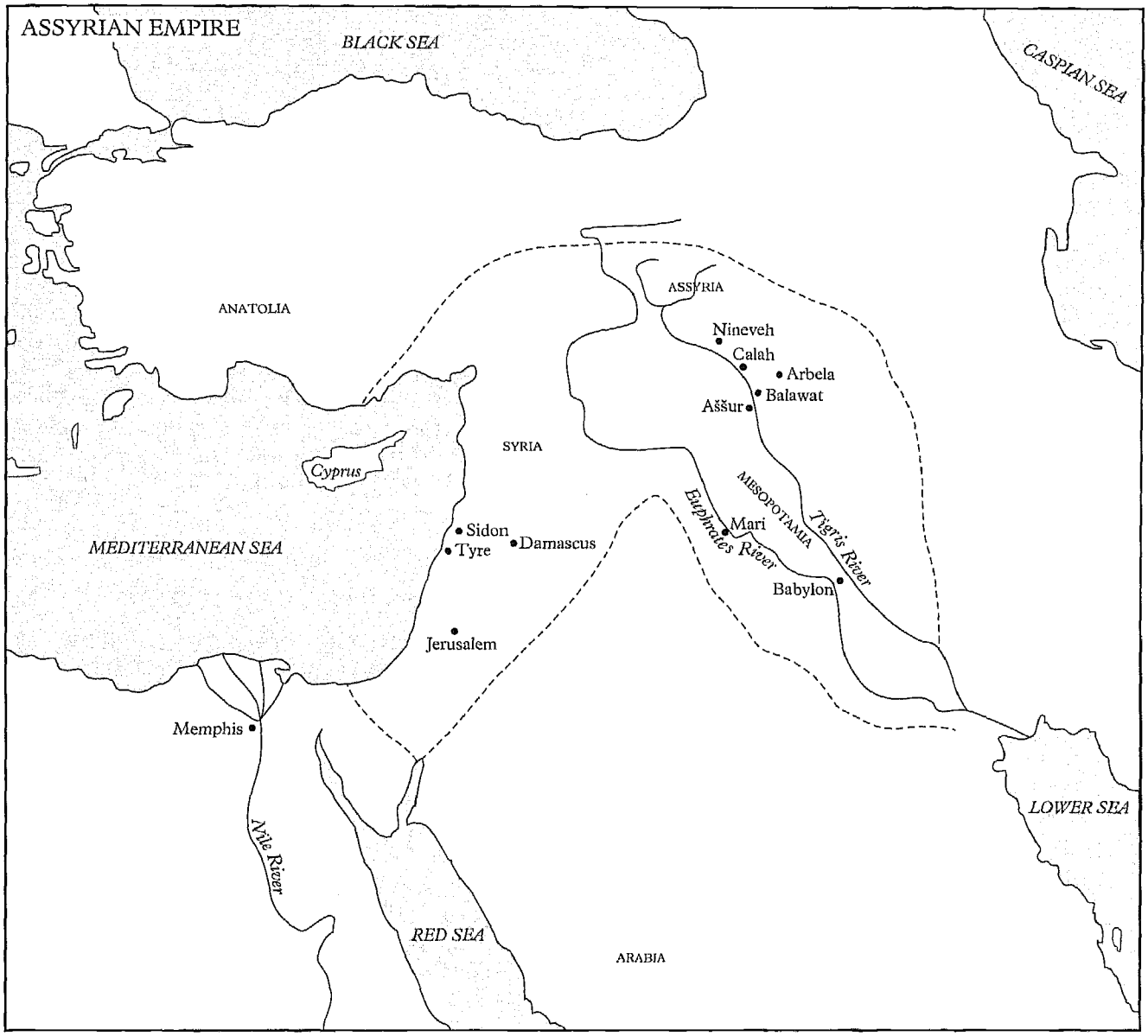
ROLAND W. LAMPRICHS

ASSYRIANS. Little is known about population groups and settlement patterns in Assyria before about 2000 BCE. By this date the people were speaking a dialect of Akkadian and writing it in the cuneiform script. A people called Amorites, who had been seminomads living in the Syro-Arabian desert, made major inroads into all of Mesopotamia. They took over many city-states, founded new dynasties, and gradually intermarried with the older population and adopted its culture. This is certainly what happened in Assyria; therefore, the "Assyrians" after around 2000 were a mixture of Amorites, who spoke a Semitic language, and the older population, which spoke Akkadian, also a Semitic language. About 1200 BCE the Arameans, another group of Semitic-speaking seminomads from the Syro-Arabian desert, began to make significant incursions into Assyria, and over the next several centuries they intermingled with the Assyrians, thus making the "Assyrians" an even more mixed population group.

The Assyrian population was concentrated in a few cities in what is now Iraq, mainly Aššur, Arbela, Nineveh, and, after the mid-ninth century, Kalḫu (Nimrud). The rural population clustered in numerous villages from which they would venture each day to till their fields and tend their flocks. As the empire was created, Assyrians were settled in some provincial regions where they remained sometimes for centuries. Around 1900 the city-state of Aššur established some Assyrian merchant colonies in Anatolia to facilitate trade between the two regions.

Political History. The Assyrians not only developed a powerful and profitable empire, but also sponsored and protected the activities of the religious and cultural communities. It is because of the Assyrians that so much of the earlier Sumerian and Babylonian civilizations have been recovered by modern archaeology. The political history of the Assyrians is divided by modern scholars into the Old (c. 2000–1750), Middle (c. 1750–1000), and Neo-Assyrian (c. 1000–609) periods. There was no unified nation "Assyria" at the beginning of the Old Assyrian period. There were just independent city-states, which shared a common



culture, and nomadic tribes in the surrounding hills and mountains. Shamshi-Adad I (c. 1813–1781), whose ancestors were Amorites, led his forces slowly up the Tigris River to conquer Aššur and then the surrounding region as far as Mari on the middle Euphrates River. [*See* Mari.] He was the first to establish some political solidarity in the region. This unity collapsed, however, shortly after his death, and for over three centuries (c. 1740–1400) little is known about the region and its people. During this "dark" age, a revolution in warfare, the light horse-drawn chariot, was introduced into southwestern Asia by Indo-Aryan warriors. The Assyrians seized this new device and used it in their building of a militaristic state. [*See* Chariots.]

The power of the Middle Assyrian monarchs, notably Tukulti-Ninurta I (1243–1207) and Tiglath-Pileser I (1114–1076), was unprecedented. They not only ruled over a united Assyria, but they also led their armies on vigorous campaigns abroad, conquering Babylonia to the south and Syria to the west as far as the Mediterranean Sea. In the process the principles of an absolute monarchy, ruling from Aššur, were established, and the idea of imperialism was given practical expression.

After a period of confusion and temporary eclipse of Assyrian might (c. 1000–900), the greatest period of the Assyrian empire emerged. Outstanding among the warrior kings of the early phase of this era were Ashurnasirpal II (883–859) and Shalmaneser III (858–824). During their reigns the Assyrian armies thundered once again to the west,

reaching the Mediterranean and then moving both north and south along the Levantine coast. There was, however, little interference in Babylonian affairs. The exotic items such as gold, silver, ivory, and cedar that they brought back from the western expeditions were used to build and decorate new palaces and temples. Masses of foreign captives, mainly Arameans, were transported to Assyria to work on these building projects or to develop uncultivated land in order to feed the expanding population of the Assyrian cities.

After another brief interval of weakness, a series of kings resumed the military expansion of the empire. At its height (c. 680) Assyria laid claim to an empire that embraced all of the Fertile Crescent, including Egypt, as well as central Anatolia and western Iran. By this time the capital had been moved to Nineveh, where the last great monarch, Ashurbanipal (668–627), resided. In 612 Nineveh fell to the Medes and Babylonians, and over the next few years the territory that had been the Assyrian Empire was taken over by the Babylonians.

Social Structure. Assyrian society was male dominated and militaristic in character. Every male in theory was required to perform military service when called upon by the king. Thus, the social structure was essentially based on army rank—the king at the top and the peasant infantry at the bottom. The role of women, who were confined to harems and had to be veiled, was to care for the men in their family, their children, and their homes. The men engaged in arduous activity on the battlefield, hunting ground, and fields and pastures. To a modern Western eye, Assyrian society appears harsh and cruel. Punishments for criminal acts were severe, commonly requiring physical mutilation, torture, and execution.

At the bottom of the social spectrum were slaves, but they did not play as vital a role in Assyrian society as they did in the Roman Empire. There were two kinds of slaves: (1) Assyrians who went bankrupt and so became debt slaves, and (2) foreign prisoners of war. The latter had no chance of freedom, except escape or death, but the debt slaves could regain their independence by gradually paying off their debts. Above the slaves were various levels of free citizens, from rank and file to archers to noncommissioned and commissioned officers, charioteers, and cavalry. Above these were the chief army commanders of which the most important was the field marshal, who was directly under the king. The chief officers came from the noble families of the Assyrians.

Political Structure. The king was an absolute monarch being the supreme commander of the army, the chief priest in religion, and the highest source of appeal in legal disputes. He ruled by personal decree, there being no legislative or consultative assembly. The only restraints on his authority were ancient customs and religious practices, which he had to observe, and the attitude of the nobility. He had to keep his nobles happy by providing them with high offices and the benefits which came therefrom.

The Assyrian king resided in a palace which was full of courtiers, many of whom were eunuchs, of various rank. Only one courtier, however, seems to have had regular direct access to the monarch. All messages, even from the royal family, had to be conveyed through the major domo. It appears that most Assyrians, including the king himself, were illiterate. There was a large corps of scribes of which the chief was one of the king's most important advisers. It was a hereditary monarchy, the legitimate successor normally being the eldest son of the previous king.

Warfare. The Assyrians regarded warfare as their most important activity. In return for the military service which, in theory, every male citizen had to perform, he was given the use of a plot of land under an arrangement called the *ilku*. "Captains" (*rab kiṣri*) lived in the various agricultural villages, and when the call to arms was sent out, it was their responsibility to rally and produce their companies at the appointed place and time. By the Neo-Assyrian period, the annual military campaign, led by the king, had become the norm and, later in the same era, a standing army, which served year round, was also established.

On the march, the army was preceded by the divine standards ("the colors") followed by the diviners, the king surrounded by his bodyguard, the cavalry and chariots, the infantry, the siege machines and other equipment, and the camp followers. Engineers were responsible for taking the army across rivers and for organizing sieges. Rafts were built to transport equipment across the rivers, and individual soldiers stripped their clothes off and swam with the aid of inflated goat skins. The Assyrians were experts both at open-field warfare and sieges. In the field their cavalry made the initial attack, followed by the chariots, and then the infantry. Siege warfare, which was costly and time consuming, was used only as a last resort. If a region refused to submit voluntarily and would not field an army to fight, the Assyrian army surrounded a strategic town. All traffic in and out of the city was cut off and, if this maneuver did not bring capitulation, the army would attempt to penetrate the walls by various techniques: tunneling, battering rams, or building earthen ramps up the wall. Once the town was taken, it was thoroughly pillaged, and the inhabitants either were taken prisoner or slaughtered in gruesome ways as an example to the other towns in the region. Excellent organization and tactics, together with metal (first bronze, later iron) weapons, the bow, and the light horse-drawn chariot, made the Assyrians the most successful fighting power the world had seen.

Religion. State religion in Assyria was cultic and polytheistic. There were a number of temples, including that of the god Ashur (Aššur) at the city of the same name, dedicated to a variety of deities. Each temple had a corps of priests and servants who carried out elaborate rituals and

regularly cared for the gods by providing them with food and drink. There were numerous festivals, but the most important was for the new year (*akītu*), which was celebrated in the spring. Festivals often involved processions of the gods' statues through the city streets. Among the chief Assyrian gods were Ashur, Ninurta (god of war), Ishtar (goddess of love), Shamash (sun god and god of justice), Sin (moon god), and Adad (storm god).

Magic, both black (bad) and white (good), was practiced, and a large body of incantations and rituals, on a variety of themes, has been discovered on clay tablets. The Assyrians, like the Babylonians, believed in divination. According to them, the gods were constantly sending messages regarding the future to human beings through any number of vehicles. It was the task of humans to recognize and read these omens. The two most popular vehicles for omens were the entrails of a sacrificed animal, particularly a sheep's liver, and the movements of the stars and planets. An Assyrian king would not take any decisive action without consulting his diviners.

Economy. The economy of the Assyrians was founded on agriculture, animal husbandry, and foreign trade. In the rolling hills of the Assyrian homeland where rainfall was regular, the fertile fields lent themselves to abundant yields and the pasturing of sheep and goats. The crops were primarily barley (for bread and beer), linseed oil, and grapes, which were used for both fruit and wine. Goats were a source of milk, butter, and cheese, and their wool, like that of sheep, was used for textiles, which were major articles of export. The Assyrians participated in an extensive trading network, which brought them metal (silver, gold, tin, copper, and iron) precious stone (such as lapis lazuli), ivory, and various other items, both practical and luxurious.

The palace had considerable control of the economy, although it is impossible to give exact data because of scanty sources. The temples had a much smaller role to play in the economy, and by the Neo-Assyrian period they had become dependent on the king for much of their income through royal offerings and for the maintenance and construction of their buildings. Although the palace and, to a much lesser extent, the temples were directly involved with agriculture and animal husbandry, it appears that foreign trade was in the hands of private entrepreneurs. Nevertheless, the palace gained profit from the trade by means of taxation. As the empire was expanded, another major source of income became the annual tribute exacted from the provinces and territories. The tribute was of two types: (1) supplies for the military garrisons and armies on campaign in the form of grain and animals, and (2) luxury items for the construction and embellishment of monumental buildings.

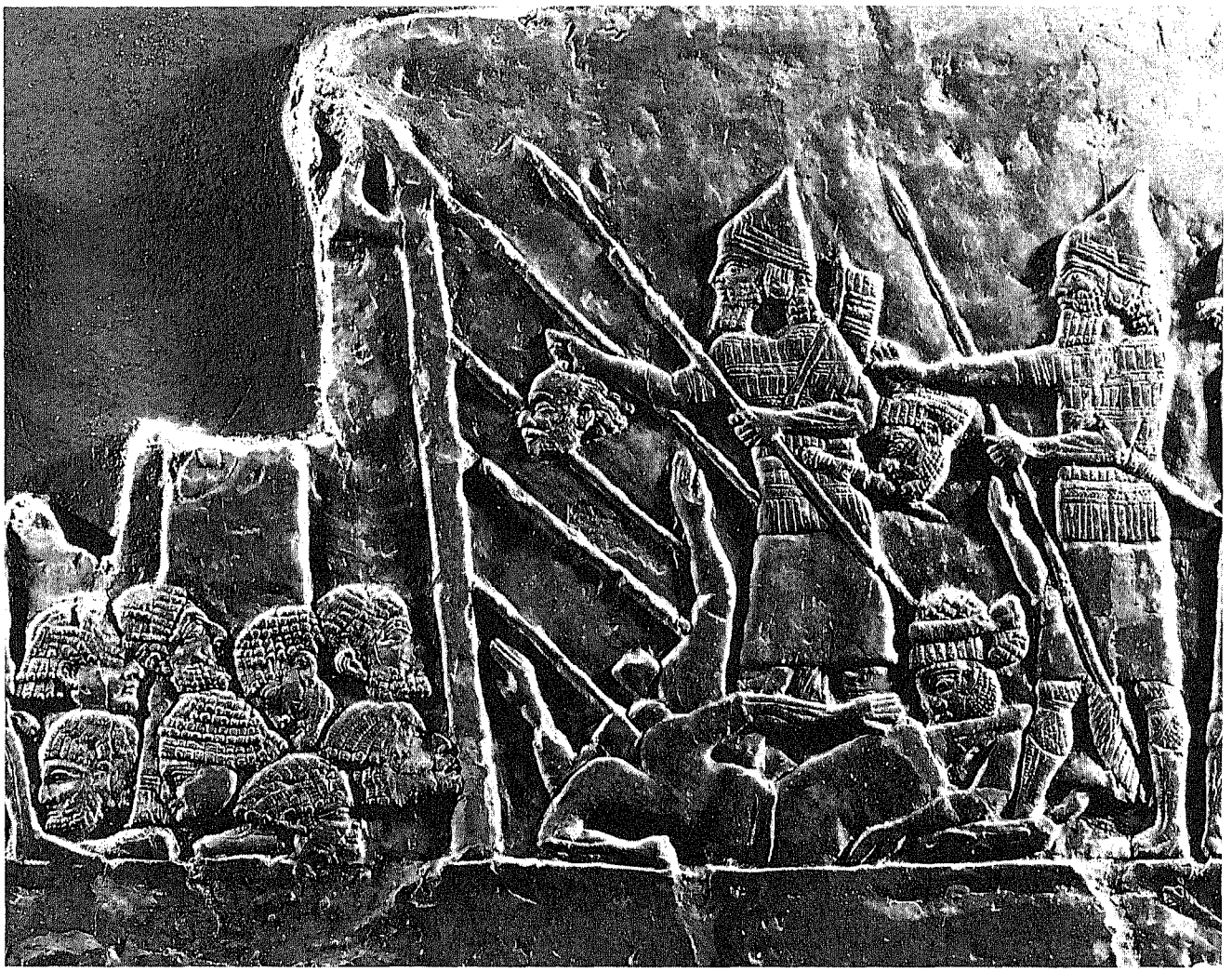
Art and Architecture. The artists of Assyria were sponsored primarily by the state; therefore, most of their works related to the deeds of the king. The carved stone reliefs that lined the walls of the palaces portrayed the Assyrian monarch triumphantly fighting, hunting, and feasting (see figure 1). The scenes were accompanied by inscriptions explaining these activities. The quality of the human figures was high, even if the subject matter was repetitious. It was in the depiction of animals, however, that the Assyrian artists surpassed themselves. The reliefs were painted in various colors, which have now almost entirely disappeared. Scenes similar to those on the reliefs were incised on a number of bronze bands on gates discovered at Balawat near Nimrud. The palaces were also adorned with scenes set out with glazed ceramic bricks, clay knobs, and painted murals. A rich horde of finely carved ivories was excavated at Nimrud, as was a large amount of jewelry of superb craftsmanship. Note must also be taken of the mythological and legendary scenes carved on the stone stamp and cylinder seals.

The palaces were constructed on artificially created terraces and consisted of many rooms of various types. The central room was the audience chamber; colossal bulls and lions sculptured in stone towered over the palace entrances. Temples and temple towers (ziggurats) were also built on terraces. [*See* Ziggurat.] Stone statues of the king, large and small, were erected inside to indicate his continual worship of the gods.

Archaeological Recovery. First excavated in the early nineteenth century, Assyrian sites in Iraq were among the initial places of investigation in the whole of the Fertile Crescent. Émile Botta, a Frenchman, concentrated on Khorsabad (ancient Dur Sharrukin, "Fort Sargon") and Austen Henry Layard, an Englishman, began work at Nimrud (ancient Calah). The discoveries, which included colossal stone winged bulls and reliefs, were a sensation when they were transported to London and Paris. They generated increased support and also lured other Europeans into Assyrian archaeology. By modern standards, the techniques employed in these early excavations were primitive. Tunneling was common because the goal was to find as many interesting objects as possible.

A more scientific approach finally came with the German expedition to Aššur at the beginning of the twentieth century. Walter Andrae, leader of the team, recognized the importance of making a topographical map that divided the mound into small carefully labeled, squares. Andrae also paid attention to the different levels (strata) of the site. Avoiding tunneling, he dug systematically, section by section. Every object was assigned a number and photographed, and its provenance was carefully recorded. Another innovation was the division of the finds. Rather than taking all of the objects to Berlin, a significant portion was handed over by agreement to the sultan in Istanbul because northern Iraq (the core of Assyria) was at this time part of the Ottoman Turkish Empire.

Before Andrae had opened excavations at Aššur, the site of Nineveh (modern Mosul) had attracted the interest of successive British archaeologists. Expeditions from various nations have continued during the twentieth century to ex-



ASSYRIANS. Figure 1. *Relief showing warriors carrying heads of enemies and throwing them on a heap.* Battle of Til Tuba. Ashurbanipal and the Assyrians fight Teumman, king of Elam, on the Ulai River in 635 BCE. British Museum, London. (Erich Lessing/Art Resource, NY)

plore other tells in Assyria. Gradually Iraqi archaeologists have appeared on the scene, and in modern times they outnumber foreigners in the field. There is no longer a division of the finds from foreign expeditions; a strict ban on the export of any antiquities has enriched Iraqi museums, notably the Iraq Museum in Baghdad and the Mosul Museum.

A major change in the direction of archaeology in the Near East was brought about by modern irrigation projects, which involved the construction of dams and the flooding of plains which were full of ancient sites. This development led to "rescue archaeology"; the organization of numerous teams of archaeologists from various parts of the world to survey the area and excavate some of the most significant looking tells. In Assyria, one such project was in the Eski Mosul region on the upper Tigris River just north of Mosul. [*See* Eski Mosul Dam Salvage Project.] In concluding this description of archaeological recovery of Assyrian remains, it must be stated that only a fraction of the ancient sites in this region has been explored, and even the excavated tells have not been fully investigated.

Inscriptions. A major product of archaeological activity in Assyria has been the discovery of a vast quantity of inscriptions. These are in the cuneiform (wedge-shaped) writing system, and the language is Akkadian. The Assyrians had their own dialect of Akkadian, but they often wrote in the Babylonian dialect because they were very much influenced by Babylonian culture. Cuneiform and the Akkadian language were deciphered about the same time that intensive archaeological activity began, that is around 1850.

The majority of inscriptions are on clay tablets. Hundreds of thousands have been recovered, but there are many texts inscribed on stone, metal, and other materials. The contents

of the inscribed tablets vary considerably. On the one hand there are libraries of tablets; most notable are the libraries of Ashurbanipal (668–627). In these libraries are found myths (such as the creation stories), legends (such as the Flood story), epics (such as the Gilgamesh epic), hymns, prayers, magical incantations, medical texts, divinatory texts, astrological texts, and mathematical texts. There are also archives: the documents accumulated by the palace and merchant houses in the course of daily business. These include letters, contracts, and administrative records. Although efforts to edit and publish all these inscriptions, which are now in museums, have increased in recent years, a significant portion of them remains unpublished, and an unknown quantity are buried in ancient sites.

By the late period of Assyrian history, the spoken language had changed from Akkadian to Aramaic, which was written in an alphabetic script on parchment or papyrus. Because those two materials perished in the Assyrian climate, almost all Aramaic documentation has disappeared. References to it exist, however, in cuneiform inscriptions.

[*See also* Akkadian; Akkadians; Amorites; Aramaic Language and Literature; Aššur; Cuneiform; Nimrud; Nineveh; *and the biographies of Andrae, Botta, and Layard.*]

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A. KIRK GRAYSON

ASYUT (also Gk., Lycopolis; 27°11′ N, 31°10′ E), capital of the thirteenth Upper Egyptian nome, or province. Although Anubis, Osiris, and eventually Hathor had cults in the city or at its necropolis, its principle deity was Wepwawet ("opener of the ways"), a jackal god, who held the title Lord of Asyut. The Greeks thought him a wolf, which explains the Hellenistic name, Lycopolis.

The nature of the local topography played a significant role in the importance of this site, where high cliffs demarcating the Libyan desert's eastern edge converge with the Nile River. These features effectively forced valley traffic to pass directly in front of Asyut, thus, allowing it to regulate river passage in either direction. Appropriately, the site's ancient Egyptian name was *S3wt(j),* "sentinel" or "watchman"; the city's modern name, Asyut, derives from that word. The cliffs also provided an avenue into the Libyan desert, so that caravans traveling south to the oases and Sudan started from Asyut (in Islamic times, this route was the Darb el-Arbaʿin). Moreover, Baḥr Yusuf, the only natural branch of the Nile River in Egypt, diverged from the main channel in the neighborhood of the city, flowing north toward the Faiyum.

Late Old Kingdom (c. 2465–2150 BCE) references indicate that Asyut was by then a recognized settlement, but it is during the First Intermediate period (c. 2150–2040 BCE) that Asyut first played a major role in Egyptian history. During

that time, Asyut housed the thirteenth nome's local governors (nomarchs), whose personal armies fought with the Herakleopolitan rulers of the ninth and tenth dynasties in their wars against a Theban dynasty (the eleventh). Asyut's location helped these provincial leaders protect Herakleopolis from attack while they launched invasions south. Most of the information available on this period has been gleaned from biographical and funerary texts found on tomb walls of the nomarchs Khety I and II and Jtj-jb-j and on coffins from Asyut's necropolis.

In the twelfth dynasty (c. 1991–1783 BCE), the size of the local governor's tombs and the information contained in their inscriptions indicate that such men as Djefahepi I, II, and III enjoyed a high rank. Their status is confirmed by the quality of execution of the statue of Sennuwy, wife of Djefahepi I (reign of Senusert I, c. 1971–1926 BCE). Only powerful officials could have commissioned such funerary equipment. Regrettably, no more is known about Asyut's administrative role during this period, except that it remained the provincial capital. In Djefahepi I's tomb, however, detailed legal contracts for the maintenance of his pious foundation (personal cult) have provided Egyptologists with insights into the complexity of property ownership.

Post–Middle Kingdom archaeological remains indicate that the site was continuously inhabited throughout the remainder of the pharaonic and postpharaonic periods, but without its earlier distinction. During the eighteenth and early nineteenth centuries, European scholars touring Egypt began recognizing Asyut's historical importance. The team accompanying Napoleon's well-documented visit in 1799 were among the most important of these visitors. Later, archaeological and epigraphic work at Asyut was conducted exclusively in the provincial necropolis (*smjt nt s3wt*, or *r3 qrrt*). By the end of the nineteenth century, Egyptologists such as Gaston Maspero (1880), Adolf Erman (1882), and most importantly, F. Llewellyn Griffith (1886–1888) recorded the inscriptions on the walls of the necropolis's rock-cut tombs. In 1893, a local peasant discovered an important tomb, that of a First Intermediate period mayor, Mehesti. Two well-known wooden models from this burial depict provincial armies (Cairo Museum, CG 257 and 258), one of which represents Nubian soldiers.

Émile Chassinat and Charles Palanque conducted the cemetery's first major excavation in 1903. They discovered twenty-six largely intact graves containing more than sixty coffins. Thirty-five of these were inscribed and form an important corpus of funerary inscriptions from the First Intermediate period. They also uncovered the tomb of the wealthy "chancellor," Nakhti.

The French excavators were followed by Ernest Schiaparelli (1905–1913), working for the Museo Egizio in Turin, and D. G. Hogarth (1906–1907), who was acquiring objects for the British Museum. Both teams unearthed numerous burials containing objects dating from the Late Old Kingdom through the twelfth dynasty. Hogarth excavated more than 100 tombs, adding some 700 objects to the British Museum's collection, but little is known about Schiaparelli's work.

In 1922, Gerald Wainwright, while excavating in Djefahepi III's tomb, found a cache of stelae, dating from the New Kingdom through Roman times (c. 1550 BCE–495 CE), demotic papyri, and mummies of canines. He also discovered the twelfth dynasty grave of the "steward," Heny.

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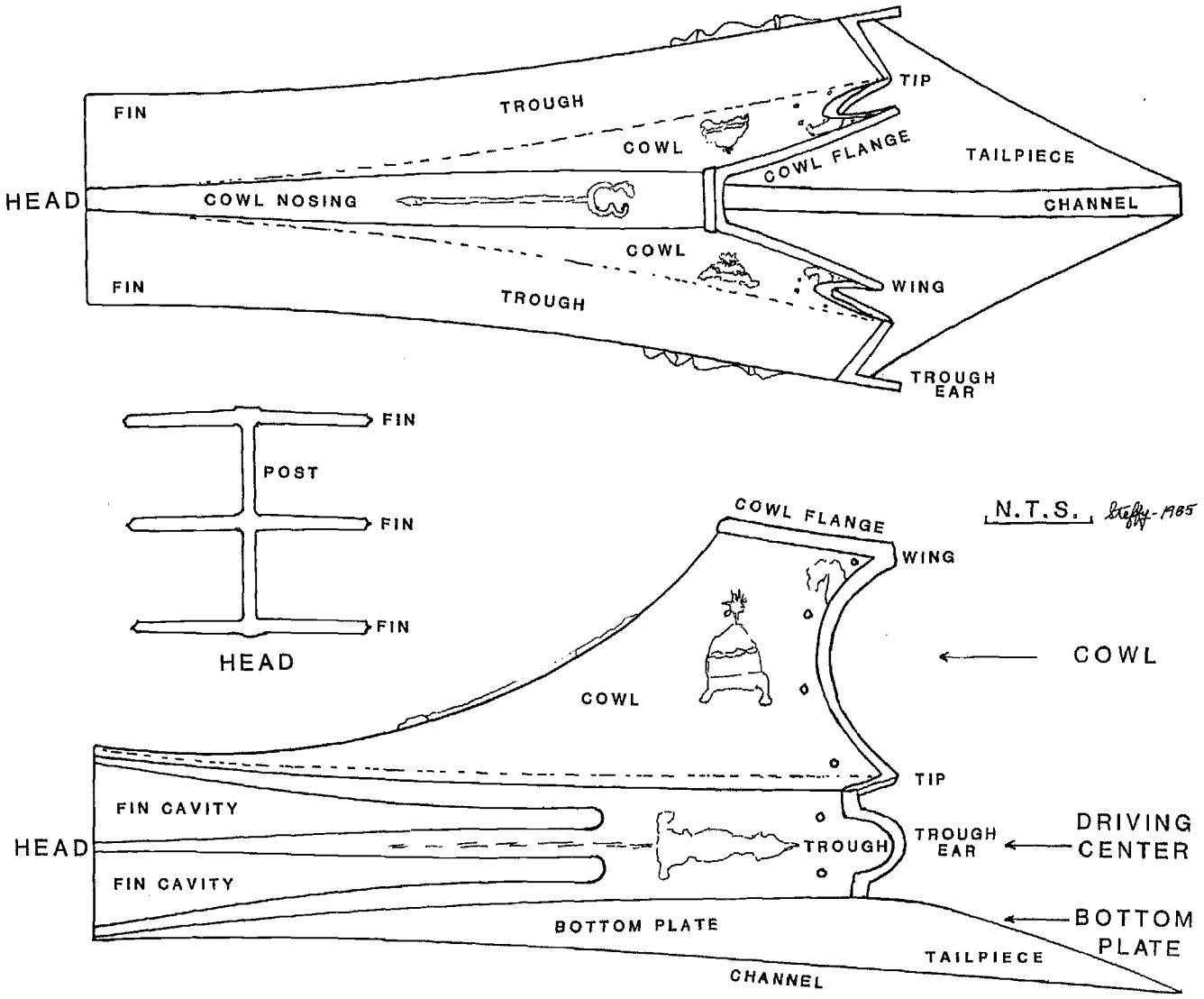
DIANA CRAIG PATCH

'ATLIT RAM. A bronze warship ram and sixteen wooden bow fragments were all that survived the wreck of an ancient warship off the coast of northern Israel at 'Atlit, 19 km (12 mi.) south of Haifa. Yet, these spare remains have made important contributions to the subjects of naval warfare and logistics, metallurgy, shipbuilding, and art in antiquity. Discovered only 200 m from the shore, in the Mediterranean Sea, the ram was situated 3 m below the surface and was protected by an overburden of sand. A team of archaeologists from the University of Haifa excavated it in November 1980 and removed it to the National Maritime Museum in Haifa for conservation and study. Further examination of the site did not produce any additional material related to the 'Atlit warship.

The ram's external surface was in relatively good condi-



'ATLIT RAM. *Drawing of the ram and its features.* (Courtesy J. R. Steffy)

tion; its interior was completely filled with wood and concretion. Only one timber extended beyond the confines of the ram. Cobalt-source radiographs were used to examine the interior of the assembly to determine the methods by which the wood and concretion could be separated from the ram without damage.

Its superb workmanship and ingenious design make the ram a beautiful and functional weapon, the largest and most impressive ram yet discovered, and the only one of its type to be associated with the hull of a ship. The symbols on its surfaces suggest that it came from a Hellenistic warship, perhaps from a unit in one of the Ptolemaic Cypriot fleets of the late third or early second centuries BCE (Casson and Steffy, 1990, pp. 51–66). Literary and archaeological evidence reveal that it belonged to a vessel at least one or two classes larger than a trireme (Casson and Steffy, 1990, pp. 72–75).

The ram had an overall length of 2.26 m and a maximum height of 0.96 m. It was cast in 465 kg of high-grade bronze. Its head, or striking surface, consists of three horizontal fins joined by a vertical post; the post is 41.1 cm high while the fins had a maximum width of 44.2 cm and were only 2 cm thick at their outer ends. The shape of the fins and post changes aft of the head to form the driving center, a 76-centimeter-wide trough that housed the ship's main ramming timbers.

Above the driving center was the cowl, which curved gracefully upward and aftward from the head to house the stem and other vertical bow timbers. Beneath the driving center, an unadorned bottom plate protected the lower sur-

faces of the hull. The ram was attached to all the major hull timbers by means of bronze bolts.

The ram bears four different symbols. The first, a *kerykeion*, or "herald's staff," bound with a fillet, is located on the nosing of the cowl. It is the only one of the symbols that appears singly—the other three appear on both sides of the ram. The fins of the head merge to join a decorative handle on each side of the after end of the driving center's trough. These have been identified as triform thunderbolts, symbols representative of the Ptolemaic dynasty. Directly above the handle devices, on each side of the cowl, a wreathed helmet is mounted by an eight-pointed star. A fourth symbol in the upper, after corner of each cowl side has been identified as the eagle of Zeus.

A variety of sophisticated processes were employed to analyze the surprisingly advanced metallurgical expertise employed in casting the ram (Casson and Steffy, 1990, pp. 40–50). The bronze alloy (90 percent copper and 10 percent tin) was ideal for this military application. Based on radiograph analysis, the nature of various casting defects, and measurements taken at defect locations, the ram is believed to have been cast in a foundry consisting of thirty furnaces placed in a circle. With melt temperatures calculated at up to 1,350° C, these furnaces supplied the two-piece sand mold through an elaborate feeding and gating system.

The timber fragments, whose survival represented only a small fraction of the warship's bow, were all in their original orientation. The major timber, of a type that had not been recorded before the discovery of the 'Atlit wreck, was the centrally located, six-sided ramming timber; it survives for a length of more than 2.04 m. A keel and thick bottom planks were fastened to its bottom and sides, while vertical bow timbers were mounted on its upper surface. Fragments of side planking were still attached to the aftward raking stem. Although only fragmentary, the preserved wood provided new information about the construction of classical warships and confirmed that, like merchant vessels of the period, these ships had hulls made of thick planks whose edges were joined with strong, closely spaced mortise-and-tenon joints.

[*See also* Underwater Archaeology.]

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J. RICHARD STEFFY

ATOMIC ABSORPTION ANALYSIS. *See* Neutron Activation Analysis.

AVDAT, or Oboda, founded as a Nabatean trade route site on a mountain ridge in the Negev desert, southwest of the Dead Sea, and identified with modern-day 'Abdah (map reference 120 × 020). The site was named for Oboda II (62/61–58 BCE), a Nabatean king who, according to Uranius (as cited by Stephen of Byzantium), was buried and venerated there as a god. His name is retained in the Arabic 'Abdah.

The first settlement appeared at the end of the fourth century BCE, when caravan traders from both Petra and Aila (Eilat) stopped at Avdat on their way to the Mediterranean sea at Gaza. By the end of the first century BCE, and into the mid-first century CE, Avdat was a major religious, military, and commercial center, the site of magnificent Nabatean temples. After the destruction of the settlement by fire, sometime between 40 and 70 CE, agriculture replaced trade as the primary source of revenue and Avdat became a center of sheep, goat, and camel breeding. Prosperity returned under the Romans, who, at the beginning of the fourth century, built a fortress there, making the town part of the eastern empire's overall defense system. During the fourth century, Christian churches replaced the Nabatean temples and wine production played an important role in the local economy. Avdat was destroyed in 636, during the Arab conquest of Palestine, and was subsequently abandoned.

Various explorers examined the site in the late nineteenth and early twentieth centuries, among them Edward H. Palmer in 1870 and Alois Musil in 1902 and 1904. The first comprehensive survey was conducted in 1904 by Antonin Jaussen, Raphael Savignac, and Louis-Hugues Vincent, who drew a detailed plan of the site. Further explorations were undertaken by C. Leonard Woolley and T. E. Lawrence in 1912 and by Theodor Wiegand in 1916. Large-scale excavations were conducted by Michael Avi-Yonah in 1958 on behalf of the Hebrew University of Jerusalem and by Avraham Negev from 1959 to 1961 and again in 1989 and by Negev and Rudolph Cohen from 1975 to 1977, also on behalf of the Hebrew University as well as the Israel Department of Antiquities.

Occupational evidence spanning the Nabatean through

the Byzantine periods has been uncovered. The remains from the Nabatean period have been assigned to three settlement phases. The first, Early Nabatean (early fourth century–early first century BCE), is characterized by imported pottery and minted coins but no architecture; the inhabitants probably dwelled in tents. This phase ended with abandonment, apparently in the wake of the Hasmonean conquest of Gaza by Alexander Jannaeus.

Public buildings were prominent features of the second phase, the Middle Nabatean period (50 BCE–50/70 CE). The most prominent was a temple complex (11 × 13.70 m) that consisted of a portico supported by four columns, a hall, and an adytum divided by a partition wall. The pantheon of Nabatean deities was worshiped in the larger area; Obodas, in the smaller area. The temple was plastered as well as painted and, as indicated by numerous Nabatean dedicatory inscriptions, was in use from the end of the first century BCE to the end of the third century CE. [*See* Nabatean Inscriptions.]

At a later stage of the middle period, the temple became part of a large sacred complex built on the acropolis. Supported by retaining walls on three sides (north, west, south), the acropolis could be entered through three passageways. One was a rectangular gatehouse (7 × 7 m) at the eastern edge of the northern retaining wall. Another, made up of a small court (10 × 6 m), an arched passageway, and a staircase tower (4 × 3.6 m), was built in the southwestern corner of the acropolis. Dedicatory inscriptions dating to the reign of Aretas IV (9 BCE–40 CE) were found among the ruins of this passageway, which led to the portico of the temple.

The remains of a military camp (100 × 100 m) located northeast of the acropolis also belong to the middle period. The main road leading in from the gate divided the camp in half, and another wide road divided it into quarters, each of which had barracks. There probably were camel sheds in the streets in front of the barrack, and halls and rooms had been built along the inside of the enclosure wall.

The end of the Middle Nabatean phase corresponds with the destruction of Avdat by pre-Islamic Arab invaders in the mid- to late first century CE. The Late Nabatean phase began with the reign of Rabel II (70–106 CE) and continues, from the second to the mid-fourth centuries, into what is historically termed Late Roman but can just as well be classified as Late Nabatean because the inhabitants remained culturally Nabatean even after 106 CE, when Avdat and the rest of the Negev were annexed by the Romans into the Provincia Arabia. The initial Late Nabatean settlement centered along the valleys to the south and west of the town, where the first private dwellings were located. Dedicatory inscriptions on pairs of limestone libation altars found in these valleys date to the reign of Rabel II and probably commemorate the beginning of Nabatean agriculture.

The subsequent Late Nabatean remains are concentrated in the Roman quarter situated to the southeast of the Middle Nabatean acropolis. Dwellings with enclosed courtyards were found within the quarter, and a three-story observation tower (9.6 × 9.6 m) was uncovered on its southwestern edge. Dated to 294 CE, the tower is the latest structure at Avdat to incorporate every component of Nabatean architecture. Also from this period are a burial cave (*en-Nuṣrah*, "cave of the Christian") found on the southwestern slope and a two-story khan, or rest house, situated northeast of the Nabatean settlement. The ashlar structure (22.5 × 31 m) had a large middle court (12 × 19 m) as well as rooms, halls, and a kitchen; it apparently remained in use until the mid-fourth century CE.

The beginning of the Byzantine period at Avdat seems to correspond to the devastating earthquake of 363, after which the primary structures on the acropolis were built. Dismantled stones from the Nabatean military camp were used to construct the Byzantine citadel on the eastern section of the acropolis. The rectangular fortress, comprising an area of about 0.5 acre, had thick outer walls (up to 2 m thick) that enclosed a large courtyard (61 × 41 m). Twelve towers of various sizes were positioned along the four walls (three towers on each wall); gates and entrances were situated on all sides. (Some entranceways had been blocked, perhaps to defend against Arab attacks in the mid-seventh century.)

Two Byzantine churches (north and south) were constructed on the western portion of the acropolis. The north church dates to the Early Byzantine period. Separated from the fortress by a large, unpaved square (51 × 40 m) that had belonged to the Nabatean sacred complex, it is situated just northeast of the Nabatean temple. It contains a basilica with a single apse and an abutting room that are adjoined on the south by a chapel and several service rooms. [*See* Basilicas.] Two projections (both enclosed by chancels) jutted out from the apse like shoulders. Inside of each were the truncated legs of small altars that supported containers filled with religious relics. To the west of the church, situated at one corner of the Nabatean portico, was a narrow baptistery that had a cross-shaped marble font (1.35 m per length) as well as a smaller font for infant baptisms. [*See* Baptisteries.]

The south church, constructed a century after the north church, was dedicated as the Martyrium of Saint Theodore. In addition to a basilica, this church contained a complex of rooms identified as a monastery. [*See* Monasteries.] Columns, capitals, and other architectural elements from the Nabatean temple were reused to decorate the atrium. Permanent reliquaries were found inside the large niches that had been carved into the rear walls of the two rooms flanking the single apse. In the sixth century the south church served as a burial ground.

The Byzantine occupants of Avdat lived in houses and adjoining caves built into the site's western slope. Several hundred of these house-cave units have been found. A cross carved into the ceiling of one cave suggests that the room served as a house chapel. Other Byzantine remains include

five wine presses and associated storerooms, a large farmhouse (15 × 35 m) east of the Roman quarter, and a Roman bathhouse located at the bottom of the slope. [*See* Baths.] The bathhouse, which contained a cold bath, a tepid bath, and two hot rooms, was heated by flues leading to outside furnaces. Preserved with its roof, the structure is one of the best examples of a Roman bathhouse yet uncovered in the region.

[*See also* Churches; Nabateans; Petra, *and the biographies of Avi-Yonah, Lawrence, Palmer, Vincent, and Woolley.*]

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AVRAHAM NEGEV

AVIGAD, NAHMAN (1905–1992), Israeli archaeologist, epigraphist, and paleographer. Born in Zawalow in Galicia, formerly Austria, today the Ukraine, Avigad studied architecture in Brno, Czechoslovakia, and then immigrated to Palestine in 1925. As a member of a Zionist youth group in Palestine he became enamored of archaeology as he hiked and camped around the country exploring the land and the physical remains of its long history. This field of study, known as *yedi'at ha'aretz,* "knowing the land," was the core of the absorption process for all newcomers to Palestine.

Avigad entered the Hebrew University of Jerusalem in 1929 and received his master's degree in 1949. The subject of his Ph.D. dissertation in 1952 was the ancient necropolis of Jerusalem, published in 1954 as a book, *Masṣebōt Qedumot be-Naḥal Qidron.* This work marked the beginning of his lifelong association with the archaeology of Jerusalem. His chief mentor in field archaeology was Eleazar L. Sukenik, with whom he worked at the synagogue sites of Beth Alpha (1929) and Ḥammath-Gader (1932). He also worked with Benjamin Mazar at Beth-She'arim, assuming the directorship of the elaborate catacomb excavations there in 1953. His work appeared as the third volume in that series, *Beth She'arim III: The Catacombs 12–23,* in 1971.

Avigad joined the faculty of the Institute of Archaeology at Hebrew University in 1949, later becoming a full professor. He specialized in epigraphy and paleography, focusing on Hebrew and Aramaic scripts. He also published a key text of the Dead Sea Scroll corpus, *The Genesis Apocryphon* (1956), jointly with Yigael Yadin. Avigad was the leading scholar for work on ancient seals, bullae, and jar stamps.

He was perhaps best known for his excavations in the Jewish Quarter of the Old City of Jerusalem, where he worked almost year-round from 1969 to 1983. During that time, he became emeritus professor in (1974). His semipopular report of his work in the Jewish Quarter, *Discovering Jerusalem* (Nashville, 1983), was widely acclaimed. He did not live to complete his final report, which will be written by a senior member of his staff. The areas he excavated now house the popular museums of The Burnt House, The Herodian Quarter, and Hezekiah's Wall.

Avigad received numerous prizes for his scholarship, including the Israel Prize (1977). He was especially honored when he was named "Yaqqir Yerushalayim," "Beloved One of Jerusalem" (1984), in recognition of his unique contributions to the city. His scholarship in all periods of antiquity, and his familiarity with ancient Near Eastern and biblical, classical, and rabbinic texts set him apart. It was Avigad's concern with their intersection that made his work important and enduring.

[*See also* Beth Alpha; Beth-She'arim; Dead Sea Scrolls; Ḥammath-Gader; Jerusalem; *and the biographies of Mazar, Sukenik, and Yadin.*]

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ERIC M. MEYERS

AVI-YONAH, MICHAEL (1904–1974), archaeologist and art historian best known for his synthetic studies establishing the foundations of classical and Byzantine archaeology in the land of Israel. Born in Lemberg (modern Lvov in western Ukraine), Avi-Yonah immigrated to Palestine as a child. He began his higher education at the Uni-

versity of London (1925–1928) in Classical archaeology and history; much later, after he had already established his career, he earned an M.A. (1943) and a Ph.D. (1953) from the same institution. Between 1931 and 1948 he served as the keeper of records in the Palestine Department of Antiquities, a position he continued in for the newly founded Israel Department of Antiquities (1948) until in 1953, he joined the Hebrew University of Jerusalem as a lecturer in archaeology and art history.

As an archaeologist, Avi-Yonah directed several small-scale excavations: the synagogue at ʾIsfiya (1931); tombs in Nahariya (1941); the thermae at Beth-Yeraḥ (1945–1946), the Roman site at Givʿat-Ram, Jerusalem (1949); and the synagogue at Caesarea (1956, 1962). He also participated in the first survey of Masada (1955).

Avi-Yonah's books on the history and historical geography of Palestine are significant contributions to the field. In addition, he was the editor of two of the leading journals of professional archaeology: from 1932 to 1950 he edited the *Quarterly of the Department of Antiquities in Palestine* (*QDAP*), publishing all fourteen of its issues; and he edited the *Israel Exploration Journal* (*IEJ*) for more than twenty years. As the author of a number of introductory books, dictionaries, and atlases, Avi-Yonah was an outstanding and responsible popularizer of the field of archaeology. He is also well known for his work on the scale model of Jerusalem of the Second Temple period on the grounds of the Holy Land Hotel in Jerusalem. The model is a graphic statement of Avi-Yonah's lifelong research on the topography of Jerusalem in the Second Temple, the Roman, and the Byzantine periods.

[*See also* Beth-Yeraḥ; Caesarea; *and* Jerusalem.]

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AXUM, ancient capital and important trading center in Ethiopia (14°10′ N, 38°45′ E). Located in the highland plateau of northern Ethiopia, Axum was a large urban center and the eponymous capital of a political state that flourished from the first through the seventh or eighth century CE. During the period of its greatest expansion, it controlled the highland plateau and coast of northern Ethiopia, southern Yemen, and part of the eastern Sudan.

Axum was the southernmost outpost of the hellenized Near East. Its economic strength depended upon its role in the international trade that passed through the Red Sea. This trade was diminished by Persia's conquest of South Arabia in the late sixth century; its decline continued with subsequent Islamic domination of the area. By the end of the seventh century the Axumite state had lost its international economic standing. Internally, deforestation and soil degradation around the urban center took their toll; between the eighth and tenth centuries Axum had ceased to be the capital of the Christian kingdom of highland Ethiopia.

Archaeological investigations have revealed the outlines of Axum's relative chronology, but its absolute chronology remains more problematic. King Ezana converted to Christianity about 333 and still reigned around the year 356. Kaleb reigned in 520 but had given up the throne before 543 when the Byzantine author Procopius in his *History of the Wars* (1.20.8) referred to Kaleb's successor. A merchant's handbook known as the *Periplus of the Erythraean [Red] Sea,* written in 40–70 CE, describes the Red Sea port of Adulis and names Axum as the metropolis.

The clearest indicator of Axum's position in the economy of the graecized Near East is its issue of gold coinage, beginning about 270 with the coins of King Endubis. Silver and bronze coins were issued for local use, and the gold coin issues were tied to the Roman standard. All coin issues, reflecting the design of Roman coinage, show a bust or half-length portrait of the ruler in profile, framed by stalks of barley or wheat (cereals being the basis of Axumite agriculture). Coins issued prior to the conversion of Ezana show a disc and crescent, and those issued after show the cross. Most coins are inscribed in Greek, but issues of the second half of the sixth and seventh centuries may be inscribed in Geʿez, an Ethiopian Semitic language of the Afro-Asiatic linguistic family.

Monumental lapidary inscriptions offer royal propaganda in Greek language and script and in Geʿez, written either in Epigraphic South Arabian or Geʿez script. Although Geʿez letter forms are related to those of the South Arabian scripts, a system of vocalization was invented, whereby vowel markers are joined to consonant letter forms. The first fully vo-

calized Ge'ez appears in a royal inscription of King Ezana. Royal victories were also commemorated by votive stone thrones. Remains of square throne bases, slotted on three sides, are visible at Axum. The stability of the centralized state (at least until the end of the sixth century) is reflected by the lack of defensive walls at Axum and other Axumite urban centers.

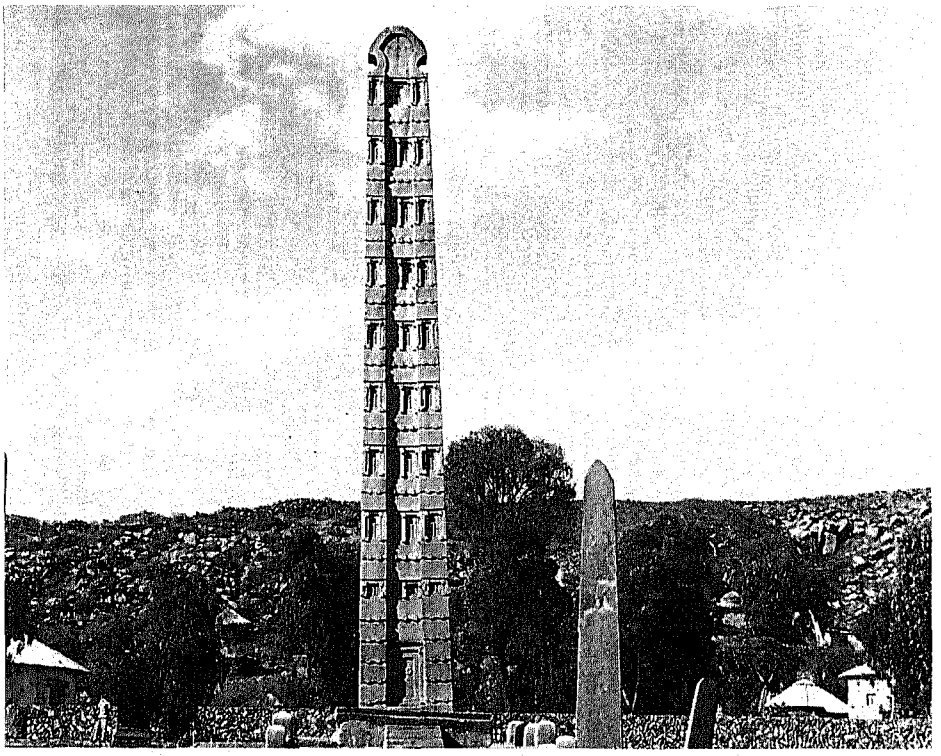
Little is known of Axumite religion prior to Ezana's conversion. His trilingual inscription mentions the deities Ashtar (Ishtar), Beher, and Meder, under whose protection he placed himself; it names him as the son of Mahrem, identified in the Greek Axumite inscriptions as Ares, god of war.

Excavations at Axum have revealed remains of several large elite mansions; foundations of the largest (in the Dungur area) measure 57 × 56.5 m (187 × 185 ft.). These mansions, dating from the late third to the late sixth century, incorporated distinctive features of Axumite architecture. Their central pavilions were built upon stepped podia (platforms) with monumental entrance stairs. Walls were constructed of stones laid in mud mortar, and corners of walls and podia were reinforced with dressed stone blocks. Walls and stepped podia were built with projecting and re-entrant sections, a design element that imparts greater strength. Dressed masonry was used for doorways, stairways, pillars, door jambs, and lintels. Wooden beams, round and square in cross-section, were used as roof supports.

These characteristic features of Axumite architecture—projecting wooden roof supports (so-called monkey heads), framed windows and doorways, and recessed facades—ornament the faces of six giant stelae at Axum's central necropolis. These monuments are datable to the fourth century. The great ornamented stela that still stands is 21 m (68 ft.) high (see figure 1). Contrary to legend, the giant stelae fell because of their inadequate foundations. Their suggestion of multiple stories (ten or more) is the sole fantastic element of an otherwise authentic facsimile of a monumental Axumite facade. Pottery house models, datable to the later third century, show rectangular houses with thatch roofs, which represent the ordinary dwellings of private individuals.

Earlier stelae at Axum were simple upright stones. After the fourth century, stelae were no longer erected. All were funerary. Those of the central necropolis are associated with platforms, terraces, and tombs that were either dug into rock or built in pits. Arches and vaults of baked brick were found in tombs datable to the fourth century. Excavations in this area by the British Institute in East Africa, led by Neville Chittick, were halted in 1974 because of the local political situation.

Tomb contents included a range of objects, imported Mediterranean luxury goods, and some glass fragments that suggest a local glass industry. Well-made Axumite pottery was produced by a local craft industry. Major ceramic types are the burnished Red Axumite ware, datable to the first or second through the fifth century, and Brown Axumite ware



AXUM. Figure 1. *Stelae at Axum.* (Werner Forman/Art Resource, NY)

that replaced Red Axumite ware during the sixth century. Axumite pottery is handmade, and glaze is rare.

The earliest Red Axumite ware shares sufficient elements with pre-Axumite pottery to suggest no discontinuity in local populations. Axum itself does not overlay earlier construction, although pre-Axumite sites, such as Yeha, are not far from Axum. The pre-Axumite period, dating to the second half of the first millennium BCE, is not well understood. Inscriptions demonstrate connections with South Arabia.

In 1993, programs of archaeological research at Axum and its environs resumed, including the work of the British Institute in East Africa led by David W. Phillipson and that of the Instituto Universitario Orientale and Boston University Archaeological Mission, led by Rodolfo Fattovich and Kathryn A. Bard.

[*See also* Ethiopia.]

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MARILYN E. HELDMAN

AYYUBID–MAMLUK DYNASTIES. The Ayyubids (1169–1250) and the Mamluks (1250–1517) ruled with great impact over Egypt and Syria (i.e., Greater Syria: Palestine (modern Israel), Jordan, Lebanon, and modern Syria) for almost three hundred and fifty years. Toward the end of the Fatimid period (909–1169), Egypt was in chaos. Internal power struggles led to intervention by the Crusaders, who even controlled Cairo for a short time, and by the new rulers of Syria and northern Mesopotamia, the Zangids (1127/1146–1181). One of the Zangid generals, Salah ad-Din (the Saladin of Western sources), brought an end to the deteriorating situation in Cairo and to the Fatimids; came in control of Egypt (1169) and the holy cities of Islam (Mecca and Medina) and Yemen (1173); took Tripoli, in modern Lebanon, from the Normans (1172); and conquered Damascus (1174), Aleppo (1178), and, soon after, northern Mesopotamia.

Thus, Salah ad-Din, a ruler of Kurdish origin, was the king (sultan) of a state that stretched from the western borders of Egypt to the western borders of Iran. The only remaining enemy in the territory was the Crusaders, who controlled parts of the coastal regions of Syria and Jerusalem. In 1187 he took Jerusalem and conquered other Crusader states the following year. This led to the Third Crusade (1190–1192), which left the Crusaders with only a few sites and the right (if unarmed) to visit Jerusalem. [*See* Crusader Period.]

Salah ad-Din's political and military strength and his tolerance figure prominently in contemporary Western sources. Islamic sources place him next to a few other outstanding rulers in Islam, primarily because of his military achievements. He must have been an efficient ruler as well, but his political vision did not encompass a centralized state. Before his death in 1193, he divided his realm among members of his family, who ruled after him as kings in Egypt, Damascus, Aleppo, and elsewhere. The Ayyubid "federation" survived with some success into the middle of the thirteenth century.

Following a lengthy period of internal struggles for supremacy within the Ayyubid family, in Egypt a slave-soldier *(mamluk)* of Turkish origin named Aybak took power in 1250. He became the founder of the Mamluk dynasty, whose more than fifty sultans became the lords of Egypt and Syria for the next more than 250 years. In Syria the Ayyubid kingdoms were overrun by the Mongols of Hülegü in 1259, who in turn were defeated by the Mamluks in Palestine in the same year. This victory opened Syria to the Mamluks. The leader of this Mamluk army, Baybars, became the Mamluk sultan in 1260. It was during his long reign (for a Mamluk) of seventeen years that the foundations of the Mamluk state were established. An administrative system was laid out that used the pre-Mamluk structure in Syria. In it even an Ayyubid prince, the historian Abu al-Fidaʿ of Hama, was retained. Baybars continued Salah ad-Din's policy of pushing back the Crusaders by military and political means and as a result, holds the same esteemed place in Islamic history as his predecessor. His quasi-successor, Kalaun (1279–1290), ended the Crusader presence in the Holy Land and built, on Baybars' foundations, the basic elements of the Mamluk state. The long reign of Kalaun's son Nasir Muhammad (1310–1341) benefited both the arts and political stability. Baybars, Kalaun, and Nasir are the most prominent Mamluk sultans of the so-called mainly Turkish Bahri dynasty, which in 1382 was overthrown by another Mamluk group, the mainly Circassian Burji dynasty. The Burjis remained in power until 1517, when a new and militarily advanced power the Ottomans, who introduced gunpowder to warfare in the Near East, conquered Syria and Egypt.

Few of the sultans who followed Baybars and Kalaun compare to them. Many ruled only for a short period and many suffered a violent death. It was the internal political structure of the Mamluk state that created instability. Whereas after Salah ad-Din members of the Ayyubid family ruled over small kingdoms in Syria and Egypt—Egypt being the most prominent—in which the ruler of Egypt, as a rule, was the overlord, patron, or "king of kings," the Mamluks had their own unique system of government and practice for choosing their sultan or king. Their system was oligarchic, even though there are a few exceptions where a son followed his father as sultan. In principle, only a slave-soldier who, as a boy or young man, had been brought as a slave from the Turkish areas north of the Black Sea and the

Caspian Sea—in general, a Kipchak Turk—or a Circassian slave-soldier who had been brought from the Caucasus were eligible to become sultan. After these young men were brought from the northeast, they went through thorough military and administrative training that sorted the weak from the strong. The strongest, within a very well-organized system, advanced themselves as military leaders and governors of the provinces in the Mamluk state. The strongest, most successful, most cunning, or most brutal advanced higher and higher in rank until they competed for sultanship. This system, for all its brutality, had one advantage: a weak son rarely followed a strong father. The sons of the Mamluks were not permitted to serve in the military, and were thus excluded from direct political power. They served in the lower ranks of government, where important (handling finances) posts were held by Christians, or in different trades. In this way a unique interrelated system developed between government and business that may have been the base of the longevity and relative economic prosperity of the Mamluk state.

The material evidence—remains of buildings and sherds classified as Ayyubid/Mamluk—demonstrates that in the Ayyubid and Mamluk periods in Syria large areas of land were recultivated that had not been used since Late Antiquity. Documents show that a rather efficient feudal system of land administration and land ownership existed in Egypt. Thus, enough surplus was produced to allow patronage in the arts and in building construction. Salah ad-Din built the citadel of Cairo, but no noteworthy architecture from his reign is left. Literary sources as well as inscriptions bear witness, however, that this sultan, who spent most of his time at war, was a patron of extensive construction projects. There were no innovations in style in Islamic art and architecture during his reign—nor is there an Ayyubid style in Islamic art and architecture. In Cairo, the few monuments remaining from the Ayyubid period are mature continuations of a Late Fatimid architecture. [*See* Fatimid Dynasty.] The best example is the Madrasah of Najmaddin (1240–1249). Like most buildings in Cairo, it was squeezed into a preexisting urban fabric. The style of the facade and the minaret in its (quasi) center have little to do with the architectural style of the building. The forms used are those of Late Fatimid buildings like the Mosque al-Akmar or the Mosque as-Salih Talai. The building's ground plan, however, determined the layout of future madrasahs in Cairo. Two large iwans (vaulted rooms open to the courtyard), elements taken from Iranian architecture via Zangid Syrian buildings, flank the courtyard. This future element in Islamic architecture in the west came from the east, with Syria the transmitter.

From pre-Ayyubid times, one of the finest examples of imported Iranian architecture is the Maristan an-Nuri, built by the Zangid Nur ad-Din, in Damascus, Syria. Nur ad-Din, the building's patron, came from the east and changed architectural forms in Syria. The most "classical" building in Mediterranean Islamic architecture is preserved in Aleppo, Syria: the Madrasah al-Firdaws. It was built in 1237 (?), toward the end of Ayyubid rule in Syria. A clear language of forms and a mature floor plan characterize it. The courtyard is framed by well-proportioned arcades and, in the north, a large iwan dominates. The integrated stonework of the *mihrab* hints at forms later taken up in Mamluk architecture in Syria and Egypt. Its polychrome execution (black and white stone) became a characteristic element of Mamluk and post-Mamluk architecture in Syria and Egypt, known as the *ablak* technique. The Zangid-Ayyubid "classical revival"—the tendency to return to pre-Islamic Mediterranean forms and concepts of proportion—was continued in Baybars' buildings in Damascus and Cairo. In Damascus, the Madrasah az-Zahiriya is a copy of the Ayyubid Madrasah al-Adiliya across the street. Imitations of the mosaics in the Umayyad mosque in Damascus (which Baybars ordered restored) reflect the tendency to link his sovereignty with the pre-Islamic past (the Umayyads in this case). In Cairo, Baybars built his Great Mosque following Fatimid examples—the mosque of al-Ḥakim and the mosque in Mahdiyah, in Tunisia, the first Fatimid capital. Older forms there were combined with a large dome in front of the mihrab, an eastern element, however.

More than three hundred years of shared history under the Ayyubids and the Mamluks mingled aesthetic concepts and practices in Egypt and Syria into a fruitful marriage of the "flat" Egyptian form and the use of space in Syrian forms. Examples are found in Cairo as well as in Damascus, Aleppo, and Jerusalem. The fragile structures found in Cairo and Jerusalem are in contrast to the monumental form of the Mosque of Sultan Hasan in Cairo (1356–1363) and the plump forms of the Great Mosque in Aleppo rebuilt by the Mamluks.

Characteristic elements of Mamluk architecture are the dome, the iwan, and polychromy in the facades and other parts of buildings. It is both a synthesis and development of earlier forms—a synthesis of pseudoclassical forms, of eastern, Crusader, and Zangid/Ayyubid traditions. It led (along with the dominant Ottoman dome) to what is understood to be "Islamic" architecture.

[*See also* Crusader Period; *and* Mosque. *In addition, many of the sites mentioned are the subject of independent entries.*]

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ʿAZEKAH, a small one-acre site, situated on a high ridge of the Judean foothills overlooking the Elah Valley, ʿAzekah (Tell Zakariya) is located 8 km (5 mi.) northeast of Beit Jibrin, 3.5 km (2 mi.) southwest of Tel Yarmut, and 6 km (4 mi.) southwest of Tel Beth-Shemesh (31°42′ N, 34°54′ E; map reference 1440 × 1230). Its strategic location, at 400 m above sea level, explains its description in Assyrian sources from the time of Sargon II as a "stronghold, which is situated in the mid[st of the mountains . . .] located on a mountain ridge like a pointed dagger" (British Museum 131–3–23; see Tadmor, 1958).

Tell Zakariya was first identified as biblical ʿAzekah of the David and Goliath narrative (*1 Sm.* 17) by Jozeph Schwartz, in the nineteenth century. The site's excavator, Frederick J. Bliss, favored an identification with ʿAzekah's sister city, Socoh. However, that site is now located at Khirbet Abad (near Khirbet Socoh), 5 km (3 mi.) to the southwest, and Zakariya's identification with Israelite ʿAzekah is generally accepted. The later, Roman-period ʿAzekah, mentioned by Eusebius (*Onomasticon* 18:10), is probably to be located at Khirbet el-ʿAlmi, to the east.

Formal excavations at Tell Zakariya were conducted for only three seasons in 1898 and 1899, in work directed by Bliss, assisted by R. A. S. Macalister and sponsored by the Palestine Exploration Fund. On the southwest side of the site they explored foundations of three individual towers they initially dated to the Roman-Byzantine era. On the elevated southeast section, they uncovered the walls of a rectangular fortress (about 40 × 60 m) with towers at the corners and at midpoints along the northern and eastern sides. They subsequently excavated half of the fortress area to bedrock and dug another trial pit outside it, in the center of the mound to the north.

In the Bible ʿAzekah is mentioned in *Joshua* 10:10–11 in connection with Joshua's defeat of the Amorite kings; in the Judean town lists in *Joshua* 15:35; and, subsequently, in the David and Goliath story in *1 Samuel* 17. In *2 Chronicles* 11:9, it is identified as one of the cities involved in King Rehoboam's refortification efforts, and in *Jeremiah* 34:7 it is cited, along with Lachish, as among the last fortresses to hold out against invading Babylonian forces in the early sixth century BCE. This last reference seems to be corroborated by the mention of ʿAzekah in Lachish letter 4. The city is also mentioned in *Nehemiah* 11:30 as one of the homes of returning exiles.

Based on their excavations, Bliss and Macalister concluded that the site had been occupied almost continuously from before 1500 BCE until the Byzantine period; they attributed the construction of the southeast fortress to Rehoboam (922–915 BCE). Excavating to bedrock inside the fortress, they distinguished four main occupation periods: period A, early pre-Israelite (?–1500 BCE); period B, late pre-Israelite (1500–800 BCE); period C, Jewish (800–300 BCE); and period D, Seleucid (300–? CE).

Although in broad outline this sequence agrees with the mention of ʿAzekah in the literary sources, the stratigraphic picture is very uncertain. The existence of some "pre-Israelite" component is attested by scarabs of Thutmose III and Amenhotep II assigned to period A. However, royal stamped jar handles were found on surfaces of both periods B and C within the fortress. This requires the ascription of both of these phases to the late eighth century BCE and admits the possibility that the fortress was constructed just before that time. Similar ninth- and eighth-century fortresses now excavated elsewhere in the region, as well as at Qadesh-Barnea and Arad, support this conclusion. Alternatively, Shmuel Yeivin (Avi-Yonah and Yeivin, 1955) has suggested that the fortress was initially constructed in the period of the Judges and the additional towers in the southwest represent Rehoboam's work.

[*See also the biographies of Bliss and Macalister.*]

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AZRAQ. The Azraq oases lie at the center of an internal drainage basin (12,000 sq km [7,440 sq.mi.]) in north-central Jordan (31°50′ N, 36°50′ E). The basin formed within a geosyncline and contains Late Cretaceous and Early Tertiary limestones, marls, and cherts. The northern sector is overlain by a canopy of Late Tertiary and Quaternary basalts. Rainfall today varies from just over 200 mm along the basin's northern and western margins to less than 50 mm in the southeast. For this reason most of the region is dry steppe or subdesert and is only suited for seasonal pastoralism.

Irrigation cultivation is, however, practiced at Azraq where copious springs emerge from beneath the basalt. These formerly fed extensive tracts of marshland which at-

tracted large numbers of migratory birds in spring and autumn (Nelson, 1973). During the last twenty years, water has been pumped from these springs to serve the population centers of Amman and Irbid, and the wetlands have largely dried out. In addition to the springs, there is also a large sabkha, or playa, at Azraq which serves as a central sump for runoff in the depression. This fills with water in the winter and dries out in the summer. The subsurface aquifer is highly saline and the villagers exploit this for salt production. There presently are two villages in the oases, both of which were established by refugees in the early part of the century: North Azraq, which was settled by Druze from southern Syria, and South Azraq, which was founded by Chechen from the Caucasus (Nelson, 1973).

The springs at Azraq have provided a focus for settlement since the Stone Age. In the 1950s, mechanical equipment uncovered two very rich late Acheulean (Lower Paleolithic) sites close to South Azraq which are likely to be more than 200,000 years old. Both were reinvestigated in the 1980s: Lion Spring ('Ain el-Assad) by Gary O. Rollefson (1983) and C Spring by Andrew N. Garrard (Copeland and Hours, 1989). The latter contained bones of an extinct rhinoceros and of camel, onager, wild ass, hartebeest, and cattle, in conjunction with handaxes, cleavers, and other flint tools.

During the 1980s, Garrard undertook an extensive survey of Epipaleolithic and Neolithic sites in the Azraq region and excavated at six of the localities (Garrard et al., 1994). Two of the most interesting were the Natufian occupation at Azraq 18 and the Neolithic settlement at Azraq 31, both lying close to South Azraq. Azraq 18 probably dates to between 10,000–9,000 BCE and is notable for containing a shallow burial pit with the disarticulated remains of at least eleven individuals. These represent the only Natufian burials known from east of the Jordan Valley. The burial pit was overlain by rich occupational levels containing the bones of wild cattle, ass, and gazelle and many stone tools (Garrard, 1991). Azraq 31 is thought to date to between 6300 and 5500 BCE. Remnants of semisubterranean circular or oval dwellings were found in the sixth-millennium levels. These were similar in design to those excavated in Wadi el-Jilat, 55 km (34 min.) to the southwest [*See* Jilat, Wadi el-.] The site documents a shift from the exploitation of the local wild fauna to imported sheep and goat (Baird et al., 1992). Traces of cultivated wheat and barley were also found.

Little research has been done on the later prehistoric sites of the Azraq region, but Alison Betts (1988) has undertaken extensive surveys in the lava country to the north and east, finding prehistoric hunting traps (desert "kites"), animal corrals, and settlement sites of various kinds. The classical period is better known as a result of the surveys of David L. Kennedy (1982) and others. An inscription indicates that Azraq may have been called Dasianis in Roman times (David L. Kennedy, personal communication). During the classical and Islamic periods the oases, which lie at the northwestern end of Wadi es-Sirḥan, are likely to have been an important watering point on the caravan routes between the Levant and central Arabia. Two forts guard the approaches to the oases and a third stands close to the pools in North Azraq. The one lying 13 km (8 mi.) to the southwest, Qaṣr el-'Uweinid, stands on a basalt bluff overlooking Wadi el-'Uweynid. Its plan is trapezoidal with a projecting bastion containing a tower in its southern corner. It contains inscriptions indicating that it was built during the reign of Septimius Severus, probably in 201 CE. Names are given for the imperial governor of Arabia, L. Marius Perpetuus, and two consuls, M. Nonnius Arrius Mucianus and L. Annius Fabianus. Pottery indicates that the fort continued in use until the late third or early fourth centuries. The fort lying 13 km (8 mi.) northeast of the oases, Qaṣr Aseikhin, is situated on a commanding hilltop. It is square in plan and contains Late Roman and Byzantine pottery. The most impressive of the forts is that located in North Azraq, Qaṣr el-Azraq. It has been modified a number of times in its history: early aerial photographs show that it was erected within a much larger enclosure. The present structure (79 × 72 m) has angle towers at the corners and interval towers along the walls. Rooms were attached around the inside of the walls and there is a large central courtyard. Inscriptions have been found dating to the late 3rd and 4th centuries. The overall plan is comparable with other Late Roman forts. Modifications did occur in later periods however. An Arabic inscription above the main entrance indicates major building works by the Ayyubid governor Azzeddin Aybak in 1237. The mosque in the central courtyard may belong to this period.

Evidence for classical or Early Islamic building activity has also been found around the pools and marshes at South Azraq. A well-constructed and buttressed wall was erected around the main spring outlets, creating a large reservoir. A platform was erected at its eastern side and a number of animal sculptures were found in association with collapsed arches (Ghazi Bisheh, personal communication). An additional buttressed wall extended around the marshland to the south and east. No traces have been found on the north, but if the wall formed a complete circuit it would have enclosed an area of several square kilometers. An Umayyad farmhouse, Qaṣr 'Ain es-Sol, located 2 km northeast of the fort at Azraq. Roughly square in plan, its rooms are arranged around a central courtyard. Excavation has revealed ovens, olive presses, and an external bathhouse.

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BAALBEK, site located in the Biqaʿ (Bekaa) Valley, 85 km (53 mi.) from Beirut, Lebanon, at an elevation of about 12,540 m. The Biqaʿ Valley, known as Coele-Syria in classical times, is bordered on the west by the Lebanon mountain range and to the east by the Anti-Lebanon range. [*See* Coele-Syria.] Two springs, Ras al-ʿAin and ʿAin Lejouj, a short distance away, provided caravans with water in antiquity. Baalbek is strategically placed at the highest point on a well-established trade route from Tripoli that led into the Biqaʿ before proceeding to Damascus or to Palmyra in Syria. Baalbek's name in Hebrew, *Baʿal biʿki,* means "Baal of tears"; its Greek name, Heliopolis, means "city of the sun."

The first survey and restoration work at the site was begun by the German Archaeological Mission in 1898 under the direction of Bruno Schulz and the supervision of Otto Puchstein. Later, in 1922, French scholars (René Dussaud, Sebastien Rouzevalle, Henri Seyrig, and Daniel Schlumberger) undertook extensive research and restoration work on the site's temples. The Lebanese Department of Antiquities subsequently continued excavation and restoration under the supervision of Emir Maurice Chehab, director general of Antiquities, and Haroutune Kalayan. [*See the biographies of Dussaud, Seyrig, and Schlumberger.*]

History. Test excavations at Baalbek in 1964–1965 revealed the Bronze Age tell beneath the Great Court of the Jupiter temple. Traces of settlements dating to the Middle Bronze Age (c. 1700 BCE) were found. Other minor remains were dated to the Early Bronze Age.

In the third century BCE, when Syria became a possession of the Lagid successors of Alexander the Great who ruled from Alexandria, Baalbek was given the Greek name *Heliopolis.* The Macedonians must have equated the Baal of the Bekaa with the Egyptian god Re and the Greek Helios, with the purpose of establishing closer religious ties between their new dynasty in Egypt and the eastern Mediterranean world. In the second century BCE, the Seleucids, successors of Alexander who ruled from Antioch, invaded Coele Syria and drove the Lagids back to Egypt. The podium of the Jupiter temple probably dates to this period. [*See* Seleucids.] Between 100 and 75 BCE, Baalbek was ruled by a hellenized Arab dynasty, the Itureans. In 63 BCE, the Roman emperor Pompey passed through Baalbek on his way to conquer Syria. He was succeeded by his son, who was put to death by Marc Antony. Marc Antony then gave all the Syrian territories, including Baalbek, to Cleopatra. In about 16 BCE, Augustus settled veterans of the same Roman legions in Beirut (Berytus) and Baalbek. It was then that building was begun on great Temple of Jupiter.

In the second century CE, the Great Court, with its porticoes, two altars, and two vast lustral basins, was added to the temple. At the same time construction of the Bacchus temple began. It was completed in the third century, at the same time that the Propylaea were erected and the Hexagonal Court added.

In about 330, Christianity became the official religion of the region and the Byzantine Emperor Constantine closed the temples. Emperor Theodosius destroyed them and tore down the Altar of Sacrifice and the Tower in the Great Court, replacing them with a Christian church in approximately 440. By this time the Temple of Jupiter was probably already in ruins as the result of an earthquake. Numerous architectural elements taken from the Heliopolitan Jupiter temple were reused in building the church.

In 636, after the battle of the Yarmuk River, the entire province of Syria fell to the Arabs. Muʿawiyah founded the Umayyad dynasty in 661 and took possession of the Byzantine mint at Baalbek, showing the name *Baalbek* inscribed in Arabic letters on the coins. Thus, the name *Heliopolis,* which had been in use for about a thousand years, was replaced with its original Semitic name. The temple area was transformed into a citadel and Baalbek fell successively into the hands of the ʿAbbasids, the Tulunids, and the Fatimids. [*See* Umayyad Caliphate; ʿAbbasid Caliphate; Fatimid Dynasty.]

During the eleventh–twelfth centuries, Baalbek suffered from floods and earthquakes and the passage of several plundering armies. The city fell to Salah ad-Din (Saladin), founder of the Ayyubid dynasty, in 1175. The Mongols arrived in Baalbek in about 1260, sacking it and destroying its mosques; they were soon overthrown by the Mamluks, however. (The Mamluks were enfranchised slaves purchased by the last Ayyubid ruler for his army. They constituted the bulk of his army in general and of his court in particular).

Under the Mamluks (and until the Ottoman occupation in the sixteenth century) Baalbek enjoyed a period of calm. The fine architecture of the city's Fortress must be attributed to this period. [*See* Ayyubid–Mamluk Dynasties.]

Monuments. The temples of Baalbek have an east–west orientation. A monumental stairway provides access to the platform of the Acropolis. When the Arabs turned this temple area into a fortress, they filled in the spaces between the columns of the portico, which is flanked by two towers. Three doors lead to the Hexagonal Court (see above), which may have been used for introductory rites for the pilgrims. This space was covered by a dome at the end of the third century, transforming it into the Church of the Virgin.

Three gates lead onto the Great Court (1,452 × 1,221 m), built in the second century CE. Important ceremonies and sacrifices were held in front of the facade of the Jupiter temple. The court is an artificial platform built over a huge area (6,600 m) of vaulted substructures that were used for stables and storage. The court contained two altars and two pools and was enclosed by a succession of rectangular and semicircular exedras decorated with niches that must have contained statues.

Temple of Jupiter Heliopolitan. All the temples of Baalbek are Roman in construction but show considerable Oriental influence in both their art and architecture. The huge Temple of Jupiter (950 × 495 m) was constructed during the Augustan era (first century CE), built as a high podium with mammoth blocks. It was reached by a monumental stairway 86 m above the courtyard. Until the earthquake of 1759, the temple had nine gigantic exterior Corinthian columns; only six remain. These columns and the entablature surmounting them, which consist of a frieze of bulls' and lions' heads connected by garlands, give some idea of the vast scale of the original temple. [*See* Temples, *article on* Syro-Palestinian Temples.]

Temple of Bacchus. The best-preserved Roman temple in the Near East, the Temple of Bacchus was built in the second century CE. There is no evidence for its attribution to Bacchus, except for some motifs in the gateway carvings (grapes and wine leaves) and of the adytum (dancing bacchanti). It was built on a high podium (746 × 386 m). A stairway with thirty-three steps divided into three stages leads to its pronaos. Its exterior portico is made of contrasting plain and fluted columns with Corinthian capitals. Large slabs form the ceiling, which is richly decorated with carved geometric patterns of triangles and hexagons. The latter are filled with busts or portraits.

The entrance to the cella through the monumental gate (more than 139 m high) is one of Baalbek's major beauties. The underside of the lintel depicts an eagle with a caduceus, the symbol of Mercury, in its claws. The interior of the cella is richly decorated with engaged fluted columns that divide the walls into compartments, each with two tiers of niches—the lower with arched pediments and the upper with triangular ones. To the rear of the cella is the adytum, or holy of holies, which is on a higher level, following the Oriental Semitic tradition.

Temple of Venus. Located southeast of the Acropolis, the Temple of Venus has a unique circular design. Built in the third century CE, its podium and entablature are composed of five concave sections connected by Corinthian columns.

Byzantine modifications and remains. Toward the end of the third century, when Christianity was officially adopted, the open Hexagonal Court was covered with a dome and converted into the Church of the Virgin. At about the same time, under the rule of Theodosius (379–395), the two altars of the Great Court were removed to make room for the construction of a Christian basilica dedicated to St. Peter. Originally, the entrance was on the east and the apses were placed on the stairway of the Jupiter temple, but this order was later reversed in compliance with Christian tradition. [*See* Churches; Basilicas.]

Arab period remains. Within the Acropolis, the remains from the Arab period consist mainly of fortifications, including curtain walls, towers, and battlements that can be seen to the west of the Temple of Bacchus. Between the temple and the curtain walls are the remains of a mosque, living quarters, and storage rooms, all dating to the twelfth and thirteenth centuries. On the southeast of the temple stairway is a fortification tower of the Mamluk period (fifteenth century) with typical Islamic corbeled vaulting over the door.

East of the Acropolis the Great Mosque is on the original location of the Roman Forum. Built during the Umayyad period, it consists of three rows of columns (probably reused) that support arches on which the wooden roof must have rested. Remains of an octogonal minaret were found in the northwest angle of the courtyard.

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LEILA BADRE

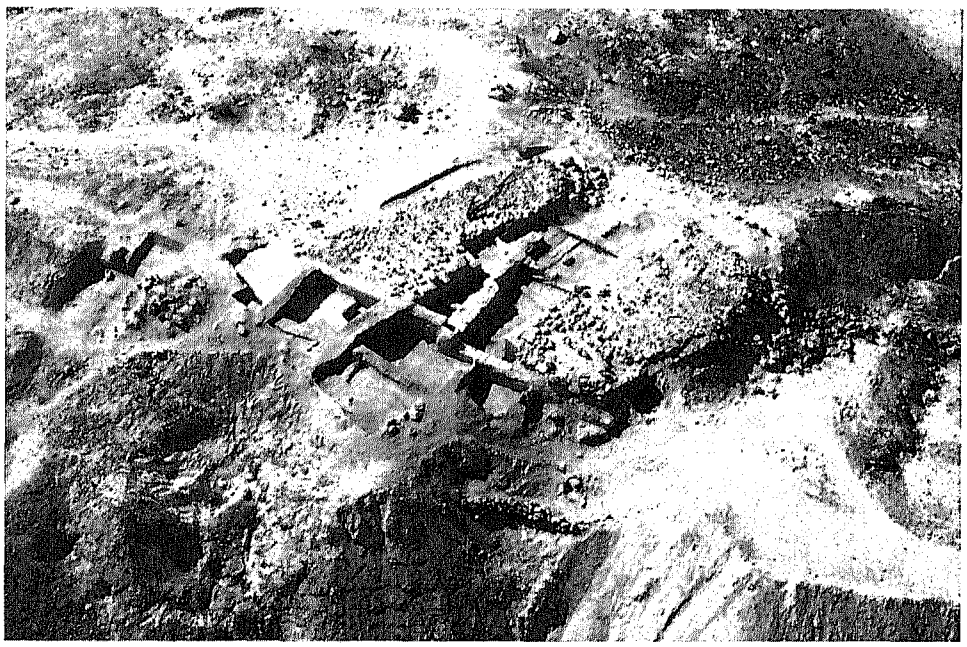
BAB EDH-DHRAʿ, Early Bronze Age (3300–2000 BCE) site on the plain southeast of the Dead Sea in Jordan (map reference 2006 × 0734). Because of its early time range, its size, and its location, some scholars have identified Bab edh-Dhraʿ with the biblical traditions concerning

Sodom, the most prominent town of the Cities of the Plain (*Gn.* 19:25, 29; *Dt.* 29:23). Among all of the ancient sites recorded on the southeast Dead Sea plain before the Hellenistic period, Bab edh-Dhraʿ is the largest (the walled town is 12 acres: see figure 1) and has the longest occupational history (1,100 years). In addition to the town area the site includes an open settlement to the south and east and a large cemetery farther to the south. Although the biblical tradition locating the Cities of the Plain can also be interpreted as referring to a northern location (*Gn.* 13:10–13; *Dt.* 34:1–3), most of the biblical texts support a southern option (cf. e.g., *Gn.* 10:19, 14:1–12, 19:24–28; *Ez.* 16:46).

Early Greek writers (Diodorus and Strabo) vividly described the desolate nature of the region around the Dead Sea, and ever since a succession of historians, geographers, and travelers has noted its ruins, with widely varying degrees of detail. A 1924 survey, led by William Foxwell Albright, M. G. Kyle, and Alexis Mallon, was the first to describe with clarity and date the walled area of Bab edh-Dhraʿ, interpreted by Albright as a sanctuary complex. Excavations under the direction of Paul W. Lapp (1965–1967) concentrated on the cemetery but also included some soundings in the area of the walled town. Following a survey in 1973 by Walter E. Rast and R. Thomas Schaub that identified several other EB settlements and cemeteries farther to the south, the Southeast Dead Sea Plain Expedition was formed to explore the relationship between the various towns and cemeteries (Schaub and Rast, 1989). At Bab edh-Dhraʿ, the expedition's interdisciplinary team explored both the town site and cemetery in four field seasons (1975–1981).

Excavations on high peripheral areas of the site and carefully chosen areas of the interior have determined the history of occupation and major activity areas. The earliest occupation within the town is associated with a village dated to EB IB (3150–3000 BCE). Remnants of mud-brick and stone structures above bed gravel and marl and associated with the distinctive line-group pottery of this period were found in all of the lowest areas of the site excavated. Evidence of the thriving EB II–III (3000–2300 BCE) urban culture of Bab edh-Dhraʿ is provided by a massive 7-meter-wide stone wall, built on the site's natural marl ridges; a sanctuary area with a broadroom building; a courtyard with a circular stone altar; and domestic and industrial areas within the walls. The wall and gate area on the site's western edge underwent a major destruction near the end of EB III. Subsequent occupation in limited areas within the walls, including a sanctuary on the northern ridge, and to the south and east reflect a brief return to village life during EB IVA (2300–2200 BCE). The site was subsequently abandoned.

The use of the large cemetery area to the south basically parallels that of the town site. The area's soft marl and clay were cut into for deep shaft tombs in EB IA (3300–3150 BCE), apparently by seasonal pastoralists. Shafts 2–3 m deep lead to domed chamber tombs, varying in number from one to five, cut horizontally from the bottom of the shaft. The burial pattern in these chambers usually included a line of skulls to the left of a central disarticulated bone pile, sur-



BAB EDH-DHRAʿ. Figure 1. *Aerial view of the site.* The view looks south at the tower in the northeast corner of the walled town. (Courtesy R. T. Schaub)

BAB EDH-DHRAʿ. Figure 2. *A III North, an EB IA shaft tomb chamber of the Bab edh-Dhraʿ cemetery.* The typical placing of skulls in a line is shown to the left of the central disarticulated bone group. (Courtesy R. T. Schaub)

rounded by distinctive pottery groups of bowls, jars, and juglets (see figure 2). The second phase of the cemetery is signaled by the development of round mud-brick funerary buildings used for successive burials in EB IB. During the zenith of the town site (EB II–III), the funerary buildings became rectangular and increasingly larger, with several apparently in use simultaneously. Several of these mud-brick structures show signs of destruction and burning contemporary with the end of the town site. The last tombs excavated in the cemetery, dated to EB IV, were also shaft tombs, but usually stone-lined with single or double chambers, and contained both disarticulated and articulated skeletal material. [*See* Shaft Tombs; Burial Sites; Grave Goods.]

The cultural remains uncovered at Bab edh-Dhraʿ reflect the full development of ancient Palestine's EB culture. Many items suggest extensive trade with other urban centers, including Mesopotamia and Egypt. Among the more unusual finds are well-preserved textiles; copper and bronze weapons and tools, including some early tin/bronze weapons; slate palettes and combs; an extensive collection of cylinder-seal impressions, along with three cylinder seals; and a wide range of jewelry, including gold items. [*See* Textiles; Weapons; Seals; Jewelry.] Botanical samples reveal the predominant use of barley and include wheat, grapes, olives, figs, lentils, pistachios, and almonds. [*See* Cereals; Olives.] Faunal finds include the usually dominant sheep and goat and donkey and cow. [*See* Sheep and Goats; Cattle and Oxen.] Overall, the finds from the town site and cemetery at Bab edh-Dhraʿ allow for a reconstruction of the basic life and burial patterns of a thriving third-millennium urban culture that was not matched in the region until the Byzantine period, more than two thousand years later.

[*See also* Southeast Dead Sea Plain.]

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R. THOMAS SCHAUB

BABYLON, site located on the bank of one of the branches of the Euphrates River, 90 km (59 mi.) southwest of Baghdad, in modern Iraq (32°33′ N, 44°26′ E). Babylon, as the name of a city and as a cultural concept, was transmitted to European culture through the Hebrew Bible and Greek and Roman authors. Christian cultures have used the concept of the Tower of Babel and the story of its destruction as synonyms for human arrogance and the punishing hand of God. Interest in rediscovering Babylon was primarily awakened by the biblical stories, on which numerous artistic representations of the Tower of Babel were based. The name *Babel* was associated with a large hill in the northern part of the ruined city of Babylon. The hill always linked the site with biblical Babylon, although the identification of the tower was strongly contested.

The name *Babylon* is traced to *babil(a),* a pre-Euphrates name (i.e., neither Sumerian nor Akkadian) and is interpreted as a place name. The designation was understood in the Sumerian period as *kâ-dingirra,* first attested for the Akkadian king Sharkalisharri (2217–2193 BCE), who mentions two temples in the city. Presumably, this Sumerian spelling was used as a folk etymology, just as the Semitic *Bab-ili* has been translated as "gate of God." Beginning with the old Babylonian period, the spelling *tintirki* was also used. This probably had the same meaning as the other spellings or was a synonym. The spelling *Babylon,* still customary, was taken from the Greek name for the city.

History of Research. Some Islamic authors preserved the memory of Babylon; however, they knew little more than the name and a few almost legendary events. The scholar Ibn Hawqal, who probably visited Babylon in the tenth century, described it as a small village. In Jewish tradition, Babylon was the city hostile to God in which the Jews had been held captive. These memories as well as an interest in the Jewish communities still living there brought Rabbi Benjamin of Tudela to Babylon twice, between 1160 and 1173 (M. N. Adler, ed., *The Itinerary of Benjamin of Tudela,* London, 1907). He, like most later travelers, was primarily interested in the site of the tower described in the Bible. He mentions the ruins of the palace of Nebuchadrezzar and identified the tower ruins at Birs Nimrud/Borsippa as the biblical tower. Between 1573 and 1576, the German physician Leonard Rauwolff visited Babylon and described conditions there (Rauwolff, *Itinerarium oder Raysbüchlein,* Lauingen, 1583); ruins in ʿAqar Quf (actually ancient Dur Kurigalzu) were the remains of the tower. [*See* ʿAqar Quf.]

Toward the end of the sixteenth century, John Eldred, a merchant, who had a similar interpretation, described the tower (probably ʿAqar Quf) and its construction (see R. Hakluyt, *The Principal Navigations, Voyages, Traffiques and Discoveries of the English Nation,* London, 1589). The earliest detailed investigation was carried out by the Italian noble Pietro della Valle, who went to Babylon in 1616 while traveling in the Near East (*Viaggi,* Brighton, 1843). He considered the ruins of Babel to be the tower and provided measurements and a description. Della Valle brought the first bricks inscribed with cuneiform writing from Babylon and Ur to Europe, but they provoked no interest. When the famous traveler Carsten Niebuhr visited Babylon in 1765, he was prepared for the city by the reports of Herodotus, and expected that the city covered a huge area. He therefore believed that the ruins in Borsippa were the Babylonian tower (Niebuhr, *Reisebeschreibungen nach Arabien und andern umliegenden Ländern,* Copenhagen, 1774).

Of later travelers, only a few will be mentioned here. Abbé de Beauchamp, the papal vicar general who went to Babylon in 1780 and 1790, reported on the wholesale looting of baked bricks by the inhabitants of the surrounding areas (J. de Beauchamp, "Voyage de Bagdad à Bassora le long de l'Euphrate," *Journal des Scavans,* Paris, 1785; "Mémoire sur les Antiquités Babyloniennes qui se trouvent aux environs de Bagdad," *Journal des Scavans,* Paris, 1790). Local inhabitants described how walls with pictures made from glazed bricks as well as statues had been discovered during the looting. Beauchamp noted the existence of massive inscribed cylinders but was unable to obtain one. He dated the coins found in Babylon according to comparisons with examples from the Parthian period. With respect to identifying the Babylonian tower, he debated between the ruins of Babel and Borsippa. A resident of the East India Company, Hartford Jones Bridge, who visited Babylon briefly, succeeded in obtaining several bricks and the large stone inscription of Nebuchadrezzar II that became known as the East India House inscription.

Claudius James Rich, who knew Near Eastern languages and was interested in the cultures of antiquity, was in Baghdad as a resident of the East India Company. Beginning in 1811, he undertook the first systematic investigation of the area of the ruins, took measurements, and presented the results of his investigations in *Memoir on the Ruins of Babylon* (3d ed., London, 1818), which also contained drawings and plans. In this work, he describes the still visible walls of the city as well as the ruins on the individual hills, which he calls by their Arabic names. In his search for the Babylonian tower, he investigated the ruins of Babel, which was also called Mudshelibe by the inhabitants. There he discovered burials with small objects. Noteworthy among the objects he took back to England were some cylinder seals, now in the British Museum.

The English painter Robert Ker Porter went to Babylon in 1818 and was quite enchanted with its ruins. In a book

that was very well received by the British public, he wrote about his impressions and illustrated them with romantic views of the ruins. He too was searching for the Babylonian tower, which he identified with Birs Nimrud. Like many of his predecessors, Porter adopted Herodotus's estimate of the city's size. In an area of the ruins at Kasr that contained pillars, scientist J. S. Buckingham believed that he had found the remains of the hanging gardens described by Greek authors. In the following years there was a considerable increase in knowledge concerning the ruins of Babylon. An officer employed by the East India Company, Robert Mignan, carried out some small excavations in Babylon, in the course of which he was able, among other things, to find an inscribed clay cylinder in situ. The English geologist William Kennett Loftus, who later became known for his excavations at Uruk/Warka and Kutalla/Tell Sifr, began his work in Babylon in 1849. However, he soon came to consider the work futile, rejecting the identification of individual mounds with buildings mentioned by Herodotus.

After Paul Émile Botta and Austen Henry Layard had initiated the first genuine excavations in northern Mesopotamia, the latter went to Babylon, in 1850, to begin archaeological investigations there. He began digging the mound of Babel where he found many, probably late, burials. He was unable to establish a clear picture of the construction in the huge ruins and uncovered only insignificant small objects. The situation was similar at the hill of Kasr, which the inhabitants of the villages had already thoroughly searched for baked bricks. Layard described the fragments of glazed bricks he discovered without recognizing their significance, and he mentioned the monumental basalt lion that had already been noted by other visitors. In the course of his investigations on the mound of Amran ibn Ali, he discovered some clay bowls with Aramaic inscriptions that he considered to be the work of the Jews taken to Babylon. Because of the paucity of the results, Layard soon decided to end his investigations. A collection of antiquities, mostly seals and inscriptions, found its way into the British Museum through Layard. [*See the biography of Layard.*]

A larger expedition under the leadership of the Frenchman Fulgence Fresnel, together with the Assyriologist Jules Oppert, arrived in Babylon in 1852. They found numerous inscriptions, especially on bricks. They were interested in the glazed and relief-bearing fragments of bricks in Kasr and tried to explain them. Fresnel and Oppert believed that the remains of the "hanging gardens" were hidden in the hill of Amran ibn Ali and that the mound of Babel was the grave of Belus (Bel, "Lord," was a title used for the highest god, Marduk). Oppert also busied himself with the mound of Homera, without, however, recognizing its significance (i.e., that the remains of ancient buildings might be from the Tower of Babel). His excavations of the ancient pier on the Euphrates, which he identified through the inscriptions of Nabonidus, were important. In 1853, using trigonometric measurements and observations, Oppert published the first relatively detailed map of Babylon. For the most part, the small objects the expedition discovered were lost while being transported on the Euphrates.

Following a brief excavation in 1854 by the diplomat and orientalist Henry Creswick Rawlinson and his assistant George Smith, the British Museum commissioned Hormuzd Rassam, a sometime British vice-consul from Mosul, who served as an assistant to Layard, to reopen excavations in Babylon in 1876. The agreement included the transfer of the finds to England. Rassam arranged with the Arabs who were digging for bricks and antiquities in the ruins that he would pay them for all significant finds. In the course of his excavations, numerous clay tablets came to light, including business contracts of the house of Egibi and a clay cylinder concerning the capture of Babylon by Cyrus of Persia. Rassam also investigated the portion of Babylon lying on the left bank of the Euphrates where he found a series of cuneiform tablets. The plundering of the ruins of Babylon continued to increase; in addition to the baked bricks, the locals also took stone monuments, which they burned for gypsum. In 1887 the British Museum sent Wallis Budge, who later was keeper of Egyptian and Western Asiatic Antiquities at the museum, to Babylon to seek an end to this practice. He reached an agreement with some of the native dealers, according to which all the clay tablets, seals, and significant small objects found were to be sold to the British Museum (the extraction of bricks would be tolerated). The destruction of the ruins did not end, however, and many important buildings were so thoroughly destroyed it was later impossible to identify their ground plans.

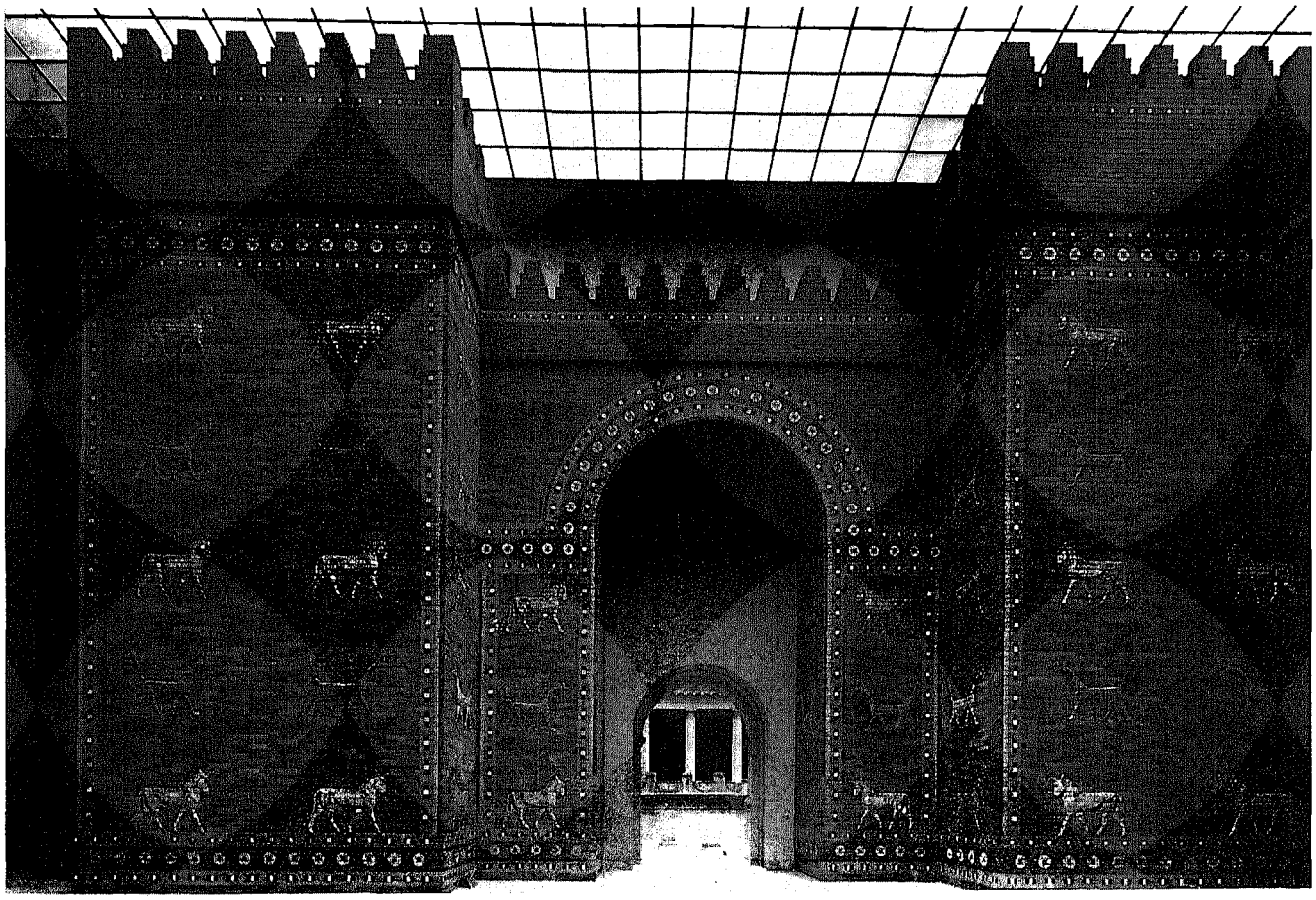
Excavations. In 1897–1898 a group of German researchers was sent to Mesopotamia to find a ruined site suitable for excavation. One of the members of the group was Robert Koldewey, to whom the direction of the excavation in Babylon was finally entrusted. From 1899 to 1914, the German excavations were carried out year-round with a small team, among whose members were Walter Andrae, Friedrich Wetzel, Oscar Reuther, and Georg Buddensieg. Some of the excavations goals were to uncover the city plan, to investigate Babylonian architecture, and to identify definitively the Babylonian tower (the Tower of Babel). [*See the biographies of Koldewey and Andrae.*]

One primary result of the excavation was the exposure of the layers of the Neo-Babylonian period, which document the time of Nebuchadrezzar and his dynasty. Because of the high level of the groundwater, the deeper layers of the Old Babylonian period could be reached only rarely. The periods of Achaemenid, Seleucid, and Parthian settlement were verified partially through excavation and by means of numerous surface finds. The plan in the Neo-Babylonian period reveals how strongly fortified the city was, with an outer ring of walls altogether 18 km (11 mi.) long. The fortifications consisted of an inner and an outer circuit of walls made

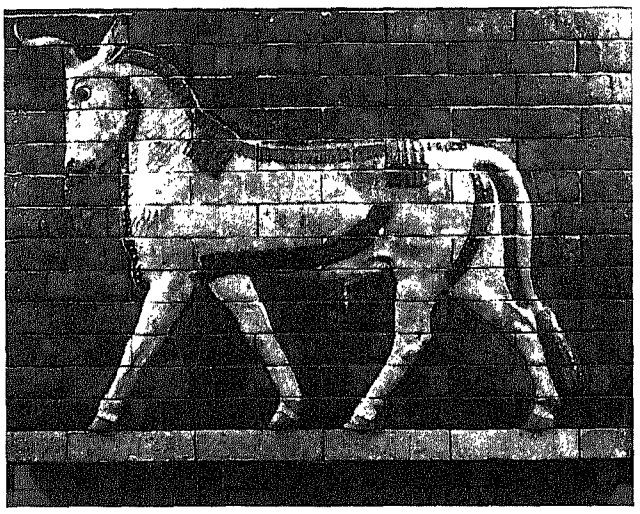
of baked bricks and supplemented by a strong embankment and a moat. Herodotus had mentioned the unusual thickness of the walls and their circumference, which he gave as 120 stadia long (about 95 km or 59 mi.)—this contributed to many later errors in interpretation. The outer wall includes Nebuchadrezzar's summer palace, which covers the northern part of the mound of Babel. The inner circuit of walls forms a wide rectangle whose perimeter is 8,150 m; the Euphrates divides it into unequal halves.

It has been shown from inscriptions that the construction of the city walls dates back at least to the Neo-Assyrian period. Eight of its gates were located and partially excavated. Most of them are known by name on the basis of descriptions of the city transmitted in cuneiform. The network of streets was laid out in accordance with the wind directions (northeast, northwest, southeast, southwest). The most famous of the city's gates, because of its relief decoration in brick, is the Ishtar Gate, which has been partially reconstructed in the Vorderasiatisches Museum in Berlin (see figure 1). In this powerful double gate, reinforced with bastions, a number of construction phases could be demonstrated, all of which probably belong to the Neo-Babylonian period. They are distinguished by the techniques used to decorate the walls. The first phase is decorated with figures of animals molded in relief in unglazed brick; the second has figures formed by glazed brick that are not in relief. The third construction phase, raised 15 m above the surrounding area on an embankment, is decorated with glazed figures of snakelike dragons (*mušḫuššu*) and bulls molded in relief (see figure 2).

A processional avenue about 250 m long and 20–24 m wide, coming from the north, led to the Ishtar Gate. The street was surrounded on both sides by high walls that delimited an outlying fortress on the east and the so-called citadel of Nebuchadrezzar on the west. The lower portion of the wall is decorated with glazed brick molded in relief that depicts lions surrounded by rosettes. According to an inscription, the citadel situated north of the city wall was constructed during the reign of Nebuchadrezzar. The citadel complex and the processional avenue were both set on a 15-meter embankment. A series of older sculptures that did not originate in Babylon was found in the citadel, along



BABYLON. Figure 1. *Reconstruction of the Ishtar Gate of Nebuchadrezzar II.* Pergamon Museum, Berlin. (Foto Marburg/Art Resource, NY)



BABYLON. Figure 2. *Detail of an enameled tile and ceramic brick bull from the Ishtar gate.* Period of Nebuchadrezzar II, 605-562 BCE. (Erich Lessing/Art Resource, NY)

with other artifacts, leading to the suggestion (now considered doubtful) that the rooms were a museum. The southern citadel lying inside the fortification walls dates back in part to the time of the Assyrian domination. It consisted of five large courtyard complexes that had served official and residential purposes. The throne room in the third courtyard had a 56-meter-long frontage decorated with stylized trees of life, rosettes, and a lion frieze of glazed bricks.

The center of Babylon was formed by the temple precinct Esagila, which contained the cult rooms of the chief god Marduk, of his wife, of Ea (god of water, wisdom) and Nabu (god of the scribal craft), and of other gods and goddesses. This precinct, which lies under the mound of Amran ibn Ali, was covered by more than 15 m of sand and rubble, so that only portions of it could be opened through tunneling. The temple precinct Etemenanki, lying to the north and surrounded by a temenos, houses the remains of the Babylonian tower, which had been sought for centuries. It was not until 1913 that the excavators, thanks to the low groundwater level at the time, succeeded in finding the building's mud-brick core, which was preserved to a height of only a few meters. The entire 15-meter-thick baked-brick facing had been looted. The tower itself, as the literary sources testify, had been torn down in the time of Alexander the Great with the intention of rebuilding it. It could be shown that the tower had covered a surface area of 91.48 × 91.66 m; it had consisted of six steps, each one set back from the one below it; on the top, as the seventh step, stood a high temple to the cult of Marduk. A monumental open staircase (51.61 m high and 9.35 m wide) and two side stairways led up the south side. The processional avenue coming from the Ishtar Gate, which was specially decorated for the ceremonial parade during the new year's celebration, ran to the southern corner of Etemenanki and then curved in the direction of the Euphrates, where a bridge (123 m long) crossed the river. Seven of its walled piers were documented. A few temples, including the Ninmaḫ Temple and the Ishtar Temple, were located in the city area and excavated. In the course of the reconstruction of the ruins of Babylon by the Iraqi Antiquities Administration, the temple of Nabu sa hare, which borders on the Etemenanki precinct and contained a large library, was uncovered in 1978.

Architectural History. A description of the city of Babylon was compiled toward the end of the twelfth century BCE. Transmitted on numerous clay tablets it gives the names of ten city districts, eight gates, and at least fifty-three temples, as well as of numerous shrines and other buildings. Only a small number of these could be located and excavated. The history of the earlier settlements at Babylon is largely obscure and can almost only be reconstructed from literary sources. Sargon of Akkad is said to have destroyed Babylon in about 2340 BCE; two of its temples are known from the time of Sharkalisharri (c. 2270 BCE). Šulgi of Ur (2094–2047 BCE) carried off booty from Esagila during the course of a conquest of Babylon, which is so far the earliest mention of this temple.

The rise of Babylon, which also brought great architectural changes, began with the Amorite dynasty at the beginning of the second millennium BCE. Excavations in the ruins of the Merkes (inner city) uncovered several residential buildings, from which Old Babylonian documents were recovered. The year names of the kings of Babylon give evidence of the existence of city walls, gates, a cloister district, and numerous temples, among them Esagila, as well as temples for Ishtar, Adad, Shamash, Nanna, Enlil, Marduk, and other gods and goddesses. The center of Old Babylonian Babylon was surrounded by walls and was concentrated in the inner city; additional districts, among them the so-called eastern new city, were annexed.

Very little is known about the appearance of the city of Babylon during the time of the Kassite domination. Archaeological investigations were concentrated on some private houses and graves. The description in the texts of Tintir gives the impression that the general layout of the city seems to have been similar to that of later periods. The statue of Marduk that stood in the temple of Esagila was removed from Babylon as war booty and recaptured several times, first going to Ḫana in Syria, then to Aššur, and later to Susa. Opinions vary as to whether there was already a temple tower (or ziggurat) in the Old Babylonian period. Its earliest mention in a historical inscription, that of Sennacherib, who conquered Babylon in 689 BCE, says that he destroyed Esagila and the temple tower. The reconstruction of the holy structures followed under Esarhaddon (680–669 BCE) and Ashurbanipal (668–626 BCE). Presumably, the mud-brick core of the ziggurat dates from this period. Nabopolassar

(625–605 BCE) and Nebuchadrezzar (605–562 BCE) completed the work.

After the conquest of Babylon by the Persian king Cyrus II in 539 BCE, the city was elevated to a royal residence; the royal fortresses were rebuilt as citadels, and under Artaxerxes II (404–359 BCE) an apadanalike pillared building with colorful decorative brickwork was constructed there in addition to a palace for the crown prince. Even the summer palace continued to be used up until the time of Alexander the Great. After a number of revolts, the city walls were razed and various buildings destroyed. In scientific research it was assumed over the years that Xerxes (485–465 BCE) had torn down the main staircase of the tower and destroyed the statue of Marduk; probably the Euphrates also changed its course at that time and flowed through the residential section of the city in a large curve. These assumptions were based on the descriptions of Herodotus. Recently, however, scholars have published many arguments against this thesis and it is doubtful that Herodotus really did visit Babylon and described his own impressions. Herodotus had written about the hanging gardens, which Robert Koldewey located on the northeast corner of the great southern palace (this identification also seems doubtful; today scholars propose that the gardens were located not in Babylon but in Nineveh). As noted above, Herodotus also gave an exaggerated depiction of the length and breadth of the city walls, which are also doubtful.

In 331, Alexander the Great entered Babylon as conqueror and wanted to make it the capital of his world empire. He provided for the care of the traditional holy sites and planned to rebuild the dilapidated tower. The entire upper part of the construction was pulled down and the rubble transported to the northeast of Etemenanki, where construction was begun on a Greek theater made from decorated bricks; this construction was continued in the Seleucid period. The holy area, Esagila, was cared for as the stronghold of the tradition; the summer palace and the citadel continued to be inhabited. To judge from the small objects found, parts of the city remained thickly settled and kept their Near Eastern character.

The conquest by Mithridates I (171–138 BCE) was the start of the three-hundred-year Parthian domination of Babylon, during which the city gradually declined. Nevertheless, the Greek theater was remodeled, Nebuchadrezzar's summer palace was transformed into a fortress complex, and residential houses were built on the citadel. With the founding of Seleucia, Babylon lost some of its importance; buildings in the residential sector were simple and poor. During the visits of the Roman emperors Trajan (115 CE) and Septimius Severus (199 CE), Babylon seems to have been deserted. During the time of the Sasanian domination, Babylon is said to have still been a residence and to have had a city wall, something yet to be proven. From written records from the ninth and tenth centuries it is known that Babylon was a provincial capital and that the administrative district bore the name *Babel.*

Finds. Significant large sculptures from Babylon are attested only in fragments. In addition to monuments from Mari (statues of princes), from Ḫalab/Aleppo (weather god stela), and Suhi (reliefs), which came to light in the so-called museum in the citadel, is the monumental statue of a lion standing over a man (rediscovered by de Beauchamp in 1784; see above), whose date and origin are debated. Valuable small finds came from graves from all settlement periods. Ceramics and pottery make up the largest body of finds, and these serve primarily to illustrate daily life. In addition to building inscriptions on bricks and cylinders, thousands of commercial and legal inscriptions have been found, as well as all sorts of historical, cultural, and astronomical inscriptions that date all the way into Babylon's late period (early second millennium BCE to third/fourth century CE). Much about Babylon can be gleamed from cuneiform inscriptions from other regions, as well as from texts written in Aramaic, Persian, Greek, Hebrew, and Latin. Babylon was more than a city or a state; it was a cultural center of the ancient Near East, a religious center, and a scientific center whose influence reached Europe.

[*See also* Babylonians; *and* Mesopotamia, *article on* Ancient Mesopotamia.]

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Translated from German by Susan I. Schiedel

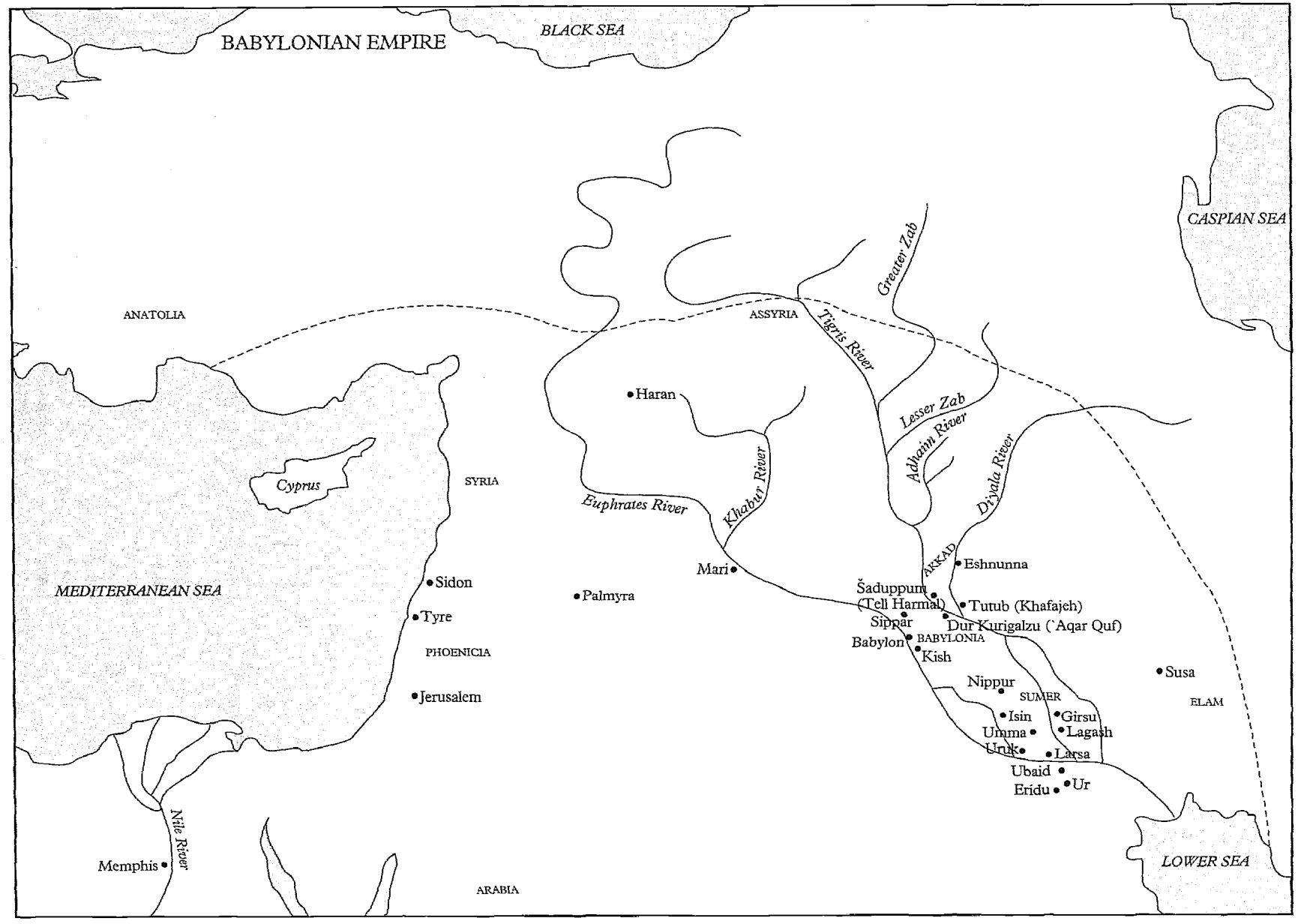
BABYLONIANS. The inhabitants of ancient southern Mesopotamia—that is, of the region extending approximately from modern-day Baghdad in Iraq, to the shore of the Persian Gulf—are designated Babylonians. The name is derived from the place name transmitted in cuneiform script as Babili (already misinterpreted in the late third millennium as "gate of God"); the Greek form of the name is Babylon. From the early second millennium BCE until into the Hellenistic period, this city southeast of modern Baghdad was a royal residence and one of the most important urban centers in Mesopotamia.

Origin and Chronology. The region of Babylonia belongs to the oldest, highly civilized areas in the world. Although Babylonia is part of the Old World desert belt, an urban culture based on irrigation systems constructed there had already developed in the fourth millennium. Beginning in the early third millennium, there is archaeological as well as written evidence for the existence of city-states in the area, which were developed by a population that spoke Sumerian (i.e., not Semitic; Sumer is the name for the southern portion of Babylonia). Semitic-speaking groups from middle Mesopotamia (Akkadians, after the source-language name for northern Babylonia) were increasingly added to this population. The origin of the Sumerians is unknown. There is proof of Semitic-speaking groups as early as the so-called Early Dynastic period (c. 2800–2400 BCE); toward the end of this period they attained greater significance because of an increased rate of immigration from the peripheral areas of the Syrian desert steppe (possibly as the result of the onset of a dry period). At the time of Sargon (c. 2340–2284 BCE) the Akkadians became the political bearers of the earliest Mesopotamian territorial state (c. 2340–2100 BCE), which was simultaneously striving to gain control of the trade routes leading to the Mediterranean and to Anatolia. Following a period of domination by the mountain-dwelling Guti over parts of Babylonia, the (Neo-) Sumerian state of the third dynasty of Ur (2111–2003 BCE) was able to exercise control over almost all of Mesopotamia.

During the third dynasty of Ur, there was a renewed influx of Semitic-speaking groups from the northwest; they were called Amorites (Sumerian, *mar-tu,* "people of the west," from a Babylonian perspective). They achieved a ruling position in many places in Babylonia and founded dynasties that played a role in the Old Babylonian period (during the first half of the second millennium BCE), for example in Isin and Larsa, Babylon, Eshnunna, and Mari. [*See* Amorites.] After struggles for hegemony by Isin and Larsa, Babylon under Hammurabi (1792–1750 BCE, the "middle" chronology) was able to conquer all of Babylonia as well as parts of northern Mesopotamia in about 1760 BCE. Nevertheless, under Hammurabi's successors Babylon once again declined in importance; in about 1594 BCE the city was conquered by the Hittites, who were advancing from Asia Minor. After their departure Babylon became the residence of a dynasty of non-Semitic immigrants, the Kassites (sixteenth–twelfth centuries BCE) who, however, both linguistically and culturally rapidly attached themselves to the Babylonian tradition. [*See* Kassites.] In the thirteenth and twelfth centuries BCE, there were struggles between Babylon and the expanding Middle Assyrian kingdom, as well as renewed conflicts with Elam (the state bordering Babylonia on the southeast), during the course of which Babylon temporarily came under Assyrian rule.

In the late second millennium BCE, the regional political systems collapsed. In conjunction with this, there was an increased immigration of new Semitic-speaking population groups, the Arameans, from the northwest. They intermingled with the existing population of Babylonia, who increasingly used Aramaic as their everyday language, while Babylonian remained the language of official cuneiform inscriptions and the learned tradition. Beginning in the ninth century BCE, Babylonia was repeatedly the object of Assyrian military campaigns; after the middle of the eighth century BCE it became a part of the Neo-Assyrian Empire under its own kings; nevertheless, it repeatedly rebelled against its Assyrian overlords.

Babylon became the dominant power in the Near East under Nebuchadrezzar II (604–562 BCE), who was of Ara-


BABYLONIAN EMPIRE
BLACK SEA
CASPIAN SEA
ANATOLIA
ASSYRIA
Greater Zab
Tigris River
Lesser Zab
Adhaim River
Diyala River
Haran
Cyprus
SYRIA
Euphrates River
Khabur River
Mari
ARKAD
Eshnunna
MEDITERRANEAN SEA
Sidon
Palmyra
Šaduppum
(Tell Harmal)
Tutub (Khafajeh)
Tyre
Sippar
Dur Kurigalzu (ʿAqar Quf)
Babylon
BABYLONIA
PHOENICIA
Kish
Susa
Nippur
SUMER
ELAM
Jerusalem
Isin
Girsu
Umma
Lagash
Uruk
Larsa
Ubaid
Ur
Eridu
Nile River
Memphis
LOWER SEA
ARABIA

mean (Chaldean) origin. By conquering all of Mesopotamia, Syria, and Palestine, he became the founder of the Neo-Babylonian Empire; during his reign there was a large-scale expansion of his residence city, Babylon. In 539 BCE the troops of the Persian Achaemenid king Cyrus II conquered the city and all of Babylonia. Babylon remained a part of the Persian Empire until Alexander the Great conquered Babylonia in 331. In 323, Alexander died in Babylon, which he had wanted to make one of the capital cities of his empire. Even during the Seleucid and Parthian periods (third century BCE–second century CE) Babylonia was still able to preserve its own traditions, including the use of Babylonian and cuneiform writing (especially in mathematics and astronomy). Through the Greeks, Romans, and Byzantines, as well as through Europe's encounters with the Arab-Islamic world, the substance of Babylonian tradition even made its way into European culture.

Language and Writing. The history and culture of Babylonia were transmitted in a variety of languages and methods of writing. Sumerian and Semitic Akkadian (Babylonian-Assyrian) are the essential source languages. Whereas Sumerian began to die out as a colloquial language at the beginning of the second millennium, Akkadian continued to undergo further development through a series of stages: Old Babylonian (first half of the second millennium); Middle Babylonian (approximately the second half of the second millennium); Younger Babylonian (the literary language of the first half of the first millennium); New Babylonian (the language of the documents and letters in the first millennium up to about 625 BCE); and Late Babylonian (the language of learned texts during the Neo-Babylonian, Persian, Seleucid, and Arsacid/Parthian periods). Nevertheless, already in the early first millennium BCE, even in Babylonia, (West) Semitic Aramean began more and more to establish itself as the colloquial language; in the western Persian Empire it was used even for administrative purposes (Imperial Aramaic).

Both Sumerian and Akkadian used cuneiform writing (syllabic signs, word signs, and determiners). The three-dimensional cuneiform writing was pressed into wet clay with a stylus or chiseled into stone and metal. Aramaic, in contrast, used a linear system with an "alphabetic") script that had developed in Syria-Palestine. It was, thus, suitable for writing on other materials as well, such as skins/parchment and papyrus. Information, about Babylonia also comes from the Hittite tradition in Asia Minor, from Egyptian inscriptions, from the books of Hebrew Bible, and from ancient authors writing in Greek or Latin. The majority of the cuneiform texts from Babylonia were transmitted in archives or libraries as well as on monuments and archaeological finds. Aramaic texts were only preserved when they were written on clay, stone, or other materials durable enough to withstand the climate of Mesopotamia. [*See* Sumerian; Akkadian; Aramaic Language and Literature; Cuneiform.]

Excavations. The corpus of archaeological information about Babylonia and Babylonians essentially comes from the excavations that have been carried out in southern Mesopotamia since the middle of the nineteenth century. Especially in Babylon, Sippar, Isin, Larsa, Umma, Ur, Uruk, Nippur, and Girsu/Lagash, excavation has led to the discovery of textual materials, which have been supplemented by epigraphic finds from outside of Babylonia—from Mari on the Middle Euphrates and from Assyrian residences. Since the beginning of fieldwork, the methods of excavation—which originally were primarily concerned with obtaining interesting objects and often paid almost no attention to archaeological context—have been considerably refined. This is true not only for the exact scientific documentation but also with regard to the inclusion of research pertaining to the ancient environment, using methods from the natural sciences.

Economic Foundations. Archaeological discoveries and the testimony of the texts provide an insight not only into historical tradition, literature, and religion, but also into the means of subsistence. In contrast to the Assyrian north, Babylonia is an alluvial plain, in which the small amount of rainfall (under 250–300 mm per year) makes agriculture possible only through the use of river water. In order to enlarge the amount of usable area, canals were dug leading away from the course of the river. Even kings considered extending the land through canals to be one of their most important functions. The lack of dependence on rainfall and the fertility of the soil favored large, regular harvests; nevertheless, from an early date the increasing salinity of the soil as a result of an inadequate flushing out of the water-born minerals and the high level of groundwater proved to be a problem. Declining harvests and the abandonment of crops requiring high levels of care, such as wheat, in favor of the more resistant barley were often the result. The acquisition of new farmland was therefore also an attempt at solving this problem, which often led to military conflict.

In addition to hoes, cattle-drawn plows were also used for tilling the soil, leading to the development of breaking plows and plows with seed guides (the latter enabled a sparing and regular application of the seed). The date palm was added to grains (wheat, emmer, and barley) and vegetables (especially onions and leeks) and became an important crop; southern Iraq is still one of the largest date-growing regions in the world. Vegetables and other useful plants were often grown in the area underneath the date trees. Fertilization of the soil could occur in conjunction with the grazing of the harvested areas by herds of livestock belonging to the landowners or to seminomadic groups.

In the raising of livestock, sheep and cattle played the most important role. The sheep were primarily kept to provide wool. The use of camels as working animals is first attested in the late second millennium BCE; at that time they played

an especially important role in transport because they can carry quite large loads and cover great distances without water. Camel breeding was primarily carried out by seminomadic groups. In the final analysis, it was the camel that provided these groups with considerable independence from the settled population and made them desert dwellers (bedouin). Beginning in the middle of the second millennium, horses were used in Babylonia for drawing war chariots; it was only later that they were ridden. Mostly, however, they were raised in the cooler mountain regions of the Near East.

In the third millennium, the Babylonians were already specializing in crafts, which can be demonstrated from the textual evidence; they were working indigenous materials (clay, reeds, leather) and, increasingly, imported material. Special mention should be made of their textile and leather production, pottery, metalworking, and stoneworking. Because Babylonia was poor in raw materials, metals and stone—including gemstones—had to be brought into the country either through trade or as war booty. Wood was also imported because the indigenous species (especially palms and tamarisk) did not provide suitable construction material for large buildings, such as palaces and temples.

The Babylonians exchanged products locally and regionally, without special markets, but an exchange system extending beyond the regional area was already in place in the prestate period (before the third millennium). Once the Babylonians were organized in a city-state, or territorial state, this exchange became a wide-reaching foreign trade documented in temple, palace, and private archives. Although Babylonia's trade was originally oriented toward the east—toward the mountain countries that were rich in raw materials or toward the countries on the Persian Gulf—in the early second millennium BCE there was a demonstrable shift of emphasis toward the Mediterranean. New partners had emerged there in the palace economies of Crete and through the exploitation of the copper deposits on Cyprus. As early as the fourth millennium, an important trade route from the Euphrates to Syria and Asia Minor included spurs that branched off to the west through the Syrian desert steppe to Syria and the Mediterranean. Beginning in the late second millennium, the use of the camel as a transport animal even made it possible to cross the desert steppe south of Palmyra and to reach the Phoenician coastal cities via a direct route from Babylon. The direction and intensity of this trade contributed significantly to cultural contacts for the Babylonians with the Mediterranean area.

Organization of Society. In the course of the approximately three millennia documented by the textual evidence, Babylonian society went through a considerable change, while preserving certain basic traits. The Early Dynastic period (c. 2800–2400 BCE) shows a city-state structure (a city with settlements on city territory) and a socially stratified population. Remnants of earlier political organizations, such as councils of elders, were subordinated to and made to serve the growing monarchical power. The temples lost their role as the central economic and political institutions to the palace. At the time of the territorial states of Akkad and Ur (c. 2400–2000 BCE), the authority of the ruler succeeded in establishing itself even against the aristocracies of the former city-states that had been incorporated. The deification of the kings, attested from Naram-Sin of Akkad (2259–2223 BCE) until the Old Babylonian period (early second millennium), served firmly to establish monarchical rule—the king joined the local divinities as the god of the country. Royal legislation points to the establishment of newer, state-regulated and controlled norms for community life, but at the same time hints at social tensions. The production of the means of earning a living was organized in the form of institutional (i.e., temple or palace) households, to which the individual "houses" were functionally and hierarchically assigned. The royal domains were at the same time centers for the distribution of goods in the form of rations (barley, oil, and other commodities).

The early Old Babylonian period (early second millennium) was characterized by the individualization of social relationships. From this time on, the palace economies represented themselves primarily as a sum total of smaller households, which worked parcels of land they had received subject to various conditions. In exchange they had to provide services in the form of work or produce. Payments in the form of produce could be excused for persons who paid corresponding sums of money to the palace as advance lump-sum payments. At the same time, the role of leasing land increased in the Old Babylonian period; family possession of land also seems to have expanded during then. The "edicts" (*mīšarū*) published by the Old Babylonian kings (generally at the beginning of their reigns) primarily signified debt relief, as well as the collection of laws into codices (especially the so-called code of Hammurabi). They should certainly also be understood as reactions to the economic and social problems that arose through the threat to the individual family as the foundation of production and the army.

In the Kassite period (c. second half of the second millennium), stone proclamations of gifts of land (*kudurrus*) point to the emergence of a larger private possession of land; nevertheless, this development does not seem to have advanced consistently. At any rate, in the Neo-Babylonian period (6th–5th centuries BCE) private possession of land did not play a dominant role. The temple and the palace controlled the possession of land and all important economic activities; but they left room for private involvement, as is expressed, for example, in the institution of general leasing, in which tenants of large estates (e.g., of temples) farmed out smaller areas to other tenants. Some of the Jews from Jerusalem who had been deported to Babylonia by Nebu-

chadrezzar II integrated themselves into this system at that time.

Art and Culture. The Babylonians' methods of earning a living, recording history, and cultivating imagination found expression in their artistic and literary legacy. The late fourth and early third millennia were among the most creative periods. Many of the artistic means of expression and stylistic devices that emerged then remained basic over the centuries that followed. The most lasting achievement was undoubtedly the development by the Babylonians of a system of writing, which enabled the transmission of entire bodies of knowledge. Their architecture reflects the emergence of large communities with central cult sites, such as have been excavated especially in Ubaid, Uruk, and Tutub (Khafajeh), where strong city walls suggest an increase in hostile attacks. The method of construction was determined by the sun-dried mud brick, which, in the Early Dynastic periods, appeared in the so-called plano-convex variety.

The walls in religious buildings consisted of projections and indentations (Ubaid period, fourth millennium). To stabilize and decorate walls, the Babylonians pressed patterns of colored clay pegs into the plaster on the walls (Uruk period, early third millennium). Their temples developed from small, single-roomed structures to monumental buildings, in which the central cult room was surrounded by symmetrically arranged subsidiary rooms (Uruk period). Beginning in the Early Dynastic period (first quarter of the third millennium), the cult rooms became separate spaces, often situated at the end of a rather large series of rooms; cult practice for the masses took place entirely in the courtyards, however. The Early Dynastic buildings in Kish, Eshnunna, and Eridu that contained reception rooms can be described as palaces.

In the Uruk period a rich artistic tradition developed that is attested by realistically formed small figurines of humans and animals as well as reliefs on stone vessels and other items. In the Early Dynastic period a change in stylistic devices took place. Babylonian artists began to depict human figures in a more strongly stylized way. They provided their cult statuettes of praying figures with a cuneiform dedication; they created dedicatory plaques with scenes of banqueting or supplication; and they carved the earliest historical depictions (of wars, victories, festivals) in relief on stone slabs (the vulture stela of Eanatum, ruler of Lagash). The burials of members of the ruling houses, especially the royal graves from Ur, bear witness to sophisticated craftsmanship in metalworking, which already had a long tradition. Craftsmen fashioned copper, often alloyed with arsenic or tin, as well as gold and silver, into jewelry, vessels, weapons, and other objects by means of a casting process (sometimes the lost-wax method); they frequently combined metals with semiprecious stones, especially lapis lazuli. Large sculptures were partially modeled over a bitumen or wood core and thinly plated with copper, bronze, or gold (Ur, Ubaid). Soldering techniques were known and granulation techniques were developed.

During the Uruk period the Babylonians gradually replaced the stamp seal, which had been used since prehistoric times, with the cylinder seal, whose use spread into numerous regions of the Near East until the Neo-Babylonian period. The cylinder seal made it possible to represent many-figured scenes through a succession of pictures on a "rolling" seal. Sealing with clay allowed rooms and objects to be secured. Later, rolling a seal on a clay tablet became a technique of legal certification of one's personal presence or of one's office. The Babylonians took the design motifs of these seals, which changed throughout different periods of use, primarily from mythic and cultic realms. Archaeologists use them as "type-fossils" to date stratigraphic levels. [*See* Seals.]

Babylonian religious conceptualizations are mirrored in their visual arts and in inscriptions and mythical texts that were later committed to writing. Above all, to the Babylonians the gods incorporated whatever was necessary for the community's continued existence. The Babylonians conceived and depicted them anthropomorphically—as beings acting in human fashion. The epic tradition already told stories of heros who were, at the same time, or even predominantly, human beings (Gilgamesh stories). The contacts of the city-states with each other furthered the development of a pantheon, in which the local gods and goddesses were arranged according to rank and relationship; Enlil, son of the father of the gods; Anum, or god, rose to the top and ruled the universe with the help of "specialized" divinities. The Babylonians served their gods, providing them with food and drink and honored them in religious processions or through prayer; for this they expected a service in return. At the same time, however, they also sought to understand their natural environment and to arrange it in lists according to conceptual groups. The Babylonians observed the heavenly bodies in respect to the calendar. In laying out and measuring their fields for agriculture they used and developed their astronomical and mathematical knowledge.

In Babylonia the late third millennium was marked by the territorial states of Akkad and Ur. While the residence of the ruler of Akkad has not yet been discovered, Ur has provided proof of extensive building activity. The stepped temple (ziggurat) developed from temples on terraces and continued to be built until into the Neo-Babylonian period. The transition to a broad-room cella with an altar and a cult statue in a niche was an innovation. In contrast to the temple, the palaces appeared to be independent architectural complexes. Essentially they represent enlarged residential houses inasmuch as they, like the courtyard house, were oriented toward the inside with closed, windowless exteriors. Sun-dried clay remained the predominant building material, but formed into rectangular bricks. Figurines (terra cottas) of humans and animals were less and less frequently formed

by hand, but were pressed in molds. Large-scale sculpture concentrated on representations of rulers; these show excellent knowledge of anatomy and a good mastery of stone-working techniques in such hard stone as diorite. Battle scenes predominate in Babylonian relief carvings (cf. the Naram-Sin stela) in which the heroic ruler is shown subjugating defeated peoples. In the Ur III period (late third millennium BCE), scenes of supplication once more came to the fore in increased numbers—a development also found in the glyptic arts. Frequently, an "initiation scene" is depicted, in which the worshiper is portrayed holding the hand of an intermediary protector god before the throne of the chief god. In literature, in addition to hymns to the gods, hymns to the kings appear as a new genre. From the time of Naram-Sin of Akkad until the Old Babylonian period, the deification of some rulers is also known. They appeared as the gods of the state in contrast to the local gods of the subjugated former city-states. Eventually, through the process of integration and merging, the number of gods in the Babylonian pantheon was gradually reduced.

The Old Babylonian period (first half of the second millennium) is still relatively poor in architectural remains. In Babylon itself, the high level of the groundwater has prevented the excavation of the architecture of Hammurabi's dynasty. Contemporary Mari, on the Middle Euphrates, may be the best-researched example for that period. Remains of palace buildings have been found in Old Babylonian Larsa, Uruk, and possibly also in Eshnunna. Temple buildings are demonstrated in many places, and at Šaduppum (Tell Harmal), near Baghdad, an Old Babylonian city, and at Ur, residential quarters are recognizable.

Three-dimensional sculpture and reliefs are still scantily represented; the best known is the stela of Hammurabi with the laws, which shows the king in a gesture of supplication before the sun god Shamash, a monument actually found in the Elamite city of Susa. The terra-cotta reliefs typical of the Old Babylonian period occur in great numbers, however, offering an impression of the treasure trove of motifs from this period and reflecting the literary transmissions. In the glyptic arts, it is interesting that initiation scenes more often show the worshiper directly before the enthroned godhead, suggesting perhaps a greater sense of self-worth on the part of the human being.

This concept may also be reflected in the literature of this period, above all in the Gilgamesh epic, in which the search for eternal youth is a leitmotif. That human beings, in contrast to the gods, grow old and die contributed to existential doubts and to the search for explanations in other compositions as well, leading to a fully developed omen literature as well as to doubts about the righteousness of the world order established by the gods. The city god of Babylon, Marduk, began to play an important role among the divinities of the Babylonian pantheon during the Old Babylonian period.

With respect to its architecture, the Kassite period in Babylonia (c. second half of the second millennium BCE) is best known through the excavations at Dur Kurigalzu (modern 'Aqar Quf), whose ziggurat is still an impressive ruin. From Kassite Uruk comes the temple facade of bricks that depicts the water divinities in high relief. In sculpture the so-called *kudurrus* are noteworthy; in addition to the text of a land transfer, these stone proclamations reproduce the symbols of the divine witnesses and also continue to be manufactured in the following period. In the literary tradition, the Kassite period primarily preserved and refined what had been handed down; the Gilgamesh stories, for example, were formatted into a coherent epic. The city god of Babylon, Marduk, rose to the top of the pantheon.

While there was already a recognizable separation between the literary language and the popular language of the Babylonians, in the Kassite period this development continued in the period of Assyrian dominance, as Aramaic probably more and more became the Babylonians' colloquial language. In their official inscriptions and learned tradition, however, the Babylonians continued to use the Babylonian language and cuneiform writing, the tradition, essentially, by which they are known today. It is not until the Neo-Babylonian period (604–539 BCE) that the architecture and art of the Babylonians are again better attested. At that time Nebuchadrezzar II had the city of Babylon rebuilt as his splendid residence city. In the process, large colored glazed bricks were used to cover the walls. In his official inscriptions, Nebuchadrezzar consciously affiliated himself with the Old Babylonian period, when a fairly sizable empire had similarly been ruled from Babylon.

[*See also* Akkade; 'Aqar Quf; Babylon; Eridu; Eshnunna; Girsu and Lagash; Isin; Kassites; Khafajeh; Kish; Larsa; Mari; Nippur; Sumerians; Ubaid; Ur; Uruk-Warka; *and* Ziggurat. *In addition, see* Mesopotamia, *article on* Ancient Mesopotamia.]

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Translated from German by Susan I. Schiedel

BADÈ, WILLIAM FREDERIC (1871–1936), professor of Old Testament literature and Semitic languages and excavator of the site of Tell en-Naṣbeh northwest of Jerusalem (1926, 1927, 1929, 1932, and 1935). Badè taught at the Pacific School of Religion in Berkeley, California, from 1902 until his death. Although not trained as an archaeologist, Badè carried out his excavation at Tell en-Naṣbeh based on the highest standards of his day. He cleared about two thirds of the site, intending to test its identification with biblical Mizpah of Benjamin, which is now generally accepted. The method he employed was the so-called Reisner-Fisher method, dividing the tell into 10-meter squares and excavating in strips. Following the excavation, the strips were filled in. Badè kept meticulous records, including plans, photographs, and descriptions of about twenty-three-thousand artifacts, all of them drawn to scale. Badè's fieldwork ranks above the contemporary excavations at Beth-Shemesh and Beth-Shean, and below those at Megiddo and Tell Beit Mirsim.

Badè died after the final season at Tell en-Naṣbeh so that the excavation's final report was prepared by his colleague, Chester C. McCown, and chief recorder, Joseph C. Wampler (1947). Badè's publication of the site is generally limited to preliminary reports of the early campaigns and short articles on specific finds.

Although many excavators before him had written brief summaries of their methodologies as prefaces or appendices to their reports, Badè's *A Manual of Excavation in the Near East* was the first volume written as an independent account of the work of an excavation and the development of its methodology. Today, the Badè Institute of Biblical Archaeology in Berkeley houses a museum whose displays of Tell en-Naṣbeh materials illuminate daily life in the ancient Israel.

[*See also* Naṣbeh, Tell en-.]

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JEFFREY R. ZORN

BADIAT ASH-SHAM, the steppe lands of southeastern Syria, eastern Jordan, and western Iraq. Rainfall in this region is insufficient for agriculture; as a result, the lands were, and still are, primarily used by nomadic herders, visited by hunters, and crossed by traders.

The region is divided into two distinct environmental zones, the *harra*, a rough, rock-strewn basaltic region, and the *hamad*, open, gravel-covered limestone plains. Water is scarce but there are three major oases, a number of wells, and also areas where water is held in pools for some months after the winter rains. The main oases are at al-Kowm in the north, Palmyra in central Syria, and al-Azraq in eastern Jordan.

The Badiat ash-Sham was used sporadically throughout the prehistoric periods. Paleolithic sites have been found around the oases, buried under several meters of later deposition. Kebaran camp sites (c. 15,000–10,000 BCE) are also found near major water sources. In the Natufian period (c. 10,000–9,500 BCE), when settlements in the verdant areas were becoming larger and more permanent, sites with stone huts and heavy grinding tools were established on the edges of the region, in areas where the rainfall was highest.

In the early Neolithic period (c. 8500–6000 BCE), the area was used by hunter-gatherers. Toward the end of that period, the groups developed sophisticated hunting techniques, using stone or brushwood enclosures to trap large herds of game. In the late Neolithic period (c. 6000–5000 BCE) sheep and goat herding were introduced to the region. Sheep and goat were already being kept as domesticated animals in villages of the verdant zone, but this expansion into the steppe marked the beginning of a pastoral nomadic way of life that has always been the economic mainstay of the peoples of the *badia*. [*See* Sheep and Goats; Pastoral Nomadism.] In the Chalcolithic and Early Bronze periods (fourth–third millennia BCE), villages were established on the western margins of the steppe, specifically in the Hauran region. By the beginning of the second millennium BCE, a series of fortified settlements and stations grew up on the more verdant fringes of the *badia*. Although the archaeological record for the early historic periods is still limited, these sites form a background to more extensive evidence from textual sources, particularly the archives of the Royal Palace at Mari on the Middle Euphrates River. In the early second

millennium BCE, the kings of Mari ruled over lands used by seminomadic shepherd-farmers who grazed their flocks of sheep and goats in the *badia* down as far as Palmyra and the steppe to the east of Damascus and also raided Palmyra and north to Qatna. Farther south at this time, the *badia* was used in winter and spring by hunter-herders.

By the first millennium BCE, camel herding was introduced, and the *badia* became not only pastureland for camel breeders, but also the crossroads of several major trade routes between urban centers in Mesopotamia, Syria-Palestine, and Arabia. [*See* Camels.] By the time of the Roman conquest of western Asia, the nomads of the badia were economically sophisticated and many were literate, as is attested by numerous inscriptions and graffiti carved on rocks throughout the region. Relations between the Romans and the Arabs involved both conflict and cooperation. The Romans constructed frontier posts (*limes Arabicus*), such as the fort at al-Azraq, on the margins of the *badia*, to monitor the activities of the Arabs. [*See* Limes Arabicus.] By the sixth century CE, many of the tribes of the *badia* had converted to Christianity; some had entered into a client relationship with the Byzantine government, assuming control over the steppic borderlands with the Persians. These client "kings" (Ghassanids) began an ambitious building program throughout the area. During this time, monasteries and hermits' retreats were founded in the steppe. There may have been one such religious establishment at Qaṣr Burquʿ, deep in the steppe on the eastern edge of the *harra*. The coming of Islam saw further building activity in the *badia*, which produced the multipurpose desert castles, such as Qaṣr al-Ḥayr (East and West), Jebel Seys, the reconstruction at Qaṣr Burquʿ, and Qaṣr ʿAmra, among many others. After the early ʿAbbasid period, archaeological records are restricted to inscriptions, mostly of a religious nature, and sherd scatters at various sites.

[*See also* Azraq; Mari; Palmyra; Qaṣr al-Ḥayr al-Gharbi; Qaṣr al-Ḥayr ash-Sharqi; *and* Qaṣr Burquʿ.]

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ALISON V. G. BETTS

BAGATTI, BELLARMINO (1905–1990), Franciscan priest whose research and discoveries sparked a lively interest in Judaeo-Christianity and provided evidence for the Christian presence in the Holy Land before the era of Constantine. After obtaining a degree in Christian archaeology in Rome, Bagatti taught at the Studium Biblicum Franciscanum in Jerusalem for almost fifty years. He excavated at Commodilla's cemetery in Rome and in different parts of the Holy Land: the Beatitudes Shrine, the Visitation at ʿEin-Kerem, Emmaus/Qubeibeh, Bethlehem, the Mt. of Olives, Nazareth, Mt. Carmel, and Khirbet el-Mukhayyat (Mt. Nebo). His essays on the Churches of the Circumcision and of Gentility and on ancient Christian villages in Galilee, Samaria, Judea (Judah), and the Negev are indispensable for anyone interested in the history of Christianity in the Holy Land. Bagatti's methodological principle, ever present in his research, was an approach using both monuments and documents. This accounts for the numerous references to historical and literary sources in his work.

[*See also* Bethlehem; Emmaus; Franciscan Custody of the Holy Land; Jerusalem; Nazareth; *and* Nebo, Mount.]

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BAGHDAD, the major administrative center of the ʿAbbasid caliphate (750–1258 CE) and the capital of the modern state of Iraq (33°26′18″ N, 44°23′9″ E). The city was founded in 762 CE by the second ʿAbbasid caliph Abu Ja'far al-Mansur. Previously, the ʿAbbasid rulers had established the center of their administration at a number of sites in Iraq, each of which was called al-Hashimiyyah. It would appear that the ʿAbbasids preferred to build their administrative complexes in the vicinity of established urban centers, but they always left a discreet distance between an area reserved for the government and military and the urban population. In this way they hoped to provide for security while availing themselves of nearby goods and services. The pattern seems to have been employed at Baghdad as well.

The caliph's decision to seek a new location at which to build still another administrative center was conditioned by security needs. Al-Mansur's current administrative center was situated in the general vicinity of Kufah, a city known for its residual support of Shiʿi causes. After a lengthy search, in which he followed the course of the Tigris River as far as Mosul, the caliph decided to construct a palace complex at the junction of the Tigris and the Sarat Canal, the latter a constructed waterway that bifurcated from the Euphrates River. This particular location offered certain strategic and geographic advantages. The Sarat, which was deep enough to allow for commercial traffic, enabled the caliph to utilize Iraq's two major river systems: the Tigris and the Euphrates. Moreover, the city was astride the major overland highways and pilgrimage routes. Baghdad thus became the commercial as well as geographic epicenter of the newly established ʿAbbasid regime.

The palace complex itself was surrounded by three bodies of water: the Tigris and the upper and lower arms of the Sarat. The Tigris, a wide, undulating river, could not be forded at the site of the city. Throughout the history of Baghdad, movement across the Tigris was funneled through a series of pontoon bridges that could be cut from their moorings, denying potential enemies access to the caliph's flank. The built waterways similarly served as natural barriers in time of attack.

The first major structure to be erected was the Round City, called Madinat al-Salam. It was built on the site of an old hamlet on the west side of the river that was called Baghdad. That name was subsequently applied to the entire urban area. Before the founding of the ʿAbbasid city, there were a number of villages in the general area. These were divided among four administrative districts on both sides of the Tigris: Qatrabbul, Baduraya, Nahr Buq, and Kalwadha. A small market area known as the Tuesday Market was situated on both sides of the river, to service the inhabitants of the four districts.

The construction of a major edifice on a sparsely settled site required an organized and highly efficient set of work procedures. It was not until a large labor force had been assembled that construction was actually begun, and it took four years to complete all the major elements of the Round City, thus allowing the caliph time to transfer his old capital from near Kufah. With tens of thousands of workers assembling from the outlying districts and from areas even farther removed, the skilled and unskilled laborers, the artisans, and the military who kept order all required housing and access to established markets for services. Al-Mansur's capital therefore assumed a quality of permanence in places beyond the walls, even before the Round City was completed. The urban area around its original walls eventually developed into a sprawling complex of interdependent elements with markets, mosques, and cemeteries. The area below the Sarat Canal, which contained the Tuesday Market, developed into the great commercial suburb called al-Karkh and was inhabited by the general populace. The area north of the Sarat and beyond the Round City was originally set aside for billeting the army.

The Round City was not a conventional city. It contained no economic infrastructure whatsoever, and strict precautions were taken to limit access by the general populace. It was more correctly an enormous palace complex that housed the residence and mosque of the caliph, the residences of his younger children, the agencies of government, and residences for the government bureaucracy that staffed the agencies of government as well as a skeleton force of security personnel. The size of the complex, 450 ha (1,132 acres) was unprecedented. Though only a palace complex, it was, in fact, larger than any urban settlement in the Diyala plains, the area that was the vast hinterland of Baghdad.

The Round City consisted of four architectural elements: outer fortifications, an inner residential area of symmetrically arranged streets, a second inner area of government agencies, and, moving toward the center of the circle, an inner courtyard in which the caliph's palace and the adjoining Friday mosque were situated. The outer fortifications

were two concentric walls separated by an *intervallum*. The inner wall, the city's major protective wall, was flanked by roundels. Access to the residential area and the central court was gained through four elaborate gateways and arcades beginning at the outer wall and extending to the circular court. The four gate complexes were situated along the central axis of the caliph's residence and thus formed the city's northeast, northwest, southeast, and southwest quadrants. They originally contained security forces protecting the approaches to the central court. The arcade system was symbolically, as well as functionally, an extension of the caliph's domain. The purpose of the Round City was to combine the caliph's residence and mosque with the agencies of government, the residences of the regime's public servants, and security forces. Access to the general public was restricted and movement to the central court carefully monitored.

The very size of the palace complex, and the large and exclusive population it contained, made it difficult to service and supply. As a result, various distributive outlets were permitted within the walls, but following a breach of security, the merchants who had been permitted entry into the city were removed. The caliph, aware that his original plan for discrete government and private sectors had been compromised, moved to a more modest residence outside the Round City, along the Tigris. The caliph had previously begun construction of a second palace complex across the river. This construction on the east side of the Tigris was completed by his son and successor, al-Mahdi in 776 CE. The new area, called ar-Rusafah, or Askar al-Mahdi, contained a magnificent palace and Friday mosque that was to serve as the residence of the heir apparent. When al-Mahdi came to power, he took up residence in the palace built expressly for him. Unlike the Round City, which had been partly chosen for its advantageous location near the Tuesday Market, the situating of ar-Rusafah was determined primarily by its strategic location opposite the government sector on the upper west side of the river. This created two problems: a lack of water and a lack of services in the absence of a major nearby market area. Al-Mahdi therefore extended feeder channels from a canal north of the city and established a major market near the Main Bridge. It was called the Thirst Market and was likened to the markets of al-Karkh.

In time, two large private neighborhoods were developed nearby: Bab at-Taq, near the main bridge connecting ar-Rusafah with west Baghdad, and al-Mukharrim, which extended southeast along the river. Subsequent caliphs, al-Hadi (d. 786 CE) and Harun al-Rashid (d. 809 CE), lived in individual palaces rather than large complexes. The reign of al-Rashid is generally considered the zenith of growth in Baghdad. The city then reached its greatest limits in surface area and population.

The caliph's untimely death in 809 brought his son al-Amin to power and plunged the Islamic state into a debilitating civil war. A second son, the heir apparent, al-Ma'mun, dispatched an army against the capital and laid siege to it. The chronicles describe widespread devastation and suffering in graphic terms, but closer examination of these texts reveals that the damage is grossly overestimated: all the major structures that had been damaged were repaired and functioning shortly after the conflict ended.

Despite winning the battle for Baghdad, al-Ma'mun remained at his stronghold in the eastern province of Khurasan. When he finally did settle in the city, it was in a modest palace on the east side of the river. Even then, the caliph, who never felt comfortable in Baghdad, preferred to spend his time in Khurasan. When al-Ma'mun died in 833, he was succeeded by a third brother, Caliph al-Mu'tasim, who also resided in a modest residence. The latter relied heavily on military contingents recruited from among Turkish captives. The unruly behavior of the Turks resulted in several altercations with the local populace, causing al-Mu'tasim to leave the city altogether. The caliph then founded a rival administrative center at Samarra, about 96 km (60 mi.) upstream, along the Tigris. When the Caliph al-Mu'tadid returned to Baghdad in 892, he built the first of a series of new caliphal palaces, collectively called the Dar al-Khilafah.

The new caliphal enceinte, which was situated in the southeast section of the urban area, is described in the sources in great detail. Magnificent residences, exquisitely appointed, and featuring unusual elements are mentioned that include a zoological garden and fantastic mechanical devices. This impressive architectural achievement was to be the last major caliphal construction effort. With the caliphate's declining fortunes, the city began to shrink in size and population. Beginning with the Buyid hegemony in 945, the caliphs were increasingly reduced to the role of figureheads. The Buyids, indeed, went so far as to build a major series of palaces in the northeast section of the city above ar-Rusafah that was intended to rival the splendid residence of their de jure patrons. This construction was more than offset, however, by the breakdown of order and the decline of local neighborhoods. The chronicles describing the events of the tenth and eleventh centuries indicate a pattern of religious conflict, economic dislocation, and widespread decay. When Hülegü, the Mongol, conquered Baghdad in 1258, effectively ending the 'Abbasid regime, he conquered a hollow shell of a once-proud city. Writing about Baghdad, the great geographer Yaqut (d. 1225 CE) describes a series of truncated neighborhoods at some distance from one another, where there had at one time been a continuous line of occupation. This pattern continued until the twentieth century.

The dimensions of the medieval city and the extent of its population are difficult to gauge. The sources give exact figures for the surface area in varying meteorological systems. If these figures are accurate, the city would have covered more than 7,000 ha (17,290 acres). This would make

Baghdad five time larger than tenth-century Constantinople and thirteen times larger than Sasanian Ctesiphon, hitherto the largest city known in the Diyala plains. Although this figure reflects Baghdad's suburban districts as well, there is reason to believe that the greater metropolitan area was heavily occupied. There is no hint of any census in the sources, but various crude efforts were attempted to calculate the population, usually by the use of multipliers (i.e., the number of doctors, attendants at bathhouses, foods consumed, and so forth). The figures obtained from this method are, however, unreliable. In modern Baghdad, the density of occupation in the oldest neighborhoods is about 200 people per hectare, which agrees with the most conservative estimates for the population of medieval Constantinople. The physical and human dimensions of medieval Baghdad must have been vast by any standard of measurement, however, because the greater urban area did not represent a single city but a series of urban settlements collectively known as Baghdad.

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JACOB LASSNER

BAHRAIN. The State of Bahrain is an archipelago of thirty-three islands located in the Arabian Gulf, about 24 km (15 mi.) from the east coast of Saudi Arabia at roughly 26° N, 50°50′ E. Estimates of Bahrain's surface area vary considerably, but the Bahraini Central Statistics Organisation put the figure at 677.90 sq km (4,021 sq.mi.) in 1983. Although the climate of Bahrain is arid and rainfall is insufficient to support dry farming, the islands are underlain by one of the richest aquifer systems in the world, which endowed Bahrain with a permanent water supply throughout its history.

Geomorphological research and the study of sea-level changes in the Arabian Gulf have shown that the main island of Bahrain did not become separated from the Arabian mainland until about 5000–4000 BCE, when the trough between Bahrain, Saudi Arabia, and the Qatar peninsula became inundated at the presumed climax of the worldwide rise in sea level known as the Flandrian transgression. This accounts for the fact that the earliest occupants of Bahrain were the same late prehistoric, stone-tool using population as that found on the mainland in the fifth millennium. Although not abundant, lithic sites have been noted on Bahrain since the first Danish reconnaissance in 1953 directed by P. V. Glob of the University of Aarhus. The industry is characterized by the use of pressure-flaked, tanged, and/or barbed arrowheads. A small encampment excavated at al-Markh has yielded evidence of intensive fishing, as well as 143 sherds of Terminal or Post-Ubaid 4 pottery, datable on stylistic grounds to about 3800 BCE. Interestingly, a later, aceramic phase at the site showed a substantial increase in sheep and goats (about 33 percent of the faunal collection), in hunted mammals such as dugong and hare, and nearly six times as much flint as found in the early deposit.

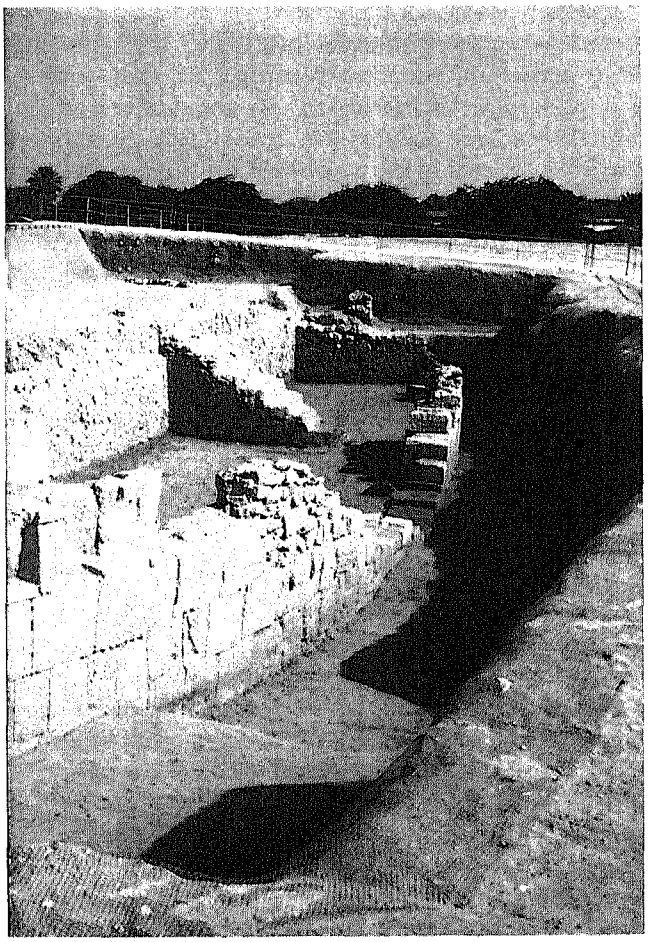
With the exception of a single sherd of painted Jemdet Nasr polychrome pottery from a context outside of the much later Barbar temple (see below), no evidence has been found of later fourth millennium occupation on Bahrain. Indeed, there is a gap in the occupational sequence of Bahrain until the middle of the third millennium, when Early Dynastic and/or Akkadian-related pottery appears in the basal levels of the major settlement Qal'at al-Bahrain. Dating to the same period is a *série ancienne,* or Intercultural Style, soft-stone vessel, of Mesopotamian or Iranian origin, from a grave in the burial complex at Saar (unpublished but illustrated in the Bahraini Ministry of Information's calendar for 1993).

By the late third millennium, pottery, Harappan weights, and glyptic evidence show that Bahrain was becoming integrated into an international network of trade linking Mesopotamia, the Gulf, Iran, Bactria, and the Indus Valley. It has been difficult to discover settlements of this period, but it appears that Qal'at al-Bahrain was the primary population center on Bahrain, while the temples at Barbar and Diraz, to the west, were important cult centers. It was at this time that the practice of burying the dead in above-ground mounds first became common. Some of the earliest graves at Rifa'a and Hamad Town contain imported painted Umm an-Nar pottery and soft-stone from the Oman peninsula.

Bahrain's importance grew during the early second millennium BCE, when it assumed the role of trade entrepôt for which it is so justly famous. Copper from Magan (Oman), and wood and ivory from Meluḫḫa (Indus Valley?), changed hands for silver, textiles, and sesame oil from Mesopotamia. Thousands of burial mounds bear witness to the thriving population inhabiting the island at this time. Several hundred years later, however, Bahrain fell prey to the Kassite state in Babylonia, at which time a governer (Akk., *šakkanakku*) was installed on the island. An important, but only partially excavated building complex at Qal'at al-Bahrain and many graves, particularly at al-Hajjar, are the main archaeological remains from this period. The presence of Mitanni Common Style cylinder seals and a handful of cuneiform tablets prove that Bahrain partook of the same pan-West Asian cultural trends at this time as its northern neighbors. Pottery with post-Kassite and Isin II parallels was discovered by a French team under the direction of Mo-

nique Kervran (CNRS, Paris) in new soundings on Qal'at al-Bahrain between 1979 and 1982, but little is as yet known of the late second millennium BCE on Bahrain.

Indeed, there is no substantial body of data for Bahrain until the seventh or early sixth century BCE. A large residential complex on the Qal'at al-Bahrain, sometimes incorrectly dubbed the palace of Uperi (the king of Dilmun attested in cuneiform sources from the reign of Sargon II), shows a ground plan that recalls Neo-Assyrian and Neo-Babylonian palatial and domestic architecture. Neo-Babylonian and/or early Achaemenid glazed ceramic bathtub coffins, one of which contained an Achaemenid-type bronze wine set, were dug into the building after it went out of use. A hoard of scrap silver found buried in the ruins of the Kassite-era building described above contained a pseudo-Egyptian scaraboid seal ring, probably of Phoenician manufacture; the hoard belongs to a category of silver hoard now well known at Iron Age sites in ancient Palestine, Mesopotamia, and Iran during the period just prior to the introduction of coinage.



BAHRAIN. *Barbar Temple.* View of the ashlar masonry of the temple. (Courtesy D. Potts)

The fate of Bahrain under the Achaemenids is a matter for speculation, and in spite of the large number of burials dating to the Hellenistic period, as well as building levels at Qal'at al-Bahrain from that era, little is known of the political status of the island, known as Tylos (while the smaller Muharraq was called Arados), at the time. There are, however, accounts by writers such as Theophrastus that describe Bahrain's flora and water resources in great detail (*Historia Plantarum* 4.7.7–8, 5.4.7–8; *De Causis Plantarum* 2.5.5). Strabo (*Geog.* 16.3.4) and Pliny (*Nat. Hist.* 6.28.147; 12.21.38–23.40; 16.80.221) cover other topics, such as the origin of the Phoenicians on Bahrain and the location of the islands. In the second century CE, Bahrain was briefly ruled by a satrap of Meredat, the king of Characene, who may have been installed in a fortress located at Qal'at al-Bahrain that was reused during the medieval era.

Bahrain, identified by the name Mešmahik or Mâšmahîg (cf. Samahiğ, the modern name of a town on Muharraq Island), later became a part of the Sasanian Empire and was the seat of a Nestorian Christian bishopric (attested for the first time in 410 CE) that became involved in 676 CE in a revolt against the authority of the head of the Nestorian church (*catholicos*) Išo'yahb III. Bahrain was known in Early Arabic sources as Awal, and it was not until the early eleventh century CE that the celebrated Persian traveler Nasr-i Khusrau called the island Bahrain. Little remains of the Early Islamic era on Bahrain, but the presence of Chinese coins and porcelain in the fortress attest to links with Southeast Asia and lively commerce prior to the coming of the Portuguese in the early sixteenth century.

[*See also* Qal'at al-Bahrain.]

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DANIEL T. POTTS

BALAWAT (Balāwāt), site of the ancient town of Imgur-Enlil ("The god Enlil was favourably inclined"), located about 15 km (9 mi.) northeast of Nimrud (ancient Kalḫu) in northern Iraq (36°09′ N, 43°30′ E). The town walls enclose an area nearly square in plan and approximately 52 ha (130 acres) in size. The main mound, where a palace and a temple dating to the Neo-Assyrian period have been uncovered, measures about 230 × 160 m. The primary occupation at the site dates to the ninth–seventh centuries BCE, although evidence of earlier settlement in the Ubaid, Uruk, and Middle Assyrian periods has been found on the main mound. Because the site was not a provincial capital in the Neo-Assyrian period, its substantial size and impressive remains at that time suggest that it functioned as a station on the road from Nineveh to Kirkuk (ancient Arrapḫa), possibly situated near junctions with two other routes. The site was apparently abandoned in the late seventh century BCE, when the most important Assyrian cities were destroyed. Evidence of later Hellenistic occupation has also been found on the summit of the main mound.

The site was first excavated in 1878 by the Iraqi Hormuzd Rassam, acting on behalf of the British Museum and prompted by the accidental discovery at the site of bronze relief fragments by a local gravedigger. Rassam uncovered parts of a palace and discovered sets of bronze bands that had been used to decorate two of its monumental doors. The bands depict military and hunting scenes and bear inscriptions indicating that one set dates to the reign to Ashurnasirpal II (883–859 BCE) and the other, more impressive set (currently on display in the British Museum) to the time of his son, Shalmaneser III (858–824 BCE). Rassam also excavated part of a temple, where stone foundation inscriptions of Ashurnasirpal were found. The king states that he refounded the town, gave it the name Imgur-Enlil, and built a palace and a temple dedicated to Mamu (the god of dreams). At the time, doubts were cast on Rassam's claim that the bronze bands came from this obscure site, but when the site was reexcavated for the British School of Archaeology in Iraq by M. E. L. Mallowan in 1956–1957, a third set of bronze door bands was found in the doorway leading into the anteroom of the temple of Mamu. This set bears an inscription dating it to the time of Ashurnasirpal II. An archive of forty legal and economic documents dating to the late eighth and the seventh centuries BCE, with the majority coming from 697–671 BCE, was found in one room of the temple. Work on the site was briefly resumed in 1989 by a British Museum team, with a surface survey of the area being carried out by D. J. Tucker.

[*See also* Assyrians; Libraries and Archives; Mesopotamia, *article on* Ancient Mesopotamia; Nineveh; *and the biography of Mallowan.*]

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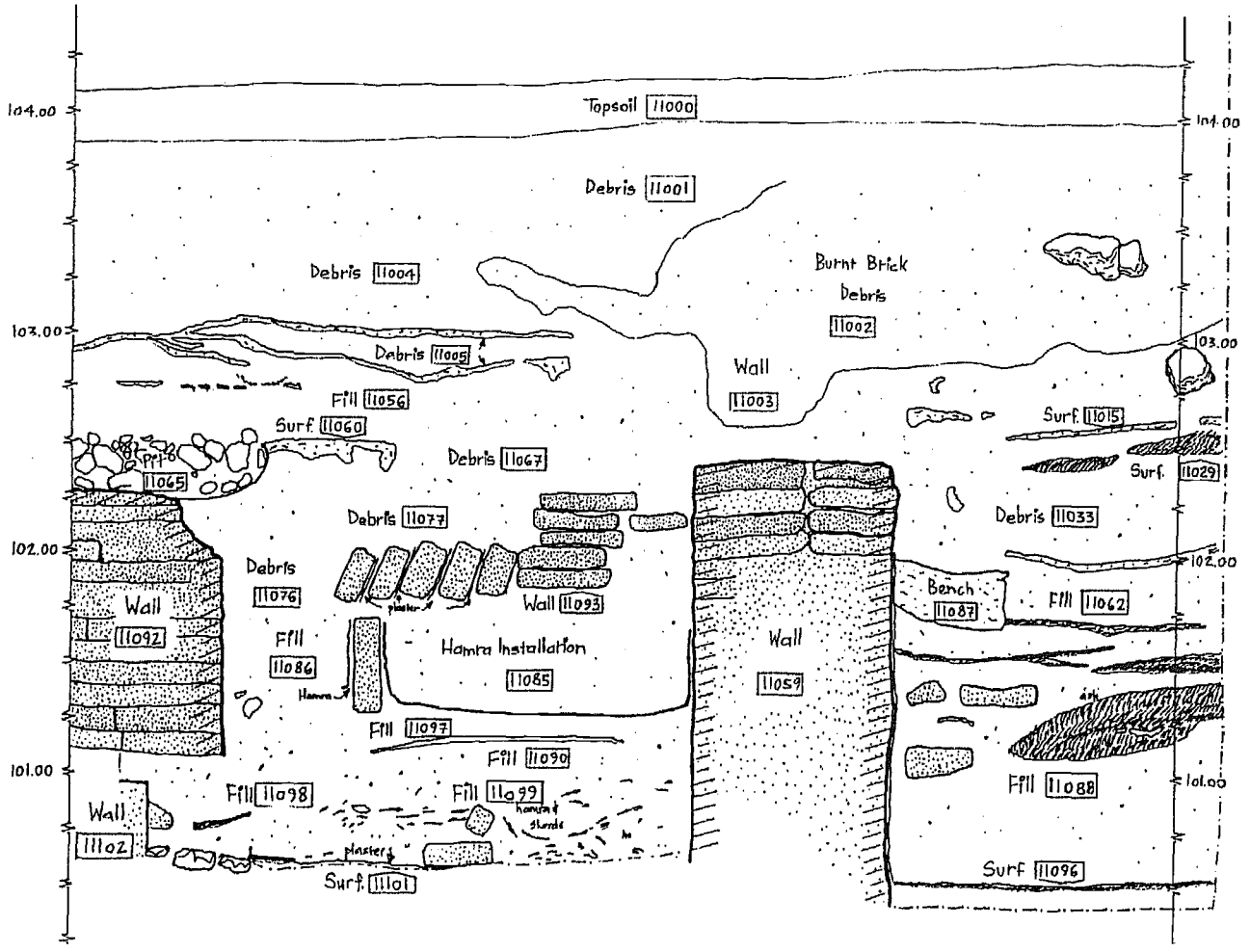
GRANT FRAME

BALK. The vertical earth wall bordering and facing an area from which soil has been removed during an excavation is known as a balk. Its width between two excavated areas is usually one meter; its height increases as excavation proceeds downward. Once excavation has detected, defined, and removed the archaeological soils and their related features from a particular area, the adjacent balk contains and preserves a record of them—of their content, context, and sequence.

Balks initially help to understand and control the area under excavation. In addition, the top of the balk facilitates the movement of workers and the removal of excavated material. Balks are also a significant part of the survey grid, which enables the archaeologist to interconnect the various parts of the site under excavation. Most important is the record of human and geological activity that is preserved in the balk. The face of the balk is thus typically closely examined during the process of excavation.

In order for that record of activity to be observed accurately, interpreted, drawn, and photographed for future analysis, the balk face must be kept horizontally level and vertically plumb (this assures that the record is uniform). Frequent scraping with a trowel, putty knife, or even a broad, flat spade keeps it as smooth and even as possible.

Because lighting direction and angle play on the level and the plumb (or perpendicular) balk face, they are critical to the successful observation and accurate reading of a balk. Once it is drawn to scale and photographed under optimal lighting conditions, the balk face, or often an extended sequence of faces representing the side of a long trench or the cross-section of a building or succession of buildings, enters the archaeological record as a permanent key to interpreting a site. This visual recapitulation becomes the basis for an



BALK. *Record of a balk face.* A sample balk face showing the spatial and chronological relationships between various archaeological features of a site, including walls, debris layers, pits, hard surfaces or floors, and various other artifacts. From Tel Miqne, field III, NE 11, east section, 1993. (Courtesy Tel Miqne-Ekron Excavation and Publication Project)

informed interpretation of the context and associations of any archaeological feature in the stratigraphic record.

[*See also* Excavation Strategy; Excavation Tools.]

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BARRY M. GITTLEN

BALU' (el-Bālū'), site located south of Wadi el-Mujib and about 5 km (3 mi.) east of Jebel Shihan (elevation 1,063 m above sea level), in the district of Kerak, in central Jordan, ancient Moab. Balu' is the largest Iron Age ruin in the area, in which all periods of occupation are represented, from the Early Bronze Age to Mamluk times. The classical periods are not well represented in the site's southwestern quarter, where there are remains only of a large Mamluk village medieval Arab travelers called Shihan. Interest in Balu' was sparked with the discovery made by R. Head in 1930 of the Stela of Balu' (about 1.7 m high), which shows a Moabite "king" between two Egyptian gods. For iconographic reasons, the stela has been dated to the tenth century BCE. After the stela was found, three soundings by J. W. Crowfoot were carried out at the site (in 1933) but bore no specific results.

In 1986, an intensive surface survey of Balu' revealed that

the older part of the city (Late Bronze and Early Iron Ages) is the area immediately east and west of the impressive *qaṣr* (Ar., "castle"), which may date to the Iron Age and has undergone some rebuilding in the Nabatean or Early Roman period. The city had a defensive wall of the casemate type, with a small gate that faced east. During the Iron IIA–B period the city limits were extended eastward and another defense wall was built, enlarging the city by about 200 m. Soundings in this area brought to light an inscription (. . .]*tmlk*[. . .) on a basalt *mortarium*, or bowl. In the Iron II period the city expanded east–west for about 450–500 m.

The casemate wall runs up to a courtyard house that, based on its plan, the pottery found within it (including Assyrian-type carinated bowls), and a scaraboid Egyptian bulla (dated to c. 725 BCE and bearing the name *mn-k3r*ʿ), can be dated to an Assyrian or Babylonian presence in ancient Palestine in the eighth–sixth centuries BCE. The excavated rooms had been used as a kitchen, reception hall, and a possible chapel, which was concluded from their finds (pilgrim flask, female figurine, small *maṣṣēbâ*?). Because the walls of the house are still standing (to a height of about 1.70 m), almost all the doors have their lintels in situ. At the western wall of the house in a temenos-like area, two standing stones (*maṣṣēbôt*) still in situ have been discovered. Wedging stones at the foot of each hold the stones in an upright position. Broken animal figurines, burnt ashes and bones from the immediate area suggest a religious meaning for these standing stones. In the partially excavated casemate wall west of the house, large storage jars and kraters were found, as well as several rims of collared-rim jars (of the late type)—the first found south of Wadi el-Mujib, but in an Iron II context.

West of the *qaṣr*, a farmhouse was partially excavated. One room and a courtyard represent the most recent occupational stratum. In the courtyard area a V-shaped enclosure apparently held goats and sheep during the night. A *ṭabun* was located in the yard where two additional unroofed cell-like units had been built adjacent to the north wall of the house. The chamber to the east contained many round stones, a grinder, and a trough. During a brief sounding in 1994 three figurines (two female, one male) were unearthed under and close to the threshold leading from the courtyard into the room. The most remarkable, almost complete, figurine is the "pillar-type figurine" holding a disk. The chamber to the west was empty, but it may have been used for storage.

The areas unearthed revealed the latest remains of the city of Baluʿ, which belong to the Iron IIB–C period. They indicate a flourishing city during Moab's vassalship under the Assyrians and Babylonians.

[*See also* Moab.]

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UDO WORSCHECH

BANIAS, site of ancient Caesarea Philippi, located at the southern extremity of Mt. Hermon, between the northern Hula Valley and the western slope of the Golan Heights, in a region blessed with an abundance of water (map reference 2948 × 2150).

The copious amounts of precipitation that fall in this rocky region of soluble chalk penetrate deeply and burst forth in springs at the mountain's base. Where the Hermon, the Golan, and the northern Hula meet at Caesarea Philippi, springs gush forth from below a steep wall at the foot of a large cave that, according to Josephus, is the water's source (*War* 1.21.3). As early as the third century BCE, the cave was connected with the god Pan and, as such, was called Paneion, meaning "cave dedicated to Pan" (Polybius, *Historiae* 14.18.19:1–19).

Herod the Great, in 18 BCE, received the entire territory of the southern Hermon from the Romans and built a magnificent temple there that he dedicated to Augustus (Josephus, *Antiq.* 15.360). Following the division of Herod's kingdom, Paneion passed to his son Philip the Tetrarch (4 BCE–34 CE) who, because of the area's natural beauty and strategic importance, made it his capital city, changing the name to Caesarea Philippi, in honor of Augustus (Josephus, *War* 1.168). Philip's capital was also known as Paneas ("the city of Pan"), as the sanctuary of Pan continued to play a primary role in the city's cult rituals. During the reign of Agrippas II (53–93 CE), the city was renamed Neronias, in

honor of the emperor Nero, Agrippas II's benefactor. Upon Nero's death, the city again was known both as Caesarea Philippi or Panias. Both names were retained throughout the Roman and Byzantine periods and up to the seventh century.

In 638 CE, following the Arab conquest, Panias passed from Byzantine into Muslim hands. The city's name became Banias, a distortion of the original Greek *Panias*. During the relatively short period of Crusader occupation (1129–1163), the city was reduced in size and fortified by massive citadels. Its name became the Bellina Citadel. When the last remnant of Crusader rule collapsed, the formerly magnificent Roman-Byzantine capital city Panias, or Caesarea Philippi, and the impressive fortified Crusader Bellina Citadel declined into a small and insignificant hamlet named Banias.

Archaeological and historical research at Banias received a powerful boost after the Arab-Israeli Six-Day War in 1967, when access to the area was renewed. Surveys, small rescue operations, and large-scale excavations were initiated. In progress are excavations directed by Zvi Uri Ma'oz at the cave sanctuary of Pan and at the center of the ancient city, where the public institutions and monumental buildings of Caesarea Philippi stood.

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VASSILIOS TZAFERIS

BAPTISTERIES. The term *baptistery* (Gk., *baptisterion*) denotes either a building or a pool (also called a font: Gk., *kolumbethra;* Lat., *fons* or *piscina*) for the performance of the Christian ritual of baptism. Because the practice of baptism among the earliest Christians has antecedents in both Jewish and pagan patterns of ritual washing, paradigms have often been suggested, such as in the Jewish *miqveh* (a pool for ritual ablutions known chiefly from Talmudic sources) or in the pools of the settlement at Qumran. [*See* Ritual Baths; Qumran.] Nevertheless, the bulk of the archaeological evidence for formal Jewish ablution installations in clearly religious or ritual contexts is later. Paradigms from ritual washings connected with the initiatory rites of the so-called pagan mystery cults also face difficulties because the washing was a preparatory purification rather than the initiation proper. The beginnings of Christian baptism are, therefore, somewhat clouded. Nonetheless, it appears that the practice was already in use at least in some Christian groups by the middle of the first century CE, as reflected clearly in the letters of Paul (cf. *Rom.* 6:1–12; *Gal.* 3:27–28; *Col.* 2:10–12).

Going back to the tradition of John the Baptizer, who reportedly worked in the areas around the Jordan River (where, the Gospels say, Jesus came to him to be baptized), the earliest evidence seems to suggest that baptism was performed in streams or natural pools. By early in the second century, however, some alternative arrangements were allowed, as indicated in *Didache* 7, an early church order document (c. 100–140 CE) from Syria. By the middle of the second century, it appears that Christians used other regular sources of water, such as baths or fountains, at least in Rome (see Justin Martyr, *Apology* 1.61–66; cf. Tertullian, *On Baptism* 4), but there was no regularly designated place. [*See* Baths.] The earliest evidence that the ritual of baptism was being brought into the physical context of a church building comes only in the third century (cf. Tertullian, *On Baptism* 8–9; Hippolytus, *Apostolic Tradition* 21). Prior to this time there was little or no regularly identified church architecture because most Christians continued the earlier practice of meeting in unrenovated private buildings, such as houses. [*See* House Churches.] By the fourth–fifth centuries, an elaborate liturgical tradition had developed around the practice of baptism, and with it a regular architectural form.

The earliest archaeological evidence for a formal baptistery comes from the Christian building at Dura-Europos (c. 241–256 CE). [*See* Dura-Europos.] In the renovation of a typical house to form a *domus ecclesiae,* one room was set aside for baptism and a small font basin (0.955 m high, 2.57 m wide and 1.58–1.83 m deep) was installed in it. The basin was recessed slightly into the floor, the basin's interior was sealed with hydraulic plaster, and brick side walls were erected. The room's construction resembled that of the public baths at Dura-Europos. The formality of the ceremonies planned for this installation are further attested by the nature of the other decorations: an arched canopy over the font proper and an elaborate program of representational scenes around the walls. [*See* Wall Paintings.] The painted program contains a number of scenes drawn from the Gospels in which death or water symbolism is prominent. Analysis suggests also that there may have been a regular processual pattern attached to the performance of the ritual at Dura-Europos. A liturgical tradition like the one found in the Syriac *Didascalia* (a church order from c. 270) may be similar to that used at Dura, given its location in Roman Syria.

No other pre-Constantinian baptismal installations are known archaeologically, with the possible exception of the *domus ecclesiae* at Parentium, Istria. At least one other early church edifice in Rome (Ss. Giovnani e Paolo) was built around a building with a bath that might have been acces-

sible to the Christians prior to the time of Constantine. At Aquileia, Istria, the first *aula ecclesiae* of Bishop Theodore (c. 317–319) seems to have been built over a house complex that continued to be used as the episcopal residence. These quarters included a bath, which appears to have served in some capacity related to the baptistery of the double-hall church. Of the two halls, the southernmost might have been especially designed with baptism in mind—as reflected in the elaborate mosaic pavement depicting the Jonah story and scenes of fishing and many forms of ocean life. [*See* Mosaics.] Even so, an elaborate baptismal font was not a part of the architectural form. At Philippi, Greece (Macedonia), the early fourth-century church edifice, the church of St. Paul beneath an octagonal complex, was built immediately adjacent to a Hellenistic hero cult tomb and an earlier Roman bathing establishment. In its later renovation (fifth century) to an octagonal form, one of the wings of the bath was annexed to the church and was used formally as its baptistery. A later basilica in Rome (S. Anastasia) was built over a public bath near the Circus Maximus, but there is no direct archaeological evidence that the bathing establishment was used by the Christiians prior to the construction of the basilica. [*See* Basilicas.]

Altogether, there are more than four hundred known sites for baptisteries from the third to the seventh centuries CE; most come from the later part of this span. There is a considerable diversity of architectural forms associated with baptism, ranging from small areas set aside within larger church buildings to elaborate freestanding buildings dedicated just to this act. The architectural iconography of these buildings was equally diverse. In a number of the Syrian churches of the fifth–seventh centuries, the baptistery in a separate building or complex of buildings in the form of a small basilica (e.g., at Dar Qita and Serğilla). [*See* Serğilla.] At Amwas/Emmaus in Israel, the baptistery was a slightly smaller basilical building beside and oriented on the same axis as the main basilical hall of the church (dating to the fifth century). [*See* Emmaus.] The baptismal font proper, a recessed pool cut into the floor in the shape of a cross, was set into the church's small apse. In these cases, the liturgical use of the architecture would seem to have been patterned directly on that of the main basilica. In other cases, the architecture developed on a central plan using either octagonal or domed construction. The octagonal plan has strong affinities with Roman funerary architecture; the church of Sta. Costanza in Rome was originally built as a mausoleum but was later converted into a church and used as a baptistery. [*See* Mausoleum.] The most elaborate baptisteries built on this octagonal plan are the Orthodox Baptistery in Ravenna, Italy (c. 450), and the baptistery of St. John Lateran in Rome. The latter also contains the largest font, a circular pool more than 8.5 m in diameter. Finally, the font basin itself tended, in later periods, to take one of two basic forms: either circular (or octagonal) or cruciform. Although they range in size, the average depth is just under one meter. It has been suggested that these forms were each associated with one of the dominant symbolizations of the baptismal ritual: the circle as a symbol of the womb and rebirth; the cross as a symbol of death and resurrection. In some cases, a combination of these architectural and artistic symbols was employed with conscious design to enhance the liturgical experience. For example, the plan of the Orthodox Baptistery in Ravenna was designed in such a way that the initiate was led through the antechambers and into the great domed room in order to approach the steps down into the font. The design placed the initiate so that he or she was looking directly up (and from the proper angle) at the magnificent ceiling mosaic of the baptism of Jesus in which he is surrounded by a procession of the twelve apostles.

[*See also* Churches; Martyrion.]

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L. MICHAEL WHITE

BAQʿAH VALLEY, area located 15 km (9 mi.) northwest of Amman, Jordan, at 625 m above sea level on the Transjordanian plateau (32°5′10″ N, 35°40′20″ E; map reference 168 × 228). The region's earliest survey was conducted by Nelson Glueck in 1939. Since 1977 the Baqʿah has been the focus of ongoing excavations conducted by the University Museum of the University of Pennsylvania. The project is directed by Patrick E. McGovern and funded by the museum, its Applied Science Center for Archaeology (MASCA), the National Geographic Society, the Jordanian Department of Antiquities, and private sources.

The valley's central location, combined with its rich, arable soil, moderate climate, plentiful springs, and other natural resources, explain why the Baqʿah has been inhabited virtually without a gap for the last fifty thousand years—since the late Middle Paleolithic. Glueck stated that the Baqʿah was occupied only by nomadic peoples during the Late Bronze Age, but more recent evidence shows that there were numerous LB settlements in the region. Archaeological evidence points as well to occupation in the Early Bronze Age, the Early and Late Iron Age (into the Persian period), and the Early Roman period.

Most of the excavated sites—and exposed remains—are in the northwestern (Umm ad-Dananir) region of the Baqʿah, where there are more springs than in any other sector of the valley. Urban settlement is evidenced by the 3.5-hectare (9-acre) fortified hilltop site of al-Qaṣir ("the fortress"). Pottery vessels and grinding stones found crushed beneath a large, circular stone "hillock" date to EB II–III (c. 2900–2300 BCE), when occupation was most extensive. Many broadroom houses dating to this period also were found on the surface. By EB IV (c. 2300–1900 BCE), however, settlement had declined, and after 1900 BCE had ceased.

An overlapping sequence of LB (c. 1550–1200 BCE) burial caves on Jebel al-Qaṣir and Jebel al-Hawayah attest to the urban character of the Umm ad-Dananir culture, as well as to its international trade. Among the imports found in the caves were Mitannian Common Style cylinder seals; Egyptian scarabs and a ring; Mycenaean stirrup jars; Cypriot base-ring II and white-slip II wares; and numerous Mediterranean and Red Sea mollusk shells. In addition, pieces of wheel-made pottery uncovered at the site are comparable to those found at urban communities west of the Jordan River.

Another important LB settlement is situated on a series of terraces at Khirbet Umm ad-Dananir. Comprising about 2.5 ha (6 acres), the site overlooks Wadi Umm ad-Dananir. The earliest structure uncovered there is similar in plan to another LB structure, the Amman Airport building, located 15 km (9 mi.) to the southeast. [*See* Amman Airport Temple.] Of the *Quadratbau* type, both are laid out in a square with a central courtyard surrounded by outer rooms, and may have served a cultic purpose. At Umm ad-Dananir, for example, pottery, silicate jewelry items, and burned and unburned animal bones of cattle, donkeys, sheep and goats, mountain lions, and gazelles were found in a fill under the structure's plastered floor and in its foundation trenches. A freestanding altar (60 × 60 × 60 cm) with a limestone capstone was found near the center of the building, as was a fireplace that predates the building and that apparently was used in "sacrificing" the animals deposited in the fill. The destruction of the building has been dated to LB II, based on the pottery and animal bones (like those in the fill) found in pits dug into the destruction debris. Carbonized roof beams on the building's plastered floor indicate that the building was destroyed in a conflagration.

One of the largest Early Iron Age (c. 1200–1050 BCE) tombs yet discovered in the region is a circular burial cave on Jebel al-Hawayah. The bones of 227 men and women of various ages were found in the cave (4.5 m in diameter). The burial goods were poorer than in the Late Bronze Age and of local manufacture, suggesting that the standard of living was lower and that in the Iron Age trade was less widespread. [*See* Tombs; Grave Goods.] The few new pottery forms introduced in this period probably reflect a continuation of the coil-building technology begun in LB II. Among the eleven complete pieces of mild-steel jewelry found in the tomb was an iron anklet or bracelet type; its similarity to one found in a nearby LB II burial cave suggests that iron metallurgy had already been developed.

A large number of structures dating to the Late Iron/Persian (c. 650–400 BCE) period have been found in central Transjordan. Among them, a building on the site of Rujm al-Ḥenu (West) in the Baqʿah has been investigated. Probably a single-phase fortress with complementary domestic and agricultural functions, the building was constructed out of dry-laid, unhewn boulders. Its towers were circular and rectangular, and an inner courtyard was surrounded by casement rooms. The upper walls (some preserved as high as 2.5–3 m) collapsed onto the clay floor (over bedrock) sometime during this period. A contemporaneous level at Khirbet Umm ad-Dananir yielded an Ammonite inscription on a storage jar sidewall. The inscription reads *shemaʿ* ("to hear"), the first word in the traditional Hebrew declaration of faith (*Dt.* 6:4), but was more likely part of a name here. It was deeply incised in the clay before the jar was fired.

Also at Khirbet Umm ad-Dananir a large, Early Roman III (c. 4 BCE–73 CE) structure was excavated. The building was discovered just below the surface. Its central room was characterized by a northern wall with seven orthostats spaced about a half-meter apart, several with their overlying stretchers in place, and a beaten-earth floor. A collection of Early Roman III pottery and artifacts (including glass vessel and bracelet fragments, an intact iron sickle blade, and Herodian-type limestone vessels) help to date the structure, as does a coin of Antonius Felix (52–62 CE) recovered from under the building's floor.

The ancient identities of sites in the Baqʿah remain uncertain. In the list of Pharaoh Thutmosis III's Asiatic toponyms (c. 1450 BCE) that ostensibly lists sites and areas along the King's Highway (which probably ran through the middle of the Baqʿah), the Baqʿah Valley has been identified with *mkrpwt* ("fertile depression"). The *Quadratbau*-type building at Khirbet Umm ad-Dananir has affinities with late MB–early LB structures at Shechem. Later biblical tradition, as reflected in the Jacob-Laban cycle, the Israelite settlement narratives, and the story of the sacrifice of Jephthah's daughter, point to close ties between Gilead, where Khirbet Umm ad-Dananir (Mizpah Gilead?) is located, and Israel, where Shechem is located. [*See* Shechem; Gilead.]

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PATRICK E. MCGOVERN

BAR'AM, a Jewish settlement in the Upper Galilee in Late Antiquity, located approximately 11 km (7 mi.) northwest of Safed and 0.5 km south of Israel's modern border with Lebanon (map reference 1891 × 2701). This locale is not mentioned in ancient sources, but it appears as Kefar Bar'am in the itineraries of Jewish pilgrims, beginning in the fourteenth century. Numerous nineteenth-century explorers described the site, including Edward Robinson, Ernest Renan, Victor Guérin, and members of the British Survey of Western Palestine. Bar'am is one of only two settlements in this region (together with Gush Ḥalav) that is known to have had two synagogues, which underscores its size and apparent importance. The larger of the two synagogues servicing this community was excavated by Heinrich Kohl and Carl Watzinger on behalf of the Deutsche Orient-Gesellschaft in 1905. Other areas of the village have not been excavated.

The large synagogue is the best preserved of all extant Galilean-type basilical synagogues. [*See* Synagogues.] Although Michael Avi-Yonah dated the Galilean type to the second century, it is now generally accepted that Galilean-type basilical synagogues date to the third–sixth centuries. [*See* Basilicas.] The building is constructed of local white limestone ashlars without mortar. The facade (15.2 × 20 m), which is aligned toward the south, is preserved to the upper cornice of the lower story. An exedra (5.35 m wide) supported by eight columns was constructed along the length of the facade. The building had three entrances: a large central portal that led into the nave and two smaller portals that led into the side aisles. The central entrance has molded jambs and a lintel bearing a wreath flanked by winged Victories that were intentionally mutilated. It is surmounted by a large Syrian arch. On the sill of a window above the eastern portal is a Hebrew dedicatory inscription that reads "Built by Eleazar son of Yudan." The central nave is surrounded by columns on three sides. A balcony may have been constructed above the nave on the northern, western, and eastern sides of the hall. The architecture of this building has much in common with contemporaneous Syrian church architecture. [*See* Churches.] During the late 1960s the site was cleared and partially restored.

Remains of the so-called small synagogue were still visible during the nineteenth century. Little is known of this building, although two doorways were apparently still in place in the sixteenth century. One of these monumental portals was still standing in the nineteenth century, when it was described by explorers and documented by photographers. These ruins were dismantled sometime before 1905. A portion of the lintel bearing a dedicatory inscription is preserved in the Louvre museum. This Hebrew inscription is particularly important for the history of synagogues in this region:

> May there be peace in this place and in all of the places of Israel. Yose the Levite son of Levi made (or donated) this lintel. May blessings come upon his deeds. Amen.

The artisan (or donor) of the lintel appears in a similar dedicatory inscription in Aramaic in the nearby Alma synagogue.

[*See also* Basilicas; Deutsche Orient-Gesellschaft; Galilee, *article on* Galilee in the Hellenistic through Byzantine Periods; Synagogue Inscriptions; *and the biographies of Avi-Yonah, Guérin, Renan, Robinson, and Watzinger.*]

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STEVEN FINE

BARAMKI, DIMITRI CONSTANTINE (1909–1984), archaeologist and teacher. Born in Jerusalem, Baramki developed a keen interest in the cultural heritage of his homeland and city. After attending St. George's School in Jerusalem and the American University of Beirut, he received both his B.A. with honors and Ph.D. degrees from the University of London. In his dissertation, "The Culture and Architecture of the Umayyad Period," he drew upon the results of his excavation at Caliph Hisham's palace at Khirbat al-Mafjar near Jericho (1935–1948).

His career in the Department of Antiquities of Palestine began in 1927, and in 1945 he became senior archaeological officer. He served as acting curator of the Palestine Archaeological Museum (today the Rockefeller Museum) in Jerusalem (1948–1949). He was then appointed archaeological advisor and librarian at the American School of Oriental Research in Jerusalem. From 1951 until his retirement in

1975 he was curator of the Archaeological Museum of the American University in Beirut, where he also taught using the substantial collections for training in the study of artifacts.

Baramki's experience made him sensitive to the need to make knowledge of the past available to the public at large and to establish archaeology as an academic discipline in order to train local archaeologists. In 1952, the young Jordanian Department of Antiquities could only find one student of archaeology to send to the American University of Beirut. Subsequently, Baramki trained numerous Arab and foreign students in the program. As an archaeologist and teacher Baramki communicated with astonishing immediacy what he knew from direct contact with the archaeology of his homeland. In 1956 he introduced the vital aspect of fieldwork into the archaeology curriculum of the university by opening its first excavation site, the Bronze and Iron Age settlement of Tell el-Ghassil on the road to Baalbek.

The excavations at Umayyad Khirbat al-Mafjar made Baramki the first Arab archaeologist to deal with Islamic materials, at a time when the subject was the domain of art historians. His contributions to making the Islamic cultural heritage accessible to the public involved museum exhibits and activities and publications geared to a general audience.

[*See also* Mafjar, Khirbat al-.]

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Baramki contributed a series of articles to the *Quarterly of the Department of Antiquities in Palestine* beginning in 1935, as well as the *Dictionary of Biblical Archaeology* and the *Wycliffe Bible Encyclopaedia.* His popular publications have perhaps been more influential in spreading archaeological and heritage awareness than many scientific publications to which the general public has no or only difficult access. See, for example, *The Coins Exhibited in the Archaeological Museum of the American University of Beirut* (Beirut, 1968); *Phoenicia and the Phoenicians* (Beirut, 1961); *The Road to Petra: A Short Illustrated Guide to East Jordan* (Amman, 1947); and *The Art and Architecture of Ancient Palestine: A Survey of the Archaeology of Palestine from the Earliest Times to the Ottoman Conquest* (Beirut, 1969).

HELGA SEEDEN

BAR KOKHBA REVOLT. The hardships the Jews in Palestine endured at the hands of the Roman authorities after 70 CE were emphasized by the favorable attitude of the same authorities to the non-Jews there. This behavior sharpened even more the dichotomy existing between the two segments of the population. The non-Jews were in fact the major beneficiaries of the First Revolt against Rome (66–70 CE). [*See* First Jewish Revolt.] When Emperor Hadrian removed the hated governor Quietus and perhaps—if a late Jewish tradition is to be believed—even toyed with the idea of rebuilding the Temple and Jerusalem, the Jews felt more hopeful, as they regarded the emperor as "Cyrus Redivivus." When the emperor later decided not to go through with his plans (according to the same legend), their frustration was deep and strengthened the resolve of radical Jews to go to war.

In autumn 129, Hadrian arrived in Palestine as part of his visit to the provinces of the East, which he hoped would promote the process of hellenization there. This brought him into conflict with the Jews of Palestine. Although some specific reasons for the revolt can be found, they should be considered with caution. It is claimed that during Hadrian's visit it became clear that he had decided not to exempt the Jewish people from the law against castration, which for the Jews meant a ban on circumcision. It also became clear, probably at this juncture, that the emperor wished to rebuild Jerusalem as Aelia Capitolina, a pagan city. However, the information about the ban on circumcision comes from an unreliable source (the *Scriptores Historiae Augustae, Life of Hadrian,* 14.2). Cassius Dio, who does not mention the ban on circumcision but does mention Hadrian's scheme to build Aelia Capitolina on the Temple Mount, is also unreliable as a result of the abridgement of this source made by Xiphilinus in the eleventh century. The coinage of Aelia Capitolina does not help much because the series of Aelia Capitolina can only be dated to the span of time 131–135 CE. Thus, it is possible that both the above literary source retrojected Hadrian's punitive actions from the quelling of the revolt in 135 to its start. This would support the suggestion that the cause of Bar Kokhba's revolt was the revival of zealotism rather than initial Roman suppression. Be that as it may, some sort of provocation induced many Jews to start a rebellion under the leadership of Shimʿon (Simeon) Bar Kokhba in spring 132 CE.

The war lasted three and a half years, but no historical survey is available analogous to the ones for the Maccabean Revolt and the First Jewish Revolt. The rabbinical sources contain some information about the events, but their reliability as historical sources is questionable. Greek and Latin sources are helpful but brief.

The war started in 132 CE after preparations were made by the rebels (Kloner and Tepper, 1987). The Bar Kokhba letters reveal that he had a well-organized, disciplined Jewish army, apparently organized hierarchically, with different ranks of commanders—a "head of the camp" is known, and even the names of some of the commanders. Judah bar Manasseh was the commander at Kiryath Arabaya, and Jonathan bar Be'ayan and Masabala bar Shimʿon were the commanders at 'Ein-Gedi. From the letters it appears that Bar Kokhba's soldiers were God-fearing Jews. (There is one reference to non-Jews who participated alongside the Jews.) Bar Kokhba's official title was *nasi'*, which had already been associated with the king in the Hebrew Bible (*Ez.* 12:10) (Yadin, 1971; Lewis, 1989). In rabbinic literature there is a debate as to whether Bar Kokhba was a king-messiah (Rabbi Akiba was positive that he was, but Rabbi Yohanan ben Tortah said he was not of the Davidic line; J. T., *Taʿan.* 4.8.

68d). Eusebius as well as other church fathers denigrated Bar Kokhba because, according to him (*Hist. Eccl.* 4.6.2), Bar Kokhba persecuted Christians who refused to join him in the war against Rome. [*See* ʿEin-Gedi; Judean Desert Caves.]

The Romans were caught by surprise and had to send auxiliary forces to Judea (Judah) in addition to the two standing legions already there. Two legions constituted a substantial force for the Roman army of the period: two legions were stationed only in problematic areas such as Upper Germany, Lower Germany, and Dacia. Because Judea was considered a problematic place by the Romans long before the Bar Kokhba war, roads had been built in strategic places during Hadrian's reign as emperor. The intensity of the revolt can be deduced by the number of troops the Romans used to subdue the rebels (more than fifty thousand), as well as from Cassius Dio's condensed history: he claims that during the war the Romans destroyed 50 of the Jewish strongholds and 985 of their villages (69.14.1). The available sources do not say whether the rebels conquered Jerusalem before or during the war, whether they renewed the sacrifices on the Temple Mount, or whether the revolt extended beyond Judea proper. It is, however, clear from the coins that the main aims of the rebels were to rebuild the Temple and renew its rituals. Some of the symbols on the coins are associated with the Temple cult and with its facade. Other coins minted by the rebels refer to "the Priest Eleazar," who was apparently an important figure in those stormy days, and who may have been considered a candidate for the high priesthood in the eventual Third Temple (Meshorer, 1982). Eleazar is sometimes identified with the uncle of Bar Kokhba who fought with him at Beṭar and was then put to death because of accusations that he wished to make peace with the Romans (J. T., *Taʿan.* 4.8.68d–69a).

From the little information available, in particular from the epitomized version of Cassius Dio, it appears that the emperor himself came to Palestine during the revolt, and that troops from Roman legions all over the East were sent there. The rebels' coinage and various legal documents reveal that a new "calendar" was created for the emerging Jewish state, and that the years of the revolt were counted according to the "liberation of Israel," or the years of Bar Kokhba's rule ("Third year of Simeon the son of Kosiba the *nasi'* of Israel"), and the years of "the liberation of Jerusalem." There is, however, very little evidence of exactly which territories the rebels succeeded in liberating during the revolt. Conflicting evidence may indicate that the revolt encompassed, along with Judea, parts of the coastal plain, the Galilee, and even the Golan (Kloner and Tepper, 1987).

On the ninth of Ab 135 CE, the last stronghold of the Jewish rebels, called Beṭar, near Jerusalem, fell. Shimʿon Bar Kokhba was among the victims. According to Cassius Dio 580,000 Jews fell in the battle, and many others were sold as slaves in the aftermath of the war. If later Jewish traditions are to be believed, the Romans also enforced restrictive laws on the Jews in Palestine, such as the ban on circumcision and a prohibition against reading the Torah in public. The memories of these terrible days are depicted in the rabbinic literature in a very vivid manner. The story about the ten martyrs, among whom was Rabbi Akiba, is perhaps the most famous (Schäfer, 1981).

Provincia Judaea became Syria Palaestina, and Aelia Capitolina was founded with a pagan temple in its midst. Non-Jews were settled in the new colony in place of Jews, and Jews were forbidden to enter the city. Moreover, any Jew found there was put to death. Pagan cults of Bacchus, Astarte, and Aphrodite were established in Jerusalem, and on the Temple Mount a pagan temple was built that contained a statue of Hadrian.

[*See also* Jerusalem.]

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BARROIS, AUGUSTIN GEORGES, (1898–1987), theologian and archaeologist. Born in Charleville, France, Barrois studied in Louvain. He was ordained a priest and joined the Dominican Order in 1924. The following year he was sent to the École Biblique et Archéologique Française in Jerusalem, where he spent a decade. He returned to France in 1935 to become professor of Old Testament studies at the Dominican Faculty of Saulchoir. In 1939 he moved to the United States, where he taught theology in Washington, D.C., at Princeton University, and at St. Vladimir's Orthodox Theological Seminary in Crestwood, New York.

In 1926–1927, Barrois codirected (with P. Carrière and F. M. Abel) the excavations at Nerab, 7 km (4 mi.) southeast of Aleppo, Syria, where two Aramean stelae had been discovered in 1891. The major discovery of the 1920s had been an important Neo-Babylonian and Achaemenid necropolis. A group of twenty-five cuneiform tablets (Dhorme, 1928) was also found. [*See* Nerab Inscriptions.] In 1929 he took part, under François Thureau-Dangin, in the excavations at Arslan Tash (ancient Ḥadat[t]u) in northern Syria. The following year, he joined a Harvard University expedition to Serabit el-Khadem in Sinai. Barrois is responsible for having discovered or studied several important monuments: a funerary chapel in the convent of St. Euthyme in the Judean Desert; synagogues at Beth Alpha, east of the Jezreel Valley, and in Jerash, in Jordan; and tombs in Jerusalem and its vicinity. In addition, he published studies on biblical metrology, and on the excavations at Beth-Shean, Caesarea, Megiddo, and Helbon (mod. Khalbun, 25 km north of Damascus). Most of his publications appeared in the *Revue Biblique* and in the journal *Syria* between 1927 and 1939. Barrois's most significant publication is his two-volume *Manuel d'archéologie biblique*, an ambitious enterprise covering the entire field of traditional biblical archaeology.

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PIERRE DE MIROSCHEDJI

BASILICAS. Derived from the Greek word *basilike,* "royal house," the basilica is "a roofed hall, usually rectangular or apsidal, and often with inner columns, serving . . . general social and commercial intercourse and the hearing of lawsuits, for which it became the primary location" (Robertson, 1969, p. 268). A tribunal (or dais) for the presiding magistrate was often a feature. Its plan may be simple or have two to four aisles formed by pillars alongside the central nave. Some make use of the clerestory system for illumination. Its apse(s) or rectangular dais(es) may be on the short or the long side, with one or three entrances facing the tribunal. Models of the form are the Greek hypostyle hall (*ibid.,* p. 180), the Stoa Basilike in the agora in Athens, and the audience hall in imperial palaces.

Early Basilicas. The basilica first appears in Italy in republican times. The oldest known structure is the Basilica Porcia (c. 175 BCE) in Rome. Frank E. Brown (1976) points to second-century BCE basilicas at Cosa and Ardua. The basilica at Pompeii (c. 100 BCE), destroyed in 79 CE, had a rectangular central space (possibly unroofed) surrounded by a colonnade that created a corridor. Its raised dais was at its western end. The civil basilica became a standard feature of Roman cities in the early empire, at Augusta Raurica (Augst, Switzerland), Thaumagusta (Timgad), Leptis Magna in North Africa, and at Trier in Germany (now a Lutheran church). Later Roman basilicas include the Basilica Aemilia (first century BCE), the Basilica Julia (first Century CE, rebuilt in third century), and the great Basilica of Maxentius (completed by Constantine after 313 CE).

Eastern Basilicas. The civil basilica first appears in the early Roman Empire, though primarily in what were essentially Roman cities in the east: three in Corinth (all first century CE), in Shaqqa in Syria, north of the Sea of Galilee (c. 280 CE), and in Samaria/Sebaste in Israel. The so-called Royal Stoa at the southern end of the Herodian Temple platform in Jerusalem presents some problems. According to Benjamin Mazar (*The Mountain of the Lord,* Garden City, N.Y. 1975, pp. 124–125), the center of this stoa was "in the shape of a basilica." Josephus (*Antiq.* 15.411–416) describes three rows of monolithic Corinthian columns and one row of engaged columns forming a three-aisled structure whose central nave was half as high as the two aisles. Such a stoa would be unique. Did Josephus confuse a building like the two-story Stoa of Attalos (with its interior colonnade) in the Athens agora with the basilicas he saw in Rome? Its function is unclear as well. Meir Ben-Dov (1982, pp. 124–127) hypothesizes an eastern apse decorated with a menorah. Richard Mackowski (*Jerusalem City of Jesus,* Grand Rapids, 1980, p. 125), however, argues that the Temple functioned as a place where everybody mixed, "either for business or to exchange religious and political news and views," like the basilicas in Rome and at Sebaste and the Stoa of Attalus.

Basilical Synagogues. The basilical plan in synagogues appears in the third or fourth century CE. The location of the Torah shrine distinguishes the longhouse plan (Barʿam, Beth Alpha, Capernaum, Chorazin, Gush Ḥalav, Ḥammath-Gader, Khirbet Shemaʿ, Meiron, and Tiberias in Israel; on Delos; and in Ostia and Stobi in Italy) from the broadhouse plan (Eshtemoa and Khirbet Susiya in Israel and Dura-Europos in Syria). The longhouse type sometimes has an apse for the Torah shrine, as at Beth-Sheʿarim and Beth Alpha in Israel and at Sardis in Asia Minor.

Christian Basilicas. Constantine began building great basilical churches in the fourth century. Their typological origins have been attributed to the atrium house, secular basilicas or halls, and to the synagogue. Ecclesiastical basilicas use colonnades that divide the structure into aisles and a nave (as at Pompeii), with an eastern apse. They have axial entrances on the west, often with an atrium in front of them. Constantine erected the Church of the Resurrection in Jerusalem, the Church of the Nativity in Bethlehem, and St. Peter's Basilica in Rome to set a standard.

After Constantine, the building of ecclesiastical basilicas

spread rapidly throughout the eastern Mediterranean, especially in Syria-Palestine, which presents a broad spectrum of basilicas, many of which are from the fourth to the sixth centuries CE. Some of the most important are in North Syria (Antioch and inland regions). They range from simple three-aisled basilicas without an apse (Behyo, North Syria) or with a single apse (Kharem Shems, Der Turmanin, and Qalb Louzeh in Syria; Umm er-Rasas and the series of churches at Gerasa—St. Theodore, the cathedral, and Bishop Genesius—in Jordan), to triple-apsed churches (designed by the architect Julianus at Brad; by a series by Marcianus Cyris in the mountains from Antioch to Aleppo; at Rusafa (Sergiopolis), in the desert south of the Euphrates River; and at Petra, in Jordan). The introduction of transepts, coupled with the dome and squinch, led to the gradual abandonment of the basilica plan and the adoption of the Byzantine cross-in-square plan.

The great basilicas at Santa Maria Maggiore, Santa Sabina, and St. Paul outside the walls of Rome were built in the fifth century. In the sixth century, Justinian rebuilt the Church of the Nativity and erected the Nea Church in Jerusalem. The addition to Sancta Sophia of a dome and side apses to the basilical plan influenced subsequent Greek ecclesiastical style.

Basilical churches are numerous, and the basilica form clearly became the standard in both the east and west (Milburn, 1988, pp. 83–201). Basilical churches have been excavated in Israel at Avdat (Oboda), Tabgha (Heptapegon), Herodium, Khirbet el-Kursi (Gergesa?), Latrun, Mamre, Kurnub (Mampsis), Nessana, and Shivtah.

The basilica was also adapted for martyria. The cruciform Martyrion of St. Babylas at Antioch/Kaoussie has four arms without apses. The most grandiose is the cruciform martyrion of St. Simeon Stylites at Qal'at Sim'an in northern Syria, with four basilicas radiating from the octagon built around the saint's pillar. The eastern three-aisled basilica terminated in an apse.

[*See also* Churches; Synagogues; *and* Temples. *In addition many of the Near Eastern sites mentioned are the subject of independent entries.*]

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EDGAR KRENTZ

BASSIT, site located on the Syrian coast, as the crow flies about 40 km (25 mi.) north of Latakia, 50 km (31 mi.) from Antioch, and 137 km (85 mi.) from Cape St. Jean on Cyprus (35°51′38″ N, 35°49′15″ E). The site has been visited by, among others, C. Leonard Woolley, Claude Schaeffer, Henri Seyrig, P. J. Riis (who identified it with ancient Posideion; see below), George Saadé, and John W. Hayes (who studied the site's corpus of stamped clay basins (Fr., *pelves*). Herodotus (3.91.1–3) and then various other authors (Diodorus, Strabo, Ptolemaeus) mention Posideion. The name appears, more and more distorted, on portolanos, medieval (fourteenth–sixteenth centuries CE) navigation manuals; on a 1692 map (Michelet edition, Paris) that reads Possidie and places it on the coast; on an 1859 British Admiralty chart that calls it Ancient Posideion; and as el Bouseit, mentioned at the end of the nineteenth century.

Following a 1969 survey, excavations took place from 1971 to 1984 under the direction of Paul Courbin, and were at first limited to the site's ancient terrace (now called Meidan), the tombs in the Iron Age necropolis, and the Hellenistic and Roman acropolis. In 1973, the western valley was partly excavated and subsequently the tell (Late Bronze Age I–end of the Roman period) itself was excavated.

The first evidence of settlement dates to about 1600 BCE. The surrounding woodland was cleared to cultivate cereals. [*See* Cereals.] The name of the site in that period is unknown, but it appears to have been an advanced outpost of Ugarit. Two important buildings succeeded each other that had been abandoned before the arrival of the Sea Peoples in about 1200 BCE. The site was immediately reoccupied, but only partially. It appears then to belong to the Aramean kingdom of Hama. Many architectural levels follow without interruption during the Early Iron Age. As a small Levantine harbor related by trade to central Phoenicia and Cyprus, and possibly receiving colonists from those areas, Bassit developed contacts with Greece in the tenth century BCE that continued into the ninth and eighth centuries BCE; however, there is no evidence of a Greek presence at Bassit before the

first half of the seventh century BCE. The site received its name, *Posideion,* then. Many objects found in the eighth–seventh-century BCE necropolis confirm relations with Phoenicia and Cyprus. The settlement appears to have been small and its inhabitants poor. Some sixth-century BCE child burials were dug *intra muros.* The society appears to have been both exclusive and egalitarian.

Following the end of the seventh century BCE, relations grew steadily with eastern Greece: Aeolis, Ionia, Samos, Miletus (630–520 BCE); mainland Greece: Corinth and Sparta; and even (although doubtless, indirectly) Etruria and then Athens (575–480 BCE). The Persian conquest (539 BCE) brought no change to these relations. The Median wars seem to have slowed trade during most of the fifth century BCE, but it was later resumed. The city may eventually have minted its own coinage, before Alexander's death, as a local coin of Alexander's is known. In that period the acropolis was fortified. Following Alexander's death, the site became part of the Seleucid kingdom and later used the Hellenistic koine. Even after the Roman conquest (64 BCE), the Greek language remained in use.

From the third century CE onward, the town witnessed considerable construction activity: a new pier and harbor facilities, a new town wall made of modular blocks, large houses, new ramparts, a basilica, chamber tombs that eventually held sarcophagi, and a synagogue. It became a Christian cult place. In addition, *pelves* (see above) were produced and exported. The site was inhabited until the Arab conquest at the beginning of the seventh century.

[*See also the biographies of Schaeffer, Seyrig, and Woolley.*]

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PAUL COURBIN

BASTA, site located about 20 km (12 mi.) south of Wadi Musa/Petra, in southern Jordan, 1,460–1,420 m above sea level, at the border between arable land with rich springs and the steppic Artemisia (Artemisia herba alba) regions of the western Arabian plateau, where the mean annual precipitation is 200 mm (30°13′47″ N, 35°32′06″ E). A Neolithic occupation was first recorded in a survey carried out by the Department of Antiquities of Jordan in 1972. Hans Georg Gebel did a sounding in 1984 that revealed a deep Late Pre-Pottery Neolithic B (PPNB) occupation that was excavated from 1986 to 1989 and again in 1992 by the Basta Joint Archaeological Project, directed by Hans J. Nissen and Mujahed Muheisen. Gebel was the project's assistant director.

The settlement was located next to the rich spring of Basta, on a steep wadi slope. The surface distribution of PPNB artifacts was almost 14 ha (36 acres). The area excavated covered about 900 sq m. The evidence at Basta was of a shifting site occupation, with marginal refuse dumps, activity areas for processing food, materials used for construction, and possible cultivated areas. The Late PPNB chipped lithics and architectural phases excavated had radiocarbon dates of the second half of the seventh millennium, with parallels at ʿAin Ghazal, Wadi Shuʿeib, ʿAin Gamam, and Naḥal Issaron. [*See* ʿAin Ghazal; Shuʿeib, Wadi.] The cultural layers and deposits above the PPNB architecture revealed a PPNC- and Yarmukian-related chipped stone industry and artifacts. The layers were more than 6 m deep. Below the surface, predominantly sixth-millennium colluvials were interbedded with cultural layers (Yarmukian-related arrowhead types and a few Pottery Neolithic sherds as well as flimsy installations of a phase between the Late PPNB and the PN) covering an upper Late PPNB architectural phase.

Because of terraced housing on the slopes and rebuilding activities, it is difficult to separate the main architectural phase from even one subphase. The architectural units are assumed to have been used for long periods of time. Built on terraces created by channel-like grids of dry-stone masonry, they were well preserved (up to 4 m high), preplanned, and multiroomed. The substructures have parallels at Çayönü and Nevalı Çori in Turkey. [*See* Çayönü; Nevalı Çori.] These substructures, possibly related to subfloor climatic needs (i.e., air circulation), were covered by stone slabs, a stone fill, and the beds of the first-floor rooms, and sometimes with a finish of burnished plaster stained in a red or cream color. Most of the "channels" were found empty; some had been used as a burial ground and a few at least were accessible. (An entrance into one channel could be traced for more than 12 m.) Some of the well-built walls on the terraces (double rows of dressed stones set in mortar, with smaller stones wedged into the courses) show traces of mud plaster, rarely bearing burnished and painted plaster. In one case a painting appears to represent twigs with berries. The ground plans of the larger units and rooms seemed to follow the contour lines of the slope of the terrace. The

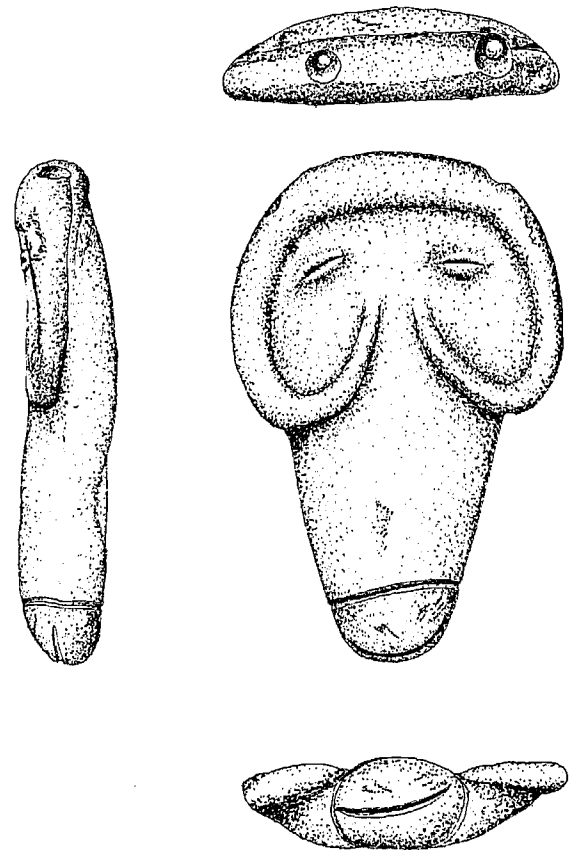
central building unit of area B (10 × 15 m), however, was constructed on one level, with two single and double rows of small rooms (1.3–2 sq m) around a central open space. In many cases there was no evidence of how the rooms were connected, and their function remains unclear. True entrances and stairs were rare, but windowlike wall openings (for air circulation, light, and accessibility) are attested. The evidence is of a long-time use of the main walls, and two stories cannot be ruled out. Less well-built structures in the upper architectural phase were related to an early sixth-millennium occupation.

Unmixed debitage dumps of workshops indicated specialized craftsmanship in naviform core technologies (with exclusive use of tabular flint) that gave place to predominantly flake technologies in the Post-PPNB layers. Arrowhead types in the Late PPNB layers are related to the Byblos and 'Amuq shapes; the 'Amuq-related morphology dominates. [*See* Byblos; 'Amuq.] The tool kit comprises all implement classes known from permanent PPNB village sites, with additional types. A rich ground stone industry is represented by marble and limestone vessels, standardized manos and grinding slabs, as well as items with unknown functions. The bone industry is of a Late PPNB standard type, including needles and tubular bone beads. Large marble plates and oval vessels, as well as limestone and tiny chlorite vessels, exist at Basta. Vessels made of tempered sun-dried or low-fired clay are also well attested in the Late PPNB contexts.

All sorts of beads made of greenstones, Red Sea corals and mollusks, local and exotic minerals, pailletts of mother-of-pearl, and tokenlike objects were found. Human faces are represented by two Basta "heads" (green marble, limestone), a stone carving and a mask fragment (limestone). From the Post-PPNB layers (possibly mid-sixth millennium BCE), a hoard of two animal figurines and two pendants carved in different styles and raw materials was found; one represents a ram that resembles a phallus when turned (see figure 1).

Primary burials of complete and incomplete corpses as well as secondary deposits of skulls from disturbed burials were found together with dispersed human remains in architectural contexts. It is likely that uninhabited parts of the settlement (ruins) were used as a burial ground. Multi-individual burials were common. Infant mortality is represented by 38 percent for zero–two years and 38 percent for five–seven years. Well-attested diseases and pathological alterations are dental caries, periodontal diseases, stomatitis, scurvy, transversal enamel hypoplasia, possible anemia and/or A-hypervitaminosis, *cribra oribitalia,* meningitis, osteomyelitis of the skull vault, arthrosis of the large joints, and rheumatic arthritis.

In the Late PPNB, subsistence appears to have been 76 percent domestic sheep/goats, 1–3 percent morphologically wild sheep/goats, 10 percent goitered and mountain gazelle (possibly also *G. dorcas*), 4 percent morphologically wild and possibly domestic cattle, very few wild and possibly domestic pigs, fallow deer, onager, and African wild asses. [*See* Sheep and Goats; Cattle and Oxen; Pigs.] Late PPNB arboreal cover and subsistence are represented by juniper, 74 percent; pistachio, 25 percent (most likely *P. atlantica*); and a few poplar and willow trees. The inhabitants of Basta collected almonds and wild figs and cultivated two-row hulled barley and emmer wheat and filed peas. [*See* Cereals; Agriculture.]



BASTA. Figure 1. *Limestone ram amulet.* From a Yarmukian-related context. Length, 7.8 cm. (Courtesy H. G. Gebel)

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HANS GEORG GEBEL and MUJAHED MUHEISEN

BATASH, TEL (Ar., Tell el-Batashi), site located in the Sorek Valley, 7 km (4 mi.) west of Beth-Shemesh and 5 km (3 mi.) northwest of Tel Miqne (Ekron). The site (map reference 141 × 132) can be safely identified with Timnah, a town mentioned in the biblical description of the northern border of Judah as located in the Sorek Valley, between Beth-Shemesh and Ekron/Miqne (*Jos.* 15:10–11). Tel Batash is the only mound between these two points. Timnah is mentioned in several additional biblical texts, the most important of which is the Samson narrative in *Judges* 14–15, where it is described as a Philistine town close to the Danite border. Timnah in *Genesis* 38:13–14 probably also refers to this site. The town is mentioned in the town lists of Dan (*Jos.* 19:43), attributed by many scholars to the time of the United Monarchy. It thus appears that during the time of David and Solomon Timnah changed hands and became an Israelite town. According to 1 *Chronicles* 28:18, the Philistines, probably the Ekronites, took the city back from the Israelites during the time of King Ahaz. A few decades later, during Sennacherib's invasion of Judah, the Assyrians captured Timnah, just before Ekron, which during that time was also under Judean subjugation.

Tel Batash covers 6 acres of a flat alluvial plain south of the Sorek brook. The mound, rising about 15 m above the plain, is square and its sides are oriented to the points of the compass.

Excavations were carried out on the mound in twelve seasons (1977–1989), sponsored by the Southwestern Baptist Theological Seminary, in collaboration with the Institute of Archaeology of the Hebrew University of Jerusalem. The expedition director was George L. Kelm, and the archaeological director was Amihai Mazar. A sequence of twelve major strata was identified, some with several subphases, covering a span of 1,300 years, from Middle Bronze II until the Persian Period.

Middle Bronze Age (Strata XII–X). The town was founded sometime during Middle Bronze II, perhaps in about 1700 BCE. Its founders constructed a square earthen rampart, 200 m long on each side, which subsequently created the mound's geometric configuration. The town developed inside the crater-shaped area. In area B, in the mound's northeastern corner, the rampart was uncovered for a length of more than 30 m. It was preserved to a height of about 6 m, leaning on the massive mud-brick wall of a large structure, perhaps a citadel. Only two rooms of this citadel were excavated, in which two construction phases (denoted strata XII–XI) were observed. The citadel appears to have been destroyed before the final phase of MB III: occupation was resumed on its ruins following its destruction in stratum X. Only fragmentary building remains were preserved from this level, and it appears that the fortifications (or at least the citadel) went out of use then. The pottery suggests a date late in the Middle Bronze Age. Stratum X was heavily destroyed by fire.

Late Bronze Age (Strata IX–VI). Four occupation levels from the Late Bronze Age were identified in area B. Each of the lower three (IX–VII, dated to the fifteenth–fourteenth centuries BCE) was destroyed violently by fire, indicating a period of unrest and instability. It appears that during this period Tel Batash was a town in the kingdom of Gezer, which dominated the fertile land of the Sorek Valley. As at many other LB sites in Israel, no trace of a city wall was found; the outer walls of houses served as a defense line, and where streets reached the end of the mound they were blocked by walls that closed the gaps between houses.

In each of the three strata the remains of substantial buildings were found, including those of large pillared halls with staircases leading to a second floor. The architecture of these houses is unparalleled elsewhere; they probably belonged to upper-class landlords or merchants. Rich assemblages of pottery and other finds were recovered in the destruction layers: considerable amounts of Cypriot pottery (mainly in stratum VII) and cylinder seals, scarabs from Egypt, clay figurines, and metal objects.

It seems that after the destruction of the prosperous stratum VII town (fourteenth century BCE), the site declined. Only poor structural remains and a few finds could be attributed to stratum VI (thirteenth century BCE).

Iron Age (Strata V–II). It is stratum V at Tel Batash that is to be identified with the Philistine town of Timnah in the biblical texts, probably built by the Philistines as a border town in the territory of the city-state of Ekron/Miqne. It was founded sometime in the second half of the twelfth century BCE, when Philistine bichrome pottery was already in use. Unlike nearby Ekron/Miqne, Tel Batash produced no Mycenaean IIIC pottery. The Batash was destroyed in about 1000 BCE or slightly later, perhaps when King David conquered the region. The Philistine town was well built, with mud-brick structures on stone foundations. Evidence for a shallow defensive wall was found in area C. In the residential areas several phases of construction were observed, evidence of the longevity of this stratum. Among the finds were typical Iron I pottery assemblages, including Philistine pottery and some figurines; however, the area of this stratum excavated thus far is too limited to allow an in-depth evaluation of the material culture.

Stratum IV (tenth century BCE) follows the total destruction or abandonment of the previous town. Its new structures were built on a different plan and are mainly domestic, probably belonging to a community of farmers. No city wall was discovered, but two towers and an L-shaped wall are probably the remains of its city gate. It appears that the stratum IV population was Israelite, and the town was part of the kingdom of David and Solomon. The pottery is very similar to that found at other Judean sites of the period and includes vessels covered with a thick, hand-burnished red slip. The stratum IV town came to an end in the late tenth century BCE, perhaps during the invasion of Pharaoh Shi-

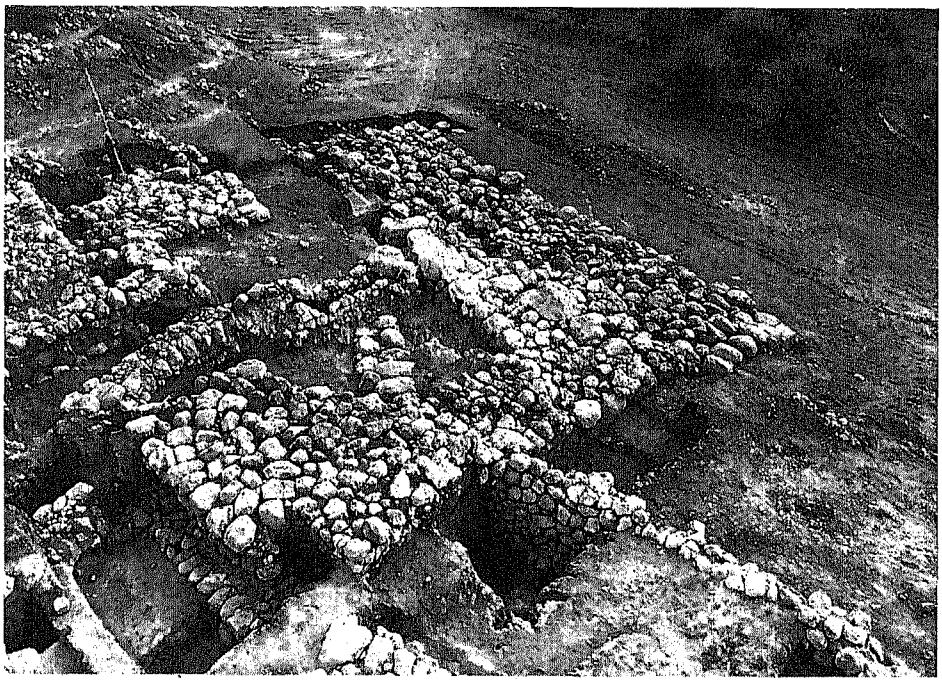
shak. Among the finds was an incised inscription on a bowl fragment that mentions "[so]n of Hanan." The name Hanan in this context is interesting because Elon Beth-Hanan is mentioned as one of the cities in this region during the reign of Solomon (1 *Kgs.* 4:9).

Stratum III represents the rebuilding of the town on a large scale. This town was destroyed in 701 BCE during Sennacherib's invasion; however, the date of its foundation is not clear, and it is still not known whether there was an occupation gap in the ninth century BCE. There clearly is no more than one major stratum between the tenth century (stratum IV) and the seventh century (stratum II).

The stratum III city was well fortified by a stone wall on the crest of the mound and a lower wall on its slope. A magnificent city gate led into the town (see figure 1). The narrow approach to the town was defended by an outer gate with a large bastion (8 × 24 m). A bent-axis approach in the outer gate and a small piazza led to an inner four-entryway or six-chambered gate structure.

South of the gate complex, on the crest of the mound, the foundation courses of a large public building were discovered. It appears to have been an administrative structure, just inside the city gate. In the northern part of the town, a building was found with large storage spaces in which dozens of smashed storejars, Judean in type, stamped with royal Judean seal impressions (*lmlk*), were found. One jar bears the seal impression of an official, "Tsafan (son of) Abimaas." The building was destroyed during Sennacherib's invasion of Timnah in 701 BCE, recorded in his annals. This fits the historical sources, which relate that King Hezekiah took control of the city-state of Ekron/Miqne, exiled its king to Jerusalem, and forced its elders to join him against Assyria. Timnah, which the Philistines had taken from Judah several decades earlier (according to 2 *Chr.* 28), was thus under Judean control, and the jars with royal seal impressions may have belonged to a Judean garrison stationed there.

In Stratum II (seventh century BCE), Timnah prospered, as did its much larger neighbor, Ekron/Miqne. The fortifications of the previous city of stratum III were reconstructed, the city wall thickened, and the gate rebuilt. The building remains indicate that the seventh-century town was well planned and densely built up. The public building south of the gate was replaced by an industrial and commercial complex, which included a finely built oil-pressing installation. In the northern part of the town, a large area was exposed that revealed a series of dwellings and a public building. The dwellings are typical Iron Age pillared buildings, or four-room house, featuring a space on the ground floor that is divided by a row of monolithic pillars. [*See* Four-room House.] A street separated the houses from the northern city wall. Out of the four houses exposed, three had industrial installations: one had an oil press and the two others an in-



BATASH, TEL. Figure 1. *View of the outer gate at Tel Batash, looking northeast.* (Courtesy Tel Batash Expedition)

stallation of undefined function, known also from nearby Ekron/Miqne.

Every house contained large quantities of pottery and other finds. Many of the forms of pottery vessels are typical of the region of Philistia and mainly of Ekron/Miqne; the others are Judean. Evidence for long-distance connections is found in the form of Phoenician, Transjordanian, and East Greek pottery. Connections with Judah are also illustrated by inscribed stone shekel weights and rosette seal impressions. Stratum II at Timnah was probably a town in the state of Ekron/Miqne that maintained strong ties with Judah and conducted extensive industrial and commercial activity. It appears that, as at Ekron/Miqne, the production and export of olive oil, part of a "cottage industry," was a major factor in the town's prosperity. It was severely destroyed by fire during the Babylonian conquest of the region, probably in 603 BCE.

The city subsequently fell into ruins and was briefly occupied by few squatters. During the Persian period there was a small settlement on the mound, but only a few walls and pits can be attributed to this period.

[*See also* Miqne, Tel.]

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AMIHAI MAZAR

BATHS. During pre-Hellenistic times in the Near East, the private bath, consisted either of a bathtub or bathing platform. From the Hellenistic through Byzantine periods, public bathhouses became the popular form of bathing. The sources for baths in antiquity are archaeological evidence, ancient depictions, and written sources.

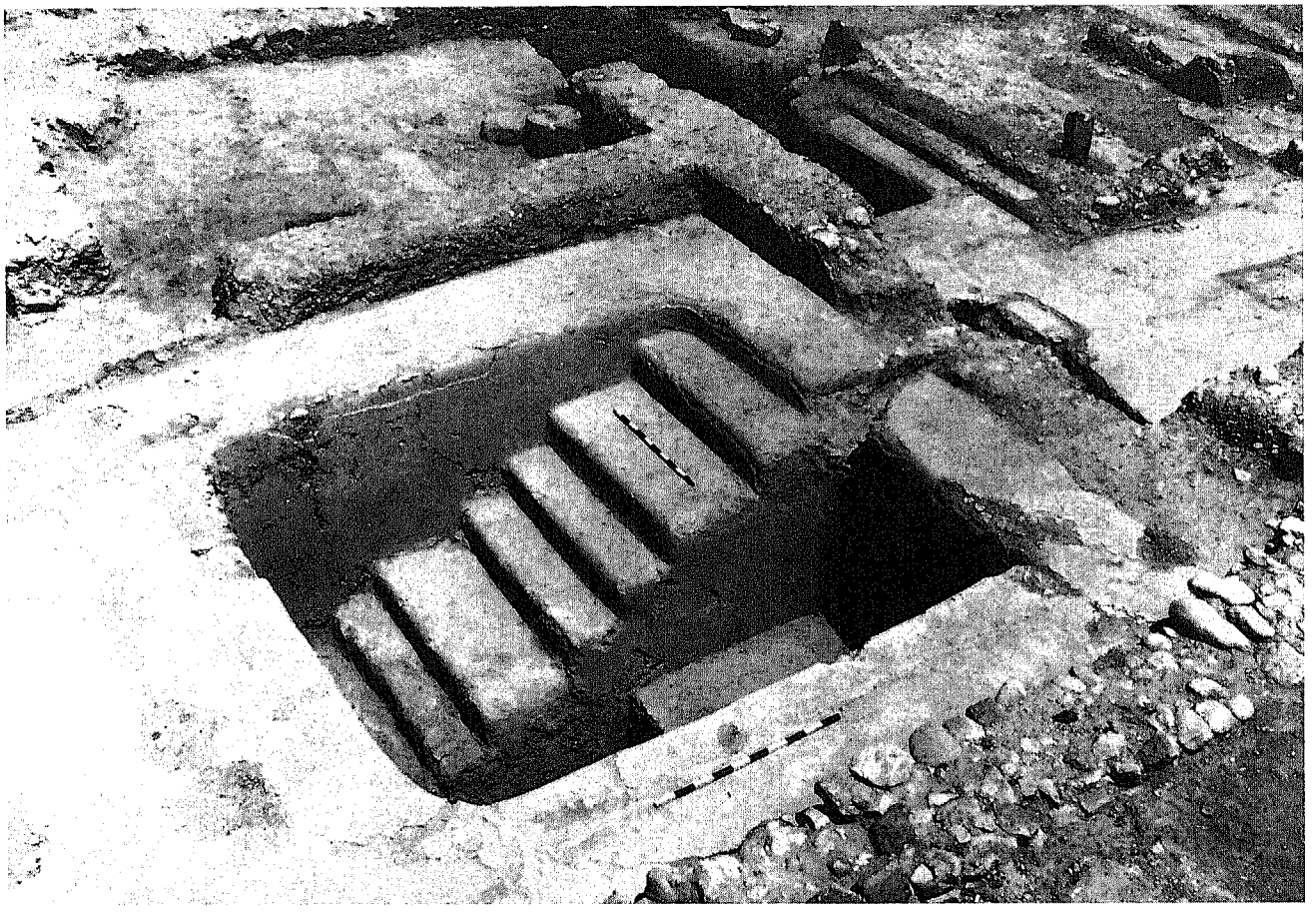
Some of the earliest archaeological evidence comes from Mesopotamia, from the first half of the second millennium BCE. From eighteenth-century BCE Mari, located on the Euphrates River, terra-cotta bathtubs were recovered in the palace. [*See* Mari; Palace.] Bronze bathtubs have occasionally been uncovered from the first millennium BCE in Mesopotamia. It seems, however, that in ancient Mesopotamia tubs were reserved for the wealthy; the poor bathed on the banks of canals and rivers and in cisterns or poured water over a bather on a plastered or paved surface. [*See* Cisterns.] In Nebuchadrezzar's Babylon, residences typically included a bathroom located behind the main room of the house. The bathroom consisted of a fired-brick floor, lined with bitumen and powdered limestone. The waste water from the bath flowed into a sump located beneath the lowest section of the floor. No traces of bathtubs have been recovered, indicating that shower water was poured over the bather.

Bathtubs appear on Cyprus in the Late Cypriot II period (fourteenth–thirteenth centuries BCE) and became increasingly popular in the Late Cypriot IIIA period (twelfth century BCE). [*See* Cyprus.] Both limestone and terra-cotta examples are known from Ayios Iakovos, Kalavasos Ayios Dhimitrios, Enkomi, and Maa-Palaeokastro. [*See* Kalavasos; Enkomi.] The custom of bathing in tubs is well known in Mycenaean Greece. It is described in the *Iliad* and *Odyssey* (cf. *Odyssey* 10.165) and can be associated with the increasing influence of Late Bronze Age Greece on Cyprus in the Late Cypriot II–III.

Indoor bathing installations in residences were common in Egypt. From Middle and New Kingdom Egypt, excavations at the royal palace of Amenophis III in Thebes and in residences at Lahun and el-Amarna have uncovered numerous examples of bathrooms. [*See* Amarna, Tell el-.] The typical bathroom was located near the bedroom, in close proximity to a latrine and dressing room. The bathroom consisted of a slightly sloped stone-slab floor and wall-lined with stone slabs. The bathwater drained through a spout located at the lower end of the stone slab or through a drainage channel that ran through the outer wall into a vessel or to the outdoors. A low wall separated the bathroom from the latrine. Similar bathrooms have been excavated on Minoan Crete. [*See* Crete.]

In addition to the archaeological evidence, a wall painting from a New Kingdom tomb at Thebes depicts a woman bathing in a bath installation that resembles those excavated at el-Amarna. [*See* Wall Paintings.] The woman is shown with four slaves waiting on her. One removes her jewelry and clothing, a second pours water over her head, the third rubs her arms and body, and a fourth holds a flower to her nose as she is bathed. The Greek historian Herodotus and the Roman author Diodorus mention Egyptian bathing customs, noting that warm and cold baths were used by the Egyptians; for ordinary ablutions, however, cold water was preferred.

Though rare, bathing installations similar to those found in Egypt are known from Canaan. At Tell el-'Ajjul and Beth-Shean, both sites with a strong Egyptian influence, plas-



BATHS. *Hasmonean ritual bath at Jericho.* (Courtesy ASOR Archives)

tered, pebbled, or shell floors have been interpreted by the excavators as bathrooms in which water was poured over the bather. [*See* ʿAjjul, Tell el-; Beth-Shean.] Bathtubs in ancient Philistia and Israel are found only occasionally. Terra-cotta baths or fragments from them have been excavated at several sites, including Tell Qasile, Ashdod, Tel Miqne/Ekron, Tell Abu Hawam, and Tel Dan. [*See* Qasile, Tell; Ashdod; Miqne, Tel; Abu Hawam, Tell; Dan.] It is noteworthy that the first three are Philistine sites, perhaps reflecting an Aegean origin for the custom of bathing. The nearly complete tenth-century BCE tub from Tel Dan was discovered in the sacred precinct and it presumably served a cultic function. [*See* Cult.]

Bathing in the modern, nonreligious sense is seldom mentioned in the Bible. In *Exodus* 2:5, Pharaoh's daughter bathes in the river; in *2 Samuel* 11:2, Bathsheba is observed by David bathing on the roof. However, washing of the face, hands, and feet are mentioned frequently in the Hebrew Bible and New Testament (cf. *Gn.* 43:31, *Sg.* 5:3; *Jn.* 13). Oval pottery footbaths have been found at Iron Age II Israelite levels at Samaria, Tell en-Naṣbeh, and Megiddo. [*See* Samaria; Naṣbeh, Tell en-; Megiddo.]

Private bathrooms in domestic architecture, located in proximity to lavatories, often including bathtubs, became common among the aristocracy in the eastern Hellenistic and Roman world. Bathtubs, hewn from stone, appear in subterranean rock-cut chambers below houses dating to the Hellenistic period from Mareshah, Israel. Several examples of bathrooms, located on the ground floor of the house and separate from ritual-bath installations, are known from Judea (Judah) during the Herodian period (first century BCE–first century CE). [*See* Ritual Baths.]

The custom of bathing in public baths originated in the classical Greek world with the rise of the public gymnasia and hot baths in the fourth century BCE. The gymnasium provided the inspiration for later bathing complexes throughout the Roman Empire that combined physical exercise with public bathing. The rapid spread and popularity of Roman baths are in a large part the result of the development of hypocaust heating and the ability to transport large quantities of water into cities via an aqueduct. [*See* Aqueducts.] Numerous contemporary Roman and Byzantine authors comment on the custom of public bathing. Bathing in Roman society was a daily habit, and spending

the afternoon in the public baths was a well-accepted custom, except among certain groups—philosophers, Jews, and Christians—who frowned upon the decadence of public bathing.

The major features of Roman baths include an exercise courtyard *(peristylum)* or larger gymnasium (palaestra), a dressing room (apodyterium), a cold room (frigidarium), often with a plunge bath, and a warm room (tepedarium) that led to a hot room *(caldarium)*. Because of the great variety in building plans, it has proven difficult to devise a typology for bathing complexes. Public bathing establishments can be divided into two main groups: *thermae* and *balneae*. Publicly funded thermae were exceptionally large baths that incorporated hygienic, athletic, recreational, educational, and social activities. Public baths could also be located near natural hot springs that also served medicinal purposes. One of the largest of these thermomineral complexes in the Roman world was Ḥammath-Gader, located in the southern Golan along the Yarmuk River in Roman Syria. [*See* Ḥammath-Gader.] *Balnaea* were smaller baths, either publicly or privately owned. In addition to public baths, bathing complexes are found in military camps, sanctuaries, and private and imperial residences.

In Asia Minor, the Greek gymnasium heavily influenced the plan and function of public bath buildings. At Pergamon, Roman baths were added on to the Hellenistic gymnasium; at Salamis and Samos, Roman baths were built over the Hellenistic gymnasium; and at Miletus Roman baths operated separately from the gymnasium. [*See* Pergamon; Salamis; Miletus.] In the larger centers they were symmetrical and well planned. Smaller baths in towns and villages were more varied in plan.

Most of the baths in North Africa date to the mid-second century CE and later. Almost every major center had more than one public bath. Fikret Yegül (1992) divides the North African baths into three main categories: imperial (e.g., the Hadrianic baths at Leptis Magna in Libya), half-axial (e.g., the Julia Memmia baths at Bulla Regia in Tunisia), and small, asymmetrical establishments (e.g., the Baths of Gallienus at Vollubilis in Morocco). [*See* Leptis Magna.]

In Judea and Roman Syria, public baths were introduced by King Herod and the Roman legions in the late first century BCE–first century CE. However, the majority of the public baths in Syria-Palestine date to the Late Antique and Byzantine periods and belong to the small-bath category. In the Byzantine period, the palaestra and associated athletic events disappeared from the bath. This trend is associated with the rise of Christianity in the fourth century, which frowned upon the gymnasium, an institution associated with pagan culture. Following the Islamic conquest of Syria-Palestine in the seventh century, the bathhouse continued in use, both as public baths in towns (e.g., the baths at Qaṣr al-Ḥayr East in Roman Syria) and as private baths in palaces (e.g., Khirbat al-Mafjar in the Jordan Valley in Roman Syria) and in desert castles (e.g., Quṣayr ʿAmra in the eastern desert of Roman Syria). [*See* Qaṣr al-Ḥayr al-Gharbi; Mafjar, Khirbat al-; Quṣayr ʿAmra.]

[*See also* Medicine; *and* Personal Hygiene.]

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ANN KILLEBREW

BE'ER RESISIM (Ar., *Bir er-Resisiyeh,* "well of the morning-dew") is a small hilltop site in the western Negev highlands, near the Naḥal Neṣṣana (30°49′ N, 34°34′ E; map reference 109 × 026). It is one of the largest of the dozens of Early Bronze IV pastoral nomadic encampments (c. 2300–2000 BCE) known in this area of scant rainfall. It was excavated in 1978–1980 by William G. Dever and Rudolph Cohen, sponsored jointly by the University of Arizona and the Israel Antiquities Authority.

The ridge above the wadi and modern well below revealed some eighty circular or elliptical stone huts, averaging 2.00–4.50 m in diameter, with walls well preserved up to 1.50 m (see figure 1). Door jambs and lintels were often intact. The roofs were made of chalk slabs, supported by wooden beams and central stone pillars. Few furnishings were noted, apart from sporadic stone benches, bins, hearths, and saddle querns for grinding grain.

BE'ER RESISIM. Figure 1. *Eliptical stone hut.* A portion of the upper walls and slab roof are reconstructed from original materials. (Photograph by Jonathan Kline; courtesy ASOR Archives)

The scant pottery, none of it restorable, consisted of a scattering of Early Bronze IVA red-burnished wares of Transjordanian type, dated about 2300 BCE, but mostly quantities of Early Bronze IVC wares typical of Dever's "Southern/Sedentary" family, about 2100–2000 BCE. Several copper awls and daggers were found, as well as a hoard consisting of a broken dagger and two triangular-section bar ingots. Miscellaneous domestic items included stone and shell ornaments; many *ad hoc* flint tools; two small chalk cups; a piece of leather; and several fragments of Red Sea conch shells and polished pierced bars made from them, perhaps remains of pectorals.

Most of the animal bones recovered came from a few large, unroofed stone circles. They were more than 90 percent sheep and goat, with a few small birds, desert gazelle, and hares also represented. The presence of immature caprids (sheep-goat) indicates winter occupation of the site since that is when they are slaughtered, but that does not, of course, rule out occupation in the summer as well.

Several off-site structures were investigated or excavated, including isolated stone circles, burial cairns with both articulated and disarticulated inhumations, two large rectangular hilltop buildings of enigmatic character, a few remains of run-off irrigation systems, and even a small "satellite village" on a nearby alluvial fan.

The plan of the main hilltop settlement, with many nearly identical round sleeping huts clustering around central courtyards, suggests a relatively egalitarian, polygamous society, with a total population of eighty to one hundred individuals at any one time. They were certainly pastoral nomads, but the copper ingots and a few "exotic" items like the conch shells suggest long-distance trade; the grinding stones are evidence of some primitive irrigation means that agriculture was also an element in a mixed subsistence system. The strong similarities of the pottery to that of the many Hebron hills shaft-tomb cemeteries (as at Jebel Qaʿaqir) probably indicate a pattern of seasonal transhumance over a circuit of roughly 60 km (100 mi).

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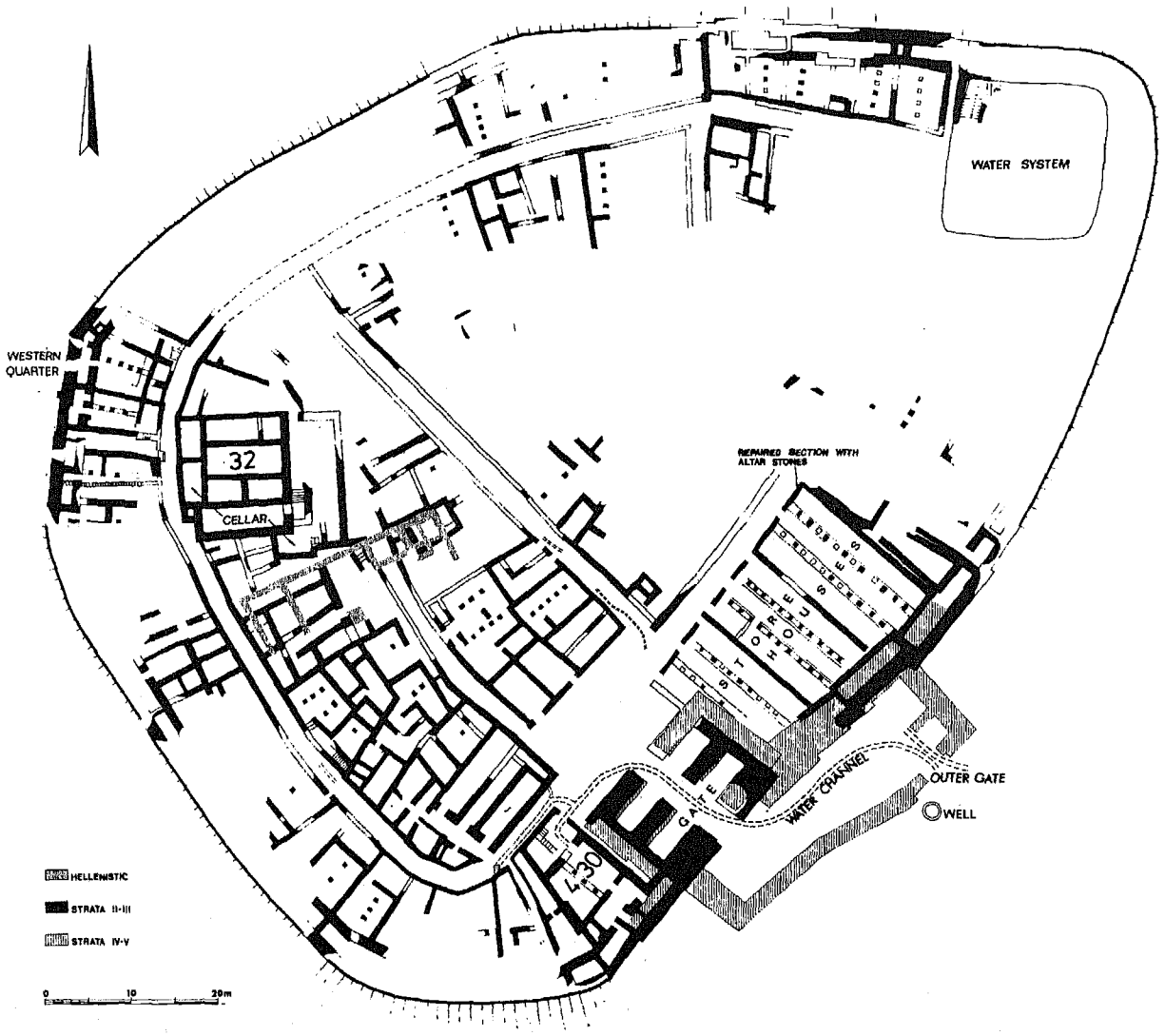
WILLIAM G. DEVER

BEERSHEBA (Ar., Tell es-Saba'), a small mound about 1 ha (2.5 acres) in area, located in the Beersheba valley, east of the modern city of Beersheba in Israel's Negev desert (map reference 135 × 073). The settlement was built on a hill at the fork of the Beersheba and Hebron riverbeds, which provided the site with natural protection and close proximity to cultivable alluvial soil, as well as to the main crossroad.

Biblical References. The main biblical references to Beersheba come from the patriarchal narratives. The patriarchs appear as pastoral nomads and occasional cultivators in the southern part of the land. God revealed himself to them (*Gn.* 26:24–25, 46:1–2) and they struggled at Beersheba with Abimelech over the wells (*Gn.* 21:22–34, 26:15–33). The name of the site stems from the Hebrew *shebu'a* ("oath") or *shiby'a* ("seven") (*Gn.* 21:31, 26:33). In the late premonarchical period, Joel and Abijah, the sons of Samuel, were stationed in Beersheba as "judges over Israel" (*1 Sm.* 8:1–2). Beersheba appears on the list of cities of Simeon and Judah (*Jos.* 15:28, 19:2; *1 Chr.* 4:28). It demarcates the southern end of the land of Israel that stretched "from Dan to Beersheba" (*Jgs.* 20:1; *1 Sm.* 3:20; *2 Sm.* 3:10, 17:11, 24:15; *1 Kgs.* 5:5). [*See* Judah.] Elijah passed through Beersheba on his journey to Mt. Horeb (*1 Kgs.* 19:3), and Amos



BEERSHEBA. *Plan of the city.* (Courtesy ASOR Archives)

condemned the pagan rites held at Beersheba along with those at Dan, Bethel, and Gilgal (*Am.* 5:5, 8:14).

Identification and Excavations. Although the identification of Tell es-Saba' with biblical Beersheba seems to be confirmed by excavation (Aharoni, 1973; Rainey, 1984), some scholars see a contradiction between the biblical accounts and the finds. Mervyn D. Fowler claims that the absence of Bronze Age and Late Iron Age remains discredits Tel Beersheba as a patriarchal period site and as a city during Josiah's reign, respectively (Fowler, 1982). Nadav Na'aman believes that the location of ancient Beersheba must be sought at Bir es-Saba', while locating biblical Sheba at Tel Beersheba (*Jos.* 19:2; Na'aman, 1980). Patriarchal Beersheba is well represented in the remains dated to the twelfth and eleventh centuries BCE. Anson F. Rainey suggests that two settlements—one at Tel Beersheba and one at Bir es-Saba'—bore the same name (Rainey, 1984). Yohanan Aharoni also suggested identifying Tel Beersheba with the "Hagar of Abra(ha)m" of Shishak's list (Aharoni, 1973, pp. 111–113).

Extensive excavations were conducted at Tel Beersheba by an expedition from the Institute of Archaeology at Tel Aviv University. The project was directed by Yohanan Aharoni from 1969 to 1975 and in 1976, following Aharoni's death, by Ze'ev Herzog. Methodologically, a wide horizontal-exposure approach was applied, aimed at uncovering broad and continuous occupation levels. Indeed, a comprehensive picture of the city planning in stratum II was revealed. Additional seasons, directed by Herzog, have been carried out at the site since 1990 in conjunction with the National Parks Authority's preservation of the site.

Chalcolithic Period. Scattered sherds from the Chalcolithic period were found in the site's debris. It seems that any structures from this stage were removed by later construction operations. The first Iron Age settlers (Iron I, stratum IX) cleaned and reused depressions, or pits, they noticed on the mound that may have belonged originally to the Chalcolithic settlement (see below).

Iron Age I. The best sequence of Iron Age remains was detected on the southeastern slope of the mound, under the outer gate of stratum V. The remains include four strata (IX–VI) dating from the mid-twelfth to the early tenth centuries BCE. The first settlement (stratum IX) consisted of a series of pits hewn into the hill's natural bedrock. The pits range from 5 to 10 m in diameter, and from 2 to 3 m in depth. The excavated area yielded parts of seven pits, most of them used for storage, apparently of grain. One pit, excavated almost in its entirety, had clearly been utilized for habitation. It was hewn into the bedrock at an angle, so that the rock provided natural protection from above. Its floor was paved with pebbles, and storage jars stood in a hewn niche. A cooking oven, surrounded by layers of ash, indicates domestic use of the pit.

A community of about twenty families could have lived in this settlement in tents or huts alongside the pits. The lack of stone architecture may point to a seminomadic community experiencing the first stage of sedentary life, a shift generated by slightly improved climatic conditions that enabled them to grow yields. Dry farming is indicated from the presence of cattle bones (12 percent), but most of their subsistence was still based on animal husbandry (sheep and goats, 74 percent). [*See* Cattle and Oxen; Sheep and Goats.] Two Egyptian scarabs from the New Kingdom, fragments of Philistine pottery, and local ware date stratum IX to the second half of the twelfth and the first half of the eleventh centuries BCE.

The first houses at the site were erected in stratum VIII, although the pits were still utilized. The single large unit erected near the well (see below) consists of a broad room and a forecourt—a house that might be considered the prototype of the four-room house. [*See* Four-room House.] The meager number of objects found in this stratum include the earliest iron arrowheads found at the site. Stone-built houses indicate a more permanent type of settlement. Stratum VIII is dated to the third quarter of the eleventh century BCE.

The stratum VII settlement was built over the abandoned pits and houses of stratum VIII. Houses with solid stone foundations were erected in a belt covering the eastern slope—about half of the hilltop. The houses, which can be reconstructed as four-room-house types, encircled the settlement, their back walls facing outward, forming an enclosed settlement (Herzog, 1984). The large open space in the center of the settlement was probably utilized for the community's flocks of sheep and goats. However, large quantities of cattle bones discovered at Tel Beersheba, Tel Masos, and other sites in the area may point to the growing role of agriculture in the region's economy, most probably from further-improved climatic conditions. [*See* Agriculture; Masos, Tel.] In the eleventh century BCE, the Beersheba valley witnessed the most dense occupation in its premodern history. Stratum VII yielded rich finds, including pottery vessels, jewelry, iron tools, and fragments of figurines, that date to the late eleventh and early tenth centuries BCE.

The settlement of stratum VII was abandoned and parts of the houses were dismantled. The next stage, stratum VI, is characterized by a partial reuse of the earlier units, once interior partition walls were added. A single new "three-room" house was constructed in this stage. The finds from this stratum are very similar to those from stratum VII and must date to the first half of the tenth century BCE. The remains in stratum VI are interpreted as belonging to an interim stage, during which the new city (of stratum V) was built. The single house on the slope of the hill may have served the commander of the project. The compartments near it could be used as stores for equipment and shelters for work supervisors. These remains were eventually razed toward the final stage of the construction of the new city.

The well. A well 69 m deep was found in the center of the remains of the Iron I settlement. During Iron II, this well was left outside the city fortifications but continued to serve both the city's inhabitants and passers by. Although the well was reused for several centuries, it seems that it was first dug in one of the Early Iron phases. Aharoni (1973) identified this well with the one mentioned in the patriarchal narratives (*Gn.* 21:26). Stratigraphically, the well does not destroy any Iron I structure, and the builders of the outer gate of stratum V clearly took it into consideration when erecting the gate's foundations. During Iron II, the city's drainage system directed rainwater into the well. The finds from the fill indicate that the well was destroyed (apparently in an earthquake) and filled in during the Late Hellenistic period.

Iron Age II. The four strata of the Iron II city include remains of a small fortified city (2.8 acres) built on the top of the mound (strata V–II). The last occupational phase (stratum I) was an attempt to rebuild the city that was eventually halted. Two systems of fortifications were erected at Beersheba in Iron II. The earlier one consisted of a solid city wall with a four-chambered gate built in stratum V and reused in stratum IV. The later fortifications consisted of a casemate city wall and another four-chambered gate built in stratum III and reutilized in stratum II. Each of these strata suffered destruction, but the destruction of strata V and II was clearly caused by a more violent and widespread conflagration. These destructions should be dated, based on the rich pottery finds, to campaigns of Pharaoh Shishak (Sheshonq) in 926 BCE and King Sennacherib in 701 BCE, respectively. Some scholars have, however, challenged the date of stratum II. Kathleen M. Kenyon (1976) dated Beersheba II earlier than Lachish III, whereas Yigael Yadin (1976a) correlated it with stratum II at Lachish. [*See* Lachish.] Na'aman (1979) suggests, on historical grounds, pushing the conquest of Beersheba back to the time of Sargon.

Israelite city. The city of stratum II at Beersheba presents a valuable picture of an administrative center in a marginal region. The oval city is small but carefully planned, with the encircling city wall following the topography of the hill. Only on the eastern side of the mound does the plan extend to a lower level. The water-supply system was erected there, and in order to incorporate it into the city, a colossal earthen rampart was built. A belt of two circular streets, parallel to

BEERSHEBA. *View of the Beersheba Gate.* (Courtesy Pictorial Archive)

the outer contour of the mound, divided the city's interior. An additional street was cut through its center. All the streets converged on the open gate square, the city's only piazza, which could serve as a meeting place and market. The gate itself consisted of chambers with benches used by the city's functionaries in conducting their business.

An elaborate system of drainage channels was uncovered beneath the streets and pavements that conducted rainwater outside the city quickly. This prevented the collapse of the walls, which were made of stones packed with a mud mortar topped by sun-dried mud bricks. The main channel, which ran under the gate, conducted the water into the deep well outside the gate.

Water system. Aharoni (1973) interpreted a wide flight of stairs he exposed in the 1970s as part of a water system. In 1994, the entire area was excavated and a monumental water-supply system unearthed. The system was approached through a square, vertical shaft, about 15 m deep. Stairs with a low parapet led to a stepped tunnel for an additional 5 m, at the bottom of which a series of underground cisterns is entered. [*See* Water Tunnels; Cisterns.] Five cisterns, each about 3 × 6 m and about 6 m high, were hewn into the limestone bedrock and covered with thick layers of water-resistant plaster. The total capacity of the system was about 500 cu m. Water was directed into the system through a tunnel from a nearby riverbed. Because the rivers in the Negev flow only for brief periods in the winter, the planners had to build a dam that directed floodwater into the tunnel. In this respect, the system at Beersheba differs from its counterparts at Hazor and Megiddo—which offer an approach to the underground water level or cistern. [*See* Megiddo; Hazor.] The systems in both regions were adapted to the availability of their water resources. Because the system could be filled only during a limited period of time (when it rained in winter), water was probably spared for emergency use, when the city was under siege. Assuming a population of three hundred in the city and an annual consumption rate of about 1,000 l per person, the city could withstand a siege for as long as one year. The well outside the city gate provided the daily needs of the city's inhabitants as well as of merchants, caravans, and military units passing by and of the livestock.

Pillared buildings. A large (600 sq m) typical pillared building was exposed near the city gate. It consisted of three units, each with three long halls separated by limestone columns that are square in section. Hundreds of pottery vessels found in the building's destruction layer indicate that it was the city's main storehouse. The goods would have been collected as taxes from neighboring villages like *byt ʿmm* and *tld* mentioned in an ostracon found in one of the storerooms (see Aharoni, 1973, pp. 71–72). In addition to storejars for cereals, oil, and wine, the inventory also included objects for food preparation and serving, evidence that the storehouse also was used for cooking and serving food to the city's administrative or military personnel (functions hinted at in some of the Arad ostraca). [*See* Arad Inscriptions.] Despite such clear-cut information, some scholars are of the opinion that the pillared buildings at Beersheba were horse stables (Yadin, 1976b; Holladay, 1986).

Horned altar. In the fifth season of excavation, unusually well-dressed stones were uncovered that were incorporated into a wall of the storerooms. Peculiar rounded projections at the top of three of the stones (a fourth was cut off) identified them as part of a large horned altar. Additional stones were found in the eighth season that together reconstruct an altar that is a cube of 1.6 × 1.6 × 1.6 m. Aharoni (1973) suggested that the alter had originally stood in the courtyard of a temple, apparently in the place of the later basement building (see below). The dismantling of the temple and demolishing of the alter at both Beersheba and Arad are viewed as part of the cultic reform carried out by Hezekiah, king of Judah. [*See* Arad, *article on* Iron Age Period.] Yadin (1976a) suggested locating the altar in a *bāmâ* near the city gate.

Governor's palace. A large unit (no. 416) in stratum II that controlled the gate square is interpreted as the residence of the city's governor (Heb., *śar hāʿîr*). The building is composed of ceremonial, residential, and service wings. Two large halls paved with stone pebbles, located on either side of the entry corridor, served as reception rooms. The doorjambs in the rear of the rooms were adorned with ashlar stones, the only example of such masonry found in Iron Age Beersheba. At the far end of the palace, with a separate wide entrance, was a small kitchen and a storage room. The western wing of the building consisted of two residential units. A narrow stair area offered passage to the upper floor from the entry corridor.

Basement house. The second large structure in stratum II was found on the western side of the city. Its odd wall foundations were sunk 4 m deep into the ground (all others were only about .5 m deep). While in some rooms the space was filled with homogenous earth, two rooms were left empty and served as basements. The building's exceptional wall structure and east–west orientation led Aharoni to conclude that Beersheba's temple had stood there: that in stratum II, after the temple was destroyed down to its oldest foundations, the basement house replaced it. The underground rooms were connected by a door and apparently served as a wine cellar owned by one of the city's chief functionaries.

Residential dwellings and population. Apart from the units listed above, the city's space was allocated for residential buildings. The sections of the city exposed attest that the domestic units were not uniform, however. Although they resemble the four-room-house type (most houses possessed a wall made of stone pillars to support the roof), their sizes differ and their internal division varies. The kitchens appear to have been located in the front room, which was unroofed. The central space, divided by pillars, may have been roofed

and used as a storage area and as a stable for the household's livestock. The rear broad room was the family's bedroom. In houses located at the outer belt of the city, this room was also part of the defensive casemate wall. An estimated 300–350 people could live in the seventy-five dwellings at Tel Beersheba.

Its high standard of city planning as well as the vast resources and effort invested in its urban structures—its fortifications, street network, water system, and storehouses—clearly point to an administrative role for it. Such efforts were made for the kingdom's civil service elite; ordinary citizens lived in villages and farms and were engaged in agriculture. The inhabitants of Israelite cities were the region's governor; regional tax collectors who were also responsible also for redistributing taxes in kind; military commanders and local guards; officials responsible for international trade; and the priests who controlled religious rites.

Late periods. After the destruction of stratum II, Tel Beersheba was never rebuilt as a city. Following an unsuccessful attempt to rebuild the fortifications (stratum I), the site was deserted for nearly three hundred years. The majority of the finds from the Persian period are from pits around the mound's perimeter. Forty Aramaic ostraca found in the pits list personal names of Jews, Edomites, and Arabs and mention quantities of wheat and barley. The pits were used, as elsewhere, to store grain, which was then supplied to the Persian army.

Remains of a large Hellenistic fortress with a temple nearby were found on the mound. Numerous objects were uncovered in *favissae,* or pits, dug in the temple's courtyard: a clay figurine (made in a mold) of a pair of goddesses; a Babylonian-style cylinder seal; female figurines in bronze and bone; a bronze bull figurine; and a falcon-shaped faience pendant. In the Herodian period a large palace, including a bathhouse, was built on the mound. The latest structure was a fortress from the Roman period (second and third centuries CE), built as a part of the limes Palaestinae. Following another gap of about five hundred years, the fortress was reused as a way station in the Early Arab period (eighth–ninth centuries CE). In the last few centuries the mound has served as burial place for local bedouin.

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ZE'EV HERZOG

BEHISTUN. *See* Bisitun.

BEIDHA, site located 4.5 km (2.8 mi.) north of Petra, 33 km (20 mi.) from Ma'in, 101 km (63 mi.) from 'Aqaba, and 180 km (112 mi.) from Amman in southern Jordan. It lies along a 4-kilometer-wide shelf comprised of alluvial valleys interspersed between steeply faced Cambrian sandstone outcrops. This north-south shelf interrupts an abrupt westerly descent from the Jordanian plateau to the lowlands of the Wadi 'Arabah, where elevations drop from 1,600 m to fewer than 200 m within a distance of 16 km (10 mi.). The site's elevation is 1,020 m, on and within a remnant terrace formed by alluviation of the Wadi el-Ghurab. A thick sequence of cultural and noncultural deposits, up to 6 m deep, accumulated. Three periods of human occupation were identified; a Natufian encampment (primarily during the eleventh millennium BCE), a Pre-Pottery Neolithic B (PPNB) village (during the seventh millennium), and terraced Nabatean agricultural fields (second century BCE—first century CE).

Beidha, initially called Seyl Aqlat, was discovered by Diana Kirkbride with the aid of B'dul bedouin during a 1956 reconnaissance survey for sites predating the ceramic Neolithic in the Petra area. Stone walls and early Neolithic flints eroding out of the upper talus slope of a seasonal drainage, and white-patinated Natufian artifacts farther downslope revealed the site's research potential. Kirkbride excavated the site for eight seasons; seven between 1958 and 1967 and a final one in 1983. She supervised the excavations, and a series of assistants directly supervised local workers, starting in 1963. The digging was conducted primarily by trained Jericho men using a hand pick and a trowel.

Excavations exposed 54 sq m of the Natufian occupation,

revealing a maximum thickness of 0.6 m of cultural deposits that thinned along the margins. The Natufian occupation, consisting primarily of small lithics, faunal remains, and small hearths and large roasting pits, appears to have been a short-term or seasonal campsite that was occupied repeatedly over a considerable period of time. Minimal evidence of plant processing was discovered, there was an absence of features such as buildings, storage facilities, and burials.

The PPNB settlement lies on top of the alluvial terrace. It consists of a small, low tell more than 3 m thick, along with a shallower deposit of associated cultural material beyond the limits of the village. Excavations exposed 1,425 sq m of Neolithic deposits and sixty-five buildings (1,050 sq m and sixty-one buildings within the limits of the tell, and 375 sq m of indeterminate Neolithic deposits outside the tell, including four buildings and a series of related features 40 m farther east). Final Neolithic stratigraphic modeling distinguished three main phases associated with well-preserved buildings and abundant artifacts on their floors (including bone tools, flaked stone tools, ground-stone axes, pestles, stone grinders, stone beads, raw materials, and subsistence remains, including gazelle, goat, cattle, cereals, legumes, and pistachios). These data allowed for considerable insight into the spatial organization of an Early Neolithic village.

The Neolithic village appears to have been continuously occupied, during which time a unique, indigenous architectural progression took place from clusters of oval post houses, through individual oval and subrectangular buildings, and ultimately to full rectangular buildings complete with two stories (with an open upper story and a basement consisting of a long corridor and up to seven very small rooms).

Initially, the Early Neolithic village consisted of open courtyard spaces and small aggregates of buildings. The distribution of buildings became more compacted over time, and open space was limited to a central courtyard. The earliest buildings were simply organized, interior structural features were absent, and storage and production shared an undifferentiated space used for eating, receiving guests, and sleeping. Production and storage became more spatially segregated within domestic dwellings over time. Interior architectural features increased in frequency and diversity, focusing activities and storage in particular locations within domestic buildings. Storage and production areas were ultimately restricted to the basements of the two-story domestic buildings.

Larger, distinct, nondomestic structures were centrally situated throughout the village's history. They were inferred to have been the venue of suprahousehold decision making and related ceremonial activities. Five uniquely constructed medium-sized buildings off-site were also interpreted as nondomestic, possibly associated with aspects of the rich ideological and ritual tradition that flourished during the PPNB.

Research at this Early Neolithic village has provided considerable insights into how one small community attempted to embrace the social and economic changes initiated by sedentarism and food production.

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BRIAN F. BYRD

BEIRUT, capital of Lebanon, located on the Mediterranean coast (33°54′ N, 35°30′ E). The city's ancient name was Biruta and, in the classical period, Berytus. The name is generally thought to be derived from the common Semitic word for "well" or "pit"—in Akkadian, *būrtu;* Hebrew, *bĕ'ēr;* Arabic, *bīr.* Biruta is a plural form.

Berytus was renowned in the Roman world as a commercial center but most especially for its school of law, which flourished from the third to the sixth centuries CE. The earthquake of 551 CE devastated the city. In turn the medieval city fell into ruins, but its scattered granite columns impressed the Persian traveler Nasr-i-Khusraw, who visited the city in 1047. The early western visitors, Henry Maundrell (1697), Richard Pococke (early eighteenth century), F. B. Spilsbury (1799), and William Thomson (1870), all realized that the scattered remains were the ruins of Roman public buildings.

Early Investigations. Beiruit provides only the barest archaeological evidence of a pre-Roman city. The Roman city

itself lies beneath the port area, making regular excavations impossible.

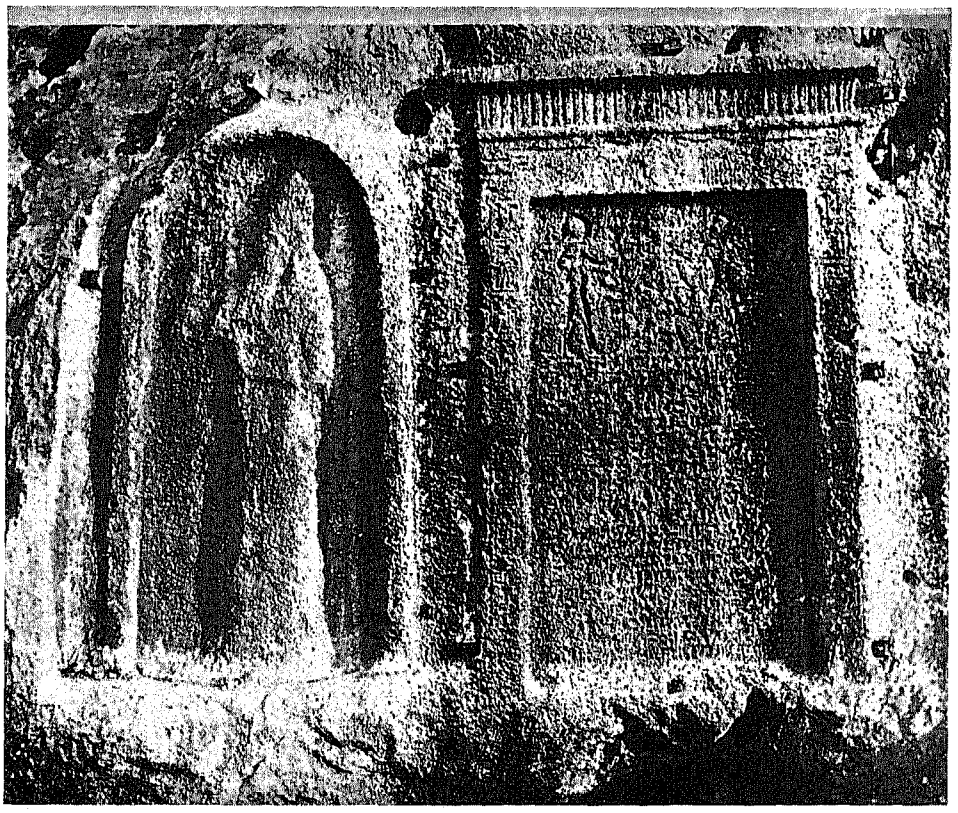
Prehistoric period. Early investigations and limited archaeological activity were begun in 1914 by a group of Jesuit scholars at St. Joseph University, Beirut. In 1946 Henry Fleisch and Louis Dubertret, also from St. Joseph, made a careful study of the marine terraces of Ras Beirut, the promontory, identifying different levels. During this survey of open-air, unstratified sites, Fleisch picked up an Acheulean biface, a water-worn hand ax believed to be the oldest stone tool found in Ras Beirut.

In 1972–1973, Fleisch extracted fifteen Lower and Middle Acheulean bifaces, the oldest stone bifaces found in Beirut in a stratified deposit. Raoul Desribes found similar tools at Furn ech-Chebbak near Nahr (the River) Beirut in about 1914. Fleisch and Paul San-Laville identified the Middle Paleolithic and the Levallois-Mousterian cultures by their core and flake industries, making Ras Beirut the earliest Mousterian site in the eastern Mediterranean basin (see Saidah, 1970).

Fleisch found evidence of the Upper Palaeolithic at two kinds of sites in the vicinity of Ras Beirut: open-air campsites and caves and shelters. Lorraine Copeland's survey in the early 1960s recognized twenty open-air campsites in the sand around Beirut (see Saidah, 1970). The caves and shelter sites belong mainly to Upper Paleolithic Beirut, and they are represented in the Wadi Antelias area, some 6 km (4 mi.) north of Beirut. Ksar 'Akil is a key site for this period and for the prehistory of Lebanon. [*See* Ksar 'Akil.]

In 1930 Auguste Bergy identified the earliest known Neolithic village site, called Tell Arslan, near the Beirut airport. Fleisch rescued a large number of Neolithic flint tools as well as potsherds there that are now part of the collection at St. Joseph's Museum of Lebanese Prehistory. In 1969 Roger Saidah located another Neolithic settlement in the center of the city, at the ancient tell of Beirut. In 1914, Desribes uncovered a Chalcolithic site called Minet ed-Dhalieh on the second headland south of Pigeon Rock. The site was partly excavated. Abundant remains of flints, blades, and flakes litter its surface.

Historical periods. Little is known about Beirut in historical periods before Greco-Roman times. Although kings from Egypt and Mesopotamia had stelae carved in the rock cliffs of Nahr el-Kalb north of the city, recounting their military exploits in the eastern Mediterranean (see figure 1), written documents pertaining to the history of Beirut are



BEIRUT. Figure 1. *Nahr el-Kalb rock-cut stelae.* At left is Assyrian stela no. 13; at right, Egyptian stela no. 14 of Rameses II. (Courtesy I. Khalifeh)

rare. The city is not mentioned by Herodotus and it does not appear in the Hebrew Bible.

Second millennium. In 1926, near the port area, an Egyptian sphinx with a royal inscription of Amenemhet IV (eighteenth century BCE), was uncovered that found its way to the British Museum. In 1954, about 100 m northeast of where the sphinx was found, three tombs were discovered containing burials ranging from the seventeenth to sixteenth centuries BCE. In addition to pottery and metal tools, the scarabs and alabaster vases found are evidence of trade with Egypt and Palestine. Another Middle Bronze Age tomb was discovered at Sin el-Fil, about 2 km east of the ancient tell. At the tell itself, a Late Bronze Age tomb was found containing a stone vase fragment bearing the name of Rameses II. The presence of Mycenaean pottery in this tomb indicates that Beirut was also involved in trade with the Aegean.

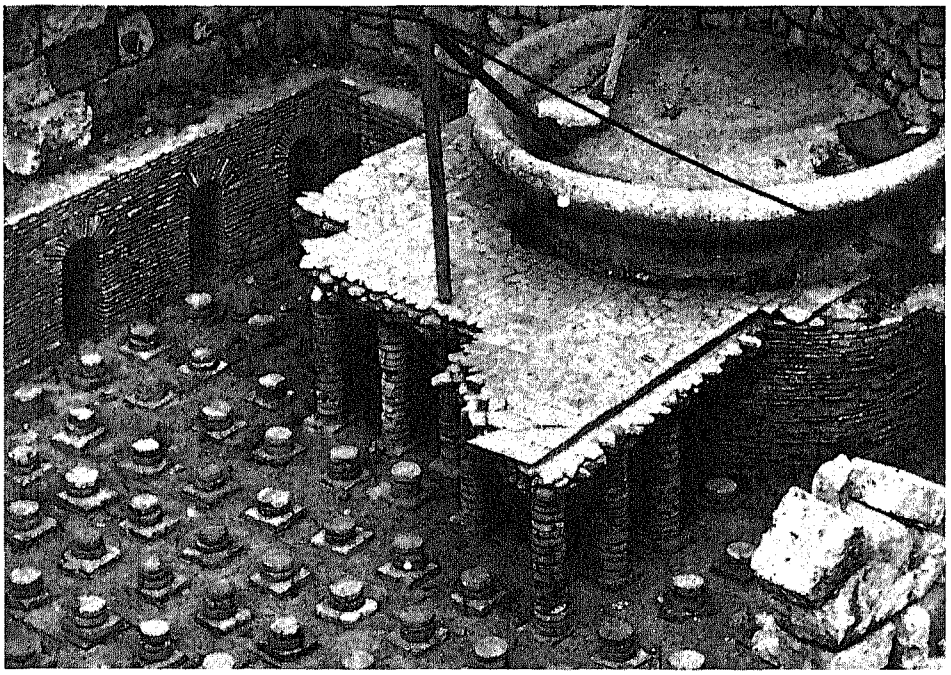
First millennium. Written and archaeological records for Beirut from the first millenium BCE are scarce. A small ivory perfume vase in the form of a standing woman, now in the Ashmolean Museum in London, is said to have come from Beirut. It may date as early as the eighth century BCE. In 1930, just east of the Grand Serail, a quantity of baked-clay figurine fragments of horsemen and a small terra-cotta statuette of a woman, perhaps a goddess, with an Egyptian hairstyle were discovered that belong to the Persian period. Several of these fragments are part of the collection of the Museum of the American University of Beirut.

Classical period. From 1907 to the late 1950s, no major archaeological excavations were conducted in Beirut. Mainly rescue operations attempted to salvage certain Hellenistic, Roman, or Byzantine architectural elements. Important suburbs developed on the sandy beaches south of Beirut during the Roman period. Between Jnah and Ouzai several mosaic floors were uncovered belonging to those seaside villas. High on a mountain overlooking Beirut, at Beit Mery, stand the remains of a Roman settlement and a temple. During the 1960s, the Department of Antiquities excavated the area, whose rich finds of Roman Beirut and its environs are now in the Beirut National Museum.

Beirut's urban plan followed the practice of all Roman city planning: it has two major crossroads, a *Decumanus Maximus* and a *Cardo Maximus*. The information available about this city was assembled into a plan from various unrelated sources by Jean Lauffray in 1914. It is still a useful document (see Saidah, 1969).

Recent Excavations. In 1968, the Department of Antiquities commissioned Haroutine Kalayan to excavate certain monuments in Beirut.

1. An extensive Roman bath near the Grand Serail, with a large cistern and rooms decorated with frescoes were uncovered and partly restored
2. A Roman defensive tower that had been reused in the medieval period
3. A stretch of a Roman street complete with its pavement, columns, capitals, and an architrave in the center of Parliament Square



BEIRUT. Figure 2. *Detail of the Roman baths.* (Courtesy I. Khalifeh)

4. A second Roman bath and part of an important municipal building (a basilica?) that probably covers the *Decumanus Maximus*

In 1969, the Department of Antiquities, represented by Roger Saidah, began to clear an area on the ancient tell, near the port area, where in 1954, MB and LB tombs had been found (see above). Surface finds included a Neolithic hammerstone, some EB combed ware, and MB and LB sherds. No Early Iron Age material was recovered, but some sixth-century BCE jar handles were found. This excavation was the last opportunity to work on the ancient tell. Saidah's results remain unpublished, as he died soon thereafter.

In 1977, when the possibility of reconstructing the modern city was being studied, Ibrahim Kawkabani, under auspices of the Lebanese Department of Antiquities, and J. D. Forest, from the Institut Français d'Archéologie du Proche Orient, undertook a series of soundings to look for the city's ancient law school (see above). The work stopped with the onset of Lebanon's civil war. Twenty soundings were made, producing finds from the Hellenistic, Roman, Byzantine, and Mamluk periods. The material culture unearthed included pottery jars, lamps, and figurines; stamped Rhodian and other jar handles; carved bone objects; metal weights, rings, and handles; sculptured and inscribed reliefs, mortars, and capitals; and weaving utensils. Glass, coins, and gold jewelry, mainly from the Byzantine period, were also recovered but remain unpublished.

In 1977 and 1982, several attempts to reconstruct and restore modern Beirut's central business district were stalled by security considerations. In 1983 and 1984, reconstruction and restoration went forward at a considerable pace. A symposium called Beirut of Tomorrow, held at the American University of Beirut in 1983, called for the protection of historic monuments and for attempts to explore the ancient tell of Beirut. UNESCO experts Ernst Will and Rolf Hachmann were invited to the city in 1983 as consultants.

Early in 1993, UNESCO consultants Philippe Marquis, John Schofield, and Jean Paul Thalmann were contracted to work with the Council for Development and Restoration and the Department of Antiquities. On 10 September 1993, work was begun in downtown Beirut in collaboration with teams from the Lebanese University, the American University of Beirut, Britain, France, the Netherlands, and Italy, and the Royal Museum of Belgium. Five soundings were dug in a three-month period in the downtown area, with the objective of exploring the limits of the ancient town. The teams worked during 1994 and 1995 in and around the ancient town in an area of about 500,000 sq m, expanding the number of soundings to find the Prehistoric, Canaanite, Phoenician, Roman, and medieval cities. Archaeological rescue operations accompanied the construction in the downtown area and will continue to do so.

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ISSAM ALI KHALIFEH

BEIT MIRSIM, TELL, site located in the chalk foothills of the eastern Shephelah, about 20 km (12 mi.) southwest of Hebron and 13.5 km (8 mi.) southeast of Tell Lachish (31°27′ N, 34°54′ E; map reference 1415 × 0960). In 1924 William Foxwell Albright identified the 3-ha (8-acre) site as biblical Debir (*Jos.* 15:15–17; *Jgs.* 1:11–15). This identification, however, has been contested, most convincingly, by Moshe Kochavi, who identified Debir with Khirbet Rabud. [*See* Rabud, Khirbet.] Tell Beit Mirsim thus remains without a known biblical identification.

The site was first excavated in four seasons (1926–1932) by a joint expedition from Xenia Theological Seminary and the American Schools of Oriental Research, with Albright serving as field director. Excavations were devoted mainly to a broad exposure in the mound's southeast quadrant, reaching bedrock in some parts. In the northwest sector a large, contiguous area of the uppermost stratum (A) was cleared. For many years Albright's excavation at Tell Beit Mirsim was considered a model of scientific accuracy, and his four volumes of final reports (1932, 1933, 1938, 1943) became a cornerstone for the ceramic typology and chronology of biblical Palestine.

In the 1970s extensive looting led to the discovery of the necropolis of Tell Beit Mirsim, and some thirty tombs were investigated between 1978 and 1982 by the Israel Antiquities Authority; as of 1995 these have yet to be published.

The Mound: Stratification and Principal Finds. Ten major strata (A–J), some of them subdivided into phases, were identified on the site, representing nearly continuous settlement from the Early Bronze Age to the Iron Age II. Albright's excavation method and somewhat sketchy stratigraphic analyses, which consist mainly of identifying major burn layers and homogeneous pottery assemblages, have attracted several attempts at a reassessment of the major strata and finds (see bibliography). The following description of the excavations, while based on Albright's most recent summary (1975), incorporates the results of these more recent reevaluations.

Stratum J: Early Bronze Age. No architectural remains were recovered in stratum J, which consisted of pottery deposits in pockets in the bedrock. The bulk of this pottery is EB III in date—large, pattern-burnished platters; combed-ware jars and pithoi; and spouted vats—with possible fragments of earlier EB forms.

Strata I–H: Early Bronze IV. Fragmentary pavements and masonry were attributed to strata I–H, which are separated by ash deposits. The pottery of the two strata is similar and consists of typical southern EB IV forms: ribbed and inverted rim bowls, ovoid jars, jugs, and cups with combed and applied decoration, some forms with vestigial lug and ledge handles.

Strata G–F: Middle Bronze Age I. Strata G–F represent the beginning of intensive occupation on the mound. While stratum G appears to be an unwalled settlement, with generously proportioned houses, stratum F reveals elements of urban planning—a city wall and adjacent structures built at right angles to it. The city wall, with massive stone foundations some 3.3 m wide, is polygonal in plan, with towers placed at each angle. The houses abut the fortification by means of a common rear wall running along its inner face. Despite evidence of considerable building activity in the two strata, their pottery assemblages were indistinguishable, consisting of forms typical of both earlier and later phases within the MBI.

Strata E–D: Middle Bronze Age II–III. Strata E–D, each subdivided into two phases, represent the zenith of Canaanite Urban civilization at Tell Beit Mirsim. In stratum E, the fortification wall was buttressed by a massive beaten-earth glacis, partly faced with stone. Traces of what may have been a three-entryway gate were unearthed beneath the east gate of the Iron Age town. Within the wall and parallel to it, a street furnished with a stone-lined drain was revealed, lined on both sides by several well-built structures. The stratum was characterized by a rich, well-made ceramic repertoire.

Stratum D continued the stratum E layout, with two perimeter streets and connecting radial alleys clearly defined. A large (200 sq m), thick-walled courtyard building, the "palace," was cleared in the west. Finds in this building included many storejars, as well as stone, metal, and ivory objects—including a game board with a die and gaming pieces—and, most important, the lower part of a cultic stela, interpreted by Albright as a "serpent goddess" but now recognized as a representation of a Canaanite dignitary. Additional noteworthy finds in this stratum are royal Hyksos scarabs (one of *yqb*[*ḥr?*]) and fine Syrian-type cylinder seals.

Stratum C: Late Bronze Age. Following the destruction of the MB town in the mid-sixteenth century BCE, there was a considerable hiatus in settlement. The subsequent architectural phases, C1 and C2, both date to Late Bronze Age II and represent a decline in the site's urban character. The thin, fragmentary perimeter wall ascribed to the latter phase (C2), suggests that the town relied on the MB defenses for protection, and many open spaces between the houses are occupied by grain silos. The LB settlement was destroyed in a fierce conflagration, dated by the ceramic assemblage to about 1225 BCE.

Strata B–A: Iron Age. The stratum C destruction was followed closely by a partial rebuilding. Strata B1–B2(Iron I) are characterized by fragmentary architectural remains and a large number of stone-lined silos, many of them superimposed. The pottery recovered from the silos continues Canaanite traditions, with a small amount of Philistine ware, probably imported from the coast, appearing in B2. A major change came about in stratum B3, dated to the period of the United Monarchy. A 4–4.5-meter-wide casemate wall was built, following the line of the MB fortifications. Of the few structures found within the walls, a series of storerooms abutting the wall is the most prominent.

Following the destruction of stratum B3 at the close of the tenth century, possibly by Shishak, an extended period of relative prosperity set in. The fortifications were rebuilt and repaired along B3 lines, and a new two-entryway gate was built in the east. The gate was later rebuilt as an indirect-entry gate, protected by towers. The town itself was densely built up, with perimeter streets and radial alleys reminiscent of the Bronge Age town plan. Houses were mainly of the pillared three- and four-room type, with those at the perimeter utilizing the wall casemates. Public construction included a large building near the center of the town and a large tower (originally identified by Albright as a city gate) built over the casemate fortifications at the western end of the site. Rock-cut cisterns and oil presses (Albright's dye plants) are ubiquitous.

Albright attributed the destruction of this city to the Babylonians, mainly on the basis of a private seal attributed to a servant of Jehoiachin, the penultimate king of Judah. Later studies of the pottery by Yohanan Aharoni ("The Stratification of Judahite Sites," *BASOR* 224 [1976]: 73–90) and of stamped jar handles by David Ussishkin ("Royal Judean Storage Jars and Private Seal Impressions," *BASOR* 223 1976: 6–11) have established that the destruction should be

attributed to Sennacherib's 701 BCE campaign. There is slight ceramic and stratigraphic evidence for a partial reoccupation of the site in the seventh or early sixth century BCE.

The Cemetery. Tell Beit Mirsim's cemetery includes hundreds of tombs—most of them recently robbed—extending in an arc on the southwest and northwest slopes of the mound. Salvage excavations by David Alon and Eliot Braun were conducted on the southwest slope. Intact tombs included EBIV shaft tombs; several MB tombs, exceedingly rich in finds; LB tombs with many imported goods (and, possibly, evidence of an LB I occupation); and rectangular Iron II loculus and shelf tombs. Thousands of vessels and other finds looted from the Tell Beit Mirsim cemetery (and from the mound itself) have made their way to the antiquities market and thence to private and public collections all over the world.

[*See also the biography of Albright.*]

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RAPHAEL GREENBERG

BEIT RAS, site located in northwestern Transjordan, 5 km (3 mi.) north of Irbid (map reference 680 × 105). Beit Ras was known as Capitolias from the first through the seventh centuries CE and was a member of the Decapolis confederation. Following Islamic hegemony over the region (c. 636 CE), the original Aramaic name, Beit Ras, was reinstituted. To date, no stratified deposits earlier than the first century CE have been excavated, although survey has provided some data earlier than the Roman period. These data, primarily pottery, were found on the *rās*, the highest point (about 600 m) in the immediate vicinity of the site, which may indicate the use of the *rās* as a lookout post prior to the formation of the city.

F. Kruse and H. L. Fleischer (1859), commenting on Ulrich J. Seetzen's travels and explorations (1806) were the first to identify Beit Ras with Capitolias. J. S. Buckingham (1816), Selah Merrill (1881), Gottlieb Schumacher (1890), Nelson Glueck (1951) and Siegfried Mittmann (1970) all visited the site and recorded certain of it's elements. G. Lankester Harding, director of antiquities for the area during the British Mandate, noted the site's importance. The Jordanian Department of Antiquities has conducted salvage excavations there, particularly in the necropolis, during the last thirty years. Systematic archaeological research was begun in 1983 with an intensive survey of the site and its immediate vicinity; excavation, begun in 1985, continues. Because the village is inhabited, research combines archaeological strategies with ethnohistorical research, oral history, and text interpretation, with the aim of elucidating all of the site's past.

In antiquity, the site was walled. The excavated portion of the wall, built in the second century CE of local limestone ashlar blocks, consists of three gates that face north. The gates were altered in the following five centuries, perhaps because of seismiturbation. In the early eighth century CE, one gate was turned into a tower. A walled acropolis has been excavated on the *rās*, evidencing the same constructional techniques and alterations throughout the site's occupational periods as the city wall.

Two levels of a three-tiered marketplace, known from literary sources, has been excavated north of the main *decumanus*, known from the city's oral history. The upper level consists of nine vaults that face north, bounded by vaults that face east and west. The region's natural bedrock was used to construct the marketplace. The rear wall of the vaults is continuous. One vault is a Roman barrel vault; the others were periodically reconstructed throughout Beit Ras's history. The vaults' interior and exterior are covered by utilitarian tesselated pavements. Marble facing found inside the vaults suggests that the upper level of the marketplace was used for selling finished products. This second story evidences the same construction. The vaults were altered considerably in the thirteenth/fourteenth century.

The city's main church has been excavated across from the first level of the vaults. Built on the remains of an earlier

Roman structure, this construction dates to the mid-fifth century. It is likely that it was turned into a mosque in the early eighth century. A three-tiered water installation (ablution pool?) was built against the juncture of the church's central and southern apses. The entire area of the vaults and church remained public space until the tenth century CE, when the space was used for domestic and minor industrial activities.

An intricate water system served the city from its inception in 97/98 CE and subsequently. The absence of springs in the vicinity made the city dependent on rainwater and water brought from a distance. Part of a low aqueduct system was surveyed west of the city, outside the city wall. Inside the city, a well-engineered channel run-off system cut into the bedrock debouched into large cisterns. A reservoir was built on the south side of the city and periodically refurbished throughout the city's history.

The archaeological research to date indicates that Beit Ras/Capitolias was a planned Roman city, probably established for military reasons, and that it flourished in the period between the first and tenth centuries. Excavation has yielded quantities of pottery comparable to that at other Decapolis cities. No hiatus in occupation at the site has yet been found, but a gradual decrease in size and change in use from public space to private space seems to begin as early as the tenth century.

[*See also* Decapolis.]

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C. J. LENZEN

BENNETT, CRYSTAL-MARGARET (1918–1987), first director of the British Institute at Amman for Archaeology and History and the excavator of those Edomite sites that have been most extensively investigated. Bennett began her archaeological career relatively late, in 1954, at the Institute of Archaeology in London. At first she participated in excavations in England, later joining Kathleen M. Kenyon's final season at Jericho.

In 1958, while taking part in Peter Parr's excavations at Petra, in Jordan, Bennett became interested in the Iron Age "Edomite" site of Umm el-Biyara in the center of Petra. She excavated there (1960–1965), at the Edomite site of Tawilan (1968–1970, 1982), and at Buṣeirah, the probable capital of Edom (1971–1974, 1980). Although she did not produce a final report for any of these sites, her preliminary reports were regular and comprehensive. Her results made the Edomites archaeologically visible for the first time and considerably revised the then generally accepted chronological picture of Edom. The three Bennett excavations clearly dated Edomite pottery to the seventh century BCE, rather than to the thirteenth century BCE, as was previously thought. Her excavations also revealed strong evidence for Edomite settlement continuity into the Persian period.

Bennett's other major contributions were organizational and diplomatic. She was assistant director of the British School of Archaeology in Jerusalem from 1963 to 1965, and director from 1970 to 1980, overseeing the greater part of the mammoth survey of Mamluk Jerusalem that recorded the Islamic buildings in the Old City (Michael H. Burgoyne, *Mamluk Jerusalem,* London, 1987).

By 1970 Bennett had rented space in Amman at her own expense to provide an office and base for British excavations in Jordan. She was the prime mover, with Kenyon, in founding the British Institute at Amman for Archaeology and History and was its first director (1980–1983). During that time she established the institute as a viable body and developed close links with the Jordanian Department of Antiquities and particularly the Jordanian royal family.

[*See also* British Institute at Amman for Archaeology and History; British School of Archaeology in Jerusalem; Buṣeirah; Edom; Tawilan; *and* Umm el-Biyara.]

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PIOTR BIENKOWSKI

BENZINGER, IMMANUEL, (1865–1935), German Protestant theologian, born in Stuttgart. In 1894 Benzinger worked as an assistant at Tübingen, and in 1895 as a pastor in Neuenstadt. From 1897 to 1902 he edited the *Zeitschrift* of the Deutscher Palästina-Verein and served on its executive board until 1912. From 1898 to 1902 he was a lecturer (*privatdozent*) at the University of Berlin. He spent the next ten years in Jerusalem. In fall 1903 he replaced Gottlieb Schumacher, who had been called away on a special assignment, as director of the excavations for the Deutscher Palästina-Verein at Tell el-Mutesellim/Megiddo and published a preliminary report of his work. Benzinger was a professor at the University of Toronto from 1912 to 1915; at Meadville, Pennsylvania, from 1915 to 1918; and at the University of Riga in Latvia from 1921 until his death. He published his scholarship on the Hebrew Bible as well as *Bilderatlas zur Bibelkunde* (Stuttgart, 1905; 2d ed., 1912) and revised Karl Baedeker's travel guidebook *Palästina und Syrien* (Leipzig, from the 3d ed., 1890, to the 7th ed., 1910). His principal work, however, is *Hebräische Archäologie.* In its first edition (1894) using "archaeology" as a source meant describing ancient Israel's private, public, and sacred institutions, based chiefly on the biblical texts. However, in its second edition (1907), which he wrote in Jerusalem, Benzinger began to emphasize the importance of excavations and their discoveries in order to reconstruct a history of the civilization of Israel. This is evident in a new discussion on ceramics and new and more illustrations of archaeological artifacts. In its third edition (1927), Benzinger included many of the important results of excavations that had been made since 1907. Benzinger was a pioneer in publishing the discipline of biblical archaeology.

[*See also* Deutscher Palästina-Verein; Megiddo.]

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DIETHELM CONRAD

BETH ALPHA, also known as Beit Ilfa or Alfa, site located in the eastern part of the Jezreel Valley, at the foot of Mt. Gilboa. Beth Alpha was settled by Ptolemaic Greeks and was part of Scythopolis, one of the cities of the Roman Decapolis. The city is named after the nearby ruins of Khirbet Beit Ilfa; it shows no occupation before the Roman period. The foundation remains and mosaic floor of a synagogue were accidentally discovered there in 1928 and were excavated in 1929 by Eleazar Lipa Sukenik of the Hebrew University of Jerusalem.

The synagogue, built of untrimmed local limestone, is basilical, with two longitudinal rows of columns and stone benches. It includes a courtyard with columns on the south and enclosing walls on the other sides. The courtyard's columns also formed the north side of the narthex. On the north, a large central door is flanked by two smaller entrances. A side door on the west leads into an annex. It is conjectured that there was an upper gallery over the two aisles and the narthex. Stairs leading to the gallery are believed to have been located in the western annex. It is not clear, however, what the function of such a gallery would have been.

A semicircular external apse at the southern end of the basilica faced Jerusalem and was reached via three narrow steps. Two holes on the second step may have held posts for a curtain to close off the Torah shrine. Evidence of an earlier mosaic pavement was discovered below the present mosaic floor. In its present state the entire building complex has mosaic floors.

The nave mosaic has three panels, whose interpretation has found no scholarly consensus. All the panels are surrounded by a wide decorative border. The northern, or lowest, panel features the Binding of Isaac and is to be read from left to right. Abraham's two servants are depicted with the donkey. One leads the donkey by its reins, and the other stands behind it, but his legs are not visible. A hand emerges from above, symbolic of the hand of God, with the Hebrew inscription from *Genesis* 22:12: "Don't stretch forth [your hand]." A ram is shown tethered to a tree with the Hebrew inscription from *Genesis* 22:13: "Here is the ram." Neither the hand of God nor the ram tied to the tree follow the biblical narrative, but they are in keeping with later Jewish and non-Jewish sources (see below). A bearded and haloed Abraham brandishes a long knife in his right hand; he seems to be grasping Isaac, who is suspended in midair, with his left hand. Both Abraham and Isaac have Hebrew labels. A flaming altar is also depicted.

Isaac floating in midair is found in early Christian depictions, but in them Abraham is shown grasping the ends of a blindfold. Apparently, the provincial Beth Alpha artists, Marianos and his son Hanina, misunderstood their Christian model, leaving only the anomalous projections attached to the boy's neck.

The middle panel depicts the zodiac with the pagan god Helios riding his chariot. Personifications of the four seasons are shown in the four corners, but they do not correspond to the twelve signs of the months, which run counterclockwise. Both the seasons and the months carry labels with their Hebrew names on them. The practice of placing the zodiac in synagogues finds striking analogies in contemporary liturgical poems.

The southern, or uppermost, panel shows the Torah

shrine flanked by two three-footed, seven-branched menorahs, lions, and such ceremonial objects as the shofar, lulav and etrog, incense shovel, and Torah shrine curtains. Whether the objects are symbolic of contemporary synagogal celebrations or relate to the destroyed Jerusalem Temple cult has not been resolved. The Torah shrine also has a lamp suspended from it. Although the lamp is frequently called *nēr tāmîd,* its symbolism is uncertain, as the "eternal light" is not known in synagogue furnishings until the seventeenth century CE.

The synagogue is usually dated to the early sixth century CE on the basis of thirty-six coins—the latest dating from the reign of the Byzantine emperor Justinian I—and an Aramaic inscription referring to Emperor Justinian. Recent research places the synagogue in the third quarter of the sixth centry, on both stylistic and iconographic grounds. An earthquake probably destroyed the synagogue shortly after its construction.

[*See also* Decapolis; Mosaics; Synagogues; *and the biography of Sukenik.*]

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JOSEPH GUTMANN

BETHEL (Heb., "House of [the god] El"), site located 16 km (10 mi.) north of Jerusalem, on the border of ancient Israel and Judah (31°56′ N, 35°14′ E; map reference 172 × 148), at the juncture of the trunk road from the central hills down to the Jordan Valley. Bethel is mentioned in the Hebrew Bible more times than any site except Jerusalem. It figures prominently not only as a border fortress, but in the patriarchal narratives, in the stories of the period of the Judges, and as an important sanctuary in accounts of the Monarchy.

The site was first identified with the modern Arab village of Beitin by Edward Robinson, the American explorer, in 1838. Excavations were carried out at the site in 1934 by William Foxwell Albright and James L. Kelso for the American Schools of Oriental Research, and again by Kelso in 1954, 1957, and 1960. Kelso published these excavations in 1968 as *The Excavation of Bethel, 1934–1960.* The report lacks stratum designations and information on provenience and mixes factual description with imaginative interpretations (usually biblically inspired), making historical reconstruction almost impossible, except in the broadest sense. The following points have been extracted from that report, however.

The site was first occupied briefly in the Late Chalcolithic period (c. 3200 BCE) and then again in the Early Bronze Age III–IV (c. 2400–2000 BCE)—no doubt because of its hilltop location and nearby springs. Kelso's claim for an EB IV "temple" is fanciful, based as it was more on biblical traditions regarding the Patriarchs than on the evidence; the walls in question are no more than the foundations of the Middle Bronze Age city gate.

The Middle Bronze Age occupation witnessed a gradual urban buildup. The MB I (c. 2000–1800 BCE) is attested only by sherds and tatters of walls. Somewhere in the MB II (c. 1800–1650 BCE), the town was defended by a cyclopean city wall and earthen glacis. The dearth of detail in the report precludes saying anymore. Kelso's description of a northeastern "gate" in this wall suggests that this particular structure is Roman, or at least was destroyed in the Roman period. A northwest gate may well be MB II, but its plan, as published, is enigmatic. The masonry of the town's MB II domestic structures was excellent. The MB III period (c. 1650–1500 BCE) apparently continued without interruption, with the building of more houses and additions to the defenses. Another "sacred area" (or Ar., *ḥaram*) claimed for this phase is largely imaginative. The report is ambivalent about a destruction at the end of the MB III, but there does appear to be a gap in occupation in the Late Bronze IA–B (c. 1500–1400 BCE).

The LB II period (c. 1400–1200 BCE), with two phases, seems particularly well attested. Domestic structures are very well laid out, with courtyards and drains, and the masonry is excellent. A destruction by earthquake is claimed between the two phases, which might be Claude F. A. Schaeffer's notorious 1365 BCE earthquake, if it has any credence. Kelso makes much of the final "Israelite destruction" of the Canaanites (as Albright had), but the little evidence presented is neither well dated nor conclusive. The best indication of change may be the new town plan in the Iron Age I, presumably in the early twelfth century BCE. When Kelso published, our knowledge of this transitional Bronze/Iron Age horizon was limited, but today it is possible to show that the Bethel pottery is indeed typical of the Early Iron Age, "proto-Israelite" ceramic repertoire in the hill country. The four Iron I phases (not numbered in the report) apparently extend from the early twelfth to late eleventh/early tenth centuries BCE. No fortifications are mentioned.

The Iron II period (c. 900–600 BCE) is said to have had three phases (also not numbered). The report offers scant material for the entire period, leaving the biblical accounts of Bethel's importance in the Divided Monarchy without a

context. Presumably, occupation at the site ends with the Babylonian destructions in the early sixth century BCE; the report discusses a corpus of sixth-century BCE pottery but without a context. There is some Persian occupation, and the town recovered some of its importance by the Hellenistic-Roman period (the pottery treated by Paul W. Lapp). Travelers mention Bethel in the Byzantine period, from which there are some remains.

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WILLIAM G. DEVER

BETH-GAN (also Beit Gan), site located at the edge of a subdivision of Moshavah Yavne'el (Jabneel), in the eastern Lower Galilee, astride the Darb el-Hawarneh, an ancient road connecting Akko with the Hauran (32°43′ N, 35°30′ E; map reference 197 × 235). The site is situated on an alluvial fan near the western edge of the Yavne'el Valley, which has 20 sq km (12 sq. mi.) of potential arable land. The site's rich soil and ample water supply are owed to its adjacent location to Wadi Saruneh and numerous nearby springs. The site is listed in the *Survey of Western Palestine* as a "ruined Arab village built of basaltic stone" (Conder and Kitchener, 1881, p. 382) and was subsequently explored by Aapeli Saarisalo (Saarisalo, 1927, pp. 37–39), who reported finding Late Bronze, Early Iron, Roman-Byzantine, Byzantine, and "Early and Late Arabic" sherds, and by Zvi Gal, who reported finding Iron II pottery (Gal, 1992, p. 33). Harold Liebowitz conducted soundings in 1988 and 1989 on behalf of the University of Texas at Austin, and found Iron I, Late Byzantine, and Mamluk sherds. The first small-scale season of excavation was conducted by Liebowitz in 1992 and was followed by excavations in 1994 and 1995, which yielded the following remains.

LB II sherds in association with a wall were found in a probe in square FO2 at the close of the 1995 season of excavation, confirming Saarisalo's report of discovery of Late Bronze Age sherds and confirming that the Late Cypriot Age milk-bowl sherd found on the surface of the tell in 1992 was not a simple chance discovery. Iron I pottery assemblages were found in association with two superimposed domestic structures in the same square. Iron IIA sherds were found in squares EO2 and EO3 in association with poorly preserved architectural remains, the result of Mamluk disturbance, and in a limited probe in square BO3, where debris adjacent to a disturbed 1.9-meter-long and 1.30-meter-wide wall that rode under the Roman period east–west wall yielded Iron II pottery and a bronze fibula.

The Persian period is represented by a single restored storage jar found at the base of a Roman-period locus in square BO3 and by large thicked-walled bowl sherds with external thickening and prominent everted ring base (moratoria), found in a sounding. The Roman period was reached only in a narrow probe, where part of a wall with an associated surface with second-century CE cooking pots, bowls, storage jars, and casserole sherds were found. However, Roman-period architectural fragments such as a heart-shaped column segment (reused in the subsequent Late Byzantine phase), suggest that there was a synagogue or church in the Roman period inasmuch as heart-shaped columns are generally associated with synagogues or churches. The Late Byzantine period is represented by a large structure in Area A whose walls contained reused architectural fragments (door jams, ashlar blocks, column bases, and a segment of a heart-shaped column in BO1 and two heart-shaped columns in square AO1). The pottery includes terra sigillata bowls, cooking bowls with horizontal handles, and storage jars with white-painted decorations. Coins found on the surface span a possible twenty-three year period, from the reign of Justinian II and Sophia (565–587 CE) to Tiberias (582–602 CE). A flat bronze cross that resembles examples from Pella, in Jordan, suggests a Christian presence or a mixed population at the site in this period that may have had connections with the population east of the Jordan River. Parts of a Byzantine building with large flagstones and well-cut limestone blocks were found below the Mamluk terrace wall in Area B.

Parts of three Mamluk structures, one of which yielded evidence of architectural phases, were excavated in Area A. Pottery from the period is comparable to assemblages of vessels from Yoqneʿam and ʿAfula. The single coin found confirms a fourteenth-century CE date for the stratum. In Area B, Liebowitz found a Mamluk terrace wall that was traced for about 18 m, and parts of walls that abutted the terrace on the west.

Adjacent to the wadi, at the western edge of the mound, Liebowitz and his team excavated a check point of a dam used for water management datable to the Late Roman/Byzantine period.

Beth-Gan is significant because of its LB occupation, which supports the idea of a significant presence in the eastern Lower Galilee in that period. Unlike the neighboring Tel Yinʿam, which was abandoned before the Byzantine period, this site was occupied during the Late Byzantine and Mamluk periods, enabling an understanding of the regional material culture for these periods in the Yavne'el Valley. Finally, Beth-Gan's location along the Darb el-Hawarneh furthers efforts to reconstruct a picture of intercity and international trade in the eastern Lower Galilee in antiquity.

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HAROLD A. LIEBOWITZ

BETHLEHEM, modern town occupying the site of the ancient town, located 9 km (5.5 mi.) south-southwest of Jerusalem, 21.5 km (13.5 mi.) north-northeast of Hebron, 23.5 km (15 mi.) west of the Dead Sea, and just east of the main north–south ridge road of the central hill country of Judah (31°42′ N, 35°12′ E; map reference 169 × 123).

Bethlehem may appear in the Amarna tablets (fourteenth century BCE) as "Bit-Laḥmu" (J. A. Knudtzon, ed., *Die El-Amarna Tafeln*, 2 vols., Leipzig, 1915, no. 290), apparently meaning "house of Lahmu," an Assyrian god. The name may have been distorted later to *beth-leḥem*, meaning "house of bread." While Bethlehem is mentioned in the Hebrew Bible (cf. *Ru.* 1:19; *Jgs.* 12:8) and is the city where Jesus was born (*Mt.* 2; *Lk.* 2), it is also identified as Ephrath(ah) (cf. *Gn.* 35:19; *Ru.* 4:11; *Mi.* 5:1 [Eng. 5:2]).

Extrabiblically, Bethlehem is mentioned by Justin (*Dial. Trypho* 78.5–6), in the *Protoevangelium of James* (18.1), and by Origin (*Contra Celsum* 1.51) refering to a cave in which Jesus was born. Jerome (*Epis. ad Paul* 58:3) records that Hadrian destroyed the Christian site and built a shrine to Adonis in its place. Jerome's remarks are largely the basis upon which the current identification of the Church of the Nativity rests.

Few excavations have been conducted in the town, except in the vicinity of the Church of the Nativity. However, as a result of investigations in the caves beneath the church and in the process of building a new school in Bethlehem, remains from the Iron Age town tenth–eighth centuries BCE have come to light. The data are insufficient, however, to relate to descriptions in the Hebrew Bible indicating the presence of a well and fortifications at Bethlehem (cf. *2 Sm.* 23:15; *2 Chr.* 11:5–6).

Constantine initiated construction of the Church of the Nativity in Bethlehem in 326 CE over the traditional cave of Jesus' birth, and Queen Helena dedicated it thirteen years later. The building was partially destroyed in a Samaritan revolt in 529, but Justinian quickly ordered its reconstruction. The current building reflects that reconstruction with minor modifications.

William Harvey's excavations in 1934 under the auspices of the Mandatory Department of Antiquities proved that the current structure dates from the time of Justinian and not Constantine, although the Justinian structure follows many of the Constantinian foundations. The Constantinian church consisted of a square basilica (about 26.5 m to a side), divided by four rows of nine columns into a 9-meter-wide nave with two aisles on each side. The excavations revealed a patterned mosaic floor above the original column bases but 50–60 cm below the modern floor. Hence, the Constantinian structure appears to have undergone some modification before its destruction at the hands of the Samaritans. An octagonal apse stood over the traditional grotto. The octagon measured 7.9 m on each side. Later alterations to the bedrock in the grotto destroyed the original entrance.

Justinian added an atrium to the western end of the basilica, extending its length by 6.5 m, and strengthened the walls to protect the building from attackers. The central nave was widened to 10.5 m, narrowing the adjacent aisles accordingly. Under Justinian's auspices the octagonal apse was replaced with a triapsal arrangement, and the north and south entrances to the grotto were introduced. All subsequent modifications to the building have been minor.

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DALE W. MANOR

BETH-PELET. *See* Far'ah, Tell el- (South).

BETHSAIDA, site located 2.5 km (12 mi.) north of the Sea of Galilee and a few hundred meters from the Jordan River (map reference 209 × 257). Following the death of Herod the Great in 4 BCE, the region of Bethsaida became a part of the tetrarchy of his son Philip (Josephus, *Antiq.* 17.189; *Lk.* 3:1). Sometime during the second decade of the first century CE, Jesus withdrew to Bethsaida upon hearing of John the Baptist's death (*Lk.* 9:10) and performed some of his "mighty works" there. Toward the end of Jesus' ministry in the area, when he realized that not many would follow him, he condemned Bethsaida to humiliation, along with

Capernaum and Chorazin (*Mt.* 11:21; *Lk.* 10:13). [*See* Capernaum; Chorazin.]

In 30 CE, Bethsaida was elevated to the status of a Greek polis by Philip Herod and renamed Julias, after Livia-Julia, Augustus's wife and Tiberius's mother, who had died a few months earlier (Josephus, *Antiq.* 18.28; *War* 2.9.1). Josephus's statement that the renaming was after Julia, Augustus's daughter, should be corrected based upon numismatic evidence. Philip died in 34 CE in Bethsaida and was buried in a magnificent funeral (*Antiq.* 18.108).

In 65–66, the Roman armies of Agrippa II clashed with rebels in a series of battles that failed to result in a clear victory for either side (Josephus, *Life* 71–73). The archaeological evidence is that the city was destroyed and never rebuilt.

Bethsaida is mentioned by biblical interpreters and in pilgrims' accounts beginning in the fourth century. Most of these descriptions point to a few locations at the north of the Sea of Galilee, perhaps neither to the correct site. A scholarly controversy over its identification began at the end of the sixteenth century. Based on *John* 12:21, which places Bethsaida in Galilee, and Josephus (*Antiq.* 18.28) and other Gospel citations, which place it in the Golan, scholars deduced that there were two such places: one named Bethsaida in Galilee—namely, on the west side of the Jordan River—and the other, Julias—on the east side. The quest for the proper site reemerged with the rise of modern biblical research. In the first half of the nineteenth century, a few scholars proposed identifying Bethsaida with a large mound named et-Tell at the northern corner of the Bteḥa plain, 2.5 km (1.5 mi.) from the Sea of Galilee. In the 1880s Gottlieb Schumacher maintained that it was implausible for a fishermen's village to have been located so far from water. He proposed two sites located on the shore: el-Araj, a few hundred meters from the mouth of the Jordan, and el-Mesadiyeh, a small ruin father to the southeast. [*See the biography of Schumacher.*]

In 1987 the archaeological investigation of the site of Bethsaida began on behalf of the University of Haifa. Probes were carried out at Tell Araj and et-Tell. As et-Tell alone yielded levels dating to the period in question, excavations have continued exclusively there. In 1991 a consortium of university scholars for the excavations of Bethsaida was formed, headed by the University of Nebraska at Omaha.

Et-Tell/Bethsaida is the largest mound near the northern Sea of Galilee. Its ancient ruins lie on a basalt hill, an extension of the lava plains that form the Golan Heights. The mound (450 × 200 m) rises 25 m above its surroundings. Two peaks and a saddle form its summit, and steep slopes descend from all sides, except at its northern corner. A spring, now hidden by bushes, flows down its western slope toward the Jordan. Probes opened on the summit revealed four periods of occupation.

The first settlement dates to the Early Bronze I period (3100–2850 BCE) and continued uninterrupted through the EB II (2850–2650 BCE), when the settlement was surrounded by a very thick wall built of huge boulders. Parts of this wall have survived to a height of 1.30 m.

The next period of occupation at the site of Bethsaida occurred during the end of Iron Age I and the beginning of Iron Age II (eleventh century BCE). This was a very intensive period of occupation and constructions. Although segments of the Early Bronze Age city walls were put back into use, particularly as revetment walls, a new city wall was constructed. It was built as a series of offsets and insets on the exterior and the interior faces of the wall. In addition to this, towers were constructed. The width of the city wall varies between 6 and 7 m. The tower that was discovered at the east added 2 m to the city wall.

The northeast area of the mound forms the summit of the site and the upper city. New revetment walls were built there to loop large basalt bedrock boulders that could not be removed. This area was filled with red clay material and formed the platform of the upper city, where new constructions were added. A tower that was excavated at the southern revetment wall may indicate that few other towers were constructed astride this wall. Thus far, excavations at the summit reveal two main structures: one in the north and the other in the south of a large plaza, adjacent to the city wall and tower. The massive structures were of large and heavy basalt boulders that measure 1.4 m in width and indicate that they were built for public purposes.

The building at the north was a rectangular structure of 20 × 30 m in the form of the Aramean-Assyrian palaces known as *bit-ḫilani*. Architectural elements, such as a porch, that preceded the facade were thoroughly destroyed by later constructions and a modern Syrian military trench. At the facade a rectangular vestibule room with two antae and a single large pillar out of presumably two, have survived. Behind the vestibule a large rectangular room was discovered that is interpreted to be a throne room. West of the vestibule a rectangular service room has been discovered and at the east, another room was found. This room contained an Egyptian statuette known as Pataekos, highly competent artistically (see figure 1). A row of four smaller storage rooms were unearthed at the northern side of the palace. One of these rooms contained more than twenty complete vessels; some of them are Cypro-Phoenician and Samarian ware. In addition, an Israelite bulla in Phoenician style testifies correspondence with Samaria and an existence of an archive were also discovered.

In the eighth century the palace may have gone out of use as the modification and alternation of its rooms may imply. The throne room was divided into two halls by a relatively thinner partition wall. Large numbers of loom weights and spindle whorls suggest that some sections of the palace were utilized for a garment industry. Other changes included blocking the entrances to the back storage rooms, installa-

BETHSAIDA. Figure 1. *Faience statuette of the Egyptian dwarf god Pataekos.* Iron Age II period. (Courtesy R. Arav)

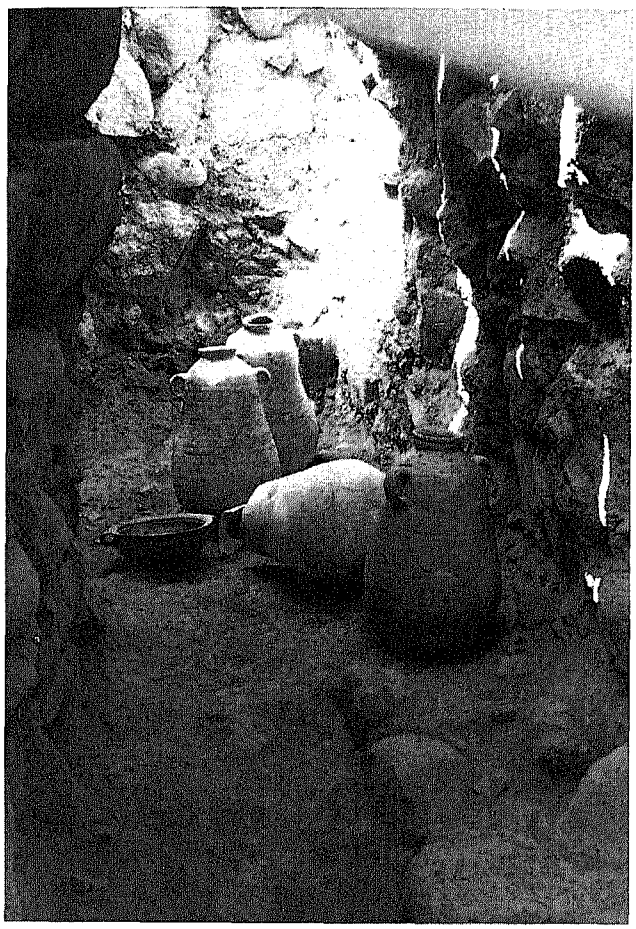
tions at the vestibule, and two brick benches in the northern of these aforementioned halls.

In front of this building there was a large, well-paved piazza. The plaza contained a canal that led to a row of three standing stones in the form of stelae. At the east the piazza reached the city wall and at the south there was another public building. The city wall was constructed by large boulders at the exterior and the interior faces. The core of the wall was made of large field stones. The width of the wall varies from 5.5 to 6.5 m. A strong tower was added to the wall east of the piazza and created a majestic width of 8 m to the wall.

The building at the south was built by large boulders and was preserved at one point to an elevation of 2 m. The function of this building is yet unclear. Thus far the facade of the structure has been entirely excavated. It contains an entrance 1.7 m wide built in an impressive wall. A large, broad room, divided in a later period into two sections, is behind the entrance. A column base and a column drum that were found in a later deposit may originate from the area of the entrance or belong to the missing porch of the *bit-ḫilani.* A large cavity was excavated in front of the entrance during the last period of the Iron Age and the entire floor and whatever was in front of it were removed.

Bethsaida was not abandoned at the end on the Iron Age. A small but distinctive layer of occupation during the Persian period was discerned during the dig. Unfortunately, this layer was too poor and its remains too fragmentary to retrieve a comprehensive ground plan. However, the settlement resumed to a remarkable extent when the next period, the Hellenistic, emerged. The ancient city walls most probably remained at a fairly high level and therefore were reused, as were other sections and walls of the old Iron Age public buildings. The overall view of the settlement during the Hellenistic and Early Roman periods seems to be thoroughly different from the Iron Age. Simple private homes occupy the summit; the former Iron Age upper city remains were observed and reused. The impression was of a peculiar combination of a fishing village within city walls. A few private houses were excavated thus far. Two of them were preserved fairly well and present a similar ground plan. They were built in the typical courtyard pattern. The main core of the building is a central courtyard where most of the home activities, perhaps, were carried out. The kitchen is the next largest room, occupying the eastern section of the house. The residential quarter is located at the north. The southern courtyard house contains many fishing implements, including lead net weights and other implements indicative that the owner of the house was a fisherman. The northernmost of the houses was preserved to a better state. It contained four iron sickles for harvesting grapes and a wine cellar (see figure 2). These finds imply that the owner of the house was a wine dresser. An interesting discovery at this house was a cross incised on a sherd of pottery, discovered next to the entrance to the residential quarter. In addition, architectural elements and remains of a monumental building were discovered scattered on the surface. The location and the function of this building are still unknown.

The later history of Bethsaida is a history of destruction and ruin. Throughout the fourteenth and fifteenth centuries CE, the site suffered severely from intensive stone looting. Limestone blocks, columns, capitals, architectural elements and decorations, and perhaps statues and sculptures that once adorned the town were taken away. In addition to this, hundreds of bedouin tombs were dug in the mound in the last few centuries. The excavations have uncovered over one hundred tombs dug into the walls and floors of the Iron Age and Hellenistic buildings. However, the most destructive period for the site occurred rather recently, when the mound served as a Syrian military stronghold until 1967. Military



BETHSAIDA. Figure 2. *Cellar with winejars.* Found adjacent to a Hellenistic-Early Roman courtyard house in area C. (Courtesy R. Arav)

trenches, bunkers, and positions of all kinds crisscross the site, leaving upheaval and destruction.

In antiquity the Bethsaida plain was a bay of the Sea of Galilee. Geological investigations reveal that landslides in the upper Jordan River gorge blocked the river and formed catastrophic floods. Torrents of gravel and mud filled the bay and isolated the fishing town of Bethsaida, leaving only a small lagoon between the town and the Sea of Galilee. Another flood during the second century CE filled the lagoon almost entirely and shifted the seashore away from the city.

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RAMI ARAV

BETH-SHEAN (also Beth-Shan; Ar., Tell el-Ḥuṣn), site located at the intersection of two major roads that cross the land of Israel from west to east (through the Jezreel and Beth-Shean Valleys toward Transjordan) and from north to south (along the Jordan Valley). The mound, about 4 ha (10 acres) in area, is located on a steep natural hill on the southern bank of the Harod River, in the midst of a fertile, well-watered valley. The site was settled intermittently from the Late Neolithic period until the Middle Ages. [*See* Jordan Valley.]

Although the appearance of the name *Beth-Shean* in the Egyptian Execration texts of the Middle Kingdom is questionable, it does appear in various Egyptian New Kingdom sources: the topographic lists of Thutmose III, Seti I, and Rameses II; the Amarna tablets (in which it is mentioned only once); and Papyrus Anastasi I also from the reign of Rameses II. During this period (sixteenth–thirteenth centuries BCE) Beth-Shean was an Egyptian administrative center, second in importance only to Gaza. In the Bible, Beth-Shean is one of the cities from which the Israelites, at the time of the conquest, did not rout Canaanites (*Jos.* 17:11; *Jgs.* 1:27), and the city onto whose walls the Philistines "fastened" the body of Saul and those of his sons (*1 Sm.* 31:10). Later, it is a city in the fifth district of Solomon (*1 Kgs.* 4:12) and is on the list of cities Shishak conquered during his campaign in the land of Israel (c. 918 BCE) shortly after the monarchy was divided. In the Hellenistic, Roman, and Byzantine periods, the city was known as Nysa or Scythopolis, during which time it is attested in the written record. It was recorded as well by Theodorich of Würzburg, who visited the

town in 1172. During the Early Islamic period, it was once again called by its ancient Semitic name, in the form of Beisan; a nearby Arab town preserved the name, making the identification of the site certain.

The University Museum of the University of Pennsylvania carried out excavations at Beth-Shean from 1921 to 1933, under the direction variously of Clarence S. Fisher, Alan Rowe, and Gerald M. FitzGerald. They exposed the site's uppermost strata (Early Islamic and Byzantine periods) across the mound; their work on the upper part of the mound was more limited, but they cleared an extensive cemetery to the north of it. As the first large-scale stratigraphic excavations conducted in Palestine after World War I, the work contributed significantly to the archaeology of the biblical period despite deficiencies in excavation methods and publication. In 1983, Yigael Yadin and Shulamit Geva of the Institute of Archaeology of the Hebrew University in Jerusalem excavated briefly on the summit. Since 1989, Amihai Mazar has been working there, under the auspices of the university and the tourism authority at Beth-Shean; his on-going excavations have reexamined almost all the site's occupation layers, refining its stratigraphic sequences.

Neolithic–Early Bronze Age: Strata XVIII–XI. An 8.5-meter-deep layer of occupation debris dating from the Neolithic period to the Early Bronze Age attests to the importance of these periods at Beth-Shean. However, very little is known about them. In stratum XVIII, the Pottery Neolithic period (fifth millennium) is represented by pits dug into the bedrock. In stratum XVII, the Chalcolithic period (fourth millennium) is represented by pottery. Strata XVI–XIV, the Early Bronze I (thirty-fifth to thirty-first centuries BCE), produced an oval dwelling, gray-burnished pottery, and bronze axes, all typical of the period. Strata XIII–XI appear to be EB II–III occupation layers (thirtieth to twenty-fourth centuries BCE). A rich assemblage of Khirbet Kerak ware, reflecting Anatolian influences, characterizes its last phase. The latest excavations uncovered a very shallow occupation level, perhaps evidence of a seasonal settlement of the EB IV/Middle Bronze I transitional period (2300–2000 BCE). Pottery typical of the Jezreel and Beth-Shean Valleys has been recovered from many MBI burial caves in the Northern Cemetery.

Middle and Late Bronze Ages: Strata X–VII. A gap existed in the occupation of the tell during the first phase of the Middle Bronze Age (William Foxwell Albright's MB IIA, or MB I, c. 2000–1800 BCE), although the tomb of a warrior from this period was discovered in the Northern Cemetery. Three settlement layers belong to the MB IIB–C periods (MB II–III; mainly seventeenth-sixteenth centuries BCE) were discerned in the recent excavations (stratum X in the nomenclature of the earlier excavations). Dwellings of this period yielded high-quality domestic pottery and luxury objects, indicating an advanced standard of living. No fortifications were discovered. The period's last occupation phase is characterized by pottery of the so-called chocolate-on-white ware.

Settlement in the Late Bronze Age generally reflects Egyptian hegemony and is divided into five phases. The first settlement phase, in LB I, occurs before the Egyptian occupation. Of the four phases that followed, strata IXB–A date to the fifteenth and fourteenth centuries BCE and strata VIII–VII to the thirteenth century BCE.

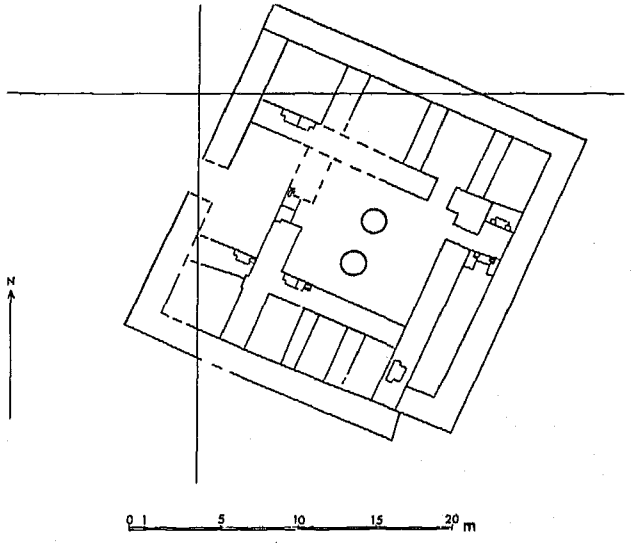
Five successive temples of the Late Bronze and Iron Age I periods were found on the summit of the tell. Mazar's excavations revealed the earliest temple in an occupation level later than MB stratum X and earlier than LB IIA stratum IX, which should be dated to LB I. This modest (11.7 × 14.6 m) building's plan is unique: it is tripartite and includes an entrance hall, a central hall with benches and raised platforms, and an inner room (sanctuary) whose walls were lined with benches. The entrances, however, are not on the same axis. In stratum IX (divided into two subphases) a large sacred area was established in which various structures surrounded a central courtyard. On the east, the main part of the complex included a monumental hall and an additional cultic room. The plan of this holy precinct is unique and has no parallel at any known temples in Canaan. Outstanding among the many finds attesting to an Egyptian presence is the Mekal stela, a small stone monument carved with a cultic scene that is Egyptian in style and that was dedicated by an Egyptian official to the memory of his father. The iconography in the scene includes a seated god whose dress and attributes are Canaanite. A large building partially preserved at the edge of the tell south of the sanctuary yielded one of the most outstanding relics of Canaanite monumental art: a basalt orthostat carved with two scenes, each of which depicts a struggle between a lion and a dog (or a lioness).

The stratum IX town was destroyed by a massive conflagration but was soon rebuilt on a new plan (strata VIII–VII, thirteenth century BCE), perhaps during the reign of Seti I. A new temple, with an entrance vestibule, was erected on a north–south axis. The ceiling of its main hall was supported by two pillars, and its holy of holies was raised about 1.5 m above the floor in the main hall. A foundation deposit, found underneath the steps leading to the holy of holies, yielded a rich assemblage of precious objects, including dozens of cylinder seals and numerous pendants. In a residential quarter east of the temple, houses lined the street. Rowe called a massive building southwest of the temple a *migdol*, a "tower" or inner "citadel," which would have been the seat of the representative of the Egyptian government at Beth-Shean; however, both its reconstructed plan and its supposed function are suspect. A large round silo found nearby may have been used by the Egyptians to garrison their soldiers.

Three locally made basalt Egyptian royal (nineteenth dynasty) stelae found in later contexts belong to this stratum,

evidence of Beth-Shean's prestige as an Egyptian administrative center in the Late Bronze Age. The text on one of the three stelae relates that during the reign of Seti I, Egyptian units put down a rebellion in the northern Jordan Valley at Hamath (Tell el-Ḥammeh) and Peḥal (Pella). The text also mentions the cities of Reḥob, Yano'am, and Beth-Shean. A second stela from the reign of Seti I preserves the record of military action in the hill country against raiding 'Apiru and Theru. These actions were meant to shore up Egypt's administration of Canaan, which, at the end of the eighteenth dynasty, had been weakened. The third stela bears a standard laudatory inscription of Rameses II.

Iron Age I: Upper and Lower Stratum VI. Two strata (lower VI and upper VI; "lower" and "upper" are the terms used by the University of Pennsylvania excavators) are attributable to Iron I. Lower stratum VI is dated to the time of the twentieth dynasty (twelfth century BCE), namely to the final stage of Egyptian administration in Canaan. In this stratum the buildings of stratum VII were rebuilt, retaining the earlier town plan. The temple of the stratum VII city was rebuilt, but changes were made in its entrance vestibule and holy of holies. To its north were found administrative buildings whose architectural details are Egyptian in style. The most important of these buildings is the Governor's Residence (building 1500), a square structure with a central hall surrounded by rooms (see figure 1). Two monumental pillars supported the ceiling in the hall; door sills and inscribed doorjambs, and two lotus-shaped column capitals found nearby that may belong to it, are all distinctly Egyptian. Additional Egyptian friezes, reliefs, and inscribed door jambs were recovered from adjacent buildings. The inscriptions are dedications, prayers, vows, personal names, and titles. The most important is a dedicatory inscription of an official named Rameses Weser Khepesh. He may have been the governor of Beth-Shean during the reign of Rameses III, whose life-sized statue, found in the following level, probably originated in this stratum. These finds, as well as locally made Egyptian pottery, attest to the intensive Egyptian presence in the city during the twentieth dynasty.



BETH-SHEAN. Figure 1. *Plan of building 1500, the Governor's Residence.* (Courtesy University of Pennsylvania Museum, Philadelphia)

During the reign of Rameses VI or Rameses VIII, as Egypt's control over Canaan was waning, lower stratum VI was destroyed in a violent conflagration. Among the finds in the destruction level were bronze stands similar to ones known from Cyprus and the Mycenaean IIIC sherds of vessels that most probably were imported from Cyprus.

In the Northern Cemetery many strata VII and VI tombs were found that held fragments from more than fifty anthropoid clay coffins (see figure 2). The lids of most represent human faces, five of them in what is known as the grotesque style reminiscent of the anthropoid coffins from Deir el-Balaḥ in the Sinai Desert. [*See* Deir el-Balaḥ.] An Egyptian funerary influence and contemporary Egyptian funerary customs are clear. On the forehead of three of the lids is a headdress that resembles the one worn by the Sea Peoples in the wall reliefs at Medinet Habu in Egypt. The finds from these tombs include bronze vessels, Egyptian-style Ushabti figurines, jewelry, ivories, and weapons. The coffins were probably used to bury Egyptian officials and military personnel, although some of the coffins with grotesque lids may have been for mercenaries who originated among the Sea Peoples. There are no burials in this cemetery later than the end of the period of Egyptian domination in Canaan (mid-twelfth century BCE).

In upper stratum VI the town was rebuilt following the violent destruction of lower stratum VI. Some of the streets and ruined buildings of the previous city were reutilized, while many others went out of use. The material culture is typical of the eleventh century BCE. During this period, Beth-Shean was probably settled by Canaanites and perhaps by some of the Sea Peoples. The American excavators identified a pair of public buildings they uncovered above the temples of the previous strata as twin temples: "the House of Ashtoreth" (*1 Sm.* 31:10) and "the House of Dagon" (*1 Chr.* 10:10) mentioned in accounts of the Philistines removing Saul's armor and impaling his head on the wall of Beth-Shean. Although attributed by the excavators to stratum V, the buildings may belong to upper stratum VI. These buildings were damaged by later construction work, so that many details of their plans are lost. Access to the southern temple, a long building, was indirect, through its large entrance hall in the front. The building's main room is a large rectangular hall with auxiliary rooms on its two long sides. The ceiling of this central hall rested on two rows of three columns each. Access to the northern temple, which could be reached from the southern temple through a narrow corridor, was also

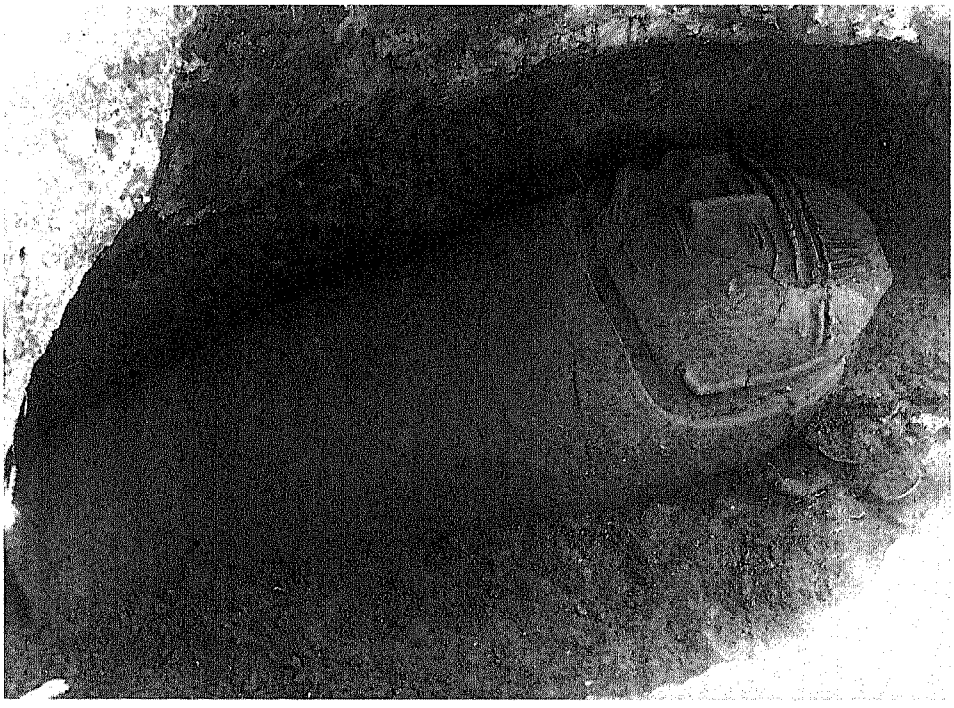
indirect and led to a central hall in which four columns supported the ceiling. The rich assemblage of cultic vessels found in the temples includes an assortment of ceramic cult stands. Many are multitiered, possibly to suggest multistoried temples, and are decorated with human and animal figures. Others are cylindrical with applied decoration of snakes in relief.

Several of the above-mentioned Egyptian monuments of the nineteenth and twentieth dynasties were found in the large courtyard in front of the northern temple. An Egyptian stela dedicated to Antit was discovered in the northern temple. These Egyptian monuments predate the context in which they were found, suggesting that they came to be venerated in local tradition and were passed from stratum to stratum in a cultic context. The recent excavations showed that this town was also destroyed by fire, perhaps during the conquest of Beth-Shean by King David in the early tenth century BCE.

Iron Age II: Strata V and IV. It is difficult to interpret Beth-Shean's development in the tenth–eighth centuries BCE because of the complicated remains in stratum V. The original excavators subdivided the stratum into two phases: lower V and upper V. However, the temples attributed to lower V should probably be dated to the eleventh century BCE (upper VI). A large, well-planned architectural complex north of the temples, apparently an administrative center, may belong to the tenth century BCE, along with a partially preserved public building the recent excavations uncovered. The latter was severely burned, perhaps as a result of Shishak's invasion in about 918 BCE. It may be that the buildings in the northwest section of the excavated area, whose construction with ashlars and stone pillars is characteristically Israelite, were also built in the tenth century BCE. One of the buildings appears to have been used as a city gate through which the administrative complex on the acropolis could be reached. A large hall to the east of this gate was either a royal storehouse or a stable.

The upper phase of stratum V, as well as a few poorly preserved buildings attributed to stratum IV (ninth–eighth centuries BCE), indicates a later date for the town. The new excavations revealed a well-preserved large building that was destroyed by heavy fire, probably during Tiglath-Pileser III's conquest of the region in 732 BCE. A few structures may represent a partial resettlement following the conquest.

Persian–Roman Periods: Stratum III. In the Persian period, the tradition of Beth-Shean as a cultic place may have been perpetuated in the vicinity of the temples, which is indicated by the discovery from that period of several ceramic figurines on the tell itself. The Hellenistic period is represented by a hoard of tetradrachmas, as well as by an occupation layer from the second and first centuries BCE identified by the recent excavations. It appears that the tell was occupied after the Hasmoneans destroyed the nearby large settlement at Tel Istaba. The Early Roman period



BETH-SHEAN. Figure 2. *Anthropoid sarcophagus in situ.* (Courtesy University of Pennsylvania Museum, Philadelphia)

(stratum III) is represented by what appears to have been an isolated structure on the summit. Interpreted as the remains of a monumental temple, it towered over the civic center that had grown up around the foot of the mound. Several of its architectural elements were a rectangular stone podium, column fragments, and Corinthian capitals. Late Hellenistic and Early Roman tombs were uncovered in the site's Northern Cemetery.

Byzantine, Islamic, and Crusader Periods: Strata II–I. The entire tell was resettled in the Byzantine period (stratum II). A round church, typical of the fifth century CE, was constructed on the summit and embellished with a mosaic floor and carved capitals. In the northern part of the tell a residential quarter filled with grand houses was clustered on a ledge to the east. On the tell itself, another well-protected neighborhood of large, well-built houses existed, a suburb of the large Byzantine city to the south and west. During the Early Islamic period (stratum I) a residential quarter appeared here as well. At the northwestern corner of the tell a thin circumference wall and a city gate have been identified that probably date to the Crusader period.

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AMIHAI MAZAR

BETH-SHE'ARIM (Ar., Sheikh Abreik; map reference 2344 × 1624), site located in southwestern Galilee near modern Tiv'on, some 20 km (12 mi.) east of Haifa, facing the western extremity of the Jezreel Valley. The identification of this site with the Beth-She'arim of rabbinic literature is confirmed by the correlation between the archaeological finds from the enormous necropolis discovered there, several literary sources, and an inscription found at the site that mentions the town's Greek name, Besa[ra] (see below).

Referred to by Josephus as Besara (*Life* 24. 118–119) and in the rabbinic literature as Beth-Sharei and Beth-Sharein, the site is first mentioned in connection with Berenice, the wife of Agrippa II, who owned property in the Jezreel Valley (*Life* 24. 118–119). From the early second century CE onwards, at least one sage, Yoḥanan ben Nuri, was associated specifically with Beth-She'arim (cf., Tosefta, *Suk.* 2:2). Beth-She'arim, however, achieved its prominence owing to the extended residence there of the editor of the Mishnah, Rabbi Judah I (B.T., *San.* 32b). Although he spent the last part of his ministry in nearby Sepphoris, Rabbi Judah nevertheless left explicit instructions that he wished to be buried at Beth-She'arim. The Jerusalem Talmud describes his funeral cortege in detail (*Kil.* 9.4.32b); for the next century and a half, Beth-She'arim served as the central necropolis for Jews throughout Palestine and the Diaspora (cf., J. T., *Mo'ed Q.* 3.5.82c).

The principal excavations at the site were carried out in the 1930s and 1950s. Between 1936 and 1940, four seasons of excavation were conducted by Benjamin Mazar of the Hebrew University of Jerusalem. Eleven burial complexes were discovered, in addition to the remains of a city wall and a synagogue and its various annexes. Between 1953 and 1958, Nahman Avigad, also of the Hebrew University, discovered an additional twelve catacombs (nos. 12–23, and 30) during his four seasons of excavation at the site. In summer 1956, Mazar returned to Beth-She'arim for one season and uncovered three additional catacombs (nos. 24–26), as well as a large basilica.

Five main building phases have been identified at Beth-She'arim: Period I (first and early second centuries CE), several walls and isolated burials; Period II (late second and early third centuries CE, the period of Rabbi Judah I), extensive expansion of the necropolis and the erection of other public buildings; Period III (mid-third to mid-fourth centuries CE, whose *terminus ad quem* is about 352 CE, evidenced by a destruction layer probably from the aftermath of the Gallus Revolt), construction of the majority of catacombs and a synagogue (only sketchily reported); Period IV (Byzantine era), a small, modest settlement; and Period V (Arab period), a very brief span of settlement.

The various catacombs at the site differ from one another in size and style. Most consist of a series of connected caves (or halls), with burial places (trough-shaped *kôkhîm,* or arcosolia) cut into the walls. Remains of sarcophagi were found in a number of catacombs; the largest concentration was in catacomb 20, which contained the remains of 130 sarcophagi. Several catacombs (nos. 14, 20, and possibly 23) were especially monumental and consisted of a spacious outer courtyard and facade, the latter consisting of four engaged pillars, a large central arch, and two side arches (see figure 1). Within these arches doors are often decorated with

panels and studs and crowned by a decorated lintel. Above these burial chambers and carved into the side of the mountain are semicircular benches, probably an element of an assembly place for those who came to memorialize the dead.

Catacombs 14 and 20, the focal points of the necropolis, were the most elaborate burial sites. Catacomb 20 was the densest of all the catacombs, representing the entire range of burial styles, but particularly the use of the sarcophagus: some 65 percent of the two-hundred burials in catacomb 20 were in sarcophagi, of which a third were decorated. These sarcophagi were made primarily of stone, but examples in marble, lead, and wood were also found. Rabbis were buried in this catacomb, and it is therefore not surprising that Hebrew dominates the inscriptions. Catacomb 14 appears to have been a private burial site, as it held far fewer interments. The names Rabban Gamaliel, Rabban Simeon, and Rabbi Aniana (Ḥanina?) discovered in this catacomb point to it as the burial site of the immediate family and circle of Rabbi Judah I (B. T., *Ket.* 103a–b). Indeed, the innermost double-trough burial is very likely the resting place of this patriarch and his wife.

These catacombs are rich both in their ornamentation and epigraphic remains. Many reliefs and carvings, as well as pictures painted and incised on stone, were found throughout the necropolis; they reflect one of the richest depositories of popular Jewish art in late antiquity. Floral and geometric designs are ubiquitous, as are representations of animals (lions, oxen, eagles, birds, horses) and an occasional human figure. Depictions of cuetic objects abound and include the Torah shrine, lulav, ethrog, shofar, and incense shovel. A predominant motif is the menorah, which appears scores of times in a variety of shapes and styles.

The approximately 280 inscriptions found at Beth-She'arim give the names and titles of the Jews interred, as well as their professions and places of origin. Moreover, the distribution of the languages in these inscriptions is most revealing: almost 80 percent are in Greek, 16 percent in Hebrew, and the remainder in Aramaic or Palmyrene.

The monumental catacomb 11, with its many and lavish fragments, indicates that a large building, probably a mausoleum, was located there. In the debris near the mausoleum, a seven-line inscription written in Greek on white marble was found:

> Here I lie, dead, Justus the son of Leontis and Sappho
> After I have picked (the fruits) of all wisdom
> I left the light, my unhappy parents who mourn continuously,
> And my brothers, Woe to me in my Besara,
> And after I have descended to Hades, I, Justus, lie here
> With many of my relatives, for so determined the powerful Fate
> Be comforted, Justus, for no one is immortal.

There is no question that the importance and centrality of Beth-She'arim to Jewish Palestine in late antiquity were inextricably linked to the presence of the patriarchal family there; Jews from all parts of Israel and the Diaspora wished to be interred there precisely because the necropolis was associated with the patriarch. The centrality of the office in late antiquity has been, however, a controversial subject in modern historiography. On the one hand, rabbinic literature

BETH-SHE'ARIM. Figure 1. *Entrance to catacomb 20.* (Courtesy E. M. Meyers)

following the ministry of Rabbi Judah I takes an increasingly dim view of the patriarchate, and by the fourth century either ignores the office or has only negative things to say about it. On the other hand, non-Jewish sources, such as the Theodosian Code and Libanius, depict the office as the most important one within the Jewish community. Even the church fathers, whose theological motivations led them to be critical of the patriarchate, nevertheless attest to its centrality. Archaeological finds at other sites have corroborated the results of the Beth-She'arim excavations. For example, both a synagogue inscription from Stobi (Yugoslavia) dating to 280 CE and a mosaic floor in the Hammath Tiberias synagogue attest to the importance of this office in the Jewish world. (In the former, the patriarch was designated as the recipient of a sizable fine owed by the party breaking the agreement outlined in the inscription; in the latter, one Severus associated with the patriarch was the principal donor to the synagogue.)

The finds at Beth-She'arim, along with those from ancient synagogues in general, have revolutionized our concept of Jewish art in antiquity. Previously, it had been assumed, on the basis of very explicit sources from the late Second Temple period, that Jews throughout antiquity shied away from all figural representation. The archaeological finds here, however, demonstrate that Jews used figural representation from the biblical period until the Hasmonean era, and that during the centuries of the Late Roman and Byzantine periods they once again depicted humans and animals figurally to decorate their public and private buildings. Beth-She'arim was one of the first and certainly most dramatic expressions of this more liberal posture, paving the way for a reevaluation of the historical attitude of the Jews and Judaism toward figural art.

The necropolis at Beth-She'arim provides evidence of the extent to which Jewish burial customs in late antiquity differed from those of the Second Temple period. Secondary burials, especially in ossuaries, are almost entirely absent at Beth-She'arim. The use of ossuaries was superceded by the trough-shaped burials and sarcophagi, which had been rare in earlier Jewish funerary contexts. Many of the customs evidenced at Beth-She'arim indicate the adoption by the Jews of the forms of burial regnant in late antiquity in general.

Finally, Beth-She'arim is a dramatic example of the extent of Hellenization within the Jewish community in Late Roman Palestine. Its art, architecture, and inscriptions attest to the far-reaching influence of contemporary forms and styles.

[*See also* Architectural Decoration; Burial Sites; Burial Techniques; Catacombs; Sarcophagus.]

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BETH-SHEMESH (Heb. "house/temple of the sun"), site located in the northeastern Shephelah, along the inner reaches of the Sorek valley that guarded the major ascent to Jerusalem in antiquity (map reference 1477 × 1286). It is a prominent mound, about 7 acres in size. The Hebrew name apparently preserves the tradition of an older Canaanite temple (cf. Ir-shemash, "city of the sun" in *Jos.* 19:41). The site's Arabic name is Tell er-Rumeilah; the nearby village of 'Ain Shems ("spring of the sun") preserves the ancient name.

Edward Robinson identified the mound in 1838 and Duncan Mackenzie excavated it in 1911–1912 under the auspices of the Palestine Exploration Fund. Haverford College (Pennsylvania) excavated from 1923 to 1928, under the direction of Elihu Grant, who was assisted by G. Ernest Wright in publishing the final volume of the excavation report. Bar-Ilan University resumed excavations in 1990, under the direction of Shlomo Bunimovitz and Zvi Lederman.

Stratum VI consists only of Early Bronze IV–Middle Bronze I sherds near bedrock. Stratum V represents the well-fortified MB II–III city with a few patrician houses and several tombs (tombs 9, 12, 13, 17). Mackenzie had identified its "strong wall" and triple-entry gate. Stratum IVa–b denotes the prosperous Late Bronze town, which produced some fine domestic structures, many cisterns, a smelting furnace, a Proto-Canaanite ostracon, a jewelry hoard, and several tombs (tombs 10, 11). Its destruction may date to about 1200 BCE, but the causes are unknown.

Beth-Shemesh in the Iron Age I was a large but relatively unplanned village, still somewhat in the LB tradition, but with Philistine Bichrome ware. (It is Mackenzie's "second city," stratum III.) Wright (Grant and Wright, 1938–1939) ascribed its destruction to the Philistines (c. 1050 BCE). The recent excavations have confirmed that it was indeed a massive destruction (Mackenzie's Red Burnt stratum), but it dates somewhat earlier, to the beginning of the eleventh century BCE.

Stratum II, with phases IIa–c, spans the tenth–eighth centuries BCE. In stratum IIa (c. 1000–950 BCE) a casemate wall was constructed around the entire site, and pillared courtyard houses characterized the well laid-out city within it. The structures included industrial installations, a fine "residency," a large silo, and a typical tripartite storehouse (sometimes called stables), which may indicate that Beth-Shemesh was a regional administrative center during the United Monarchy. How much of stratum IIa is Davidic, if any, is debated. The earlier excavations had published a good deal of pottery slipped with an unburnished, streaky red slip. This pottery also occurs in abundance at nearby sites such as Tell Qasile XI and Gezer X–IX, where it characterizes the period from about 1050 to 950 BCE, postdating Philistine bichrome ware and immediately preceding typical Solomonic red-burnished wares. [*See* Qasile, Tell; Gezer.] This evidence does suggest a Davidic date for stratum IIa.

Stratum IIb (c. 950–700 BCE) and stratum IIc (700–586 BCE) follow stratum IIa rather closely. Many of the houses were reconstructed several times, and some were even built over the stratum IIa casemate wall. The recent excavations have shown, contrary to Mackenzie's and Wright's view, that the city was scarcely fortified in Iron II; there was a massive rebuild of the city wall in this period, including a northern gate complex. Large olive-crushing installations and many Royal stamped jar handles attest to the city's continued importance. Several tombs (tombs 14–16) belong to this horizon. The final destruction of stratum IIc was thought by the earlier excavators to have been carried out by the Babylonians (c. 586 BCE), but the latest excavations have not revealed any seventh-century BCE remains. The destruction is better related to the well-known Judean campaigns of Sennacherib in 701 BCE.

The site's later periods are represented by Hellenistic, Roman, Byzantine, and medieval materials (stratum I). A large Byzantine monastery on the southeast slopes is still visible.

[*See also the biography of Mackenzie.*]

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BETH-YERAḤ (Ar., Khirbet Kerak, "the ruins of the castle"), a low, flat tell (25 ha, or 62 acres) located at the southwestern end of the Sea of Galilee, which has eroded some portion of the site (32°43′ N, 35°34′ E; map reference 204 × 236). The present outlet of the Jordan River lies to the south, but in antiquity it was to the north and the river flowed along the site's western edge. Fortifications on the south and west, and a Roman bridge on the north, suggest that the river's southern outlet was dug in the Byzantine period or later.

Four identifications have been suggested for Beth-Yerah/Khirbet Kerak (Maisler [Mazar] et al., 1952, p. 165, n. 1.; Avi-Yonah, 1976, pp. 88, 95; Esse, 1991, pp. 34–35; Hestrin, 1993, p. 255). Pliny and Josephus indicated that the site of Tarichea, Vespasian's campsite during his campaigns in the Galilee in 67 CE, was located at the southern end of the Sea of Galilee (*War* 3.447; 4.455). Most scholars reject this, while some others equate Khirbet Kerak with Philoteria, which Polybius said was built by Ptolemy II Philadelphus (Polybius 5.70.3–4). Others suggest Roman Sennabris or neighboring Beth-Yerah. The Jerusalem Talmud indicates that Beth-Yerah and Sennabris were walled sites at the southern end of the Sea of Galilee (*Meg.* 70a), while the Babylonian Talmud notes that the Jordan River began at Beth-Yerah (*Bekh.* 51a; *Bik.* 55a), which favors the identification with Khirbet Kerak. The name of *Khirbet Kerak* in the Bronze Age is unknown. *Beth-Yerah* is not mentioned in the Hebrew Bible or in other Bronze or Iron Age sources, but the term *bt yrḥ*, "house of the moon," places the name within Canaanite lunar traditions.

Major excavations at Beth-Yerah include those of Benjamin Mazar for the Jewish Palestine Exploration Society in 1944–1946 (Maisler [Mazar], 1952) and Pierre Delougaz for the Oriental Institute of the University of Chicago in 1952–1953, 1963, and 1964. The unpublished excavations of Pessah Bar-Adon (1951–1955) were the most extensive. William Foxwell Albright's surveys of the site and the Jordan Valley during the 1920s revealed distinctive Early Bronze III red-on-black burnished pottery known as "Khirbet Kerak ware" (Albright, 1926), the southernmost manifestation of the Early Transcaucasian or Kura-Araxes tradition, originating in the Caucasus region (Burney, 1989). [*See* Jordan Valley; *and the biographies of Mazar and Albright.*]

The site was densely settled during the Early Bronze Age and also reveals Hellenistic, Roman, Byzantine, and Early Islamic remains. Stratified EB material was recovered in all parts of the site. The Mazar excavation discerned four phases:

Beth-Yerah I: Pit dwellings containing ashes and animal bones. Gray-Burnished Ware, called Late Chalcolithic by the excavators, dates to the early EB I.

Beth-Yerah II: Rectangular mud-brick houses. Grain-Wash or Band-Slipped wares date to the late EB I.

Beth-Yerah III: Rectangular mud-brick buildings with basalt foundations and possibly a mud-brick city wall in three sections (8 m wide). The phase dates to EB II.

Beth-Yerah IV: The thickest phase, with up to 2 m of accumulation and four building stages. Large stone buildings were found along with Khirbet Kerak Ware and animal figurines. Whether the mud-brick fortification wall was used during this phase (EB III) is unclear.

Later excavations revealed EB stratification, in keeping with the strata I–IV sequence, varying in depth and number of structural phases (Esse, 1991, pp. 40–41). Bar-Adon also excavated an EB IV occupation level, including a potter's workshop, houses with courtyards, and a paved street. The Tell el-Yahudiyeh ware found in a grave is the only MB material known at the site. [*See* Yahudiyeh, Tell el-.]

The three-element mud-brick wall was founded on virgin soil and may date to EB I but is more characteristic of EB II. Bar-Adon's excavation revealed two superimposed gate structures paved with basalt stones, with steps leading down into the city. The latter phase had flanking guardrooms. The early phase was flanked on its exterior by several tall basalt stones, probably *massēbôt*. These gates remain unpublished (but see photographs in Yeivin, 1955, pl. VI:1; 1955b, pl. 50, fig. 8; and the plan in Eph'al, 1964, pp. 365–366). Mazar also found a poorly built stone wall 4 m wide. Bar-Adon cleared approximately 1,600 m of it along the southern and western edge of the site. The wall was constructed on massive stone foundations up to 7 m wide and 3 m high. The foundation supported a poorly preserved mud-brick superstructure containing alternating round and square towers. Bar-Adon dated this wall to EB IV, but it is Hellenistic.

The most notable structure excavated was the Building with Circles, dated to EB III. It is a rectangular stone structure (30 × 40 m) surrounded on three sides by paved streets. Comprised of a single wall 10 m thick, it surrounds a square courtyard and has a rectangular entrance passage. In the wall are eight or ten circles 7–9 m in diameter, each subdivided by partition walls. The partitions do not reach the center of the circles. The structure was entered through a 7-meter-wide passageway. Narrow paved passages led into two of the circles. The others were entered from a higher level. Large amounts of pottery, including Khirbet Kerak Ware, burnt animal bones, soot, and carbonized olive pits were found. The shape of the circles' mud-brick superstructure is unknown. The Building with Circles is one of the largest EB structures known. The excavators suggested four possible functions for it: fortress, granary, palace, or sanctuary. The building resembles the model of a Helladic granary found on Melos, the model of an Old Kingdom granary from el-Kab, and depictions of granaries from Egyptian tomb paintings of the fourth and fifth dynasties.

Persian remains are reported by excavators but are unpublished. However, considerable Hellenistic material was excavated at Khirbet Kerak. The largest feature is the stone fortification wall with towers. Other materials remain unpublished. Bar-Adon found several Hellenistic houses on the southern part of the site, including a large residence with a courtyard dating to the Ptolemaic period, and houses, decorated with colored plaster, preserved to their windows.

The Roman materials were found on the northern part of the site and include a bathhouse. [*See* Baths.] Its frigidarium was paved with marble slabs and contained a round pool lined with marble situated in the center of the room and surrounded by a round bench. Beyond the bench were pillars and impressions of smaller pillars, indicating that there had been a dome or pavilion above the pool. The walls were decorated with colored and gilt mosaics. [*See* Mosaics.] Adjoining the frigidarium was a hypocaust cellar below a caldarium and tepidarium. The hypocaust had thick walls and a cement floor; its burnt-brick and ashlar pillars in the walls had supported floors of upper rooms. Walls containing vertical square ceramic pipes vented the hot air up into the caldarium. The complex was fed by a clay pipe that cut across part of the Building with Circles and connected to an aqueduct from Naḥal Yavne'el to Tiberias. The thermal establishment was constructed in the fourth or fifth century CE, repaired in the sixth century, and destroyed in the seventh. It was partially built above a square Roman fortress (60 sq m) with corner and gate towers constructed of dressed stones and with a rubble core and dated to the second or third centuries CE. Within the fortress were foundations of a synagogue, in which two rows of columns created a nave and aisles. The nave was decorated with a mosaic depicting plants and animals and a column base was decorated with carved motifs of a menorah, lulav, etrog, and incense shovel. The apse in the southern wall was oriented toward Jerusalem.

A large church was excavated on the north of the site by Delougaz and Richard C. Haines. This was a basilica (11.5 × 12.5 m) with three apses and a row of pillars along its long axis, creating a nave and aisles. Tombs, possibly reliquaries, were found under the floor of the nave. The narthex led to a large rectangular atrium and narrow loggia, all later additions. A small diaconicon was added to one side of the basilica and decorated with floral and geometric mosaics. The diaconicon was decorated with a mosaic containing a short Greek dedicatory inscription. The basilica was constructed in the early fifth century; the diaconicon was completed in 528; and the complex was abandoned during the late sixth or early seventh centuries. A building from the Early Arab period was partially excavated above the church that consists of well-built small rooms around a courtyard.

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BETH-ZUR, site located 30 km (19 mi.) south of Jerusalem in the hill country of Judah, identified with Khirbet eṭ-Ṭubeiqah (map reference 159 × 110). The conical mound rises between 22 and 100 m above the valley floor, commanding roads northward to Jerusalem and westward toward the Shephelah. Its ancient Hebrew name is preserved in the Arabic of nearby Khirbet Burj eṣ-Ṣur.

Beth-Zur was first identified by F.-M. Abel, William Foxwell Albright, and Ovid R. Sellers. Excavations took place in 1931 and in 1957, directed by Sellers for the Presbyterian (McCormick) Theological Seminary and the American Schools of Oriental Research. Albright and H. Neil Richardson served as archaeological advisers. In 1931, some 8,000 sq m were cleared to bedrock; in 1957, fields I and III within the city wall and field II outside of it were opened. [*See the biographies of Albright and Abel.*]

Early Bronze Age sherds suggest some third-millennium occupation, but Beth-Zur's first significant settlement dates to the Middle Bronze II/III period. The hill was inhabited in the seventeenth century BCE, fortified early in the sixteenth century, destroyed in about 1550, and then abandoned until the beginning of the Iron Age.

Israelite Beth-Zur (*Jos.* 15:59; *1 Chr.* 2:45), a rather poor town, was destroyed late in the eleventh century BCE. The biblical description of Rehoboam's fortifying the site (*2 Chr.* 11:7) remains unsubstantiated archaeologically. Excavations attest to an Israelite occupation in the mid-seventh century BCE, at which time the city was undefended. Fifteen *lamelekh* jar handles are among the finds from that period. Archaeological evidence for a 587 BCE destruction is ambiguous.

The Hebrew Bible notes that Beth-Zur was a district center at the time of the rebuilding of the Jerusalem Temple, but remains of the fifth-century BCE town are sparse (*Neh.* 3:16). Numismatic evidence substantiates a fourth-century Hellenistic city. In the third century BCE, Beth-Zur attained new importance, figuring strategically in the conflict between the Ptolemies and the Seleucids. It was then that the site's phase I citadel was constructed.

Beth-Zur, or Bethsura, as it was then called, reached the zenith of its prosperity during the Maccabean wars (stratum II, second century BCE) and the reign of Antiochus IV Epiphanes (175–165 BCE). It was the site of a major battle between Judah Maccabee and the Seleucid general Lysias (*1 Mc.* 4:28–34; Josephus, *Antiq.* 12.7.5). In 164 BCE, the victorious Judah reconstructed its MB wall and built the phase II citadel (*1 Mc.* 4:61, 6:7, 6:26; *Antiq.* 12.7.7).

Lysias retook control of the city almost immediately and strengthened its defenses even further (*1 Mc.* 6:28–31, 47–50; *Antiq.* 12.9.4–5; *War* 1.1.5). The phase III citadel was built in 161 BCE by his successor, Bacchides (*1 Mc.* 9:52). The many Rhodian wine-jar handles found at Beth-Zur are remnants of two decades of Seleucid occupation, an occupation that included both a military garrison and some renegade Jews loyal to the Seleucids (*1 Mc.* 10:14).

In the last years of the Hasmonean king Jonathan's reign (160–143 BCE), his brother Simeon (later high priest) conquered Beth-Zur and posted a Judean garrison there (*1 Mc.* 11:65–66, 14:33). This stratum I city remained an important Judean border fortress until another Hasmonean, John Hyrcanus, annexed Idumea in 129 BCE, thus undermining Beth-Zur's significance. By about 100 BCE, Beth-Zur had been abandoned.

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BIBLICAL ARCHAEOLOGY. The movement known popularly as biblical archaeology is principally an American phenomenon. Its parent disciplines are Syro-Palestinian archaeology and biblical studies. The history of biblical archaeology can be divided into four phases.

Premodern Period. The emergence of both Syro-Palestinian and biblical archaeology really began in the mid- to late nineteenth century with the rediscovery through exploration of ancient Palestine, following that of Mesopotamia and Egypt. This was also the period that witnessed the birth of modern literary-historical criticism of the Bible. Thus, the romance of discovery and the challenge of vindicating the historicity of the biblical accounts combined to create the movement that came to be called biblical archaeology. Its objective was to bring external "proofs," provided by archaeological discoveries, to bear directly on such problematic issues as the patriarchal and conquest eras, Moses and monotheism, and other issues where faith and history seemed to intersect. The method of biblical archaeology was to excavate (in reality, to "mine") select sites thought to be identified with places and events in the Bible. From their recovered remains a "political history" would be written—of great men and public events—that could be correlated directly with the biblical texts for the purpose of corroborating the texts (or at least the writers' interpretation of the texts). However, despite mounting enthusiasm for archaeology in biblical circles in late nineteenth-century Europe, neither American biblicists nor American scholars in any disciplines, except for the philologist Edward Robinson, were involved in Palestinian archaeology until nearly the end of the century. [*See the biography of Robinson.*]

The first actual fieldwork in Palestine was carried out for the British Palestine Exploration Fund (1865–) by the legendary Sir William Flinders Petrie, at Tell el-Ḥesi in southern Palestine (possibly biblical Eglon) in a six-week season in 1890. [*See* Palestine Exploration Fund; *and the biography of Petrie.*] American involvement in fieldwork finally materialized when Frederick Jones Bliss directed a follow-up season in 1893. [*See the biography of Bliss.*] It was Bliss who, in 1903, delivered the Ely Lectures at Union Theological Seminary in New York City—Robinson's old school—under the published title *The Development of Palestine Exploration* (New York, 1906). It was the first comprehensive survey of the field. The combination of Bible and archaeology, evident at the beginning of American archaeology in Palestine (dating back in fact to Robinson's explorations in 1838), was to remain characteristic. Some subsequent American excavations, such as those of George Andrew Reisner at Samaria in 1908–1910, were carried out under secular auspices; however, the growing fundamentalist-modernist controversy of the early twentieth century—named for the six-volume series of Evangelical theology called *The Fundamentals* (the first ones published in about 1909—and its divisive impact on American religious life set the scene for the flowering of biblical archaeology.

Heyday: 1920s–1960s. World War I brought a halt to all archaeological fieldwork in the Near East. The year 1919, however, marked the dawn of a new era. In that year the fledgling British Mandatory Government established a Department of Antiquities in Palestine and promulgated a modern antiquities law; and Americans founded the Oriental Institute at the University of Chicago and began to plan for an in-country institute and year-round field operation at Tell Megiddo, in the Jezreel Valley. Perhaps the most significant event, as it turned out, was the arrival in Jerusalem of a young American scholar, William Foxwell Albright, at the American Schools of Oriental Research (ASOR), which had been established in 1900 but had neither a building, a program of fieldwork, nor a long-term director. [*See* American Schools of Oriental Research.] Albright became unarguably the most prominent and influential Orientalist of the twentieth century. [*See the biography of Albright.*]

Albright was the director of ASOR from 1920 to 1929 and again from 1933 to 1936. He also directed field campaigns at Tell el-Ful (biblical Gibeah) in 1922 and Tell Beit Mirsim (biblical Debir?) from 1926 to 1932. His mastery of the pottery of Palestine and his ability to establish the results of excavations in the broad context of the whole of the ancient Near East quickly placed him in the forefront of Palestinian archaeology. Furthermore, it was he who really established biblical archaeology as a legitimate enterprise, at least in principle. Under both his influence and direct tutelage there developed a pattern that included the deliberate choice of biblical sites for excavation; financial and institutional backing drawn from church-related organizations (largely Protestant); field staffs made up almost exclusively of biblical scholars, seminarians, and clerics; and an agenda that subjugated strictly archaeological methods and objectives to what were perceived as the larger issues of biblical interpretation (largely in the Hebrew Bible). Projects of this type were those of Albright himself at Tell el-Ful, Bethel, and Tell Beit Mirsim in 1922–1934; of the Pacific School of Religion at Tell en-Naṣbeh in 1926–1935; of Haverford College, Pennsylvania, at Beth-Shemesh in 1928–1933; and, of course, the American excavations in the 1950s–1960s at such sites as Dibon, Heshbon/Ḥesban, Shechem, Ai, Ta'anach, Gibeon, and other sites in modern Israel and Jordan (see below).

The biblical archaeology movement dominated American Palestinian archaeology (though not continental) from the 1920s through the 1960s, and it still has a few wistful defenders. In retrospect, it appears that the movement constituted a chapter in American religious life, and particularly in theological development, as seen in connection with the biblical theology movement in the 1950s by Albright's protegé G. Ernest Wright and others (Dever, 1985, 1993). [*See the biography of Wright.*]

Albright had furthered the original historical aims of biblical archaeology, such as the attempt to use archaeology to confirm the essential historicity of the patriarchs, of Moses and early monotheism, and of the Israelite conquest of Canaan. Wright, however, went further in deliberately joining the issue of "faith and history"—a characteristic theme of the Neo-Orthodox theology movement of the 1950s—with developments in Syro-Palestinian archaeology. Unlike Albright, Wright was an ordained clergyman and a leading biblical scholar—indeed he was Parkman Professor of Divinity at Harvard. As Wright stated the issue: "Now in Biblical faith everything depends upon whether the central events [i.e., the call of Abraham, the promise of the Land of Canaan, the conquest under Joshua, etc.] actually occurred" (*God Who Acts: Biblical Theology as Recital,* London, 1952, p. 126).

To many, especially in Europe, Wright's position appeared dangerously close to fundamentalism, even more so than Albright's historicism. By the mid-late 1960s, however, the biblical theology movement had waned, and the stage was set for American Syro-Palestinian archaeology to move toward independent status. Nevertheless, up until that time much of postwar American archaeology in the Holy Land remained in the traditional biblical mold. That included Wright's own excavations at Shechem (1956–1968); the work of Joseph A. Callaway, a professor at the Southern Baptist Theological Seminary, at Ai (1964–1969); the work of Paul Lapp, a Lutheran clergyman, at ʿIraq el-Amir (1961, 1962), Taʿanach (1963–1968), Tell er-Rumeith (1967), Bab edh-Dhraʿ (1965–1967), and elsewhere; the excavations of James B. Pritchard, professor of religious thought at the University of Pennsylvania, at el-Jib (1956–1962) and Tell es-Saʿidiyeh (1967); and the project of Siegfried H. Horn, Lawrence T. Geraty, and others at Ḥesban (1968–1978).

"New Archaeology": 1970s–1980s. It may be significant that all the above excavations were of sites in Jordan, where Americans with a Christian theological background apparently felt more at home after the partition of Palestine in 1948. Although a vigorous Israeli national school was developing in the new State of Israel, there were no American-directed excavations there until the long-lived project directed by William G. Dever, Joe D. Seger, and others at Gezer (1964–1974, with final seasons in 1984 and 1990). Gezer was followed by other projects under Gezer-trained personnel: at Tell el-Ḥesi (John E. Worrell, Lawrence E. Stager, and others, 1971–1983); at Galilean synagogue sites and at Sepphoris, in separate projects (Eric M. Meyers and Carol Meyers, and then James F. Strange, 1970–1981 and 1984–, respectively); at Lahav (Seger and Dan P. Cole, 1976–); at Tel Miqne (Seymour Gitin, with Trude Dothan of the Hebrew University of Jerusalem, 1981–); at Ashkelon (Stager and others, 1985–); and other sites. Other American excavations of this and later periods in Israel included large projects at Caesarea (Robert J. Bull and Lawrence E. Toombs, 1971–); at Tel Anafa (Saul S. Weinberg and Sharon Herbert, 1968–1981); Tel Jemmeh (Gus van Beek, 1970–1982); and Be'er Resisim in the Negev (Dever, jointly with Rudolph Cohen of the Israel Department of Antiquities, 1978–1980).

The Gezer excavations proved to be a microcosm of developments in the field of archaeology. They transformed "biblical" archaeology beyond recognition, gradually bringing about the emergence of the discipline of Syro-Palestinian archaeology by the mid-1970s. There occurred in this enterprise what the scientist/philosopher Thomas S. Kuhn (*The Structure of Scientific Revolutions,* Chicago, 1970), has termed a paradigm shift. In this case it was a practical consensus about improving field and recording techniques. It was not a deliberate and profound intellectual reorientation—the development of a systematic body of theory as this was understood in other branches of archaeology or in the social sciences generally (that is, in fact, yet to occur).

From the late-1960s through the mid-1980s biblical and Syro-Palestinian archaeology borrowed elements of a trend in Americanist New World archaeology that came to be called the New Archaeology. These "external factors," as we shall call them, in the demise of biblical archaeology, need only be enumerated briefly here, since they have been amply treated elsewhere (Dever, 1993; Drinkard et al., 1988). The principal aspects of the New Archaeology follow:

1. An orientation that is more anthropological than historical, away from particularization toward the study of culture and culture change generally
2. A "nomothetic" approach that seeks to formulate and test the lawlike propositions that govern cultural processes (thus, "processualist" archaeology)—and thus to develop a body of theory that qualifies archaeology not only as a discipline but as a science
3. An ecological thrust that emphasizes technoenvironmental factors (rather than simply evolutionary trajectories) in the role of adaptation in culture change
4. A multidisciplinary strategy that involves many of the physical sciences and their statistical and analytic procedures in attempting to reconstruct the ancient landscape, climate, population, economy, sociopolitical structure, and other subsystems (often using the model of General Systems Theory)
5. An insistence on an overall, up-front "research design" for projects that integrate all of the above, and thus advance archaeology as a culturally relevant enterprise.

Radical as these trends were to conventional "biblical archaeologists" in the 1960s, many aspects were prefigured in developments already taking place in the field of Syro-Pal-

estinian archaeology, or "internal factors" in change. These included the following:

1. The recent stratigraphic revolution led by Kathleen M. Kenyon and others that promised total retrieval, automatically generating data so copious and varied they required analysis by specialists
2. The growing complexity and costs of excavation, especially in Israel, which was pushing the field inevitably toward professionalization
3. Field schools and student volunteerism—which not only constituted an intellectual challenge but broke the monopoly of biblical scholars on dig staffs and thus contributed to the secularization of the discipline
4. The increasing sense that "biblical archaeology" was not only parochial but had failed to achieve even its own limited agenda of historical-theological issues.

Another major factor in American Syro-Palestinian archaeology's "coming of age" was competition with other national schools and their approaches. The European schools, while not ignoring the connection between archaeology in the Holy Land and the Bible, had taken differing approaches: some completely secular (the British); others aligned with the religious establishment, largely through a state church that located Palestinian archaeology academically in state university departments of theology (the Germans); and still others viewing clerics and secular scholars alike involved in Near Eastern archaeology generally (the French). The significant difference was that none of the European schools was haunted by the specter of fundamentalism, as the American school had historically been. At the same time, none of these schools possessed the perseverance to enable them to survive as a major force in Syro-Palestinian archaeology as it evolved into a mature discipline in the 1980s.

The Middle Eastern countries themselves had developed national schools only in the 1960s, well after the establishment of the State of Israel and the end of the mandatory governments in Syria, Jordan, and Iraq. Arab countries wanted little to do with either the Bible, the ancient history of Israel, or the search for Western cultural and theological roots in the Holy Land. However, their national schools, as they developed in the 1960s and later, did not manage to avoid bias toward pan-Islamic culture or escape the pull of nationalism. All in all, however, archaeology in Arab countries has developed recently, with all the strengths and weaknesses of the field generally. American involvement from country to country is difficult to assess because of rapidly changing political configurations. In the early 1990s American fieldwork and influence in Jordan are strong, thanks to the work of the American Center for Oriental Research (ACOR) in Amman since 1968. British and German institutes also exist but are less conspicuous. American and other foreign projects continue in Syria on varying scales, while Lebanon is virtually closed to all archaeologists.

The situation in Israel is in many ways unique. Israelis claim that they connect with the biblical past not necessarily in the sense of formal religion, certainly not theologically—since most of the archaeologists are neither personally observant nor academically trained in Bible and religion—but emotionally and directly. They maintain that the Hebrew Bible is, after all, the virtual constitution of the modern state; that for Jews displaced for centuries, even secular Jews, digging for their past in the soil of the Holy Land is a vital matter of identity, an existential quest no one has the right to deny them. They have a point, although the argument is somewhat disingenuous, and it can lead to nationalist extremes. In any case, Israeli archaeologists who use the phrase "biblical archaeology" for popular consumption, or for an English-speaking audience, do so with a meaning that differs from typical American usage, and partly to avoid the awkward term "Palestinian." (In Hebrew, the common designation is simply "the archaeology of Eretz-Israel, the "Land of Israel," exactly parallel to the archaeology of Jordan or Syria.) The most recent syntheses by Israelis of archaeological results (Amihai Mazar, *Archaeology of the Land of the Bible 10,000–586 B.C.E.*, New York, 1988; Amnon Ben-Tor, ed., *The Archaeology of Ancient Israel*, New Haven, 1992) have not been matched by American archaeologists working in Israel. The 1990s have, however, been witness to several major and a number of smaller American field projects, most coordinated with ASOR through the W. F. Albright Institute of Archaeological Research in Jerusalem. Despite the changing balance of Israeli and foreign-sponsored work, it is obvious that the leadership has shifted to Israeli archaeologists, who now dominate the field through extensive excavations, surveys, and publications. [*See* Israel Antiquities Authority; Israel Exploration Society; Survey of Israel.]

The overall general impact of the American-generated New Archaeology must be assessed. As biblical archaeology moved from a relative backwater into the mainstream of archaeology in the 1970s it was considerably influenced by the New Archaeology then current, especially by its much more anthropological than historical orientation, and its concern with culture and culture change (so-called "processual archaeology"). Yet, if the full impact of the New Archaeology was felt, it was so only belatedly: the antihistorical attitude and theoretical thrust toward positivist philosophies of science were rejected outright; and the actual changes were more a matter of style than of substance. The real contribution of the "New Archaeology" lay first of all in its commitment to multidisciplinary methods and its insistence on explicit, self-conscious statements of methods and purpose, as we have seen. Second, the broad overriding ecological

approach placed all archaeological research in the broad context in which it belongs. These aspects of Americanist "New Archaeology" should remain features of Syro-Palestinian archaeology as it moves into the next phase of its own development.

A still newer approach to recovering the past developed in the late 1980s: the postprocessualist archaeology. Specifically identified with several British archaeologists such as Cambridge's Ian Hodder (cf. *Reading the Past: Current Approaches to Interpretation in Archaeology,* Cambridge, 1986), this approach rejects the positivism, scientism, and determinism of the more extreme expressions of the New Archaeology. It returns to more traditional, symbolic, ideological (or "mentalist"), and historical explanations of culture change. It views "context" (Hodder's preferred term) as broader than the ecological setting—as embracing the concept of culture in its widest sense. This more balanced and eclectic approach may be particularly congenial to future Syro-Palestinian and biblical archaeologists.

Current Status: Two Disciplines. The trends of the 1970s and 1980s resulted in sweeping and probably permanent change. American Syro-Palestinian archaeology has emerged as an autonomous academic and professional discipline, often quite independent of biblical studies, with its own appropriate aims and methods. The change of name from biblical to Syro-Palestinian archaeology (reviving Albright's original designation in the 1930s) is now widely used, appropriately reflecting the new reality. That is to say, this field is simply a branch of Near Eastern or Levantine archaeology—the other accepted branches being Egyptian, Anatolian, Mesopotamian, and Iranian archaeology (Cypriot archaeology may straddle the border between Near Eastern and classical archaeology).

The specialization of Syro-Palestinian archaeology focuses primarily on ancient Canaan, which includes biblical Israel in the Iron Age. No longer "the handmaiden of history," as a former generation put it—and especially not of biblical history—Syro-Palestinian archaeology has come of age as a parallel but unique means of investigating the past, based not on texts alone but primarily on material culture remains. The archaeology of ancient Palestine as a cultural entity is still allied with biblical and ancient Near Eastern studies, ancillary and contributory disciplines. Increasingly, however, it is multidisciplinary, linked also with general archaeology, with social and cultural anthropology, with the social sciences, and even with the natural sciences, when analytical procedures are required.

The secularization of Syro-Palestinian archaeology also poses a challenge. The long-dominant understanding of the history of ancient Israel as unique, or *Heilsgeschichte* ("salvation history"), has given way to an approach that sees ancient Israel and Canaan in terms of *Siedlungsgeschichte,* the long, complex settlement history of the ancient Near East generally (similar to *la longue dureé* of Fernand Braudel and historians of the *annales* school). Invoking the deus ex machina of divine purpose does nothing to elucidate the actual phenomena of culture and culture change, even in ancient Palestine. Syro-Palestinian archaeology, as a basically historical discipline, deals with the problem of reconstructing ancient events, or "What happened?" Exegesis and theology deal with the question "What did/does it mean?" These may indeed be complementary tasks; however, honest inquiry demands that they be kept separate, at least initially. Syro-Palestinian archaeology has now matured to where it is ready to assume its proper role in this and other dialogues. Ironically, it is the new "secular" archaeology that promises to contribute most to biblical studies, precisely because it is indifferent, in the best sense of the word (below).

Toward a Dialogue. Biblical archaeology—or "the archaeology of Palestine in the biblical period"—is not a surrogate for Syro-Palestinian archaeology, or even a discipline at all in the academic sense. It is a branch of biblical studies, an interdisciplinary pursuit that seeks to utilize the pertinent results of archaeological research to elucidate the historical and cultural setting of the Bible. In short, biblical archaeology is what it always was, except for the brief Albright-Wright period. The crucial issue for biblical archaeology is properly conceived as a dialogue to achieve the proper relationship between its understanding and use of archaeology on the one hand, and its understanding of the issues in biblical studies that are fitting subjects for archaeological illumination on the other.

What is that relationship? That is, what can archaeology and biblical studies contribute to each other? First, archaeology is unique in providing an immediate context in Canaan in which to situate the places, peoples, and events of the Bible—most of which would otherwise be without any external witness, and therefore are problematic for the historian. In particular, most aspects of the daily lives of ordinary people would not be known because the biblical writers and editors were, rather, preoccupied with the grand schemes of their own brand of theocratic history. The *Sitz im Leben* ("life-setting") that the form-critical and traditio-historical schools of biblical scholarship sought for specific biblical texts and larger blocks of material remains at best a *Sitz im Literatur,* apart from the real-life setting archaeology and archaeology alone can provide.

Second, archaeological discoveries, including the textual evidence recovered through excavation, enable us to paint the broader canvas of ancient Near Eastern peoples and cultures, against which Israel's distinctiveness (if not her uniqueness) can be more accurately portrayed and fully appreciated. Such comparative cultural study, based on archaeological investigation and its unique angle of vision on the past, provides a perspective that no other approach can, certainly not one based on minute internal analysis of the texts alone. Finally, archaeology can contribute to questions of faith and morality, although not by offering "proofs." It

does, however, have its limits: archaeology illuminates, but cannot confirm; it brings understanding, but not necessarily belief. Yet, a grasp of the material reality of ancient Israel, in all its variety and vitality, can make the Bible both accessible and credible.

The dialogue can be viewed from the opposite perspective, that is, what can biblical studies contribute to Syro-Palestinian archaeology? It can interpret the texts of the Bible in the light of the best modern tools of philology, literary-critical, exegetic, and hermeneutic principles. Because this is a complex, highly specialized task, teamwork among specialists is required. Here the contribution of biblical scholarship to archaeology is essential because the Hebrew Bible is virtually all the literature there is for Iron Age Palestine. Despite the limitations of theological biases, biblical literature provides a wealth of information on conditions in Palestine, as well as an outline of its political history and ideology—at least of the ruling classes, scribal schools, and theological circles that produced the Bible in its final version. Archaeology is not "mute" without texts, as biblical scholars such as Martin Noth and others have long maintained; however, its voice is amplified considerably when textual records are available and happen to accord well with the interpretation of material culture remains.

There is little to be said about archaeology and New Testament studies in this context. Biblical archaeology has been almost exclusively the province of scholars of the Hebrew Bible—largely because of the long sweep of biblical history, the vast setting of the ancient Near East, the paucity of direct extrabiblical historical testimony, and the complex historiographic issues involved. By contrast, the New Testament covers a brief, extremely well-documented period in Roman Syria-Palestine and Asia Minor. In addition, the theological issues involved in the study of Christian origins have not been thought amenable to archaeological investigation in the same way as the origins of early Israel.

[*See also* New Archaeology. *In addition, the sites mentioned are the subject of independent entries.*]

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BIBLICAL LITERATURE. [*To survey the chronological range and literary genres of the books of the Bible and to discuss the formation of the formal canon, this entry comprises two articles:* Hebrew Scriptures *and* New Testament.]

Hebrew Scriptures

The dramatic changes in biblical scholarship during the late twentieth century have shattered the relative consensus that much of the field had enjoyed since the advent of historical criticism in the late 1800s. Feminist, reader-response, deconstructionist, and other new approaches have challenged understandings not only of individual books and passages but indeed of the Bible's very nature and origins.

These heated and on-going debates center on a collection of documents, most of which are believed to have been written in Hebrew, that are accepted as religious canon by Judaism and Christianity. The modern Jewish canon has a tripartite organization: the Torah (the first five books, also called the Pentateuch); Prophets, subdivided into Former

Prophets (*Joshua* through *Kings*) and Latter Prophets (*Isaiah* through *Malachi*); and Writings (a variety of materials, from *Psalms* to *Chronicles*). The early Christian canon retained these books as well as deuteroncanonical writings from the Greek-speaking world; to enhance how the collection would lead to the additional documents about Jesus also accepted by the church, Christianity renamed the earlier collection the Old Testament and moved the Latter Prophets to its end. The Protestant Reformers later removed the deuterocanonicals, labeling them Apocrypha. Hence, while Jews, Roman Catholics, and Protestants rightly may be said to share the books found in the Hebrew Scriptures, each community understands differently the significance of a given book within its respective canon, a reality that is also reflected in the ordering of the books in each tradition.

These modern canons include many different types of literature. The Torah narrates events from the creation of the world through the death of Moses, interspersing judicial and cultic regulations as well as poetry. The Former Prophets are primarily narrative in form and cover Israelite history from the entry into the land of Canaan through the fall of Judah. Poetic oracles dominate the Latter Prophets, although biographical narratives occasionally intertwine. The Writings contain liturgical poetry *(Psalms),* instructions on "wisdom" *(Proverbs, Ecclesiastes, Job, Song of Songs),* short narratives *(Esther, Ruth)* and miscellaneous books, such as *Lamentations.*

Getting a Text. Such a straightforward description of the organization and content of these existing canons can, however, obscure the fact that the Hebrew Bible as a whole and its constituent parts have undergone an extended process of collection, canonization, transmission, and translation. As a result of the lack of autographs (originals), even determining the text of the collection can be problematic. Modern translators rely on manuscripts (handwritten copies), some of which are removed from their assumed originals by more than a thousand years. The two principal manuscripts, used exclusively prior to 1940 and still used today, are medieval in date. Manuscripts found in the Judean Desert since the 1940s have given scholars more ancient scraps of biblical materials but no complete copies of the whole. Early translations (versions) in languages such as Greek, Coptic, and Syriac also inform textual judgments.

Because such manuscripts and subsequent codices were created in and preserved by religious communities, determining what is genuinely ancient is a matter of scholarly judgment. During the history of biblical interpretation, scholars interested in the historical information the Hebrew Scriptures can provide have developed a number of critical methodologies, such as source criticism, form criticism, and redaction criticism. Recently, however, these methods have been challenged—both in the results they produce and the assumptions from which they work.

Finding an Author. Although many modern books are the products of a single author writing from a consistent point of view, the great variations in content and style between and within biblical books suggest quite different origins. Alert for inconsistencies in style, vocabulary, and theology, source criticism arose in the 1800s to distinguish the signs of multiple authors. For example, Julius Wellhausen (*Prolegomena to the History of Ancient Israel,* reprint, Gloucester, 1983) argued that the Pentateuch was not the work of Moses but rather a compilation of four discrete sources, the first written during the Monarchy and the last in the postexilic period.

Form criticism as developed in the early 1900s claimed that the biblical materials are yet more ancient. Hermann Gunkel (*What Remains of the Old Testament and Other Essays,* translated by A. K. Dallas, New York, 1928) and his successors interpreted recurring motifs and stereotypical formulae as signs that biblical writings preserve a prior oral stage. Within this framework, some of the writings now found in the Hebrew Bible may be very ancient, perhaps as old as the patriarchs.

Although source and form criticism are still practiced, both have waned in popularity. Myriad literary studies of biblical narrative have argued that source "inconsistencies" exist in the eye of the beholder and that ancient Semitic writers worked within a different aesthetic than that of modern Europeans. While studies of folklore and anthropology continue to trace elements of orality, form criticism has recently been challenged—by John van Seters (*In Search of History: Historiography in the Ancient World and the Origins of Biblical History,* New Haven, 1983) in the case of the Pentateuch, and by other literary studies that attribute formulae and repetitions to creative authors in other portions of the Bible.

Dating the Composition. Describing the time period a text talks "about" is much less difficult than determining "when" it was written, although neither may be readily tied to recognized archaeological time periods. Biblical history is usually divided according to the political history of the Israelite and later Judean nations, and thus does not directly coincide with the archaeological designations of the Bronze or Iron Age.

Using biblical terminology, the Hebrew Bible relates material about an undated prehistory through the Hellenistic period. In regard to when it was written, greater consensus exists for the more recent periods than for early ones. For example, that parts of the Bible were written in the Hellenistic period is generally accepted *(Daniel, Ecclesiastes,* perhaps *Joel),* and much material is seen to derive from the Persian period (the last of the prophets, some wisdom texts, *Ezra, Nehemiah*). The Babylonian period is well represented (*Jeremiah, Ezekiel,* parts of the Pentateuch, perhaps the Former Prophets), as is the Assyrian period *(Isaiah, Amos, Hosea).*

How many of the writings precede the Assyrian period, however, is questioned. Building on Wellhausen, Gerhard von Rad (*The Problem of the Hextateuch and Other Essays*, translated by E. W. Trueman Dicken, London, 1984) dated the first strand of the Pentateuch (J) to the era of Solomon. Few modern scholars place the writing of biblical materials before the Monarchy, although the Song of Deborah (*Jg.* 5) and the Song of Moses (*Dt.* 32) may be earlier compositions.

Making Comparisons. In dating discussions, in analyses of literary genres, and in historical reconstructions, scholars have turned to other literature from the ancient Near East for illumination. Comparisons abound, offering much fodder for scholarly debate. Such parallels provide rich background regarding the cosmological, cultural, and religious milieu of the ancient Near East. Mythological texts from Mesopotamia and Ugarit are particularly helpful in this regard. Concerned with the division of the elements from chaos, the loss of immortality because of a sly snake, and the ability of one man to survive a flood on a boat, the Mesopotamian documents *Enūma elish* and the epics of Gilgamesh and Atraḫasis appear to be the backdrop against which the writers of *Genesis* worked. Ugaritic myths of Baal's ordeal in the underworld illumine some psalmic and prophetic language.

Similarly, comparison of biblical legal material with that of Mesopotamian and Hittite cultures reveals many similarities, both in individual laws and in their underlying values. Laws often considered unique to Israel (such as sabbath observance and an owner's responsibility for a goring ox) have Mesopotamian counterparts. In addition, the covenant ideology in which biblical law is presented employs diplomatic language typical of Hittite and Assyrian treaties.

Much of the Writings section utilizes common ancient Near Eastern literary types. The Psalms, for example, often adapt Mesopotamian, Ugaritic, and Egyptian hymnody to the monotheism of later Israel. Large portions of the *Book of Proverbs* draw from the Egyptian wisdom text "The Instruction of Amenemope," and the books of *Job* and *Ecclesiastes* and the *Song of Songs* bear equally strong literary ties to other forms of Near Eastern literature.

Although scholars have long recognized the benefit of such comparisons in appreciating the intellectual and cultural environment in which the Bible arose, much more debated is the accuracy with which specific events recorded in the Hebrew Bible can be verified in extrabiblical documents. A prime example of such disagreement concerns the date of the Exodus. Followers of William Foxwell Albright (for example, John Bright, *A History of Israel*, 3d ed., Philadelphia, 1981) insist on a thirteenth-century date for the Exodus based on the mention of "Israel" on Pharaoh Merneptah's victory marker (1220 BCE) and on an identification with the store cities mentioned in *Exodus* 1:11 with Egyptian sites. Earlier dates for the Exodus are embraced by scholars who correlate the *ḫapiru* mentioned in the Amarna texts with the Hebrew people: if Canaanite rulers were complaining about marauding "Hebrews" in the fourteenth century BCE, the Exodus would necessarily have taken place earlier. A good number of European scholars today are questioning whether the Exodus actually occurred. Similar debates have arisen as well over dating the nature of the Israelite occupation of Canaan and the historicity of the patriarchal narratives.

Forming a Canon. Understanding how stories and books were gathered into larger units and then into a single collection involves understanding how and why documents came to be understood as canonical. A standard view of this process identifies the first move toward "scripture" with a reform movement recorded in *2 Kings* 22, in which a book found in the Temple in Jerusalem (perhaps *Deuteronomy*) served as a basis for a community covenant. With the concept of canon thus established, Ezra the scribe elevated the Pentateuch in postexilic Judah to the status of "law" and introduced provisions prohibiting exogamy. According to this view of canonical development, the Prophets were accepted as canon by the Maccabean period; the Writings, and hence the whole Hebrew Bible, were ratified by a rabbinic council at Yavneh/Jamnia in about 90 CE.

Alternatives to this understanding of canon development have been offered. According to Martin Noth (English translation: *The Deuteronomistic History*, Sheffield, 1981), since *Deuteronomy* through *Kings* forms a continuous narrative, *Deuteronomy* would have been composed not with the rest of the Pentateuch but as part of a longer historical work called the Deuteronomistic History. David Noel Freedman ("The Formation of the Canon of the Old Testament," in *Religion and Law: Biblical-Judaic and Islamic Perspectives*, edited by Edwin B. Frimage et al., pp. 315–331, Winona Lake, Ind., 1990) posits that a primary history (*Genesis* through *Kings*), along with much of the prophetic corpus, was complete by 540 BCE and, hence, that *Ezra's* contribution was the reorganization of the collections to exalt a Pentateuch devoid of the conquest. Recent studies of Achaemenid governance of the postexilic community suggest that the impetus for codifying the community's laws and membership criteria may have come from Persia.

Discussions since the 1960s have challenged the assumption that the Council of Jamnia finalized the canon, since the "council" model more resembles later Christian councils than it does a first-century Jewish gathering and since the ordering of biblical books remained fluid until at least 400 CE. In the case of Judaism, Talmud *Bava' Batra'* 14b places the book of *Isaiah* after *Ezekiel*, whereas in the modern Jewish canon *Isaiah* precedes *Jeremiah*. In Christianity, different canonical orders are given by Epiphanius, Cyril of Jerusalem, and Jerome.

Understanding the Current Discussion. Recent biblical scholarship has produced many critiques of older views of biblical origins and canonical development without pro-

viding a new consensus in their place. Indicative of the late twentieth-century *Zeitgeist,* newer approaches offer less certainty than they do discrete and passionate voices on these fundamental issues in understanding the Hebrew Scriptures.

[*See also* Hebrew Language and Literature.]

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New Testament

The New Testament is a collection of twenty-seven individual documents written between about 50 and 150 CE, the period following the initial founding of the Christian movement. They were originally written for small, specific audiences (either congregations or individuals) but were collected during the next two centuries to form a body of literature. Circulation in this form also influenced the development of the codex (or book type) of manuscript production that became popular among Christians in place of scrolls. Of the twenty-seven documents, the majority (twenty were originally written in the form of private letters, and two more (*Hebrews* and *Revelation*) incorporate epistolary features. Because of the diverse and particular nature of the documents, the process of collection and editing to form the present New Testament canon was sometimes complex and contentious.

The earliest New Testament writings are the genuine letters of Paul, dating to the Aegean period of his ministry (c. 50–60 CE). Paul's first letters were written to fledgling house-church congregations of predominantly gentile converts, for whom the letters served as encouragement or to answer questions that arose after Paul had moved on. [*See* House Churches.] The earliest letter is *1 Thessalonians* (c. 51 CE); Paul wrote it while in Corinth, and within a relatively short time after he had left Thessalonike after founding the congregation there. From Corinth, Paul proceeded to Ephesus, which was to become his base of operations for most of this period. [*See* Ephesus.] He continued to make a regular circuit of visits, but in the interim often sent coworkers, such as Timothy and Titus, bearing a letter from him to a community. Letter writing in the Greco-Roman world followed certain highly stylized conventions of form and address. Paul adopted many of them in his writing, adapting them to a given occasion's particular needs or issues. Formal analysis of the genre and conventions has been greatly enhanced by the discoveries of many private letters on papyrus from Egypt and elsewhere. In addition to giving advice and encouragement, Paul's letters often served as formal letters of recommendation in which he sought hospitality for himself (*Phlm.* 22) or his coworkers (*Rom.* 16:2; *Phil* 2:25–29).

The New Testament contains two letters from Paul to Corinth (*1 Cor.,* from c. 54; *2 Cor.,* from c. 56/57), both written in Ephesus. From internal references (cf. *1 Cor.* 5:9; *2 Cor.* 2:3; 7:8), it is clear that Paul also wrote at least two other letters to Corinth that are now lost. The sequence of these letters is, therefore, (1) letter now lost; (2) *1 Corinthians;* (3) letter lost (partially?); and (4) *2 Corinthians.* Moreover, analysis of *2 Corinthians* reveals a later composite of fragments of several letters, especially (3) and (4) and perhaps one or two more. The various Christian groups at Corinth also wrote letters to Paul (cf. *1 Cor.* 7:1). There are other letters by Paul that may incorporate fragments of several letters (e.g., *Philippians*), and there are several other lost letters (cf. *Phil.* 3:1; *Col.* 4:16). All the genuine letters from Paul were written from 50 to 60 CE, in the Aegean; the last was most likely his letter to Rome, which was to prepare the way for his intended mission to Spain.

Following Paul's death there was some concern on the part of his followers in these regions to preserve the apostle's legacy and teachings. This led to the composition of pseudonymous (or pseudepigraphic) letters written in his name. Of the thirteen letters in the New Testament attributed to Paul, the authenticity of seven is debated: *2 Thessalonians, Colossians, Ephesians,* and the so-called Pastoral Epistles (*1, 2 Tm.; Ti.*). *Ephesians* and the Pastorals are the least likely to have been written by Paul. The explicit address "who are at Ephesus" does not appear at all in the oldest manuscripts of the so-called Ephesian letter; it was probably produced

nearer the end of the first century, at about the time that a collection of Paul's letters was first being assembled. The Pastoral Epistles may derive from some partially preserved writing by Paul (in *2 Tm.*); however, in their present form, they were probably produced in the early to mid-second century.

There is a wide range of composition, date, and authorship questions relating to letters in the New Testament not attributed to Paul. The *Epistle of James* is generally associated with the brother of Jesus who, according to tradition, led the Jewish Christian community in Jerusalem until his death (c. 64 CE), just prior to the beginning of the First Jewish Revolt against Rome. [*See* First Jewish Revolt.] Some scholars have suggested, however, that it is a later pseudonymous composition, probably dating to near the turn of the second century. The two epistles attributed to Peter are likely by different authors: *1 Peter* is a pseudepigraph with influences from Pauline tradition (especially the debated letters *Colossians* and *Ephesians*) and was probably written sometime in the first decade of the second century, in Asia Minor. The letter *2 Peter* appears to be later still (probably from the 120s or so); it draws on (and is thus later than) the *Epistle of Jude* and seems to reflect an existing collection of Paul's letters (cf. *2 Pt.*, 3:15–17). The situation addressed by *2 Peter* may be similar to that in *2 Thessalonians* because both address disputes and opinions over the delay of the eschaton.

The three Johannine letters are probably the work of two distinct schools. The letter *1 John* was probably written by the same group of followers of John who produced the Gospel. Like the Gospel, it can be dated to between 95 and 125 CE. The place of composition is usually thought to be Ephesus, but a Syrian origin (such as Antioch) has been suggested by some scholars. The two short letters, *2* and *3 John*, seem to be by a single author who is never identified except as "The Elder"; they probably come from early in the second century, from Asia Minor. They might have derived their Johannine attribution from the fact that a figure known as John the Elder, not the same as the apostle, was prominent at Ephesus at the end of the first century. The *Book of Revelation* (which carries the Greek title of *The Apocalypse*) is thought by some to be by this same John the Elder because the traditional attribution to the apostle John was disputed in antiquity; the author is, however, clearly different from that of *2* and *3 John*. The date of *Revelation* is traditionally placed at about 95 CE, from Patmos, but it has been variously dated as early as 70 and as late as the second century.

Despite their position within the canon of the New Testament, the Gospels and *Acts* were products of a long and complex compositional history stretching into the second century. According to prevailing scholarly opinion, the earliest of the canonical Gospels to be written was *Mark;* it is usually dated to between 66 and 75 CE. A date sometime after the destruction of Jerusalem in 70 seems the most likely, given internal references to these events (cf. *Mk.* 13:14). The dates usually assigned to the other Gospels follow: *Matthew,* 75–85/90 CE; *Lk.,* 80–90/95 CE; and *John,* sometime after 95 CE. The Gospels were composed by authors or groups of authors working with a combination of oral and written source materials that they reworked with their own peculiar stories and concerns. Hence, these authors are properly thought of as redactors (or editors) as well. As with most of the New Testament documents, the actual names of the authors remain unknown. The author of *Mark,* for example, likely had available an early collection of miracle stories and an existing passion narrative; however, the final narrative of Jesus' life was the product of the Markan redactor. Both *Matthew* and *Luke* seem to follow the basic outline of *Mark,* although they alter some sections radically in shape or position and add some new material. Each adds some material peculiar to its author, so that it is not possible to know whether it was derived from earlier sources or from the author's own composition. Some 250 verses are common to both *Matthew* and *Luke* (but are entirely missing from *Mark*); therefore, scholars have proposed the existence of a lost source (called Q), which appears to be an early collection of "sayings" material. Recent work on the Q document suggests that it dates from about 50 to 70 CE and that it, too, was edited in various stages over time, prior to its incorporation in *Matthew* and *Luke.* Further corroboration of the existence of such a collection of sayings has been given since the discovery among the Nag Hammadi (Egypt) library of a complete Coptic text of the *Gospel of Thomas,* a noncanonical sayings Gospel (originally composed in Greek, probably in Syria) variously dated either before about 70 or to between 100 and 140 CE). [*See* Nag Hammadi.]

The editorial process at work in each of these Gospels derives in large measure from the context in which each was used. These earliest narrative compilations of the life of Jesus were told and retold within particular Christian communities. The tone and details of the narrative were shaped according to the circumstances of each community. *Matthew,* for example, was written in Upper Galilee or in Lower Syria (the nearer diaspora) in a context in which emergent Pharisaic and Christian groups were competing to establish their identities. The Christian community of *Matthew*'s Gospel still thinks of itself as completely Jewish, but it feels pressure from other Jewish groups. The vitriolic anti-Pharisaic sentiments attributed to Jesus in *Matthew* are in reality a reflection of this tension in the period of post-70 reconstruction, rather than the situation in Jesus' own day. In sharp contrast, both *Luke* and *John* seem to come from a decidedly Greek environment; each has been claimed as having been written in Antioch and Asia Minor. *John*'s development of the synoptic tradition seems to favor some highly Platonic philosophical speculations, similar to those found in Philo of Alexandria. It has been suggested that *John*

went through five stages of editing to achieve its present form sometime after the death of its namesake, the apostle John. *Luke*, on the other hand, comes from a later follower of the Pauline tradition, who adapts the synoptic tradition to meet the more cultured literary tastes of a Greco-Roman audience. *Luke* seems to follow the Greek genres of history writing and novelistic fiction. What sets *Luke* apart in the development of the Early Christian literary tradition is that it was clearly designed from the outset as a two-part narrative that continues in *Acts* (cf. *Lk.* 1.1–4 with *Acts* 1.1). The formal preface and dedication combine with the stylistic features of the writing to make this the most literary document in the New Testament.

None of the writings of the New Testament have survived in their earliest manuscript form: all are copies of copies that were preserved chiefly through the process of collection beginning in the early to mid-second century. The earliest manuscript version of Paul's letters (the Chester Beatty II papyrus [P_{46}], c. end of the second century), however, clearly omits the Pastoral Epistles. The earliest impulse to assemble such a collection seems to have begun around the legacy of Paul in the churches of Asia Minor and Greece. By the 110s, a partial collection of Paul's letters was known by Ignatius of Antioch, but he does not reflect a knowledge of the diverse Gospel traditions. By the 140s, at least a partial collection of Paul's letters (omitting the Pastorals) was known and used by Marcion, but he refused to accept any Gospel other than *Luke*. Marcion was originally from Sinope on the Black Sea but migrated to Rome, where he was eventually excommunicated as a heretic.

The earliest canon list that resembles the shape of the present New Testament comes from the so-called Muratorian fragment; preserved in a later Latin manuscript from Milan, it dates to about 180–200 and is most likely from Rome. The beginning is lost, but the fragment commences by naming *Luke* as the Third Gospel; its strenuous defense of the authorship of John suggests that it was written in response to an ongoing debate. While it includes the deutero-Pauline letters, it omits *Hebrews*, *James*, and both Petrine letters. It accepts the debated *Apocalypse of John*, but also included the apocryphal *Apocalypse of Peter* and the *Wisdom of Solomon*. While it knew of other churches (notably in Alexandria) that accepted the Shepherd of Hermas, the Muratorian canon list treats it as secondary—that is, suitable for admonition but not worthy of being numbered among the prophets and apostles. It seems that this last twofold designation was the term by which the entire Christian Bible was conceptualized in the Muratorian list, with the "prophets" designating those books of the Hebrew canon, and the "apostles," the equivalent of the New Testament. It is the first clear reference to this two-part structure in the Christian tradition. While a core of works (the four Gospels and the letters of Paul) seem to have been fixed from the mid-second century, other works (notably *Hebrews* and *Revelation*) continued to be debated into the fourth century. At the same time, numerous other writings were being produced, some with purported apostolic authority. These divisive issues were further fueled by the fact that each geographic region and local sectarian group often used different collections or other competing works. By the time of Constantine, therefore, calls for unity were beginning, and these eventually resulted in the establishment of criteria for considering works as Scripture. Eusebius of Caesarea (c. 325) designated three categories: those "accepted" (Gk., *homologoumena*) as Scripture, those disputed (Gk., *antilegomena*), and those that are spurious (Greek., *en tois nothois*). His final list is less than clear, however, because only twenty writings were in the first category, most of the so-called catholic epistles appear in the second, and *Revelation* seems to be in the last. Athanasius of Alexandria (in his *Festal Letter* 39 of 367 CE) produced the first list of New Testament books that corresponds to that used today. This list was eventually ratified by practice rather than dogmatic assertion in later Christian councils, even though some debate continued into the sixth century.

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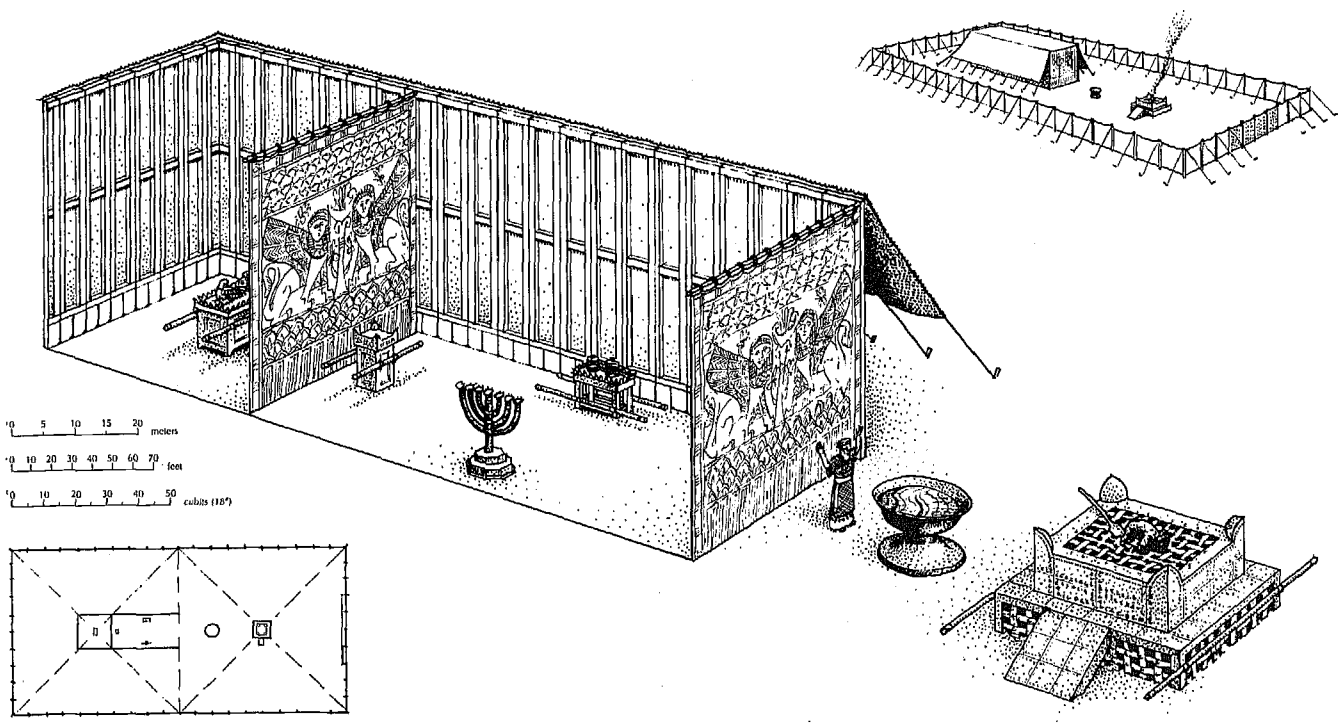
BIBLICAL TEMPLE. The biblical temple is understood to be the Temple of Solomon, completed in about 953 BCE and destroyed in about 587 BCE (commonly known as the First Temple), and the Temple of Zerubbabel, dedicated in 516 BCE, substantially expanded and restored by King Herod beginning in 20 BCE, and destroyed by the Romans under Titus in 70 CE (a long and complex phase of the biblical temple commonly known as the Second Temple). The sole literary source for the First Temple and the Zerubbabel phase of the Second Temple is the Hebrew Bible.

The Herodian transformations of the Zerubbabel Temple



BIBLICAL TEMPLE. *Tabernacle of Moses.* (Courtesy M. Lyon)

are described at length in the writings of the ancient Jewish historian Josephus, who was an eyewitness to the destruction of the Second Temple. There are many other records describing various aspects of the architecture and ritual of the Second Temple, chief among them the Mishnaic tracts *Middot* and *Sheqalim.* Also important are the writings of Philo and the intertestamental Apocrypha and Pseudepigrapha, particularly *Maccabees* (Books 1 and 2). The New Testament also has many references to the Second Temple in its Herodian phase. From among the Dead Sea Scrolls, the Temple Scroll, although visionary in spirit, probably had the Zerubbabel Temple as its point of reference and may have influenced the architecture and decoration of the Herodian temple.

Perhaps the greatest irony regarding the archaeology of the Near East is that the biblical temple, arguably the most famous sacred structure in world history, is entirely absent, in all its phases, in the archaeological record. The primary reason for this is that the Temple Mount in Jerusalem, the building site of the First and Second Temples, is also a Muslim holy site, the location of the Dome of the Rock, and is thus unavailable for archaeological excavation or exploration. In addition, the absence of any archaeological remains of the temples is that they were destroyed more than once in antiquity, which resulted as well in the thorough looting of precious metals and the destruction and looting of ritual objects. The building history of the subsequent phases (including the preparation of the foundations for the Dome of the Rock in the seventh century CE), resulted in the clearing away and scattering as rubble the remains of earlier phases.

The unavailability of archaeological remains has led to the extensive use of archaeological analogy, in which the excavated remains of shrines from approximately contemporary sites in Syria and Palestine have been used to achieve a sense of what the First Temple, in particular, may actually have looked like. A comprehensive volume of architectural plans and diagrams by G. R. H. Wright (1985) presents comparative evidence, and a compilation of comparative material relating to the biblical conceptions of the Temple and ritual has been published by Othmar Keel (1978).

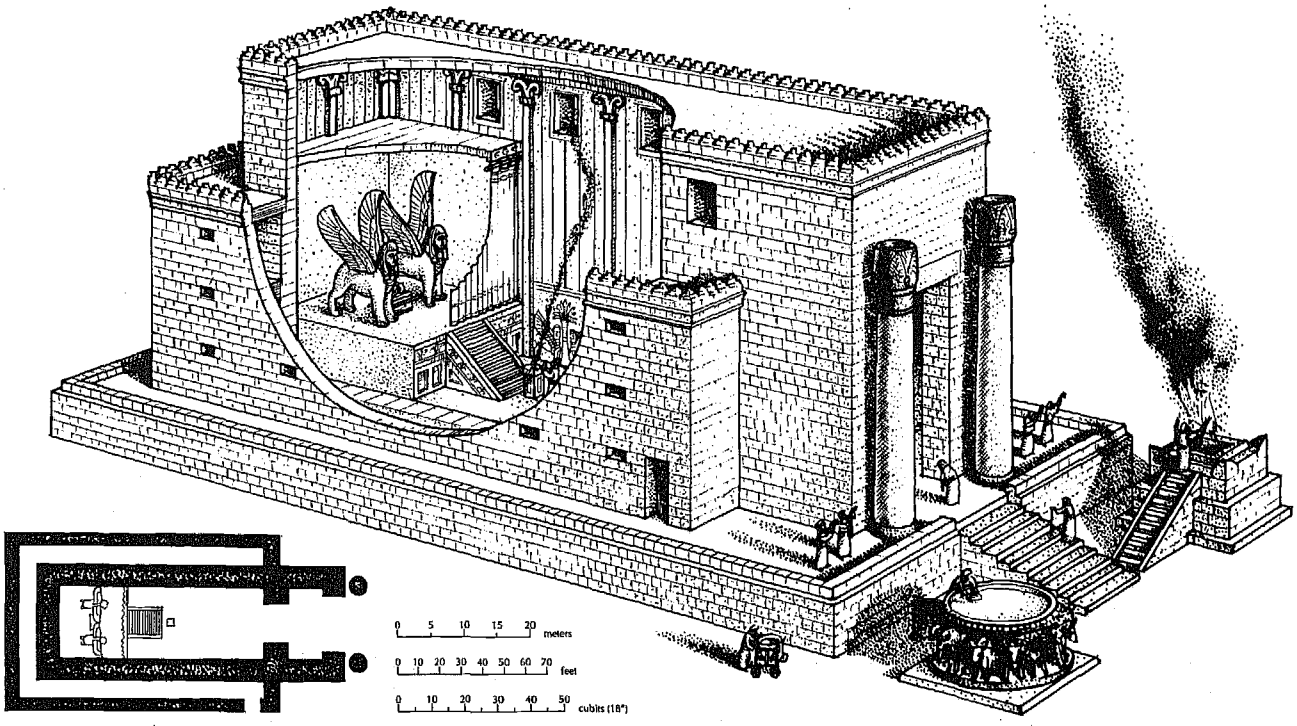
First Temple. The best, indeed the only, evidence for the floor plan, construction methods, decoration, and ritual of the First Temple is found in the Hebrew Bible, primarily *1 Kings* 5–6; *2 Chronicles* 2–3; *Ezekiel* 40–47, and *Psalms.* Other related passages include the looting by Pharaoh Shishak (Sheshonq) during the reign of Rehoboam (*1 Kgs.* 14:25–26); expansion the "new court" built by Jehoshaphat, possibly reflecting the time of the Chronicler (*2 Chr.* 20:5); repairs made during the reign of Jehoash (*2 Kgs.* 12); the looting of precious metals by King Hezekiah to collect tribute for Sennacherib (*2 Kgs.* 18:14–17); the additions of non-Israelite altars and rituals to the Temple and its courtyards by King Ahaz, who replaced the Israelite altar with one he had seen in Damascus, and by Manasseh, who introduced

Phoenician altars and pillars (*2 Kgs.* 16:10–16 and 21:1–9, respectively); and the complete repair, cleansing, restoration, and rededication of the Temple under King Josiah (*2 Kgs.* 22–23).

While the Hebrew Bible provides a clear picture, even in the absence of material remains, there are many discrepancies in the biblical record regarding the various stages in the biblical temple and its ritual: in *1 Kings* 6:2, the House is 30 cubits high; in *2 Chronicles* 3:4, it is 120 cubits high; in *Ezra* 6:3, Cyrus decrees that the Temple should be 60 cubits high; and in both the Qumran Temple Scroll and in Josephus the Second Temple is said to be 60 cubits high (*11QT* 4:10; *War* 5:215). These discrepancies are usually attributed to differing social, political, and religious conditions and points of view between the actual events in the time of David and Solomon and those of the two main Hebrew Bible editors, the Deuteronomist (sixth century BCE) and the Chronicler (fifth century BCE). The classic instance of editorial difference as it affects the Temple accounts is *1 Kings* 8, which depicts King Solomon's dedicatory prayer. According to the earlier biblical view, which is more in line with Canaanite ideas, the Temple was the actual dwelling place of Yahweh (*Ps.* 74:2, 76:3). However, the Deuteronomist (see *1 Kgs.* 8:17–20, 44, 48), tones this view down considerably: the Temple is now built to the name of the Deity, and the sanctuary becomes a house of prayer (*1 Kgs.* 8:41–43).

In the biblical record, the Temple is a tripartite building, of the *Langraum* (Ger., "long room") type, constructed on a straight axis: it had three distinct building units, or elements; was longer than it was wide (as a whole); and the most holy place was directly on the same axis as the worshiper standing at the front entrance. The three units, from front to rear, were the *'ûlām,* the "vestibule," or "porch"; the *hêkāl,* the "cella," or "nave"; and the *dĕbîr,* the "inner sanctuary," or most holy place. The length of this building was 60 cubits (the royal cubit was about 21 inches), its width was 20 cubits, and its height was 25 cubits. The *'ûlām* was 20 cubits wide and 10 cubits long (defining it as a *breitraum,* or Ger., "broad room," architectural type). The *hêkāl* was 40 cubits long, and the *dĕbîr,* the most holy place, was a cube, 20 cubits on each side. The holy of holies was, thus, 5 cubits shorter than the rest of the building. Of the many attempts to explain this difference, the most plausible is that the inner sanctuary stood over the cosmic "Rock of Foundation"—that part of the rock massif on the Temple Mount that stood for the place of original creation in Israelite cosmogony. This does not necessarily place Solomon's Temple over the present-day Dome of the Rock. Convincing arguments have been made placing the Temple north of the Dome of the Rock, on the same line as the Byzantine-period Golden Gate (which, in turn, was built on a much earlier gate) located in the northern quadrant of the eastern wall of the Temple Mount (Yadin, 1975, p. 95). The Temple was oriented east.

In general, the Temple's floor plan must have subsumed



BIBLICAL TEMPLE. *Temple of Solomon.* (Courtesy M. Lyon)

within its walls the location of the biblical Tabernacle. Thus, the *dĕbîr* housed the Ark of the Covenant and the protective cherubim standing over—and in all probability forming—the cosmic throne of the deity. The *hêkāl* housed the lampstand, table of showbread, and the other ritual objects described for the Tabernacle for the room immediately in front of the inner sanctum. The Tabernacle texts (*Ex.* 25:31, 35:14; 37:17) mention a single lampstand whereas the sources for the First Temple (*1 Kgs.* 7:49) indicate that there were ten lampstands.

A three-story annex surrounded the *hêkāl* and *dĕbîr* but not the *'ûlām*. Finely dressed ashlars, prepared offsite in a quarry, provided the building material. The entire inner building was lined with cedar and then overlaid with gold. Gilded olive-wood doors formed the entrances both to the *hêkāl* and the *dĕbîr*. The walls of the nave and inner sanctum were carved with cherubim, palm trees, and flowers and then gilded. According to the Chronicler, a veil of blue, purple, and crimson linen, with cherubim embroidered on it, was hung immediately before the Ark of the Covenant, separating the *dĕbîr* from the *hêkāl* (*2 Chr.* 3:14). This corresponds exactly to the veil described for the Tabernacle in the desert (*Ex.* 26:31, 36:35). The veil described here stands in place of the olive-wood doors of *1 Kings* and presumably represented the situation at the time of the Chronicler, as it did also in the time of Josephus (*Mt.* 27:51; *Mk.* 15:38; *Lk.* 23:45).

The *'ûlām*, which stood in front of the *hêkāl*, may have been an inner court providing access to the two inner rooms of the divine dwelling. Two hollow, cast-bronze pillars (18 cubits high) stood in front of the *'ûlām*. They were probably freestanding and marked the entry to the inner court (Lundquist, 1982, 1988). The pillars had 5-cubit-high capitals of pomegranates and lotuses and bore enigmatic names, Jachin (the southernmost) and Boaz (the northernmost). They carried cosmic connotations, founding the Temple in the underworld, while uniting it with the heavenly sphere, to tie all three world spheres (heaven, earth, underworld) together in the universal heavenly Temple. The names on the pillars symbolized the cosmic universal rule of Yahweh and of the Davidic dynasty the building of the Temple founded and legitimized: *Jachin* meant that Yahweh founded the dynasty and the Temple, and *Boaz* that Yahweh's power emanates from the Temple (Meyers, 1983). It was this legitimizing power that made possible the promulgation of "law codes" in the temples of the ancient Near East, as well as the enactment of state and dynastic renewal covenant ceremonies, such as that directed by Josiah in front of the pillars (*2 Kgs.* 23:1–3). The pillars as gateposts also signified the entrance of the building's resident, Yahweh, into his dwelling place and of God's sanction of and availability to the national state.

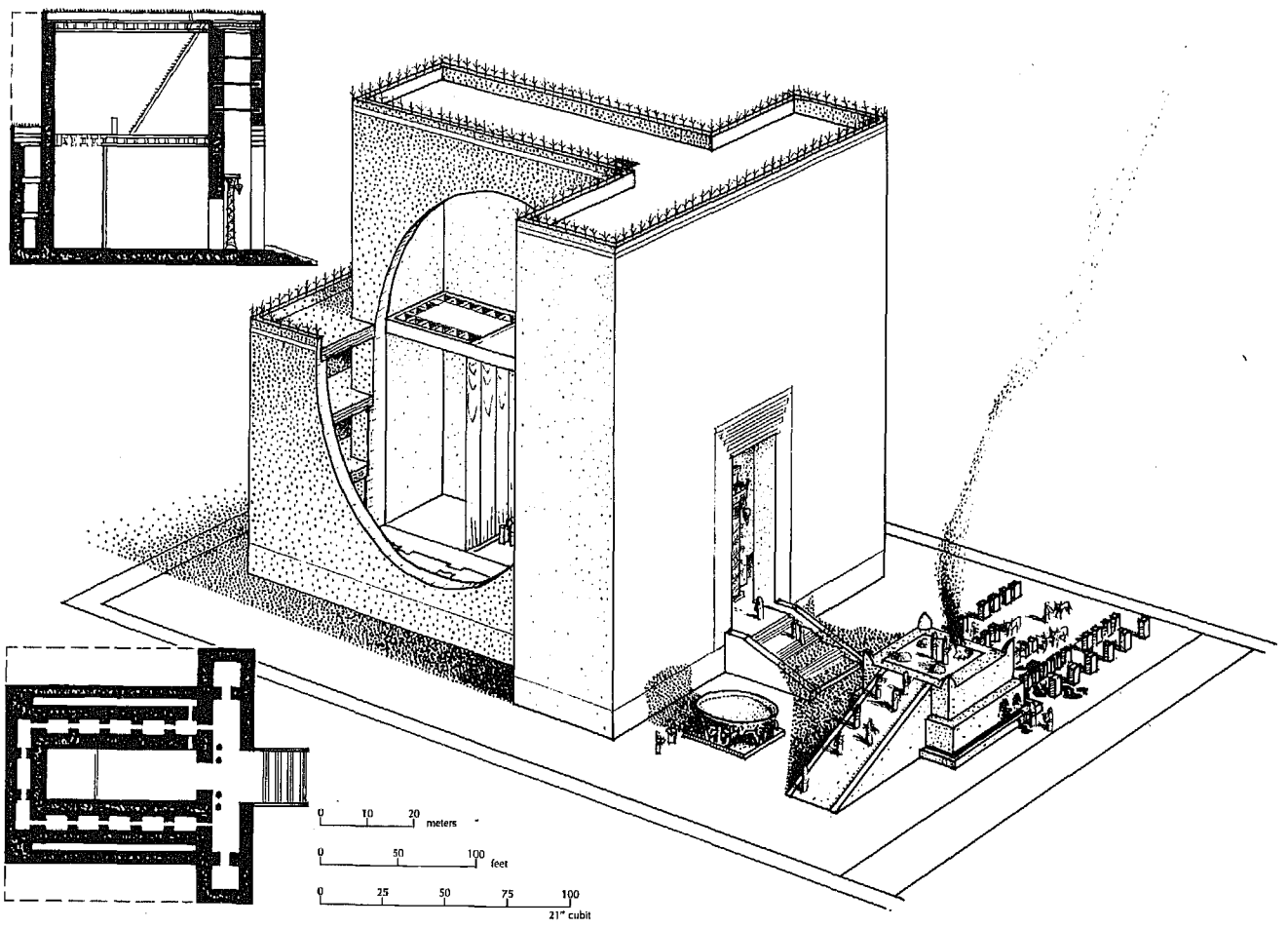
The structural relationship of the *'ûlām* to the pillars may follow the Egyptian model: the pillars may have formed a monumental entrance, the way pylons do in an Egyptian temple, giving way to the open *'ûlām;* or, they may have been structural members of an open porch (the *'ûlām*), either in the North Syrian *bit-ḫilani* style or in the style of the megaron, with the pillars standing in antis.

There were two courts in front of the Temple (*2 Kgs.* 21:5), an inner (*Ez.* 40:28) and an outer (*Ez.* 40:20) court, also known as the upper, and lower courts. At the northeastern corner of the inner court, in front of the Temple, was a wooden altar covered with bronze for burnt offerings, with horns at each of its four corners, according to the prescriptions of *Exodus* 27:1–2, but constructed in the time of David (*2 Sm.* 24:21, 25). In his dedicatory prayer Solomon stood (*1 Kgs.* 8:22) and kneeled (*1 Kgs.* 8:54) before this altar as he prayed. A round bronze basin, 30 cubits in circumference and supported by twelve cast-bronze oxen, stood at the southeast corner of the Temple.

No architect is named, but in the ancient Near East, gods and kings were architects and builders. Kings received architectural plans from the gods through direct revelation, often while spending the night in a sanctuary, as was the case with King Gudea of Lagash (cf. *2 Chr.* 1:7–13: "In that night God appeared to Solomon"—that is, in the high place at Gibeon.) The Temple plan is then presented in *2 Chronicles* 2 (cf. *1 Kgs.* 3:3–5). The beginning of a new dynasty, which often meant the beginning of a new national state, was the time for building a great dynastic temple. According to this ancient pattern, the king went to Lebanon for cedar (*2 Chr.* 2:3–10), for other building materials (*2 Chr.* 2:11–16), and, as is also stated in the biblical records, for the building expertise for which Phoenicia was famed (*2 Kgs.* 7:13–14, 45). Materials and technological assistance may have been accompanied by an architectural plan—which may mean that the First Temple was Phoenician in style—a style strongly influenced by Egypt and that is documented in Lebanon as early as the Egyptian twelfth dynasty (1991–1783 BCE; see Lundquist, 1983b, pp. 205–219).

There was also a long tradition of temple building in Syria and Phoenicia of tripartite, straight-axis temples, with an open *breitraum* porch or vestibule with columns in antis and a *langraum* nave or antecella. In most cases, these temples had a niche in the rear of the nave for the statue of the deity, representing the most holy place. Examples from more recent excavations are Temple D from Middle Bronze Age I Ebla/Tell Mardikh in North Syria, and the three LB temples from Emar/Meskene, on the west bank of the Euphrates River, in Syria, just east of Aleppo (see "Syria and the Temple of Solomon," 1985, pp. 192–193).

The overall impression of the Temple precinct in Jerusalem in the time of Solomon is that of a Near Eastern cosmic temple, sitting on top of the sacred mountain—the ultimate architectural expression of the heavenly temple revealed on the Mountain of God and built after the pattern revealed there (*Ex.* 25:8–9). The primordial waters of the



BIBLICAL TEMPLE. *Temple of Herod.* (Courtesy M. Lyon)

abyss from the time of the creation were harnessed, present in the symbolism of the bronze sea. Everywhere were sacred trees and life-giving vegetation, both real-life and carved, representing "the primordial landscape," the state of the world at the creation, whose purpose the temple represents and symbolizes (see Lundquist, 1990, pp. 113–123).

The closer the worshiper came to the inner sanctum, through its sequence of courtyards and chapels, all on a single axis, the holier and more restricted the sacred space became. The most holy place could only be entered by the high priest (once each year on the Day of Atonement) and, during the time of the First Temple, by the king himself (*2 Kgs.* 19:14). Approaching ever nearer to the most holy place, along the axis, the path rose in elevation, perhaps to 5 cubits (see above). This is directly analogous to the situation in Egyptian temples, where the floor level rises at each threshold, until the adyton is reached, which was believed to be built on the primordial mound of creation. In the First Temple, according to this theory, the higher elevation of the *dĕbîr* would have been created by the rock formation below it, the Rock of Foundation, the place creation began.

Second Temple. The Temple Mount lay in ruins for a generation following Nebuchadrezzar's destruction of Jerusalem in 587 BCE. What is known of Zerubbabel's Temple, dedicated in 516 BCE, centers primarily on the difficulties the people had in managing the rebuilding, not on the details of the building itself. *Haggai* gives a sense of how much poorer and less grand the Zerubbabel Temple was in comparison to Solomon's (*Hg.* 2:1–3). At the same time, there is valuable evidence in *Haggai* (e.g., 1:1–11) for the common ancient Near Eastern temple ideology in which the people's dire economic straits are tied directly to their neglect of the Temple (see Lundquist, 1984).

Perhaps the clearest picture of what this phase of the Temple was intended to be, architecturally and in its building methods and decoration, is to be found in Cyrus's decree in *Ezra* 6:1–5: a 60-cubit (broad) by 60-cubit (high) House of God where sacrifices and burnt offerings will be brought, constructed of ashlars and timber, to which the gold and silver vessels taken to Babylon by Nebuchadrezzar will be returned.

As with the biblical accounts of the First Temple, the ma-

jor sources for the Herodian Temple (Josephus, *Antiq.* 15, *War* 5; Mishnah *Mid.*) provide contradictory information for many important details. Furthermore, the Temple Scroll from Qumran (*11QT*), which stands in roughly the same relationship to the two phases of the Second Temple that *Ezekiel* 40–48 does to the First Temple, provides a visionary source of a future Temple based in some degree—perhaps to a great degree—on the Temple that stood in Jerusalem at the time of the writing of the visionary scripture (Maier, 1989; Delcor, 1989).

The canonical demands of the biblical prescriptions for the Temple determined that Herod's Temple could not be altered in any significant way. Its dimensions were to be 60 cubits long, 60 high, and 20 wide (equivalent dimensions in the First Temple were 60, 25, and 20). The primary way in which Herod altered the Zerubbabel Temple, thereby transforming it into the largest and most spectacular sacred temenos in antiquity, was by greatly expanding the area of the platform (to an area of 67,000 sq m [172,000 sq. yd.]). The temple precinct included an elaborate array of courtyards, beginning with the Court of the Gentiles along the southern perimeter and followed by increasingly sacred courtyards in front of the Temple: from east to west, a Court of the Women, then, passing through the Nicanor Gate, the Court of the Israelites, and finally, just in front of the Temple, the Court of the Priests. Herod also had the outside of the temple covered with gold, which would have created a scene of blinding incandescense in the sunlight (*War* 5:222–223 and passim; *Mid.* 2, 3, 4). The building's implements and furnishings as well were probably crafted on a more sumptuous scale than ever before. Similar arrangements in *11QT* represent part of the evidence for many scholars that *11QT* was a foundation document for the Herodian construction.

[*See also* Jerusalem; Temples.]

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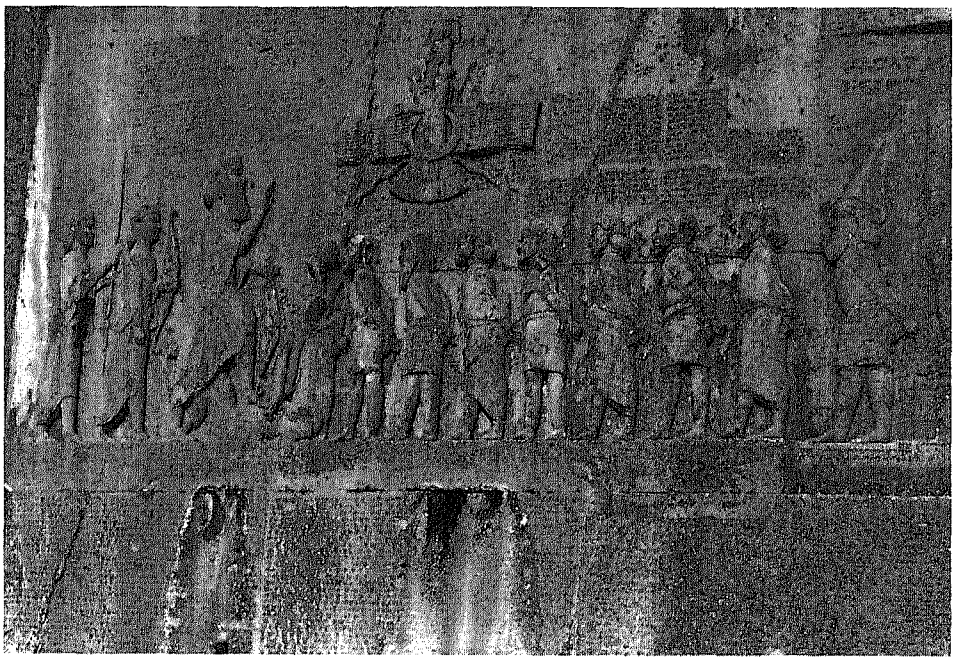
JOHN M. LUNDQUIST

BISITUN (Behistun; Old Pers., **bagastana*, "place of god[s]"), a strategically located, scenically dramatic site in western Iran, some 32 km (20 mi.) east of Bactaran, formerly Kermanshah (34°35′ N, 47°25′ E). The site is variously known for its remains of Paleolithic, pre-Achaemenid, Achaemenid, Parthian, Sasanian, and Islamic date. Preeminently, however, Bisitun is associated with the rock-cut relief and inscriptions the Achaemenid ruler Darius the Great (522–486 BCE) chose to erect, in 520 and 519 BCE, on the precipitous southeast face of the Bisitun mountain (see figure 1). The monument, which provides the only historical account left by an Achaemenid monarch, stands 70 m above the age-old east–west highway that connects the highlands of Media with the Mesopotamian plain. The site appears as Mt. Bagistanon in Diodorus (2.13, after Ctesias).

The relief is approximately 3 m high and 5.5 m wide. It is bordered on three sides by trilingual inscriptions, a circumstance that gives the whole composition a height of about 7 m and an overall width of 18 m. In the earliest stage of the creation of this complex monument, the carved panel was complemented by no more than a single text, in Elamite, which carried the story of Darius's career through the course of his accession year and his first regnal year. Soon afterward, a Babylonian version of the text was inscribed on the opposite, left side of the relief. In a stunning innovation that followed the subsequent invention of the Old Persian cuneiform script, Darius chose to introduce, directly beneath the relief, a separate Persian version of the text. Then, in response to fresh triumphs in Darius's second and third regnal years, the existing scheme was arbitrarily expanded. The right-hand limit of the relief was extended into the area occupied by the original Elamite text—and the contents of that text were reinscribed in a new position, to the left of the Old Persian text. In addition, Darius's description of his latest accomplishments came to be accommodated in the final, fifth column of the Old Persian account.

In the beginning of the Bisitun inscription, Darius is clearly concerned about bolstering his claim to the throne. Thus, special stress is laid on his standing as an Achaemenid; and, while his selection as king is ascribed to the divine "favor of Ahuramazda," it is also made clear that it was the personal actions of Darius that were responsible for the downfall of "Gaumata the magus"—an apparent impostor who had abrogated Achaemenid rule. The greater part of the rest of the inscription is taken up with a description of the fate of those who then sought to wrest power from Darius and who were duly overcome, either by Darius himself or by his generals.

As far as possible, the relief offers a single abridged version of the full sweep of these successive events. The tall, commanding figure of Darius, armed with a bow, is shown with his leading foot on the prostrate body of Gaumata, who raises both arms in supplication. Another nine rebel leaders,



BISITUN. Figure 1. *Relief of Darius I.* (Deutsches Archäologisches Institut, Abteilung Tehran)

identified, in the fashion of Darius and Gaumata, by trilingual labels, proceed in bonds toward the king. Skunkha, the last of these, was not of course a part of the initial design; his image was cut into the area of the adjacent Elamite inscription after Darius's victory over the pointed-capped Scythians. The scene is completed by three unlabeled figures: two armed (and seemingly noble) attendants, each elegantly attired, like their sovereign, in the full, pleated Persian costume; and a male figure (with a far more ornate crown than that worn by Darius) who rises out of a winged disk and hovers above the row of standing, slightly bowed captives.

The identity of this winged figure in Achaemenid art is today a subject of controversy (see Shapur Shahbazi, "An Achaemenid Symbol. I: A Farewell to 'Frahahr' and 'Ahuramazda,'" *Archäologische Mitteilungen aus Iran* n.s. 7 [1974]: 135–144). Yet, from the way in which the hovering, elaborately crowned figure at Bisitun appears to hold the ring of kingship in one hand and to reciprocate the gesture of the raised right hand of Darius, it does seem warranted, at least in this instance, to identify the winged symbol with Ahuramazda, whose "favor" is so repeatedly acknowledged in the accompanying text. Such an assumption is most specifically supported by Darius's evident quotation of the complementary motifs of investiture and military triumph that appear in the relief, 150 km (93 mi.) away, of the early second-millennium Lullubi monarch Anubanini. Anubanini is depicted with his forward foot firmly lodged on the supine form of his principal opponent, while his gaze rests on the elevated, ring-clasping image of the goddess Inanna.

Darius asserts (in para. 70 of the Old Persian version of the Bisitun inscription) that copies of the text—itself remote, but indubitably safe, in its lofty situation—were sent "everywhere among the provinces." This statement is confirmed by copies of portions of the text in Aramaic (Greenfield and Porten, 1982) and Akkadian (Voightlander, 1978) discovered at Elephantine and Babylon, respectively. Furthermore, the possibility that copies of the sculptured panel also circulated within the empire is raised by the recovery of three apparently related relief fragments from Babylon that are executed in a slightly different style (Ursula Seidl, "Ein relief Darios I in Babylon," *Archäologische Mitteilungen Aus Iran* n.s.9 [1976]: 125–130).

Following a long period of time, during which the true significance of the Bisitun monument was wholly lost, the monument's identity as the handiwork of Darius was reestablished by Henry Creswicke Rawlinson (1846) who, at intervals between 1835 and 1847, was the first to examine and copy the inscriptions. [*See the biography of Rawlinson.*] Moreover, it was this trilingual "empress of inscriptions" that provided, from the time of Rawlinson onward, many of the initial clues that led to the decipherment of the Babylonian and Elamite cuneiform scripts. Subsequent landmarks in the study of the monument include Léonard W. King and Reginald Campbell Thompson's publication of both the relief and the inscriptions in 1907 (*The Sculptures and Inscription of Darius the Great on the Rock of Behistun in Persia*, London) and the numerous studies contributed by George G. Cameron (e.g., "The Elamite Version of the Bisitun Inscriptions," *Journal of Cuneiform Studies* 14 [1960]: 59–68). Last but not least, the monument was rerecorded and reexamined in many important ways during the course of the exemplary surveys of the locality of Bisitun carried out in the 1960s and the 1970s under the direction of Heinz Luschey on behalf of the German Archaeological Institute in Tehran.

[*See also* Elamites; Persian; *and* Persians.]

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DAVID STRONACH and ANTIGONI ZOURNATZI

BLEGEN, CARL WILLIAM (1887–1971). American pioneer of Aegean prehistoric archaeology, excavator of Troy and Pylos, and early advocate of interdisciplinary fieldwork and surface survey. Blegen's excavations in the Corinthia at Korakou (1915–1916) and Zygouries (1921–1922) established the relative chronology of prehistoric Greece in pre-Mycenaean times. His stratigraphic excavations at Troy (1932–1938) clarified the stratigraphy of the site and suggested that city VIIa was the Troy of the Homeric epics.

In 1939, Blegen began excavations in Messenia. At Ano Englianos he discovered the Palace of Nestor and its archive room; the rapid transcription of its documents greatly facilitated the decipherment of the Linear B script as Mycenaean Greek. Blegen's scholarly articles were particularly influential. He was the first (1928) to argue that Greek speakers must have entered Greece at the beginning of the Middle Bronze Age and invaded Crete in the Late Bronze Age; later (1958) he sparked the "Knossos controversy" by pointing out discrepancies between the dates of contexts in which Linear B tablets had been found at Pylos, Mycenae, and Knossos. Blegen and his close friend and frequent coauthor A. J. B. Wace saw (1918) Mycenaean civilization as an indigenous development shaped by interaction with Crete (a "fruit of the cultivated graft set on the wild stock of the mainland"), and argued strongly against the then-prevalent theory that the Greek mainland had been controlled by the Minoans in the Late Bronze Age. Already in 1939 they saw the dominance of Mycenaean pottery over Minoan in the Near East and Egypt as evidence that the Greek mainland had by the second phase of the Aegean Late Bronze Age replaced Crete as the politically dominant force in the Aegean; the decipherment of Linear B more than a decade later proved them right.

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JACK L. DAVIS

BLISS, FREDERICK JONES (1859–1937), archaeologist, educator, and lecturer. Born in Lebanon, Bliss was the son of American missionaries and educators. Unable to hold standard employment because of marginal health, in 1890 he was asked by the Palestine Exploration Fund (PEF) to continue William Matthew Flinders Petrie's pioneering archaeological excavation at Tell el-Ḥesi in southern Palestine. Bliss trained under Petrie in Egypt before going to Tell el-Ḥesi where, in 1891 and 1892, he conducted the first truly stratigraphic excavation in Palestine. Bliss's work combined Petrie's ceramic chronology with his own original stratigraphic concept, thereby founding the discipline of Palestinian archaeology.

Bliss continued to excavate on behalf of the PEF until 1900: in Jerusalem (1898) and later at Tell Zakariya (ʿAzekah), Tell eṣ-Ṣafi, Tell el-Judeideh, and Tell Ṣandaḥanna (Marisa/Mareshah). For these sites, he produced the first modern archaeological report for Palestine (with R. A. S. Macalister, 1902). In 1900 Bliss was dismissed as excavator for the PEF primarily because his careful excavation methods were too time consuming and did not yield finds thought sufficient to raise funds. Within thirty years William Foxwell Albright recognized this as a tragic mistake. After his dismissal, Bliss prepared one final archaeological monograph (1906), describing the development of Palestinian research from its beginnings until 1902. The theoretical foundations he defined for archaeological research in Palestine are still in use today.

Bliss served as dean of men at the University of Rochester in New York State from 1911 through 1914 and as a tutor at the Syrian Protestant College in Beirut until the end World War I. In 1919 he was an adviser to the British general Allenby on the antiquities of Syria and Palestine, and in 1920 and 1921 he was an archaeological consultant to the American Schools of Oriental Research. He retired in 1921.

[*See also* ʿAzekah; Ḥesi, Tell el-; Judeideh, Tell el-; Mareshah; Palestine Exploration Fund; *and the biography of Petrie*.]

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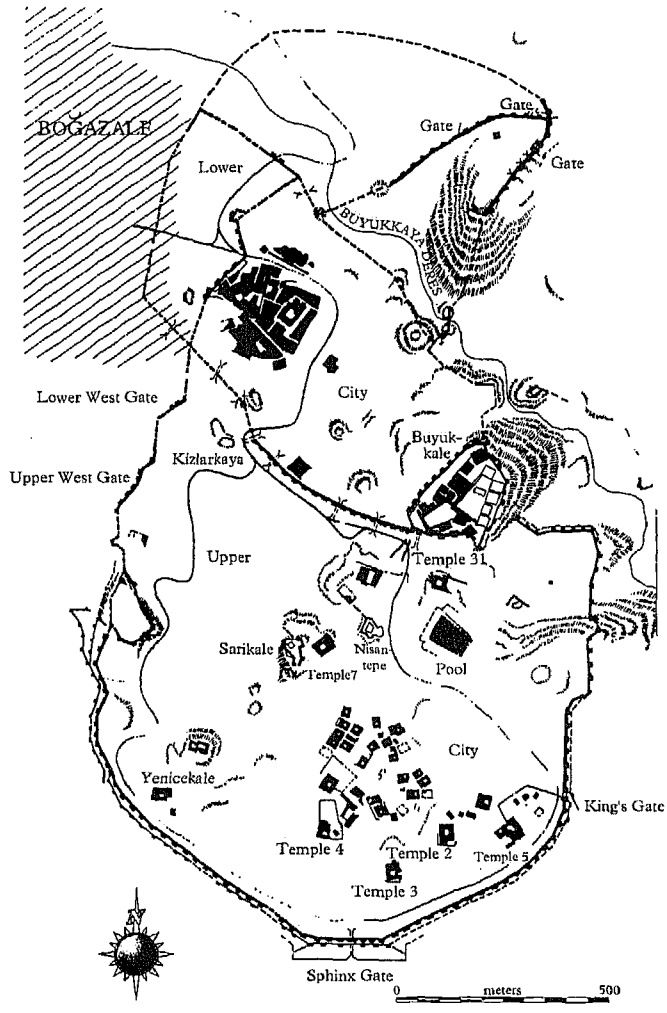
JEFFREY A. BLAKELY

BOATS. *See* Ships and Boats.

BODRUM. *See* Halikarnassos.

BOĞAZKÖY, site of Ḫattuša, the capital of the Hittite Empire. The village of Boğazköy has been renamed Boğazkale and upgraded to a town, but scholars continue to use its former name. Boğazköy (roughly 40°01′ N, 34°40′ E) is in the province (Tk., *il*) of Çorum, Turkey, 200 km (124 mi.) on the road east of Ankara, 80 km (50 mi.) from Çorum; 40 km (25 mi.) from Yozgat; and 19 km (12 mi.) from Alaca Höyük. It is situated at the southern end of a small, fertile plain. The ancient city rises on a slope between two deeply cut streambeds, filling the angle between their converging courses. The ancient city rises toward the south from about 900 m to about 1200 m above sea level on a length of about 2 km (1 mi.). It covers an area of 414 acres. The modern town lies near the northern end of the ancient city, partly encroaching upon it.



BOĞAZKÖY. *Plan of the ancient city.* (Courtesy ASOR Archives)

Boğazköy was discovered in 1834 together with the nearby rock sanctuary Yazılıkaya by the French explorer Charles Texier. It was later visited by British and German scholars. In 1893 and 1894 another Frenchman, Ernest Chantre, found some fragments of clay tablets inscribed in Babylonian cuneiform script, but in a hitherto unknown language. In 1901, J. A. Knudtzon deciphered two letters found at Tell el-Amarna written in a language he recognized as Indo-European; they belonged to a correspondence between Pharaoh Amenhotep III and a king of the country of Arzawa. It was soon noticed that the language of these letters closely resembled that of Chantre's tablets. Therefore, in 1905, the German archaeologist Hugo Winckler and Theodore Makridi Bey, second director of the Istanbul Museum, went to Boğazköy in search of Arzawa. The following year, they began excavations at the site under the auspices of the museum but financed in part by the Deutsche Orient-Gesellschaft (DOG). They found thousands of tablets and fragments on the west slope of Büyükkale, the royal acropolis. Since the introductory formulas on some tablets were written in Akkadian (Babylonian), Winckler immediately recognized the title "Great King, King of Ḫatti," which showed that Boğazköy had been the Hittite capital. The excavations continued in 1907, 1911, and 1912 and included some storerooms belonging to the Great Temple. Fieldwork brought the total number of tablets to ten thousand, and these became the source material for Hittitology. In 1907, a team of archaeologists and architects, directed by Otto Puchstein, under the auspices of the German Archaeological Institute, surveyed and partly excavated the city walls, including five gates and five temples.

After World War I the excavations were resumed in 1931 jointly by the German Archaeological Institute and the DOG. Because Winckler had only dug for tablets and Puchstein's work was limited to the great monuments, it became necessary to establish the site's stratigraphy with modern methods. The field director was Kurt Bittel. Interrupted in 1939 by World War II, the work was resumed in 1952

and is still underway. Peter Neve succeeded Bittel upon his retirement and he, in 1994, was succeeded by Jürgen Seher.

In 1931 Bittel started on Büyükkale, because it had an accumulation of debris that would allow for stratigraphic observations. Later, the excavations were extended over most of the city area. Neve concentrated his work on the Upper City. The excavations since 1931 have added several thousand tablets to those Winckler found. Since 1993 the excavation has been extended to Büyükkaya, an elevation east of the Ancient City.

The earliest settlements in the area of the city go back to the late phase of the Early Bronze Age (before 2000 BCE). Finds belonging to the period's earlier phases appeared at sites near Boğazköy, but not in the city. The next major phase at the site is the Middle Bronze Age. It is characterized by the Assyrian merchant colonies then in Anatolia. A settlement found in level 4 of the Lower City contained old Assyrian tablets belonging to the later period of the Assyrian colonies known from level 1b (eighteenth century BCE) at Kültepe. [*See* Kültepe Texts.] The inscription of the early Hittite king Anitta says that he defeated the king of Ḫatti, destroyed his city, and put a curse on its site. Anitta is attested at Kültepe toward the end of 1b, so the settlement at Boğazköy must antedate this destruction. At that time the city was known by the name *Ḫattuš*, in the language of the pre-Indo-European population, which scholars call Ḫattic, to distinguish it from Indo-European Hittite. In Hittite, the stem was enlarged by the vowel *a* to Ḫattuša (nominative *Ḫattušaš*). About one hundred years later, a Hittite king of another dynasty, disregarding the curse, made Ḫattuša his capital and was given the name Ḫattušili, the man from Ḫattuša. He belongs to what is known as the Old Hittite Kingdom. This is followed by the so-called Middle Kingdom (fifteenth century BCE) and the New Kingdom (fourteenth and thirteenth centuries BCE), also referred to as the Empire period. Almost all buildings visible today belong to this last period. Older levels, particularly those excavated on Büyükkale, have been covered up, so that the buildings of the empire could be restored.

During the Old Kingdom, only the lower part of the city and Büyükkale were settled. The wall separating the Upper and Lower Cities can still be followed. The Upper City was apparently only occupied in the New Kingdom. The southern city wall, with its three monumental gates decorated with

BOĞAZKÖY. *Lion gate.* (Courtesy ASOR Archives)

sculpture—Lion's gate, King's Gate, and Sphinx Gate—also belong to the Empire period.

Shortly after 1200 BCE, Boğazköy was destroyed. Traces of the conflagration have been found in all parts of the city. This event is usually connected with the migrations of the peoples mentioned in Egyptian sources as the Sea Peoples. After the destruction, there is a settlement gap. The next building level is datable by its painted pottery, which strongly resembles that of the Phrygians, known from their capital, Gordion [*See* Gordion.] It is datable to after 1000 BCE. On Büyükkale, the Phrygian level is superceded by one that lasted into the Hellenistic period. In the third century BCE, the Celtic Galatians entered Anatolia, and one of their tribes, the Trocmai, settled east of the Halys River. Boğazköy probably belonged to their realm, but an earlier theory, according to which a certain class of decorated Hellenistic pottery was Galatian, is no longer accepted. Under the Romans, Galatia became a province, but the Roman period is poorly attested by scattered remnants of buildings, coins, and some objects. The name of the Roman city may have been Pteria.

The Christian era is represented by an apse carved out of a rock called Mihrablı Kaya ("Rock with Prayer Niche") and a small church built of spoils over a Hittite temple in the Upper City. Under the Ottomans, members of a family called Zülkadir Oğulları ruled over a large area in central Anatolia. In the nineteenth century, a branch of this family resided at Boğzaköy. Its last member, Ziya Bey, was a host to Winckler and later to Bittel.

[*See also* Anatolia, *article on* Ancient Anatolia; Hittite; *and* Hittites.]

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HANS G. GÜTERBOCK

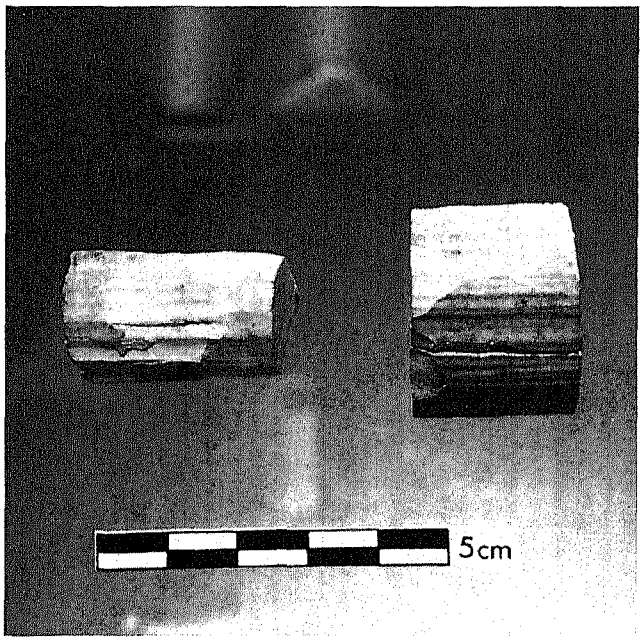
BONE, IVORY, AND SHELL. [*This entry surveys the history of bone, ivory, and shell artifacts with reference to the technologies used to create them, the uses to which they were put, and their overall role in the cultures and societies in which they figure. It comprises four articles:*

Typology and Technology
Artifacts of the Bronze and Iron Ages
Artifacts of the Persian through Roman Periods
Artifacts of the Byzantine and Islamic Periods

The first serves as a general overview, while the remaining articles treat the artifacts of specific periods and regions.]

Typology and Technology

A number of animal-derived materials were crafted into artifacts in antiquity. Almost all worked bone was mammalian in origin, although a few pieces of worked bird bone are known from Tell Jemmeh and Ashkelon. [*See* Jemmeh, Tell; Ashkelon.] Ivory came from the incisors and canines of hippopotamus, the tusks of wild boars, but mostly from the upper incisors of the male Asiatic elephant or the male or female African elephant (see figure 1). Artistic and literary evidence suggests the existence of wild elephants in Syria in the second and first millennia BCE until the end of the Late Bronze Age, when they were hunted to extinction. The absence of a fossil record from the Near East leaves open the question of whether these Syrian populations were related to the African or Indian form, or evolved separately from one or the other group. One scholar (Caubet, 1991) believes



BONE, IVORY, AND SHELL: Typology and Technology. Figure 1. *Sections of sawn hippo ivory from Ashkelon.* This is some of the earliest evidence of bone and ivory working, dating to the MB II/LB I levels. (Photograph by Carl Andrews)

that most of the ivory worked at Aegean sites through the end of the Late Bronze Age was from the hippopotamus.

Antler, the bony outgrowth of cervid skulls, is a sturdy raw material for making tools and was preferred for objects subject to heavy-duty use. Numerous sawn tines and sections of antler are known from sites such as Ashkelon, Tel Miqne, and Tel Batash in Israel, but few complete artifacts have been recovered. [*See* Miqne, Tel; Batash, Tel.] Antler found at Levantine sites could derive from fallow, red, or roe deer, but almost all of the sawn antler documented is from the fallow deer. Antler, shed annually, was probably an item of trade.

Horn, the keratinous sheath surrounding the bony interior, or horn core, of bovids, was also worked in antiquity; however, because it is more susceptible to attritional processes than osseous tissue, it often has not survived the rigors of deposition—although a fragment of worked horn that may have been intended for use as a border inlay has been identified from Ashkelon (Wapnish, 1991). In the absence of the raw material, horn working can be documented from the concentrations of sawn horn cores found belonging to sheep, goat, and cattle. [*See* Sheep and Goats; Cattle and Oxen.]

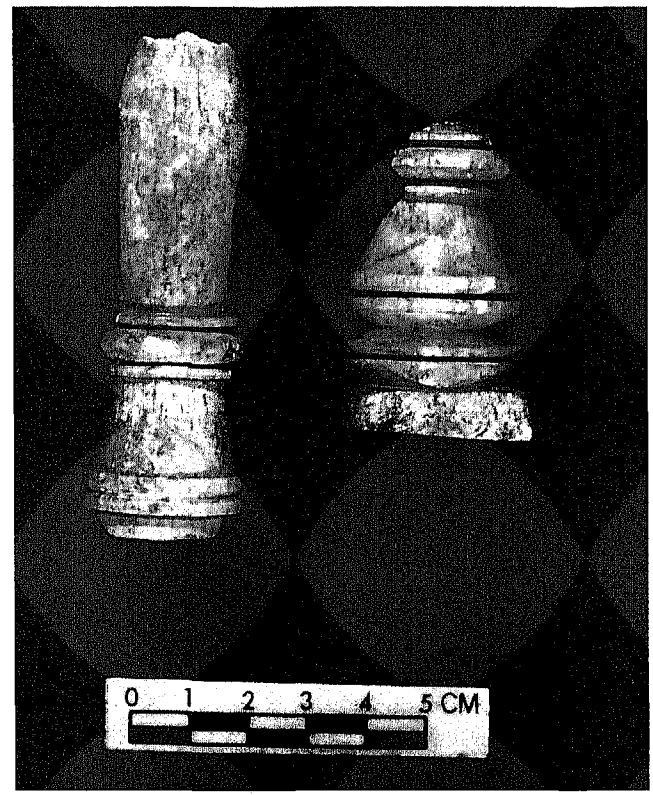
Bone was by far the most commonly worked animal-derived material, and ivory a distant second. The documentation for antler is scarce, and for horn, nonexistent—except for the piece mentioned above. Ivory objects have received the greatest attention because they were often luxury items carved with much finesse; yet, little is known about the actual process of manufacture. Studies on ivory lengthily discuss style and typology, but not much else. When archaeologists direct more attention to the systematic collection of all animal remains, it will be possible to document the complex processes of procurement, manufacture, and distribution of many of the objects of daily life crafted from those materials in antiquity. Present information allows the documentation in any detail only of boneworking.

The manufacture of a diverse array of bone artifacts found in the later historic periods in the ancient Near East had its beginnings in Late Paleolithic boneworking. Awls, borers, and scrapers, most likely made by their users, were some of the earliest tools fashioned with stone implements. With the introduction of copper, bronze, and (later) iron, metal tools gradually supplanted stone as the primary shapers of bone.

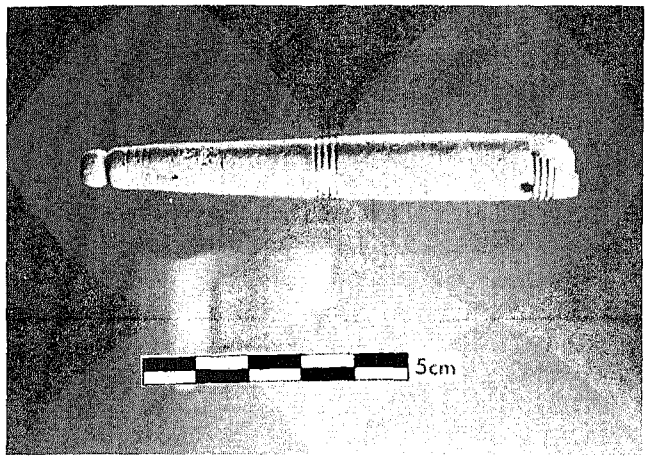
The tools used to work animal-derived materials were probably borrowed from wood-carvers. Because these tools are rarely found, their use must be inferred from the telltale marks they leave, particularly on the backs of objects and on unfinished pieces. Judging by Late Chalcolithic artifacts, numerous types of tools were already available. Early Egyptian wall reliefs (c. 2500 BCE) show furniture makers using knives, saws (more like large knives with a toothed edge), and bow drills. By the Middle Bronze Age II period, a sophisticated tool kit existed that included knives, coarse- and fine-toothed (finishing) saws, drills, gouges, chisels, straight- and compass-scribers, rasps, and files. Wet sand, leather and sand (or other minerals), and, by Roman times, the coarse skins of fish, shark, or ray were used to smooth and polish finished pieces.

By about 1500 BCE, simple lathes were in use in the wood-producing and working areas of the eastern Mediterranean. The first lathes were in all likelihood elaborations of the bow drill. The object in preparation became the actual stock of the drill, secured between two fixed points; it was turned by a bow as cutting and shaping tools were applied. Even simple, early lathes could produce pieces with a precise circumference. As they became more technologically sophisticated, lathes were indispensable to bone-carvers of quality items, such as furniture embellishments (see figure 2), round composite boxes, jewelry, and even hairpins. [*See* Jewelry.]

Bone was used for a wide range of artifacts, from utilitarian to purely decorative. With any bone tool type it is important to distinguish between casually worked bone (pieces



BONE, IVORY, AND SHELL: Typology and Technology. Figure 2. *Lathe-turned furniture mounts.* These pieces were often made from metapodials, or bones from the lower legs. They were attached to the legs of chairs and tables as decoration. Most are sawn longitudinally, leaving either half or two-thirds of the tube as an attachment, perhaps an indication that only the fronts of the legs were decorated. (Photograph by Carl Andrews)



BONE, IVORY, AND SHELL: Typology and Technology. Figure 3. *Lathe-made ligula or handle.* Most of the handle is hollow to hold the tang of the attached implement that was secured by a metal rivet, the hole for which can be seen at one end. This was probably the handle for some sort of spoon. (Photograph by Carl Andrews)

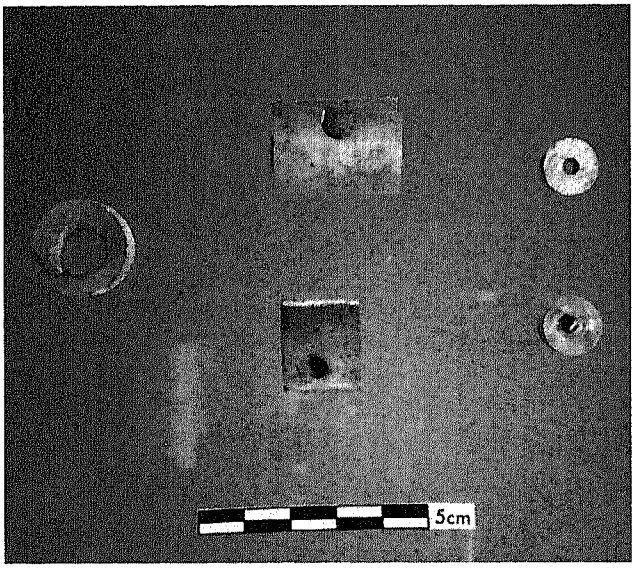
made by the user) and objects resulting from the organized production of professional craftsmen. A fragment of long bone sharpened at one end into a pointed tip to serve as a borer or stylus, ankle bones (astragali) planed and smoothed into gaming pieces thrown like dice, and bone sections minimally modified to scrape and dress hides are examples of casually worked bone known from antiquity that are still being produced. [*See* Games.] They testify to the fact that bone is easy to model, inexpensive, and readily available. User-made tools are found widely and over long periods at most sites because they were made by simple methods and served immediate needs. Casual tools were distinct in form and technique from products of specialized manufacture; they were also heterogeneous in character, whereas items of specialized manufacture are more uniform in shape and appearance. Casual tools were most likely crafted in or around the home, whereas those of specialized manufacture almost certainly were produced in workshops.

Increased community size and degree of urbanization, coupled with more sophisticated boneworking technology and professional organization, led to a proliferation in the types of objects made from bone. Beginning in the Persian period (sixth century BCE) and continuing into the later historical periods, the variety of bone artifacts offers a comprehensive picture of daily life: handles for a range of implements (see figure 3), spoons, whorls, buttons, needles, pins (cloth and hair), spatulas, beads, pendants, amulets and charms, rings and bracelets, composite boxes (pyxides; see figure 4), cosmetic accessories, single- and double-sided combs, gaming pieces, paralleliped and cubical dice, theater tickets, stamp seals, hinges for boxes and chests (see figure 5), composite elements for mechanical devices, flutes, carved figurines, toy dolls with movable arms (see figure 6), and furniture attachments and inlays, including carved plaques, decorative borders, finials, and mounts to cover furniture legs. [*See* Seals; Musical Instruments; Furniture and Furnishings.]

Gauging the intensity and organization of production is difficult. Because finished pieces recovered at any given site could have been imports, the debris of manufacture—blanks, waste and trim, and unfinished pieces—is a necessary indicator of on-site production. Bone is often not intensively collected during excavation; however, even when it is, scraps and leftovers are likely to be overlooked because of an unfamiliarity with this type of artifact and the tendency to focus on finished pieces. A great deal of potential information is thus lost. In addition, no actual workshop or primary surface littered with bone debris has so far been reported from any site in Israel, where most of the research is presently being carried out on these materials.

Renewed excavations at Ashkelon since 1985, have, however, yielded evidence of a large-scale boneworking industry that began in the Persian period and continued until the thirteenth century CE (Wapnish, 1991). Boneworking is actually documented from the MB II period onward at the site but did not reach industrial proportions until the later pe-

BONE, IVORY, AND SHELL: Typology and Technology. Figure 4. *Two lathe-made composite pyxides with similar turned decorations.* Sections of these hollowed pieces were joined together into a complete box. A flat disc fitted to the bottom formed the floor of the box. The shorter, squatter piece is made of elephant ivory, a precious material. The longer section in bone is most probably a cheaper version, perhaps an ancient "knock-off." (Photograph by Carl Andrews)

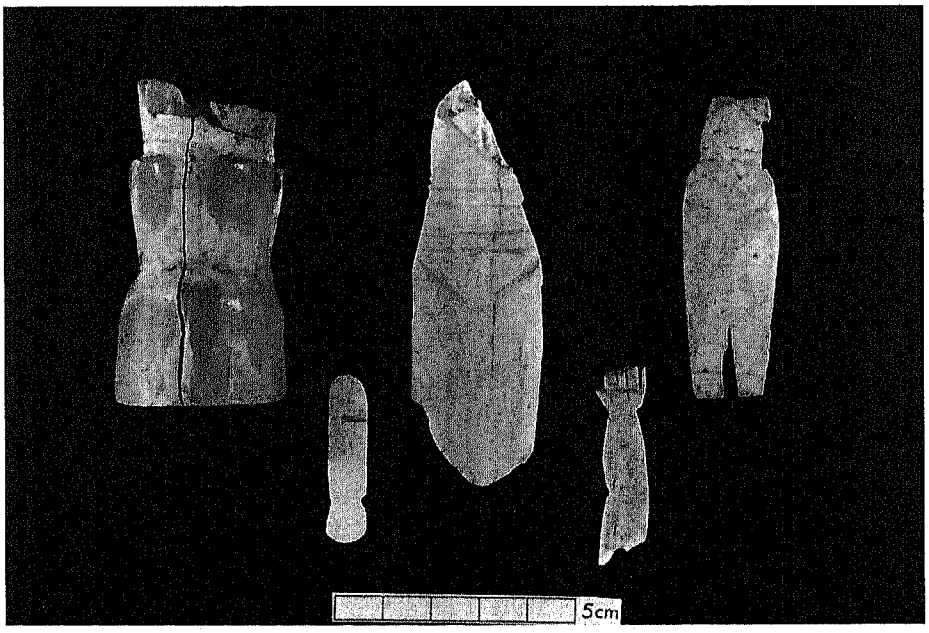


BONE, IVORY, AND SHELL: Typology and Technology. Figure 5. *Hinges (three larger pieces) and spacers for hinges (two smaller pieces).* These were often made of bone for boxes and larger pieces of furniture. They were both hollow and solid, like the small spacer at the lower right. (Photograph by Carl Andrews)

riods. Unfortunately, none of the evidence for manufacture has been found in situ; even concentrations of waste and blanks are secondary and even tertiary deposits. A clear (if incomplete) reduction sequence in the manufacturing process of a large variety of artifacts at Ashkelon can be observed, however.

The professional status of Ashkelon's bone-carvers is manifest in a number of factors. The tool kit alone indicates a degree of specialization uncharacteristic of casually modeled bone. So, too, does the kind of bone used: mostly the long bone shafts of cattle and camel, occasionally donkey, and, in the rarest instances, horse. [*See* Camels.] The fact that the raw material derived from the largest domesticates is particularly significant. Small-scale pastoralists raise these animals in small numbers, in quantities insufficient to produce a regular flow of bone into the production system. Only in highly organized supply systems, where bone was not just a raw material but a commodity, would crafters be able to access the bones of camel and equids regularly. At scales of production above the household level, the bones of sheep and goats were used only for casually worked bone, when user and producer were the same.

Standardization is a critical indicator of how specialized craftsmen were. At Ashkelon there is uniformity at a number of points in the reduction sequence. Initial preparation of a whole long bone began when the articular ends (areas of spongy bone unsuitable for working), were sawn off, leaving a tube of dense cortical bone. These tubes were then sectioned into smaller, workable segments that, in turn, were reduced further into blanks of various shape and size, depending on the object to be modeled. Blanks were standardized in form as flat sheets of varying thickness, square and



BONE, IVORY, AND SHELL: Typology and Technology. Figure 6. *Various dolls made from bone.* The first piece is the torso of a composite doll made from the hollow shaft of a cow metacarpal (lower front leg). The carved arms were attached to the torso at the shoulder by rivets, allowing the arms some front and back movement. Neither of the arms shown here goes with this torso. The second and third examples are flat, carved dolls. (Photograph by Carl Andrews)

round rods also of varying thickness, complete and halved tubes, and chunks whittled into somewhat irregular blocks. The preparation of both blanks and artifacts produced standardized waste and trim pieces. The presence of a reduction sequence with uniformity at some nodes argues against one individual creating an object from start to finish. The intensity of production remains a question in the absence of a workshop site. However, because some contexts yielded concentrations of particular unfinished objects and/or offcuts, it is probable that workshops were specialized by object and that several stages of production existed, with each delegated to a different worker. It is possible that middlemen dealing in bone as a commodity bridged the gap between abattoir and workshop.

The tools used to work bone were also used to model ivory, antler, and horn. However, it is doubtful that the same craftsmen worked both bone and ivory. Bone was readily available, inexpensive, and used for many mundane items, whereas ivory was rare, expensive, and mainly used for luxury goods. In addition, although the carving techniques may be similar, the substances are different. Although bone, antler, and ivory are roughly equal in hardness (1.5–2.5 on the Mohs' scale), elephant ivory is somewhat softer and easier to carve. Because it is comprised of large areas of solid matter, it can be used to make larger items, like furniture panels, figures in the round, and especially circular boxes. On the other hand, hippopotamus ivory is denser and more difficult to carve, and the canines and incisors of which it is comprised cannot be used for large objects. These differences—in carving techniques, suitability for certain objects, and availability of supply—point to a separation of bone and ivory carvers.

Another issue concerning bone and ivory carving for the region is whether craftsmen were itinerant or sedentary. While both would contribute to the economic activity of a settlement, only sedentary craftsmen would be an integral part of the social fabric and organization of the larger community. It is certainly true that all the tools needed, even early lathes, were portable. At least one authority (Barnett, 1982) considers that preindustrial craftsmen were highly mobile. However, just how roving specialists provided themselves with a raw material as expensive and relatively difficult to obtain as ivory is a question not easily answered. Bone, though, as the by-product of meat production, would be at hand in sufficient quantities in any large settlement. "Itinerant workers" implies that one craftsman worked each piece from start to finish because the logistics of moving a group of carvers, each specialized at a certain task, would make it unpracticable at best. However, the elaboration of production argues for the opposite because a manufacturing sequence, such as existed at Ashkelon, could be carried out more efficiently by sedentary craftsmen.

Despite the absence of workshops, it is possible to speculate about some of the organization of bone-tool production. (Until comparable waste materials and a manufacturing sequence are known for ivoryworking, or the working of antler for that matter, it cannot be assumed that it was the same in organization.) Ancient and modern markets in the Near East are characterized by streets or areas given over to the practice of one trade or craft. It is possible that the majority of bone-carvers were so arranged in the urban settings of their work. Craftsmen attached to special interests (e.g., state or temple) could have been clustered near their sponsor. Nor should home crafting on the piecework system be ruled out, with entrepreneurs organizing the production by providing the raw material, dictating what and how much was produced, and handling marketing and distribution. This is obviously far removed from home-based production of casual tools. Although both types of boneworking occur at the household level, they are totally different in organization, scope, and content. Craftsmen in any of these schemes could have been specialized not only by product, but also by the stage of the reduction sequence at which they labored. Because these arrangements are not mutually exclusive, one or several of them could have operated at a given place and time with respect to a variety of artifact types.

A number of other factors may be suggested for the organization of the craftsmen, although none can presently be demonstrated. The opportunity to learn and practice a given profession may have depended on kinship affiliation. Craftsmen may have been organized into professional associations, with various economic and social missions. Such groups are known from Roman sources, such as the *eborarii*, or "ivory workers," recognized as specialized craftsmen in the second century BCE. A professional association of dice and theater ticket makers was also formed at this time (Barnett, 1982). It appears that there were numerous associations of craftsmen and merchants in Asia Minor, especially during the Roman period (37 BCE–324 CE). These may have already existed in Hellenistic times (332–37 BCE) as the successors to extant native guilds prior to the Greek conquest (Koester, 1987). During the Islamic period (610–1919 CE), professional associations of craftsmen and merchants became prominent features of urban economic life, beginning with ʿAbbasid rule (750 CE). They continued as a mainstay of economic activity through successive caliphates (Perry, 1983).

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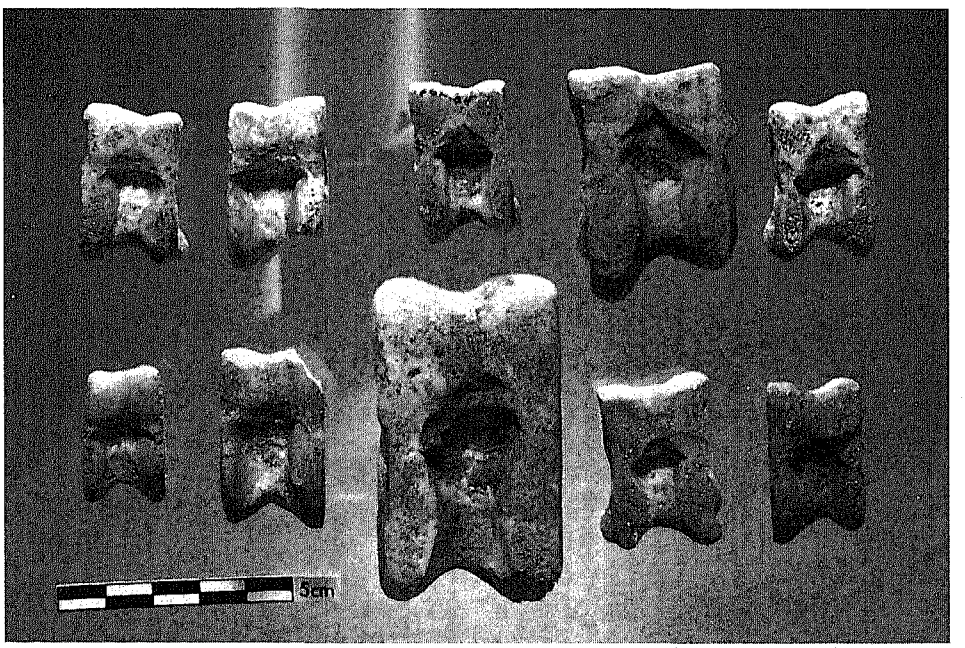
PAULA WAPNISH

Artifacts of the Bronze and Iron Ages

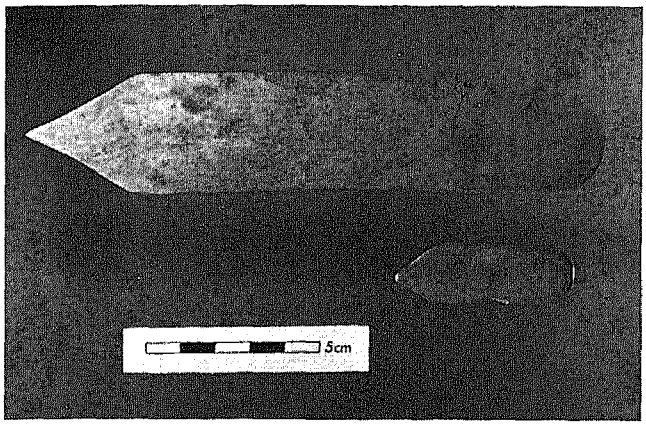
As opposed to metalwork or glasswork—which involve heat, chemical changes and fusion, molds (for copper and bronze), and hammering—bone-, ivory-, and shellworking involve relatively simple techniques to produce objects of utility and adornment. Worked and unworked ivory and unworked shell were also items of trade, providing evidence of long-distance cultural contact. D. S. Reese (1985) notes that elephant tusks found on Minoan Crete and hippopotamus canines from Bronze Age Greece and Cyprus originated in the Levant or Egypt. Three unmodified hippopotamus incisors were recovered from the thirteenth- or early fourteenth-century BCE Uluburun shipwreck off the coast of Turkey—evidence of trade in unworked animal bone. [*See* Uluburun.]

Bone. In antiquity, bone was used to decorate utilitarian objects and wooden boxes, to fashion figurines and tools, and to serve as handles for tools and weapons. Bone sickle hafts with animals carved in the round are known from the Natufian Mesolithic period (c. 8000 BCE) in the Levant. However, bone sculpture subsequently suffered a decline, and the style of sickle hafts became simplified. Bone strips made from the bones of sheep or goats, were used to decorate wooden boxes in the Middle Bronze Age. Metal saws were used to cut the bone to size and shape. The strips were then incised with a pointed metal instrument. Applied bone silhouettes of birds, *djed* (Egyp., symbol of endurance and stability) columns, and snakes were more complicated to produce, but in all likelihood required the same combination of sawing and incising. Bone objects such as whorls, needles, awls, and club-shaped pendants carved in the round involved a technology that included splintering and smoothing with a stone, in addition to carving and the use of a bow drill with a metal bit for perforation.

Bone is best known for its use for utilitarian objects. In



BONE, IVORY, AND SHELL: Bronze and Iron Ages. Figure 1. *Planed astragali (ankle bones), used as gaming pieces.* The two largest astragali are from cattle, the others are from sheep or goats. (Photograph by Carl Andrews)



BONE, IVORY, AND SHELL: Bronze and Iron Ages. Figure 2. *Large and small spatulas made from ribs.* Spatula tools like these date from the prehistoric to late historic periods at sites in Israel. Despite numerous theories, their use remains a mystery, but they most likely had numerous purposes. (Photograph by Carl Andrews)

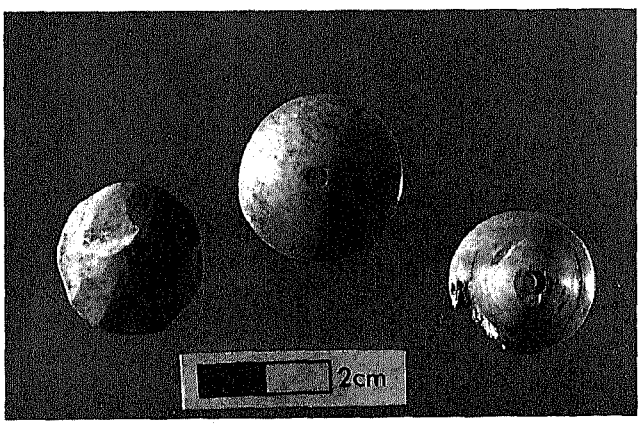
spite of the increase in the use of metal for tools throughout the Bronze and Iron Ages, bone continued to be used to produce awls, needles, and pins. Bone pins are commonly represented in ʿAmuq G and H (third millennium), at which time decorated tubes became popular in Syria. [*See* ʿAmuq.] Highly polished, incised bone tubes were popular in Early Bronze III Palestine as well, where they have been found at sites such as Megiddo, Khirbet Kerak/Beth-Yerah, Jericho, and Ai. [*See* Megiddo; Beth-Yerah, Jericho; Ai.] Bone whistles, unknown in the Early and Middle Bronze Ages, are found in Palestine in Late Bronze Age levels at Lachish and ʿEin-Gedi. [*See* Lachish; ʿEin-Gedi.] Bone gaming pieces are also known from this period (see figure 1), as are bone handles for bimetalic knives (also found with some frequency in the tenth century BCE). [*See* Games.] In the Iron Age, bone was used for spatulae that were rounded at one end and pointed at the other (see figure 2)—in all likelihood used for weaving. Dome-shaped, vertically perforated bone spindle whorls are found along with stone spindle whorls in both the Bronze and Iron Ages (see figure 3).

Beginning in MB IIA in Palestine, reaching a zenith in MB IIB, and continuing into the LB I period, bone was used extensively as a decorative element (e.g., as strips with incised geometric motifs and in a variety of silhouettes applied to wooden boxes; see figure 4). The genre is also known in Syria at Ras Shamra/Ugarit and Byblos, in Anatolia, and in Egypt; however, Palestine was the apparent center for this craft. Subsequently, ivory replaced bone for luxury items. [*See* Ugarit; Byblos.] Few examples of bone sculpture in the round are known for the following periods, although a carved bone figurine is known from Iron Age Beersheba. [*See* Beersheba.] Frontal armless, flat bone figurines, whose legs are separated by an incised line and that have other anatomic features suggested by clusters of incised dotted lines, appear in the Orontes River Valley at Hama (East) in about the eighth century BCE. Club-shaped bone pendants pierced at one end and incised with dotted circles and encircling horizontal incisions were almost ubiquitous in Iron II (ninth–eighth centuries BCE) Palestine.

Ivory. The ivory used in the Levant came from the tusks of African elephants that roamed northern Syria in the second and first millennia BCE and from the canines and incisors of hippopotami, which are superior to elephant ivory. Ivory, like bone, was sawed to the desired size for use. Because ivory is softer and is not hollow, it lends itself more readily to carving in the round, relief carving, openwork, and the hollowing out of square and cylindrical shapes to fashion containers. The carver cut the tusk according to the shape the piece was ultimately to assume: plaques for incision, relief carving, and openwork; or blocks for carving in the round. The tools used in ivoryworking included hacksaws to cut the tusks, finer saws for detail work, bow drills to bore holes, chisels to shape and gouge, compasses to outline arcs, a stylus for incising, and an abrasive for polishing.

Cloisonné, a technique that involves cutting depressions into the ivory that are then filled with substances of varying colors and framed with ivory ribbing, although well known in New Kingdom Egypt, was not popular in Palestine and Syria until the Iron Age. In some instances, such as on the plaques featuring floral forms from Megiddo VIIA, parts of the object were painted. Ivories from Nimrud and elsewhere are known to have been covered with gold foil, either to cover blemishes or make the objects more resplendent. [*See* Nimrud.]

Ivoryworking reached a high point in the Palestinian Chalcolithic period, but went into a decline in the Early Bronze Age and only slowly revived in the latter part of the Middle Bronze Age, when ivory, well-suited for decorating contain-



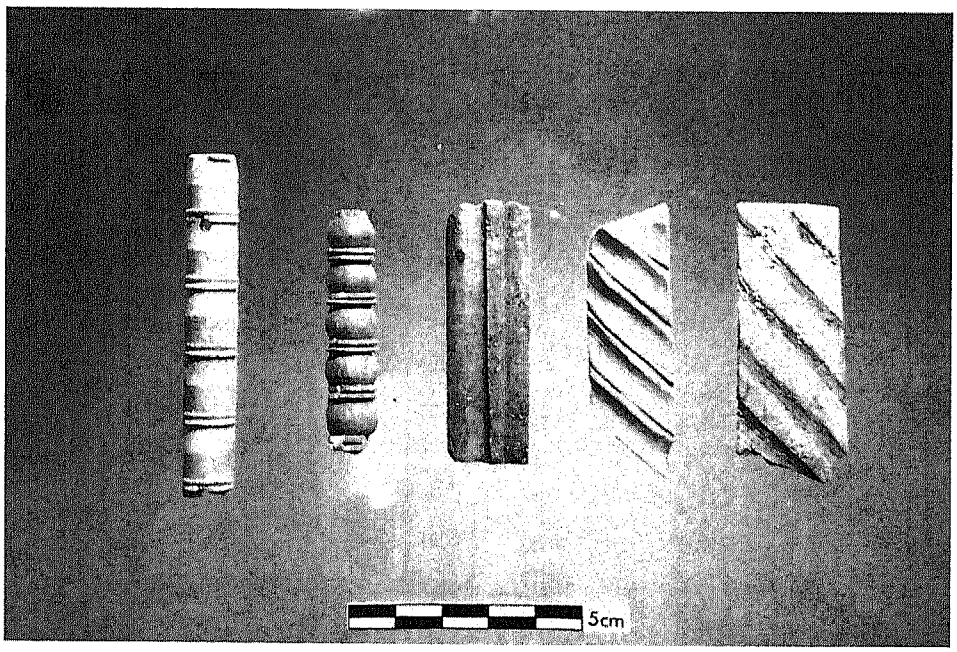
BONE, IVORY, AND SHELL: Bronze and Iron Ages. Figure 3. *Undecorated whorls.* On the left is a knife cut blank. The whorl at the center is made of bone, the one on the right of ivory. (Photograph by Carl Andrews)

ers, was applied to wooden boxes at least from the sixteenth century BCE onward, demonstrated by examples from Pella in Transjordan and from silhouettes from el-Jisr in Palestine. [*See* Pella.] However, there was a resurgence at the beginning of the Late Bronze Age that reached its peak in the latter part of the period, when it was used for many kinds of luxury items. The most prominent use was for ivory plaques worked in a variety of techniques and affixed to wooden furniture (see above). The most complex of these plaques feature continuous narrative scenes, such as the military and feast scenes on examples from Megiddo and Tell el-Farʿah (South). [*See* Farʿah, Tell el- (South).] Less finely worked LB ivory plaques and silhouettes with some affinities to those found elsewhere in Syria-Palestine have been found at Tell Fakhariyah. [*See* Fakhariyah, Tell.] Although Syro-Palestinian wooden furniture is not preserved, the manner of attachment and the use of the ivory can be reasonably reconstructed based on Egyptian New Kingdom chairs and on an Iron Age chair from Salamis, Cyprus. [*See* Salamis.]

Ivory was also used in the Late Bronze Age for freestanding objects. An exquisite ivory sculptured figurine was found in the Megiddo VIIA hoard, in which several ivory female figurine heads were also found. A carved ivory hand, apparently from a large sculpture, much of which was made from a different material (probably wood), was found at LB Lachish. In the Iron Age, ivory sculpture in the round was reserved, based on what is currently known, to small-scale objects, such as lion fittings for furniture, as demonstrated by carved lions in the round from Samaria and Nimrud. Ivory was also used in the Late Bronze and Iron Ages for combs. It was used less commonly for dice (e.g., the eight-sided die from Iron II Shechem). [*See* Shechem.] Although it is generally assumed that the LB ivories found in Palestine were imported from Syria, a case can be made, on the basis of style, for some of the Levantine-type ivories having been made in Palestine. In addition, unworked tusks were discovered at Megiddo.

A fascinating ivory box with lions and cherubs in bold relief on a projecting ledge encircling the base of a box was found in the Megiddo VIIA hoard (see above). The missing lid may have featured cherubs similar to those on the two opposing sides of the box; they suggest the type of decoration that may have covered the Hebrew tribes' Ark of the Covenant. Lids of cylindrical cosmetic boxes (whose lower parts are generally missing) have been found at Megiddo and elsewhere. A tusk-shaped oil or perfume container with a stopper was also found at Megiddo, with parallels elsewhere. Other types of containers are duck shaped and have movable parts. Scepters or wands in the shape of cylindrical tubes fitted into pomegranate-shaped heads have been found at LB Lachish; an Iron Age parallel is an inscribed pomegranate-shaped miniature ivory head purported to be from King Solomon's Temple in Jerusalem. [*See* Jerusalem.]

In the Iron Age, ivory carving enjoyed a great resurgence in the Levant. Major collections of worked ivory originating there have been found at Nimrud, Khorsabad, Arslan Tash (Syria), and Samaria; isolated pieces have been found elsewhere in Syria, Assyria, and Mesopotamia, and on Cyprus



BONE, IVORY, AND SHELL: Bronze and Iron Ages. Figure 4. *Bone border inlays and mounts.* The pieces were arrayed around the edges of boxes, caskets, and so forth as decoration. (Photograph by Carl Andrews)

and in the Aegean. [*See* Khorsabad; Samaria; Cyprus.] Richard D. Barnett (1982) has distinguished between those ivories coming from North Syrian workshops and those originating in Phoenicia. [*See* Phoenicia.] In the Syrian style old motifs were continued—animal combat, a hero and a winged griffin, or a procession to a throne—motifs derived primarily from Mesopotamia, and a figural style developed with rather squat bodies and faces with either a prominent nose and eyes or round, chubby faces. The Phoenician ivories almost slavishly imitated Egyptian motifs and proportions and used techniques such as polychromy and openwork. Irene J. Winter (1976) has raised the possibility of the existence of a South Syrian school. The notion of a Palestinian origin for the ivories found at Samaria has been ruled out basically because, in spite of considerable excavation in Israel, a major collection has only been found at Samaria. Yet, literary evidence pointing to Assyrians carting off booty including ivory chairs from Judah suggests the possibility of the existence of a Palestinian school. The richest assemblage (consisting of several thousand pieces) and the finest examples of Iron Age ivories come from Nimrud, where they were used on the backs and sides of beds and chairs and for wall paneling. Another important assemblage, primarily of small fragments, which reflects the complexity of cultural transmission, was found at Hasanlu in Iran, in a settlement of unknown ethnic and linguistic background that was burned before the end of the eighth century BCE. [*See* Hasanlu.] The majority of those ivories were locally made; others originated elsewhere in Iran or are said to have originated in North Syria. The smallest class is Assyrian. Though the influence of the North Syrian, Phoenician, and Assyrian workshops is apparent, the local and otherwise Iranian examples lack the intricacy, precision, and richness of the former.

Ivory was favored for the carving of small luxury items because it was soft and relatively easy to carve; it was even-grained, and its rich, light color was well suited for flesh tones. In the eighth century BCE, when the elephant population dwindled in North Syria, eliminating the locally available supply of ivory, tridacna shells and bone were used as substitutes.

Shell. Shell, readily available along the shores of the Red Sea, the Mediterranean coast, and the shores of the Kinneret (Sea of Galilee), provided the early inhabitants of the Levant with a natural, practically ready-made object for adornment from Mesolithic times onward. In later periods, it was imitated in precious metal or covered with gold foil. Desired for its natural beauty, it was transported over great distances and used both in its natural state and carved into geometric forms. In their natural state, shells require only a perforation to permit stringing. At other times they were cut to conform to varying shapes. Shell beads were sawed into disks and bored with a bow drill.

Used for a variety of purposes, but primarily for jewelry, shell was not a popular material in the Bronze Age. It gained popularity in the Iron Age, when jewelry in precious metal is found with less frequency. Clusters of intact small conch shells with perforations for stringing have been found at several Iron II sites. In other instances, disks cut from tridacna shells (giant clam shells), with central perforations for stringing, were used as filler beads. Engraved tridacna shells that probably come from the Red Sea have been found at numerous sites in the Near East (i.e., Kish, Nippur, Babylon). [*See* Kish; Babylon.] They were widely distributed in Israel, where they have been found at Shechem, Jerusalem, Bethlehem, Tell el-Farʿah (South), and Arad, and in Syria at Alalakh. [*See* Bethlehem; Arad.] These examples may have been used as containers for cosmetics or unguents.

[*See also* Furniture and Furnishings, *article on* Furnishings of the Bronze and Iron Ages; *and* Jewelry.]

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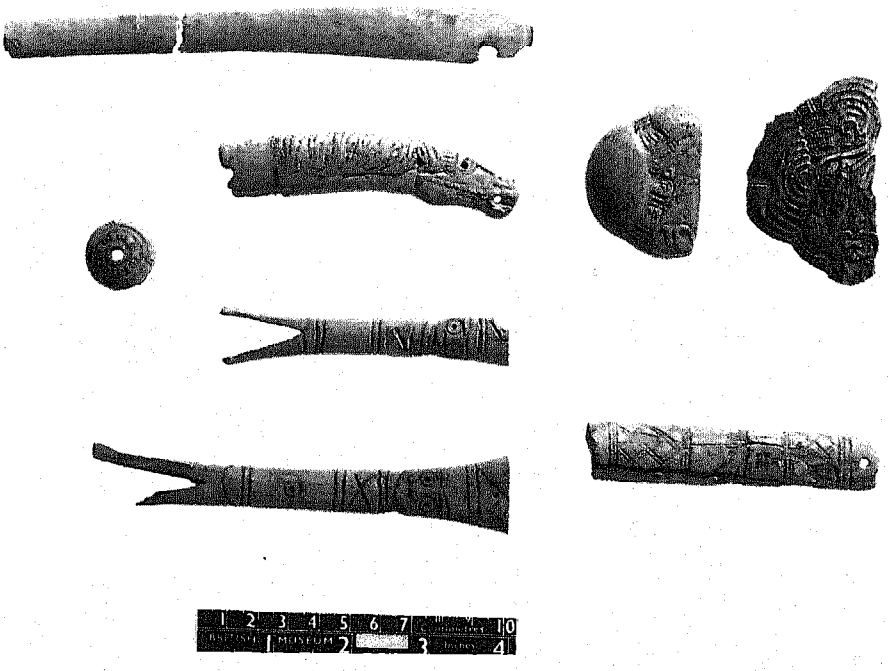
HAROLD A. LIEBOWITZ

Artifacts of the Persian through Roman Periods

Virtually nothing is known about the scale, organization, or physical whereabouts of the industries that produce objects from bone, ivory, and shell from the Persian through the Roman periods. The study of the relative uses of these ma-

terials at different periods is hampered by a lack of systematic archaeological interest in them. As a result, identification often even of objects, material or species is lacking: primary attention instead has usually been focused on their date, decoration, and possible function. In addition, there is some confusion over how to distinguish between bone, antler, horn, and ivory; without laboratory analysis, it is also difficult to distinguish between hippopotamus and African elephant or Asiatic (male) elephant ivory (although the possible use of fossilized mammoth, walrus, or whale ivory is less likely in the Near East than in northern Europe). An additional problem is that, unless artifacts are particularly distinctive or are found in a single-period context (e.g., a grave), it is difficult to isolate objects—such as beads—as being residual or deliberately reused from earlier periods. Close study of the artifacts themselves, combined with analyses of bone or shell assemblages, can throw some light on the subject. Bone and shell working generally are by-products of food industries, whereas ivory working reflects deliberate procurement of a scarcer resource used to manufacture more valuable ("luxury") goods. Although there is a tendency in the archaeological literature to view bone and shell (let alone antler and horn) as unimportant artifact categories, broad consistencies in style between different regions at specific periods suggest minor but popular craft traditions. Small numbers of professional craftsmen are likely to have worked at or near major centers of demand (e.g., cities, large military garrisons), while itinerant craftsmen may have served rural populations; many of these craftsmen may also have worked seasonally.

Bone. A distinctive category of worked bone found in Achaemenid (Persian period) graves and other contexts from Palestine to southwestern Iran consists of kohl tubes. Occasionally found with applicators in situ, these were usually decorated with incised horizontal registers of lattice, chevron, or herringbone, sometimes with dog's-tooth incision around one end ('Atlit, Hazor, Kamid el-Loz, Deve Höyük, Til Barsip, Nippur, Ur, Susa). They were also copied in bronze at Deve Höyük. Other bone artifacts include decorated handles (Hazor, Shiqmona), spatulae (Tel Haror,



BONE, IVORY, AND SHELL: Persian through Roman Periods. *Assorted carved ivory and bone artifacts from the Persian through Sasanian periods.* Top left: two Persian-period scabbard tips in carved ivory and bone (BM.WAA 132925, 140666). Top right: Persian-period decorated bone cosmetic tube from Deve Höyük (BM.WAA 108684). Middle: Parthian-period bow-tip reinforcement from Nineveh (BM.WAA 138666), a horse's-head handle (BM.WAA 135718), and two "doll" handles from Uruk-Warka (BM.WAA 1856-9-9, 214; 1881-11-3, 38). Bottom: Sasanian incised and colelored bone spindle-whorl from Dailem (BM.WAA 1881-8-30, 558). (Courtesy Trustees of the British Museum)

Tel Michal), coarse-toothed combs (Tel Michal), beaters used in weaving (Susa), perforated tools or objects of uncertain function (Hazor, Tel Michal), pins (Nippur), inlays (Hazor), and simple beads (Tel Michal, Deve Höyük). Corresponding reliably dated Achaemenid evidence from highland Iran is sparse. Simple beads, disks, biconical toggles, a pair of "spatulae," and a point were excavated at Pasargadae (Tall-i Takht) but derive partly from post-Achaemenid contexts; an incised scabbard chape (i.e., a scabbard-tip reinforcement), another toggle, pins, possible gaming pieces, and fragmentary possible containers were found at Persepolis.

Bone was used as a cheaper alternative to ivory during the Seleucid period: a possible workshop has been identified at Alexandria and portraits of Ptolemaic queens appear on bone finger rings. Some utilitarian objects continued to be made of bone, including spindles (Bahrain), beaters for weaving, and spatulae (Larsa, Uruk, Nimrud in Mesopotamia). Plates incised with floral motifs were riveted to handles (Tel Zeror); decorative plaques, carved figures, and double-sided combs also occur (Uruk; Hajar Bin Ḥumeid in South Arabia). As with later Roman work, these were carved using a knife or flat chisel, followed by compass drilling for concentric incision.

The iconography of Roman products in Egypt continued to be heavily Hellenistic in style, although it is possible to distinguish between Egyptian, Syro-Palestinian, Anatolian, and Italian workmanship. Bone plaques and panels, often decorated with scenes from classical mythology, paralleled on sarcophagi, peak in the second–third centuries CE in the eastern Mediterranean (Antinoopolis, Ras el-Soda in Egypt; Ḥesban, Mampsis, Neṣṣana, Oboda [Avdat], Samaria, Amman Airport Cemetery, Pella in Palestine). Some of these may have been carved in Alexandria, where other varieties were carved from ivory. Many of these plaques were glued or riveted together to form larger continuous panels attached to cosmetic boxes, caskets, beds, couches, and other objects. Traces of crimson, dark-red, pink, or black color sometimes survive. Other uses of bone are attested by a coffin with bone and wooden inlays forming circles, rosettes, and pomegranates (Jericho) and a wooden casket decorated with Nereids (Damascus Museum). [*See* Sarcophagus.]

Bone objects comprise naturalistic human figurines, dolls with movable limbs, cubical die and other gaming pieces, double-sided single-piece combs (also made of wood or iron), handles, spatulae, needles, spoons, spindles, whorls, beads, and pendants (Tel Dor, Jerusalem, Masada, Samaria, Judean Desert caves, Amman Airport Cemetery, Ḥesban, Dura-Europos). Bone pins with knife-cut shanks and turned heads carved in geometric, vegetal, anthropomorphic, or zoomorphic shapes (e.g., birds, nude females), were widespread throughout the Roman Empire (Gush Ḥalav, Samaria, Amman Airport Cemetery, Pella, Jerash, el-Lejjun, Dura-Europos, Anemurium) and are paralleled in metal and glass. In some cases, bone originals were used to prepare molds to cast bronze specimens. Most pins were cut from the sides of large ungulate limb bones; the process destroyed the identifying characteristics, so that the original species usually cannot be identified—although rare examples survive where gold leaf was applied to the heads (Jerusalem). Similar locally made bone pins are found at Parthian-period sites in Mesopotamia (Kish, Nineveh, Nippur, Nuzi, Seleucia on the Tigris, Uruk), Central Asia (Akhal, Merv, Nysa) and elsewhere (Taxila).

Parthian bone working, especially during the first–second centuries CE, generally seems to have been more extensive than in the later Sasanian period. A possible workshop has been identified at Merv. Bone objects from other Parthian, Kushan, or contemporary sites include belt plates lightly incised with vigorous scenes of animals, combat, or mounted hunters pursuing stags and boars (Dedoplis Mindori in Georgia, Orlat in southern Uzbekistan, Takht-i Sangin). Other plaques depict female dancers and male acrobats plus standing or seated individuals (Olbia on the Black Sea). Decorative carved inlays are found, possibly that originally were attached to small boxes (Seleucia on the Tigris, ed-Dur in southeast Arabia). Small decorative finials or handles carved in the shape of lively horse or other animal heads occur at Parthian (Seleucia on the Tigris) and contemporaneous sites (Petra; Qaryat al-Fau in southwest Arabia); bronze versions also exist. Inscribed Parthian bone knife-handles have been found at Nineveh and Seleucia on the Tigris. A distinctively Parthian type of cylindrical bone handle found in Mesopotamia (Babylon, Nippur, Seleucia on the Tigris, Uruk) and southwest Iran (Masjid-i Suleiman, Susa) is carved in the shape of a crude stylized human face or figure. Traces of paint survive on some of these objects: usually described as bone dolls they are often found in children's graves, but their exact function remains unclear. Other varieties of plain or decorated hollow or flat handles, sometimes made of antler, also occur (Uruk, Masjid-i Suleiman, Susa, Noruz Mahale in Dailaman, Taxila). [*See* Grave Goods.]

Composite bows were used in the Near East from the fourth millennium onward, but the addition of elongated bone splints in the first–second centuries CE suggests the development of more powerful weapons. These occur in both domestic and funerary contexts at Parthian sites (Nineveh in northern Mesopotamia; ed-Dur, Akhal, Merv). Syrian auxiliaries may have been responsible for introducing these bows into the Roman army: similar splints have been found at several Roman military sites from Egypt (Belmesa) and Palestine (Neṣṣana) to Scotland (Bar Hill on the Antonine wall). Bone arrow nocks and possible arrowheads also occur (Ctesiphon, Nuzi, Uruk, Taxila). Other objects include beaters, spindles, and spindle whorls (Nineveh, Nippur, Nuzi, Seleucia on the Tigris, Uruk; Nush-i Jan in western Iran; Hassan-i Mahale in Dailaman; Merv), spoons,

applicators and styli (Taxila), cosmetic containers (Seleucia on the Tigris), plain or incised combs (Nippur, Seleucia on the Tigris, Taxila), finger rings (Uruk), belt buckles (Kampyr-tepe in Uzbekistan), dice (Uruk, Nush-i Jan, Kampyr-tepe, Taxila), astragali (Taxila), flutes (Seleucia on the Tigris), beads and "amulets" (Seleucia on the Tigris). Finally, antler and bone horse-bridle cheek-bars occur in Parthian-period levels at Taxila.

Corresponding Sasanian evidence is rarer. Objects include pins (Tell Barghuthiat, Ctesiphon, Tell ed-Der, Kish, Tell Mahuz, Tell Mohammed Arab, Nippur, Nuzi, Yarim Tepe, plus Kushano-Sasanian sites in Bactria such as Zartepe) and rare beads, mostly found in graves (Barghuthiat, Ctesiphon, ed-Der, Kish, Mahuz, Tell Mohammed Arab, Uruk, Yarim Tepe, Merv). Cubical dice (Tell Mahuz); ground and polished astragali, or knucklebones (Merv); other possible gaming pieces (Kish); bone and horn handles (Tell Ababra, Tell Barghuthiat, Kish, Shahr-i Qumis); spindle whorls (Tell Abu Sarifa, Babylon, Barghuthiat, Coche, Ctesiphon, Kish, Tell Mahuz, Merv, Tell Mohammed Arab, Nineveh, Nippur, Nuzi, Umm Kheshm, plus Qaṣr-i Abu Nasr in south-central Iran); and miscellaneous tools and other objects (Ctesiphon, Tell ed-Der, Kish, Nippur, Nuzi) also occur.

Ivory. Ivory tusks are shown among East African tribute depicted on reliefs of Darius I (521–486 BCE) at Persepolis: twenty tusks were said by Herodotus (3.97) to be presented every three years. Darius also obtained ivory from Arachosia (western Afghanistan) and Sind, whereas "the ivory workers" employed in his palace at Susa came from Sardis according to a foundation inscription from this building. Finished objects of Achaemenid date include *akinakes* (short sword) "scabbards" (Takht-i Sangin) and dagger chapes. They are carved in low relief at Deve Höyük, are depicted at Persepolis, and are closely comparable to surviving examples in metal and bone. An ivory comb found at Ashkelon was carved with representations of a horseman, ibex, lions, and a contest scene; other decorated combs have been found at Susa. Small studs, presumably for ornate objects (Hazor); incised inlays in Egyptianizing, Greek, and other styles (Persepolis, Susa); handles ('Atlit); and statuettes (Susa) were also made from ivory.

The price of ivory within the eastern Mediterranean fell during the third century BCE, followed by the appearance of a range of naturalistically carved ivories (e.g., a sword-hilt and chape from Takht-i Sangin). An ivory furniture leg dating from the fourth–third centuries BCE was found at Ai Khanoum near Takht-i Sangin. During this period, elephants were frequently depicted in Bactria, particularly on coins, whereas a tomb painting at Marisa/Mareshah in Palestine depicts a saddled African elephant. Alternative ivory sources are suggested by boar tusk fragments (Samaria). Alexandria was an important ivory market during the Seleucid period and ivory plaque fragments, triangular inlays, pins, and probable spindle whorls occur at various sites (Alexandria, Bahrain, Failaka, Uruk).

There was a heavy demand for both elephants (for the army and circus) and their ivory during the Roman period. These were obtained mainly via Red Sea ports, although a small elephant population still survived in northwest Africa. Associations of ivory workers (Lat., *eborarii*) were formed in Rome and Egypt, and the price of the ivory itself was finally fixed by Emperor Diocletian at 150 denarii per pound. Caligula provided an ivory stable for his horse; Seneca owned five hundred ivory tripod-leg tables; and a friend of Zenobia, queen of Palmyra, had a pair of complete elephant tusks made into a couch. Ivory was reportedly used to make statues, doors, chairs, beds, boxes, chariots, scepters, hilts, scabbards, flutes, lyres, tablets, book covers, birdcages, combs, brooches, and earrings. Archaeological finds from Syria-Palestine are more modest but include carved spindles (Amman Airport Cemetery) and a figurine depicting Ganymede, a subject familiar from Egyptian bone carvings (Samaria). Finished ivory pieces were only rarely traded from India (Pompeii, Hatra).

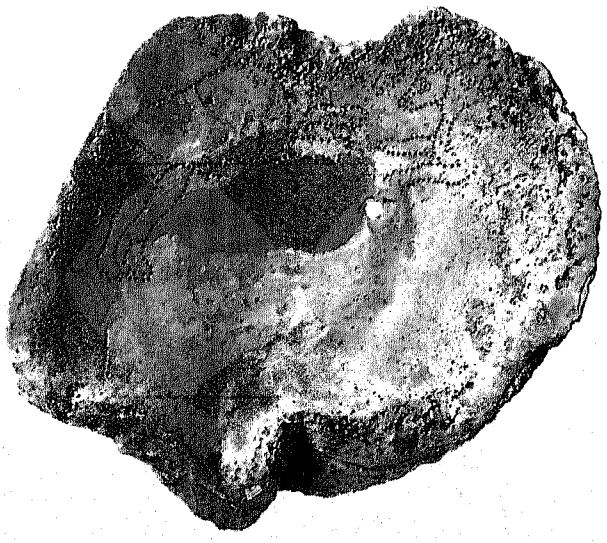
The most spectacular Parthian evidence consists of more than forty-five large ivory rhyta (hornlike pouring vessels) found within the citadel at the first Parthian capital at Nysa/Mithradatkert (Turkmenistan). These were made from up to four lathe-turned elements carefully jointed with copper pins, lined with wood, inset with semiprecious stones or colored glass, and later repaired with silver wire. They measured up to 60 cm in length and contained between 0.5–1.5 l. The spouts ended in animal protomes, and the upright portions were decorated with classical scenes. Turned ivory furniture legs, cheek pieces with griffins' heads and decorative inlays (Nysa), statuettes, figurines, painted or incised combs, handles, gaming pieces including dice, and beads also occur (Uruk, Bard-i Nishandeh, Masjid-i Suleiman, Susa, Dalverzin-tepe, Kampyr-tepe in Uzbekistan; Begram, Tillya-tepe in Afghanistan; Taxila).

Evidence for Sasanian ivory use is rare, despite sixth-century and later references to its being imported from East Africa: a fine casket carved with hunting and other scenes, formerly attributed to Sasanian workmanship, is probably of Early Islamic date; possible Sasanian pins, beads, pendants, and a stick die (?) from other sites (Tell Mohammed Arab, Qaṣr-i Abu Nasr) may be bone rather than ivory. Occasional ivory chess pieces have been found in Mesopotamia and Central Asia, but they probably date to the sixth-seventh centuries CE (Late/post-Sasanian periods). A single ivory handle (Tell Dhahab) and ring bezel inset (Tell ed-Der) complete the list of known excavated occurrences of Sasanian ivory.

Shell. Sporadic uses of shell are found at Achaemenid sites, as beads, for instance (Yafit, Tell el-Mazar in the Jordan Valley; Kamid el-Loz, Persepolis): species include cowries *(Cypraea annulus, carneola and moneta)* and horn shell

(Cerithium erithraconense). Horus-type pendants were made of mother-of-pearl (Tel Michal), paralleled in frit at other sites (Kamid el-Loz). Pearl beads were used in Achaemenid jewelry: a hoard of 244 was found at Pasargadae. Coral beads also occur (Kamid el-Loz). Finally, Murex snail and *purpura haemastoma* were crushed in lined pits to produce purple dye (Dor, Tel Mikhmoret).

Pearls are occasionally found in Tylos-period graves in Bahrain; shell from Seleucid contexts includes *Pinctada* (pearl oyster) with holes punched along the edges (Kourion, Paphos) and other species (Nimrud). During the Roman period, perforated Mediterranean (*Arcularia*/Basket shell, *Columbella, Cymatium, Glycymeris*/dog cockle/comb shell), Indo-Pacific/Red Sea/Gulf (*Conus, Cypraea, Dentalium, Nerita, Pinctada, Strombus*/true conch) and freshwater *(Unio)* shells were used as beads (Quṣeir el-Qadim on the Red Sea, Jerusalem, Amman Airport Cemetery, Amathus on Cyprus, Alişar Höyük in central Anatolia, Tell Hadidi and Tell Sheikh Ḥamad in Syria). An exceptional instance from Ḥesban was the modification of a tiger/panther cowrie into a small bird-shaped cosmetic container with an ivory head and tail. Conch, horn shell, *Charonia tritonis*/triton or trumpet shell, *Drupa, Natica*/Moon or necklace shell, *Olivia*/olive shell, *Tectus*/top shell, *Tridacna*, incised *Pinctada*, a Red Sea whelklike species used in perfume, and pearls are also found (Quṣeir el-Qadim, Hajar bin Ḥumeid, Ḥureidha, Samaria, el-Lejjun, Amman Airport Cemetery, Kourion). *Lambis*/spider conch and *Turbo*/turban shell at Quṣeir el-Qadim probably represent food remains.



BONE, IVORY, AND SHELL: Persian through Roman Periods. *Interior of a Parthian-period pearl-oyster shell from Uruk-Warka.* Note the drilled decoration showing a pair of animals (BM.WAA 1851-1-1, 177). (Courtesy Trustees of the British Museum)

Decorated shell inlays, possibly belonging to a small box, were found in a Parthian grave at Shami (western Iran) and depicted archers, horsemen, and a female figure wearing ornate jewelry and an embroidered cloak. A *Pinctada* valve from a third–fourth century CE burial at Mtskheta (Georgia) was incised with an architectural design, a pair of birds, and a ribboned investiture diadem. Large bivalves decorated with dotted outlines of animals were found at Merv and Uruk; simple ringed dot decoration has been found on other shells from Kobadian (Bactria). Finally, shell (including cowrie, *Engina mendicaria*/whelk), mother-of-pearl, and coral beads, rings, and "buttons" occur sporadically at Parthian sites (Seleucia on the Tigris Uruk, Masjid-i Suleiman, Nush-i Jan, Nysa). A wide variety of marine and freshwater species, including Indo-Pacific scallop, were represented by uncut shells at Taxila.

Red Sea coral was a sought-after material for beads in the Roman Empire and may have been traded eastward, judging from archaeological finds (Tell Mohammed Arab, Merv). Sasanian mother-of-pearl geometric inlays occur (Qaṣr-i Abu Nasr), closely paralleled by stone inlays from Ctesiphon; mother-of-pearl was also used to make beads, pendants, and buckles (Qaṣr-i Abu Nasr). The extensive Sasanian use of pearls in jewelry (drop earrings, beads) suggests expanded local Gulf pearl fisheries or imports from Sri Lanka: reliable archaeological evidence for Sasanian occupation or trade in these respective areas has hitherto been scarce. Cowry beads are found in graves (Tell Mohammed Arab) and other contexts (Ctesiphon, Qaṣr-i Abu Nasr). They were regarded in later periods as a means of protection against the Evil Eye, but it is unclear whether similar superstitions were held at this date. Other shells were used as beads, pendants, rings, and spindle whorls, although the varying proportions of shell to other bead materials hints at local fashions (Babylon, Ctesiphon, Kish, Tell Mahuz, Tell Mohammed Arab, Nippur, Nuzi, Umm Kheshm, Uruk, Yarim Tepe, Qaṣr-i Abu Nasr, Merv). Ostrich-egg cups were sent from Persia to China; one example was excavated at Qaṣr-i Abu Nasr. Remains of a painted and glided ostrich egg from Ctesiphon may have served either as a cup or been attached above a hanging lamp: the latter were characteristic of Byzantine and later churches in the southern Levant, the dual purpose being as a counterweight and an obstacle to rodents seeking to drink the lamp oil. The source of both the Sasanian and Levantine examples is likely to have been Arabia.

[*Many of the sites mentioned are the subject of independent entries.*]

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ST. JOHN SIMPSON

Artifacts of the Byzantine and Islamic Periods

Precious, hard, and resistant—but less hard than marble and therefore easier to cut—ivory is an excellent material for carving planes in relief. The art of carving developed greatly during the last centuries of the Roman Empire when, with the decadence of classical Greek culture and sculptural art, a pictorial tendency prevailed. Important in this and later periods (up to the tenth century) was the influence of miniature painting as a source for theme and style (cf., e.g., the plaque showing "The Washing of the Feet," now in Berlin at the Staatliche Museen, with the painted icon of the same theme in the Monastery of St. Catherine in the Sinai Desert).

Among the most notable masterpieces of late imperial art in carved ivory is the series of diptychs—double small tables joined by hinges, carved on their exterior face, and covered on the interior with wax for writing—used as gifts for special state occasions like the appointment of high state officials, especially consuls, to whom, indeed, the use of diptychs would later be reserved. The several consular diptychs that come mainly from Constantinople are almost all datable to the fifth and sixth centuries. [*See* Constantinople.] On them, the idealized image of the consul exemplifies the original style created by the syncretic art of the eastern empire. Among the best of this group is the diptych of Aerobindus, consul in 506 (now in Zurich, at the Musée National Suisse), and the one representing the empress Ariadne, dated to about 500 (in Florence, at the Museo Nazionale). The diptychs are often very useful in establishing a chronology of comparable ivory objects as they often bear the name of the official they represent. Whereas Italian imperial cities like Rome, Ravenna, Milan, and Monza were once thought to have been the main centers for the ivory craft, it is now clear that many of the best ivories came from peripheral areas (Cutler, 1985).

A well-known pyxis representing the Sacrifice of Isaac and Sts. Peter, Paul, and John, datable to the fourth or fifth century (Berlin, Staatliche Museen), is most probably from Antioch. [*See* Antioch on Orontes.] Egypt as a source of worked ivory is attested by both papyri and excavations and was recently confirmed by the finds at Abu Mina (Engemann, 1987). The sixth-century cathedra of Maximianus (Ravenna, National Museum) seems to come from Alexandria, as do other stylistically cognate artifacts, such as the Barberini ivory dated to about 500 (Paris, Louvre Museum), on which a barbarian is represented offering a giant tusk to the emperor—testimony to the reputation of ivory in late antiquity as an imperial material. [*See* Alexandria.]

The production of carved ivory artifacts in the Byzantine world did not cease with the Islamic invasions in the mid-seventh century. The masterpieces of the ninth century present an iconographic repertoire that looks both toward classical antiquity and the Orient, especially to Sasanian Persia. [*See* Sasanians.] Characteristic products of the eighth and ninth centuries are caskets and hunting horns (oliphants). The caskets are usually rectangular, with a flat or a truncated pyramidal lid, and are decorated with ornamental squares or bands with mythological subjects or zoomorphic subjects in the Persian tradition. One of the best examples is the tenth-century Veroli casket (London, Victoria and Albert Museum).

A large number of Byzantine ivories datable to the ninth and eleventh centuries are carved tablets, mainly intended as icons, and there are also examples of ivories sculpted in the round. Documentation for ivory carving after the sixth century is scanty. Nothing is known of modes of production, and there is no information about how such objects were used. There is only one extant Byzantine ivory tablet. It is presently displayed at the tenth-century great cross/reliquary at San Francesco at Cortona, Italy. It was probably originally exhibited as it is now (except that its elaborate frame is a seventeenth-century work) because the inscription on its back required that it be displayed in the Hagia Sophia so as to show both its front and back.

Ivory objects from the Islamic period include caskets (both rectangular and cylindrical), combs, oliphants, and chess pieces. [*See* Games.] Ivories sculpted in the round are rare. Techniques of decoration were relief carving; the painting or gilding of flat surfaces; intarsia, or mosaic decoration, on ivory plaques countersunk in wood; adhering cut ivory shapes to a wooden surface; and incising dots and concentric circles on a surface, sometimes filling them in with colored pigments.

Excavations at Umayyad and early ʿAbbasid sites have yet to reveal ivory objects, and there are very few attributable to the Sasanian period in Persia. In Egypt, on the other hand, Coptic craftsmen kept alive an earlier tradition, and there are pieces that, on stylistic grounds, can be attributed to Coptic craftsmen of the ninth and tenth centuries. For the eleventh and twelfth centuries there are bone and ivory carved panels from Fustat, associated stylistically with Fatimid wood carvings. [*See* Fustat.] Cut in low relief and depicting hunting scenes, isolated animals and human figures are set against a background of scrollwork. These examples were probably either whole panels belonging to caskets or insets for larger wooden panels.

Ivory caskets are mentioned in an eye-witness account of the treasures of the caliph al-Mustansir reported by the fourteenth-century historian al-Maqrizi. Also to be attributed to Fatimid Egypt is a group of panels carved in openwork (Florence, Bargello Museum; Berlin, Staatliche Museen; Paris, Louvre Museum). These are related in style and subject matter to the carved-wood panels from the *maristan* (hospital) at Qala'un and to some Fatimid wooden panels now also in the Louvre.

Another group of objects ascribed to Fatimid Egypt or to Norman Sicily comprises ivory oliphants and caskets. Their style is distinctive and characterized by relief cutting in two planes; the decoration consists of interlaced circles, each containing an animal or bird and, on the caskets, human figures. Similar decorative treatment appears in Muslim Spain, but an attribution to Sicily or southern Italy—whose Norman rulers are known to have employed Muslim craftsmen—is likely, as it presents elements common to the oliphants and caskets manufactured in southern Italy.

A group of ivories that has given rise to much discussion consists of painted and gilded caskets (and combs and crosiers). Many of these found their way to the treasuries of European churches in the Middle Ages, where the caskets were used as reliquaries or pyxes and the combs for liturgical purposes (i.e., used in the ceremony consecration of a bishop). All have certain common stylistic and technical features. Many caskets have inscriptions around the rim of the lid in either Kufic or Naskhi script, generally containing benedictory phrases addressed to the owner. [*See* Arabic.] Occasionally, there are verses of a love poem, suggesting that these particular examples were bridal caskets for jewels and trinkets. The painted decoration includes floral motifs, birds, falconers, and images of Christian saints. Unfortunately, no surviving inscription contains a date, or the name of either the maker or owner.

While it is generally agreed that the painted ivories can be assigned to the twelfth or thirteenth centuries, opinions differ regarding their place of origin; on stylistic grounds they have been variously attributed to Persia, Mesopotamia, Syria, Egypt, Spain, and Sicily. The decoration of one distinctive group contains interlaced star and geometric ornaments so similar to those found in the art of Nasrid Granada (Spain) that their attribution to a fourteenth-or fifteenth-century Granada workshop seems certain. For the others, however, an attribution to twelfth-century Sicily seems most likely—given the close stylistic connection with the painted pottery of Norman Sicily and with the greatest surviving monument of Fatimid painting, the ceiling of the Cappella Palatina in Palermo.

By far the most remarkable examples of medieval Islamic craftsmanship are the carved ivories made in Muslim Spain that include masterpieces to rival the best Byzantine and Western ivories. Unlike most of the ivories discussed so far, these were produced under royal patronage and include some objects made for presentation to royal personages. They belong to the years of the caliphate of Cordoba, having been produced first in Cordoba itself and then in Madinat az-Zahra'. The three finest examples are two cylindrical pyxes, one, dedicated to al-Mughira, brother of al-Hakam II and dated to AH 357/968 CE (in the Louvre Museum), and the other, dedicated to Ziyad ibn Aflah and dated to AH 359/970 CE (Victoria and Albert Museum), and the casket in the cathedral of Pamplona, dedicated to a son of al-Mansur and dated to AH 399/1008 CE. Scenes include the prince with attendants, servants, and musicians; huntsmen with falcons; men performing rustic tasks; and animals attacking their prey; in one case an elephant carrying a litter is represented. The use to which these domed cylindrical pyxes were put is suggested by an example owned by the Hispanic Society in New York City (D752, c. 966 CE): it bears an inscribed poem identifying it as a container for musk, camphor, and ambergris, which were considered precious substances, on a par with large amounts of gold or silver.

Plentiful amounts of ivory were available in the Mediterranean area from the fourth to the sixth centuries; the supply was cut short, however, by the Persian wars (first half of the seventh century) and the Islamic conquest of Spain (711 CE). An ample flow appears to have been restored by the ninth and especially the tenth centuries. By the middle of the tenth century, it became abundant in Spain, as a result of flourishing trade contacts with North Africa. The main source of ivory in the Islamic period was probably East Africa, also the greatest ivory-producing area in the Middle Ages. Surviving Islamic ivories seem to be of elephant tusk.

Walrus ivory was used for the handles of daggers. Hippopotamus ivory is more elastic and compact than elephant ivory and, in general, is less yellow. It is also harder, and therefore more difficult to work, but it is more suitable for small objects, such as knife handles. A hippopotamus ivory hoard has been discovered in Gao (Mali), that was destined for export, most probably to Islamic Spain. It was found in an archaeological context that dated it to the eleventh century.

The range of application for bone carving exceeded that for ivory. It was probably worked by the same craftsmen, and bone fragments (e.g., plaques attached to caskets and boxes) have often been mistaken for ivory. Bone, usually from cattle and pack animals, was used for buttons, knobs, and struts, as well as for tools, especially in the weaving trade. It was also used to craft gaming pieces, containers, and bird rings. [*See* Jewelry.] Ornamental handles for fans or flyswatters from many different periods have been found in excavations in Constantinople (Gill, 1986).

Similarly eclectic uses for bone have been found in Islamic-period contexts, and it sufficient here to refer to the Egyptian finds at Karanis and Fustat (which also included Coptic material; see Scanlon, 1976), among which were found figurines, combs, weaving tools, gaming pieces, draughtsmen, and cubic and rectangular dice.

Except for its sporadic use in intarsia decoration, shell does not appear to have been a mainstream material in either the Byzantine or the Islamic period.

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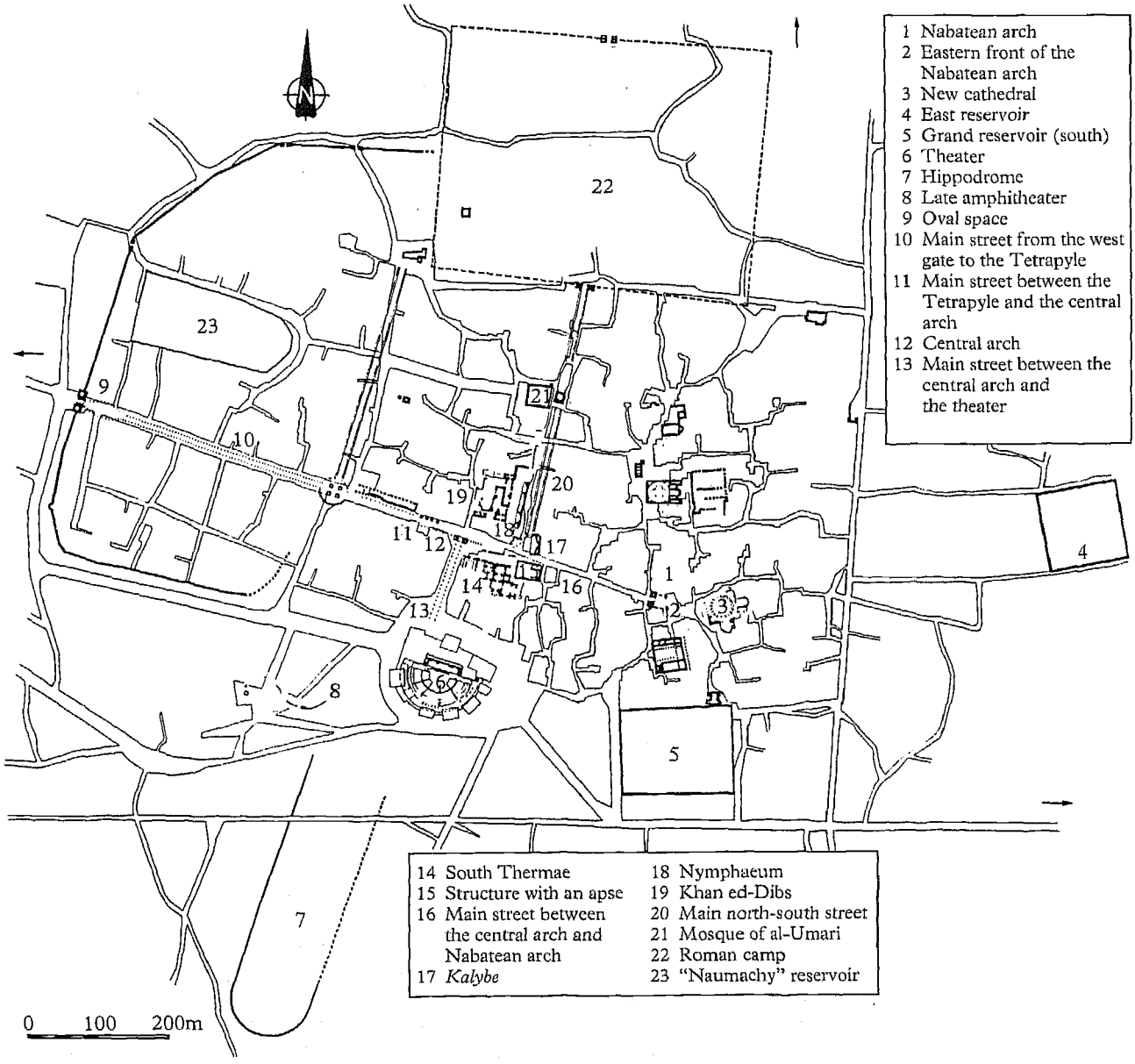
ANNA CONTADINI

BOSRA, site located to the south of the basalt plateau in the Hauran province of Syria (32°31′ N, 36°29′ E), 42 km (26 mi.) east of Der'a and approximately 10 km (6 mi.) from the Jordanian border. Although the population has been reduced in recent centuries, there is no doubt that the city has been inhabited continuously since the Nabatean-Roman period. Before that period, it is uncertain whether the city is to be identified with a site named *bwdznw* in the inscription on a statuette from Saqqara from the late twelfth dynasty; with BḌN in a list engraved on the Karnak pylons; with Busruna in two Amarna texts; or with bḍrn on a geographic list in the funerary temple of Amenophis III (1408–1372 BCE). The site has sometimes been confused with Bosora in Moab, which may be the one cited in *Deuteronomy* 4:43, and with

Bosora (Buṣeirah) in Edom. The present-day Arab name *Bōṣra* corresponds exactly to the Nabatean and Palmyrene written form *BṢR'*, from the root *bāṣar*, "to make inaccessible," when defining, for example, a fortress. The *t* in the Greco-Latin form *Bostra* seems designed to facilitate pronunciation.

The excavations by the American University of Beirut (1980–1984) in the northwest area of the city have attested the occupation of the city from the Early Bronze Age onward. Judging mainly from the ceramic materials found there, Helga Seeden (1986) concluded that the site was first inhabited toward the beginning of the second millennium BCE. It was not enclosed by a fortification wall, and was situated in the vicinity of a perennial spring, which explains settlement in a region where springs are very rare. Old aerial photographs of the area to the west of Bosra indicate the boundaries of what may have been the Bronze Age settlement. At least one building, constructed on a stone foundation, has been identified at the very edge of the settlement; remains of domestic and agricultural activity, such as ceramics, basalt utensils, and animal bones, were recovered. The excavations conducted by the Franco-Syrian mission since 1981 have revealed traces of older occupation at the site. On the edge of the South Thermae (see plan, no. 14)



BOSRA. *Plan of the city.* (Courtesy J. M. Dentzer)

and of the main east–west street (nos. 10–11, 16) of the city sherds out of context dating to EB I and lithic material were discovered. Near the Nabatean arch (no. 1), ceramics also out of context date to EB II–III and a few sherds to the Iron Age.

In 162 BCE Judas Maccabeus, coming to the aid of the site's Jewish minority, destroyed the city of Bosor in Gilead (*1 Mc.* 5:26, 28). The identification of Bosor as Bosra is certain, but no trace of this period has been found yet at Bosra.

Bosra and the surrounding region were under the authority of the Nabatean dynasty from at least the beginning of the first century BCE (Aretas III controlled Damascus between 84 and 72 BCE). Under Rabel II's rule (70–106 CE) at the latest Bosra becomes the second capital of the Nabatean kingdom. The Franco-Syrian excavations at the Nabatean arch (plan, no. 2) and in the area to the east of it show the importance of the Nabatean urbanistic activity in Bosra. The arch was conceived as a structure connecting two areas of the town oriented toward different directions. Its western front (no. 1) has the same orientation as the main street whereas the east front (no. 2), which bears two Nabatean half columns, matches the chief orientation of the eastern part of the city. At the same time, the western part of the city, which was already entirely occupied as attested by the Nabatean ceramics found in many places within and beyond the city, must also have been reorganized.

About 100 meters east of the Nabatean arch, the Franco-Syrian mission discovered remains of a large enclosure wall (plan, no. 3) with pilasters, decorated with fine limestone slabs and stucco and dated to the Nabatean period. In front of it a stylobate belonged to a portico. These structures follow the alignment of the eastern front of the structure. It is tempting to explain these structures as parts of a vast sanctuary (temenos) whose architectural elements, for example the Nabatean capitals, were reused in the Christian church built above it. Dushares, god of the Nabatean dynasty, associated with A'ra, a local god, was called by inscriptions "the god of Rabel, our Lord, who is at Busra."

Architectural blocks sculpted in the Nabatean style were discovered in the center of the city. So it is possible to imagine a Nabatean temple not far from the crossroads near the nymphaeum (no. 18).

The role played by Bosra during the period of the Nabatean kingdom explains why, after the kingdom's annexation by Rome in 106 CE, it became the capital of the Provincia Arabia, the headquarters of the camp (plan, no. 22) of the Third Legion Cyrenaica (at the northern end of the city), and the hub of a network of roads, the most important of which was the Via Trajana Nova. The city, to which Alexander Severus gives the status of colony, develops impressively: at least four of the main streets were decorated with ionic capitals of Severan style. Nearby all the buildings were of basalt but in the street (no. 13) that led from the central arch (no. 12) to the theater (no. 6) limestone was used. In the main east–west (no. 11) and in the north–south street (no. 20) porticoes and shops were built at least partly above cryptoporticoes. The ends of the east–west main street and intersections were marked by arches or a tetrapyle; at the western end was an oval-shaped open space (no. 9). Among public buildings the best preserved is the theater constructed entirely on vaulted substructures, with an elaborate system of passageways. The *frons scenae* was completed in the Severan period. Recently an amphitheater (no. 8), probably from a later, not yet determined period, was excavated, as the hippodrome (no. 7) farther south. The two huge thermae in the center of the city had vaulted or domed roofings made of volcanic scoria concrete. In the "South Thermae" (no. 14) the big bay windows were closed with double glass partitions. The rooms were initially arranged on one line; later, in the third–fourth century, the bath was extended on both sides of these rooms in order to allow a symmetrical circulation. A part of it was still in use in the Umayyad period. The so-called Khan ed-Dibs (no. 19) was a second bath complex created with a symmetrical plan. A temple of Zeus Hammon, dedicated to the tutelary god of the Third Legion Cyrenaica is known from an inscription (IGLS, XIII, 9107). An other inscription found in the vicinity of the Nabatean arch is the dedication of a temple to Rome and Augustus (IGLS, XIII, 9143). Further cults are mentioned in inscriptions.

The lower front of the so-called *Kalybe* (no. 17), excavated by the Directorate of Antiquities of Bosra in 1994, was arranged as a monumental fountain. The real use of the so-called nymphaeum (no. 18), which faces it, is not yet proved.

In the surroundings of Bosra the Franco-Syrian mission discovered remains of several antique organized areas of land (gardens near the city, fields farther away). One of these cadasters, based on square units (705 m) must date to the Roman period.

A period of turmoil explains the restoration of the city's ramparts in about 249–250 CE. Their layout is still largely hypothetical, particularly in the southern part of the city, where they were subsequently dismantled to furnish construction materials for the Islamic citadel. In fact, an incursion of Palmyrene troops under Zenobia's direction probably damaged the Temple of Zeus Hammon then, which was restored in about 273–275 CE.

The Christian era saw a new phase of construction. Directly above the Nabatean "temenos" (plan, no. 2) a fourth–fifth-century structure, of which only the mosaic floors remain, was built; it was excavated by the Franco-Syrian mission. In turn, it was overbuilt by a church complex that could be a cathedral, similar to the Church of Sts. Serge, Bacchus, and Leonce but even larger (about 44 × 62 m).

These two churches had a similar plan: a circular central space inscribed in a square, with four exedrae in the corners, and the sanctuary and subsidiary rooms on the east.

In the Byzantine period urban maintenance and improvement continued. An inscription dated to 517 mentions the paving of the portico bordering the street (plan, no. 13) along the south thermal. A large monumental access leading to the eastern palaestra of the south thermae (no. 14) passing under a structure that has an apse (no. 15; church?).

Bosra was the first Byzantine city conquered by the Islamic armies (634 CE) and the first Syrian city to receive a copy of the Qur'an. It occupies a place of eminence in the history of the birth of Islam because the prophet is said to have met the monk Bahira there. The American University excavations in the northwest part of the city have uncovered a farm from the Late Umayyad era. The porticoes of the north–south street (plan, no. 20), excavated in 1994 by the Bosra Directorate of Antiquities, have been overbuilt by crossing walls to a *suq,* probably from the eighth century. An eleventh-century fortress built in and around the Roman theater became the heart of the medieval city. A group of religious buildings (the mosques of al-Umari, al-Mibrak, al-Khidr, and the *madrasah* al-Dabbagha), dated between the Umayyad period and the thirteenth century, is still standing. One of the last major buildings from the Mamluk period is the *hammam* Manjak, recently restored by a German team.

[*See also* Nabateans.]

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JEAN-MARIE DENTZER

Translated from French by Elizabeth Keller

BOTTA, PAUL-ÉMILE (1802–1870), French consul at Mosul, in Iraq, credited with discovering Assyrian civilization and thus opening the way for the discipline of Mesopotamian archaeology. Born in Turin, Italy, he joined his father, the historian Carlo Botta, in France, where he studied medicine. It was as surgeon on the ship *Héros* that Botta first traveled around the world (1826–1829). He subsequently traveled through Lebanon, Egypt, Senaar, and Yemen, where he perfected his Arabic and gathered collections for the Museum of Natural History in Paris. Following his appointment to Mosul, he began his search for Nineveh on the instigation of the secretary of the French Asiatic Society, Julius Mohl. Botta's first excavations at Kouyunjik were unsuccessful, but in March 1843, on the site of Khorsabad, he discovered the first sculptures of the palace built for the Assyrian king Sargon II in his capital Dur Sharrukin between

717 and 706 BCE. In two excavation campaigns (1843, 1844), with the collaboration of the painter Eugène-Napoléon Flandin, Botta unearthed the greater part of the building. The best-preserved sculptures were transported to Paris to constitute at the Louvre the first Assyrian museum in the world, inaugurated by King Louis-Philippe on 1 May 1847. The results of Botta's work were recorded in the imposing publication *Monument de Ninive découvert et décrit par M. P. E. Botta, mesuré et dessiné par M. E. Flandin* (5 vols., Paris, 1846–1850). Botta pursued his career as a consul in Jerusalem and then in Tripoli in Libya. Exploration of Khorsabad was resumed in 1852–1854 by Botta's successor at Mosul, Victor Place (1815–1875), who completed the excavation of the palace and drew up the map of the city.

The lapidary description the novelist Flaubert made of Botta during his short stay in Jerusalem in 1850: "Man in ruin, man of ruins in the city of ruins; denies everything and gives me the feeling of hating everything except what is dead" is regrettably severe for a man who was austere, timid, and solitary and whose openness of spirit, honesty, and generosity were praised by all who came into contact with him.

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ELISABETH FONTAN

BOUQRAS, Neolithic village site located in Syria on the right bank of the Euphrates River, just below its confluence with the Khabur River (35°5′12″ N, 40°23′50″ E). Bouqras was the first Neolithic settlement to be identified in the Euphrates valley. It was discovered by a Dutch geomorphologist, Willem J. van Liere. He and a French archaeologist, Henri de Contenson, under the auspices of the Centre National de Recherche Scientifique, exacavated at Bouqras briefly in 1965 to determine the sequence of occupation and to learn something of its material culture and economy. More extensive excavations were conducted from 1976 to 1978 by a Dutch team led by P. A. Akkermans and J. J. Roodenberg of the Universities of Amsterdam and Groningen. Their most significant contribution was to expand greatly what is known of the site's layout.

Bouqras was an oval mound nearly 3 ha (7 acres) in extent and 5 m deep. De Contenson and van Liere dug two trenches through the deposits at its center that revealed a sequence of three phases of occupation (Contenson, 1985, p. 336). No pottery was found in the two earliest phases, I and II, but potsherds were recovered in phase III; thus, it appears that occupation at Bouqras spanned the introduction of pottery to this region. The Dutch excavators defined a sequence of at least ten architectural episodes that could be grouped in four phases, numbered from surface to subsoil. Radiocarbon dates indicate that the village was inhabited from about 6,400 to 5,900 BP in radiocarbon years.

The village was composed of tightly packed, rectangular, mud-brick houses, grouped around open yards and along streets (Akkermans et al., 1983, figure 3). The houses were similar in size and plan, suggesting that there were no great differences in status among the inhabitants. The artifacts from Bouqras were unusually varied for a site of its age, attesting to the versatile craftsmanship of its inhabitants. Among them were figurines of human females and animals made of sun-dried clay, a wide variety of bone tools, and numerous small stone dishes and bowls. Chipped-stone tools, more than 20 percent of which were made of obsidian from eastern Turkey, were ubiquitous.

Bones of domesticated sheep and goats and some wild animals recovered in the 1965 campaign persuaded the excavators that the inhabitants had been herdsmen and hunters (Contenson, 1985). Seeds of domesticated wheats, barley, lentils, and peas found in the more recent excavations indicate that the people of Bouqras had been farmers and herders, although they had still engaged in some foraging for wild foods. Farming cannot be conducted successfully at Bouqras today without the aid of irrigation because the rainfall is too low. Either the climate was a little moister then, or the inhabitants had already developed simple irrigation techniques.

Soon after the development of agriculture in the Levant, farmers expanded their area of settlement eastward, as far as the Euphrates. Bouqras flourished for several centuries, just as this phase of expansion reached its limits. The village attests to the precocious success of the new way of life and the considerable agricultural skills of its inhabitants.

[*See also* Agriculture.]

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A. M. T. MOORE

BRAK, TELL, site located near Wadi Jaghjagh on the Upper Khabur plains, one of the largest ancient mounds in northeastern Syria, measuring 43 ha (98 acres) in area (c. 800 × 600 m) and 45 m above plain level (36°46′ N, 41°00′ E). While the Upper Khabur triangle is known for its agricultural productivity, Brak's location in the relatively dry southern margins indicates that its importance lay in its strategic position: it served as an entry point onto the Khabur plains from the southeast, controlling access from the Sinjar region and—ultimately—southern Mesopotamia.

Current evidence strongly suggests that the ancient name of Tell Brak was Nagar (Nawar). Excavations of third-millennium levels yielded a clay bottle stopper with the inscription *Na-gàr*^{ki}, and a seal impression from the 1937–1938 excavations (see below) in the Aleppo Museum is inscribed with the name of Talpuš-atili, "sun of the land of Nagar." Finally, a tablet from the Mitanni palace (see below) refers to reeds of "Nawar in the province of Ta'idu."

In 1937 and 1938, Max Mallowan conducted three seasons at Brak under the auspices of the British School of Archaeology in Iraq, excavating the Eye Temple and the Naram-Sin "palace." Excavations were resumed in 1976 by David Oates of the Institute of Archaeology, University of London, who, together with his wife Joan Oates, conducted the fourteen seasons (1976–1993) responsible for the majority of what is currently known of the site's history and character. In 1994 and 1995, Roger Matthews directed excavations there for the British School of Archaeology in Iraq.

Ubaid Beginnings and Uruk-Period Urbanization. As a result of the formidable depth of deposit at Brak, virgin soil has yet to be reached. The earliest levels excavated, dating to the sixth millennium, derived from deep soundings in area CH in the southern part of the site and yielded later Ubaid ceramics. Deposited above these were Early Uruk-period materials (late fifth/early fourth millennia), including Gawra XI–IX type stamped and incised pottery and clay "hut symbols," associated with the niched facade of a probable temple.

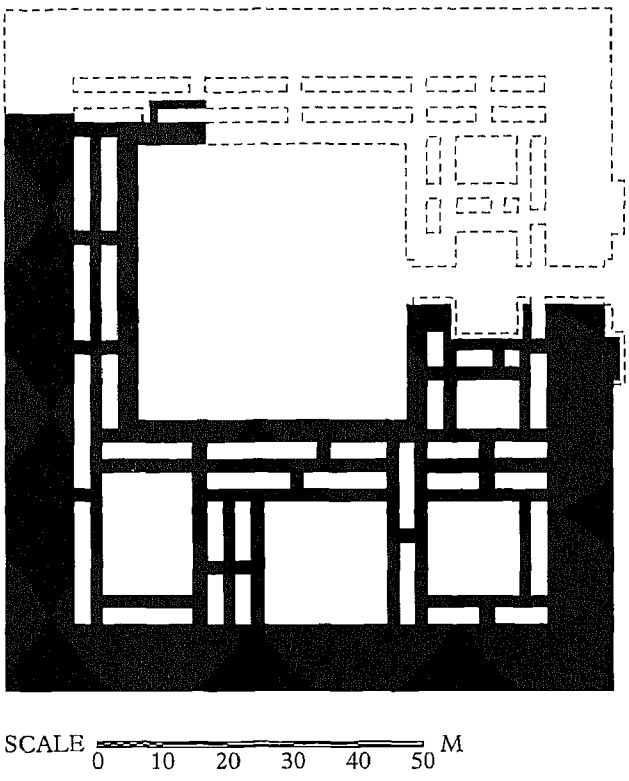
The subsequent era, the mid to late fourth millennium, was of particular importance in the history of Tell Brak. Judging from the distribution of surface sherds, the entire site was occupied, in addition to a set of smaller surrounding settlements. Moreover, it is in this phase that the relationship of Brak with southern Mesopotamia first comes into sharp focus. The Eye Temple, so-called because of its limestone plaquettes with eye images, had southern characteristics in its tripartite plan and in its colored clay cone and inlaid stone rosette decoration. [*See* Mosaics.] In area TW, the earliest excavated architecture was built of Riemchen (a southern Mesopotamian style of small bricks that are square in section) and contained southern Mesopotamian-style Middle Uruk pottery as well as a local chaff-faced ware. In the succeeding level more Riemchen architecture contained southern Late Uruk pottery; a final Riemchen phase yielded Jemdet Nasr painted pottery, a rare find outside southern Mesopotamia.

In addition to pottery and architectural characteristics, many other aspects of Uruk southern Mesopotamian material culture have emerged from Brak, including cylinder seals, a clay tablet with numerical notations, and two pictographic tablets in an unusual style. The significance of southern material culture at Brak, as well as Brak's expansion to full-fledged urban size, remains to be fully understood. One view identifies Brak as a southern Mesopotamian "colony" controlling the route to the copper mines of eastern Anatolia; an alternative perspective suggests that local elites were emulating the prestigious styles of southern Mesopotamia in order to reinforce their own status and power. [*See* Colonization.]

Reurbanization and Akkadian Conquest. In the Ninevite 5 period (early third millennium), it appears that Brak did not have the extensive size of the preceding period, and no temples or other public structures have yet been discovered. However, by the mid-third millennium, Brak had again achieved imposing urban dimensions and was probably the political and economic center of a prosperous state. This period ended with a major destruction evident in the burned architecture of five excavation areas (CH, ER, DH, AL, ST), probably to be attributed to the Akkadian rulers of southern Mesopotamia. [*See* Akkadians.]

The Akkadian conquerors made Brak an administrative center for the control of the Khabur plains. To judge from the cuneiform documentation, the Akkadian occupation occurred in later Sargonic times—during the reigns of Naram-Sin and Sharkalisharri. The Naram-Sin palace (95 × 90 m in area, with outer walls 9 m thick), whose association with Naram-Sin was established via stamped inscriptions on mud bricks, was probably a storehouse and administrative locus (see figure 1). Major Sargonic building projects were also revealed in areas FS and SS, both of which included bent-axis temple complexes. The area SS temple produced a calcite figure of a recumbent human-headed bull, perhaps to be associated with the sun god Shamash. Both temple complexes were abandoned, after which they were filled in and provided with ritual deposits including, in the case of area SS, a number of donkeys. After a brief reoccupation, the Akkadian settlement at Brak suffered a fiery destruction.

Late Third/Early Second Millennia BCE. After the Akkadian occupation, the site was reoccupied and the Naram-Sin palace rebuilt. In this period, Brak evidently functioned as one of the capitals of the Hurrian kingdom of Urkeš and Nawar. [*See* Hurrians.] By the early second millennium BCE, however, the southern part of the site was abandoned. Relatively little documentation has been retrieved for the early second millennium BCE thus far, but evidence of defensive architecture has been obtained, as well as a vaulted shrine.



BRAK, TELL. Figure 1. *The palace of Naram-Sin.* (After Mallowan, 1947, plate LX)

Mitanni Period. In its last period of occupation, Brak was a major center of the Mitanni Empire. Excavations in area HH, on the highest point of the tell, have revealed a residential fortress-palace and adjacent shrine. The palace has produced the oldest extant Mitanni-period text written in Hurrian, as well as legal texts of the time of kings Artaš-ummara and Tušratta. From these contexts also came ivory and wood furniture components, a unique stone statue, and elaborately decorated vessels of glass—a technology apparently first developed in the Mitanni heartland. [*See* Glass.] The palace was destroyed in the thirteenth century BCE, most probably by the Middle-Assyrian kings; Brak itself was abandoned by 1200 BCE.

[*See also* British School of Archaeology in Iraq; Mitanni, *and the biography of Mallowan.*]

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GLENN M. SCHWARTZ

BREASTED, JAMES HENRY (1865–1935), the father of American Egyptology. Born in Rockford, Illinois, Breasted received a B.A. from Northwestern (now North Central) College. He then successfully completed a program at Chicago College of Pharmacy, becoming a registered pharmacist in 1886. A personal call to the ministry prompted Breasted to enter the Congregational Institute (now Chicago Theological Seminary), where he excelled in Hebrew. He launched his career as an Orientalist when he decided to continue his studies at Yale University under William Rainey Harper, a brilliant linguist. Having received his M.A. in 1892, Breasted resolved to study under Adolf Erman of the University of Berlin, who held one of the few chairs in Egyptology. In 1894, Breasted received his Ph.D., having written his dissertation on the sun hymns of Akhenaten (*De Hymnis in Solem sub Rege Amenophide IV Conceptis*).

His first trip to Egypt came after his graduate work when he spent his honeymoon there in 1894, undertaking to collate inscriptions for the preparation of the *Wörterbuch der Aegyptischen Sprache,* the great German dictionary of ancient Egyptian language. In subsequent years (1899–1901 and 1905–1907), Breasted continued to copy and collate inscriptions on objects in European museums as well as on monuments in Egypt, contributing significantly to the *Wörterbuch*'s publication. Breasted made significant Egyptological discoveries on these expeditions, including a temple built by Akhenaten at Sesebi in Nubia, and he compiled a large collection of historical inscriptions.

In 1894 Breasted was appointed by the University of Chicago to the first chair of Egyptology ever in the Western Hemisphere. At Chicago, Breasted began his life-long teaching career. William F. Edgerton, Harold H. Nelson, Caroline Ransom Williams, and John A. Wilson were among his most distinguished pupils.

Breasted's collection and translation of historical inscriptions provided an enormous corpus of information for his next two projects. The first, *A History of Egypt* (1905), was a cultural history of ancient Egypt that combined a chronological outline with information about lifestyle. Subsequently, he published five volumes entitled *Ancient Records of Egypt* (1906), a translation of all "historical" texts available to Breasted. Although *Ancient Records* is still in use, the

History is outdated. Breasted continued to publish regularly, often producing popular volumes. Two of his publications have lasting scholarly value. A series of lectures for Union Theological Seminary in New York was published as *Development of Religion and Thought in Ancient Egypt* (1912). In 1930, *The Edwin Smith Surgical Papyrus* appeared. This volume includes a translation of a papyrus that contained treatments for head and chest injuries. Breasted's background in pharmacology as well as his remarkable philological skills resulted in a masterful treatment of this text.

Throughout his career, Breasted's professional goals and his research were dedicated to understanding the connections between the ancient civilizations of Egypt and the Near East and earlier cultures and later Western civilization. He saw these three cultures linked evolutionarily, convinced that Western culture owed a great debt to these early civilizations. This belief resulted in his lifelong conviction that every effort should be expended to preserve and understand them.

In 1919 as a result of a generous gift from John D. Rockefeller, Jr., Breasted formalized his plans for the Oriental Institute at the University of Chicago. The institute's overall direction was different from more traditional institutions because Breasted intended the Oriental Institute to be a place in which information gathered by all disciplines working in ancient Egypt and the Near East would be collected. The projects that Breasted instituted as director (1919–1935) demonstrate the breadth of his interests and interdisciplinary concerns: developing the Assyrian dictionary, copying the *Coffin Texts* in the Cairo Museum, recording inscriptions at Karnak and Medinet Habu temples in Upper Egypt (these endeavors resulted in the permanent establishment, Chicago House, in Luxor), surveying early human remains in the Nile Valley, and excavating Megiddo in Palestine and Alişar in Anatolia.

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DIANA CRAIG PATCH

BRITISH INSTITUTE AT AMMAN FOR ARCHAEOLOGY AND HISTORY. British scholars and academic institutions have been conducting archaeological research in Jordan since the nineteenth century. The work of such pioneers as Claude R. Conder, George and Agnes Horsfield, and Gerald Lankester Harding was followed by that of Kathleen M. Kenyon, Diana Kirkbride, Peter Parr, Crystal-M. Bennett, and many others. In 1978, largely through the efforts of Dame Kathleen Kenyon and Crystal Bennett, the British Academy founded the British Institute at Amman for Archaeology and History (BIAAH).

The BIAAH sponsors, funds, and provides logistical support for British research on the archaeology, history, languages, ethnography, geography, and natural history of Jordan, Syria, Lebanon, and Saudi Arabia. It publishes this research through the journal *Levant* (London, 1969–) which it sponsors jointly with the British School of Archaeology in Jerusalem, and contributes major reports to the series British Academy Monographs in Archaeology. The BIAAH also presents the work of British research in Jordan through lectures, day-schools, conferences, and exhibitions.

The Institute in Amman provides accommodation and logistical support for visiting individuals and teams. Its library, photographic archive, and reference collections of pottery and animal bones are open to all scholars and students.

The BIAAH sponsors numerous archaeological, epigraphic, paleoenvironmental, ethnographic, historical, and other research projects in Jordan and Syria, covering all periods from the prehistoric to the Islamic. These have included excavations at prehistoric sites in and around Azraq, at Tell Iktanu, Tell Hammam, and Tell esh-Shuna (North), in the Jordan Valley, at the Islamic site of Khirbet Faris near Kerak, and at Tell Nebi Mend/Qadesh and Jerablus-Tahtani in Syria. Archaeological surveys have been undertaken in the basalt desert and Edom; and epigraphic surveys in the basalt desert and in Wadi Ram. In recent years the BIAAH has also sponsored much ethnographic and ethnoarchaeological work.

Membership of the BIAAH is open to all. Members receive *Levant* and/or the *BIAAH Newsletter*, have priority in the use of the institute's hostel and equipment and are charged at a reduced rate.

M. C. A. MACDONALD

BRITISH INSTITUTE OF ARCHAEOLOGY AT ANKARA. In 1947, the British Institute of Archaeology at Ankara was founded largely on the initiative of the noted archaeologist John Garstang. It is the only foreign archaeological mission established in Turkey's capital, rather than in Istanbul. The institute undertakes research into Anatolian archaeology, folklore, and anthropology in Turkey and collaborates with Turkish universities in organizing international colloquia. It is a center for the study of Turkey's history, art, archaeology, architecture, and kindred subjects.

Between 1968 and 1990, the institute cooperated with the antiquities authorities in rescue work when development plans for southeast Turkey threatened to drown hundreds of archaeological sites. An excavation was begun at Maltepe-Mut, near Silifke, on the Mediterranean coast, in 1994. The site, an important Hittite regional center, will be lost under the waters of a dam to be constructed on the Göksu, ancient Calycadnus.

The institute also sponsors and offers financial support to survey projects. These include the detailed survey of Roman roads and milestones in Asia Minor; surveys of Hellenistic- and Roman-period remains at Ariassos in Pisidia, at Balbura in Lycia, and at Amasra and Canayer near Trabzon in Pontus; and financial assistance to the excavations at Amorium in Phrygia. The institute's interest in the medieval castles of Anatolia continues in western Turkey, where it sponsors a survey near Nazilli. Research projects carried out in museums and collections include studies into ancient coins and glass, prehistoric pottery, and unpublished material from old British digs, notably at Mersin, Sakçagözü, and Tell esh-Sheikh.

The institute's archaeological library is comprehensive, including Anatolian archaeology and epigraphy, journals, sherd collections from surface survey work, a photographic archive, and perhaps one of the best bone and seed collections for the Near East. The epigraphic squeeze collection (of Neo-Hittite, Neo-Assyrian, Greek, and Latin inscriptions recorded in Turkish museums and on surveys) is the only known collection of its kind in Turkey.

The institute's annual journal, *Anatolian Studies*, first appeared in 1951 (London). A variety of occasional monographs has been published over the years, notably in the British Archaeological Reports series, now replaced by Oxbow Monographs. The Institute contributes to the Oxford University Press/British Academy joint-publication scheme.

[*See also the biography of Garstang.*]

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DAVID H. FRENCH

BRITISH INSTITUTE OF PERSIAN STUDIES. Founded in 1961, the British Institute of Persian Studies served as a very active academic center for field research in Iran until the late 1970s. The journal of the institute, *Iran*, first appeared in 1963 and, although the institute's premises in Tehran are no longer formally open, it continues to be published annually. The institute's first director was David Stronach, and the founding president was Max Mallowan. Michael Rogers has been president of the governing council since 1993.

During the 1960s and 1970s, the institute was open to visiting scholars from many countries, often working in varied disciplines, including anthropology, history, and religious studies. It may be best known, however, for the excavations conducted in its name. In chronological order, they include Yarim Tepe on the Gurgan plain (Stronach, early 1960s), Pasargadae, the capital of Cyrus the Great (Stronach, 1961–1963); the prehistoric site of Tall-i Nokhodi (Clare Goff, 1961–1962); the Persian Gulf port of Siraf (David Whitehouse, 1965–1973); the Median site of Tepe Nush-i Jan (Stronach, 1967–1977); the largely Parthian site of Shahr-i Qumis (John Hansman and Stronach), 1967–1978); the late Parthian fortress of Qal'eh-i Yazdigird (Edward Keall, 1976); and the Early Islamic site of Sirjan (Antony Hutt, 1970).

The institute's library continues to be augmented and maintained and its current premises, in Ghulak, in north Tehran, were recently refitted.

[*See also* Pasargadae; *and the biography of Mallowan.*]

KIM CODELLA

BRITISH SCHOOL OF ARCHAEOLOGY IN EGYPT. Founded in 1905 by Sir William Matthew Flinders Petrie, the BSAE was dependent on the Egyptian Research Account (ERA), another organization that Petrie had launched in 1894 after appealing for funds to employ one of his students as a fieldworker in Egypt. Petrie visualized the transformation of the ERA into a permanent British school in Egypt. The BSAE never had premises there, however, and was run from University College London, where annual exhibitions of the school's finds were held. The BSAE had more ambitious aims than the ERA because it needed to support both Petrie's and his students' work in Egypt. Apart from the Egypt Exploration Fund (later Society) the BSAE

was the major British excavating organization in Egypt from its foundation until 1926. In that year Petrie transferred its activities to Palestine, in the belief that he and his coworkers had traced by fieldwork and exploration the main outlines of civilization in the Nile Valley, and the time was ripe to "proceed with the collateral search on the Egyptian remains in the South of Palestine—Egypt over the Border" (Drower, 1985, p. 364). The constitution of the school accorded with these aims because it had been founded "to work in any country that has been subject to Egypt, and so to deal with all branches of the Egyptian civilisation" (Drower, 1985, p. 364). After Petrie's death in 1942 the school, directed by Lady Petrie, ceased fieldwork and was concerned more with publication of field reports. The school terminated in 1954. Its crucial role in the study of Egyptian culture is clear from the large number of publications that bear its imprint. Petrie reckoned that about 100 students passed through the school, and that about half, including Guy Brunton, Reginald Engelbach, and John Garstang, found permanent positions in Egyptology or related disciplines.

[*See also the biography of Petrie.*]

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See Margaret S. Drower, *Flinders Petrie: A Life in Archaeology* (London, 1985), for an authoritative biography of the founder of the British School of Archaeology in Egypt. A list of the school's publications (1906–1953), of which Petrie was author or contributor, is given on pages 467–469. The publishing history of the school and the numbering of volumes in the series is somewhat complicated. For additional lists, see Ida M. Pratt, *Ancient Egypt: Sources of Information in the New York Public Library* (New York, 1925), p. 3; and Pratt, *Ancient Egypt, 1925–1941: A Supplement to Ancient Egypt* (New York, 1942), p. 4.

GEOFFREY T. MARTIN

BRITISH SCHOOL OF ARCHAEOLOGY IN IRAQ.

Founded in 1932 as a memorial to Gertrude Bell, the celebrated explorer and archaeologist who was first director of antiquities in Iraq, "to encourage, support and undertake the study of and research relating to the archaeology of Iraq and neighbouring countries, including excavation," the British School of Archaeology in Iraq has, since that time, supported almost all British archaeological research in Iraq and Syria east of the Euphrates River. The school's first director was Max Mallowan, who excavated at Arpachiyah, Chaghar Bazar, Tell Brak, and, after World War II, at Nimrud.

The School's most important excavations were at Nimrud, both on the citadel and in Fort Shalmaneser, which was investigated by David Oates, who succeeded Mallowan as director in 1961. The most spectacular discoveries were the foundation stela of Ashurnasirpal II and magnificent collections of carved ivory. From 1964 to 1971, Oates excavated the important second-millennium BCE site of Tell er-Rimah and in 1975 reopened Mallowan's excavations at Tell Brak in Syria. The next director was Diana Kirkbride, who investigated the important Neolithic site of Umm Dabaghiyeh. From 1975 to 1981 Nicholas Postgate was director and started his extensive exploration of the Sumerian city of Abu Salabikh. Beginning in 1977 the School was involved in salvage projects in Iraq: first in the Hamrin, then at Haditha, in Eski Mosul, and in the Northern Jezira. In the 1980s the BSAI embarked on a detailed survey of the Islamic site of Samarra and a reinvestigation of the site of Jemdet Nasr.

In addition to sponsoring excavations, the BSAI has supported other archaeological as well as Assyriological projects, through grants and annual fellowships. The results of research supported by the School are normally published in the journal *Iraq*. In addition, there are various series of monographs which offer definitive reports on excavations and other research. Subscribing members of the British School of Archaeology receive a copy of the journal as well as invitations to the lectures the school organizes.

During the sixty years it has been in existence, the British School of Archaeology in Iraq has played an important role in the development of Mesopotamian archaeology in Britain. Furthermore, scholars of many nationalities have benefited from the hospitality and assistance of the School and its staff in Iraq.

[*See also* Abu Salabikh; Brak, Tell; Eski Mosul Dam Salvage Project; Hamrin Dam Salvage Project; Jemdet Nasr; Nimrud; Rimah, Tell er-; Samarra; *and the biography of Mallowan.*]

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For details of the archaeological fieldwork conducted by the British School of Archaeology in Iraq, see M. E. L. Mallowan, *Twenty-Five Years of Mesopotamian Discovery, 1932–1956* (London, 1956), and John E. Curtis, ed., *Fifty Years of Mesopotamian Discovery: The Work of the British School of Archaeology in Iraq, 1932–1982* (London, 1982). For further information about the school's activities, see its journal, *Iraq*, published annually.

MICHAEL ROAF

BRITISH SCHOOL OF ARCHAEOLOGY IN JERUSALEM.

Founded in 1919 and modeled on its sister institutions in Rome and Athens, the roots of the British School of Archaeology in Jerusalem (BSAJ) are in the Jerusalem Literary Society of 1852 and the Palestine Exploration Fund (PEF) of 1865. Within a month of General Allenby's entrance into Jerusalem in December 1917, during Britain's conquest of Palestine, Sir Flinders Petrie was lecturing on Britain's responsibility to the antiquities of the countries coming under her control. The British Academy responded to an approach from the officers of the PEF and set up an organizing committee in May 1918 chaired by Sir Frederic Kenyon and with Sir Israel Gollancz as secretary. John Garstang was the school's first director, as well as the first director of the Department of Antiquities of the Gov-

ernment of Palestine. The early scholars became core members of the later antiquities service. The earliest government inspectors did their work from a register of sites prepared by the BSAJ's first assistant director, W. J. Phythian-Adams. The school's role was not limited to Palestine; one or two of the more promising students in Jerusalem were sent there to study the antiquities of Mesopotamia as well.

For several years in the 1920s, the British School in Jerusalem shared accommodations with the American School of Oriental Research (ASOR). Way House, near St. George's Cathedral, was home not only to the American library, but also to a museum that would become part of the founding collection of the Palestine Archaeological Museum (now the Rockefeller Museum). Early British hospitality was duly repaid when the Americans housed the British library from the early 1930s to the early 1950s, while first the French and then the museum stored British digging equipment. ASOR participated at Jericho under A. D. Tushingham in the 1950s, as did the École Biblique, under Père Roland de Vaux, in the opening seasons of the excavations in Jerusalem in the 1960s. Tushingham also participated in the Jerusalem excavations, representing the Royal Ontario Museum. By 1927 the Department of Antiquities, with Garstang briefly acting as its director, too, formally became the British school's major tenant, and the Americans moved to a home nearby. J. W. Crowfoot became director of the British school in 1927 and played an important role in fashioning its new character. The school's independence from its erstwhile partners proved financially precarious. In the 1930s a largely American-financed excavation assumed responsibility for Crowfoot's salary while he led the excavations at Samaria jointly with Harvard, the PEF, and the Hebrew University of Jerusalem. It was there that Kathleen M. Kenyon, fresh from her training under Sir Mortimer Wheeler in England, had her first digging experience in Palestine. By 1940, the school's work diminished considerably because of war, tension between P. L. O. Guy (who had become director in the mid-1930s) and the supervisory council, and the death of Sir Robert Mond, who was not only the school's first treasurer, but also its founding and principal benefactor.

In 1950, when Kenyon succeeded to the directorship of the school, plans were already underway to resume the excavation of Garstang's still-open trenches at Jericho. Like Garstang, she would combine her directorship and her leadership of its major excavations—at Jericho in the 1950s and in Jerusalem in the 1960s—with a vigorous academic role in England. Since the mid-1960s the school's directors (Basil Hennessy, Crystal-M. Bennett, John Wilkinson, and Richard Harper) have resided in Jerusalem. In the 1970s, the school concentrated its research on a survey of Mamluk Jerusalem, not just of the imposing facades on the roads leading to the Haram esh-Sharif, but of all its interior details. The survey has encouraged interest in restoration within the Muslim quarter. With the birth of its sister institute in Amman the Jerusalem school's role in excavations east of the Jordan River decreased. In the 1980s, the school excavated at the Crusader, Red Tower on the coastal plain, at Upper Zohar in the northern Negev desert (Late Roman/Early Byzantine), and at Belmont Castle, west of Jerusalem (a Crusader castle over a Byzantine village).

A concern with field methodology, with good training, and with accurate publications has been a continuous emphasis at BSAJ. The organization undertook a countrywide survey of medieval and Ottoman architecture in 1989, a major collaborative excavation at Tel Jezreel with the Tel Aviv Institute of Archaeology in 1990; and a wide-ranging study of Ottoman Jerusalem's Islamic monuments with the Waqf (religious trusts) Authority late in 1992. The *Palestine Exploration Quarterly* (*PEQ*) which had long been the vehicle for the school's quarterly reports. However, it launched its own journal, *Levant*, in 1969, now shared with the institute in Amman.

[*See also* British Institute at Amman for Archaeology and History; Palestine Exploration Fund; *and the biographies of Bennett, Crowfoot, Garstang, Guy, Kenyon, Petrie, and Wheeler.*]

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GRAEME AULD

BUILDING MATERIALS AND TECHNIQUES.

[*To survey the history, distribution, and role of building materials and techniques throughout the Near East, this entry comprises four articles:*

An Overview

Materials and Techniques of the Bronze and Iron Ages

Materials and Techniques of the Persian through Roman Periods

Materials and Techniques of the Byzantine and Islamic Periods

The first provides a general introduction that treats building

materials; the remainder treat the developments of particular historical periods.]

An Overview

Geography and topography affect the availability of construction materials and the methods by which they are utilized. In antiquity as well as in traditional construction methods still in use, clay bricks were the principal construction material in the alluvial valleys of Mesopotamia and Egypt, and a lack of forests compelled the Egyptians to develop sophisticated stone architecture as well. The variety of natural features in ancient Israel and Syria offered builders a choice of materials and generated assorted construction techniques.

The size of political groups and a community's level of technological competence were additional factors that influenced the use of natural materials. Large and centralized political organizations were capable of investing immense resources into constructing formidable fortifications, or of producing costly building materials like ashlar masonry. Affluent nations could overcome the shortage of local sources by importing materials from a great distance: ancient Mesopotamia, Egypt, and Israel imported cedar beams from Lebanon.

Each of the natural materials used in construction had advantages and disadvantages. Sophisticated builders were capable of combining materials to minimize the drawbacks of a single one. Archaeological data (Yeivin, 1954; Reich, 1992), supported by ethnographic evidence (Canaan, 1933; Dalman, 1942), indicate that the most common building techniques made use of wood, clay bricks, and different kinds of stones.

Wood. Tree branches are readily available in nature and are a relatively elastic construction material. The framework of a hut can be easily constructed by tying a few together and then covering the structural skeleton with leaves or animal hides to create an effective shelter. Circular wooden huts have appeared in many parts of the world as the first architectural structures (e.g., in the Natufian and Pre-Pottery Neolithic A (PPNA) periods in the ancient Near East (Bar-Yosef, 1992). Hollow gaps on the inner face of round stone houses at the PPNB site of Beidha in modern Jordan indicate the use there of wooden posts. [*See* Beidha.]

Wood has also been utilized in more complex structures. In orthogonal (right-angled) units, beams were used for roofing. The main beams were placed at intervals across the room and thinner branches were densely laid over and perpendicular to the beams. The top layer was made of mud or lime mortar. In many cases segments of the mortar, bearing the imprints of branches, are observable in the destruction deposits. Tree trunks were commonly used as columns to support the roof beams of large halls. Stone bases, which insulated the wood from moisture in the ground, are testimony to their existence. Wood was also used for door lintels and doors themselves. In monumental buildings, wooden beams were inserted between courses of ashlar masonry (see below). In quality construction the walls and floors were laid with wood, sometimes bearing carved decorations. A detailed description of this method appears in the biblical account of the Solomonic Temple (*1 Kgs.* 6:15). The most serious disadvantage of wood as a construction material is its susceptibility to fire and decay. The severity of the destruction of many ancient cities by fire was the extensive use of wood in their buildings. [*See* Wood.]

Clay Bricks. Sun-dried bricks are a simple and common type of building material. The bricks are produced by mixing soil with water, shaping the mud into the desired form, and drying the final product in the sun. To prevent cracking during drying, cut straw is usually added to the mixture (*Ex.* 5:7–18). The earliest bricks were formed by hand and were elliptical. In PPN Jericho, bricks have been found that bear the fingerprints of the workers (Kenyon, 1957, pl. 11B). Since the Chalcolithic period, to create uniformly sized bricks the mud has been placed in a wooden mold (*mlbn,* lit., "rectangular," *Na.* 3:14). This improvement enabled the construction of level courses and allowed for good wall bonding. Brick size differs depending on the region and the period, but they commonly are 12–15 cm high, a size easily grasped in the hand. Bricks were affixed to each other by a layer of mud mortar. Firing clay bricks required large amounts of fuel and, except for a few cases in Mesopotamia, was not practiced before the Hellenistic period (late fourth century BCE). Unfired bricks were always a risky building material because contact with water turns them back into mud. To prevent this from occurring, bricks were isolated from ground moisture by stone foundations. Additional protection against rain was gained by covering walls with a thick layer of mud plaster, sometimes reinforced by the addition of crushed limestone. Another means for decreasing damage to the walls was water-drainage channels, aimed at quickly conducting rainwater outside a city.

Stone. Used as a building material, stone may be subdivided into the categories of fieldstone and dressed stone.

Fieldstones. In hill country in the ancient Near East, fieldstones were useful as a construction material. The earliest round huts were girdled by low stone walls (e.g., at Natufian ʿEinan and Sultanian [PPNA] Naḥal Oren). [*See* ʿEinan; Naḥal Oren.] High standards of construction with tabular stone slabs is noticable in PPNB structures at Beidha, ʿAin Ghazal, and Basta. [*See* ʿAin Ghazal; Basta.] To consolidate walls constructed of irregularly shaped fieldstones, mud mortar and small rocks were set in the spaces between individual stones. Fieldstones were commonly used in later periods as foundations for brick superstructures, providing walls with stability and increasing their resistance to moisture. More formidable walls consisted of at least two rows of stones, about 50–60 cm wide. The top stone courses

were leveled to carry the bricks. The weakness of a fieldstone structure could be overcome by the additional width of the walls. In the fortifications of the Early Bronze Age cities at Megiddo, Ai, and Tel Yarmut, solid city walls reached a total width of 8 m or more. [*See* Megiddo; Ai; Yarmut, Tel.] For additional strength, some of those walls were constructed of extra-large blocks (megalithic masonry), and occasionally stones were fitted to adjoining ones in a polygonal method (i.e., not cut at right angles and often with more than four sides).

Dressed stones. The stability of walls could be increased by dressing the building stones into rectangular blocks, using an iron chisel. The straight sides ensured tight contact along the faces of the block without the use of mortar. The earliest appearance of dressed stone is attested in the stone bases of some EBA temples at Ai and Megiddo. During the Middle Bronze Age, huge dressed blocks were utilized as orthostats, mainly facing the entrance piers of city gates, as at Shechem, Gezer, Ebla, Carchemish, and Alalakh. [*See* Shechem; Gezer, Ebla; Carchemish; Alalakh.] A more extensive use of ashlar masonry is apparent in the city gate at Megiddo, already in existence in the Middle Bronze Age (stratum X). Well-dressed basalt orthostats faced the lower parts of walls, which were otherwise made of fieldstones, in the Late Bronze Age temples and palaces at Hazor and Megiddo. [*See* Hazor.]

Ashlar masonry was used extensively in the Iron Age II, mainly in the northern part of Israel—at Hazor, Samaria, Megiddo, and Gezer (Shiloh, 1979). [*See* Samaria.] A more limited use was applied in Judah—in Jerusalem, Lachish, and Ramat Raḥel. A common stone used for building was *nari,* a chalky rock (Shiloh and Horowitz, 1975). [*See* Judah; Lachish; Ramat Raḥel.] Two types of stone dressing are evident in Iron Age ashlar masonry: one in which the stone's entire surface is smooth (e.g., the aboveground courses of the acropolis at Samaria) and dressed margins in which the center of the stone is left as a rough boss and only between one and three of the side margins are smoothed. Marginal dressing was applied to stones in the foundation courses, which indicates that its aim was to economize on construction expenses and not aesthetics. The smooth margins were necessary to maintain a straight line for the wall, both horizontally and vertically. Dressed ashlars became a decorative element in later masonry, especially in the Hellenistic and Herodian periods, when both the margins and the central boss were carefully worked.

The additional strength of ashlar walls was guaranteed by the large size of the building blocks and by their being positioned in alternate layers of headers and stretchers. The 10–20-centimeter-wide gap between ashlar courses observed at Megiddo, Hazor, and Samaria should be interpreted as the location of a wooden (decayed) beam. The long beams probably provided the wall with elasticity, thus minimizing damage to the solid structure by earthquakes. Examples are found in both the LB (stratum VIII) and Iron Age (stratum IV) city gates at Megiddo. Mason's marks are found on the back sides of many ashlars. Ashlar masonry was also applied in constructing the square pillars used in the "pillared buildings" at Megiddo (accompanied by stone-hewn troughs), Hazor, and Beersheba. [*See* Beersheba.] The explicit method of construction combining ashlar piers and rubble stones to fill gaps has been identified as Phoenician. It appeared in Israel in the tenth century BCE, (apparently introduced by the Phoenicians) and remained popular throughout the Mediterranean region down to the Hellenistic period (Van Beek, and Van Beek, 1981; Stern, 1992). [*See* Phoenicians.]

Worked ashlars were utilized during Iron II for ceremonial and decorative purposes, as well. The design on the most popular type of decorated stone block, the proto-Aeolic capital, consisted of a triangle flanked by two spiraling volutes with upper and lower leaves (Shiloh, 1979). Because these capitals are decorated on either one or both sides, it is clear that some were freestanding and others abutted a wall pilaster or an entrance jamb. The proto-Aeolic capital ornamented the entrances of royal palaces (e.g., Samaria, Megiddo). The windows of such palaces could be decorated by a recessed frame and a stone-carved balustrade, like those found at Ramat Raḥel. At Beersheba (Aharoni, 1974) and Dan (Biran, 1994), beautifully dressed stones were used to construct horned sacrificial altars. [*See* Dan; Altars.] Decorated stone bases in the North Syrian style (like those found at Carchemish, Zincirli, and Tell Ta'yinat) have been found at Tel Dan; the wooden pilars standing on the bases apparently supported a ceremonial canopy. Stepped-stone structures identified as wall crenellations have been found at Megiddo, Samaria, Ramat Raḥel, and Tel Mevorakh (Stern, 1992).

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ZE'EV HERZOG

Materials and Techniques of the Bronze and Iron Ages

In the early part of the third millennium, the Levant achieved sociopolitical definition as an urbanized region where each town formed a separate unit of government. In roughly the same period, the neighboring regions of Egypt and Mesopotamia also assumed their social and political character, but the power generated was of a different order and vastly greater. However, in spite of the power and resources disposed by these two regions, between which the Levant formed a communications corridor, building construction in the Levant was in no way annexed to the practices in Early Dynastic Mesopotamia and Old Kingdom Egypt.

The tradition of substantial building construction was far older in the Levant than in Egypt or Mesopotamia. At the outset of urban development in the Levant, its building tradition was already about five thousand years old—roughly the same stretch of time that has elapsed since—perhaps twice as long as that for Egypt and Mesopotamia. In addition, the environment of the Levant is overall Mediterranean, which contrasted the region with Egypt and Mesopotamia. Thus whatever the influence Egypt and Mesopotamia exerted there in other contexts, the first towns in the Levant were built with the methods and materials of construction that had specifically evolved in the region during the preceding millennia. So far as can be determined, the scale but not the methods of building changed.

Preurban Building Materials and Methods. The Levant had abundant and varied building material. While good plastic earth is common there, the land is basically rocky and stones are for the gathering. In ancient times, the land was also well wooded. These basic building materials were all thoroughly understood, and were builders' stock in trade about 3000 BCE.

Stone. In the settled areas of Syria-Palestine, the lithology is basically limestone (of mainly secondary but with some tertiary and recent formations). However, between Damascus and Amman, extending across into Upper Galilee, there had been widespread basalt lava flows. While at the southern, desertic limits of the area, a Precambrian granite shield is exposed together with its immediate sedimentary cover of sandstone, often multicolored (Nubian Sandstone is the "rock" of Petra). The coastal plain, which is extensive in Palestine, is sandy, but where the sand dunes have been compacted into rock, it is virtually a sandy limestone (*kurkar*). Thus, although sandstone and basalt were used on occasion, the region's building stone is generally limestone of some sort. Notable is the "re-formed" or "reprocessed" limestone (*huwwar*), created by the leaching out and subsequent redepositing of calcium carbonate by groundwater under the effect of insolation. This forms a surface layer that can be dug away like marl and readily crushed and powdered to produce a cementitious plaster or mortar.

Mud. Earth of a reasonable constituency for mud construction is available in most areas and predominant in some (e.g., the coastal plain and the central Rift Valley continuum). Mud is virtually a natural material for mortar and plaster, and its use as a manufactured material for building units appears to have developed in the region by way of *tauf*, or puddled mud (coherent balls of earth set in a plastic state). *Tauf* occurs at the beginning of Neolithic settlements, but already in Pre-Pottery Neolithic times, the standard material was hand-modeled mud bricks of various forms (the forms probably derive from characteristic fieldstone shapes). Whereas in other regions (Anatolia, Mesopotamia) hand-modeled mud bricks were replaced fairly soon by molded mud bricks, from the evidence it appears that hand-modeled mud bricks continued in use for long ages, at least in the southern part of the Levant.

Timber. Good building timber was once plentiful in the Levant. Although only a few species employed in very ancient times have been identified, their availability and use in the historical periods allow the following reasoning about species usage. For general purposes (fittings, frames, etc.) sycamore fig, Aleppo pine, and oak (*terebinth*) were used. The same pine and sycamore and also cypress and poplar (in specific instances, date palm) were used in roofing. Mt. Lebanon was then the preeminent logging center of the ancient world, and the cedars of Lebanon were the most prized wood for magnificent construction projects. However, felling and transporting those great timbers posed problems of organization akin to those attendant in quarrying stone. For that reason it is likely that the cedar industry was only developed on a large scale with infusion of Egyptian capital, which became available during the Old Kingdom (c. mid-third millennium).

Other materials. One or two other materials may have been used in construction, although there is no evidence for them in earliest times and indeed very little in later periods. Metal, particularly copper, was available from the Sinai area; bitumen from the Dead Sea (Lake Asphaltitis); gypsum, more generally available, was used as an alternative to lime in plaster and mortar.

The earliest round buildings in the region (c. 8000 BCE) appear to have been of framed construction—that is, wood framework with, for example, a wattle-and-daub cladding.

However, it was already understood by builders in that period that masonry walls (of rubble and/or mud brick) were solid enough to bear the load of an entire structure, including its roof. The roof construction proper to the round house is a corbeled mud-brick dome as can be seen in the survivals of the type in traditional modern building. With the introduction of the rectangular plan (c. 7000 BCE), a flat mud roof set over timber beams became standard and remained so ever since in village building.

Urban Building Materials and Methods. The basic materials and methods of construction discussed here survived and sufficed for village-style construction in the region until the middle of this century (i.e. for about five thousand years). It now remains to indicate the developments brought about by political changes in society.

The most salient changes in building techniques and materials appearing with urbanization (about 3000 BCE) were occasioned by the need for massive urban fortifications. Solid walls sufficiently tall to inhibit escalade and with a total run of several kilometers had to be thrown up quickly (e.g., at Arad and Ai). Rubble stone and mud brick were used. However, since there was no basic change in the quality of the masonry, an enormous quantitative change was needed to achieve height with the necessary stability. Thus, these city walls were sometimes 5–10 m deep. This in turn meant organizing laborers into very large gangs. Urban fortifications then became the occasion in the Levant for the forced labor system (*corvée*) endemic in Mesopotamia for canals, bunds, and levees and in Egypt for pyramids. Equally modifications were required in the supply of materials.

At this stage, form-molded mud bricks ousted the hand-modeled type. Whatever other advantages there may be in molded mud bricks (stiffer construction and better bonding), it was the only type of manufacture appropriate for mass producing the enormous quantities required for the great city walls. From the beginning, both square and rectangular molded bricks were used. There was and still is a facile theory that square mud bricks are more proper to Mesopotamia and rectangular bricks to Egypt. Whether there is much significance in this theory, the fact remains that both types were always equally current in the Levant. (Nothing like the plano-convex forms of protodynastic Mesopotamia appeared at any stage.) The bonding pattern was and continued to be in the simple stretcher-bond style. Any evidence of sophisticated bonding (such as at Deir el-Balaḥ) is confined to the southern limits of the region, where it is an Egyptian feature.

The masses of large rubble stone required for the walls also probably affected how supplies were made available. Although there is no evidence for quarrying, simple surface gathering may have involved an uneconomic spreading of the work and a more intensive winning of stone via digging, levering, and detaching is probable.

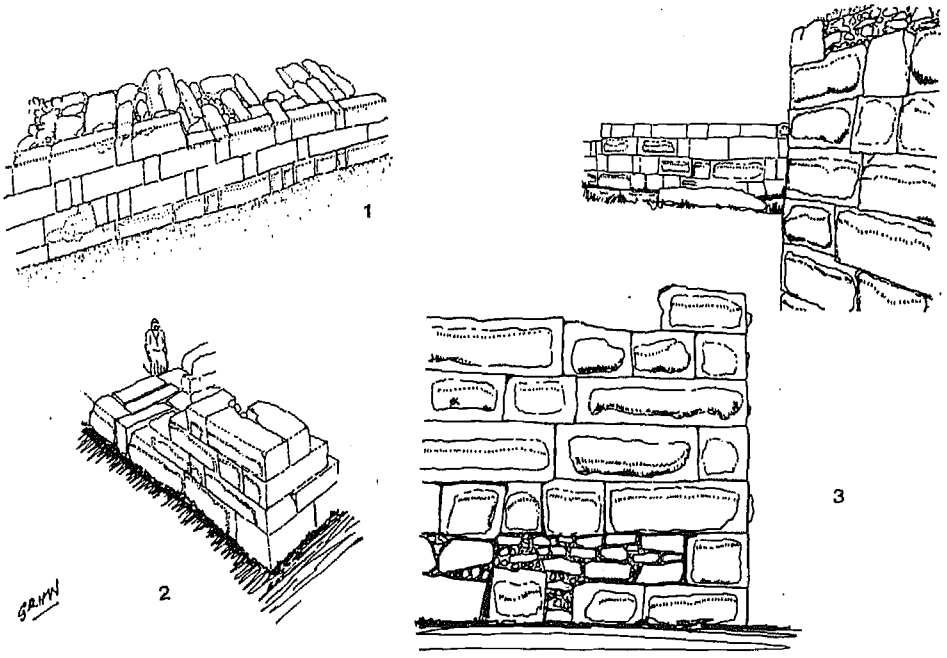
It is also possible to see the planning of the new public buildings as affecting forms of construction. For example, both palaces and sanctuaries demanded a larger, open-unit plan where the appropriate form of construction is the point support—pillar, post, or column. The principle of primeval framed construction had never been forgotten, but in the main, pillars had been used in doubling and reinforcing walls. Urban public buildings at Ai and Megiddo, however, show some columnar porticoes and halls. At Byblos, as a result of its propinquity to a cedar supply, something like primitive hypostyle halls appear in Early Bronze Age temples and mansions (cf. the Reshef Temple and the Baalat Temple complexes). However, nothing is known as yet of any systematized "order."

Monumental Construction. The highly prosperous city-state regimes of the Middle Bronze II through the Late Bronze Age (the mid-second millennium BCE) changed building construction in the Levant. Whereas the burnt-brick construction of Mesopotamia was never adopted, something like one thousand years after the grandiose buildings of Old Kingdom Egypt, elements of monumental stone masonry appeared in the Levant. At first this was confined to isolated blocks, but during the Late Bronze Age quarried and finely dressed blocks came to be used for more extended passages (cf. the Palace at Ras Shamra/Ugarit, the City Gate at Megiddo, and the Orthostat Temple at Hazor). With the increasing resources of the nation-state, fine stone masonry became a notable feature of building in Palestine (and, according to all circumstantial evidence, in Phoenicia).

This monumental masonry belonged to a very distinctive style of stone dressing. It presented the appearance of finely jointed ashlar on the face of the stone (where much of the dressing was done, in situ). However, all the joints opened widely to the interior, so that in reality it was ashlar-faced, coursed rubble. This was neither the style of pharaonic Egypt nor of the later classical Greek masonry. However, it appeared in a wide continuum extending to the west (Cyprus, Crete) and north (northern Syria, Anatolia). The style remained viable over a long period (down to Hellenistic times) and maintained its rationale vis-à-vis both Egyptian and classical masonry (see figure 1).

Parallel with these developments in stone masonry was the increasing use, from the middle of the second millennium onward, of point supports. Thus, Levantine building styles came to occupy a position between the almost totally astylar tradition of Mesopotamia and the columnar style of Egypt. There were various ramifications to this.

Columns came to be used fairly generally in palaces and temples. For the most part, they continued to be arranged across the length of an internal space—in accordance with broadroom planning concepts. The characteristics of the columns varied. In the native tradition they were probably simple posts devoid of architectural refinements. However, occasionally more formal items appeared, borrowed from neighboring regions. Remains of Egyptian plant-form cap-



BUILDING MATERIALS: Bronze and Iron Ages. Figure 1. *Monumental stone masonry, Late Bronze and Iron Ages.* (1) Israelite, Samaria Acropolis; (2) Israelite, Megiddo; (3) Late Bronze Age, Ras Shamra Palace. (After Wright, 1985, figs. 315, 317)

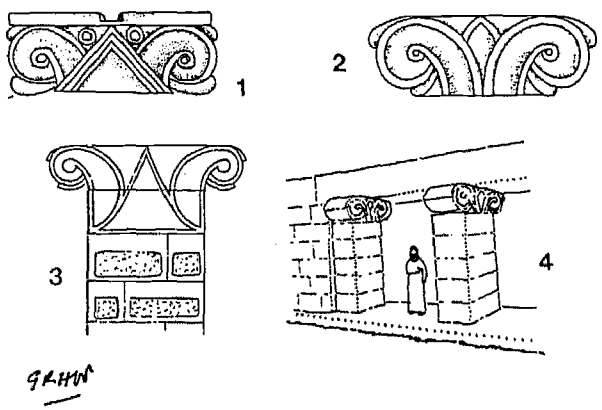
itals (e.g., Open Papyriform) have been found in Late Bronze levels at Beth-Shean, Lachish, and Megiddo; the octagonal, or faceted, shafts of Egyptian proto-Doric columns have been found at LB Shechem and Lachish; the north-Syrian ornamental torus pot or bowl base has been found in Iron Age levels at Dan; and Persian-period fragments of the Persepolitan (Bull Protome) order have been found at Sidon.

If the region never developed a columnar style of its own, in the first millennium BCE it developed a pillar/pilaster capital that it exported (e.g., to Cyprus). This was the proto-Aeolic capital used to dignify ceremonial portals by way of engaged piers at the jambs and, occasionally, a freestanding medial pier. This capital form is basically a stylized tree-of-life design and is thus allied to other plant-form capitals (Aeolic and eventually Ionic and Corinthian). All circumstances suggest that it was developed in Phoenicia, but all the evidence for it is in Israelite Palestine and Transjordan (see figure 2).

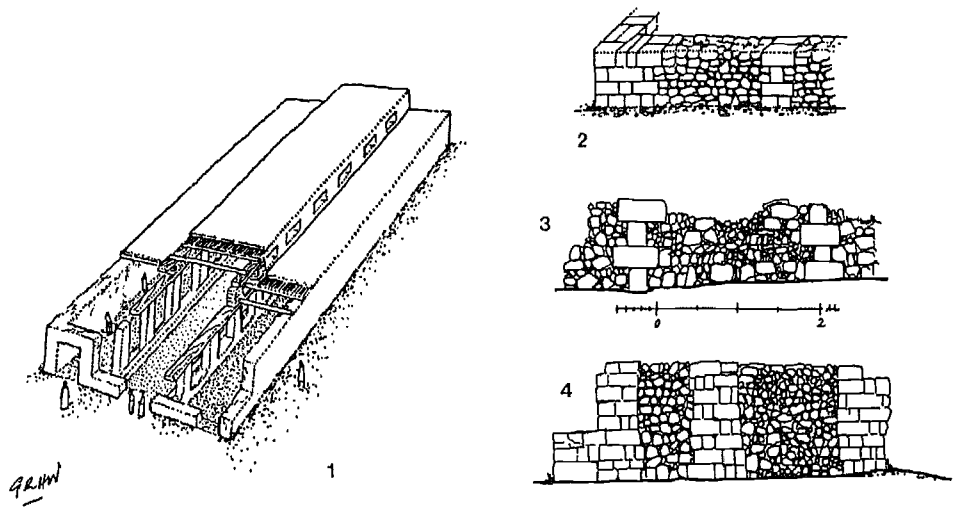
More notable is the utilitarian structural development of the pier in the Israelite period, in which it took two forms: a long pillared hall (articulated into three aisles) for all-purpose public buildings where privacy was not a requirement—stables, stores, and barracks. A monumental variant was King Solomon's House of the Forest of Lebanon.

A striking pier and panel type of wall construction also was developed (see figure 3). Again, it might seem natural for this form to have come out of Phoenicia because versions of it are found in the Phoenician colonies of the West, whence it came to be known as *Opus africanum.* However, the bulk of the examples is found in Israelite Palestine (e.g., at Megiddo), where it survived through the Persian period (Tel Mevorakh, Jaffa). It was to remain standard in North Africa until the Arab invasions of the seventh century CE.

Throughout this time, the structural system employed was trabeated: mud roofing on horizontal timber beams (terra-cotta roofing tiles were a Greek invention and do not



BUILDING MATERIALS: Bronze and Iron Ages. Figure 2. *Proto-Aeolic capital.* (1) standard (Megiddo) form; (2) variant (Hazor) form; (3) broad (Megiddo) form; (4) installation in portal. (After Wright, 1985, figs. 333, 336)



BUILDING MATERIALS: Bronze and Iron Ages. Figure 3. *Pillar construction.* (1) Pillar house stable or stores unit, Iron Age II; (2) ashlar pier and rubble panel masonry, Megiddo general type, Iron Age II; (3) ashlar pier and rubble panel masonry, Megiddo, Southern Palace, Iron Age II; (4) coursed square rubble pier and random rubble panel masonry, Jaffa, Persian period (450-320 BCE). (After Wright, 1985, figs. 245, 322)

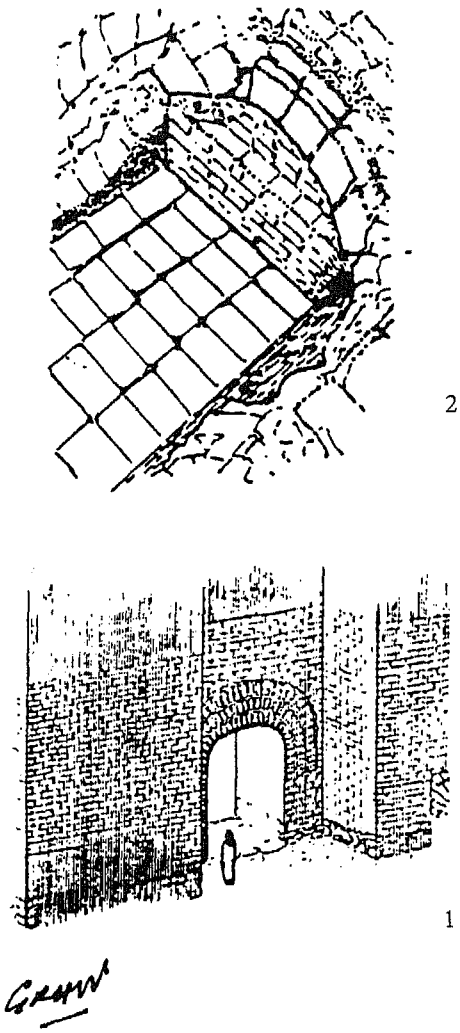
appear in the region until the Hellenistic age). Nevertheless, the arch was not unknown. The Middle Bronze City Gate at Tel Dan has its outer portal built as a true arch, with mud-brick voussoirs, but to what degree this was common practice in such monuments is unknown. Also, rubble masonry was used in MB underground tombs at Megiddo to build something like a true dome or saucer vault; whereas at Late Bronze Age Ras Shamra, imposing underground tombs entered from the courtyard of houses were built with ashlar masonry with corbel vaulting. In the Provincial period (c. 600–300 BCE), when the land was ruled from Mesopotamia, practices in mud construction belonging to that region were introduced: tall, conical, corbeled silos and pitched barrel vaulting in residences and stores (e.g., at Tell Jemmeh). A form of pitched vaulting in rubble was also used to roof the Lachish Residency (see figure 4).

Public Works Engineering. Throughout the Bronze and Iron Ages, earthworks of various forms and functions were carried out in connection with the city raised up on its mound. Quite frequently this involved an expert use of lime-plaster surfaces and slicks of crushed *huwwar.* It is not always a straightforward matter to determine the purpose of this kind of installation—whether its purpose was military or it was a civil consolidation of friable earth skirting. Such earthworks are not accurately signified by the term *glacis,* once commonly used to describe them.

Rock-cut shafts and galleries to ensure a city's water supply are another public works enterprise of vast scope that was highly developed in Israelite Palestine. In addition to cisterns and reservoirs to store surface runoff water, quite spectacular schemes were carried out to capture groundwater aquifers outside a city and bring the water into it via subterranean aqueducts (as at Gibeon, Gezer, and Hazor). Analogies to these schemes are best known in Anatolia.

Construction Methods. Little direct evidence is extant of construction methods in the region. Building preurban village houses was very likely a family affair, and the first specialized master builders were probably those who directed and supervised the raising of the first city walls—and throughout antiquity a master builder/engineer possibly recommended himself first as a military engineer. The basic problem of construction technique is how heavy, massive units can be got up into place. Some city walls show heavy boulders set at a considerable height. Those units could have been brought into position only by hauling along and up construction ramps; traces of such earthworks have been reported against several city walls (e.g., at Gibeon and Jericho). Since there is no evidence in Palestine of lifting devices (neither of hoists, winches, and pulley blocks, nor of lifting lugs, or lewis holes), we can assume that all heavy construction basically relied on the same method. This was the method of monumental masonry used in Egypt. It was highly labor intensive and so was not for everyday application in Palestine and Syria. Instead it would appear that massive units were as a rule kept close to ground level (such as a stone socle) and that the superstructure consisted of materials (wood and mud brick) that could be raised and set in place by a few hands and broad backs operating with ladders, planks, and ropes, as in traditional village building.

In summary, it can be said that building construction in the region of Syria-Palestine during the Bronze and Iron Ages was entirely adequate for its utilitarian purpose. The



BUILDING MATERIALS: Bronze and Iron Ages. Figure 4. *Arcuated construction in mud brick.* (1) arched portal, city gate, Dan, Middle Bronze II; (2) pitched barrel vaulting, Assyrian Residence, Tell Jemmeh (Provincial period). (After Wright, 1985, figs. 286, 367)

population accepted forced labor for the vital purpose of urban defense (cf. *Neh.* 3), but violently opposed it (cf. *1 Kgs.* 12.18) when the Hebrew monarchy sought to enforce it generally for display purposes (cf. *1 Kgs.* 5.13–16; 9.20–22). This public attitude is probably an underlying reason why the character of construction in the region was so different from that in neighboring Egypt and Mesopotamia.

[*See also* Cisterns; Four-room House; Furniture and Furnishings, *article on* Furnishings of the Bronze and Iron Ages; *and* House. *In addition, many of the individual sites mentioned are the subject of independent entries.*]

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G. R. H. WRIGHT

Materials and Techniques of the Persian through Roman Periods

The period of building development in the millennium from above 650 BCE to 350 CE is the most momentous of all from the present-day point of view. During this period the long-established modes of monumental building extending back across the previous two millennia and more went out of use forever. Some of the new modes of building developed during this period survived in part or were revived in part to remain in currency into modern times. On the other hand, domestic building in the region has a completely different history. It was fully developed several millennia previously and in essentials it remained little changed in nature until the middle of the present century.

Existing Building Traditions. In the middle of the first millennium BCE, three ancient modes of monumental building continued to flourish: Mesopotamian massive mud brick; pharaonic Egyptian large-block stone; and Levanto-Anatolian mixed building. Each had a long history and survived variously for an additional half millennium or more.

Mesopotamian Massive Brick Building. The oldest type of monumental building is found in Mesopotamia and was well established by the beginning of the third millennium BCE. The material of construction was mud brick (also, on occasions, burnt brick) and the structural system was trabeated and noncolumnar, with very massive load-bearing walls. However, the flat terrace roofs on timber beams were supplemented by mud-brick vaulting, generally of the corridorlike peripheral chambers. The main apartments were commonly of broadroom disposition. The individuation of the tradition was a mud-brick artificial mountain, the ziggurat, in the form of a stepped pyramid with a temple at the summit. [*See* Mesopotamia, *Article on* Ancient Mesopotamia; Ziggurat.]

Pharaonic Egyptian Stone Building. Building with stone was fully evolved in Egypt by the middle of the third millennium. The construction was entirely of fine stone masonry out of large and very large blocks, hauled into position and dressed almost entirely in situ. In fact, this system of building has been well characterized as piling up an artificial mountain and then forming a rock-cut monument out of it. The structural system was a columnar, trabeated one—the flat terrace roofs being entirely of stone beams and slabs. Mud brick was used on a large scale in utilitarian structures—for example, for outer precinct enclosure walls—and mud-brick vaulting appeared in magazines and the like, but such construction was never introduced into a monument. Both broadroom and longroom design were known. The individuation of the tradition was a stone mountain, the pyramid, containing the tomb of the deified king and/or, in later times, the obelisk, a tall pier capped by "the pyramidion" (the *benben* stone). [*See* Egypt, *article on* Dynastic Egypt; Pyramids.]

Levanto-Anatolian Mixed Building. Less homogenous than pharaonic stone buildings and of later development (second millennium BCE), Levanto-Anatolian mixed building is something of a residual category. It remained closer to domestic building in style. The materials of construction were mixed: stone, mud brick, and timber (for wall reinforcing or framing and roofing). The (relatively slighter) walls comprised a socle of dressed stone (facing), mud-brick superstructure incorporating varying degrees of timber, and flat, mud-terrace roofing (see figure 1). The structural system was (to some degree) columnar (mainly wooden posts) and trabeated. Vaulting was entirely absent. Both broadroom and longroom design were known. There was no characteristic "individuation" monument.

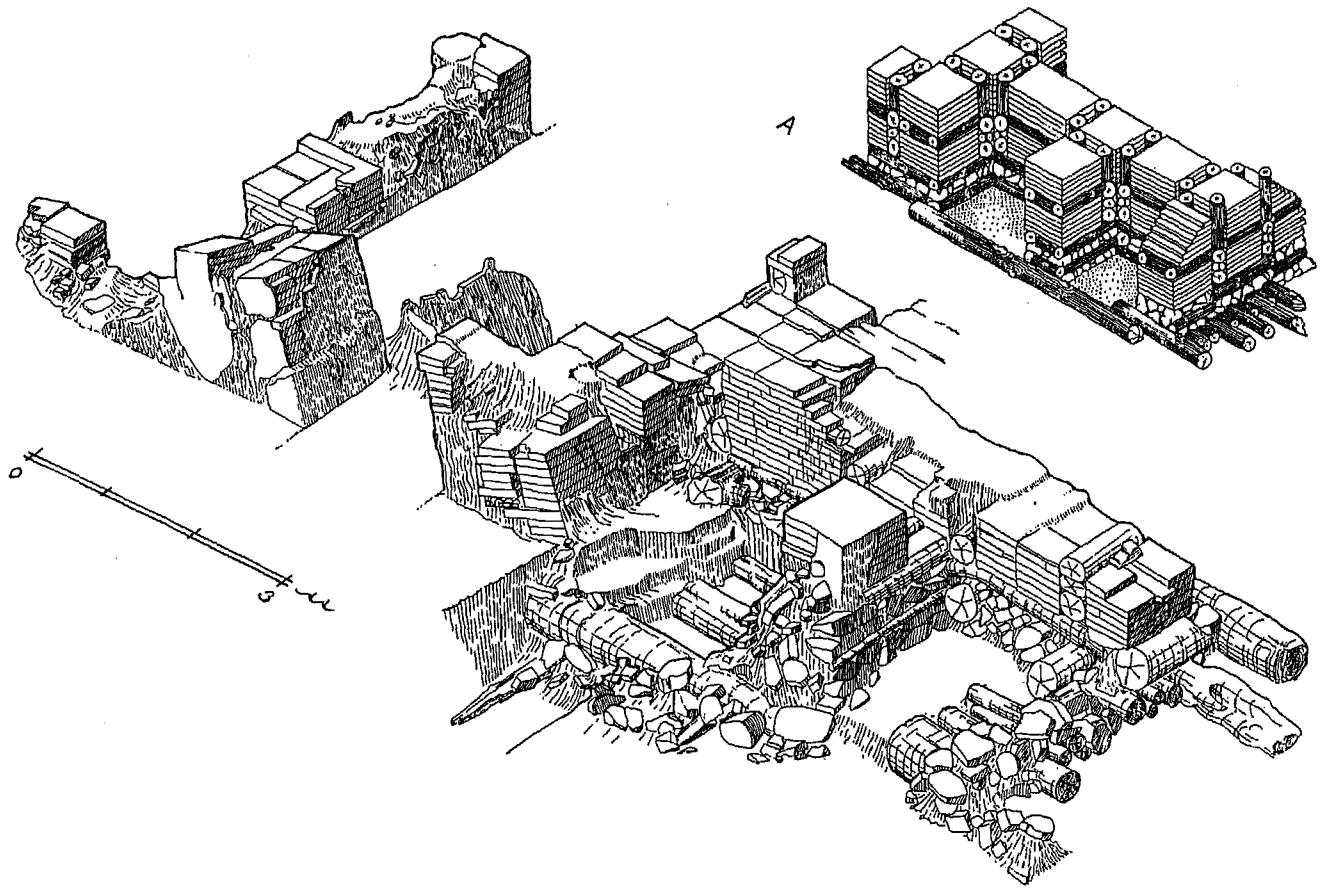
These three dissimilar modes of monumental building closely maintained their regional distribution—particularly the highly characteristic Mesopotamian and pharaonic structures. Ornamental motifs or elements of these latter two in a limited way may have come into use elsewhere (e.g., the Egyptian cavetto cornice, Mesopotamian[?] crow stepping). However, the monumental building as a complete unit was proper to its region. More especially, pharaonic building was restricted to the Nile Valley, where it was uniform from end to end. Mesopotamian building was subject to some regional modification (cf. Assyrian vs. Babylonian) and to some merger in peripheral regions (e.g., at Mari on the confines of Syria).

Nevertheless, in one important respect, these markedly dissimilar building systems have a uniform expression—the uniformity of ancient Near Eastern society. The projects they embody are confined to the same restricted range of monuments: these are, in the first place, religious monuments, temples (and perhaps with them may be considered monumental tombs); monumental palaces (where applicable); and the monumental features of fortifications (e.g., city gates).

Out of the above background, during the sixth century BCE, two new modes of building (imperial Achaemenid and classical Greek) evolved suddenly and dramatically. Although there were considerable points of contact in the processes, the results were utterly different. In terms of the general historical succession in the Near East, the Achaemenid mode is outlined first, but this does not impute any primacy in influence. The two formative traditions abutted geographically in western Anatolia—namely in the kingdoms of Phrygia and Lydia, where the ancient building tradition was Levanto-Anatolian.

Achaemenid Building. Unlike, for example, the Egyptians and the Greeks, the Persians got an empire before they had a monumental architecture to dignify it. Thus, they had to crash develop their monumental imperial architecture within two generations or so—and the achievement was marvelous and since there was nothing vulgar or banal about the mode, it was both graceful and dignified. (Incidentally, almost nothing is known of the domestic building of the imperial Persians—they could have continued to live in tents for all that is evident to the contrary.)

The imperial (aulic) Achaemenid mode of building is best manifested in two palace-city complexes: that of Cyrus the Great at Pasargadae (c. 550 BCE) and that of Darius and Xerxes at Persepolis (c. 500 BCE). With this instant achievement, the style remained frozen and there were no further developments (nor it seems much central building activity) for the ensuing two centuries, until Persepolis was ceremonially put to flames by Alexander the Great in 331 BCE to mark the end of an old order. This it certainly did, in the architectural sense, since that was the end of the Achaemenid grand manner. Although later Iranian dynasties (Par-



BUILDING MATERIALS: Persian through Roman Periods. Figure 1. *Isometric reconstruction of Beycesultan in western Anatolia.* Half timbered mud-brick construction on rubble foundations. Mixed construction is typical of Levanto-Helladic area, but is noteworthy here because of the unbridled use of wood in a (then) heavily forested area. Note the remains of a charred wooden door standing in place. Remains dated to about 1500 BCE. (Courtesy G. R. H. Wright)

thians and Sasanians) regained an empire for the Persian people, their building, however explained, was in no way a revival of the Achaemenid style.

The materials of Achaemenid construction were mixed. Extremely fine ashlar masonry characterizes the building. Very large blocks were used to face the great podia on which the complexes are elevated, while fine stone framing (e.g., door and window frames) articulates the walls of individual buildings. The bulk of the wall was, however, mud brick and the great flat terrace roofs were of mud brick on enormous timber beams. The structural system was an entirely trabeated one, and the arch and vault were not used. Perhaps the most notable structural feature is the columnar development and the forests of immensely tall stone columns, some with animal capitals or impost blocks, remain a world wonder. Although a broadroom tradition was evident at Pasargadae, at Persepolis a highly idiosyncratic design principle became dominant—that of centralized (concentric) square planning: square units set concentrically within square units. Perhaps it might be said that the great masonry podium was the individuation of the system.

The question of the sources for this harmonious composition of elements has always evoked discussion. The palace building inscriptions state that whereas the various operations of construction were carried out by subject peoples, the overall design was exactly as the "Great King" had intended it to be, which has been understood to indicate that the planning of the palace complex was entirely determined by Persian taste. This, however, is not a full explanation of the style; between the client who determines the planning and the craftsman who effects the details of construction is the architect who determines the overall composition of details in elevation. Thus, it remains unclear whether the architect of the complex was a Persian (of whatever background) or the master mason (the office which traditionally gives on to that of architect) who, according to the building inscriptions, should have been a Lydian (from Sardis) or an East Greek (from the neighboring Ionian coast). Certainly

the general overall appearance in elevation of the Achaemenid palaces was quite unlike anything known in the contemporary development of Greek monumental building.

The impact of Achaemenid monumental architecture on the building scene of the contemporary Near East is obscure. The archaeological evidence is obviously defective. Some smaller apadana-type "government house" buildings have been discovered in important regional centers (e.g., in Babylon and on the Phoenician coast). However, little can be adduced regarding the significant question of influence and hybridization. What appears clear is that Achaemenid building had a negligible impact on the great monumental traditions of Egypt and Mesopotamia. It is in the Levanto-Anatolian region where there are indications (or possibilities) of interaction with an older tradition, here the most cognate. However, in the light of existing information, traces and effects of Achaemenid building appear most recognizable after the end of the regime—a strange matter which will be mentioned in its historical context (see below). [*See* Persians.]

Classical Greek Building In Ionia. A meaningful part of the development of classical Greek building took place on Near Eastern ground: the Ionian coast of Asia Minor. In this measure it was a native Near Eastern building style and its development must be outlined on that account, quite apart from the momentous role it was eventually to play over the whole region in virtue of later political history.

The material of construction of classical Greek building is uniform, fine stone masonry—but only up to the roof. The highly characteristic roofing was a timber-framed gable roof normally clad with terra-cotta tiling, but on splendid occasions with stone (marble) tiling. The structural system employed was trabeated, and no arches or vaults were included (the ceiling was coffered stone slabbing on stone beams). The system was hyperessentially columnar, and this in a novel manner: the external load-bearing components in major structures were rows of columns. The design form was rigorously "longroom," here supplemented by the peristyle (peripheral colonade), the whole being set on a three-stepped raised platform (the "crepis").

Again, the development of this superb mode of building was rapid (entirely within the seventh and sixth centuries BCE), and anything but obvious. Certainly there is nothing in the building history of Greece during the preceeding three centuries or so to account for it. Thus, the only modes of monumental building which could have influenced the development of classical Greek architecture were the neighboring Levanto-Anatolian or Egyptian building. The ridged tile roof sets the Greek temple apart from all preceeding Near Eastern monumental building—as does the outward-looking peristylar design. The profusely columned Egyptian buildings were inward looking (as essentially was all Near Eastern architecture): the columns were enclosed within halls or internal courts. It is possible to find arrangements something like Greek in antis or prostyle design in Near Eastern building, but nothing like the peristyle. On the other hand, there is a background in the Near East to classical building in the fine stone masonry common to both.

However classical Greek masonry evolved an unsurpassed excellence of its own. Utterly unlike Levanto-Anatolian masonry, it was entirely solid throughout the thickness of the wall, and unlike Egyptian masonry, the blocks were regular orthogonal units of medium size set in regular courses dressed entirely true on all the joints before setting. The blocks were set without mortar and fixed one to the other by horizontal cramping and, on occasion, by vertical doweling. The hairline jointing was facilitated by the process of anathyrosis: the rising joints were hollowed out, leaving a band like a clear frame around three margins to make the lateral contact between adjacent blocks. An integral factor in this stone masonry was the development, in about 500 BCE, of block-and-tackle lifting devices, so that quite massive blocks could be cleanly lifted and lowered into position. The full excellence of this mode was restricted to very monumental walling of marble or hard limestone.

During the fifth and fourth centuries BCE classical Greek masonry spread into regions contiguous with Greek Ionia (cf., e.g., the Temple of Artemis at Sardis; the Nereid monument at Xanthos; the Mausoleum at Halikarnassos). However, with Alexander's conquest of the Achaemenid Empire and the firm establishment of Greek rule in the third century BCE over almost the entire ancient Near East, the stage was set for varied developments in the buildling of the region.

Oriental Hellenistic Building. Before particularizing regional developments, an important general manifestation of hellenization on Near Eastern building must be noted: namely, extension to the scope of monumental building. With hellenization, both newly Greek-founded towns and some old towns were invested with the forms of the Greek city (the polis) to enable their citizens to lead a truly human life—that is, the public one encompassing activities political, judicial, economic, and cultural-recreational. All these activities required facilities, for the most part involving substantial monumental building projects. Thus, in addition to the military, religious, and palatial structures of the ancient Near East (which certainly did not decline in significance), there was a whole new and varied series of design projects: public meetinghouses and law courts (bouleterion, ecclesiasterion, basilica); agorai, stoas, colonnaded streets, nymphaea, triumphal arches; theaters, amphitheaters, stadiums, hippodromes, gymnasia, and baths. These public buildings remained part of the Near Eastern urban scene until they disappeared when the area reverted once more to an eastern way of life under Islamic domination. There were, however, one or two legacies from the Hellenistic interregnum. The two institutions which casual impression associates with the lifestyle of the traditional Near East, the *suq* ("market") and the *ḥammam* ("bath"), are both developments of two Hel-

lenistic features introduced into the region: the agora and the balaneia/thermae.

If Greek architectural forms transformed the Orient, then it is only fair to say that the Orient and its wealth had its effect on Greek architectural forms. Various civic buildings mentioned here were strikingly developed during the Hellenistic period. The theater and the gymnasium, as also the agora (*cum* stoa complexes), were simple, indeed primitive, in the 5th century BCE. It was the wealth put into circulation by the expansion into the Orient which promoted their evolution into the monumental complexes now taken as the norm.

The deployment of all these types of civic building was bound up with probably the most salient feature hellenization brought to the Near East region: rationalized town planning, with its regular orthogonal grid pattern of streets and its organization of urban space on functional lines (i.e., into residential quarters and public quarters of various types). The Greek practice probably originates with the rebuilding of Miletus after the Persian destruction early in the fifth century BCE. However, the original, rather mechanical, concept was much vivified from the third century BCE onward by various monumental features of design incorporated into it. The grid was diversified and articulated into sectors (zoning) by colonnaded major streets and associated devices: the tetrapylon at important street crossings and the triumphal arch (or monumental arched gate) to break the perspective at the entrance to different areas (e.g., the sanctuary area, the agora, the harbor). Such features appeared contemporaneously in Asia Minor, Syria, and Palestine and were doubtless originally an expression of Seleucid enlightenment and munificence (cf. the foundation of Antioch on the Orontes). However, their full and true development took place under Roman rule during the prosperity of the second century CE (cf., e.g., Petra, Gerasa/Jerash, Ephesus), by which time they are to be found uniformly across the whole region to the Atlantic (cf. Ptolemais in Cyrenaica, Leptis Magna in Tripolitania).

One other very generalized mark of hellenization on Near Eastern building was in military engineering. Alexander's empire was won by the superior military science of the Greeks over that of Asiatics, and the Wars of the Successors ensured the maintenance of this superiority. Of particular note here was the development of the science of siegecraft (cf. Demetrios Poliorketes and Philo of Byzantium). In this way fortifications were required to keep pace with ever more and more powerful means of destruction. Greek military engineers saw traditional types of fortification over the whole region but saw nothing in advance of their own practice. Accordingly, when fortifications were required in the hellenized Orient, they were designed on Greek principles. This involved, in the first place, building city walls almost exclusively of finely dressed stone masonry (in the interest both of strength and beauty). Design novelties included the idea of the Great (or extended) Circuit—that is, of enclosing within the walls all the neighboring high ground which potentially could be used to command the terrain (cf. at Priene, Ptolemais in Libya).

Finally, a notable application of the classical Greek mode of building in the East was the architecturally developed monumental tomb. Various traditions of monumental tombs were known in the ancient Near East; however, by the middle of the first millennium BCE, generally speaking, traditional tombs were unobtrusive externally—exceptions were the tumulus tombs of Anatolia (e.g., at Gordion and Sardis) and tombs with architectural facades cut in rock cliffs (e.g., in Lycia and Persia). In contrast, before Alexander's conquests (e.g., the Mausoleum at Halikarnassos, the Nereid Monument at Xanthos) there were monumental tombs in the Near East embodying the classical orders of architecture and afterward these became commonplace. There were several different types, both rock cut (cf. the elaborate rock-cut facade tombs at Petra, the peristyle house tombs in disused quarries at Alexandra and Nea-Paphos), while freestanding built tombs are widespread, for example, in Syria (Suweida), Egypt (Cape Zephyron), and North Africa (Ptolemais).

The regional distribution of hellenization in building across the ancient East is of great historical importance and has hitherto received little close attention. The following is a summary outline.

Anatolia. A very critical region in building development during this period is Anatolia (or, rather, western Anatolia). On the one hand, its western coast was a home ground of classical Greek building; on the other, the bulk of the region was only patchily and sparingly hellenized, contrasting strongly in this respect with geographically more remote regions. However, whether on this account or otherwise, the area came to be one with prolific building in Roman times (and to a degree in Roman manners). In this way, much varied construction (e.g., faced mortared rubble, solid burnt brick) resulted, of importance in the ecumenical history of building.

Alexander's conquests had little effect on the building of the Greek cities of Ionia (he is said to have personally dedicated the Temple of Athena at Priene). They retained their civic status and maintained their building activities in the (largely Ionic) Greek style to form a (perhaps the) focal point for the continuation of the tradition. As some of the earliest Greek temples were erected in this region, so were some of the latest (e.g., at Magnesia on the Meander in the late second century BCE, and the Temple of Domitian at Ephesus, first century CE). Also, such temples continued to be built in Roman times in the interior (cf. the Temple of Rome and Augustus at Ankara). Developments here were ones of stylistic evolution and it was the famous architect of the region, Hermogenes, who was the source for Vitruvius' ideas about the rules of the Ionic order. The new Hellenistic

power in the region was Pergamon, and the pro-Roman policy of the local Attalid dynasty was of great historical importance because it gave Rome its early foothold in Asia. Some of the latest monumental Doric building was at Pergamon (e.g., the Temple of Hera, c. 150 BCE). Above all, it was in the Hellenistic building of the region that the true masonry arch is first seen expressed in monumental building (e.g., at Priene and Miletus).

Mesopotamia and Iran. The heartland of the Achaemenid Empire was formed by Mesopotamia and Iran, and in turn the house of Seleucus immediately established its principal capital in (and near) Babylon. However, in 129 BCE the Seleucids definitely lost all control over the eastern part of their vast kingdom when those lands passed into Parthian possession. This does not mean that thereafter hellenized building came to an end in this great tract of land. It did not, and indeed there were Greek communities which survived on the far eastern fringes (i.e., on the confines of central Asia and India). What it does mean is that Rome never established any real footing in the region, and thus building development continued there without any renewed direction from the West via Roman rule, as in other parts of the Near East.

It was Seleucus (the "royalest" of mind among Alexander's successors) who alone carried on Alexander's program for the brotherhood of man, and over recent years astonishing evidence has been found of a symbiosis of Greek architectural forms with others native to the region. This is the architectural expression of what may be called Greco-Oriental art (cf. Greco-Roman art) and it has been considered that it was this style which was adopted and continued by the Parthian successors of the Seleucids and thus has been termed Parthian art (without in fact, having any significant ethnically Parthian component). Much of the evidence occurs in extraordinarily remote areas (e.g., Central Asia, India, the Persian Gulf, the Syrian Desert). The evidence is fragmentary, and it is impossible to reassess it in short compass. Only the main strands are indicated here. [*See* Seleucids; Parthians.]

The Seleucids did not in any way discountenance local styles. They maintained intact the old Mesopotamian massive brick building tradition, providing for the restoration of famous old buildings and the erection of new ones (e.g., at Babylon and Uruk). This tradition survived throughout their regime and only came to an end in Parthian times early in the Christian era. Indeed, the old Mesopotamian broad-room temple plan, atypically and unexpectedly, was made use of far away (e.g., at Ai Khanum). However, Greek forms both of design and construction appeared immediately (by 300 BCE): towns were planned on Hippodamian lines (e.g., at Dura-Europos on the Middle Euphrates), and there were Greek theaters (e.g., at Babylon and Ai Khanum) and recognizable Greek temples (e.g., at Failaka, by modern Kuwait, at the head of the Persian Gulf). While plentiful Greek roofing tiles have been found (e.g., at Babylon). Nonetheless, overall development was such that Greek forms were merged with oriental ones—and increasingly so with time, culminating in the high tide of an "oriental reaction" during the latter part of the first century BCE, when Parthian political power was at its strongest.

The principal fact here was the prevalence in planning of two local forms: the centralized square cella and an open-fronted hall chamber, the iwan. The former is, of course, the typical "Iranian" design noted at Persepolis (whatever be its ultimate origins), while the origins of the latter are difficult to account for. In any event, it was to have a great future, extending on into medieval East Islamic architecture. It was these forms, generally brick built with arched portals and barrel-vaulted rooms, which were dressed with architectural ornament derived from the Greek order. Although in earlier times there were stone columns and entablatures (e.g., in western Iran at Kurrha and Kangavar), the tendency was for this architectural detail to become expressed as engaged facade decoration in stuccoed brickwork; this development thus paralleled the Roman development of transforming the Greek orders from structure to ornament. There were also reminiscences of Achaemenid style in the details: the columns slender and lofty, sometimes with campaniform bases.

This composite style was geographically widespread—from Ai Khanum and Surkh Kotal on the eastern margins to the Nabatean temples of Syria (see below). It is perhaps possible to see a reflex classical influence from romanized Syria in the second century CE in northern Mespotamia, where, for example, the stone-built monuments of Hatra have affinities with those of contemporary Palmyra but still show the iwan and the centralized square cella pattern. However, the overall line of subsequent development is clear.

In the middle of the third century CE, the collapsing Parthian regime was replaced by the Sasanians—Persians from the province of Fars, centred on the ancient capital of Persepolis. Sasanian building clearly proceeded from Parthian building in a direction away from its Greek component. The oriental planning elements, the square cella and the *iwan*, remained dominant, but the expression evolved markedly. The dome was added to the vault as the focus of design in elevation (cf. the Firuzabad Palace), thus affording grounds for one of architecture's most persistent debates: *Rom oder Orient* (did medieval domical building develop out of Roman or Eastern prototypes?). Alongside brick, mortared rubble came into use as a staple building material, with the strong (gypsum) mortar a basic load-bearing element. However, the aspect remained the stucco rendering, and here virtually all reference to Greek forms disappeared and the stucco decoration assumed an entirely oriental all-over style. As a logical conclusion to this line of development, it is not always easy to differentiate between later Sasanian building

and Early Islamic building (cf. the Palace at Sarvestan). [*See* Sasanians.]

Syria. Greco-Roman Syria is probably the cynosure of building development during the period. The native Levanto-Anatolian style, imperial Achaemenid, Hellenistic Greek, Greco-Oriental (Parthian?), Greco-Roman, all the several monumental styles previously detailed found expression in this region.

Achaemenid rule was long and prosperous and the Phoenician seaboard was a strategically important region to the Persians. Thus, there are to be found a number of Achaemenid building remains, both *disjecta membra* (Persepolitan column fragments from Sidon) and building plans (funerary monuments and sanctuary from 'Amrit, apadana from Byblos). The degree to which this Achaemenid building remained a living force in the land across the next centuries of Seleucid rule is a matter of considerable interest in view of the surprising profusion of Iranian-style building about three hundred years later, at the turn of the eras. At this stage in central southern Syria (the Hauran), then under Nabatean rule, a number of sanctuaries (Seeia, Sahr) occur, showing the Persian square temple design with elements of Persepolitan-type ornament. Similar building can be found at this time at Kalat Fakra in Mount Lebanon. This building activity is generally reckoned to be the result of Parthian influence in the region, which at the time threatened the continuance of Hellenism—and thus the building is put down as pertaining to the Greco-Oriental style. However, there are gainsaying considerations. The very monumental Baris ("stronghold") of the Tobiads at 'Iraq el-Amir, near Amman in Transjordan, belongs to the second century BCE and its massive stone masonry clearly has many Achaemenid affinities. Furthermore, although chronologically compatible with Parthian political influence, the temples in the Hauran are akin to contemporary temples on the far eastern margin of the Iranian world, in India and Central Asia, rather than to Parthian buildings of the period.

It is unfortunate that very little Greek building by the Seleucids has been preserved in Syria. Abundant ancient sources let us know that Antioch on the Orontes (the western capital of the Seleucids) soon came to be the third city in the world (after Rome and Alexandria). However, at the Great metropolitan centers (e.g., Antioch, Apamea), Hellenistic building remains are overlaid by massive Roman and Byzantine remains. As a result, later Roman developments have been projected back or evidence sought in remote areas. A significant feature at issue here is baroque design, where orders are broken up into ornamental elements in conjunction with curvilinear design. This mode is prominent during later Roman building in Syria (cf. the Temple of Venus at Baalbek), but whether it is a development brought from Rome (cf., e.g., the curvilinear Roman-type theaters in Syria), or whether, on the other hand, Roman baroque derived originally from Hellenistic Syrian exemplars is still argued. Exemplifying the debate are the monuments at Petra, where some of the tomb facades manifest postclassical baroque compositions. The date of these monuments has long been in contention—with the so-called Roman temple tombs being variously assigned to the second century CE or the first century BCE.

At all events, the floruit of hellenized Syrian building was in the second century CE during the prosperous Antonine period, when the grandiose remains from, for example, Gerasa, Baalbek, Palmyra, and Apamea, together with temple and sanctuary sites, form one of the most spectacular assemblages of ancient architecture.

The embellished Hippodamian town planning of these Syrian cities is notable, and as surviving this is almost entirely Roman period work. The colonnaded street with its articulating features, while known in other regions, is standard in Syria. These monumental building programs were effected in finely dressed ashlar masonry, close jointed throughout. The material, however, is local stone (limestone, although on occasion other stone, such as basalt, was used), and there is little evidence for the anathyrosis and cramping proper to classical marble masonry. Syria has a long background of fine stone masonry (e.g., Israelite and Phoenician) of the Levanto-Anatolian type and the later ashlar masonry is in some measure a conformable development of this. There are, however, striking examples of another type of masonry. Some blocks (the Trilithon) forming part of the podium of the main temple at Baalbek (early first century CE) are the largest blocks surviving from ancient building. They were hauled into position up long ramps from the quarry and represent another tradition of masonry. This work is often ascribed to a survival of Achaemenid building tradition, but the matter is not obvious.

The great majority of monumental building remains surviving in Syria are of religious buildings, the famous "Roman Temples in Syria" (at, e.g., Baalbek, Niha, and Dmer). These buildings are very interesting, inasmuch as they speak for the strong survival of old Syrian tradition in a central part of the hellenized world. And as opposed to Egypt, this takes the form of hybridization, for whereas in external appearance these temples give the impression, for the most part, of Roman podium temples (generally prostyle or in antis), the reality is quite other. A striking feature of their functional design is that, at the rear of the temple, raised up on a podium of its own, is a unit commonly referred to as the adyton, although in view of its special nature perhaps *thalamos* is better. Its facade received a full architectural development, as befits a separate unit; and in numbers of instances it is exactly this, being an aedicule—a small building set in a larger one. In religious terms it has been looked on as the survivor of the old Syrian shrine set in new hellenized dress. Another telling factor in this connection is the temple roofing. Almost universally, the appearance at least of a classical ridged roof is adverted to by way of a gabled front, but

whether and in what manner and to what extent this was carried over into reality is a question which has to be examined in each case on its merits. Often, the pediment and horizontal cornice mask a terrace roof of importance in the cult, to which access is gained by stair towers.

Finally, it may be noted that in view of its status as the Holy Land, some of the earliest (e.g., Constantinian) monumental Christian buildings were erected in the region (at Jerusalem, Bethlehem). It was once considered that the Syrian temples, some of them apsed, played a part in forming Christian church architecture, but this view has not found much favor and the development of Christian church architecture in the region essentially belongs to the succeeding epoch.

Arabia. In the past, the very large geographical region of Arabia has gone almost entirely unnoticed in terms of building history. However, recent discoveries have shown that during the periods under consideration it had an important and diversified building development. It is possible to recognize three provinces: Western Arabia, Eastern Arabia, and Southern Arabia.

Ancient Mesopotamian civilization expanded down the Persian Gulf (cf. the paradisial island of Dilmun), and there are remains of traditional Mesopotamian building in Eastern Arabia (e.g., the Barbar Temple at Bahrain) from early times. Then, in due course, the Seleucids established stations in the area (cf. Ikaros Island sanctuary = modern Failaka, off Kuwait).

It was, however, perhaps via Western Arabia (the Hijaz) that the most significant communication was held with the ancient world. To this degree, ancient Arabia can in some sense be regarded as an outlier of Syria. Without doubt, the most striking Arabian building is in Southern Arabia (the Yemen, Arabia Felix). From Bronze Age times onward, influences had reached the region from Syria and also from Egypt. Thus, by the sixth century BCE a very striking regional school of monumental building in fine stone masonry was already long established there (above all at Marib; cf. the famous Dam and the Haram). The characteristic of this school was the superior large-block masonry, after the Egyptian manner; however, the architectural expression (i.e., the order) was not at all Egyptian inspired. It has a stark, cubist form of its own, marked by lofty monolithic piers of rectangular section. Sometime during the latter half of the first millenium BCE, the technique of stone dressing changed to accord more closely with classical Greek practice; but it would seem that it was not until well on in the Christian era (Roman rule was never established) that naturalistic Hellenic architectural ornament appeared in the region.

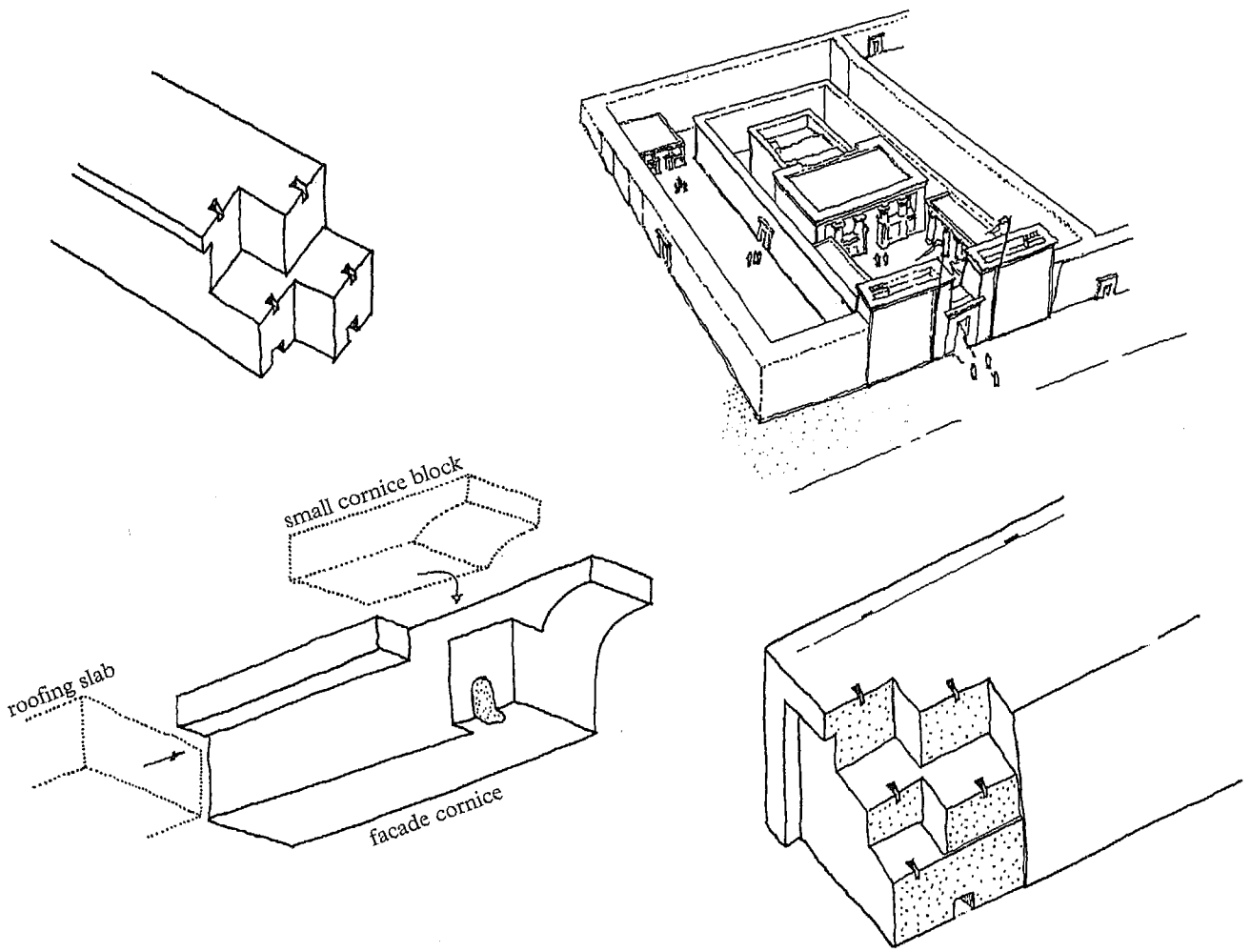
On the other hand, Western Arabia (extreme southern Transjordan, the Hijaz, or Arabia Petraea) shows virtually no monumental building prior to the rise of the Nabateans. Tayma' oasis in North Arabia was an outlier of Mesopotamia and a temporary royal residence in later Neo-Babylonian times, but little is known of its building. The Nabatean monuments in the Hijaz are virtually restricted to the rock-cut tomb facades at Meda'in Saleh (Hegra), and it is difficult to see in these anything but regional versions of Hellenistic building (Alexandrian centered).

Egypt and Its Dependencies. It has been a long accepted standpoint that in Egypt there was little commingling of Greek monumental building and Egyptian monumental building. In this respect of existence at least, the Ptolemies, as opposed to the Seleucids, enjoined a type of "apartheid"—they promoted both building modes but did not sanction their hybridization. Certainly Egyptian temple building in the traditional pharaonic manner thrived greatly under the Ptolemies (and on into Roman times). Numbers of the great showpiece Egyptian temples are of this period (e.g., Kom Ombo, Edfu, Dendera); none shows the slightest infection by the Greek style in design—and in all essentials the same might be said for construction, which is still large-block Egyptian masonry (see figure 2). However, it is possible that on close examination some secondary details of construction may show influence from classical Greek masonry. In short, the pharaonic style well survived the period of Ptolemaic rule and died of old age somewhere about 200 CE, after an incredibly extended life of about three thousand years. Hieroglyphs were probably the potent vehicle which conserved the life spirit so long, and when they fell into general disuse it marked the end. [*See* Ptolemies.]

Most of Greek monumental building under the Ptolemies was concentrated in Alexandria, which both in theory and reality was a Greek city by Egypt, not in it. The town plan of ancient Alexandria has been recognized beneath the overlay of subsequent building—it was a very regular checkerboard Hippodamian plan as directed by Alexander himself. Unfortunately, however, almost all the standing monuments have disappeared. Knowledge of such buildings is therefore available almost exclusively from *disjecta membra* and *simulacra* in the rock-cut cemeteries contrived in disused quarries around the town, which frequently represent opulent peristylar houses.

Ancient and Islamic sources speak of the splendor of Alexandrian building, so marbled that it dazzled by day and lighted up the night, but it is extremely probable that much of this marble was revetment dating from later Roman times. At any rate, very little marble of any sort remains; surviving fragments are almost entirely of local limestone. So far as can be judged, such construction was generally of good ashlar masonry; it is doubtful, however, whether anathyrosis or cramping was normal.

What is revealed by the surviving remains at Alexandria is a distinct architectural style—that is, a characteristic manner of using the Greek orders. Its notable features are a heterodox type of Corinthian capital (lacking cauliculi and medial spirals), sometimes presented in draft form (the Nabatean capital), and the appearance of modillions sup-



BUILDING MATERIALS: Persian through Roman Periods. Figure 2. *Temple of Mandoulis at Kalabsha (south of Aswan).* Constructed by the Romans in the first century CE in the traditional pharaonic design. The massive scale of the construction is shown in the perspective drawing at the upper right. Lintels, roofing slabs, and entabulature blocks weigh about 20-25 tons and were hauled up into place on ramps. The detail sketches show how large entabulature blocks rising through two or three courses were trimmed in situ for jointing with the adjacent normal blocks. (Courtesy G. R. H. Wright)

porting the corona of the cornice (simple equivalents of the imperial Roman console). There is also the breaking up and variegating of pediments into decorative compositions of, for example, flanking pinnacles and arcs. Internal colonnades were common and the solution of the angle problem adopted was the cordiform pier, a striking design element. The ultimate origins of these features are various, and some of them are found in other connections; the assemblage is, however, characteristic and can be termed the Alexandrian school. Thus, when it is encountered elsewhere, in Cyrenaica, Cyprus, southern Palestine, and Arabia (all parts of the Ptolemaic Empire or under its influence), it indicates an Alexandrian architectural province. Well-known monuments evidencing this style are the Khazne tomb facade at Petra and the Colonnaded Palace at Ptolemais in Cyrenaica, both difficult to date and assigned anywhere between later first century BCE to second century CE. This illustrates that the style survived the establishment of Roman rule in some regions and probably was only supplanted by the imperial organized "prefabricated marble" style of the second century onward.

The Alexandrian style was light and graceful and may be thought of as ancient Rococo. It was a well-known and popular image and probably formed the manner of earlier Roman wall-plaster decoration (cf. the Pompeian Second Style). As a concluding remark, it should be noticed that all discussion of this Alexandrian style refers to appearance in elevation; it does not refer to a type of building plan, far less a temple type—again, unlike Syria, with its distinct genre of Roman temples. It may be possible, however, to suggest

from the decor that the tholos was used as a planning element.

But this is not the end of the story, although such an impression is often given. Within the Roman Empire, Egypt was a very special and important province—a critical source of grain and monumental building stone (granite); thus, of necessity it was well planted with Roman administrative centers. As a result, a Roman style of monumental building supplemented the "Alexandrian" mode more brusquely in Egypt than in the Ptolemaic provinces of Cyrenaica and Cyprus, both backwaters of the Roman Empire. Certainly by the second century CE (i.e., in Hadrianic and Antonine times) there was much new building in Egypt, and it was virtually entirely in the classical mode; by that time, although relief decoration continued on Egyptian temples together with some very minor alterations and additions, no large-scale new building work was undertaken.

This Roman building was in no way confined to Alexandria or even to the other Greek cities (Naukratis, Ptolemais, Antinoe). It was spread throughout the length of the Nile Valley and further, in the desert margins and the oases. Moreover, at least by the second century CE, this Roman building was in no way derived from or modeled on the Alexandrian school, which had ruled down to the beginning of the Christian era (cf. the temple dedicated to Augustus at Philae). This new building was the Egyptian counterpart of the Imperial "Marble" style which came in earlier or later in the second century through the various provinces of the empire. Only in Egypt, for the most part, it was a "Granite" style, where monolithic granite column shafts were ordered prefabricated from the Aswan and Mons Claudianus quarries and were provided with capitals and bases in white limestone—the capitals, for the most part, being Ionic or orthodox Corinthian. Surviving buildings in the style include Roman podium-type temples, baths, theaters, and a notable profusion of monumental arches, tetrapyla, and honorific columns.

There is also striking evidence for a later stage in this building history. During the third century CE, and particularly in its closing years (cf. the times of Diocletian), there was a very considerable conversion of pharaonic monumental complexes (e.g. the Luxor Temple) into Roman establishments (notably fortresses). This indicates that the vitality of pharaonic Egyptian culture was virtually exhausted. Equally, at a somewhat later time, early Christian energies extended to contriving premises in derelict pharaonic temples and tombs, providing appropriate interior decor by covering the ancient reliefs with painted plaster. However, the architectural development of Christian Egypt, Coptic architecure, is essentially later than Constantinian times.

North Africa. In this era, North Africa was a prosperous, peaceful region with much monumental building, so that present-day remains are notable. Cyrenaica was a very old and wealthy Greek colony. Although Achaemenid armies reached the land, their irruption left no effect on building. Alexander himself arrived at its border on his visit to the oracle of Zeus Ammon but never led his armies into the territory. Shortly afterward it was brought under Ptolemaic control and during this period its old Doric building tradition continued, subject to influence from Alexandria, and probably in turn exercising some influence on Alexandrian building. It passed under Roman control early in the first century BCE, but it was probably not until the late second century CE that large-scale importation of prefabricated marble elements began to change the building scene.

Tripolitania was colonized by Phoenicians, but its monumental building eventually came to bear a Hellenistic aspect. Incorporation into the empire (first century BCE) brought no radical change until the Imperial Marble style arrived in the first half of the second century CE. In this connection a notable development was at Leptis Magna during the reign of Septimius Severus, a native of the town. Thereafter, monumental building was "international" in expression.

Circumstances were somewhat different in the extensive western areas (Tunis, Algeria, Morocco). This was very thinly urbanized by Phoenician colonization. Thus, when it came under Roman rule (from 146 BCE onward), much of it was land more akin to Western European provinces. In this way Roman settlement of the hinterland was marked by the establishment of colonies (e.g., Timgad) which came to resemble Roman towns in Europe more than cities of the Eastern provinces (n.b., bath buildings, when on a large enough scale, were modeled on the Roman thermae and concrete construction was introduced). Eventually here also during the second century CE, imperial marble building appeared. The region is of note as preserving its building energies well on into the fourth century CE. It also preserved to the end of the ancient world the highly characteristic mode of construction which the Romans called *opus africanum* (see figure 3). This was the old Canaanite System (introduced by the Phoenician colonists) of superior stone piers with a paneling of lower-grade rubble.

Roman Building in the Orient: A Summary. Roman rule in the hellenized Orient did not radically alter developments in building there. The impact of Roman rule was quite other than in those provinces previously without monumental building (e.g., the western provinces in Europe). Nonetheless, in the overall sense, certain modifications to building resulted in the eastern provinces, and it is necessary to summarize them.

The epochal building development in Rome during late Republican times (first century BCE) was *opus caementicium* (walls formed with a core of mortared aggregate laid in between faces of small stones or of flat, brick tiles). This is today loosely called Roman concrete, but the term is mis-

leading because the core was not poured as a viscous mass like modern concrete. The construction was in fact essentially similar to traditional walling in Levanto-Anatolian building, whether monumental or nonmonumental, and differed only to the degree that the (pozzolana) mortar was of superior adhesive strength. This construction was very flexible and soon its logic revolutionized design—it ousted columns as principal load-bearing elements, thus reducing the orders essentially to nonstructural ornament; and it promoted curvilinear form, both in plan and elevation (viz., the arch and the vault). Thus, by the second century CE, much monumental building in Rome was of this nature (e.g., the Pantheon). This new type of construction was not to become accepted in the eastern provinces of the empire, although a number of exceptional instances have been found, mainly in Syria. Nevertheless, baroque design certainly became prominent in some eastern provinces, but this was carried out in ashlar masonry, not in "Roman concrete."

On the other hand the next major building development in Rome equally affected the eastern provinces. During the second century CE, Roman imperial resources promoted the development of marble quarrying on a new, extended scale at quarries in the northern Aegean (e.g., Prokonesos) with adjacent harbor facilities. Mechanized masons' yards were established so that elements of the architectural orders could be dressed into nearly finished forms and dispatched to monumental building sites all over the empire. Thus, from this time onward monuments at many sites in the hellenized Orient were dignified by prefabricated marble architectural ornament. The trademark of this development was that such columns were monolithic (often of colored marble shafts with contrasting white-marble bases and capitals). In principal, this development was to outlast the age and to continue into Byzantine times.

There was, of course, a further way in which Roman rule changed the picture of building in the hellenized Orient: by the direct expedient of introducing new and radically changed building projects. Certainly the achievements of Roman engineering on roads, bridges, and above all on aqueducts were highly conspicuous. The aqueduct was associated with other projects which necessitated this urban water supply on a new scale—primarily the vastly increased use of public baths. Although the great leisure establishments of the Roman thermae were not transplanted to the East, public baths (either independent or associated with gymnasia) became endemic. Another very popular monument was the ornate nymphaeum, a pleasant amenity in the hot and dusty East. Also an additional Roman monument which became popular in the eastern provinces was the triumphal arch, or arched gate. Then there were new types of leisure projects in addition to theaters (where the more monumental Roman design became common), namely amphitheaters and hippodromes. Also a rather unexpected development in Roman times was the more frequent provision of public libraries. In review, it may be noted here that virtually all such projects in their design involved a movement away

BUILDING MATERIALS: Persian through Roman Periods. Figure 3. *Example of western Roman building construction in the province of Africa (Tunisia).* Note the opus africanum with the panel infill of opus reticulatum, a very interesting construction technique. (Courtesy G. R. H. Wright)

from the old rectilinear Greek orders structure toward curvilinear design and arcuated structure. [*See* Aqueducts; Baths; Roads; Arches.]

Conclusion. Constantine's political and religious settlement of the Roman world was a watershed in building development. Whether they had endured for several millennia or several centuries, all the building systems described here had become or became extinct within a short period. The marble perfection of the Greek temple did not essentially survive the massive stone or brick of Egypt and Mesopotamia, and Roman concrete construction was not to be continued in Constantinople. Elements of construction survived: walls of dressed stone or baked brick, the framed timber roof, domes and vaults, marble columns and associated ornament, plastered decoration. These elements were fashioned into styles: Islamic, Byzantine, Romanesque, Gothic architecture, to be followed by Renaissance, and revivals. None of these styles was a direct descendant of any one ancient building style, but each new style was recognizably Eastern or Western. The ecumenical Roman monumental building of the high empire (second or third century CE) was never paralleled. Only modern ferroconcrete building is again an international mode, unlimited in scope and provenance but unloved.

[*See also* House; Palace; Temples. *In addition the regions and sites mentioned are the subject of independent entries.*]

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G. R. H. WRIGHT

Materials and Techniques of the Byzantine and Islamic Periods

Building techniques in early Byzantine and Islamic lands were learned from the Roman and, to a lesser extent, Sasanian empires. In the formation of an Islamic vocabulary, the first Muslim dynasty, the Umayyads (640–750 CE), adopted Byzantine plans such as the centralized martyrium, as seen in the Dome of the Rock, Jerusalem (692), and architectural ornament such as the Dome of the Rock's mosaic and drilled-marble capitals, for example, those at Madinat az-Zahra', near Cordoba (936–976). Counterinfluences, which were minimal, did not occur until the late eighth century. The decorative manipulation of brick in the Middle Byzantine period, such as the sawtooth-brick bands on the facade of St. Mary of the Coppersmiths at Thessalonike (1028) and the glazed tiles excavated at the monastery of Constantine Lips in Istanbul (908), may have been a response to Islamic ornamental brickwork.

Surviving Byzantine architecture consists mostly of brick and stone churches, virtually all of the domestic and civil architecture built before 1100 having vanished. As an unfortunate result, the following description of early Byzantine architecture is skewed toward a type of religious building that was in fact outnumbered by, for example, the Justinianic fortifications described by Procopius (c. 555). This situation contrasts with the Islamic context, in which quite a number of agricultural estates, palaces, baths, fortifications, and hydraulic structures remain, giving a fair idea of both secular and religious architectural building types.

According to Glanville Downey's study (1948), the Byzantine architect, trained in geometry and physics as well as construction skills, was called either a *mechanikos* (architect) or *architekton* (master builder) until the sixth century, when the terms changed to *oikodomos* (builder) and *protomaister* (guildmaster). As stated in Leo Mayer's study (1956), the Islamic architect was variously called a *muhandis* (engineer or even designer), *banna* (builder), or a *miʿmar*, which was roughly equivalent to a mason or skilled builder. Master rank indicated by the title of *sahib* and *muʿallim* (in North Africa and western Asia) or *ustadh* (Iran, Iraq, Asia Minor).

Because of the simplicity and economy of rubble-core wall construction, most Byzantine and Islamic buildings were erected quickly by a single team of builders. Their plans were rarely innovative: Byzantine architecture improvised on conventional formulas, and Islamic architecture relied on a limited number of plans that served a variety of functional purposes. A significant problem in the study of early Byzantine and Islamic architecture is that no working drawings have survived. Given the relative simplicity of early Islamic building with its small domes and thick-walled towers, it is believed that Islamic builders relied upon a simple, numerically based system of geometrical notation for buildings such as the Great Mosque of Qayrawan (836). In contrast, Byzantine architects erected churches such as Hagia Sophia (532–537) in which the volumetric realization of a dome appended by half domes and buttresses was technically sophisticated and daring. Such complex designs would have required working drawings that may have been generated from geometrical constructions that, in turn, could be applied at the building site.

Little is known about the quantity of wood available before the eleventh century in Byzantine and Islamic Syria-Jordan-Palestine. In Lebanon, the forests diminished sometime after the sixth century; natural forests were more plentiful in Cyprus, Anatolia, and the Balkans. In the Islamic context wood was available where irrigation was practiced, as attested by the ubiquitous use of wood in tie beams, scaffolding, centering forms, and furnishings. In Byzantine architecture through the eighth century, truss-timber roofing was used for spans of 6 m (20 ft.) or less. Although the shift to the domed and vaulted church in the ninth and tenth centuries has been attributed to a lack of wood, this theory is speculative until more is known about the economics of the early Byzantine lumber industry.

The Mediterranean regions supplied ample stone, which was quarried in large blocks and sent to the construction yard to be trimmed more finely. In particular, both Islamic and Byzantine architecture used marble from the rich quarries along the Mediterranean rim, from where it was transported by ship. Marble was used for columns, carved capitals and cornices, lintels, window grilles, fountains, furnishings, pavements, and wall revetments. The variation in grain, vein, embedded crystals, color, and translucency, made marble an important decorative element. The most commonplace was an off-white marble with a blue-gray vein from the island of Proconnesus in the Sea of Marmara; red porphyry from Egypt was the most prized; green, yellow, and ivory marble came from Laconia, Tunisia, and Phrygia respectively. Because of the expense of obtaining rare marble, its presence added considerable prestige to a building. Marble was the preferred material for the revetment of interiors in Byzantine architecture, although painting and mosaic were also used. Islamic architecture also valued exotic imported marble but did not hesitate to use *spolia* (reused earlier material) where available.

Byzantine and Islamic bricks were made according to traditional practice that has been studied by contemporary ethnoarchaeologists. Bricks were made of clay (hydrated oxide

of aluminum and iron, hydrated silicates of aluminum), some sand to reduce shrinkage during firing, and organic bacteria for plasticity. Limestone and gypsum were naturally occurring impurities and, because they cause cracking, were removed manually. The clay was pressed into a wooden form and fired at 900–1,000°C (1,652–1,832°F) in an oxidizing atmosphere. Byzantine and Islamic builders often decorated their buildings with glazed or natural terra cotta. Because terra cotta is modeled, the clay body is finer than ordinary brick and must be free of impurities to prevent distortion during firing.

Ceramic glaze, like glass, was made of ground silica, soda or potash, and chalk. Glassmaking was known in the ancient Near East and Roman Empire and used in Byzantine and Islamic architecture for glazing windows: Hagia Sophia had 18-centimeter panes set in marble grilles, and Ibn al-Faqih in 903 stated that the Dome of the Rock had "fifty-six windows, glazed with glass of various hues" (as quoted by Creswell, 1989, p. 24). Although the archaeological evidence is inconclusive, it is possible that colored glass was also used in windows in the Early and Middle Byzantine periods (fourth–twelfth centuries).

The tiny units used in wall mosaics were made of colored marble and glass. The units, called *tesserae*, were set in a lime-plaster ground to form a continuous surface. For floors, stone and marble were favored; for walls, a mixture of marble, and glass—including gilded glass—was used to create rich figural and decorative representations such as the reknowned mosaics in the Church of S. Apollinare Nuovo in Ravenna (c. 490). Islamic patrons decorated some of their finest early monuments with mosaics; however, Muslims were not able to equal the skill of their Byzantine neighbors, as indicated by the importation of Byzantine masters and *tesserae* to create the mosaics for the Dome of the Rock, the Great Mosque of Damascus, and the Great Mosque of Cordoba. Both the Byzantines and Muslims also decorated architectural interiors with wall painting on plaster, which, though not as durable as mosaic, was certainly less expensive and faster.

Byzantine buildings were generally made of a mixture of ashlar (dressed stone) masonry, brick, and rubble core. Walls were made of two vertical faces of ashlar sometimes mixed with brick and filled with rubble that was held together with plenty of mortar. One common technique was to bind the ashlar faces horizontally with courses of brick laid across the entire wall at regular intervals. Walls were usually two bricks thick or about 76 cm (30 in.). Byzantine brick size varied according to region; in Constantinople, bricks measured 35.6–38 cm (14–15 in.) on each side and about 5 cm (2 in.) thick. Arches, vaults, and domes were usually made entirely of brick, an outstanding exception being the huge (11 m or 36 ft. in diameter) stone roof of the tomb of Theodoric, Ravenna (c. 530). Buildings could be constructed entirely of brick, although more commonly mixed with stone (in courses) or on stone foundations.

The mortar was made of lime, sand, and crushed brick. Perhaps as a measure of economy, the mortar layer was thicker than the brick, with the unfortunate result that structural deformation could occur as mortar dried and buildings settled. Conversely, the intended effect may have been visual because mortar was often grooved (*falsa corona*) or in the tenth–twelfth centuries made to appear even thicker by recessing alternate courses of brick. Cyril Mango states (1976, p. 10) that Byzantine construction was derived from practices in western Asia Minor and the Balkans of the second and third centuries CE. Byzantine construction differed from Roman; whereas buildings such as the Pantheon had a cement core that formed a monolith when set (the wall surfaces and internal arches serving structurally only until the cement hardened), Byzantine rubble was loose and depended upon wall surfaces to contain it; hence the importance of bonding courses.

Although Byzantine churches were generally plain on the exterior, a style of decorative brickwork appeared in the tenth century in buildings such as the Theotokos Church at Hosias Lukas (946–955) where sawtooth bands alternate with courses of brick imitating a Kufic (Arabic) inscription and stone framed with brick (called *cloisonné*). This revival of Roman decorative brick technique was clearly stimulated by the extraordinarily textured brick facades of Islamic buildings such as the tomb of Ismail the Samanid in Bukhara (first half of the tenth century) and the Bib Mardum Mosque in Toledo (999).

Islamic buildings rested on stone foundations (except where stone was scarce) that were sunken well below ground and rose .5 m (1.6 ft.) or more above ground. A wood frame was built on this socle, the walls filled in with mud brick or baked brick. In very tall towers, such as Gunbad-i Qabus in Gurgan (1006/07), the foundations were 11 m (36 ft.) below ground. In two-story complexes, like the buildings inside the large enclosure at Qaṣr al-Ḥayr East in Syria (begun 728/29), the lower story was stone and the upper was brick. Mortar, made of gypsum or lime, was used more to lubricate the stone during positioning than to hold it in place. A concrete of mortar and pebbles with an exterior revetment of stucco or marble panels replaced brick in the ʿAbbasid period beginning in 749. The use of colored marble for dados and floors, as in the Great Mosque of Damascus (714/15) was adopted from Byzantine practice.

Islamic bricks followed the Roman and Sasanian preference for the square unit, although the unit varied in size according to time and place. Unbaked brick was made of earth trampled with an admixture of chaff, straw, and water, packed into a wooden form, baked by the sun on both sides, and used immediately. The same mud-straw mix formed the bond between brick courses. Afterward the walls were coated with mud mixed with lime for greater durability.

Terre pisé, or rammed earth, consisted of earth trampled with chaff and minimal water. The mixture was applied to the wall in large globs, each course being allowed to dry for

a few days before the addition of the next layer. The walls were battered (sloped up and back) diminishing in width with height. Such apparently impermanent building materials could, with proper maintenance, prove structurally solid and durable. For example, both mud brick and *terre pisé* were used in Lashkari Bazar, the eleventh-century palace city of the Ghaznavids. Floors could also be made with the *terre pisé* technique, leveling and either beating or flooding the earth to harden its surface. A coating of lime might then be applied.

Fired brick was dried more slowly than mud brick and burned for three days in a kiln fueled with dung (wood being too scarce and expensive). Islamic ornamental brickwork, called *hazarbaf*, appeared in Syria in the eighth century in monuments such as the great gate of Raqqa (772) and was probably originally a Roman technique. The technique consisted of bricks laid in patterns, protruding and recessed to create a woven effect when light played over the surface. Often the plaster joints between bricks were ornamented with a wedge-shaped instrument pressed directly in the soft plaster, and the insertion of carved ceramic plugs and molded plaster plugs in the interstices of the bricks.

The use of glazed brick in building was an ancient Mesopotamian practice revived by the ʿAbbasids at least as early as the early tenth century. Rarely were surfaces totally glazed; usually glazed and unglazed brick were used together to make lively patterns. Cut brick added to the complexity and crispness of the design. These bricks were cut and their edges ground smooth and then arranged face down in a vegetal or geometric design. Next liquid plaster was poured liberally over the reversed composition to form a glue. When dry, the whole piece was lifted, and the glazed surface was revealed in a negative ground of plaster. The tile panel was then affixed to the building interior or facade.

An important Islamic innovation in glazed ceramic was luster, an expensive technique, which nonetheless was considerably cheaper than the silver and gold it imitated. First developed for use on glass, it appears on ceramic in ninth-century Iraq. Luster consisted of the application of a silver or copper compound to a tile surface with an oxidized glaze; the tile was refired in a reduction atmosphere until the glaze began to soften and the metallic compound burned away leaving an iridescent stain ranging in color from red to golden yellow. Lusterware tiles from the ʿAbbasid palace-city of Samarra were used to decorate the *miḥrab* niche of the Great Mosque of Qayrawan in Tunisia (836).

Early Islamic architects often reused Roman, Visigothic, and Byzantine columns, capitals, decorative or epigraphic fragments, and sculpture. Spolia was abundantly available in abandoned Roman and fifth–sixth-century buildings, and its use probably reflected a taste for older pieces at a time in which Islam was searching for aesthetic models. Occasionally the spolia was inverted, as in the minaret of the Great Mosque of Qayrawan, where a block of stone with Latin letters was deliberately placed upside down, or used in new combinations, as in the entrance to the cistern of the

BUILDING MATERIALS: Byzantine and Islamic Periods. Figure 1. *Great Mosque of Cordoba.* Eighth-tenth century. The red and white alternating voussoirs of the arches were derived from a Roman aqueduct in Merida and soon became a sign of royalty and legitimacy that was copied in later Islamic architecture of the Mediterranean and Near East. (Courtesy D. F. Ruggles)

Merida Alcazaba (early eighth century) in Spain, perhaps implying the superiority of Islam over older religions. Marble spolia was favored by the Umayyads but the supply ran out for 'Abbasids, who, building on a much greater scale, often resorted to stucco imitations.

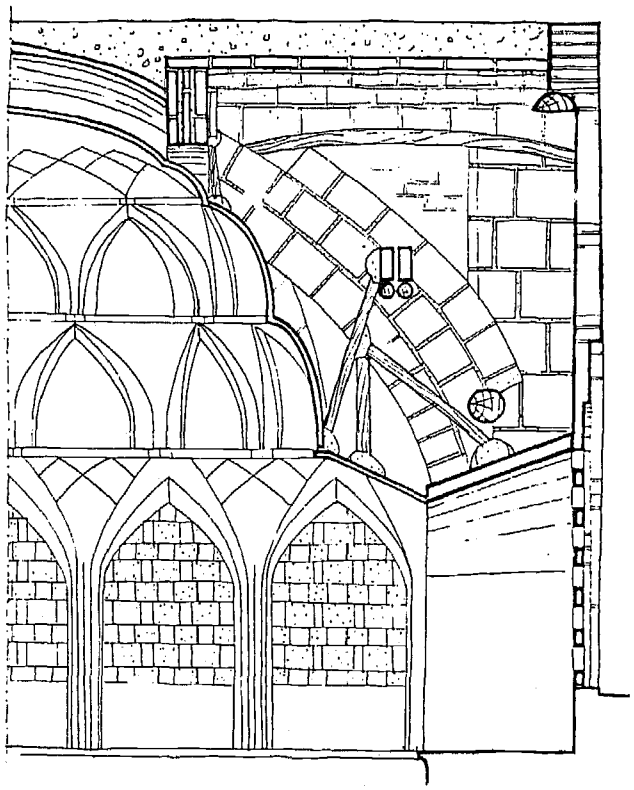
Stucco was made of either ground gypsum or lime, sometimes mixed with finely ground marble, and served as a cheap substitute for carved marble. It could be modeled in three-quarter relief for engaged statuary, as in Khirbat al-Mafjar's baths (c. 739–744), carved or modeled (while soft) directly on walls and vaults (as in the mid-ninth-century palaces of Samarra) or prefabricated in carved or pierced slabs that were affixed to walls in the manner of marble. As a medium for wall decoration, stucco had the advantage of being an inexpensive material that could be worked more quickly and easily than solid stone.

Early Islamic architects preferred lavish surface decoration to structural or spatial sophistication. However, beautiful spatial effects were achieved using the arch as a rhythmically repeating element, as evident in arcades of stilted arches at the Cordoba and Qayrawan mosques (see figure 1). But although Islamic architecture is known for its vast array of arch profiles—round, pointed, stilted, and cusped—all have Byzantine precedents. Even the horseshoe arch, which dominated Islamic hypostyle architecture around the Mediterranean, appeared first in Byzantine churches of the third through sixth centuries. Two-centered parabolic arches are seen at the Byzantine church of Qsar Ibn Wardan, near Homs in Syria (561–564). Such pointed arches are structurally superior to round arches because they send the thrust downward instead of laterally, reducing the need for a counterthrust of heavy masonry and allowing taller, more stable buildings. Wooden tie beams were usually used to strengthen and support arches during construction.

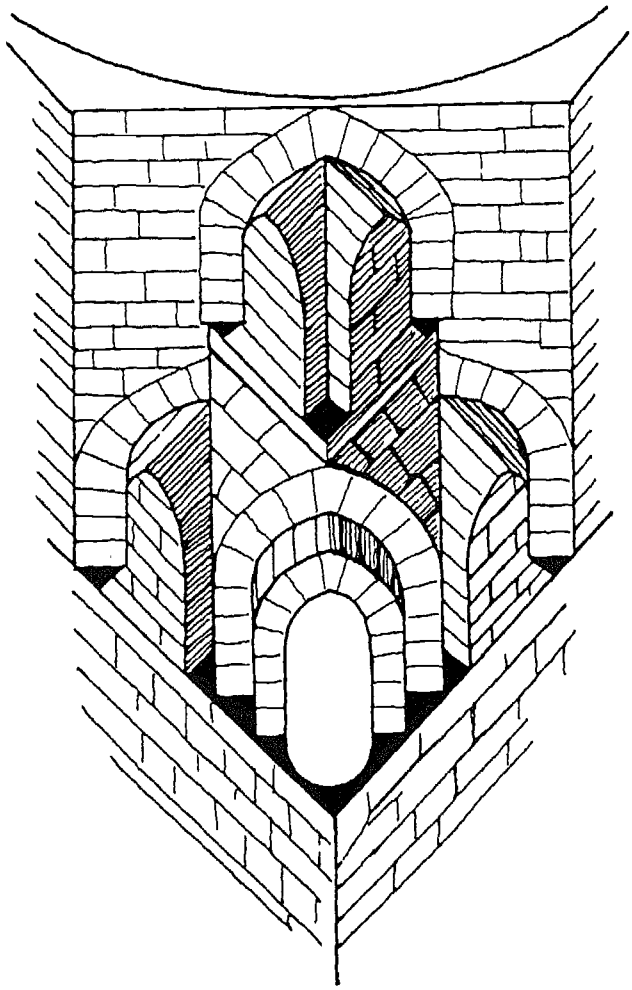
Although Byzantine and Islamic walls were made of ashlar or brick or a combination thereof, the arches, vaults, and domes were all made of brick. Whereas Roman arches rested on wooden frames that were removed after the mortar was set, Muslims followed the eastern technique of building uncentered arches without frames (see figure 2). In the latter, the barrel or pointed barrel vault was built as a series of arches, each leaning on the previous one; as the sides met, the central space was filled by a brick plug that functioned like a keystone. Vaults made by this method could and did reach enormous size; an outstanding Sasanian example that was known both to Byzantine and Muslim architects was the great arch of Ctesiphon in Iraq (third–mid-sixth century?). Domes and groin vaults were built similarly but on four arches.

One important difference between Roman vaults and Byzantine and Islamic ones was the change in material. Beginning in the fourth century, a gradual transition was made from heavy concrete mass to thin membranes of brick. The result was lighter vaults with fewer supports and wider interior spans. To lessen the weight further in Byzantine buildings, inverted earthenware vases were often placed in the poured mortar of the extrados of the vault to create a light cellular mass. In early Byzantine buildings on the Italian Peninsula, vaults were made of tubular ceramic vessels laid end to end in progressively smaller courses, as was the case in the apse of S. Apollinaire Nuovo.

Early Byzantine architects experimented with huge domes spanning large unimpeded interiors. The domes rested on a system of arches, supporting half-domes, and pendentives, the latter often serving as a surface for figural representation. The first monumental Byzantine dome on four pendentives was the Hagia Sophia. Following in the footsteps of the Sasanians, Islamic builders from Iraq eastward excelled in vaulting, specifically domes and iwans (large vaulted halls open on one side, having the appearance of a monumental niche). Islamic domes generally relied on squinches (arched corners) rather than pendentives for support, the squinches contributing to the decorative articulation of the interior (see figure 3). In buildings such as the mausoleum of Ismail the



BUILDING MATERIALS: Byzantine and Islamic Periods. Figure 2. *A maqarnas vault section.* The stucco vault is suspended from above by means of a complicated system of timber hangers attached with lumps of gypsum mortar to the brick or stone structural arches—and to each other. (From G. Michell, ed., *Architecture of the Islamic World*, London, 1978, p. 142; courtesy Thames and Hudson)



BUILDING MATERIALS: Byzantine and Islamic Periods. Figure 3. *Drawing showing a series of squinches resting upon one another in the mausoleum of Umm Qulthūm.* This Islamic method of bridging the gap between a square base and a circular dome takes advantage of both squinch and pendentive. (From G. Michell, ed., *Architecture of the Islamic World*, London, 1978, p. 142; courtesy Thames and Hudson)

Samanid, four squinches alternate with four arches, above which is a sixteen-sided band, the whole forming a perfectly conceived zone of transition from square base to diminutive dome.

The many shared building practices and materials of Byzantium and Islam is explained by their history and geography. Both societies received significant legacies from imperial Roman architecture and were essentially Mediterranean societies that confronted and competed with each other in the Levant. Until after the Islamic conquest of Constantinople in 1453, Byzantium amply provided Islam with typological models, building techniques, and methods of decoration; in contrast, Islam's contribution to Byzantine architecture was less significant and principally in the area of nonfigural decoration.

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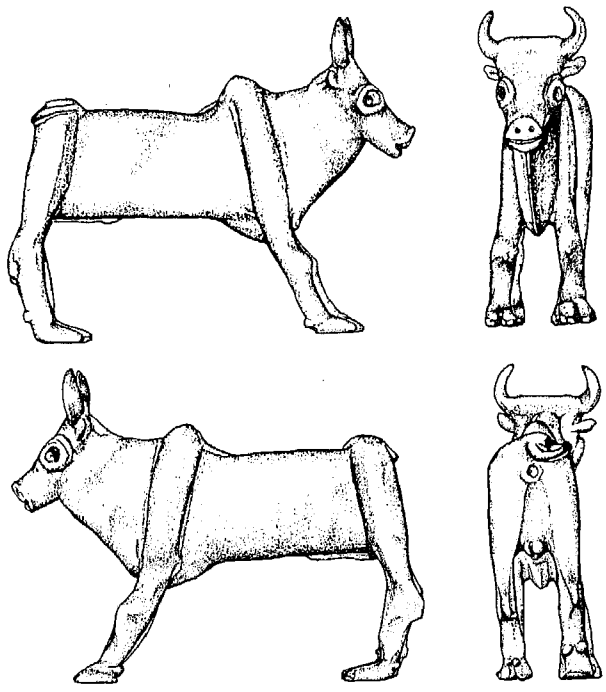
D. FAIRCHILD RUGGLES

BULL SITE, located on the ridge of Daharat et-Tawila, in the northern Samaria hills, east of Dothan (map reference 1807 × 2016). The chance discovery of a fine bronze figurine (18 cm long) showing a zebu bull, lent this site its name (see figure 1). Excavations carried out at the site between 1978 and 1981 by Amihai Mazar under the auspices of the Hebrew University of Jerusalem revealed what appears to be a unique example of a *bāmâ,* or "high place," dated to about 1200 BCE. This is a single-period site, with only one structure: a circular enclosure surrounded by a wall constructed of large stones about 20 m in diameter. The wall is



BULL SITE. Figure 1. *Drawings of the bronze bull figurine.* (Courtesy ASOR Archives)

poorly preserved as a result of erosion. The bedrock is exposed in most of the enclosure except on the east, where a standing stone is fronted by a small paved area that may be interpreted as a *maṣṣēbâ*. There may have been a sacred tree at the center of the enclosure. The site is thus a unique illustration of a Canaanite-style high place, like those mentioned frequently in the Bible (*1 Sm.* 9: 13; *Dt.* 12: 2), and the bull figurine may have served an important cultic function. While the bull is known as the attribute and symbol of both El and Baal, the main Canaanite gods, it was also adopted by the northern tribes of Israel as a symbol of Yahweh (e.g., the golden calves Jeroboam set up in the temples at Dan and Bethel). The Bull Site may thus have been a high place serving the cluster of Iron Age I sites found in archaeological surveys in the vicinity. These sites represent what is generally identified as part of the wave of initial Israelite settlement in the central hill country of Palestine.

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AMIHAI MAZAR

BURIAL SITES. In the ancient Near East, burial grounds usually reflected either tribal or familial affiliations (tribal in less complex societies and familial in more complex, more urbanized societies). Most large settlements were surrounded by cemeteries, but many societies maintained practices of intramural burial—in prehistoric periods and the Middle Bronze Age in the southern Levant, and throughout preclassical history in Mesopotamia. Successive interment of the dead in a particular burial site from one "period" to the next (as defined by material culture) most probably testifies to continuity in settlement as well. The reuse of Intermediate Bronze Age shaft tombs in the Middle Bronze Age and Late Bronze Age for example (see below) may point to long-term lineage stability and cultural continuity. Cemeteries of rural agriculturalists and pastoralists that featured conspicuous tomb monuments such as dolmens or tumuli may have served as territorial markers.

The meager human skeletal remains ascribed to the Paleolithic, Epipaleolithic, and Early Neolithic periods originate chiefly in subfloor contexts of cave, hut, or village occupations. From the Neolithic onward, a combination of intramural and extramural interment was normative for sedentary occupation in Syria and Mesopotamia, although the intramural aspect is often better represented archaeologically. By the Chalcolithic period, part of the mortuary process (secondary burial of defleshed bones for the most part) had moved beyond the limits of settlement, and the concept of a necropolis separate from the domicile became firmly established in the southern Levant, as can be seen at sites such as Shiqmim, Ghassul-Adeimeh, and the necropoli on the southern coastal plain. Infants continued to be buried beneath the surfaces of rooms and courtyards, but more mature individuals were interred in burial circles (Shiqmim), in pits around and within mortuary temples (Gilat), around elite tombs (Kissufim), in cist tombs (Adeimeh), and in rock-hewn and cave tombs along the coastal plain (Ḥadera, Azor, Ben-Shemen), in the highlands (Naḥal Qanah), and in the Judean Desert.

In the southern Levant, Early Bronze Age cemeteries seem to lie almost exclusively beyond settlement limits. Some burial sites—highland cave tombs in particular—show continuity in utilization from the Chalcolithic to the Early Bronze Age (at Naḥal Qanah, Beit Sahur). At Byblos, too, subfloor, intramural burial—particularly in large jars—seems to carry through. The circles, stone constructed grave or *nawamis,* in the Sinai Desert have been dated to EB I, but the *nawamis* cemeteries probably date back to the Chalcolithic as well. In the burial grounds on the east bank of the southern Jordan Valley, the Chalcolithic cist-tomb tradition seems to give way to the tumulus and dolmen tradition in more pastoralist societies. In a more sedentery context, at Bab edh-Dhraʿ, early EB I shaft tombs were gradually supplanted by above-surface, round burial structures (EB Ib–EB II) and finally by large rectangular "charnel houses" (EB III). In the EB IV, the shaft-tomb tradition was revived. However, the Bab edh-Dhraʿ above-surface burial struc-

tures and the length of the burial sequence are unique thus far for the Early Bronze Age.

One of the hallmarks of the Intermediate Bronze Age in the southern Levant is the existence of large cemeteries of shaft, dolmen, or tumulus tombs often associated with the small, non-nucleated settlements characteristic of this period (at Dhahr Mirzbaneh, Jebel Qa'aqir). In the central highlands this phenomenon was maintained into the Middle Bronze Age (many of the IB cemeteries show continued use) and the Late Bronze Age (when cave tombs containing multiple, successive burials seem to have been the norm—e.g., at Dothan, Shechem, Jerusalem). From the Iron Age onward, burial sites are generally allied with settlements, aside from bedouin cemeteries in marginal zones.

In the Middle and Late Bronze Age of the southern Levant both extramural and intramural burial were practiced, sometimes coinciding in the same settlement, as, for example, at Megiddo and Jericho. It has been suggested that intramural burial was reintroduced from the northern Levant, where the practice had never died out. Some sites seem to show either exclusively intramural (Tel Dan) or extramural (Tel Nagila) interment; however, most settlements of the second millennium BCE possess subfloor jar burials of infants, regardless of whether their main cemetery is extra- or intramural.

The above features persevere into the Early Iron Age in the lowland sites of the southern Levant, where the material culture shows continuity from previous periods. The hill country sites of the "Israelite" type are oddly lacking in burial sites, it is generally suggested that normative burial practices changed, shifting to simple inhumation in the earth or rock-heap burials without offerings. In the first millennium BCE, burial sites are comprised of rock-hewn tombs beyond settlement bounds. Contemporary biblical references imply the social status inherent in tomb ownership (e.g., *Is.* 22, 57) and indicate the prohibition against intramural inhumation by excepting royalty (*1 Kgs.* 2:10, 11:43; *2 Chr.* 9:31). One of the largest and best-known first-millennium BCE necropoli in the southern Levant is in Jerusalem, most of whose Iron Age tombs were carved into the malleable limestone scarps and layers to its east and north, though some of the later Iron Age tombs were placed to the west as well (e.g., Ketef Hinnom, Mamilla). [*See* Necropolis.] The number of known tombs and skeletons from this necropolis cannot account for the city's total population, and it is assumed that only the social elite could afford or were permitted such tombs. [*See* Demography.] It was also during this period that the city's cemetery became inextricably linked with both quarrying and water storage. Quarries became convenient venues for tomb carving, and tombs were often reused as cisterns or reservoirs. [*See* Cisterns; Reservoirs.] These patterns continued into modern times.

The Iron Age cemeteries in the Phoenician cultural sphere (e.g., at 'Atlit, Achziv, Tyre, and on Cyprus) featured shaft and cist tombs and cremations in kraters. At Achziv these different tomb types seem to be organized in groupings (by kin?), sometimes enclosed by a wall. They can include above-surface tomb construction; funerary stelae *(maṣṣēbôt)* and altars; perforations in roofs; and extramural, postburial offerings, all of which point to ancestor veneration (or other interaction) and beliefs in an afterlife.

The cemeteries of the Persian period initially continue Iron Age traditions. They are uniformly located outside settlements but generally in close association with them. Most of the known cemeteries of this period, and certainly the largest ones, are found on the Levantine and Cypriot coasts at sites such as 'Ain Hilweh, Achziv, 'Atlit, and Tell el-Far'ah (South) and Tsambres and Aphendrika, respectively. The dominant tomb type in this coastal "Phoenician" tradition is the shaft tomb. Other cemeteries, more often inland (at Gezer in Palestine, Kamid el-Loz in Lebanon, and Til Barsip and Ur in Mesopotamia) are characterized by cist tombs or pit graves.

Of the many and often extensive Syro-Palestinian Hellenistic-, Roman-, and Byzantine-period necropoli, several have been studied and reported on in depth: Palmyra, Jericho, Jerusalem, Petra, Beth-She'arim, and Mareshah (Marisa). Other important necropoli have been underexcavated, underreported, and/or widely plundered or damaged: Gaza, Ashkelon, Beth-Shean, Caesarea, Sepphoris, Tiberias, and Caesarea Phillipi (Banias). Starting with this period, chalk seems to have been a favored material in which to quarry out cave or chamber tombs with loculi (burial niches) and/or arcosolia (recessed, arched benches or troughs)—in Jerusalem, Beth-Guvrin, and Beth-She'arim. Where large chalk exposures were not immediately available or convenient, constructed cist tombs and mausolea were more common (e.g., Akko, Beth-Shean, Neapolis, Caesarea, Rehovot in the Negev, Gush-Ḥalav, Mesillot). The great necropolis at Palmyra included very large and ornate tomb structures of three kinds: subterranean hypogea with loculi (the most frequent), tower tombs (originally perhaps serving as monuments for hypogea) and atrium tombs (the least frequent). [*See* Mausoleum.]

During the Late Roman and Byzantine periods, great catacombs developed at Beth-She'arim and Beth-Guvrin that included large halls and corridors filled with numerous arcosolia, burial troughs, and sarcophagi. Those at Beth-She'arim were intended for the interment of Jews from afar, as well as for local denizens, but by this time kinship was not a prerequisite. Their cosmopolitan decoration includes figurative portrayals and multilingual inscriptions. The Beth-Guvrin catacombs, in contrast, show little decoration and almost no figurative art. They also accommodated an admixture of Jewish and Christian interment. Several cemeteries of this period reveal structures and tables for the

preparation and consumption of funerary meals (e.g., at Elusa [Halusa] and Gerasa [Jerash]). Beyond the limits of large cities, at both Beth-Shean and Gerasa, for example, large, ornate tomb monuments and mausolea lined the main roads, as they did the Appian Way in Rome.

It is still an open question for most periods as to whether known burial sites represent the dead of an entire population, with all its attendant social statuses, or only its elite. In cemeteries associated with large settlements, the total number of tombs and skeletons seldom corresponds to total populations calculated over long periods of occupation. This may indicate that only part of the population was interred in the associated cemetery and lead to the inference of a measure of social stratification. In cemeteries in frontier zones not clearly associated with settlements—or only with lower ranking settlements—a more egalitarian order may be expressed and a larger proportion of the total population represented. Tomb type and decoration have been used to determine class division (wealthy, middle, and poor classes) at Roman Abila in Jordan, though such claims can only be substantiated by further evidence. Other cemeteries may reflect particular ideologies or lifestyles—examples being the simple cist burials at Qumran or the interments of Byzantine monks in caves scattered throughout the Judean desert, both of which reveal a predominance of males.

[*See also* Burial Techniques; Catacombs; Cave Tombs; Cist Graves; Dolmen; Grave Goods; *and* Tombs. *In addition, many of the sites mentioned are the subject of independent entries.*]

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BURIAL TECHNIQUES. The consistent pattern for ancient Syro-Palestinian burial techniques is the practice of multiple burials—both primary and secondary—in subterranean chambers. Despite periodic changes in tomb architecture and methods of interment, the prevailing custom was to bury family members together in an underground cave. Early Bronze shaft graves held single burials. Middle Bronze tombs were larger circular underground chambers containing multiple primary and secondary burials, as well as miscellaneous grave goods—including jewelry, pots, jars, and juglets (representative sites include Gibeon and Jericho). The custom of multiple burial in small caves of this type continued into the Iron Age, albeit with slight architectural improvements—plastered walls and flooring (at Lachish, for example).

Significant changes in both tomb architecture and methods of interment occurred during the Iron Age, with the appearance of the "bench" tomb, an underground chamber with waist-high benches around three sides, entered by a stairway (e.g. the St. Etienne tombs in Jerusalem). Often, the area under one of the benches was hollowed out as a repository for secondary burial: corpses were laid on the benches to decompose, and when desiccation was complete, the bones were gathered into the repository. Over time, the repository came to hold the bones of a family's ancestors, a fact vividly captured in the biblical idiom "to be gathered to one's fathers" (*2 Kgs.* 22:20 and elsewhere). Bench tombs and secondary burial remained characteristic into the sixth century BCE.

The conquest of Syria-Palestine by the Persians, Greeks, and Romans introduced foreign cultures and brought about changes in burial techniques, but the tradition of multiple burial in underground chambers was not erased. Cist graves, individual graves lined with stone slabs, appeared when the exiles returned from Babylon in the sixth century BCE and during the Roman occupation. Wooden coffins and stone sarcophagi were used during the Hellenistic and Roman periods (exemplary specimens of each have been found at Jericho and on Mt. Scopus), but burial within niches in the walls of subterranean chambers was more typical. Two types of Greco-Roman niches proliferated during the Roman period (37 BCE–323 CE): the arcosolium, a broad, arch-shaped shelf carved along the wall of a cave, used for primary burial (e.g. the Tomb of the Kings in Jerusalem, and the tombs at Khirbet Shema'), and the *koḥ*, a deep, narrow slot carved perpendicular to the cave wall for primary or

secondary burial (e.g., the "Caiaphas" tomb in Jerusalem and the "Goliath" tomb in Jericho). In *kohîm* caves in the Roman period, ossuaries or other repositories—pits, niches, and even separate chambers and charnel rooms—were frequently used for secondary burial. These various forms of secondary burial are illustrated by Jason's Tomb, the first-century tombs at Jericho, the cemetery at Dominus Flevit, and the excavated tomb at Meiron.

Ancient Syro-Palestinian concepts of the afterlife cohere closely with these burial techniques. The Israelites, for example, called the afterlife *Sheol* and described it as a dark underground place where the souls of the dead reposed (*Gn.* 37:35; *Jb.* 17:13; and elsewhere)—not unlike Bronze and Iron Age subterranean burial caves. During the Roman period, beliefs in the resurrection of the body and expiation by decomposition motivated the widespread practice of secondary burial, especially in ossuaries. Syro-Palestinian burial techniques never included efforts to preserve flesh through mummification, a practice known in Egypt as early as 2600 BCE.

[See also Burial Sites; Ossuary; *and* Sarcophagus.]

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BYRON R. MCCANE

BURROWS, MILLAR (1889–1990), biblical scholar and theologian. A professor of Bible at Brown University (1934–1938) and of biblical theology at Yale University (1934–1958), Burrows also served as director of the American School of Oriental Research (ASOR) in Jerusalem (1931–1932, 1947–1948) and as president of ASOR (Jerusalem and Baghdad, 1934–1948). His dissertation, "The Literary Relations of Ezekiel" (Yale University, 1925), was printed privately. He completed and edited the last volume of C. F. Kent's *Student's Old Testament* (*Proverbs, Job,* and *Ecclesiastes*). His *Founders of Great Religions* (1931) presents sketches of the lives and teachings of leaders of the world's major religions. Burrows excavated in the ASOR garden in Jerusalem, where he uncovered Byzantine tombs (1932). His 1941 work, *What Mean These Stones?*, on the purpose of archaeology and its relation to the Bible and the history of culture, remains a landmark in the field. His work on the Dead Sea Scrolls, published in 1955, was a best seller and translated into many languages; its sequel (1958) was equally successful. Eschewing sensationalism, these scholarly, balanced studies deal with all the material available at the time.

Burrows contributed to the Revised Standard Version (RSV) of the Hebrew Bible. In its ongoing correction and revision, his *Diligently Compared* (1964) presents numerous discrepancies previously overlooked. His last book, *Jesus in the First Three Gospels* (1977), is a masterly survey of the content of the Synoptic Gospels, with critical comment and an appraisal of scholarly opinions.

In 1961, Burrows was awarded an honorary degree by Yale. The opening sentence of the citation appropriately praised his career: "As archaeologist of the Near East and master of its language, as a friend of both Jews and Arabs, as interpreter of the Dead Sea Scrolls and translator of the Revised Standard Version of the Bible, you have made a notable contribution to the life and learning of our time."

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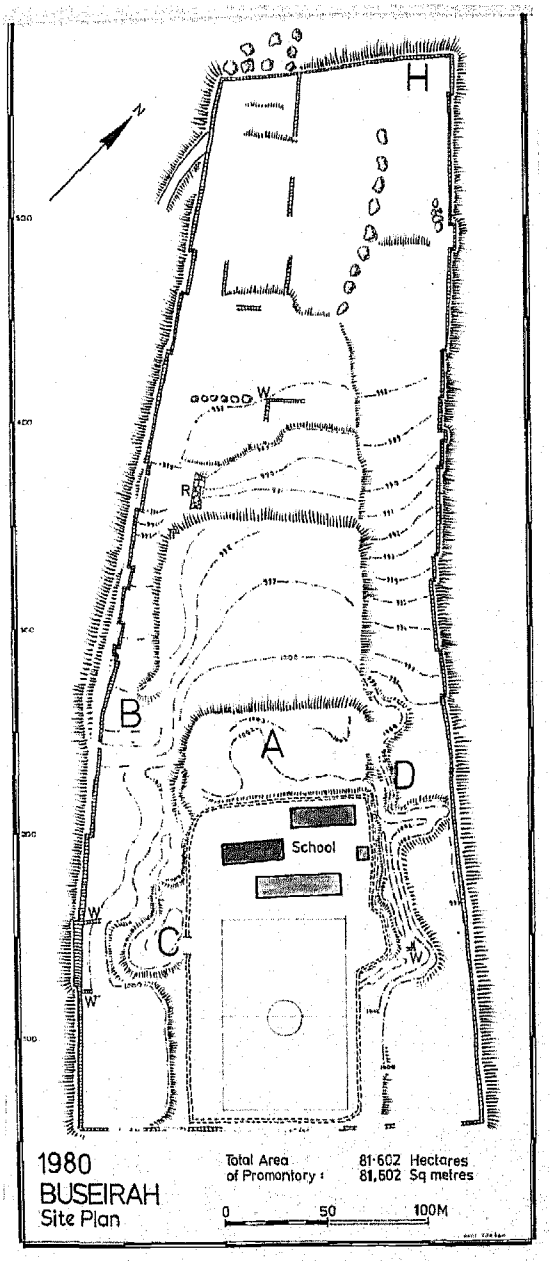
MARVIN H. POPE

BUṢEIRAH, site located about 10 km (6 mi.) south of Tafila, 4 km (2.5 mi.) west of the King's Highway, and 45 km (28 mi.) north of Petra in modern Jordan (31°10′ N, 35°40′ E; map reference 208 × 018). Lying to the north of the present-day village, the ancient site, on a spur running north-northwest along the 1,100-meter contour line, is dominated by a mound about 3,200 sq m in area. It is surrounded on three sides by deep ravines and is connected to the main land mass only to the south. Feinan, the largest copper-production area in the southern Levant, heavily exploited dur-

ing the Iron Age, is to its southwest, which helps to explain Buṣeirah's importance.

The modern site of Buṣeirah was first identified with biblical Bozrah by Ulrich Jasper Seetzen, following his trip to the southern end of the Dead Sea in 1806 (*Reisen durch Syrien, Palästina, Phönicien, Transjordan-länder, Arabia Petraea und Unter-Aegypten*, Berlin, 1854–1859). However, there is no inscriptional evidence to confirm or deny this equation. Bozrah as a city of Edom appears several times in the Hebrew Bible (*Gn.* 36:33; *1 Chr.* 1:44; *Am.* 1:12; *Is.* 34:6, 63:1; *Jer.* 49:13, 22). It may well have been Edom's capital, although this is not explicitly stated anywhere. The prophet Amos predicted Bozrah's overthrow, which was taken as symbolic of the defeat of powerful Edom and of God's vengeance on his enemies (*Am.* 1:12). Two other places named Bozrah exist, one in Moab and one in the Hauran, the latter a provincial capital of Roman Arabia.



BUṢEIRAH. *Plan of the site* (Courtesy P. Bienkowski)

Nelson Glueck was the first to survey Buṣeirah. He at first thought the site was small and that its major occupation was in the Nabatean period. For this reason, he felt that the identification of Buṣeirah with biblical Bozrah was problematic and instead identified Tawilan with Bozrah ("Explorations in Eastern Palestine and the Negev," *Bulletin of the American Schools of Oriental Research* 55 [1934]: 14). [*See* Tawilan.] Later, though, he changed his mind and accepted the equation Buṣeirah = Bozrah (*Explorations in Eastern Palestine* 2. Annual of the American Schools of Oriental Research 15 [1935]: 83). The size of the site and the nature of the remains, more impressive than any other Iron Age site in Edom, together with the apparent preservation of the ancient name, make the identification reasonably secure.

Crystal-M. Bennett excavated at Buṣeirah from 1971 to 1974 and again in 1980. Her four principal reasons for excavating the site were its probable identification with biblical Bozrah; the passages in *Numbers* 20 that tell of the king refusing passage through his land to the Israelites, an event generally dated to about 1230 BCE; Buṣeirah's proximity to Feinan; and Buṣeirah's seeming the most likely site to provide the first chronological sequence for Edom.

Bennett's excavations revealed a major Edomite site dating to the Iron II period, and possibly continuing into the Persian period (c. seventh–sixth or fifth centuries BCE), with some evidence of reuse in the Nabatean and Roman periods. Iron II Buṣeirah was a substantial administrative center dominated by two or three large buildings and fortified by a town wall. The area excavated probably embraced only the central part of the ancient city, the rest being hidden under the modern village to the south. No water source has been found within the site; the water supply probably came from the ʿAin Jenin spring about one kilometer to the east.

Bennett excavated four main areas: A–D, and a small sounding, area H. Area A, the highest point on the site, has a palatial and/or temple building in two main phases built on a deep fill or mound. Building B, the earlier phase, had overall dimensions of 77 × 38 m, with two entrances on the northeast, both off-center and approached by a ramp. In the main central courtyard water flowed into a cistern through one or two drains, one emerging from another room. At the end of the courtyard was a flight of shallow steps, flanked by plinths which may have served as the bases of two columns. The steps led into a long narrow room. All the floors and walls were plastered. There was some evidence for a mud-brick superstructure. Building B shows evidence of destruction by fire.

Building A was built on top of building B but was smaller

(48 × 36 m). It had a large central space surrounded by rooms or corridors. The corners of the exterior walls seem to curve outward—hence, its colloquial title, the Winged Building. The main entrance was now on the opposite, southwest, side. Building A also showed evidence of destruction by fire.

Buildings B and A have a generic similarity to the so-called Assyrian open-court buildings in Palestine and to Neo-Assyrian palaces and residencies in Mesopotamia and the North Syrian provinces, both in plan and in their being situated on a raised artificial citadel. These resemblances strongly suggest that the Buṣeirah buildings should be considered palaces, even though they do not necessarily attest to direct influence from Assyria. The battered enclosure wall traced between areas A and B suggests a deliberate division into upper and lower towns.

Area B, adjacent to area A to the southwest, consisted of ordinary domestic buildings, a postern, and a section of the town wall. No complete plans of the buildings were recovered, and the stratigraphy is very complex on the uneven bedrock. The impression is of a series of rebuildings of individual houses, not of unified building phases. The stone town wall in area B is 3.80 m high and pierced by a small gate. It may be a casemate wall, but the evidence is inconclusive: the "casemates" may be later Iron Age houses built over the wall. The gate was blocked in the final phase and the whole area used as a pottery dump.

Area C lies southeast of area A and measures about 67 × 105 m. It contained a monumental building with a bathhouse that bears some similarity to the area A complex, although its complete plan was not recovered. Its two main phases include a large quantity of pottery from stratified contexts (once analyzed, it may prove to be significant to understanding the repertoire of Edomite pottery). The later phase contained a cooking pot dated to the Persian period. This is so far the only direct evidence from Buṣeirah for continuity of occupation into the Persian period. The similarity of the town plans in areas C and A led Bennett to suggest that the later phase in area A may also have continued into the Persian period.

Area D, adjacent to area A to the northeast, apparently was also residential, again with no complete plan recovered. The two small trenches Bennett excavated have a stratified sequence of three phases. However, the stratified pottery does not enable meaningful conclusions: there is a low incidence of painted Iron II pottery in the earliest phases, but this may be related to the low sample size.

A small sounding in area H, in the far northeast corner of the site, revealed a massive wall about 4 m wide of coursed rubble with a rubble core. A later phase of the wall appears to be Roman.

Taken as a whole, there appear to be several major architectural phases at Buṣeirah, although each area and trench has distinct subphases.

1. *Phase 1.* The earliest town wall in area B is impossible to date accurately; it may be no earlier than the seventh century BCE.

2. *Phase 2.* The possible casemate town wall in area B, building B in area A, and the earlier building in area C appear to date to the seventh century BCE.

3. *Phase 3.* There is an intermediate phase between buildings B and A in area A.

4. *Phase 4.* The later building in area C, and possibly building A in area A, may date to the Persian period, or continue into it.

5. *Phase 5.* Following the possible Persian period occupation, the site was abandoned. An inscribed Nabatean altar and scatters of Roman sherds from the first/second centuries CE, possibly connected to some rebuilding, are the only evidence of later reuse.

The major buildings at Buṣeirah remain unique in Edom, although they fit the pattern of palace plans known from Mesopotamia, Syria, and Palestine in the Late Iron Age. They are probably to be interpreted as an example of selective borrowing by the kings of Edom and suggest that Buṣeirah was indeed their royal city. However, the excavations revealed little evidence of luxury items. Only a small number of inscribed ostraca, seals, weights, and seal impressions on pottery were recovered, all of which were dated to about 700 BCE. The painted pottery from Buṣeirah is particularly fine and certainly has the widest repertoire of forms in Edom.

The dates of occupation at Buṣeirah are subject to revision by future discoveries. Much of this uncertainty hinges on the dating of Iron II pottery in Edom. While the pottery from Buṣeirah cannot at present be dated earlier than the seventh century BCE, an earlier date, perhaps in the eighth or even ninth centuries, cannot be conclusively excluded. There is no Iron I pottery from Buṣeirah, so a date earlier than 1000 BCE is definitely excluded. The end of occupation at Buṣeirah is similarly uncertain. Although the Iron II period traditionally ends with the Persian conquest in 539 BCE, the current understanding of Iron II pottery in Transjordan suggests that it continued largely unchanged into the Persian period. If this was so, occupation at Buṣeirah may have continued beyond the sixth century BCE, perhaps down to about 400 BCE.

[*See also* Edom; Feinan; *and the biography of Bennett.*]

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PIOTR BIENKOWSKI

BUTLER, HOWARD CROSBY (1872–1922), prominent American archaeologist and architectural historian. Butler became a professor of art and archaeology at Princeton University in 1905 and in 1920 was named the first director of its School of Architecture. In 1899–1900 he led a survey expedition to north-central Syria, where he located all of the monuments that had been noted earlier by the Marquis de Vogüé, in addition to many more, mostly Roman and Early Christian structures of the first century BCE to the seventh century CE. In subsequent expeditions (1904–1905, 1909), he studied the more important sites in detail and explored southern Syria, particularly Philadelphia (Amman, in modern Jordan), and the Nabatean sites in the Hauran, such as Suweida and Seeia, which yielded numerous inscriptions and sculptures. Butler contributed several volumes to the two publication series resulting from these expeditions: Publications of an American Archaeological Expedition to Syria in 1899–1900 (1903); and Publications of the Princeton University Archaeological Expedition to Syria in 1904–1905 and 1909 (1907–1920).

At the invitation of the Ottoman authorities, Butler excavated at Sardis, the capital of Lydia, from 1910 to 1914, with a brief season in 1922. Excavation of the city of Croesus, particularly the famous temple of Artemis, attracted worldwide attention. Butler inaugurated the Publications of the American Society for the Excavation of Sardis (1922). A later monograph in this series appeared posthumously (1925).

Butler's pioneering success cleared the way for American archaeology in Syria and Turkey. A popular teacher, he emphasized practical studies of architectural technique. In addition to his major works, he authored several popular books.

[*See also* Amman; Sardis; *and* Suweida.]

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J. MICHAEL PADGETT

BYBLOS, seaport located in Lebanon, on the eastern coast of the Mediterranean Sea, at the foot of the Lebanese mountains 60 km (25 mi.) north of Beirut on the Tripoli highway, (approx. 34° N, 36° E). The site has been known throughout its long history in several variants on its name: in modern Arabic as Jebail, Jebeil, Jubail; by the Crusaders as Gibelet; in biblical Hebrew as Gebal (*1 Kgs.* 5:18, 32; *Ez.* 27:9; *Jos.* 13:5); in Egyptian as *kbn, kpny, kbny;* and in Babylonian as Gubla. The Greeks probably gave the city its name at about the end of the second millennium BCE—the Greek *bublos,* "papyrus scroll." Egyptian papyrus came to Greece through Phoenicia and Byblos for transshipment to the Aegean area. The English word *Bible* is derived through medieval Latin from the Greek *ta Biblia,* "the books." [*See* Papyrus.]

In Naples, Italy, in 1881, a sandstone bust from Byblos surfaced in the antiquities market. It was of Osorkon I, pharaoh of the twenty-second dynasty (924–889 BCE), and it had on it a cartouche and a Phoenician alphabetic dedicatory inscription by King Elibaal of Byblos. It was sold in Paris in 1910 and subsequently donated to the Louvre Museum (where it remains); in 1925 René Dussaud translated the inscription. Also in the Drehem archives (the Ur III archives in Drehem, just south of Nippur) and dated to about 2050 BCE is the earliest cuneiform economic text referring to Byb-

los, mentioning Ibdadi, the *ensi* (a title meaning "ruler" in Sumerian) of Byblos (Ward, 1963). [*See the biography of Dussaud.*]

In 1860 the French savant Ernest Renan, representing Napoleon III's mission in Phoenicia, located Byblos, made several soundings (even though twenty-nine houses occupied the site), and sketched the site and the sacred spring, the arched, roofed "Pool of the Phoenician Princess." In 1864 he published his findings and inscriptions, including the Renan bas-relief now also in the Louvre. The city was recognized as Byblos certainly by 1899. French archaeologist Pierre Montet undertook four campaigns (1921–1924) there, which uncovered the so-called Egyptian and Syrian temples (later identified as the single Temple of Baalat Gebal), along with three mutilated limestone colossi and many Egyptian Old Kingdom inscriptions, which he published in 1928 (Montet, 1928). A landslide in 1922 revealed the sarcophagus of a Byblite king with gifts from the Egyptian pharaoh Amenemhat III (c. nineteenth century BCE); eight other tombs were excavated in this royal necropolis. In 1930 the Lebanese government expropriated the houses built on the site. In 1926 the commissioner of France in Syria reopened the excavations, sponsored by the Lebanese government and the French Academy of Inscriptions and under the direction of French archaeologist Maurice Dunand. Dunand excavated from 1928 until the Lebanese civil war in the 1970s, under the auspices of the Lebanese government and the Louvre. [*See the biographies of Renan, Montet, and Dunand.*]

Major Remains. Byblos is one of the few remaining walled cities in Lebanon. The walls have massive rectangular towers, pierced by two almost-intact arched gates on the east and the north; part of the port defenses extends 1,000 m to the Mediterranean. There are four entrances: the east gate is the main entry and the northwest tower (of six *barlongue* towers) is the most important. Constructed in 1197 CE, the walls are of mediocre construction. Only from the north can Byblos be viewed as a walled city. A deep excavation marks the position of the sacred spring or well that was reached by a descending ramp. The site is guarded by a Crusader citadel (on the north, facing the sea), with its original east gate, under the twelfth-century CE chapel of Notre Dame de la Porte.

Occupational History. Built on a promontory with two harbors, close to Lebanon's cedar-bearing mountains, Byblos has been occupied for more than seven thousand years. Although one legend states that Byblos was founded by the first of the Semitic gods, El, according to Philo of Byblos, "Kronos put a wall about his habitation and founded Byblos in Phoenicia" (Felix Jacoby, *Die Fragmente der Griechischen Historiker*, Leiden, 1958, no. 790). Although Byblos has been occupied since the Neolithic period (6000 BCE), there are no early architectural remains. In about 4500 BCE small monocellular houses appear with crushed-limestone floors and shallow graves in which the deceased were placed on their back or in a half-flexed position. Incised pottery was found in one such grave. Other dwellings with beaten-earth floors held "cradle," or cyst, burials in which the deceased, in a semiflexed or flexed position, were surrounded by upright stones associated with ceramic bowls with so-called chicken-scratched decorations. Also known from this period are a pebble idol and a fine tool repertoire. The site's Chalcolithic levels (3500–3000 BCE) are known for their numerous (1,207) jar burials (with the deceased in a flexed position accompanied by ceramic offerings) and large monocellular houses with beaten-earth or pebble floors, some having interior partitions.

By the Early Bronze Age (3000–2300 BCE), Byblos was an important Canaanite West Semitic coastal city-state and a timber and shipbuilding center. Close ties to Old Kingdom Egypt are revealed in numerous inscriptions of the Egyptian pharaohs Cheops, Chephren, Mycerinus, Wenis, and Sahure, as well as in thirty-six inscriptions bearing the names of Pepi I and Pepi II. Egyptians dominated the coastal plain and sent to Byblos for cedar wood for their shipbuilding, royal sarcophagi, tomb, and palace construction, as well as for cedar oil used in mummification. The houses dated to 3000 BCE are rectangular with sandstone slab superstructures constructed in a herringbone pattern. The houses have interior partitions and beaten-earth floors and some incorporate a courtyard and used wood posts to support the roof. The temple of Balaat Gebal, "lady of Byblos" (Dunand's building 40 [Dunand, 1937–1958]; and Montet's Syrian temple [Montet, 1929]), is among the earliest monumental structures in Phoenicia. The lady of Byblos has a known relationship to the Egyptian goddess Hathor, and the temple produced many inscribed Egyptian offerings.

By 2800 BCE, Byblos was a planned city with massive walls and two gates, one on the land side and one at the seaport; the city wall had a sloping glacis with cobblestones on the north exterior surface and square buttresses on the interior (see figure 1). By 2600 BCE, Dunand's tripartite *Temple en L* (L-shaped temple) was constructed facing the Temple of Balaat Gebal but separated from it by a sacred lake. (See Jidejian, 1968, pp. 209–212, for the local dynasty of rulers who were dependent on Egypt from 2350 to 2333 BCE.)

An Amorite invasion destroyed Byblos between about 2300 and 2100 BCE. A wave of newcomers succeeded it and the city was rebuilt. A jar with nearly one hundred valuable objects, buried in about 1950 BCE (seals, amulets, cylinder seals, baboon figurines, and more than forty bronze and silver torques), was recovered by Montet in his excavations in the 1920s (Montet, 1929).

In the Middle Bronze Age (1900–1600 BCE), the Byblites generally sided with the Egyptians against common enemies. Byblos, an international center, also traded with Crete, as evidenced by the Kamares wares found. The MB period is distinguished by the nine royal necropolis sarcophagi

BYBLOS. Figure 1. *Early Bronze Age city walls.* (Courtesy M. Joukowsky)

found in underground chambers reached by 12-meter-long tunnels hewn into the cliff. In this period the Temple of Balaat Gebal underwent modifications. The Obelisk temple which was constructed above Montet's Syrian temple, was moved to its present site in the 1930s; it had been erected over the ruins of the larger EB temple, and Dunand rebuilt the Obelisk temple a short distance away from the EB temple so he could excavate it (see figure 2). The Obelisk temple contains more than twenty-six votary obelisks in its courtyard. Many precious articles were found in all of these contexts.

During the Late Bronze Age (1600–1200 BCE), Byblos, like her coastal neighbors, felt the impact of the Hittites (1380–1355 BCE). During the Iron Age (1200–539 BCE), Byblos was the center for an extensive papyrus trade with Egypt and an important Phoenician settlement. An active seaport, it was referred to by Tiglath-Pileser I (*ANET*, no. 274), the hapless Wenamun (*ANET*, nos. 25–29), and the Egyptian text of Thutmose III (Breasted, 1906–1907, no. 492). The principal find from the Phoenician period is the Ahiram sarcophagus (now in the Beirut National Museum), which displays a variety of artistic influences (Egyptian lotus designs, Hittite crouching lions, a Syrian rope design) as well as the earliest Archaic Phoenician alphabetic inscription, which is incised around the lid. [*See* Ahiram Inscription.] Under Ashurnasirpal II the Assyrians conquered Byblos around 877 BCE and held the city until the Persian period (after about 529 BCE).

The city was a vassal of the Achaemenids from 539–332 BCE. They reinforced the city walls with yet another glacis (the last of seven successive layers extending from the Early Bronze Age to the fifth century BCE). A fifth-century stela of Yehawmilk, king of Byblos has been recovered, found shortly after Renan's excavations in 1869. Except for a large platform, there are few Persian traces in the city.

In 333–332 BCE, Alexander the Great conquered the coast and Byblos voluntarily became part of his empire. Under the Seleucids, after the conquest of Antiochus III in 200 BCE, the city became completely hellenized. In the second century, this was the home of Philo. By 64 BCE, or the end of the Hellenistic period, the city had lost most of its importance.

Roman Byblos (64 BCE–330 CE) was threatened by the Itureans in the first century BCE. It was a hellenized and romanized classical city resplendent with temples, shrines, a surrounding colonnade, grand avenues, villas, and monuments; during that time, the settlement spread to the adjacent countryside. The Roman settlement developed along the same plan as the Hellenistic city: its Roman street extended east from the acropolis, through the Crusader-Arab castle moat, and into the modern town. To the north and east of the acropolis was the commercial and residential sector. Twelve meters below the acropolis a second-century CE colonnaded street is positioned going northeast, extending to meet the port street. At a bend in the road, east of the castle's bridge, is an apsidal nymphaeum out of which water flowed into a fluted pool. Sculpture adorned its niches, the best-preserved of which is of Hygeia and a group made up of Achilles and Penthesilea and Orpheus with animals (the fountain is in the Beirut National Museum). To the east of the nymphaeum was a four-columned portico. Little of the Greek, Roman, and Byzantine eras remains, except for paved streets, a Corinthian colonnade, a theater, a nymphaeum, and some sculpture and mosaics from the third century CE. Roman mosaics illustrating the legendary Atalanta were unearthed by Dunand and a large villa to the southeast contained mosaics dated to the second century CE. All that remains from classical Byblos are reused stones in the citadel; scattered granite columns, of which six have been reerected as part of the colonnade that extended from the Adonis temple to the lower town to the north; the nymphaeum; a number of tombs; and part of a temple/church structure. The best surviving example of classical architecture is the late second-century CE restored hemicycle theater with seven sectors of steps that was moved by Dunand in the 1930s and reconstructed in reduced form in its present

position overlooking the sea west of the acropolis. The theater's orchestra, which was built about 218 CE, was embellished with a delicately crafted mosaic of the bust of Bacchus, surrounded with white tesserae and a black border, which also is now in the Beirut National Museum. The ramparts of the city were once reconstructed with the aid of Herod the Great (Josephus, *War* 1.422).

In the Roman period Byblos was the pilgrim center of the Adonis cult and was known for his tomb site. The main temple to Adonis, which was constructed around a central cone-shaped altar, or baetyl, is pictured on Roman coins of the emperor Macrinus (217–218 CE). It is not clear where this temple stood in antiquity. A Greco-Roman necropolis of multistoried rock-cut tombs lies south of the present-day excavations, in the rock cliffs between the highway and the sea.

The Byzantine period (330–634 CE) is poorly represented at Byblos because of the later reuse of its buildings. Remains are found in only three areas: seven rows of flagstones at the Temple of Baalat Gebal, an area near the Roman colonnade with a circular basin and a wall, and an east–west street associated with shops. In the time of Justinian (551 CE), a severe earthquake rocked all the Phoenician cities, including Byblos. In the Early Arab period (636–1108 CE), Byblos was under the control of Banu Ammar of Tripoli. The bridge from the site to the Crusader castle was erected then.

Stratification. The reuse of architectural elements of earlier periods has disturbed the stratigraphy, or archaeological levels, at Byblos. Mixed deposits abound and modern houses are built all over the site. Byblos also served as a quarry for later builders; even modern builders use the old blocks. The topography is so complicated that Chalcolithic and Roman remains of gray or rose-red granite can be found at the same level. Remains are scattered on the land and on the sea floor, and many are built into the Crusader castle, the port's defense walls, and modern houses.

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BYBLOS. Figure 2. *Temple of the Obelisks.* (Courtesy M. Joukowsky)

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MARTHA SHARP JOUKOWSKY

BYZANTINE EMPIRE. The term *Byzantium,* originally the name of the ancient Greek colony on which Constantinople was founded, is used conventionally to designate the eastern part of the Roman empire, which survived after the fall of Rome in 476 CE. The Byzantines called themselves *Romaioi* (i.e., Romans), and their country *Romania,* indicating the historical continuity with the Roman empire. The fundamental cultural elements of Byzantine civilization were three: Greek language and education, Roman political theory and legal system, and Orthodox religion.

History, Society, Economy, Culture. Constantine I (324–337) founded the new empire when he transferred his capital to Byzantium, renamed Constantinople, on the Bosporus and recognized Christianity. In the course of the early Byzantine period (324–c. 600) the empire gradually became Christian. This early period is also called "late Roman" or "late antiquity" by those scholars who emphasize the continuity with the Roman past. Julian the Apostate (361–363) in vain tried to restore paganism. Theodosius I (379–395) strengthened the Christian Church with a series of measures, and at his death the empire was permanently divided between the Greek East and the Latin West. The Byzantine emperors successfully diverted the numerous barbaric invaders with war or diplomacy. In 476 Rome fell to the Ostrogoths, the Roman Empire in the West collapsed, and Constantinople became Rome's heir, the second Rome. The pressure of the barbarians increased and Anastasius I (491–518) attempted the reconstruction of the defense system. Justinian I (527–565) undertook large-scale building activity described in Procopius's *Buildings.* The major wars to restore the frontiers of the Roman Empire, however, weakened the state's resources, and the recovery of large districts in the West was temporary. After the Justinianic *renovatio* (reconstruction) the empire suffered serious losses: the Danubian frontier collapsed because of the invading Avars and Slavs. The permanent installation of the Slavs in the Balkan peninsula from the late sixth century created a profound crisis in the area, and its northern territories were lost forever. To the south in the Greek mainland a slow process of assimilation and christianization of the Slavs began.

The early Byzantine period is the period of the great Christological controversies. In the fourth century the fathers of the Orthodox Church shaped the Orthodox dogma in their theological works. Ecclesiastical synods condemned the heresies and defined the dogma with accuracy. The controversies that were dealt with by the ecumenical councils were Christological (they tried to define the nature of Christ). The Council of Nicaea I (325) and that of Constantinople I (381) condemned the Arian heresy, which proclaimed the subordination of the Son to the Father, and defined Christ as consubstantial with the Father. The Council at Ephesus (431) condemned Nestorius, who emphasized Christ's human nature. The Council of Chalcedon (451) defined Christ's two natures united without confusion or division. The second Council of Constantinople (553) attempted to reconcile monophysitism with Orthodoxy, while the third Council of Constantinople (681) was an attempt to settle the controversy of monothelitism. The second Council of Nicaea (787) brought an end to the first period of Iconoclasm. The canons of the ecumenical councils were accepted as deriving from and expressing the bishops' consensus (B. Botte, H. Marat, et al., *Le concile et les conciles,* Chevetogne, 1960; *Histoire des conciles oecuméniques,* 12 vols., Paris, 1962–; P. L'Huillier, *The Church of the Ancient Councils,* Crestwood, N.Y., 1986). The role of certain emperors in this process was decisive. Classical education was accepted by the Church in spite of the radical views of some ecclesiastics, and although some elements of Greek philosophy and literature were rejected, classical tradition remained until the end the cornerstone of Byzantine civilization.

Archaeological excavations show with certainty that in all the provinces of the empire there was great prosperity and an unprecedented increase of population (see Foss, 1977; Russell, 1986). Agriculture, industry, and trade flourished. Great building activity is attested everywhere, particularly in the fifth and sixth centuries. Large basilicas were constructed, although their size does not correspond with the size of the settlements. Signs of profound transformation of urban life, however, appear already in the fourth century in the literary sources and at all excavated sites. The principles of ancient urbanism were gradually abandoned: public monuments, theaters, hippodromes, temples, and forums fell out of use, and a long process of dilapidation started. Orthogonal city-planning was replaced by irregular configurations, and the ancient social and political center of the cities *(forum)* was broken up into parochial districts around churches, which became the nucleus of economic and social activity. The municipal aristocracy (*decurions*) declined, and the responsibility for public works and defense was transferred to the provincial governors. The cities lost their financial independence, and together with the new ideological orientation promoted by the Church the interest in public life gradually diminished. Monasteries became urban institutions, accumulated great wealth, and established philan-

thropic foundations. The Roman form of exploitation of land, the *villa,* was still the basis of the agrarian economy. Imperial legislation indicates that the large estates were increasing and that the *coloni* (peasants attached to the land) were becoming dependent peasants. The villages, however, according to archaeological evidence from Syria and Palaestine, were flourishing (Tchalenko, 1953–1958).

Absolute monarchy was reinforced and supported by Christian principles of order and philanthropy. A career in the state administration was a way to social recognition and wealth. Ethnic languages and cultures promoted diversity and national literatures appeared (Syriac, Coptic). In spite of the profound hellenization of the provinces in the East and in Egypt, national differences and resentment for the ruling Orthodox Greek administration of Constantinople were reinforced by the religious opposition with significant consequences: the monophysite populations of the East did not resist the invading Arabs in the seventh century.

The seventh and eighth centuries are the Dark Ages of Byzantine history. Early in the seventh century the Persians occupied Egypt, Palestine, and Syria. Heraclius (610–641) recovered these territories (629), but they were lost again to the Arabs in 636 at the decisive battle of Yarmuk. Most of the cities in the East surrendered peacefully. The Umayyad Arabs, with their capital at Damascus, established a strong navy and raided Asia Minor every year. Constantinople was besieged twice (in 669 and 717–718) and threatened during the war of 674–680. The new caliphate of 'Abbasids (750–1258) moved their capital to Baghdad, and the pressure was lifted. The consequences of the Arab occupation of the eastern provinces of the empire were decisive: the empire lost the areas with the greatest resources, but it gained a religious, linguistic, and ethnic uniformity. In the last quarter of the sixth century the first signs of a crisis appeared; archaeological evidence shows that building activity ceased. In the seventh century a dramatic decrease of population is attested everywhere. Many cities that had flourished earlier were abandoned or reduced to insignificant settlements. Economic activity, as illustrated in the interrupted numismatic series from excavated sites and coin hoards was diminished. Barter economy had apparently replaced monetary in many daily transactions. Most of the urban centers that survived resembled rural settlements with agrarian social and economic structure. The reform in the administrative system introduced with the institution of the *themes* (provinces) led to the militarization of the empire: both military and civil powers were concentrated in these administrative units. Their army was composed of peasants-soldiers. The new system strengthened the defensive forces of the empire, and it was efficient in repelling the enemies and consolidating Byzantine rule in the reoccupied territories. The class of independent peasants increased.

Overall, however, Byzantine society acquired a strong medieval character. The religious controversy of iconoclasm supported by the emperors of the Isaurian dynasty (717–802) has been seen from various angles: as a conflict between cultural and religious traditions of the East and the West (the Jewish and Muslim aniconic [nonrepresentational] concept of God versus the anthropomorphic representation of God of the Greek culture) or as an effort of the state to diminish the power of the Church, especially the monasteries. In the course of the controversy the classical tradition was attacked and interest in it was diminished. Many objects of art were deliberately destroyed.

A recovery started with the Macedonian dynasty (867–1025). Syria and Crete were conquered from the Arabs, and several wars against Bulgaria brought that new state into the Byzantine sphere of ecclesiastical and political influence (King Boris I, 852–889, was christianized). In the ninth century the glagolitic alphabet (the earliest alphabet used for writing Church Slavonic) was invented by Cyril and Methodius (apostles of the Slavs), who were sent to Moravia as missionaries in 863. Thus the first Slavic literary language, Church Slavonic, was created. The Rus (Scandinavians in origin, who had settled along the rivers of Russia and were assimilated with the local Slavic population, founding several principalities centered on Kiev) also were christianized—Christianity was officially accepted in 988. The Russian attacks against Constantinople were successfully repelled, and commercial relations were established and sanctioned with treaties. The metropolitan (bishop) of Kiev was placed under the patriarch of Constantinople. The Church became the vehicle for Byzantine cultural influence on the Rus: Byzantine artists, architects, painters, and craftsmen were sent to Russia. Archaeological evidence suggests that a growth of the urban population started in the ninth century and that the economy was slowly recovering. Imperial legislation and other sources testify to the increase of large estates, secular and ecclesiastic, which the Macedonian emperors tried to control with restrictive measures. The emperors exercised a remarkable power over the Church. The interest in classical antiquity was revived. The so-called Macedonian Renaissance in literature was marked by encyclopedism, the copying of ancient texts and selections in anthologies. The work of the intellectuals was practical: to organize and codify the knowledge of the earlier centuries (treatises on military art, administration, imperial ceremonies, and codification of imperial legislation).

In the eleventh century the schism between the Orthodox and Catholic Churches became permanent. The split of the two Churches is dated to the early Byzantine period, when the question of primacy of Rome and the privilege of honor attributed to the bishop of Constantinople on political grounds (Constantinople was the city of New Rome) were raised at the first Council of Constantinople. Doctrinal differences also appeared in various heretical controversies, especially over Arianism and monophysitism (Akakian Schism in 484–519). The controversy over the *filioque*

emerged in the conflict between Patriarch Photios and Pope Nicholas I (858–867). In the eleventh century new conflicts appeared over disciplinary questions (the celibacy of western clergy) and the use of the azymes in the liturgy. In 1054 the anathems spelled against Patriarch Michael I Keroularios and the papal legates (under Cardinal Humbert) finalized the split of the two Churches, which were already separated by different institutional traditions, theological views, and cultural reality. The political developments in the following centuries and the fall of Constantinople to the Crusaders in 1204 broadened the distance between them. In the middle of the eleventh century economic prosperity naturally coincided with the development of the middle class, represented in Constantinople by the emperors of the civil party. A further social evolution was prevented by the establishment of a military aristocracy represented by the dynasty of the Komnenoi (1081–1185). They developed institutions similar to those of western feudal society: ties of kinship appeared in the aristocracy, and the large estates were increased. The defeat of the Byzantines by an emerging new power, the Seljuk Turks, in Manzikert in 1071 marked the beginning of the troubled years ahead. The dynasty of the Komnenoi attempted a major renovation of the empire. Their rule was in many respects successful. The commercial privileges granted to the Italian cities, Venice, Pisa, and Genoa, in exchange for military and naval support, however, further weakened the resources of the state and mark the beginning of dependency on foreign aid. In 1176 a second defeat by the Seljuk Turks in Myriokephalon radically changed the situation in Anatolia: independent Armenian states were established in Cilicia, and a large part of Asia Minor was definitively lost to the Turks. In the same period the Latin West threatened Byzantium for the first time. The Normans repeatedly attacked the empire, threatened Constantinople, and occupied Thessalonike (1185). The Crusaders were successfully diverted to the East by means of diplomacy. The second Bulgarian Empire was established in 1186, and the Serbs became independent. In the interior the polarization of the ruling aristocracy in Constantinople and the heavy taxation led to the alienation of the provinces. Ambitious local magnates tried to become independent, and dynastic conflicts and corruption of the dynasty of the Angeloi (1185–1204) weakened the empire. In this climate the resistance to the Latins of the Fourth Crusade was unsuccessful.

The fall of Constantinople to the Crusaders in 1204 marks the beginning of the last period of Byzantine history (1204–1453): the empire was divided between Latin states, colonies of the Italian merchant cities, the Byzantine empires in Nicaea and Trebizond, and the Despotate of Epiros. In 1261 Michael VIII Palaeologos (1259–1282) from Nicaea liberated Constantinople and restored the empire. The period is marked by the advance of the Serbs, who by 1355 controlled most of Greece, and by the constant progress of the Ottoman Turks, who by 1340 had occupied all of Asia Minor, and then advanced into the European territories. Thessalonike, the second most important city of the empire was occupied by the Turks in 1387 and 1430. The support that the Western powers gave to the Palaeologoi by recognizing the union of the churches (synods in Lyon in 1274 and in Ferrara-Florence in 1439) was limited. The civil wars between the Palaeologoi Andronicus II and Andronicus III (1321–1328) and between John V Palaeologos and John VI Kantakouzenos (1341–1347) weakened the constantly diminishing resources of the empire. Mercenaries were used in the army; the state finances could not recover; trade was controlled by the Italians; and territories were given to the sons of emperors as appanages (independent, nonhereditary administrative districts) and became autonomous. Although the power of the state was diminishing, the Church took control of many aspects of life. The fourteenth-century theological controversy of hesychasm (promoting a method of monastic prayer and contemplation through which communion with God could be attained) revived tendencies toward spirituality, and it is often seen as a reaction to the Palaeologan Renaissance. The Church nourished the anti-Latin feelings of the common people and often promoted the idea that submission to the Turks was preferable to submission to the Latin Church. The intellectuals, however, tried to establish bridges with the West and the renewed interest in classical antiquity gave birth to Greek national consciousness and to dreams of a national rebirth. Constantinople fell to the Turks in 1453. The Despotate of Morea in the Peloponnesos, which flourished in the fifteenth century fell in 1460, and the empire of Trebizond one year later.

Archaeology, Art. Byzantine archaeology was for many years defined as Christian archaeology: the study of the architectural styles of churches, the influence of the liturgy on their development, their mosaic or fresco decoration, their sculptural ornaments, their implantation in the urban fabric. Interest in secular buildings, urban centers or rural settlements appeared only recently. A major restriction on Byzantine archaeology was that for a long time it remained a branch of classical archaeology. Because the excavators focused on classical sites and their monuments, Byzantine remains were often destroyed in order to reach the classical strata or were disposed of because they supposedly had no significant artistic value. The excavations on major sites focused primarily on identification of sites and monuments. Attention to the evolution of sites has finally been paid, and the imposition of modern cities limits the archaeological investigation to small-scale rescue excavations.

Interest in cities, particularly in the period of transition from the early to the middle Byzantine period, has been a late development. The debate on the discontinuity of urban life in the dark ages among historians since the 1950s, has

opened the way for the archaeological investigation of early Byzantine cities. In most cities, however, the excavations have been limited to the classical city centers or in and around important monuments, for example, pagan temples, hippodromes, and theaters. Obviously in all sites the archaeological evidence is fragmentary. Another difficulty consists of inadequate reports of earlier excavations, which were not conducted according to the principles of modern scholarly investigation. This situation has often been observed in Athens and Corinth, the best excavated sites in Greece. The Byzantine remains are very poor, not precisely dated, and inaccurately described. Promising sites for the study of the changing character of the early Byzantine cities are places that were destroyed and abandoned in the end of this period: Nea Anchialos in Greece and Caričin Grad in the former Yugoslavia. The latter, built by Justinian, represents the trends of Byzantine urbanism in the sixth century. Numerous forts have been investigated along the Danube and the hinterland. The best excavated sites in Asia Minor are Ephesus, Sardis, Miletus, Priene, and Aphrodisias. [*See* Ephesus; Sardis; Miletus; Priene; Aphrodisias.] Excavations in Byzantine Palestine and Syria have revealed several cities and towns that ceased to exist after the Arab conquest. The most important sites are Caesarea Maritima, Gerasa (Jerash), Scythopolis (Beth-Shean), Pella, and the cities of the Negev desert. [*See* Caesarea; Jerash; Beth-Shean; Pella; Negev.] In the latter local elements were maintained next to the Byzantine features of urbanism. Since the 1960s new technology has allowed underwater investigation of sunken coastal sites and shipwrecks. Shipwrecks provide evidence for trade: the sixth century shipwreck at Marzamemi in southeast Sicily contained a load of marble church furnishings, and the wrecks at Serçe Limanı (eleventh century) and Pelagonnesos (twelfth century) had cargoes of glasses and ceramic vessels, respectively. [*See* Serçe Limanı.] The archaeological survey of large areas without excavation has been widely used to establish settlement pattern, network of forts, villages, and agricultural installations.

Of all branches of art, architecture is most intimately related with archaeological work. Byzantine architectural types naturally developed from ancient prototypes such as the basilica. Other types are the martyria (shrines honoring martyrs), baptisteries, and mausolea. [*See* Basilicas; Martyrion; Baptisteries; Mausoleum.] The great innovations of the sixth century were the domed basilica and the very elaborate sculptural ornaments. The best example of both is the church of St. Sophia in Constantinople. In the middle Byzantine period the churches were smaller, centralized with domes, and adjoined by many attached chapels. From the twelfth century local characteristics are notable in the churches built in the provinces, and Byzantine art was disseminated in Slavic countries. Although iconography continued earlier traditions, it developed a new repertory of Christian themes from the Old and New Testaments and the lives of saints. Decoration of secular buildings derived mainly from the early centuries. Mosaics, the most expensive mural or floor decoration, were primarily used to embellish domes and apses of churches. [*See* Mosaics.] From the sixth century they were also used to adorn the walls. The best preserved examples are found at Hagia Sophia, St. Catherine at Sinai, and Ravenna.

[*See also* Anatolia, *articles on* Anatolia from Alexander to the Rise of Islam *and* Anatolia in the Islamic Period; *and* Constantinople.]

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CAESAREA, site of an ancient Greek and Roman port city, Caesarea Maritima, located on the coast of Israel, about 40 km (25 mi.) north of Tel Aviv (32°30′ N, 34°53′ E; map reference 1400 × 2120). Herod the Great founded the city above remains of a Hellenistic town called Straton's Tower. He named it Caesarea for Caesar Augustus, his patron, and its adjacent port Sebastos, Greek for Augustus. Josephus (*War*, 7.20) calls it Caesarea by the Sea, whereas other Greek and Latin authors specified "Caesarea near Sebastos," "Straton's Caesarea," or "Caesarea of Palestine" to distinguish it from numerous homonyms. Rabbinic authors call it Qisri or Qisrin, and Arabic Qaisariya survived into modern times, leaving no doubt about the site's identification.

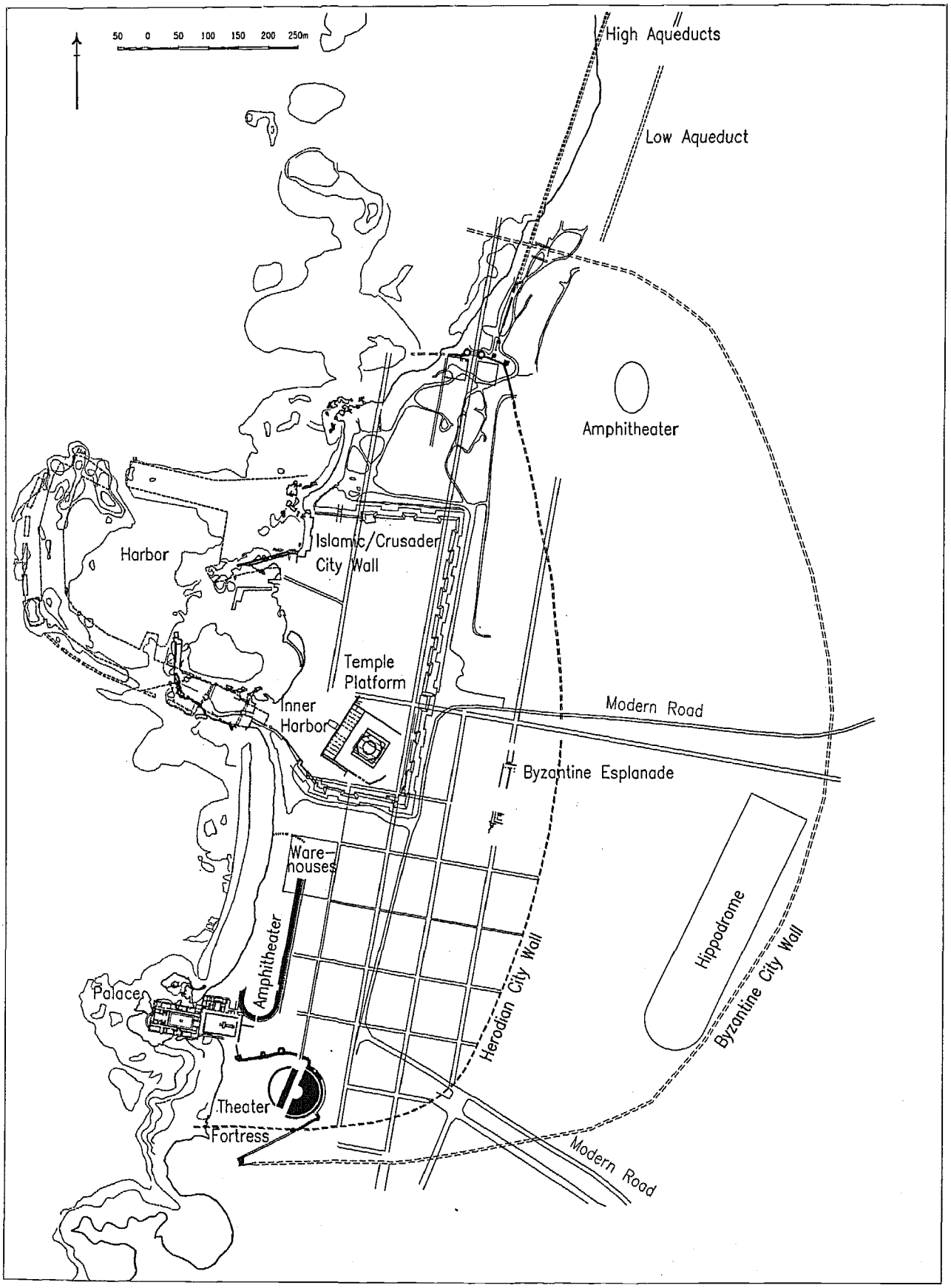
History. Straton's Tower was a Phoenician fortified town (Heb., *Migdal Shorshon*), not just a fortress. Although the earliest ceramics date from the fourth century BCE, and scholars have suggested one of two fourth-century Sidonian kings as the founder, the earliest textual reference is a papyrus from 259 BCE (*P Cairo Zeno* 59004), attesting commercial activity and a harbor. A local tyrant named Zoilus may have fortified Straton's Tower near the close of the second century BCE, but this did not prevent Alexander Jannaeus from seizing it in about 100 BCE for the expanding Hasmonean kingdom and introducing a Jewish population. To weaken the Hasmoneans, the Roman general Pompey attached Straton's Tower and other coastal towns to Syria in 63 BCE; in 31 BCE, however, Octavian restored it to Herod's kingdom. By this time Straton's Tower lay depopulated and in ruins.

Herod the Great built Caesarea and its harbor between 22 and 10/9 BCE (see figure 1); it ranks with the Second Jewish Temple as his most spectacular building project. In two succinct passages (*War* 1.408–415; *Antiq.* 15.331–341) the historian Josephus describes a typical city (*polis*) of the late Hellenistic age, including a theater, an amphitheater "along the shore," a "royal palace," marketplaces, and streets laid on a grid plan. However, he devotes most of his attention to the harbor, Sebastos—to its breakwaters extending out into the sea, vaulted warehouses for trade goods, statues apparently of the emperor's family on columns at the harbor entrance, and a tower (lighthouse?) named Drusion, for the son of Augustus. On an elevated platform above the inner harbor, Herod erected a temple to Roma and Augustus.

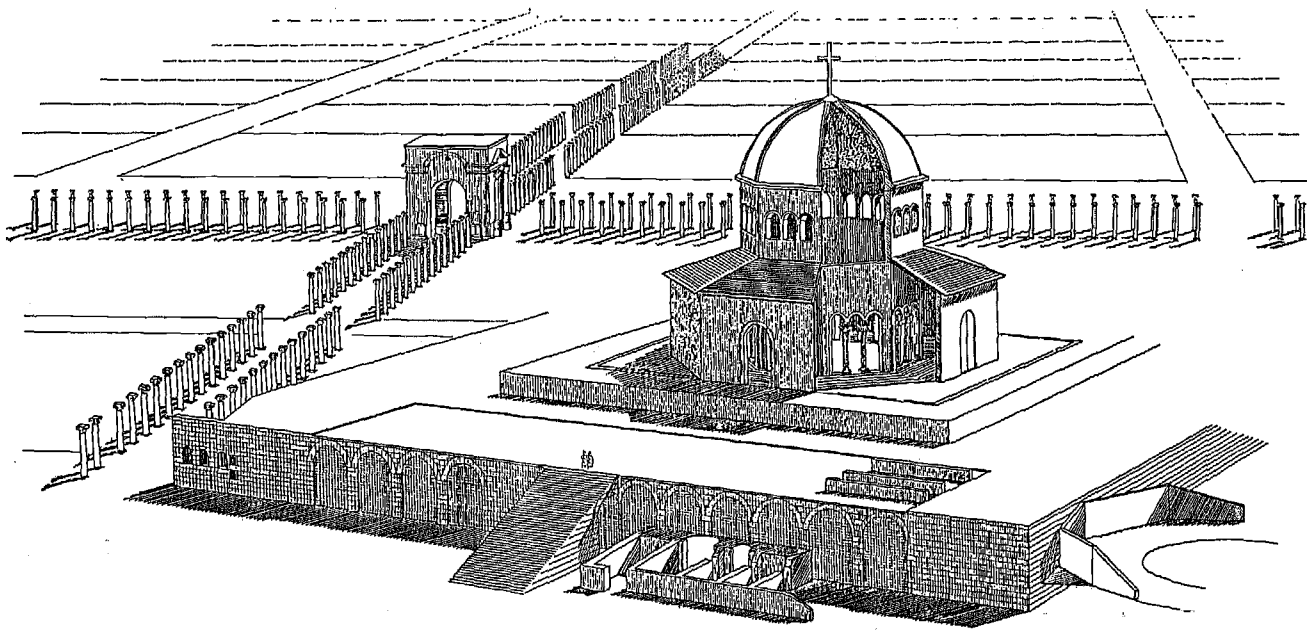
After 6 CE, when Herod's grandson died, the Romans ruled Judaea directly through a governor and an administration headquartered at Caesarea. The site remained the capital of the province, later renamed Palestine, until it fell to the Muslims in 641 CE. A Latin inscription found in the theater records that Pontius Pilate, governor in about 30 CE, dedicated a temple at Caesarea to the emperor Tiberius (*Annales épigraphiques* 1963, no. 104). During the First Jewish War (66–70 CE), the Roman commander, Vespasian, wintered his troops there, and after it, as emperor, he refounded Caesarea as a Roman colony. For the next three centuries, Roman governors, soldiers, and veterans dominated the city. The bulk of inscriptions from this period are in Latin. The city's constitution was of a western type, with two chief magistrates (*duumviri*) and a municipal senate (*decuriones*). Caesarea profited from close links with Rome: the emperors expanded its aqueduct system (Hadrian, in c. 130 CE) and built an amphitheater for gladiators and a hippodrome for chariot racing, both of western type.

Christianity emerged at Caesarea soon after the Crucifixion, when St. Peter converted the centurion Cornelius (*Acts* 10). The Jewish War had eradicated the large Jewish population, and most of the Christians as well, but after the Bar Kokhba revolt (132–135 CE), when Rabbi Akiba was martyred at Caesarea, both groups began to resettle, attracted by the city's prosperity. The rural population was mostly Jews and Samaritans. In the third century, Caesarea was the site of a celebrated rabbinic academy and the Christian school of Origen, the scholar and theologian, who assembled a notable library and compiled the hexapla text of the Christian Bible.

Caesarea reached its apogee of population and prosperity between the fourth and late sixth centuries, under the Christian Empire. A Christian church replaced Herod's Augustus temple on the Temple Platform (see figure 2). The authorities repaired and expanded the aqueducts and built new



CAESAREA. Figure 1. *Plan of the site.* (Drawing by Anna Iamim)



CAESAREA. Figure 2. *Sixth-century octagonal church on the Temple Platform, looking east.* (Drawing by Will Andalora and Anna Iamim)

fortifications to enclose a much larger inhabited space. Among the city's bishops, metropolitans of Palestine, was Eusebius (bishop c. 315–339), who wrote an ecclesiastical history and recorded Christian martyrdoms in Caesarea's amphitheater during the Great Persecution. His Jewish counterpart, Rabbi Abbahu, frequented the baths and taught his daughters Greek, which was then the predominant language. The classical historian Procopius (sixth century) was a product of the city's schools.

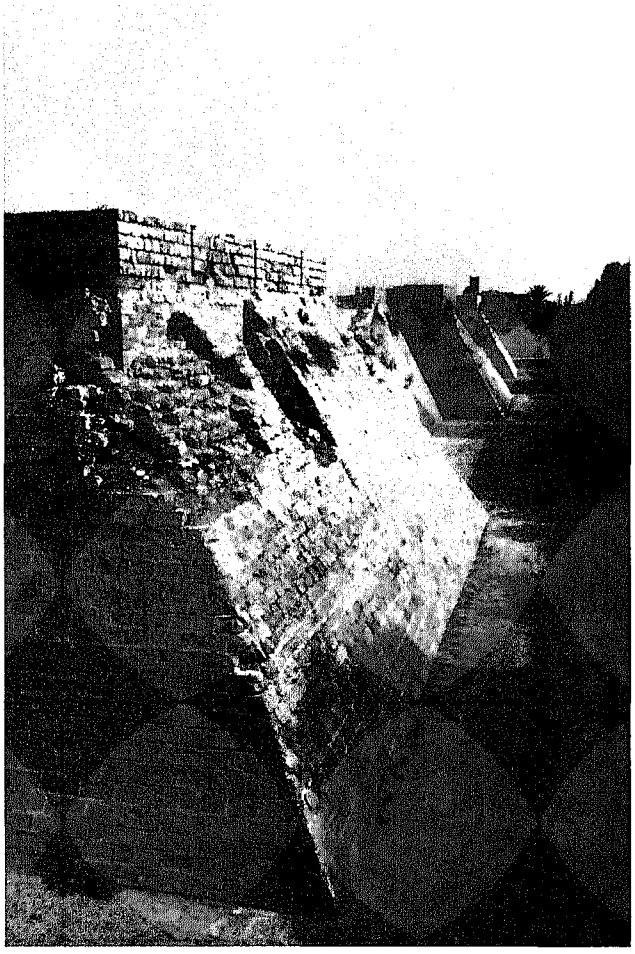
Although tectonic action and the coastal surge had damaged the breakwaters of Herod's harbor severely, Caesarea remained an important seaport until the seventh century. Emperor Anastasius restored the harbor about 500 CE (Procopius of Gaza, *Penegyricus* 19; *Patrologia graeca* 87, col. 2817); trade through the port helps account for the intense urban construction of churches, streets, and public buildings, attested archaeologically and in inscriptions throughout the sixth century. In the meantime, a series of Samaritan rebellions caused severe dislocations in the rural economy, the other source of Caesarea's prosperity. Like other cities, Caesarea suffered from recurrences of plague after 541–542, and from crushing imperial taxation demanded for the wars of the emperor Justinian (d. 565). Deurbanization had probably set in before the seventh-century invasions.

In 614, a Persian army invaded Palestine. Caesarea capitulated and suffered no physical damage but remained under Persian rule until 627. In 641 or 642, Caesarea fell to the Muslims, and the Roman city came to a precipitous end. Many of the landholding aristocracy, who had supported urban life, went into exile during the invasions. The Muslim conquerors did not favor Caesarea. During the Umayyad age (to 750) it was reduced to little more than a coastal defense station.

By the tenth and eleventh centuries, however, under Fatimid rule, a prosperous town had emerged on the site, with new fortifications encompassing a much-reduced urban space (see figure 3). The geographers el-Muqaddisi and Nasr-i-Khusrau praise the water supply of Muslim Qaisariya, its luxuriant gardens and orchards outside the walls, and its Great Mosque, positioned on what had been Herod's Temple Platform (Palestine Pilgrims' Texts Society, vol. 3.3 [1971], p. 55; vol. 4.1 [1971], p. 20). In 1101 European Crusaders took the Fatimid town by storm, and it became a Christian principality that lasted, despite episodes of reconquest and destruction, until 1265. A church of St. Peter succeeded the Great Mosque on the Temple Platform. In 1251–1252 the French king Louis IX rebuilt the fortifications. However, only fourteen years later, the Mamluk sultan Baybars seized Caesarea from the Crusaders; in 1291 his successor leveled the walls to make them useless to subsequent invaders. Caesarea then remained desolate until modern times, although squatter villages sometimes inhabited the ruins.

In 1884, Bosnian refugees from Europe resettled ancient Caesarea. Their town survived until 1940, and some of its buildings, including a mosque, still exist within the medieval fortification perimeter, now called the Old City.

Archaeology. Recently, archaeological exploration has begun to enrich our understanding of Caesarea's history, known previously from literary sources. Archaeologists rec-



CAESAREA. Figure 3. *Islamic/Crusader fortifications, eastern range, looking north.* (Photograph by Aaron Levin)

ognize six periods of occupation, corresponding to the history outlined above: Hellenistic (fourth–first century BCE), Roman (first–third century CE), Byzantine (fourth–seventh centuries), Islamic (seventh–eleventh centuries), Crusader (twelfth–thirteenth centuries), and Mamluk to modern (fourteenth–twentieth centuries).

Until thirty years ago the site was known only from the reports of nineteenth-century explorers, chance finds, and a few rescue excavations. Among the explorers, most important were Claude R. Conder and Horatio Herbert Kitchener, who visited Caesarea briefly in 1873. They studied and mapped the aqueducts, the theater, the outer (Byzantine) perimeter wall, which they dated to the Roman period, and also the medieval (Islamic and Crusader) fortifications. In 1945, J. Ory reported remains of a Byzantine synagogue exposed during winter storms to the north of the Old City, which Michael Avi-Yonah examined briefly in 1956 and 1962. In 1950 Benjamin Reifenberg recognized, in an aerial photograph, an amphitheater (not the one mentioned by Josephus) to the northeast of the Old City. In 1951 Shmuel Yeivin excavated a site to the east of the Old City, where a tractor from the neighboring kibbutz had struck one of two colossal Roman statues that had flanked the entrance (propylaeum) to an unidentified building from the Byzantine period. A tessellated pavement (11.5 × 13.4 m) exposed accidentally in 1955, is decorated with medallions displaying eleven species of birds. This has recently been identified plausibly as part of a suburban villa from the Byzantine period. [*See the biographies of Conder, Kitchener, and Yeivin.*]

Excavation on a large scale dates only from 1959, when archaeologists first comprehended Caesarea as an urban, maritime site and began systematic recovery of all phases of occupation. In 1960, Edwin A. Link, a pioneer of underwater exploration, brought a team of divers that identified the ruins of Herod's harbor. In five campaigns (1959–1964) the Italian Missione Archeologica, directed by Antonio Frova, explored the outer perimeter wall, proving it to be Byzantine; the team also exposed part of an inner perimeter to the north of the medieval fortifications, which it failed to date convincingly. The Missione also excavated the Herodian theater, to the south of the Old City, and the ruins of an imposing fortress that succeeded it in the sixth or seventh century. Between 1960 and 1964, Avraham Negev supervised clearing within the Old City that brought to light barrel-vaulted substructures forming the western facade of the Herodian Temple Platform and, on the platform itself, the ruins of a triple-apsed Crusader basilica. He also cleared the moats in front of the medieval fortifications and removed dune sand from the southern preserved section of the twin high-level aqueducts, northward along the shore, that date to the Roman period.

The 1970s and 1980s brought a higher level of archaeological sophistication to research at Caesarea, including stratigraphic excavation using balks, scientific ceramic analysis, and modern underwater techniques useful for studying the harbors. Between 1971 and 1987, the American Joint Expedition to Caesarea Maritima, directed by Robert J. Bull, conducted twelve summer seasons of excavation. This team explored sectors to the south, east, and north of the Old City, including the low-level aqueduct, which it dated to the fourth century; a well-preserved suburban bath from the Byzantine period; and a Byzantine public building that appears, from inscriptions in its tessellated pavements, to have been part of the governor's headquarters (Gk., *praitorion*). In 1973 and 1974, John Humphrey studied Caesarea's hippodrome, now one of the best-known facilities of its type from the Roman East. Among other outstanding finds were a marble statue of the city goddess, Tyche (see figure 4), of Caesarea and, to the south of the Old City, a cult center of the Roman god Mithras, located in a barrel-vaulted warehouse (Lat., *horreum*), one of a complex of such vaults dating from Herod's time. The Joint Expedition also restudied the inner perimeter wall, which it dated to Herod's original foundation, and devoted special attention to Caesarea's

CAESAREA. Figure 4. *Marble statue of Tyche and the god Sebastos to the right.* Height, 1.52 m. (Courtesy Israel Antiquities Authority)

streets. By excavating numerous street fragments in various sectors, mostly Byzantine in date, the team recovered the orientation of the original Herodian grid and the dimensions of some of the city blocks (insulae).

In 1975–1976 and 1979, a team from the Hebrew University of Jerusalem, directed by Lee I. Levine and Ehud Netzer, excavated a sector in the northwest of the Old City that contained a well-preserved Islamic dwelling quarter and, beneath it, remains of a large Byzantine public building of unknown function. Netzer also began exploring the Promontory Palace jutting into the sea northwest of the theater, which may be the royal palace of Herod's city. In 1986, Ronny Reich and Michal Peleg, in a rescue excavation, identified a south gate of the outer (Byzantine) perimeter wall beneath a factory in the neighboring kibbutz. Meanwhile, in 1975, Avner Raban and Haifa University's Center for Maritime Studies had begun systematic exploration of Caesarea's harbors. In 1980 Raban joined with Robert M. Hohlfelder, John Oleson, and later R. Lindley Vann in the Caesarea Ancient Harbour Excavation Project. That team explored Caesarea's harbors intensively for a decade. It studied shipwrecks and anchorages to the north and south—from the Hellenistic, Roman, and Byzantine periods—but devoted most of its attention to Herod's harbor, Sebastos. The project established that Josephus (*War* 1. 408–413; *Antiq.* 15.332–338) had described the breakwaters accurately and recovered details of their design and construction. In building Sebastos, Herod's engineers had employed imported materials and the technology of hydraulic concrete developed in Italy. Still under debate is the later history of Herod's harbor and whether it continued to function in the Roman and Byzantine periods, despite tectonic action and the destructive force of the sea.

In 1989 Kenneth G. Holum and the University of Maryland joined Raban and Haifa's Center for Maritime Studies in the Combined Caesarea Expeditions, a project that continues the strategy and methods of the former Joint Expedition and Harbour Project. This team has devoted its attention again to the underwater exploration of Sebastos and to the outer (Byzantine) perimeter wall and has conducted submarine and field surveys, remote sensing, and geological studies inside the ancient site and to its north and south along the coast. Within the Old City, it has expanded the limits of the Hellenistic and Herodian inner harbor; identified and studied an important Early Christian church on the Temple Platform, octagonal in plan, that Negev's clearing operation had first exposed; and excavated Islamic and Crusader dwellings and public buildings both above the inner harbor and on the Temple Platform. To the south of the Old City, this team has undertaken the excavation of a complete insula of Roman and Byzantine Caesarea to study diachronically the development of the urban plan and the urban infrastructure in antiquity. Under the Combined Expeditions' auspices, Jeffrey A. Blakely has begun excavation of another Herodian *horreum* vault to exploit the ceramics found in its well-stratified and protected context for evidence of trade goods passing through Caesarea's port. Under the auspices of the University of Pennsylvania, Kathryn Gleason and Barbara Burrell are excavating the Promontory Palace.

In 1992 the Israel Antiquities Authority organized a large project to excavate extensive sectors of ancient Caesarea, both within the Old City and to the south along the coast, for the purpose of establishing an archaeological park. Director of the IAA excavations is Yosef Porath, who had earlier conducted important research on the Roman aqueduct system and rescue excavations within the Old City. In the meantime both the University of Pennsylvania team and the Combined Caesarea Expeditions have joined the expanded project, the latter adding Joseph Patrich to its directorate of Raban and Holum. Inside the Old City, the project has identified a sea wall that may represent the harbor restoration of Emperor Anastasius (c. 500), has begun excavation and restoration of one of the vaults that formed the western facade of the Temple Platform, and has exposed a well-preserved Early Islamic dwelling quarter above the landlocked Inner Harbor. To the south of the Old City, the expanded excavations have uncovered, among other finds, a complex of

Byzantine warehouses used for storage and marketing of grain, wine, oil, and other trade goods; a Roman/Byzantine public bath; luxurious Roman and Byzantine dwellings; and the spectacular ruins of the amphitheater that Herod built, as Josephus reports (*Antiq.* 15. 341), when he founded Caesarea.

Work in the last two decades demonstrates that Caesarea is a major site for research on the evolution of ancient urbanism—especially its maritime component—from the Hellenistic period through the Crusader occupation. Research is also advancing on floral and faunal remains, glass, metal and bone objects, and other categories of material culture, including ceramics. Current projects are deploying a full range of scientific strategies and techniques to exploit Caesarea's past.

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KENNETH G. HOLUM

CAIRO, capital of Egypt (30°04′ N, 31°15′ E). The Fatimids, a Shi'i Muslim group, invaded Egypt in 967 CE and founded Cairo as their capital two years later. Like all Shi'is, the Fatimids were strongly inclined to mysticism, which often led to a deep dependence on astrology. They chose the time of the conjunction of Mars and Jupiter in the sign Aries (the ram) for their conquest. Apparently the capital's original name was to have been al-Mansuriyah ("the victorious"), named after a suburb of Kairouan (Qayrawan, the capital of the Shi'i sect at that time in Tunisia). The name al-Kahira (Cairo), which was given to the city later, derives from *Kahir el-Falak* ("the conqueror of the planets"), the designation of the planet Mars. After the Byzantine general Jawhar captured al-Fustat (the early Islamic city founded by the Arabs in Egypt), he immediately began building an enclosure of very large unbaked bricks, measuring about 1,188 sq m (12,915 sq. ft.), which would include a palace, barracks, and administrative buildings.

A major north–south street of al-Kahira linked the old gates of Bab al-Futuh and Bab Zuwayla; both are named after gates at al-Mansuriyah (the Fatimids' headquarters in Tunisia). Part of this street survives in the modern Sharia al-Muizz Li-din Illah. On either side of this sheet, north of the Mosque of al-Azhar, stood the eastern palace, which was laid out by Jawhar, and the western palace built by al-Aziz (975–996). Between them was a very large open square called the Bayn al-Kasrayn ("between the two palaces"). No trace remains of the eastern palace, but literary sources inform us that it consisted of a walled enclosure with nine gates of stone and burned brick.

The gates were the most important architectural feature of this period. At the southern side of the city were the doors of Bab Zuwayla and Bab al-Farag. These portals are prime examples of medieval military fortification. To the west were the gates of Bab Saada and Bab al-Kantara. Bab el-Futuh

("the conquest gate") and Bab el-Nasir ("the victory gate") were at the north. Bab el-Futuh contained two cylindrical towers, and Bab al-Nasir had two square towers. The two eastern doors, Bab Barquyah and Bab el-Qarratin, were connected by two vaulted galleries with domed chambers. Bab Zuwayla was named after a tribe of the same name that lived nearby. During the Mamluk period, the door was called Bab el-Metwalli, "the gate of the tax collector." According to tradition, the revenue official would sit by the door to collect the annual levy. Bab Zuwayla is considered architecturally the most beautiful gate.

Among the most important monuments that the Fatimids erected is the mosque of al-Azhar, which was built in the center of Cairo. Al-Azhar became an institution for the Shi'i rite and a famous Islamic university. During the Ayyubid rule, prayers were not permitted at al-Azhar. The Ayyubids, who were Sunni, terminated Fatimid rule in Egypt. They stopped the Shi'i ritual and closed al-Azhar as a center for Shi'i teaching. Although they ruled for only eighty years, they had a remarkable influence on the arts, and particularly on architecture. The mosque was restored during the eighteenth and nineteenth centuries CE, but the central part still preserves its original brick form.

Many Fatimid mosques remain in Cairo, such as al-Aqmar at Nahasein, as-Salih Talai near Bab Zuwayla, al-Fakahani, and al-Hakim, which follows the same plan as al-Azhar. At the end of the Fatimid period, Cairo reached its peak in terms of art and culture, and became a large city with beautiful mosques, parks houses, palaces and markets.

The first expansion of the city occurred when Salah ad-Din (Saladin) extended the original walls of Cairo farther south to enclose such early Islamic cities as al-Fustat, which was built by the Arab General Amr ibn al-'Aṣ in 641, al-Askar, founded by the 'Abbasids in 750, and el-Qatai, founded by Ahmed ibn Tulun in 870.

The origin of the name al-Fustat is not clear; some find that it derives from the Arabic word meaning "camps," and other scholars suggest that it is from the Greek word *phossaton* (Lat., *fossatum*), meaning "fortress" or "town." It is also called "the city of the tent." The site of the new capital, al-Fustat, was protected by natural hills to the east and north. On the west, the city was protected by the Nile, which at that time was the link between the northern and southern Egypt. Early historians and travelers, such as al-Kudai, wrote that there were 3,600 mosques, 8,000 roads, and 1,700 public baths at al-Fustat. Writers may have exaggerated the numbers to show the progress of this new capital in the Islamic world.

Amr ibn al-'Aṣ built the al-Atique (old) mosque in 641 in the center of the city. It is the oldest mosque in Egypt and is regarded as the first building of Islamic architecture. The mosque was expanded to its current size in the tenth century during the Umayyad period, and many additions were made by succeeding governors. The most impressive characteristics of early Islamic architecture as seen in this mosque are the magnificent large open court, the colonnades, and the marble columns. Early Arab historians named the mosque "the crown of the mosques" and "the mosque of conquest." Amr built a house for himself to the north of the mosque and another one to the west for his son.

Wanting to prevent the conquest of the city by the Crusaders, the governor of al-Fustat in the twelfth century ordered it to be burned. The fire lasted for fifty-four days and destroyed almost the entire capital, creating a beneficial situation for archaeologists because the event preserved the entire stratigraphic record. Scientific excavation of the debris of al-Fustat settlement could provide us with information about the socioeconomic status of the people, as well as details of early Islamic art and architecture.

Despite its status, al-Fustat for many decades went without scientific excavation. In 1912–1913, Ali Bahgat excavated approximately fifty acres and found the wall that surrounded al-Fustat, the Citadel, and Cairo, built by Salah ad-Din. Hassan el-Hawary and A. Marzouk conducted an excavation at the site. K. A. C. Creswell, in cooperation with Mehriz, also worked at the site. Although the Egyptian Antiquities Organization excavated for many seasons, most of their archaeological reports are unpublished. A team from the American University in Cairo under the direction of George Scanlon, as well as a Japanese group, has been working at al-Fustat.

After the 'Abbasids defeated the last Umayyad caliph in Egypt in 750, they ordered their governor in Egypt to build another capital for their troops. This new site was called al-Askar, "the barracks." It was built as a suburb to the northeast of al-Fustat, in an area known as al-Hamra al-Kuswa and extended to the Yashkur Hills. The 'Abbasids built their houses and the governor's headquarters, known as Dar el-'Imarah, in al-Askar. The soldiers' barracks and the mosque of al-Askar were established by al-Fadl ibn Salih; during his tenure the two cities al-Fustat and al-Askar merged to form one large city. With the destruction of al-Fustat, al-Askar became the principal city. A series of sixty-five governors ruled Egypt from al-Askar on behalf of the 'Abbasids for a period of approximately 118 years. The significance of the new capital al-Askar did not affect al-Fustat, which was still an important trade center.

Ahmed ibn Tulun founded the new city of al-Qata'i, "the wards," in 870. The city was built in a one-square-mile area located between al-Askar and el-Mokattam. Ibn Tulun built his palace, and ordered his people to build new houses, in the new city. He built one of the finest mosques in Egypt and in the Islamic world. It took him two years to finish it, from 879 to 891. The mosque covers approximately 6.5 acres and is the largest mosque in the Islamic world. It is known as Ka'lat el-Kabsh or "fort of the ram." The court measures ninety-nine m (325 ft.) on each side and is surrounded by arcades resting on massive square brick pillars.

There are three hundred pointed horseshoe arches, constructed of brick and covered with stucco decorated with arabesque carvings. Some architectural features used in this mosque (such as brick pillars) were new to Islamic architecture. The minaret with external corkscrew stairs shows Mesopotamian influence. The pointed arches and handmade arabesque carvings are the best example of the Islamic style of decoration.

Salah ad-Din commissioned many important monuments that can still be seen today. The Citadel (intended to house his administration at el-Mokattam) and its aqueduct were built in 1177. Several buildings were added to the Citadel during the Ottoman period. Muhammad Ali Pasha expanded the Citadel, beginning with his mosque, which dominates the area, in 1845. The Citadel later served as the royal palace until Khedive Ismail moved it to the Abdeen Palace in 1850.

Salah ad-Din also introduced the architectural design known as el-Madrasa, which he adapted from Syria. *Madrasah*s were Islamic institutions used both as schools for Sunni Muslim subjects and as mosques for prayer services. The earliest known *madrasah* had two *iwan*s (porticoes). The only surviving *madrasah* in Egypt was built by Sultan as-Salih Najm ed-Din (the last ruler of the Ayyubid period) and is an example of the important Ayyubid style, which was followed by the Mamluks. They built *madrasah*s on a cruciform plan to accommodate the four orthodox schools of Islam. The *madrasah* complex also contained a school, dormitory space, mausoleum, and mosque. The Mamluk "collegiate mosque" style of *madrasah* was a distinctive feature in the Islamic architectural vocabulary in Egypt. An extant example is the mosque of Sultan Hasan (1356), which stands in front of the Citadel. The best statement to describe that mosque was written by the historian Makrizi, "(it) surpassed all the mosques ever built in any part of the world."

The Mamluks ruled for about one hundred years, leaving a large number of important and beautiful artifacts and buildings. Forty mosques are known from this period, and their art and architecture are considered by Islamic scholars and historians to be the most refined in all of Egypt's Islamic history. The minaret was introduced in this period and became an important architectural element of the mosques. Many artists and artisans from Syria and Iraq came to Egypt and introduced other new features. Cairo attained its current size during the Mamluk period. No monuments of distinction were added to Cairo during the reign of the Ottomans.

Today Cairo is the most famous Islamic city, because of its role in the politics of the Middle East as well as its central role in Islam. Al-Azhar Mosque remains the oldest and largest Islamic educational institution and the seat of Dar al-Fatwa ("the house of constitutions") for all Muslims. A thriving urban center with fifteen million inhabitants, it has endured centuries of change to prove worthy of its glorious history.

[*See also* Egypt, *article on* Islamic Egypt; Fatimid Dynasty; *and* Fustat.]

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ZAHI HAWASS

CALLAWAY, JOSEPH ATLEE (1920–1988), American archaeologist and principal excavator of Ai/et-Tell, in Israel, a representative of the "biblical archaeology" movement; and leading figure in the American Schools of Oriental Research (ASOR). Callaway was born and educated in Arkansas, where he graduated from Ouachita College. He prepared for the Christian ministry at the Southern Baptist Theological Seminary in Louisville. In addition to his special interests in the Hebrew Bible and language, Callaway developed an interest in Near Eastern archaeology under the tutelage of William H. Morton, professor of Old Testament and biblical archaeology. After earning an M.Div. degree in 1954 and a Ph.D. in Old Testament studies in 1957, Callaway returned to Southern Seminary to teach Old Testament and Near Eastern archaeology from 1958 until his retirement in 1982.

Callaway's desire to relate archaeological findings to biblical study is best illustrated in his general essays and in his extensive fieldwork at the site of et-Tell (1964–1972), which he and most scholars identified as biblical Ai. Over a period of twenty years, Callaway modified his views on the historical accuracy of the conquest narrative (Callaway, 1968), concluding that if there was a "conquest" of Ai, it was accomplished by other Canaanites in the eleventh century BCE.

Callaway published a number of influential articles and books about et-Tell's Early Bronze Age Canaanite culture (cf. Rust, 1988, for a bibliography). He was also deeply concerned with methodological issues, including pottery analysis and the application of the sciences to archaeological research. His attention to refinements in controlled stratigraphic excavation (i.e., the Wheeler-Kenyon method) stemmed from his pre-Ai field experiences at Bethel/Beitin (1960, under James L. Kelso), Shechem (1960, 1962, and 1964, under G. Ernest Wright), and Jerusalem (1961 and 1962, under Kathleen M. Kenyon and Roland de Vaux). Indeed, Kenyon's suggestion that he study the Early Bronze tombs at Ai/et-Tell was the catalyst in his decision to excavate that site.

Joseph Callaway earned a reputation as a captivating speaker, capable administrator, and skilled excavator, all of which were evidenced in his roles as minister, professor, president of the Albright Institute of Archaeological Research in Jerusalem, trustee of the American Schools of Oriental Research, officer in the Society of Biblical Literature, and director of the Joint Expedition to Ai.

[*See also* Ai; American Schools of Oriental Research; *and* Biblical Archaeology.]

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GERALD L. MATTINGLY

CAMELS. Modern camels are of two types, *Camelus dromedarius*—the one-humped dromedary—and *C. bactrianus*—the two-humped Bactrian, both of which are known only as domestic or feral populations. Modern dromedaries are distributed from Morocco to western India, and Bactrians from Anatolia to Mongolia. Their ranges overlap in Anatolia, Azerbaijan, and regions to the east of the Caspian Sea. It is likely that these distributions were different in antiquity, having now shifted somewhat in response to environmental change. No wild camels exist save for a possible relic population in the Gobi Desert. Pleistocene remains in the Near East and Egypt include specimens from the Paleolithic in modern Jordan, Egypt, Syria, and Israel (best referred to as *Camelus* spec., given nomenclatural complications and an uncertain fossil history, and *C. thomasi*, a large form known from southern Egypt and northern Sudan). In the early Holocene, evidence for the animal is limited to a small collection from Sihi on the southern Red Sea coast of Saudi Arabia. It has been radiocarbon dated to 8200 BCE (uncalibrated), although the archaeological deposit within which the bones were found dates stratigraphically to the end of the second millennium BCE. Evidence for camels becomes more abundant in the third millennium BCE with specimens from Jericho, coastal sites around the Arabian Peninsula, and Shahr-i Sokhta in eastern Iran. These last are probably Bactrian.

Dromedaries are usually assumed to have been domesticated in Arabia before the third millennium, but no clear archaeological evidence exists to support the claim. The often-cited camel-bone collections from late third millennium Umm an-Nar, Hili 8, and Ras Ghanada on the gulf coast of the United Arab Emirates cannot be shown to contain domestic animals. In fact, the associated bone finds suggest that they were hunted. Rock art depicting camels is known in Arabia and the Sinai but is difficult to date. Therefore, the use of this evidence to support a third-millennium date for domestication is inconclusive. Only further excavation in the region will settle the question of the domestication of the one-humped camel. A tiny number of camel bones is known from third-millennium sites in the Levant (Arad, Jericho)—information insufficient to determine wild or domestic status. The discovery of dung and woven camel hair in association with the bones at Shahr-i Sokhta (2700–2500 BCE) reinforces the suppositions that these are domestic stock and that the Bactrian was domesticated slightly earlier at the border of Turkmenistan and Iran. A camel-hair rope and a series of Old Kingdom depictions suggest the presence of the animal in Egypt but do not provide certain evidence for local domestication. Even later, the evidence for the camel in Egypt is sporadic. It is not until the Hellenistic period that the animal was used extensively there.

In the second millennium BCE, a two-humped camel was depicted on a Syrian cylinder seal (c. 1800 BCE), and the animal is mentioned in cuneiform texts from Mesopotamia from the Old Babylonian period onward. Clay figurines from Yemen showing dromedaries with saddles may be as old as the second millennium BCE. One theory suggests that camels had become numerous in western Arabia by 1500 BCE, contributing to the rise of oases states. However, this pattern of sharp increases in camel use is not reflected at Levantine sites. Only a very few camel-bone finds from Middle Bronze Age sites in the Levant have been reported (Megiddo, Gezer, Ta'anach, el-Jisr, Be'er Resisim). Only the bones from the last site were excavated using modern

techniques and are stratigraphically reliable. However, none of these bones have been radiocarbon dated and none can be shown to be domestic. In the Late Bronze Age, camels are still rare. Several specimens are known from Tell Jemmeh. Although it has been reported that a large number of camel bones were found in thirteenth–twelfth-century BCE sites at the copper mines of Timnaʿ, no report of this material has been forthcoming to allow an evaluation. At Ḥesban in Transjordan, only a few camel bones are known from thirteenth–twelfth-century levels.

William Foxwell Albright argued that dromedary domestication and the spread of its use did not much precede the twelfth century BCE. This would mean that the mention of camels in the *Genesis* narrative (12:16; 24:10 ff.) is anachronistic. The archaeological evidence from the Levant still bears out his point about the late spread of camel use. During the Iron Age, camel bones begin to increase in frequency. Although substantial collections have been reported from fortress sites dated to the tenth century BCE in Israel's Negev desert (Har-Saʿad, Qadesh-Barnea), the most dramatic and sustained increase in the use of the camel, as documented from the bones, is found at Tell Jemmeh during the Assyrian occupation in the seventh century BCE. This is coincident with the textual evidence indicating that camels were used by the Assyrian army as pack animals during military campaigns. In the Persian period, the number of camel bones increased even more, as camels were used to carry the international trade in aromatics from the Arabian Peninsula. This further increase in camels at Tell Jemmeh is roughly paralleled by a similar change at the other end of the route, in Yemen. From the textual evidence it is clear that camel management was a specialty of the Arab tribes inhabiting the Syro-Arabian desert and northern Sinai. From the Persian period until the advent of gasoline-powered vehicles, as their use on trade routes expanded, camels became more frequent at sites in the better-watered parts of the Near East. It is also from the Persian period that the animal found another use: their bones became important as a raw material in the large-scale manufacture of bone tools and objects, an industry abundantly evidenced at the port city of Ashkelon in Israel.

[*See also* Animal Husbandry; Ethnozoology; *and* Paleozoology. *In addition, most of the sites mentioned are the subject of independent entries.*]

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CANAAN. In Hebrew, Ugaritic, and Phoenician/Punic Canaan is spelled *knʿn,* in Akkadian cuneiform it is spelled *ki-na-aḫ-nu(m)* (at Mari, Byblos, and Tyre), *ki-in-a-nim* (at Alalakh), *māt ki-na-ḫi* (in Assyria and Ugarit), or *māt ki-in-na-aḫ-ḫi* (in Egypt, Mitanni, Boğazköy/Ḫattuša, Babylon); and in Egyptian it is spelled *k-3-n-ʿ-n-3 or k-i-n-ʿ-nw* (with many variations). The Septuagint generally simply transliterates into Greek as Chanaan. The etymology of the name has been much discussed, and the discussion revolves around whether *knʿn* should be understood as derived from the Semitic root *k-n-ʿ,* "to bend, be subdued," with the *-n* suffix (the consensus at present; see Astour, 1965); or whether the same word as the place name *Canaan* (also spelled *kinaḫḫu* in several cuneiform sources) should be seen in *kinaḫḫu,* "blue cloth" from Nuzi (in Hurrian or hurrianized Akkadian; see Speiser, 1936, disputed in Landsberger, 1967). *Kinaḫḫu* would present a parallel (though opposite) process to the Greek use of a derivative of a word for red-purple to name the Phoenicians.

The term *Canaan* or *Canaanite* appears in the extant evidence for the first time in an eighteenth-century BCE text from Mari in Syria. A man named Mut-Bisir complains to his lord in a letter written from the town of Rāḫiṣum that "thieves and Canaanites are in Rāḫiṣum." (Doubt has recently been cast on a suggestion that the term is to be seen in *ga-na-na(-um)* in third-millennium texts from Ebla in Syria; see Archi et al., 1993, pp. 229–230.) Other than this text, nothing appears in writing about Canaan or the Canaanites until the late fifteenth century (in a booty list, Amenophis II declares that he had deported Canaanites) and then several times in the fourteenth-century BCE Amarna letters. "Ammia in the land of Canaan" shows up in the "autobiography" of Idrimi (of Alalakh), dated vari-

ously by scholars to the fifteenth–thirteenth centuries BCE. At Ugarit, in about 1200 BCE, a list of merchants includes one *Y'l,* described as a Canaanite *(kn'ny),* along with other people with ethnic identifiers, such as Egyptian and Ashdodite. Because the Ugaritians bothered to label these people with gentilics, it is generally deduced that they were in some sense outsiders and that, therefore, Ugarit did not consider itself a part of Canaan. At about the same time, the "Israel stela" of Pharaoh Merneptah lists Canaan as one of the conquered lands.

The land of Canaan is described in several ancient texts, with predictably varying boundaries. Through most of the second millennium BCE, Canaan's boundaries began in the south at Wadi al-'Arish and reached north to the Lebanon and the Anti-Lebanon Mountain ranges. The western border was, of course, the Mediterranean, and the eastern was Transjordan (mostly the Bashan) and the Jordan River and Dead Sea farther south. These boundaries accord with the area covered by the eighteenth-century BCE Saqqara group of Egyptian Execration texts and with the descriptions of the land of Canaan in *Numbers* 34:1–12 and the future inheritance in *Ezekiel* 47:13–20; 48:1–7, 23–29. (See also the southern boundary in *Jos.* 15:2–4 and the northern one in 19:24–31.) The table of nations gives a rather more restricted picture of Canaan in *Genesis* 10:19: from Sidon in the north to Gaza in the south; to the east, the area of Sodom and Gomorrah.

Biblical traditions about the land of Canaan cluster in the genealogies and in the stories of promise and conquest. The word *Canaan* occurs largely in *Genesis* and *Numbers,* a few times in *Exodus, Leviticus,* and *Deuteronomy,* and then many times in *Joshua* and *Judges* (including the earliest-dated biblical attestation, *Js.* 5:19). *Canaanite* occurs frequently in *Genesis* and *Exodus* and a few times in *Numbers* and *Deuteronomy,* but most commonly in *Joshua* and *Judges.* These mentions, of course, refer to the land in which Israel settled (conquered, according to biblical tradition) and to the inhabitants of that land. Neither word appears very many times outside the Pentateuch and *Joshua* and *Judges,* although a few later occurrences are interesting for their apparent use of phrases with the word *Canaan* (once *Canaanite*) to mean "merchant, trader" (*Jb.* 40:30; *Ez.* 16:29, 17:4; *Hos.* 12:8; *Zep.* 1:11).

Extrabiblical uses of the terms *Canaan* and *Canaanite* end for the most part with the Iron Age, with a few exceptions. In the third century BCE, coins from Beirut read *l'dk' 'š bkn'n* (in Phoenician, "Laodikea which is in Canaan"—the Greek equivalent of *Laodikeia hē en Phoinikē,* "Laodikea which is in Phoenicia." The Phoenician priest Sakkunyaton (perhaps mid- or late first millennium BCE), in excerpts from Philo of Byblos (first or second century CE), quoted by Eusebius (fourth century), says that Chna was the first person to call himself Phoenician. Both Herodianus Grammaticus (second century CE; *Peri monērous lexeōs,* 8.5–9) and Stephanus of Byzantium (fifth century CE; see under Chna) note that Phoenicia was formerly called Chna.

[*See also* Canaanites; Phoenicia; *and* Phoenicians.]

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CANAANITES. There are several ways to distinguish the ancient Canaanites: as people who lived in Canaan (Lebanon, southern Syria, Israel, and Transjordan); people who spoke a Canaanite language; people identified in antiquity by other groups as Canaanites; and people who identified themselves as Canaanites. [*See* Canaan.] For the period before there is any evidence of the individual Canaanite languages, the term *Canaanite* simply designates people who lived in (or came from) Canaan. It is not known when, exactly, the peoples who will later speak Canaanite languages arrived in Canaan, or where they came from. The first certain extant mention of "Canaanites" is in an eighteenth-century text from Mari in Syria. [*See* Mari Texts.] The clear break in culture in the region seen at about the beginning of the second millennium BCE, known as the beginning of the Middle Bronze Age I, and some ties between MB I culture

CANAANITES. *Relief showing Canaanite vassals.* From the Memphite tomb of general Horemheb at Saqqara. Eighteenth dynasty. (Courtesy Rijks Museum van Oudheden, Leiden)

on the coast of Syria and Palestine and the slightly earlier culture in the interior of Syria, suggest that the "Canaanites" of the second millennium BCE came to Canaan from Syria. At any rate, it is now evident that there was a major shift at the beginning of the second millennium BCE away from rural pastoralism and toward living in large, fortified urban centers, such as Megiddo, Jericho, Tell Beit Mirsim, Gezer, Shechem, and Hazor. [*See* Megiddo; Jericho; Beit Mirsim, Tell; Gezer; Shechem; Hazor.] Established urban centers were growing, new settlements were being founded, and trade was on an international scale, including the islands of the Mediterranean, another sign of prosperity.

The three-tiered settlement pattern typical of an urbanized culture can be seen: most people lived in large urban areas; most of the settlements outside the urban areas were small villages (many were 2 acres or less); and in between the villages were a few medium-sized towns. This information has been gleaned largely from archaeological surveys; adding to it what has been learned from full-scale excavations at a few sites and comparing settlement patterns in other areas of the world and in other periods of time to help us reach conclusions about life in MB Canaan. These conclusions are much broader than what we can learn from text finds or from the few tells that have been excavated intensely and well.

The massive fortifications around the urban areas usually included a rampart (e.g., Akko, Tel Zeror, Hazor, Tel Dan, Dor, Shechem, Ashkelon, Megiddo, Lachish, Gezer). Such fortifications could only be undertaken where there was surplus wealth, a workforce free from subsistence activities, central control of natural resources outside urban areas, and central planning. They also indicate that there was a perceived enemy or enemies to warrant such precautions, as do the more modest city walls found as defenses at small farming and pastoral villages (such as Mevorakh and Shiloh). The labor that went into huge fortifications was probably forced labor—an assumption that accords well with the archaeological indicators of a stratified society: large numbers of rather poor living arrangements alongside a very few large domestic structures as at Hazor and Tell Beit Mirsim.

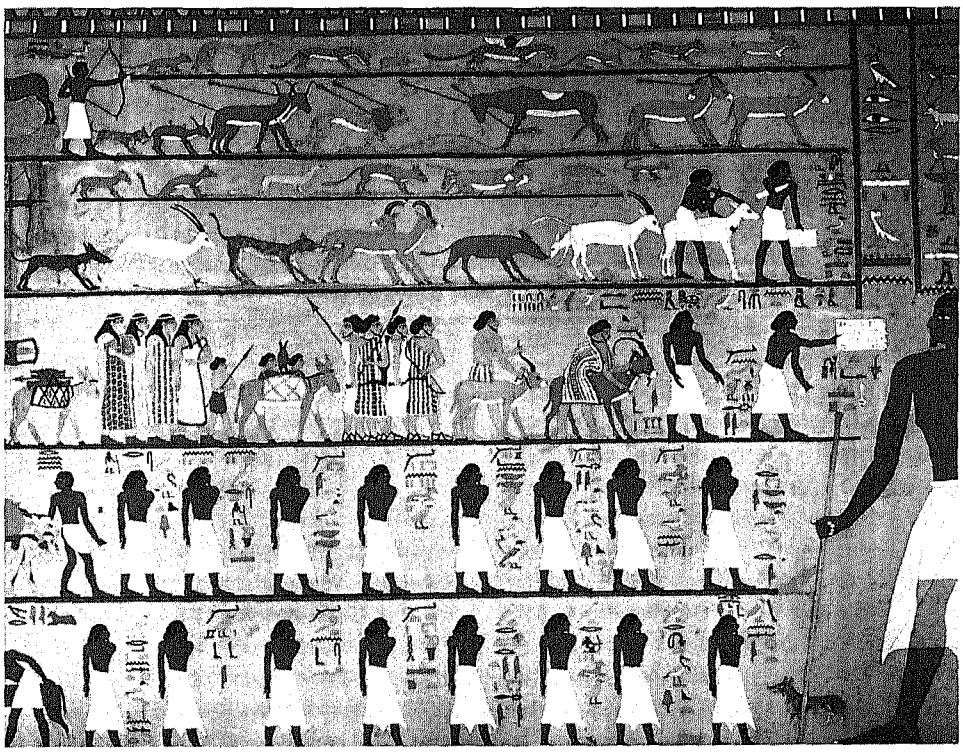
The transition from the Middle to Late Bronze Age in Canaan entailed some destruction, especially in the hill

country and in the south, but that destruction was not complete and, in the Late Bronze Age (especially LB II, the "Amarna age"), the old sites were largely resettled: Hazor, Megiddo, Shechem, Gezer, Tell Beit Mirsim, and Tell el-Far'ah (North) retained their prominence. [*See* Far'ah, Tell el- (North).] In general, the LB city-states did not build new fortifications: where they could, they used those that still stood. This is also an urban period in Canaan, but much reduced from the Middle Bronze Age. There were fewer sites and they were generally smaller, and most settlement was along the coast and in the valleys, along the trade routes (there was very little settlement in the central hill country). Until the very end of the Late Bronze Age, there is clear evidence of trade with Cyprus and the Aegean. [*See* Cyprus; Aegean Islands.]

Agriculture combined with pastoralism was the way of life for most Canaanites—in what was probably a kind of dimorphic society, like the one known from eighteenth-century BCE Mari. [*See* Mari; Agriculture; Pastoral Nomadism.] Rural pastoralists had close ties to the urban areas, from which they were supplied with agricultural and manufactured products. The urban areas, in turn, depended on the pastoralists for animal products. There is evidence of the cultivation of wheat and barley, as well as olives, grapes, and other horticultural products. [*See* Cereals; Olives; Viticulture.] Cattle, sheep, goats, and pigs were herded. [*See* Cattle and Oxen; Sheep and Goats; Pigs.] By the Middle Bronze Age the technology existed to make tools sharper and of sturdier bronze than was possible in the Early Bronze Age. In addition, the quality of Canaanite pottery was extremely fine as a result of advances in ceramic technology.

There is no indication that the Canaanite urbanized three-tiered settlement pattern, or city-state system, was ever organized on a larger scale, into a true nation-state system. (No capital city of all Canaan has so far presented itself.) Canaan was ruled by Egypt from at least the time of Thutmosis III (early fifteenth century BCE), although Egyptian control of the province was sometimes very loose. The Canaanites of the fourteenth-century Amarna letters lived in feuding city-states that depend on Egypt to settle their disputes, and there is archaeological evidence of periodic Egyptian sorties, especially in the south. [*See* Amarna Tablets.] As the era proceeded, the evidence for Egyptian fortress sites and "governors' residencies" increases (e.g., Haruvit, Tel Mor, Jaffa, Deir el-Balah, Tell esh-Shari'a, Aphek, Tell el-Far'ah [South], and Tell Jemmeh), suggesting that the city-states' pleas for more protection from Egypt were heeded.

A weakened Egypt lost control of Canaan in the mid-twelfth century BCE, and the vacuum left by its withdrawal



CANAANITES. *Copy of a mural from a tomb at Beni Hasan.* Semitic tribespeople dressed in colored striped costumes ask permission to enter Egypt. Dated to the nineteenth century BCE, Middle Kingdom. Kunsthistorisches Museum, Vienna. (Erich Lessing/Art Resource, NY)

allowed for the establishment there of independent political units: Israel, Moab, Ammon, Edom, the Philistine pentapolis, and the Phoenician cities in the north. This process in Israel and Judah seems to have been a gradual sedentarization of the population, helped along by deforestation and terracing for agriculture, and often in areas not heavily settled in the Late Bronze Age. [*See* Moab; Ammon; Edom; Philistines, *article on* Early Philistines; Phoenicians.]

Writing and Languages. There is evidence that the Canaanite peoples used several writing systems in the Middle Bronze Age and later. Akkadian syllabic cuneiform texts have been found at Ta'anach, Megiddo, Aphek, and Hazor. [*See* Akkadian; Cuneiform; Ta'anach; Aphek.] One of them, a literary text found at Megiddo, is part of the Epic of Gilgamesh, suggesting the existence of a traditional cuneiform scribal school there in which students learned to write in part by copying "the classics." [*See* Writing and Writing Systems; Scribes and Scribal Techniques.] What is known as Peripheral Akkadian was the lingua franca of much of the Near East (outside Mesopotamia proper) in the Late Bronze Age. Many letters from Amarna in Egypt (ancient Akhetaten) exist that were sent to and from Canaanite cities (e.g., from Akko, Ashkelon, Beirut, Byblos, Gezer, Hazor, Jerusalem, Lachish, Megiddo, Shechem, Sidon, and Tyre) and are written in several of these Peripheral Akkadian dialects. [*See* Amarna, Tell el-; Akko; Ashkelon; Beirut; Byblos; Jerusalem; Lachish; Sidon; Tyre.]

A much-simplified cuneiform writing system is also known from such Canaanite sites as Ta'anach, Sarepta, and Beth-Shemesh, although the vast majority of the texts in this system come from the Syrian city of Ugarit (modern Ras Shamra) and its environs. [*See* Sarepta; Beth-Shemesh; Ugarit.] Because not all such texts are from Ugarit, there has been a tendency in recent scholarship away from calling this writing system Ugaritic cuneiform. [*See* Ugaritic.] It is referred to it instead as Canaanite cuneiform (although this usage also has its problems: strictly speaking, Ugarit was not a part of Canaan). Unlike the Akkadian syllabary, with its hundreds of signs, this Canaanite cuneiform writing system (also writing wedge-shaped characters with a stylus on clay tablets) has only thirty characters, each of which represents a consonant in the Ugaritic language—or, in the case of the phoneme *'aleph*, represented by three signs, a consonant plus a vowel. It is, therefore, an alphabet rather than a syllabary.

The system for which the Canaanites are best remembered, however, is the linear alphabet, first encountered on a single sixteenth-century BCE sherd from Gezer and then in large numbers of fifteenth-century BCE inscriptions from Serabit el-Khadem, a turquoise-mining site in western Sinai where Canaanite-speaking slaves were the labor force. (The name *Proto-Sinatic* was given to the corpus.) [*See* Alphabet; Proto-Canaanite; Proto-Sinaitic.] Some of the signs resemble Egyptian hieroglyphs, but no consistent system of influence has ever been demonstrated. Each of the original twenty-seven symbols represents a consonantal phoneme. The linear alphabet operates according to the acrophonic principle: each symbol originated as the picture of something whose name in Canaanite was a word that began with the sound the picture represents. A picture of a house was the original *b* because the Canaanite word for house, *bayt-*, begins with the *b* sound. The *k* is a picture of a hand, because in Canaanite "(palm of) hand" is *kapp-*. This linear alphabet—incised in stone, metal, and gemstones and drawn in ink on potsherds (ostraca), papyrus, and leather—is the forerunner of all modern Western alphabets, spread through the Mediterranean by Phoenician traders. [*See* Ostracon; Papyrus; Leather.] Some of the signs in the earlier Canaanite cuneiform alphabet resemble this linear alphabet—it is as if the cuneiformists had attempted to draw the pictographs rather abstractly with a stylus on clay. It has therefore been suggested that the Canaanite cuneiform alphabet developed under the influence of the linear alphabet. The order of the alphabet is the same for both, as witnessed by the several complete and partial abecedaries discovered in both systems (e.g., from Ugarit, 'Izbet Ṣarṭah, and Lachish).

This linear alphabet is the source of the later Phoenician, Hebrew, and Aramaic scripts (including subsets of each, such as Ammonite and Edomite); it is also the source of the South Semitic alphabet—the letter shapes in this series suggest that it must have broken off from the rest by the thirteenth century BCE. [*See* Phoenician-Punic; Hebrew Language and Literature; Aramaic Language and Literature; Ammonite Inscriptions.] The earliest inscriptions in this linear alphabet so far recovered include (in addition to some largely dedicatory Proto-Sinaitic inscriptions) several short inscriptions likely representing claims to ownership: bronze arrowheads inscribed with personal names; several dedicatory inscriptions, usually written on the dedicated objects; and an abecedary from 'Izbet Ṣarṭah.

The word *Canaanite* is also used as the name of a group of Northwest Semitic languages: Israelite and Judahite Hebrew; Phoenician and Punic; Ammonite; Edomite; and Moabite. Also Northwest Semitic languages, but differentiated from Canaanite, are Ugaritic, Aramaic, and the language of the plaster text from Tell Deir 'Alla. [*See* Deir 'Alla Inscriptions.] (Cf. the reference to Hebrew as the "language of Canaan" in *Is.* 19:18.) The Canaanite languages are differentiated from other Northwest Semitic languages in at least the following three ways.

1. The suffix-conjugation forms for the D ("intensive"; Heb., *pi'el*) conjugation and C ("causative"; Heb., *hip'il*) conjugation are **qattila* and **haqtila* in Proto-Northwest Semitic, but they become **qittila* and **hiqtila* in Hebrew, in Phoenician, and in at least one of the Amarna Canaanite dialects.

2. The first-person singular independent pronoun, originally **'anāku̯*, becomes **'anōku̯* ([ā] > [ō] (the so-called

Canaanite shift), and then dissimilates to **'anōkī*. Corresponding to this new form comes the change from **-tū* to **-tī* in the suffix-conjugation ending for the first-person singular.

3. Proto-Canaanite leveled **-nū* for all first-person plural suffixes (on suffix-conjugation verbs, on nouns, and in the objective verbal suffixes), from an earlier mixture of **-nū* and **-nā*. (Proto-Aramaic, on the other hand, leveled **-nā*.) Obviously, evidence for all these features is not to be found in the traditions that exist only in unvocalized form (e.g., Moabite, Edomite, Ammonite); where there is evidence, however, it supports these suggested divisions.

Religion and Cult. The picture of Canaanite religion is often drawn from the texts found at ancient Ugarit (in spheres outside religion, however, most scholars do not include Ugarit within the scope of Canaan). While the Ugaritians distinguished themselves from Canaanites, Ugaritic religious literature has enough links with later biblical literature to place Ugarit on a cultural continuum with Canaan. The copious amounts of material from Ugarit may, then, suggest what LB Canaanite religion was like. Because the later political entities of Israel, Moab, Ammon, Edom, and the Phoenician cities were also Canaanite, their religious traditions also constitute "Canaanite religion," although many biblical texts, for instance, distinguish between Israelite religion and the religion of "the Canaanites," with the latter seen as the pre-Israelite inhabitants of the land.

Canaanite religion was a religion of blood sacrifice, as can be seen not only in the Bible but also on the lists of sacrifices to various deities found at Ugarit and in the number of altars found in the vicinity of animal remains at archaeological sites throughout the region. [*See* Altars.] The harvest festivals known from the Bible are thought to be general Canaanite, and not specific Hebrew, festivals. Several other religious features known especially from the Bible are also confirmed by the archaeology and historical geography of the area: outside worship at installations called *bāmôt;* the erection of standing stones; and the veneration of mountains and hills. [*See* Cult.]

A large number of male and female deities was worshiped throughout the area, known from Ugarit, the Bible, various Canaanite personal names, and inscriptions. The high god 'El, the father-god, head of the council of gods, lived on top of a mountain at the foot of which was the source of fresh water. Of the same "generation" was Asherah, a marine goddess (*'atiratu yammi* at Ugarit); the gods at Ugarit are called her children and she is called creator of creatures. Asherah was also known as Qudshu, "holiness" (in Egypt as well as at Ugarit), and as 'Elat, "goddess" (e.g., on a ewer from Lachish; see Cross, 1954, pp. 19–22). The storm god, Ba'al Hadad, a warrior-god, fights battles with both the Sea (Yamm) and Death (Mot). 'Anat, a warrior goddess, is also typical of the Near Eastern goddess represented as an adolescent—no longer a child but not yet a woman (like some descriptions of Mesopotamian Ishtar). She is described in a manner reminiscent of some iconographic representations of the Indian goddess Kali, adorned with skulls and hands (*KTU* 1.3.2.9–11). The goddess 'Ashtart is not very well developed at Ugarit or in the Bible, but she is the head deity at Sidon in the sixth and fifth centuries BCE, where her cult is presided over by the royal family. Dagon, god of grain (known also from Ugarit), is said in the Bible to be worshiped by the Philistines (e.g., *1 Sm.* 4), and so may have been more important in second-millennium BCE Canaan than the texts suggest.

These deities demonstrate continuity with those of the national religions of the Iron Age: Yahweh in Israel, for instance, is a storm god as well as an 'El figure (patriarch, head of the council). There is no evidence that Chemosh in Moab, Milkom in Ammon, and Qaws in Edom were any different. In fact, there is some slight evidence that they were similar; they were also national gods from the same time period, and the onomastica are similar; and the Mesha stela shows Chemosh leading Mesha in war and requiring a kind of "holy war" destruction.

The Phoenician gods vary in name and/or function from city to city. Ba'al Shamêm ("lord of heaven," probably a local name for Ba'al Hadad) is the god who legitimizes and blesses the ruling families of several Phoenician (and Aramean) cities; the Lady of Byblos seems to have the same function at Byblos. [*See* Arameans.] 'Ashtart, mentioned above, was also one of the gods, along with Melqart, Eshmun, Bethel, 'Anat-Bethel, and various Ba'al figures, who served as Tyrian guarantors of Tyre's seventh-century BCE treaty with the Assyrian king Esarhaddon. [*See* Assyrians.] Eshmun is the Phoenician god of healing, and Melqart ("king of the city") appears largely in Tyrian or Tyrian colonial settings. Tanit (or Tinnit), presumably a local name for Asherah, is at home in seventh-century BCE Sarepta in Phoenicia and throughout the Mediterranean, especially in North Africa in the third–second centuries BCE. [*See* Phoenicia; North Africa.]

No local evidence presently exists for the kind of sexual magico-sympathetic religion so often asserted for the Canaanites—even though the fertility of humans, animals, and crops was of course a concern of ancient Near Eastern religions (including that of the Israelites and Ugaritians). At Ugarit, Ba'al Hadad was the provider of rain as well as the god of fertility for crops; and 'El was the deity appealed to for human fertility, just as Yahweh was the god of fertility in Israel.

In addition to the cults of the national or city gods of Canaan, other forms of religious activity existed throughout the area. Both the goddess figurines excavated by archaeologists in Israel and the inscriptions from Kuntillet 'Ajrud in Sinai offer evidence of goddess worship officially or unofficially alongside the worship of Yahweh. [*See* Kuntillet 'Ajrud.] From the coastal areas there is some evidence, mostly icon-

ographic and architectural, of a religion peculiar to seafarers: anchors included in temple architecture, temples on isolated promontories, and what appear to be divinized ships portrayed on coins. [*See* Seafaring; Anchors.] Moreover, there appears to be a form of ancestor religion attested in texts and in burials from Israel (e.g., *Ps.* 106:28) and Ugarit (especially *KTU* 1.161 and the Duties of the Ideal Son repeated several times in *KTU* 1.17), as well as farther afield in Syria and Mesopotamia. [*See* Burial Techniques.] (Ancestor religion, which exists primarily in patrilineal societies, generally includes blood sacrifice; it functions to tie males to ancestors in the genealogy, while seeking blessings as a reward for keeping up the cultic ties.)

The gruesome practice of child sacrifice was also a part of Canaanite religion. It is best known from the Punic colonies in North Africa, but inscriptions related to Phoenician child sacrifice have also turned up on Malta, Sicily, and Sardinia. [*See* Malta; Sardinia.] There are many biblical references to the practice in Israel and its environs (e.g., *Dt.* 12:31, 18:9–10; *2 Kgs.* 3:26–27, 16:3; *Jer.* 7:31; *Ps.* 106:37–38).

Hebrew Bible. In the Hebrew Bible, the word *Canaanite(s)* is sometimes used as a general term for the pre-Israelite inhabitants of the land (*Ex.* 13:11; throughout *Jgs.* 1); the term *Amorite(s)* is also used (*Gn.* 15:16; *Jgs.* 6:10). More often, several peoples are said to have lived in the land before the Israelites, and the Canaanites are mentioned as one among them (e.g., *Gn.* 15:19–21; *Ex.* 3:8; *Jos.* 3:10). In a few of these cases, the Canaanites are specifically located along the coast—perhaps a reflection of the position of Phoenicia in the first half of the first millennium BCE (*Nm.* 13:29; *Jos.* 5:1, cf. 7:7–9). In the genealogy of *Genesis* 10:6, Canaan is the son of Noah's son Ham and the brother of Ethiopia (Cush), Egypt, and Libya (Put); and in 10:15–18 it is the father of Sidon, the Hittites (Heth), and the Jebusites and Amorites (who are elsewhere listed as pre-Israelite peoples in the land), as well as the father of the Arkites, Sinites, Arvadites, Zemarites, and Hamathites.

The term *Canaanite* fell out of use for the most part in about 1000 BCE, when it was replaced by the gentilics of the various Iron Age nations that grew out of Canaan. Trade in the coastal cities continued to be active, however, and the Phoenicians (see above) eventually set up a long-distance trade network in the Mediterranean world. Carthage, initially a Phoenician colony, became the head of a commercial empire of its own in the late first millennium BCE. [*See* Carthage.] In the fourth century CE its people, according to Augustine, still called themselves Canaanites (Migne 35, 2096).

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JO ANN HACKETT

CAORC. *See* Council of American Overseas Research Centers.

CAPE GELIDONYA, sometimes also Khelidonya, or Şilidonya Burnu, and more recently known as Taşlık Burun or Anadolu Burnu, the Chelidonian promontory of Pliny (*Natural History* 5.27.97) in Lycia. The cape marks the western extremity of the Bay of Antalya. Running south from the cape is a string of five small islands, the Chelidoniae of antiquity, called Celidoni by Italian sailors, and later Şelidonlar by the Turks, but today known simply as Beşadalar (Tk., "five islands"). Strabo (14.2.1, 14.3.8) noted only three of them and Pliny (*Natural History* 5.35.131) only four.

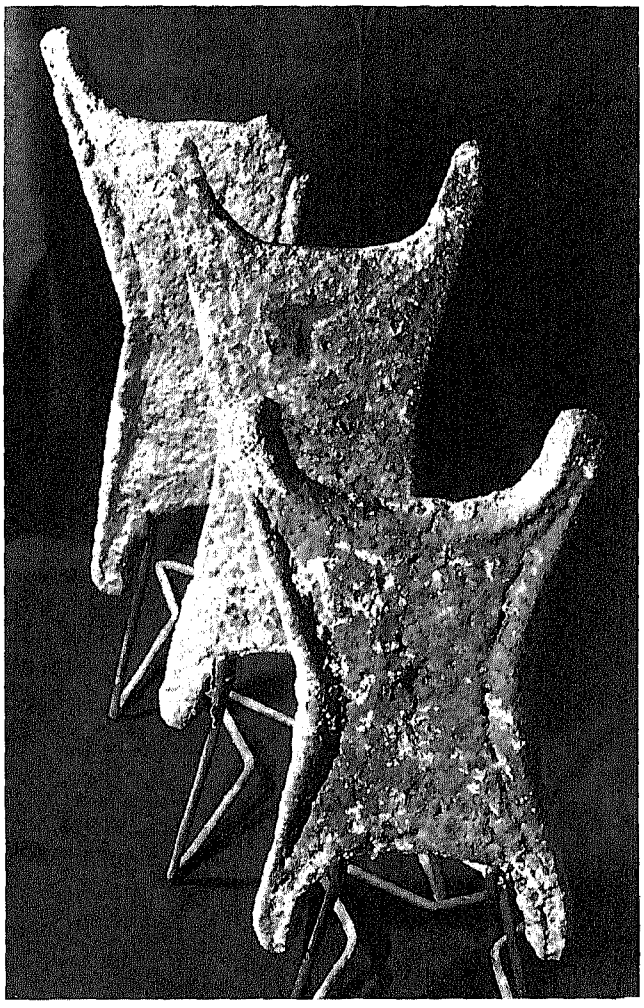
In about 1200 BCE, a merchant vessel apparently ripped its bottom open on a pinnacle of rock that nears the surface of the sea just off the northeast side of Devecitaşı Adası, the largest of the islands (36°11′40″ N, 30°24′27″ E). Spilling artifacts in a line as she sank, the ship eventually settled with her stern resting on a large boulder 50 m or so away to the north; the bow landed on a flat sea floor of rock. At some point during the hull's disintegration, the stern slipped off the boulder into a natural gully formed by the boulder and the base of the island.

In 1954, a sponge diver from Bodrum, Kemal Aras, stumbled on the wreck's main concentration of cargo, between 26 and 28 m deep. Four years later, he described it to American journalist and amateur archaeologist Peter Throckmorton, who was cataloging ancient wrecks along the southwest Turkish coast. Throckmorton was able to locate the site in 1959 and, recognizing its great age, asked the University Museum of the University of Pennsylvania if it would organize its excavation.

The subsequent excavation by the museum of this Late Bronze Age site (June–September 1960) was the first shipwreck excavation carried to completion on the seabed, the first directed by a diving archaeologist, and the first conducted following the standards of terrestrial excavation. Visits to the site in the late 1980s by a team from the Institute of Nautical Archaeology (INA) at Texas A&M University, led by the original excavation director, George F. Bass, showed, after more artifacts were recovered, how the ship had sunk. The sinking has been dated to the late thirteenth century BCE by two nearly intact Mycenaean IIIB stirrup jars discovered on these visits and by a radiocarbon date of 1200 BCE ± fifty years from brushwood on the wreck.

Because of a lack of protective sediment, most of the ship's hull had been devoured by marine borers, especially teredos. However, its brushwood dunnage gave, for the first time, meaning to the brushwood Odysseus placed in a vessel he had built (*Odyssey* 5.257). The distribution of cargo originally led to a published estimate of not much longer than 10 m for the hull, but recent discoveries suggest that this estimate was low.

The bulk of the cargo consisted of the ingredients for making bronze implements, including both scrap bronze tools from Cyprus, intended to be recycled, and ingots of both copper and tin, meant to be mixed to form new bronze. The scrap, at least partly carried in wicker baskets, included broken plowshares, axes, adzes, chisels, pruning hooks, a spade, knives, and casting waste. The copper, mined on Cyprus, was shipped as thirty-four flat, four-handled ingots, weighing on average 25 kg apiece, of the type once thought to imitate dried ox hides in a premonetary form of currency (see figure 1); discoid "bun ingots," averaging only about 3 kg each; and fragments chiseled from each type. The tin ingots were too badly corroded to reveal their original shapes, but seabed evidence suggests that at least one was a rectangular bar. In addition, there were eighteen much smaller, flat, ovoid ingots, at least one of them bronze, that seem to have been cast in multiples of 0.5 kg.



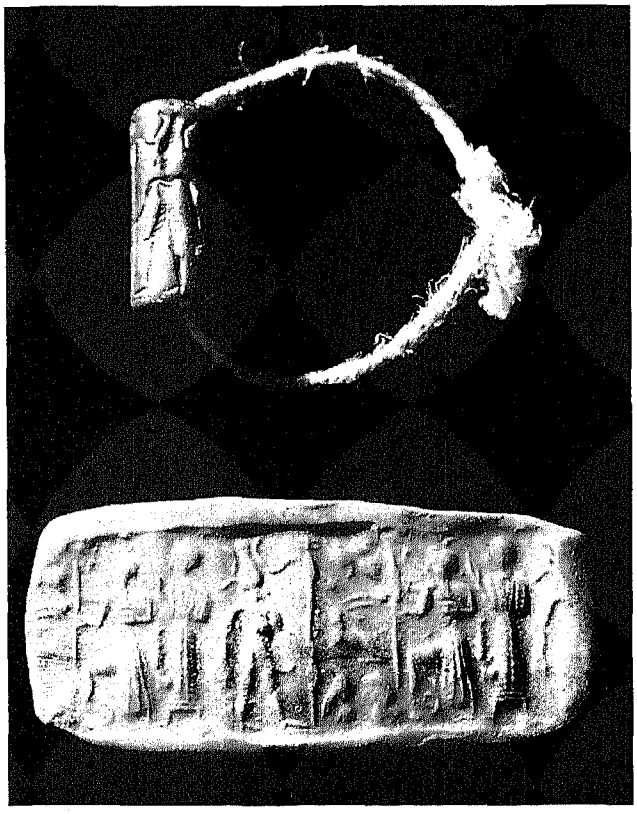
CAPE GELIDONYA. Figure 1. *Three oxhide copper ingots.* (Copyright Frey/INA)

The discovery on the wreck of a bronze swage, stone hammerheads of the kind sometimes used for metalworking, many stone polishers and a whetstone, and a large, flat, close-grained stone that could have served as an anvil suggest that a tinker may have been on the voyage.

The wreck's importance derives from the historical conclusions drawn from it. At the time of its excavation, it was generally accepted that Mycenaean Greeks had a monopoly on maritime commerce in the eastern Mediterranean during the latter part of the Late Bronze Age, and that Phoenician sailors did not begin their great tradition of seafaring until the following Iron Age. Indeed, the main reason that Homer has been commonly dated to the eighth century BCE by twentieth-century classicists is his frequent mention of Phoenician sailors and bronzesmiths.

The Cape Gelidonya shipwreck suggests new possibilities. The southeast end of the wreck, most probably its stern, held what may be considered personal possessions of the crew or passengers, as opposed to the mostly Cypriot cargo and the shipboard mixture of Mycenaean, Cypriot, and Syrian pottery. These possessions included four scarabs and a scarab-shaped plaque, an oil lamp, stone mortars, more than sixty stone pan-balance weights (including Egyptian *gedets*, and Syrian *nesefs* and *shekels*), and a merchant's cylinder seal (see figure 2), all apparently of Syrian, or Canaanite, origin; a razor is of Egyptian rather than Mycenaean type.

The excavator concluded that the ship was probably Canaanite, or early Phoenician (the Canaanites being simply Bronze Age Phoenicians), although because so many Near Eastern artifacts are found on Cyprus from the same period, there was the possibility that the ship was Cypriot. Library research revealed that, with a single exception, contemporary Egyptian artists associated the trade in four-handled copper ingots, and tin ingots, solely with Syrian merchants (the only known mold for casting four-handled copper ingots was found after the Cape Gelidonya excavation, in a palace at Ras Ibn Hani, the port of Ras Shamra/Ugarit, the greatest of Late Bronze Age Syrian port cities). [*See* Ras Ibn Hani; Ugarit.] Furthermore, the only foreign merchant ships depicted in Egyptian art of the time are Syrian. All this suggested that Homer's Phoenicians are not anachronistic in the Late Bronze Age of the Trojan War. The discovery in 1994 of the Cape Gelidonya ship's Syro-Canaanite or Cypriot stone anchor bolstered the excavator's contention that the ship was of Near Eastern origin.



CAPE GELIDONYA. Figure 2. *A Syrian cylinder seal and its impression in clay.* (Copyright Frey/INA)

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GEORGE F. BASS

CAPERNAUM (Heb., Kefar Naḥum), site located on the northwest shore of the Sea of Galilee (map reference 255 × 204), 16 km (9 mi.) northeast of modern Tiberias, 3 km (2 mi.) northeast of ancient Heptapegon (modern Tabgha), 3 km southeast of ancient Khorazin, and 5 km (3 mi.) west of the upper Jordan River. The site is called Talḥum by local Arabs.

The location of the site matches data provided by the ancient literary sources. Eusebius (fourth century CE) sets Capernaum 3 km from Khorazin (*Enchiridion Locorum Sanctorum* [*ELS*], p. 305, n. 459), whereas, according to Theodosius (530 CE), it was between Heptapegon and the Jordan River—more precisely, 3 km from Heptapegon and 10 km (6 mi.) from Bethsaida across the river (*ELS*, p. 267, n. 381). The archaeological remains stretch for a consider-

able distance along the lake shore, with the Sea of Galilee to the south side and the hills to the north, precisely as described by Arculphus in 670 CE (*ELS*, p. 176, n. 404).

Archaeological excavation at the site has not only provided full confirmation of all the periods of occupation recorded by the literary sources, but brought to light specific buildings. The monumental synagogue and the churches built upon the traditional house of Simon Peter attracted, in the Byzantine period, the attention of such pilgrims as Egeria, in 384 CE, and the Anonymus Placentinus, in 570 CE (*ELS*, p. 299, n. 443, and p. 297, n. 436).

The identification of the ruins of Talḥum with ancient Kefar Naḥum is also indirectly strengthened by the fact that no other ancient settlement exists in this area of the lake to vie with Talḥum: in fact, Khirbet al-Minyeh, in the Ginnosar valley, which several scholars once took for ancient Capernaum, turned out to be an Umayyad castle, with no remains earlier than the seventh century CE. In addition, no other ancient settlements have so far been recorded along the lake shore between the Jordan and Heptapegon, except for the evidence of some isolated potsherds from the third millennium BCE collected in surveys.

The original Semitic name Kefar Naḥum (meaning "village of Naḥum") is known from a Byzantine inscription found in the synagogue at Ḥammath-Gader; in some passages in the Mishnah (*Midrash Qoh Rabba* 1:8 and 7:26); and, as late as the year 1333, when Rabbi Ishak Chelo visited the site (*ELS*, p. 301, n. 451).

In non-Semitic languages the composite name Kefar Naḥum is always rendered as a single name, and the guttural *ḥ* is dropped altogether. In the Greek manuscripts of the Gospels two spellings occur: Capharnaum and Capernaum. The Greek spelling Capharnaum, closely following the Hebrew pronunciation and attested also by Flavius Josephus (*War* 3.519), is to be preferred; the spelling Capernaum (followed in modern English) was probably introduced as an idiom in the district of Antioch in Syria. It is difficult to tell when, if ever, this old name went out of use among the local Arab population to indicate the remains today called again Kefar Naḥum. Significantly, as late as the year 1668, Michel Nau, a scholar who asked the local bedouins to accompany him to the site of ancient Capernaum, was indeed led to Talḥum, and could write: "Capernaum is called at present Telḥoum" (*ELS*, p. 304, n. 458).

It is equally difficult to know when the new name Talḥum was applied to the ruins of Capernaum, although its first occurrence is so far not earlier than 1537, the year Uri of Biel wrote: "Tanḥum. Here Rabbi Tanḥum is buried." Probably, the presumed tomb of R. Tanḥum gave the new name to the ruins. (In a parallel way, the village of Bethany, near Jerusalem, was renamed el-Azariyeh in Arabic because of the Lazarium—the tomb of Lazarus.) The local bedouins subsequently softened the pronunciation of Tanḥum to Talḥum. Finally, several modern scholars, beginning with Nau, understood the Arab pronunciation of Talḥum as Tell Ḥum, and someone went so far as to conclude that Tell Ḥum could mean "the ruins (*tell*) of (Na)ḥum." Certainly the very preservation of the original name Kefar Naḥum, even under the name Talḥum is additional support for the identification of the ruins. The interpretation of Talḥum as Tell (Na)ḥum seems rather weak, although etymologically possible.

Surveys and Excavations. In 1816 J. S. Buckingham published a sketch of Talḥum, showing what seems to be the remains of the Byzantine octagonal church. The American clergyman Edward Robinson visited Talḥum in 1838 and correctly identified "the prostrate ruins of an edifice which, for expense, labour, and ornament, surpasses any thing we have yet seen in Palestine" as the remains of a synagogue. In 1864 Sir Charles W. Wilson described two monumental tombs, one of which is a Roman mausoleum. His limited soundings in the synagogue yielded no significant results, but they were significant to the local bedouins, who started pillaging the remains, looking for treasure. The site robbing ended in 1894, when two-thirds of the ruins, including the remains of the monumental synagogue, were acquired by the Franciscan Custodians of the Holy Land; the remainder of the site, on the east side, became the property of the Greek Orthodox Patriarchate of Jerusalem.

In 1905, H. Kohl and Carl Watzinger began an excavation of the synagogue that Wendelin von Menden expanded between 1906 and 1915. Gaudenzio Orfali worked on an octagonal structure in 1921 that he tentatively interpreted as a Byzantine baptistery. He partially restored the synagogue, which William Foxwell Albright considered "one of the most satisfying places to visit in all Palestine." From 1968 to 1986, Virgilio Corbo and Stanislao Loffreda conducted nineteen seasons of excavation on the Franciscan property, attempting to understand both the synagogue and the octagonal church in stratigraphic context and in the context of the ancient settlement, which had been extensively excavated. Finally Vassilios Tzaferis directed four seasons of excavation (1978–1982) on the Greek property. [*See the biographies of Watzinger and Corbo.*]

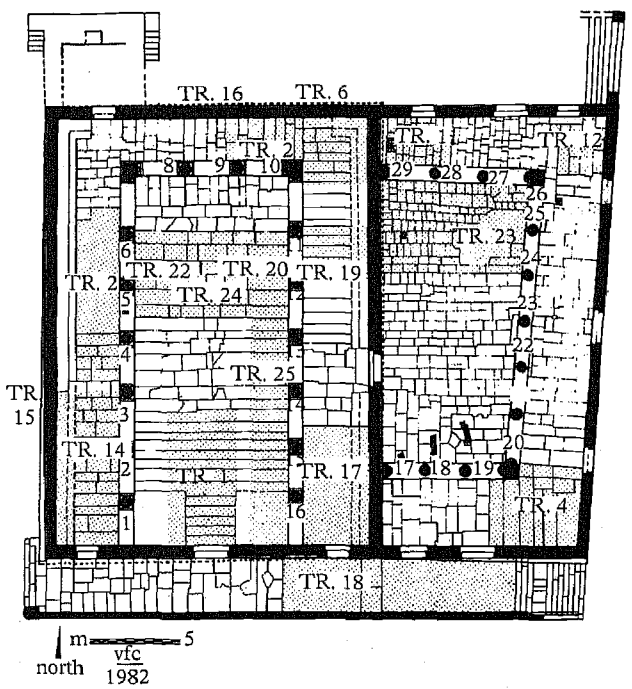
Periods of Occupation. Capernaum is mentioned for the first time in first-century CE sources, namely in Flavius Josephus, and particularly in the Gospels. Excavation has, however, pushed back the settlement's origins by three thousand years by recovering sporadic sherds (band-slip ware) from the third millennium BCE. Some walls, pavements, and a considerable amount of pottery from the second millennium BCE (Middle and Late Bronze) have also been recorded. After a complete break during the Israelite period (1200–587 BCE), the site was resettled in the fifth-century BCE and expanded progressively in the following centuries, reaching its peak in the Late Roman and Byzantine periods

fourth–seventh centuries CE. The town began to decline in the eighth century. Some structures were built as late as the twelfth and thirteenth centuries, and even later, but the town as such was already in ruins.

Material Culture. The ruins cover an area of approximately 6 ha (13 acres) suggesting a population of about 1,500 during the town's maximum expansion in the Byzantine period. The settlement's center, which reveals town planning during that period of great prosperity, is marked by the monumental synagogue, and only 30 m to the south, by the octagonal church. Both structures share the main north-south street, intersected at right angles by several alleys that form small quarters. Although the two public buildings were constructed of white limestone blocks brought from some distance, the private structures were both unpretentious and of local basalt.

Capernaum was crossed by an imperial highway leading to Damascus. It was also a border town that received revenue from collecting customs. Its additional economic resources were fishing, agriculture, industry, and trade. It was commercially linked with the northern regions in particular and, beginning in the fourth century CE, was flooded with elegant wares from Africa, Greece, and Cyprus. It was also a prominent center of Christian pilgrimage, being considered "the town of Jesus" (*Mt.* 9:1).

Excavation provided archaeologists with sealed and superimposed strata, through which it is was possible, for the first time, to classify and date the regional ware.

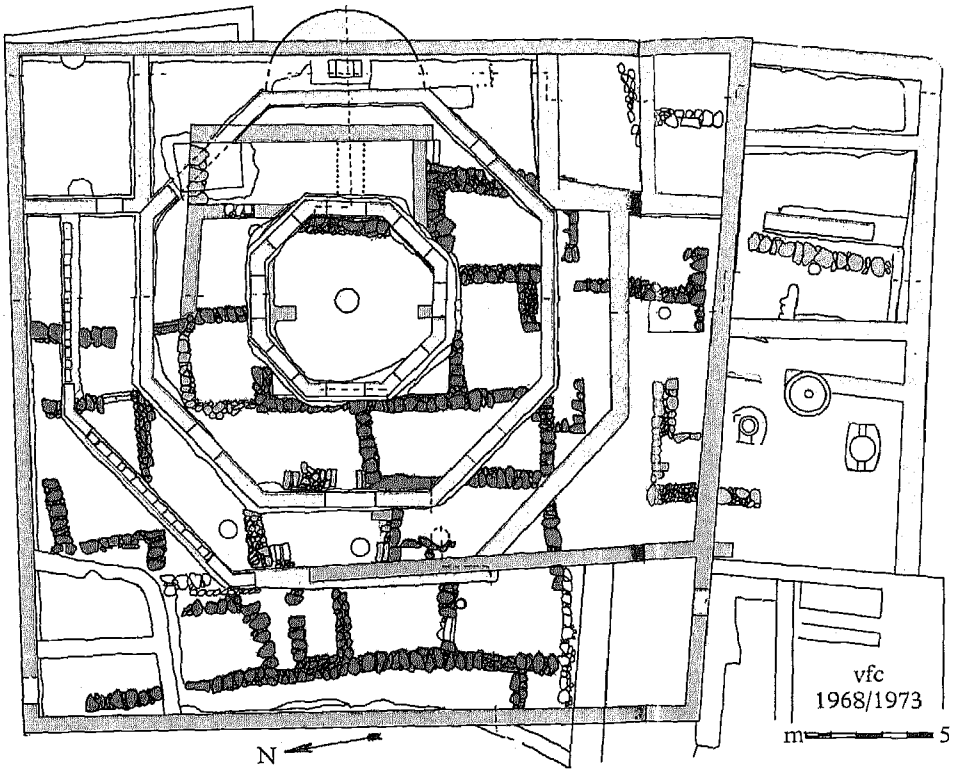


CAPERNAUM. *General plan of the fourth-century CE synagogue.* (After Loffreda, 1985, p. 34)

The in-depth excavations, both in the synagogue and in the octagonal church, clarified several problems but raised many questions. It is indisputable that the synagogue and the church were not built on virgin soil, but on previous strata dating back at least to the Hellenistic period (under the octagon) and the Late Bronze Age (under the synagogue). Scholars agree that the late fifth-century octagonal church was preceded by a fourth-century *domus ecclesia* (a house used for religious gatherings by a Christian community). The excavators suggest that this change had already taken place in the late first century CE. At the same time, several structures and pavements appear under the monumental synagogue that may belong to earlier synagogues. Finally, the two public buildings were certainly in use for the span of the Byzantine period: the earliest clear evidence of some stones from the synagogue being reused in private buildings in the village is well after the eighth century.

In sum, the synagogue and the Christian shrines built on the traditional house of Peter were not only close to one another, sharing the same street, but were in use side by side for several centuries. It is true that in the late fifth–early seventh centuries the synagogue was completely encircled by private houses, in which a considerable number of terra sigillata bowls with stamped crosses were found, but no direct evidence whatsoever exists to indicate that the synagogue was used as a church. What is still highly debated is the original dating of the monumental synagogue. On the basis of architectural, stylistic, and historical considerations, several archaeologists consider the synagogue at Capernaum to be the best example of the basilica-style synagogues that flourished in Galilee in the second–third centuries CE. On the contrary, however, the excavators, on the basis of stratigraphic material, conclude that the synagogue's prayer hall was built in the late fourth century CE and that the east courtyard was added a century later. Although they admit that several decorative elements from the synagogue can be dated to the third century, they reject the idea that the late material found in sealed levels is to be explained as the result of minor repairs in the building.

The fifth-century octagonal church and the fourth-century *domus ecclesia* are Christian shrines. The excavators suggest that some of the fragmentary, but numerous, graffiti (in Greek, Aramaic, and Syriac) predate the fourth-century *domus ecclesia*, the structure described by the pilgrim Egeria in 384, when she wrote: "The house of the Prince of the Apostles was changed into church. The walls however, are still standing as they were" (*ELS*, p. 299, n. 443). They also suggest that the octagonal church is the structure visited by the Anonymus Placentinus in 570, who wrote: "We came to Capernaum in the house of St. Peter, which is now a basilica" (*ELS*, p. 297, n. 436). To date, the assertion that the recent excavations have identified the traditional house of St. Peter remains uncontested. Is the traditional house of St. Peter the true house of Peter? How reliable is the tradition



CAPERNAUM. *General plan of the Insula Sacra.* ▬: Private houses of the Hellenistic-Roman period. ▬: The fourth-century CE Domus-Ecclesia. ▬: The mid-fifth-century CE Octagonal Church. (After Loffreda, 1985, pp. 50-51)

concerning the house of Peter, where Jesus lived? The excavators are certain of the identification, based on the considerable body of circumstantial evidence.

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CAPITOLIAS. *See* Beit Ras.

CAPPADOCIA. A land dominated by volcanic tuffs in what is central Turkey, the region of Cappadocia was home to Hittite, Greek, Roman, Christian, Seljuk, and Islamic civilizations in that order. Evidence for occupation in the area extends back to the Stone Age. Small settlements developed later into trading posts that increasingly served as places of exchange as traffic headed east–west and north–south.

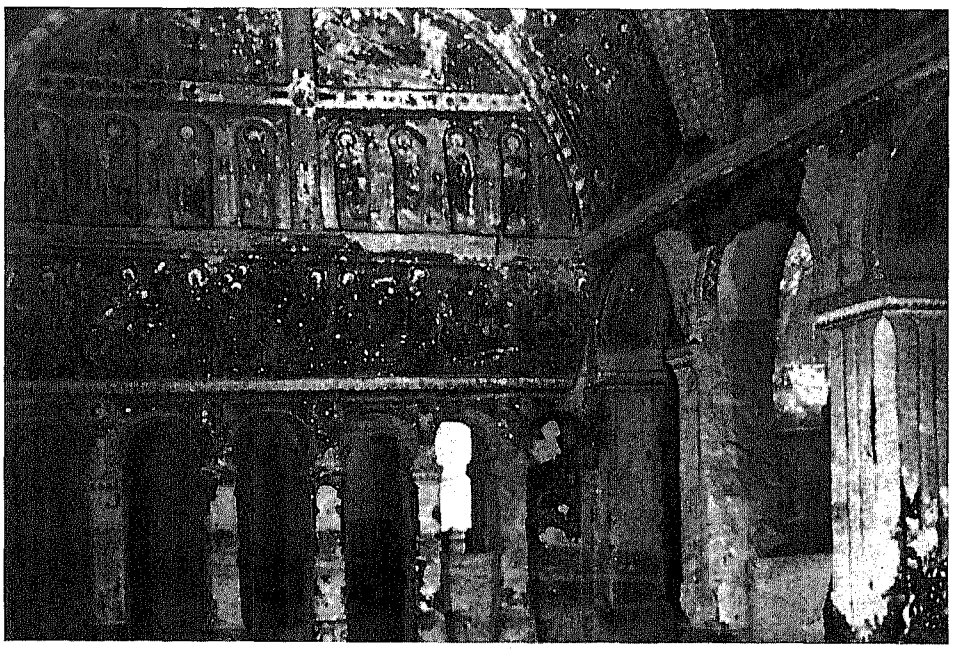
At one point the region covered a large area that extended from Lake Tatta to the Euphrates River and from the Black Sea to Cilicia. [*See* Euphrates; Cilicia.] The northern section came to be known as Pontus and the middle and southern part, Greater Cappadocia. Often, the passes, which are the principal access to the area, were closed by snow in the winter. The region is almost in the center of ancient Anatolia. The Assyrians understood the area as part of the kingdom of Kaneš. The Persians called it Katpatuka. In the classical period it came to be called Cappadocia. Its boundaries varied through history, but basically the region includes an area bounded by volcanic formations on the south and east (with Mt. Argaeus at the northeast corner and Hasan dağ on the

south), a middle valley formed by the Kizil İrmak (Red River), and a depression created in the Tuz gölü (Salt Lake) on the southwest.

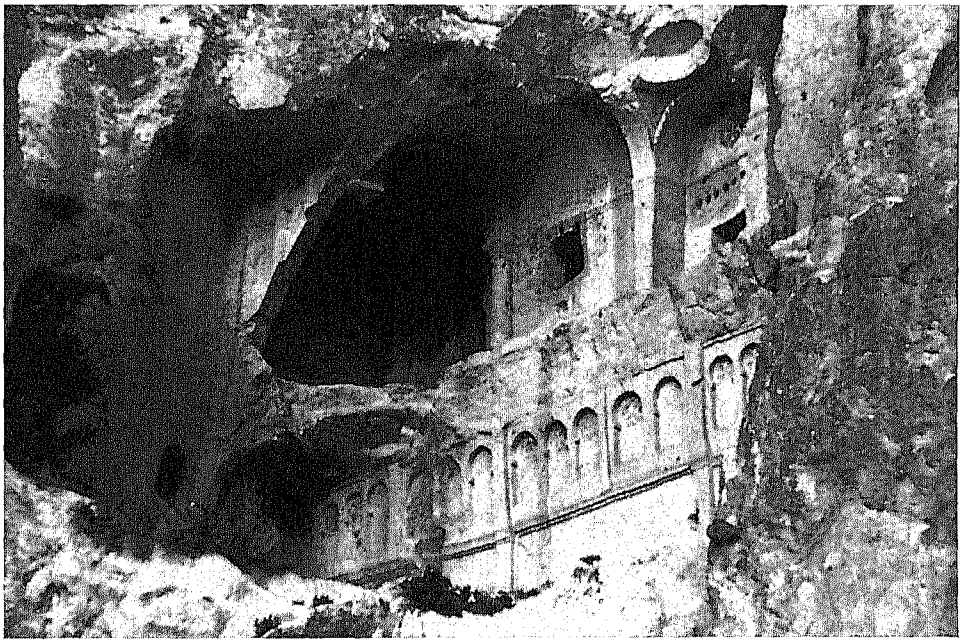
Few of its areas became urbanized. The site of Kaneš, located on the Hittite town of Kültepe near Kayseri, traded with the region of present-day Iran and Syria, primarily exchanging copper and lead for cloth and skins. [*See* Kaneš.] A Late Hittite text refers to an early coalition (c. 2300 BCE) that included seventeen local kings from this region who organized the "Great Revolt" against the Assyrian king Naram-Sin, Sargon's successor, and offers the earliest evidence of urban development in the region (Frayne, 1991). [*See* Hittites.] Boğazköy (ancient Ḫattuša) the Hittite capital, indicates the importance this central region held for the Hittite Empire until the latter's demise in 1200 BCE. [*See* Boğazköy.] In the sixth century BCE the region was incorporated into the kingdom of Lydia and shortly thereafter into the Persian Empire, but few new settlements are found until 350 BCE under Persians hegemony. [*See* Persians.] The region's rich pastures are apparent in the Persian kings' demand of fifteen hundred horses, fifty thousand sheep, and two thousand mules and the fact that Roman emperors kept stud racehorses there. It also had quartz, salt, and silver mines (Strabo 12.533–540). In the Hellenistic and Roman periods large estates controlled much of the good land; some of the estates were temple territories (e.g., Ma of Comana [modern Gümenek] and Zeus of Venasa). The strategic importance of the region for the Romans is evidenced by the continual beneficence of the Romans toward building projects, beginning with Pompey. He provided significant funds to help reconstruct several urban centers after the destructive Mithridatic Wars (88–63 BCE). Kings ruled the area for a time in the Hellenistic period, including Archelaus, put into power by Mark Antony, who renamed Mazaca Caesarea (modern Kayseri) and founded Archelais, formerly Garsaura (modern Aksaray). In 17 CE Cappadocia was annexed as a procuratorial province. Vespasian brought Galatia and Cappadocia together as an administrative unit, which lasted until Trajan combined it with Pontus, a situation that lasted until Diocletian's reign.

During the Hellenistic and Roman periods, the main towns and cities in the region that occupied ancient sites included the capital, Caesarea (Mazaca-Eusebeia), Tyana (Hittite Tuwanuwa), and Soandos (between Garsaura and Mazaca). Two main roads running north–south through the region connected the main southern (east–west) coastal road with the road linking Assyria and the western coast of Asia Minor in the eighth century BCE.

Little remains from the Hellenistic and Roman periods by way of architecture, even in the towns directly under Greek or Roman control. A few cult buildings and tombs have been discovered in some outlying areas (e.g., Sivasa, where the octagonal martyrium described by Gregory of Nysa was built; and Mavrucan, modern Güzelöz, the site of the Church of the Stratilates)—notably remnants of a tomb at Avcilar. [*See* Martyrion; Tombs.] Marcus Aurelius built a temple for his wife, Faustina, at the town in Cappadocia where she died, renamed Faustinopolis. In addition, a temple established under Septimius Severus was built at Caesarea, as indicated by a coin dated to the year 206 CE. A



CAPPADOCIA. *Northwest interior wall and arcade of the main church at Tokali Kilise.* (Courtesy Pictorial Archive)



CAPPADOCIA. *Earlier style section of church decor at Tokalı Kilise, exposed by the collapse of the rock face.* (Courtesy Pictorial Archive)

second *neocorate* (a provincial imperial cult complex) was established under Gordian (Price, 1984, p. 269). Unfortunately, most of the early periods have been obliterated by Christian building activities extending through the Byzantine period (roughly from the fourth through the thirteenth centuries). The numerous Byzantine churches carved into the rock follow the architectural patterns established in the east and apparently do not represent any unique local traditions. [*See* Churches.]

In the Byzantine period the primary cities—Andaval, Nazianzus (Diocaesarea), Garsauritis (Colonia Archealis), Soandos (Hittite Ḫupišpa, modern Ereğli), Cybistra, and Caesarea (Mazaca)—played critical roles as part of the military and trading road network that linked the plateau region with the larger empire, and especially the city of Byzantium. [*See* Roads.] A key road protected by a series of fortresses ran along the southern slope of Hasan dağ. Beyond the main traffic patterns a series of villages were cut out of rock and linked by local roads. Numerous wells, gardens, vineyards, olive presses, and other remnants of small agricultural communities have been located. Monastic centers of the eastern church and part of the diocese of Caesarea in Cappadocia (which included Sogani, Hasan, Göreme, and the chief town of the diocese, Caesarea Cappadociae) have also been discovered. Two Byzantine emperors (Zeno the Isaurian and Michael II) came from the region, as did several famous theologians, including Gregory of Nysa, Basil of Caesarea, and Gregory of Nazianzus.

Home to Christian and later Muslim mystics, the area is dotted with churches, monasteries, and chapels carved in the soft stone. [*See* Monasteries.] Some structures lent themselves to use by ascetics (both Christian and Muslim), notably the sites at "Monk's Valley" along the Zilve road, in the Peristrema valley (the monastery of Karanlık Kale, the "Dark Fort"), and Göreme, near the village of Avcilar (the location of such churches as Tokalı Kilise (the "Boss Church") and Karanlık Kilise (the "Dark Church"). During the Muslim period, a series of caravanserais, or well-fortified way stations that often had baths, stables, and lodging, were created for traders who helped maintain the links between the east and the west. [*See* Baths.] Key market towns such as the citadel of Kayseri served as the foundation for such important trade networks.

Settlement in the region tended to follow a fairly set pattern from an early period. The accessible and flat region of the plateau saw the development of the larger settlements, which were often devoted to trade and generally were the place of residence for the elite classes. In the more rugged mountainous areas, smaller villages built of stone or carved out of the rock predominated. Temples to local deities have been found throughout the region, especially in the rural areas. Numerous Christian communities developed in these rugged areas, often in isolation from the more official structures found in the larger towns, such as the capital, Caesarea. The remoteness of the area often provided a refuge from political authority as well as religious persecution. Some of the earliest Christian art from the iconoclastic period survives because of this isolation.

Perhaps best known are the spectacular underground complexes of interconnecting rooms and chambers hewn out of the tuffaceous rock (e.g., at Kaymaklı and at Ortahisar, site of Cambazlı Kilise, the "Church of the Acrobat"). Some underground towns extend for more than ten floors in depth and cover many kilometers. Round stone slabs often blocked off passages, indicating the need for security in the region. Xenophon, in his *Anabasis* (4.5.25–26) shows that such underground complexes were important in this area as early as the fifth century BCE: "The dwellings in these villages are underground: they have an entrance like the mouth of a well, but the rooms are spacious. The livestock lives in separate apartments hollowed out of the ground; the men go down into them with ladders. Here they rear goats, sheep, cows, and hens, together with their progeny; and all these beasts are fed solely on hay. They keep stores of corn, rice, vegetables, and barley wine in large jars. . . ."

The coming of the Seljuk Turks in the eleventh and twelfth centuries altered the landscape in Cappadocia. Private houses had few of the embellishments sometimes found in their Byzantine counterparts. They did develop elaborate water systems (cisterns, aqueducts, canals) to irrigate orchards, parks, and gardens and to provide plentiful water to bath complexes. [*See* Cisterns; Aqueducts; Irrigation.] Caesarea remained the leading city and capital of Cappadocia and continued its significant military and trading role. Niğde and Bor took on increasing importance as well because they controlled a critical crossing on the main road to the Cilician gates and the Mediterranean Sea.

[*See also* Anatolia.]

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CAPPADOCIAN TEXTS. *See* Kültepe Texts.

CARAVANSERAIS. Denoting a variety of commercial, residential, and pilgrimage structures in the Islamic world, caravanserais reflect the importance of trade routes in the history of the Islamic lands of the Near East. Caravanserais served as staging posts on major roads between towns, or as secure commercial storage with residential facilities within towns. Terminology varies in different contexts and related buildings include *khans*, *wakalas*, *fundugs*, and *ribaṭs*. The involvement of central governments in the construction of many of these caravanserais has led to a degree of stylistic uniformity in their design.

The commercial routes of the pre-Islamic world may have given rise to caravanserailike architecture, but it is in the Islamic period that the provision of facilities for travelers led to a significant body of architecture. The early Islamic geographers often refer to way stations as *manzil,* which may be presumed to have been buildings. *Khans* have also been identified at the Umayyad sites of Qaṣr al-Ḥayr al-Gharbi (724–727 CE) and Qaṣr al-Ḥayr ash-Sharqi (728–729) in Syria and the location of other Umayyad desert sites suggests that some may have encompassed a caravanserai role.

In the late eighth century, the ʿAbbasid caliphs developed the Darb Zubaydah, the road from Iraq to Mecca, building *quṣur* (enclosures, palaces), and *mazil* at staging posts. There are numerous settlements on the road, and excavations at ar-Rabadha east of Medina show a major eighth–ninth century settlement with several secure courtyard buildings with storage facilities. The presence of lusterware and other early ʿAbbasid glazed pottery points to a luxurious level of provisioning of the way stations.

The Seljuks were munificent builders of caravanserais, reflecting their interest in maintaining commerce and security along the extensive road system under their control. The Ribaṭ-i Malik (c. 1068–1080), southeast of Bukhara in central Asia is the earliest extant Seljuk caravanserai. It has a courtyard enclosure preceded by a great portal of a type found in contemporary mosques, and its lavish brick decoration is in keeping with the finest architectural decoration of the period. Another early Seljuk caravanserai is the twelfth-century Ribaṭ-i Sharaf in northeastern Iran that also has monumental portals, *iwans* and chambers around the courtyards, in a manner reminiscent of Seljuk mosques.

The tradition of the caravanserai is continued in later times in Iran, Central Asia, and the Near East. The Timurids, Ottomans, and Safavids were all involved in maintaining and improving commercial facilities along the roads. Examples of royal or aristocratic foundations on major roads include the series of twelfth–thirteenth-century Seljuk *khans* along the Anatolian road system; a group of fifteenth-century caravanserais associated with a Timurid official, ʿAli Shir Navai, concentrated in northeastern Iran; and the seventeenth-century Mader-i Shah caravanserai near Isfahan, built by Shah ʿAbbas II.

Related to such caravanserais are urban *khans* or *wakalas*,

which constituted the distribution points for goods, as well as the collection point for customs duties. In many cases, these urban depots specialized in particular commodities, such as oil or soap. This situation is well demonstrated in Damascus and Aleppo, where a number of *khans* still survive within the extensive market areas.

At Jerusalem, commercial caravanserais were established to support religious foundations in the Mamluk period. The *Khan as-Sultan,* or *al-Wakala* at Jerusalem, built under Sultan Barquq (1386–1387) has a covered market hall: in a neighboring two-story courtyard structure, the lower floors were for storage and the selling of goods to local merchants, the courtyard was for animals, and the upper rooms accommodated visiting merchants. Such urban *wakalas* have parallels in Asia Minor, Syria, Egypt, the Hijaz, and North Africa.

A quite different type of caravanserai occurs in Mamluk and Ottoman times, to guard pilgrim roads in desert regions. On the Red Sea coast of Arabia, fortications at ʿAqaba, al-Muwayliḥ, al-Azlam, and al-Zurayb reflect attempts to protect the coastal route from Egypt to the Hijaz. In the sixteenth century, the Ottomans also built a series of fortified caravanserais through Syria to the Hijaz to garrison the pilgrim road and disperse payments to tribal leaders during the *hajj* march. Such structures are more more closely related to the caravanserai's security role than its commercial purpose.

[*See also* Camels; Transportation. *In addition, many of the sites mentioned are the subject of independent entries.*]

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CARCHEMISH, ancient Hittite city and its territory located on the west bank of the upper Euphrates River (37°10′ N, 38°01′ E). To the south of the site circles the Aleppo-Mosul railway, which also defines the modern Turkish-Syrian frontier. The Syrian village of Jerablus adjoins the site to the southwest, and a more recent Turkish village named Kargamiş has grown up to the northwest.

The site, under the name of Jerablus (or Jerabis), attracted the notice of travelers from the eighteenth century onward because of its citadel mound, walls, and surface monuments. It was identified in 1876 by the famous Assyriologist George Smith as the Karkamiš known from Assyrian, Egyptian, and Hebrew sources. The spelling "Carchemish" represents the anglicization of *krkmyš* in the Hebrew Bible.

Carchemish is known from limited archaeological investigations; its history is much more fully documented by the historical sources. The British Museum has sponsored three archaeological expeditions there: (1) P. Henderson, a British consul in Aleppo, dug intermittently from December 1878 to July 1881 to recover sculpture and inscriptions for the museum; (2) regular excavations were conducted between March 1911 and spring 1914 under the direction first of D. G. Hogarth, then Campbell Thompson, and then C. Leonard Woolley, but these were broken off by the outbreak of World War I; (3) Woolley's attempt to resume operations in spring 1920 was again interrupted by the Turkish occupation of the area in the autumn. The subsequent peace settlement established the Turkish-Syrian frontier, as already noted. The site's strategically sensitive position has precluded any resumption of excavations up to and including the present time (1995).

Only the operations of 1911–1914 resulted in any significant exposure of parts of the site, which include three main areas: (1) the citadel mound, (2) the outer town and its fortifications, and (3) the inner town and its fortifications.

On the citadel mound, little coherent architecture was recovered, except for a poorly preserved building first identified, incorrectly, as Assyrian ("Sargon's Fort") and subsequently identified, without supporting evidence, as the Temple of Kubaba.

The rubble foundations of the outer city wall were located at certain points by sondage, permitting a reconstruction of its course. Within this wall, a number of private houses designated A–H were excavated, and a west gate was examined.

The inner city wall, a high earthen rampart, was surveyed and its west and south gates excavated. Within this wall lay the main area of the site to be exposed, which extended westward from the Water Gate along the southwest foot of the citadel. Even here few complete buildings were recovered: the Storm God Temple complex, including its exterior facade (the Long Wall of Sculpture), the Great Staircase with its Gatehouse ascending to the citadel, and the poorly preserved *ḫilani* (as buildings with columned porticoes are designated by archaeologists, using the Assyrian term). Besides these, only facades faced with sculptured and inscribed orthostats were revealed: the Herald's Wall, the Processional Entry (later remodeled by the addition of the Royal Buttress), and the King's Gate.

All excavated monuments at the site belong to its Neo-

Hittite floruit (c. 1000–717 BCE). The excavation reports often mention damage done to these by Roman foundations, although they were neither recorded nor published.

The sculpture and inscriptions found in situ and other pieces found out of context give information on two dynasties, the houses of Suhi and of Astiruwa, dating apparently to the tenth and eighth centuries BCE, respectively. The former seems to have built most of the excavated monuments, to which the latter added the Royal Buttress and, also according to an inscription, rebuilt the Temple of Kubaba.

These excavated remains represent only a small period in the site's recorded history. Carchemish is already attested in the Ebla archives of the mid-third millennium as a part of the trading network of the period, and in the Mari archives of the early second millennium as an independent kingdom enjoying good relations with Mari. In the mid-second millennium, the site was an important outpost of the upper Mesopotamian kingdom of Mitanni. Most important, however, is its position under the Hittite Empire, when Šuppiluliuma I, after his conquest of Syria, captured Carchemish and installed his son Piyassili as king. This dynasty lasted for at least five generations, surviving the fall of the Hittite Empire. Its kings acted as Hittite viceroys of Syria, and in the absence of any remains of this period from the site itself, their activities are documented in the archives of Ugarit and Emar. This important position in the Late Bronze Age made Carchemish the most prominent of the Neo-Hittite states.

The Assyrians terminated the power of Carchemish. In 717 BCE they conquered and annexed the city, constituting it a province of their empire, which it remained until the fall of Assyria in 612 BCE and beyond. Carchemish was the site of the final battle between the Babylonian and Egyptian armies in 605 BCE, at which the remnant of Assyria was obliterated. This was the city's last appearance in history.

[*See also* Anatolia, *article on* Ancient Anatolia; Hittites; Neo-Hittites; *and* Syria, *articles on* Syria in the Bronze Age *and* Syria in the Iron Age.]

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CARMEL CAVES. Mount Carmel is a limestone mountainous block that stretches as a triangular mass over about 350 sq km. It was surveyed intensively and all visible prehistoric sites were recorded (Olami, 1984). A series of prehistoric caves is located in the western escarpment of Mount Carmel, facing the narrow coastal plain (1–3 km wide), which even during glacial regression periods did not exceed 10 km in width. Excavated sites include Naḥal Me'arot (Wadi Mughara), es-Skhul, El-Wad, Jamal, and et-Tabun and Kebara caves. In the wadis that descend westward, Sefunim, Naḥal Oren, and Abu Usba caves were excavated as well as Rakefet cave, which is located in Naḥal Yoqne'am, which flows eastward into the Jezrel Valley.

Excavations at Mount Carmel were first undertaken by Dorothy A. E. Garrod in a project that lasted from 1929 to 1934. Subsequent excavators included Francis Turville-Petre (Kebara), Moshe Stekelis (Kebara, Sefunim, Naḥal Oren), Arthur Jelinek (Tabun), Avraham Ronen (Sefunim and Tabun), Tamar Noy and Eric Higgs (Rakefet), Ofer Bar-Yosef and Bernard Vandermeersch (Kebara), Mina Weinstein-Evron (El-Wad and Jamal). These excavations uncovered remains from the Lower, Middle, Upper and Epi-Paleolithic, as well a few Neolithic assemblages described in the following pages.

Tabun Cave. Originally excavated by Dorothy Garrod (1929–1934) in a joint expedition of the British School of Archaeology in Jerusalem and the American School of Prehistoric Research and later by Arthur J. Jelinek (1967–1972) for the University of Arizona, Tabun Cave is still under excavation by Avraham Ronen of the University of Haifa. The cave lies 45 m above sea level; the lower part of its sequence of layers (G, F, half of E) is filled by fine-grained, well-sorted sand, resembling a modern dune. The upper part of layer E is increasingly siltier, and the layer D deposit resembles loess. Layer C contains the remains of brush fires in the form of ash lenses. The sediments are mainly clays that were

washed in through the "chimney" that was formed by the dissolution of the limestone from the Mt. Carmel plateau. Layer B and the "chimney" were filled in with similar deposits with numerous limestone cobbles and blocks. The old shoreline next to the cave, 39 m above sea level, was probably the source of the sand. It has been suggested, but not confirmed, that the cave was lifted to its present location by the tectonic movements that characterized the Pleistocene era.

The chronological placement of Tabun's various layers is an unresolved debate. Pollen evidence is rather scanty but indicated fluctuations from warmer to wetter conditions. Thermoluminescent (TL) dates suggest an average age of 170,000 years old for layer C; 270,000 years old for layer D; and 300,000 years old for the upper part of layer E. Electron spinresonance (ESR) indicates somewhat later dates, such as about 80,000–100,000 years old for layer B; about 100,000 years old for layer C; 130,000–150,000 years old for layer D; and more than 200,000 years old for layer E. There are no dates yet for layers F and G. The previously held chronological scheme that viewed most of the sequence in Tabun as lasting from the last interglacial (c. 130,000 years ago) to about 45,000 years ago is therefore not accepted, although disagreement still exists about the ages of the older layers. It has also become evident that the kurkar ridge about 2 km west of Tabun, where the red loam soil is known as Mousterian *hamra,* is much older—150,000–175,000 years old.

Lithic industries began in layer G with what was defined as Tayacian by Garrod and later as Tabunian by F. C. Howell (1959). It is a core-chopper assemblage with a few retouched pieces. Layer F contains an Upper Acheulean industry with ovate and cordiform bifaces, side scrapers, and other stone tools.

Layer E was originally called Micoquian by Garrod and later Acheulo-Yabrudian or the Mugharan by Jelinek. The Acheulo-Yabrudian is limited to the northern and central Levant. It contains three industrial facies, once considered independent archaeological entities, defined on the basis of quantitative and qualitative studies:

- The Yabrudian facies contains numerous side scrapers, often made on thick flakes, which results in relatively high frequencies of Quina and semi-Quina retouch; a few Upper Palaeolithic tools; rare blades; and few or no Levallois products.
- The Acheulean facies has up to 15 percent bifaces, with numerous scrapers fashioned in the same way as the Yabrudians.
- The Amudian facies—including end scrapers, burins, backed knives, and rare bifaces—seems, as the result of the Tabun excavations, to be closer to the Acheulean than the Yabrudian and contains evidence for limited practice of the Levallois technique.

The Mousterian sequence begins with layer D and contains blades and elongated points predominantly removed from Levallois unipolar convergent cores and perhaps some blade cores with minimal preparations of the striking platforms. Elongated retouched points, numerous blades, racloirs, and burins are among the common tool types. Layer C is characterized by large, oval flakes that were removed from Levallois cores through radial or bipolar preparation. Levallois points appear in small numbers. In layer B, blanks were mainly removed from unipolar convergent Levallois cores with a minority of radial preparation. Broad-based Levallois points and, often, short, thin flakes and some blades were all made by the same Levallois recurrent method. The chimney seems to have contained a similar industry and numerous bones. Jelinek (1973) has suggested at that time the hole of the chimney served for trapping deer.

Human remains include a broken femur in layer E and the burial of a woman, the exact provenience of which remains uncertain. It is traditionally attributed to layer C but could have originated in layer B. An isolated jaw resembles modern humans in the Qafzeh cave, while the woman is considered to have more robust features.

Jamal Cave. Garrod believed that the Jamal cave was empty, but in recent years, in the course of conservation activities, the cave was found to contain Acheulo-Yabrudian industry in brecciated deposits. It is currently being excavated by Mina Weinstein-Evron for the University of Haifa.

Skhul Cave. The ceiling of Skhul cave, which is located on the northern face of the same escarpment in which Tabun and el-Wad are found, collapsed in prehistoric times, and the archaeological remains are mostly the residues of two Mousterian layers. Layer C was found in small pockets in the bedrock with a small lithic assemblage, mostly abraded. Layer B was about 2 m thick and contained the remains of several Mousterian burials. The remains of ten individuals were uncovered. The best known are the burial of Skhul V, with a pig's mandible incorporated in the grave; Skhul I, the skeleton of an infant; Skhul IV, a semiflexed burial; and Skhul IX. The skeletal remains of this group served as the basis for the identification of early modern human anatomical characteristics. Stratigraphically, the remains of the Skhul II and V seem to be later than the others. The lithic industry essentially resembles that of Tabun C. ESR and TL dates indicate an age in the range of 80,000–117,000 years old. Layer A contained some Upper Paleolithic artifacts.

El-Wad Cave. An elongated karstic corridor that lies 44.5 m above sea level, the El-Wad cave and its terrace were first excavated by Garrod from 1929 to 1933. In 1981 the terrace was reexamined by François R. Valla and Ofer Bar-Yosef, and from 1988 to 1990 salvage excavations were carried out in the interior chamber by Weinstein-Evron. The earlier layers were found only in the cave. Layer G contained a late Mousterian industry that resembles the upper part of the Tabun sequence. Layer F was in part mixed, and some of

the artifacts were abraded by water. The mixture of tool types, together with Emireh points, is related to the earliest phase of the Upper Paleolithic. Layer E contained a Levantine Aurignacian assemblage with scrapers, carinated and nosed scrapers, burins, and el-Wad points. In addition, seven bone and antler points were recovered. Layer D contained a Levantine Aurignacian assemblage (D2 and D1). Carinated and nosed scrapers, together with ordinary scrapers, are most frequent, with a small number of el-Wad points. Layer C was characterized by numerous burins and scrapers, originally called the ʿAtlitian culture. In this industry, the production of flakes is more dominant than blades, while numerous bladelets were removed from carinated cores.

Layer B contained the remains of a Natufian (c. 10,000–8,000 BCE) settlement and cemetery and covered both the frontal chamber of the cave as well as the entire terrace. The remains of more than one hundred skeletons were mostly recovered on the terrace, but also in the cave. Garrod identified the collective burials as typical of the Early Natufian and the isolated, often flexed burials as Late Natufian. In a few cases, body decorations were found attached to the remains (remains of headgear, necklaces, belts). Most of the decorations were made of dentalium shells but also of bone. In the bedrock of the terrace, four mortars were recovered; next to them Garrod identified the remains of a terrace wall constructed of large cobbles. The lithic industry included numerous microliths, among which lunates were dominant. The high frequencies of bifacially retouched Helwan lunates is representative of the Early Natufian, while subsequently the backed lunates are more common. Other tool types include scrapers, burins, borers, and awls, as well as many sickle blades. The bone industry includes points, a few harpoons and fishhooks, spatulas, and sickle hafts, one of which was preserved with two blades still adhering. Ground-stone artifacts include pestles, often of basalt, which were brought from the Galilee or the Golan, and fragments of bowls and portable mortars. With regard to artistic expression, the site is known for a sickle blade with a carving of a young ungulate, a small model of a human head in limestone, and some schematic human figurines. Information concerning subsistence activities was obtained from animal bones, which indicate the hunting of gazelle and fallow and roe dear, the trapping of birds, and fishing; reptiles were also collected. Pollen spores indicate the importation of branches with flowers of olive and tamarisk; firewood was identified, indicating that the cave was occupied during spring and summer. Cementum increments of gazelle teeth reflect hunting during both winter and summer, and it therefore seems that el-Wad was a sedentary to semisedentary campsite. Layer A contained remains from the Neolithic to historical periods. Also worth noting is a Hellenistic clay statue of Aphrodite. Since Medieval times, the cave has been occupied mainly by shepherds.

Kebara Cave. Located at the western escarpment of Mt. Carmel, the Kebara cave is about 13 km (8 mi.) south of Naḥal Meʿarot, at about 60–65 m above sea level (map reference 1442 × 2182). The first sounding near the cave entrance was made by Moshe Stekelis in 1927 (Schick and Stekelis, 1977). While excavating the caves in Wadi el-Mughara in 1930, Garrod, unaware of Stekelis's test pit, dug a small trench in Kebara, where, below the historical deposits, she encountered remains of the Natufian culture. In 1931, together with C. A. Baynes, Francis Turville-Petre excavated at Kebara, revealing about 300 sq m of surface area to a depth of 3 m. Stekelis carried out additional excavations from 1951 to 1965, and a joint project coordinated by Bar-Yosef and Bernard Vandermeersch was conducted from 1982 to 1990 under the auspices of the Hebrew University and the French Mission in Jerusalem. The combined stratigraphy, from which the first three layers were removed in their entirety by Turville-Petre, follows:

Layer A: From the Bronze Age to the modern period, layer A was a mixed stony layer, quite variable in its thickness.

Layer B: About one meter thick, layer B contained an Early Natufian assemblage with numerous bone tools, pendants, ornaments, and decorated sickle hafts. The lithic assemblage, collected without sieving, included approximately five hundred lunates and one thousand sickle blades. Turville-Petre (1932) also listed a few mortars and pestles and a variety of other stone tools, such as shaft straighteners and whetstones. A pit with several badly damaged Natufian skeletons was uncovered close to the cave's entrance.

Layer C: A microlithic assemblage in layer C (20–40 cm thick) serves as the type-site for the definition of the Kebaran. The dominant tool types were the obliquely truncated backed bladelet and some curved backed bladelets. At the rear of the cave, some fragmentary charred human remains were found, but recent radiocarbon dates on the bones relate them to the Early Natufian.

Layer D1: A Levantine Aurignacian assemblage dominated by end scrapers, steep (carinated) scrapers, and some burins, mostly made of flakes, was found in layer D1.

Layer D2: Currently units I–II, layer D2 was similar in its contents to layer D1; it had a Levantine Aurignacian assemblage with mainly flake end scrapers, steep scrapers (both nosed and carinated), a few burins, and El-Wad points. Two bone tools were recovered in this layer, one a point with the tibia articulation still intact and the other a broken point with parallel incisions encircling its width. The new excavations found a typically Aurignacian split base point and provided several radiocarbon dates indicating a time span of 36,000–28,000 years ago.

Layer E: Currently units II–IV, layer E contained a few Mousterian elements, most of which differ in their patination from the typical Upper Palaeolithic elements. The industry is dominated by blade production; the main tool types are end scrapers, some steep (carinated) scrapers with

a few burins, and el-Wad points. A series of radiocarbon dates ranges from 43,000–36,000 years ago.

Layer F: Originally termed Levalloiso-Mousterian, layer F remained largely untouched until the 1951–1965 Stekelis excavations. The Upper Palaeolithic layers (D–E) contained several hearths and a series of peculiar installations built of limestone slabs laid over small stones near the northern cave wall. The Mousterian layers were excavated to varying depths and contained large quantities of debitage and bones. The major discovery was the skeletal remains of a baby (eight–nine months old) found close to the northern wall at a level of 6.83–6.90 m.

Bedrock was reached near the northern wall in the 1982–1990 excavations and in Stekelis's original sounding. Upper Paleolithic levels still in place were in the southern portion of the dig and were radiometrically dated to 43,000–28,000 years ago.

In 1983, the excavation in the Stekelis deep sounding uncovered a human burial. The skull is missing, but the postcranial skeleton is complete. This robust individual, TL dated to about 60,000 years ago, is included with the other so-called Near Eastern Neanderthals. The central area was chosen for "horizontal" excavation (exposing everything, leaving it in place for mapping and photography). Plotted artifacts and bones indicate that the hearths were located toward the entrance and the dumping zones toward the rear of the cave. Diagenetic processes caused by intensive water percolation destroyed all bones in the southern sector of the cave.

The lowermost unit is an accumulation of sterile, sandy-silty deposits (units XV–XIV) above the uneven bedrock. Subsidence into a sinkhole and subsequent erosion were followed by sedimentation of a depositional admixture created by intervening activities of biogenic and natural agencies. Unit XIII was the first to accumulate the admixture. It contains numerous well-delineated hearths and rare artifacts, but no bones. Following an unconformity, units XII–VII accumulated as a continuum, containing ashy deposits, hearths, bone accumulations, isolated human bones, a human burial, and rich Mousterian lithic assemblages. An additional major event of subsidence in the sinkhole led to slumping and microfaulting of the Mousterian layers at the rear of the cave, followed by erosion and burrowing. Thus, the cave floor during the early Upper Palaeolithic formed a basin slanting steeply toward the cave's rear wall. Continuous erosion and burrowing led to the mixed accumulation of Upper Paleolithic and Mousterian artifacts in the lower part of this basin. Some Upper Palaeolithic lithics infiltrated into units V and VI, which primarily contain Mousterian artifacts, and some Mousterian elements found their way into unit III, primarily Upper Palaeolithic. Unit IV is a thin lense; together with unit II, it may be similar to what Turville-Petre (1932) called layer E.

Lithic studies of the Mousterian period demonstrate that blank production was frequently done by the convergent recurrent Levallois method. Short and broad-based Levallois points and triangular flakes were often the end products. Despite the site's proximity to sources of raw materials, the sequence of flake removals was repeated until the cores were exhausted. The upper units (VII–VIII) exhibit a proliferation of Levallois flakes obtained by unidirectional or radial removals. Retouched pieces in Kebara are quite rare and include a few side scrapers and Upper Palaeolithic tool types. Levallois points and triangular flakes are rarely retouched but bear traces of hafting and impact fractures caused by their use as projectiles. Other stone tools demonstrate signs of use for woodworking and butchery. Bone accumulations in Kebara cave reflect the hunting of gazelle and fallow and roe deer and the gathering of reptiles. Carbonized plant remains were mainly of vetch—indicating gathering activities in late spring. Firewood from the Tabor oak and common oak were collected from the cave's immediate environment.

[*See also* British School of Archaeology in Jerusalem; Paleobotany; Paleozoology; Tabun; *and the biographies of Garrod, Stekelis, and Turville-Petre.*]

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OFER BAR-YOSEF

CARTER, HOWARD (1873–1939), English Egyptologist, discover of Tutankhamun's tomb. Trained in drawing and painting by his father, Carter was introduced to Egyptology by a coincidence. In 1891, while visiting the renowned collections of paintings and Egyptian antiquities of Lord and Lady Amherst at Didlington Hall, their home in Brandon, Norfolk, not far from the Carter residence in Swaffham, both father and son were introduced to the Egyptologist Percy Edward Newberry. Subsequently Lady Amherst recommended young Howard to the Egypt Exploration Fund in London, which sponsored archaeological work in Egypt. Thus, at the young age of seventeen, Carter found himself in Egypt employed as a draftsman for Newberry's work in the decorated tombs and Beni Hasan. Following Newberry's method of facsimile recording, Carter hung sheets of tracing paper on the walls directly over the decorated surfaces in order to trace in pencil what was visible. In time Carter devised his own technique, which in his own words "created scientifically exacting facsimile(s) from the originals with a free and understanding hand" (quoted in James, 1992, p. 22). Carter's later watercolors, which were made for the tourist trade, command respectable prices when occasionally offered on the art market.

Carter learned as much about all aspects of Egyptology as possible. His perseverance was rewarded in 1900 when he was appointed chief inspector of antiquities (or archaeologist) for Upper Egypt. In time he was introduced to Lord Carnarvon, who had come to Egypt to convalesce after a near-fatal automobile accident, perhaps by Gaston Maspero, the then head of the Egyptian Antiquities Organization. From that moment in 1908 on they forged a partnership, excavating sites in Thebes until that fateful day,

26 November 1922, when Carter peered through a small hole in what proved to be King Tutankhamun's treasure-laden tomb, and replied to Carnarvon's query about whether he could see anything with, "Yes, wonderful things." Subsequently political maneuvering and disputes between Carter and various officials caused him personal pain that mitigated the success he now enjoyed. In fact, his life as an Egyptologist has been characterized as a "sad success."

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ROBERT STEVEN BIANCHI

CARTHAGE, city on the North African coast, now a suburb of Tunis (36°51′ N, 10°20′ E), founded around the end of the ninth century BCE by settlers from Tyre, who called it Qart Ḥadasht ("new town"). Centuries later, Tyre in Phoenicia was still honored as the mother city, its gods receiving from Carthage an annual offering of the first fruits (Polybius, 31.12). The Phoenician ancestry of Carthage is reflected in the Latin term *Punicus,* which is an adjectival derivation from the Greek for "Phoenician." The designation *Punic* describes anything pertaining to Carthage.

The traditional date for the foundation, 814/13 BCE, thirty-eight years before the first Olympic games, goes back at least to Timaeus, a Sicilian Greek who wrote in the third century BCE. In the next century Menander of Ephesus, who had access to Phoenician sources, gives a similar date. Cicero and other Latin writers follow the same tradition, which recent excavations tend to confirm. A variant that sets the foundation before the Trojan War must be rejected.

Sources and Early History. No Punic literature survives, the city's libraries having been dispersed when Carthage was taken by the Romans (Pliny, *Natural History* 18.22). There is material in the works of more than forty Greek or Latin writers, but these sources must be treated with skepticism. Polybius, one of our fullest sources, who had traveled in Africa and was present at the sack of Carthage in 146, is overtly pro-Roman and mentions Greek historians who wrote from a Carthaginian standpoint only to dismiss them as worthless (Polybius, 3.20). The Carthaginians, he says, are ashamed of nothing if it makes money (6.56), and Plutarch calls them harsh and gloomy, caring nothing for pleasure or the arts (*Moralia* 799D). Such negative stereotypes have been accepted uncritically all too often. Classical writers are also often negative and ill-informed about the Jews or Syrians as well. For the Greeks and Romans, peoples of Semitic culture were "the other."

Punic inscriptions, however, survive in some quantity. Carthage itself has yielded more than six thousand, and one thousand more come from other sites in Africa or elsewhere in the western Mediterranean. Most are merely standard formulae, such as votive or funerary inscriptions and documents regarding sacrifice and religious cult, but they give us more than five hundred personal names, plus names of magistracies, trades, and professions. Otherwise little historical information can be gleaned from them, and when it comes to the longer texts, there is often considerable dispute among experts as to the meaning, because the Punic language is not perfectly understood. Texts in Punic or in the later script known as "neo-Punic" continue into the Roman period.

Attempts to reconstruct the form of government and the internal politics of Carthage from this literary and epigraphic material are very hazardous, especially for the early centuries. Whether there were kings in Carthage's early years is hotly disputed. Oligarchic factions subsequently disputed the power, and the literary tradition suggests that the leading families were successively the Magonids, the Hannonids, and the Barcids, founded by Hamilcar Barca, father of the great Hannibal, but again the family names and the dynastic concept may owe something to the Greek historiographic tradition.

Carthage had extensive trading interests in the western Mediterranean and beyond and fought to defend them. We thus find Carthage in the early sixth century unsuccessfully contesting the foundation of a Phocaean colony at what is now Marseilles (Thucydides, 1.13), but succeeding around 535 in alliance with the Etruscans in driving the Phocaeans from their Corsican base at Alalia (Herodotus, 1.166). By the fourth century Carthage was a major power, striking gold and silver coinage, importing pottery and luxury goods from Greece, and exporting her own manufactured goods and agricultural surpluses (her agricultural expertise was famous). Punic amphorae of the fourth and still more the third century are particularly common in Spain and southern Italy. Punic vessels sailed down the west coast of Africa, though how far they reached is much disputed, as well as northward, perhaps as far as Britain. Treaties between Carthage and Rome in 509/08 (Polybius, 3.22) and on subsequent occasions recognized the two cities' respective spheres of interest, but Rome's expansion eventually brought them into conflict over Sicily and the three Punic Wars (264–241, 218–202, 149–146), so named from the Roman standpoint, ended with the total destruction of Carthage, whose site thereafter lay abandoned for over a century.

Archaeological Evidence and Topography. The urban development of Carthage down to 146 can be traced from well over a century of archaeological excavation, culminat-

ing since 1972 in the UNESCO-sponsored Save Carthage campaign, described below. Excavations have now shown that the earliest city lay between the Byrsa hill and the sea, where the occupation sequence goes back to at least the first quarter of the eighth century, dated by imported Euboean pottery. The Byrsa and adjacent hills were first used as cemeteries, but in fourth century the Byrsa became an industrial zone with extensive metal-working operations, and from the end of the third century it was a residential area. Excavation corroborates Appian's account (*Punica* 96, 128) of the steep streets descending from the Byrsa toward the ports, which comprised a circular inner harbor for warships with an island in the center and shipsheds all around, and an outer, rectangular, commercial harbor. The latest reports ascribe the construction of the harbors to the second century, in flagrant violation of the peace treaty at the end of the Second Punic War. The original port of Carthage must presumably have been within what is now the Lake of Tunis, then much more extensive.

Religion. Alongside the commercial harbor lay the religious precinct known today as the *tophet*, by analogy with the Old Testament site in the valley of Hinnom (*Jer.* 7:31–32). Here were found urns dating from the seventh century onward, containing the cremated remains of babies, small children, and animals, and steles referring to sacrifice (*molk*) and dedicated to the goddess Tannit ("face of Baal") and her consort, Baal Hammon. Most scholars see this material as corroborating what the literary sources attest—that the Carthaginians practiced infant sacrifice, which according to Tertullian (*Apology* 9.2) continued clandestinely even into the Roman period. Child sacrifice was certainly practiced by the Phoenicians, as the Hebrew Bible makes clear (e.g., *Jer.* 19:5, references assembled by Brown, 1991, pp. 27–29), and attempts to explain away the evidence and to interpret the *tophet* as a cemetery for children who died naturally do not carry conviction. This aspect of Punic culture shocked Greeks and Roman writers, who may be suspected of piling on the horror, although the same writers accepted complacently the Greco-Roman practice of exposing unwanted infants to die on dungheaps.

Baal Hammon is frequently celebrated in theophoric personal names like Hannibal and Hasdrubal; he was identified in the Roman period with Saturn, as was Tannit with Juno, and his cult is widely attested. Other divinities of Punic Carthage include Ashtart (Astarte), here subordinate to Tanit, and Eshmun, identified with the Greek Asclepius, god of healing, whose temple crowned the Byrsa and was the site of the final Punic stand in 146; both appear in theophoric names, as in a dedication from the *tophet* by Bodashtart, son of Abdeshmoun. Inscriptions mention Melqart, the patron deity of Tyre, Shadrapa, Sid, Sakon, and Rašap (Resheph) and attest the preponderant role of sacrifice in worship. The terminology often recalls that of the Old Testament, but parallels must not be pushed too far. [*See* Cult.]

Art. Punic art has generally been dismissed as unimaginative, unoriginal, and just plain bad. Nothing could be more totally damning than M. P. Charlesworth's account in the original *Cambridge Ancient History* (vol. 8, 1930, pp. 484–494) concluding, "It is hard to name anything which mankind can be said to owe to Carthage." A reappraisal, however, is long overdue. Two magnificent statues of a so-called priest and priestess on sarcophagus lids in the Carthage Museum reveal a synthesis of Egyptian, Hellenistic, and local elements that cannot be dismissed as merely imitative. Typically and without evidence, earlier scholars pronounced them as the work of Greek immigrants! Some stelae are very fine, though most are rough work, the local sandstone did not lend itself to sculpture. Apotropaic (protective) masks and pendants of human heads show great vigour. Bone and ivory, glass, and metalware reached a high standard, and Punic furniture was renowned. The swan-necked, so-called razors found in tombs are most elegantly engraved, and Punic jewelry is magnificent. Carthage adapted Greek and Egyptian models to serve her own needs and values, as did Rome later.

Foundation of the Roman Colony. For a century after the destruction of Carthage in 146, BCE, neighboring Utica served as capital of the new Roman province of Africa. Carthage was abandoned, although the story that the site was sown with salt was apparently invented for the *Cambridge Ancient History* (vol. 8, 1930, p. 484). Literary sources ascribe to Gaius Gracchus the project of founding a colony in 122, but there is no evidence of urban settlement, though Gracchus is probably responsible for the Roman division of the Carthage peninsula into units of two hundred *iugera*, which survives in the modern field boundaries. Caesar revived the idea of a colony, but it was probably Augustus who realized it, laying out a street grid parallel to the coast and leveling the summit of the Byrsa to create a rectangular esplanade, building massive retaining walls around it, and covering the late Punic houses on its slopes beneath many meters of fill. A peculiarity of the grid was that the blocks were four times as long from north to south as from east to west. In the flat ground between the Byrsa and the coast, the orientation was that of the late Punic city, and elements of this, such as the cisterns, were reused in Roman structures.

Public buildings. Of the city under Augustus and in the first century CE archaeology tells us little. None of the great public buildings in its present form goes back that far, though an earlier phase is not excluded. The amphitheater has been ascribed to the late first or early second century, the circus was given monumental form in the Antonine period, and the top of the Byrsa was also rebuilt under Antoninus Pius. Both the Antonine basilica on the Byrsa and the circus are the largest of their kind outside Rome. The theater goes back to the early second century and may be earlier,

and the neighboring Odeon, the largest in the whole Roman world, is described as new in the early third century (Tertullian, *On the Resurrection of the Dead*, 42.8). In Punic times, the whole Odeon hill had been a cemetery. The vast Antonine Baths on the seashore take their name from an inscription that probably records Antoninus's completion or refurbishing of baths started by Hadrian. To supply these baths Hadrian had commissioned the aqueduct that brought to Carthage the waters from Jebel Zaghouan.

This aqueduct is one of the greatest works of Roman engineering. It is over 90 km (56 mi.) in length from its source at Zaghouan and falls almost 265 m (870 ft.) to the cisterns on the hill of Bordj Djedid in Carthage, which supply the Antonine Baths. It loses nearly half this height, however, in the first 6 km (3.7 mi.) as it descends rapidly to the plain of the Oued Miliane at Moghrane, where it is joined by another branch, possibly of Severan date, coming from Aïn Djoukar more than 33 km (20.5 mi.) away. Thereafter from Moghrane to Bordj Djedid the aqueduct channel falls only 127.93 m (419.7 ft.) in 84.418 km (52.34 mi.), a gradient of .15 percent, and its capacity has been calculated at 370 l (98 gal.) per second. Where it enters the city, the aqueduct bifurcates, one branch feeding eighteen cisterns at Bordj Djedid, the other twenty-four at La Malga, each some 102 m (335 ft.) long and 7.40 m (24.3 ft.) wide.

Christianity and culture. By the second century CE, only Alexandria rivaled Carthage as the empire's largest and wealthiest city after Rome. It was beginning to be a center of Christianity and produced some notable martyrs. When the serious persecutions of the third century began, the whole of Africa was divided on how to respond. One result was the Donatist movement, rigorist and intransigent on doctrinal matters, and at the same time a movement of social protest, poor against rich and country against town (Frend, 1952). Carthage lay at the heart of the controversy, and was split between the two parties. When the emperor Constantine himself adopted Christianity in 312, both Donatists and Catholics began to build, and Carthage acquired its first basilicas and other Christian buildings, such as the late fourth century martyrium on the Odeon hill.

At the same time, Carthage was an intellectual center, second only to Rome in the Latin-speaking West. The works of Tertullian and Apuleius in the late second century give some of the flavor. In the fourth century, Augustine naturally gravitates there from a small town in the interior and finds his intellectual milieu. He also finds it a city of luxury and pleasure: "there seethed about me a cauldron of unholy lusts" (*Confessions* 3.1). His subsequent career led him to Italy, where he converted to Christianity, then returning to Africa to find himself bishop of Hippo (Annaba) from 395 until his death in 430. Augustine spent half the year in Carthage battling for the faith, the outstanding personality, and intellect of the Catholic church in Africa.

Vandal and Byzantine Carthage. By the end of the fourth century, the Roman Empire in the West was falling apart. In 410 the Goths sacked Rome. Africa, protected by the Mediterranean, received refugees, but the remission was short-lived. The Vandals crossed the Straits of Gibraltar in 429, swept along the coast, besieged Hippo as Augustine lay dying within the walls, and finally took Carthage in 439, despite the so-called Theodosian Wall, which had been built around the city about 425 in anticipation of the attack. The Vandal king occupied the proconsul's palace on the Byrsa hill, and Vandal notables took over the grand houses on the seaward slope of the Odeon hill. Some public buildings were allegedly destroyed (Victor Vitensis in J.-P. Migne, *Patrologia Latina*, Paris, 1862, vol. 58, col. 184), and archaeology suggests that, although there was no sudden dramatic change in the city's condition, within a generation its trade and prosperity had fallen off and soon the outlying parts of the city were being abandoned.

The Theodosian Wall was also allowed to fall into disrepair, and in 533 the Byzantine general Belisarius captured the city with no great difficulty, repairing the wall thereafter. Economic recovery and new building ensued under Byzantine rule, but little less than a century later the first Arab invasions culminated in the battle of Sbeïtla (647), in which the governor Gregory fell. The Arabs departed for a time, but their foundation of Kairouan (Qayrawan) in 670 symbolized their intention to stay, and around this time the reoccupation of areas of Carthage that had earlier been abandoned may betoken the arrival of refugees seeking the security of the city. If so, it was in vain, because Carthage fell to the Arabs in 695, and after a rebellion it was retaken and destroyed in 698. The site may not have been completely abandoned, but organized urban life ceased, and Tunis replaced Carthage, subsequently becoming the capital of Ifriqiya, the former Roman Africa, modern Tunisia.

Destruction of Carthage in Middle Ages and History in Modern Times. Carthage became a stone quarry. Because there is no good building stone on the peninsula, much of the Roman stone was either limestone from the Jebel Zaghouan region or sandstone brought by sea from the quarries at El Haouaria on the tip of Cap Bon. It was easier to "recycle" Roman stone than to bring in more. Carthage supplied the columns and capitals for the Zaytouna Mosque in Tunis and the great blocks of the fort of Charles V at La Goulette guarding the entrance to the Lake of Tunis. Stone was also exported: al-Idrisi in the twelfth century says that no boat left Carthage without a cargo of stone, and marbles were shipped from Carthage to build the cathedrals of Pisa and Genoa. Memoirs and archaeological accounts right up to World War II speak of stone-robbing as an honorable local profession nor is it yet totally extinct. It is to be hoped that recent legislation and the establishment of a national archaeological park will save what remains.

The UNESCO "Save Carthage" Campaign. The site of Carthage was virtually uninhabited in the nineteenth century, but construction of a suburban railway along the coast from Tunis to La Marsa in 1907 opened it up for development, which increased after independence in 1956. By 1972 the danger that the site might become totally built over led the Tunisian authorities to launch an international campaign of excavation and conservation under the patronage of UNESCO before it was too late. About a dozen countries took part, and the results have been summarized in a volume of articles (see Ennabli, 1992). The campaign officially closed in 1992, and although excavation continues, the emphasis is now more on conservation and the creation of an archaeological park.

The campaign added more to our knowledge of Punic Carthage and of late Roman, Vandal, and Byzantine Carthage than to that of the early empire. For the Punic period, the German excavations at a number of points between the Byrsa hill and the sea revealed the original Punic settlement, going back at least to the first quarter of the eighth century BCE; the French laid bare several blocks of late Punic housing on the Byrsa itself, overlying an earlier industrial quarter, and preserved under later Roman fill; and British and American teams excavated in the area of the Punic ports, backed up by geophysical prospection and underwater exploration along the coast, while the Americans also excavated in the *tophet*.

The British and German excavations also cast light on the early Roman period, and a second French team worked out the topography of the monumental first- and second-century forum on the summit of the Byrsa. The Americans helped clarify the history of the circus, following geophysical prospection by a Polish team, and the Italians in the northwest and Canadians in the northeast of the city added to our knowledge of the urban topography. A second British team carried out a number of rescue excavations and made observations during the construction of a new sewage system. Most of the great monuments of the early empire, however, had been excavated long ago, like the amphitheater, the theater, the Odeon, the vast cisterns at La Malga and Bordj Djedid, and the Antonine baths, along with the houses on the east slope of the Odeon hill, and much of the information that they might have yielded to modern excavation techniques is lost forever.

From later periods a number of Christian basilicas and their adjacent cemeteries, previously excavated at least in part, were reinvestigated, and the Americans also dug a major Byzantine cemetery behind the circus and one of the Vandal period just outside the city to the northwest. Germans studied the enigmatic underground structure known only as the Kobbat Bent el Rey, dating from the early fourth century, and a Canadian team showed the "Circular Monument" west of the theater to be a Christian *memoria* of the later fourth century. A University of Michigan team excavated an ecclesiastical complex linked to a basilica in the southeast sector of the city and built an exemplary site museum to display their results. The Swedes excavated a house with a bath complex at the foot of the Byrsa and the Danes a late Roman villa on the coast in the extreme northeast of the city. The British, Americans, Italians, and Canadians all excavated stretches of the Theodosian Wall, built around 425 in anticipation of the Vandal invasion, and the Canadians and Danes in the northeast, like the Michigan team in the southeast, found evidence of squatter occupation in the final years before the Arab capture of the city in 695.

This summary necessarily omits much, and particularly the Tunisian contribution in numerous rescue excavations, but it indicates how important the UNESCO campaign has been, utterly transforming our knowledge of the city, although adding little to its history in the Arab period, when pottery suggests that it was largely but not completely abandoned.

[*See also* Phoenician-Punic; *and* Phoenicians.]

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literally. Volume 2 deals with the archaeology of Carthage. Both volumes are now largely out of date as far as the archaeology is concerned, and Cintas is just plain wrong about the ports. Good bibliography through 1975.

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COLIN M. WELLS

CARTS. Wheeled vehicles apparently developed in Sumer during the Uruk period, perhaps as early as 3000 BCE. The earliest type was a heavy, four-wheeled, ox-drawn wagon featuring a boxlike body and four solid wheels. Excavated remains reveal that these early wagons were relatively small, with bodies less than half a meter wide and wheels 50–100 cm in diameter. Covered wagons, with leather or linen covers, are represented in Sumerian models as early as 2500 BCE, as well as at Carchemish and Aššur. Examples of some of the earliest remains and models of various types of wagons and carts are presented by Armas Salonen in his *Die Landfahrzeuge des alten Mesopotamien* (Helsinki, 1951, pp. 157–158, with accompanying plates). From this cumbersome wagon developed the somewhat lighter two-wheeled cart, which was still a ponderous affair, also borne on solid wheels.

Such wagons and carts appear to have been extensively used in the ancient Near East. In the code of Hammurabi, for example, two laws (nos. 271, 272, *ANET,* p. 177) deal with the rental of a wagon with or without a driver and oxen, and at Alalakh, in Syria, "twenty wagons" are mentioned in a Hurrian list of objects. Shamshi-Adad sent instructions that the inhabitants of Qattunan were to transport some goods from Qattunan to Shubat-Enlil in wagons. The Akkadian term for wagon, *eriqqu,* occurs frequently in Mesopotamian literature and in records from the earliest times through the Neo-Babylonian period (626–539 BCE). Wagons and carts are also frequently represented in the art of the region, particularly during the Neo-Assyrian period (900–612 BCE). For example, a relief from Nimrud, depicting a city under attack, shows several two-wheeled, ox-drawn carts carrying away women and children prisoners (cf. *ANEP,* no. 367, and the similar relief of Sennacherib's siege of Lachish, which shows a two-wheeled cart transporting women and children who are sitting on top of some bundles). A closed, four-wheeled, covered wagon is depicted on Ashurnasirpal's obelisk. (For other Mesopotamian examples, see *ANEP,* nos. 167, 169, and 303). Carts and wagons were used especially to transport heavy loads, such as large quantities of metal, timber, or military supplies (see Annals of Sennacherib 1.25).

After the introduction of the horse as a draft animal in about 2300 BCE, a lighter type of two-wheeled cart was needed. This lighter vehicle, the precursor to the chariot, eventually evolved, thanks to a new technological development: by about 1500 BCE, Mesopotamian craftsmen had learned the technique of bending wood with heat, which enabled them to replace heavy disc wheels with much lighter spoked wheels. These wheels comprised four or six spokes connected to a rim of curved, joined felloes. The cart's cumbersome all-wood body was redesigned with a curved wooden frame overlaid with a hide or wicker covering. The new, light conveyance became highly popular, and within two or three centuries it had not only become a standard means of transportation in the Near East, but also penetrated as far away as Greece, northern Europe, India, and even China.

The type of harness used throughout the ancient world was the yoke, originally designed for hitching a team of oxen.

It comprised a draft pole extending from the center of the vehicle's front side, with a horizontal crossbar near the outer end. One ox would be positioned on either side of the pole, and the crossbar (the yoke) would sit on the oxen's protruding shoulders. When horses became draft animals, the same yoke was used. Because the horse lacks prominent shoulders, the yoke was secured by a band that passed over the animal's breast, which unfortunately pressed against the windpipe and prevented it from using its full strength. This design flaw was never rectified in antiquity.

During the Roman period the most common means of transportation was the ox-drawn wagon, normally drawn by eight oxen or horses in the summer, ten in the winter. Heavy goods, such as army supplies, were transported by heavy *clabulariae*, a large, open wagon that could carry as much as 1,500 Roman pounds. Lighter vehicles included the *rheda*, a mule-drawn, four-wheeled cart using eight to ten mules, which could bear a maximum load of 450 kg; the *carrus*, a four-wheeled cart, which carried 270 kg; the *verreda*, drawn by four mules, which carried two to three persons and up to 135 kg of goods; and the two-wheeled *birota*, drawn by three mules, which carried one to two passengers and a maximum of 90 kg.

[*See also* Roads; Transportation; Wheel.]

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CATACOMBS. Large underground cemeteries, catacombs typically consist of a network of long, subterranean galleries whose walls have been cut as graves. Sometimes galleries open into rectangular or quadrangular rooms *(cubicula).* Such rooms usually contain rock-cut graves; occasionally, they also contain sarcophagi (stone containers used as coffins). [*See* Sarcophagus.] In the ancient Near East, catacombs normally consisted of galleries situated on one level. In the early Christian catacombs in Rome, by contrast, it is not unusual to find as many as four galleries one on top of the other.

The term *catacomb* derives from the Greek *kata kumbēn,* a toponym that means "near the hollow." In the Roman period it was used to denote a particular spot on the Via Appia, near the Catacomb of Sebastiano and the Circus of Maxentius, where the terrain suddenly drops tangibly. In exceptional cases, as in Hellenistic and Roman Egypt, catacombs were used to deposit the remains of mummified animals. Normally, however, catacombs served in the burial or reburial of the mortal remains of human beings. Discoveries in Roman Palestine and in Rome itself show that both the Jewish and the early Christian communities used catacombs. It is not clear, however, whether the idea of burial in catacombs first originated in Jewish or in early Christian circles.

Burial in catacombs was customary from the late second to the early sixth centuries CE. Extensive remains of catacombs have been found throughout the Mediterranean area, including the Near East. Yet, in Late Antiquity, burial in catacombs seems to have been particularly popular in Italy (e.g., at Rome, Naples, Venosa) and on the islands adjoining it (particularly Sicily and Malta).

Catacombs differ from other types of underground tombs in size, formal appearance, and, consequently, in function. In the ancient Near East, subterranean tombs were usually mere underground structures (hypogea). They offered a final resting place to a restricted group of people only—the members of an extended family. Compared to burial in such family tombs, burial in catacombs always remained exceptional in the eastern provinces of the Roman Empire. Occurring during a relatively short period of time only, the use of catacombs must be taken to reflect a particular attitude toward burying the dead. With their long underground galleries, catacombs were designed from the outset to accommodate the remains of large groups of people that either had to be or wanted to be buried or reburied together in a given locality.

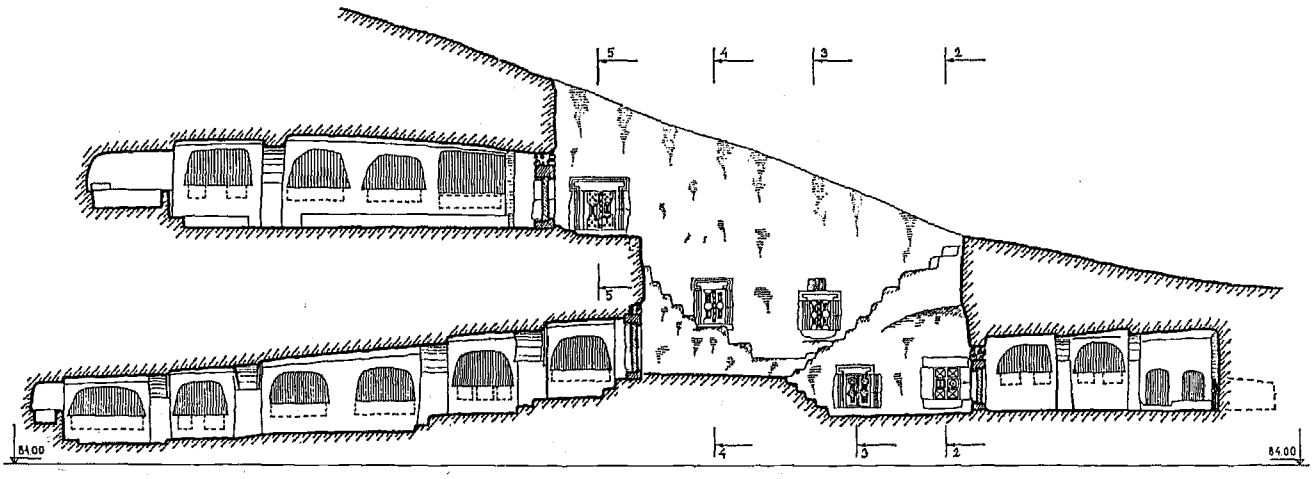
In contrast to Rome, where more than sixty catacombs are known, only a few catacombs have been discovered in the Near East. Among the sparse finds, the dozen or so Jewish catacombs at Beth-She'arim (Lower Galilee) are certainly the most important because of the abundance of archaeological and epigraphic remains preserved there. [*See* Beth-She'arim.] No less significantly, Beth-She'arim is the only catacomb complex in the region that was studied systematically by its excavators (Avigad, 1971; Mazar, 1973).

In the Near East a few early catacombs believed to be Christian, but that may be Jewish-Christian, have also been discovered. One such catacomb came to light in the late nineteenth century CE on the Mt. of Olives in Jerusalem at a site known as Viri Galilei (Schick, 1889). The so-called Tomb of the Prophets, also located on the Mt. of Olives, has also been known since the nineteenth century and is still accessible (Vincent, 1901). It consists of several short, semicircularly shaped galleries. Despite its unusual plan, it too must be considered a catacomb. An early Christian catacomb was discovered and partially excavated in the late 1960s, at Emesa/Homs in Syria (Bounni, 1970). In Alexandria (Egypt), many subterranean Christian tombs, often referred to as early Christian catacombs, were discovered from 1820 to 1890; most of them are now destroyed (Leclercq, 1924). Although adequate documentation on the formal appearance of these Alexandrinian tombs is often lacking, the use of the term *catacomb* to describe them is incorrect. Characteristic of Alexandria's early Christian funerary architecture is the hypogeum—in this case a collection of subterranean rooms arranged around a central courtyard. Such hypogea were dug in proximity to one another. Not unusually, they were interconnected to form large underground complexes. Yet, they lack a catacomb's most distinguishing feature: galleries dug specifically for the deposition of the deceased members of an entire community.

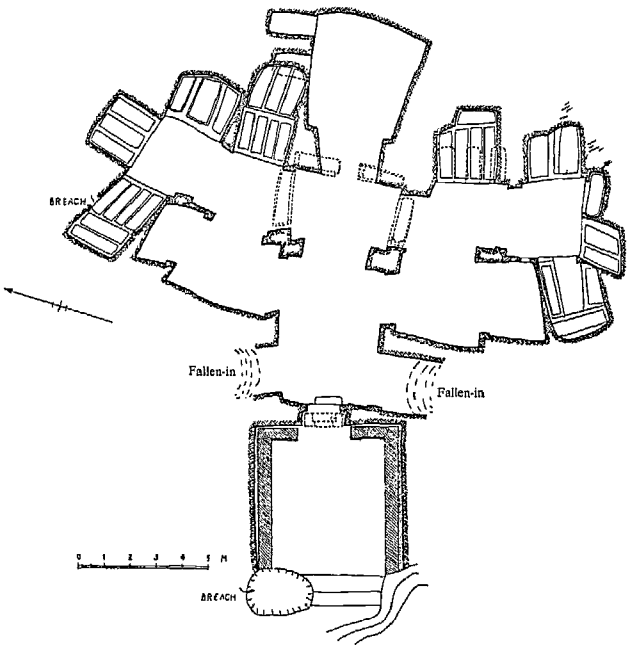
Because ancient tombs have often been robbed, it is usually difficult to establish when precisely a given catacomb came into use or when burial ceased there. Archaeological small finds can, however, point to the approximate period of its use. Thus, it was ascertained that the Jewish catacombs at Beth-She'arim were in use mainly from the late second to the middle of the fourth centuries CE. The precise dating of the catacomb on the Mt. of Olives has not been achieved. It is not unlikely though that burials took place there in the third–fifth centuries CE. The Tomb of the Prophets is dated to the fourth and fifth centuries. The Christian catacomb at Emesa Homs has been dated by its excavator to the third–seventh centuries (Bounni, 1970).

The size and layout of a catacomb's complex network of underground galleries and cubicula are determined by several factors: the workability of the rock, the amount of space needed, and the degree of planning involved. In Rome, for example, the earliest catacombs frequently consist of a network of irregular galleries (curvilinear galleries that seem to go into every direction). Galleries in later Roman catacombs, on the other hand, display a much more systematic layout (Brandenburg, 1984). Such developments in planning testify to a rise in the popularity of burial in catacombs, as well as to the need to dispose of the ever-increasing number of dead in the most rational way. This explains why in many of the catacombs at Beth-She'arim, too, a tendency toward symmetry and the economic use of space is discernible.

Rock-Cut Graves. In catacombs, different types of rock-cut graves were used. Some graves are long, rectangular slots that were cut parallel to the wall. These loculi take up little wall space, and so it is not unusual to find rows of up to seven or eight loculi, one on top of the other. Another rectangular grave, the *kokh,* is cut at right angles to the wall and goes right into it. The term *kokh* has a clear association with the practice of secondary burial in the Near East and is borrowed from the East Semitic language groups (Meyers, 1971). Despite a clear difference in formal appearance, the terms *loculus* and *kokh* are often used interchangeably in scholarly literature, which may lead to confusion. A third type of wall-cut grave, known as an acrcosolium, consists of one or more rectangular containers that are dug into the rock and overarched by a vault. The fourth and by far the simplest type of rock-cut grave is also rectangular: dug into the



CATACOMBS. *Cross-section of catacomb 13 at Beth-She'arim.* (After Avigad, 1971; courtesy Massada Press, Ltd.)



CATACOMBS. *Plan of Mugharet el-Jehennem, a catacomb at Beth-She'arim.* (After Mazar, 1973; courtesy Massada Press, Ltd.)

floor of a gallery or burial room, it is known as a pit grave, or *forma.*

Rock-cut graves of the kind listed above normally offered enough space for one person only, though in some instances they were used for multiple reburials. They were sealed in various ways: with stones, bricks, rubble, or with a marble plate that sometimes carried a funerary inscription. In catacombs, burial in sarcophagi (coffins made of either stone, terra cotta, wood, or lead) is not very common. Unexpectedly, the underground galleries of catacomb 20 at Beth-She'arim were found filled with 125 well-preserved specimens of large sarcophagi, the great majority of which are of local limestone (Avigad, 1976). Another peculiarity confined to the catacombs at Beth-She'arim is the use of ossuaries—small stone or wooden containers used for secondary burial. [*See* Ossuary.] Together with sarcophagi and loculi, the vast majority of burials at Beth-She'arim were reburials, testifying to the Jewish idea of the importance of burial or reburial in the land of Eretz-Israel, where resurrection would occur and where the land had atoning powers (Zlotnick, 1966).

With the exception of ossuaries, which reflect a typically Jewish funerary philosophy (at least in Roman Palestine), the grave forms listed above occur in Jewish and Christian catacombs alike. In fact, in the second–fourth centuries CE, there are no major differences between catacombs and hypogea, either in terms of grave types or burial customs. The tombs in the Jewish catacombs at Beth-She'arim and in the early Christian catacombs at Viri Galilei are remarkably similar in both shape and selection of tomb types to those found in contemporary hypogea, such as the chamber tombs of the Dominus Flevit cemetery in Jerusalem. Evidence from these catacombs and hypogea shows cumulatively that in second–fourth-century Palestine, the arcosolium slowly but steadily replaced the *kokh* as the most popular grave form. Similarly, archaeological materials from the catacombs at Beth-She'arim and from hypogea at Meiron, Khirbet Shema', Gezer, Ramat Raḥel, and Ḥorvat Thala in Roman Palestine document that in the period under discussion the same trends in burial customs affected the funerary customs in catacombs and hypogea. It is now known, for example, that secondary burial continued to be practiced in different parts of Roman Palestine throughout antiquity, but that it lost much of the popularity it had enjoyed in first-century CE Jerusalem.

The single most important factor leading to the genesis and subsequent evolution of burial in catacombs was that large numbers of people could be buried together without taking up too much space. The various stages of this process can best be seen in Rome. There, the earliest Christian catacombs are nothing but a collection of irregularly shaped galleries. Originating in deserted quarries, cisterns, and water channels, these subterranean galleries maintained the character of privately owned tombs until more space and more systematic planning were needed. In the third and fourth centuries, Rome's Christian community—all people who had to be buried—rapidly increased in size, and many Christians wanted to be buried near the remains of their martyrs. Beginning in the period of Pope Zephyrinus (199–217), who appointed one Callistus as overseer of a catacomb, the Christian community was enabled to fulfill an obligation it had taken upon itself—to bury the Christian poor. Planned catacombs were dug that were no longer privately owned and offered room for all members of the Early Christian community (Brandenburg, 1984).

It is not clear whether similar factors shaped the contemporary development of catacomb architecture in the Near East. It is clear, however, that in the eastern part of the Mediterranean, catacombs were constructed because this form of burial offered the same advantages the inhabitants of Rome had come to appreciate. Beginning in the second century CE, Beth-She'arim replaced Jerusalem as the most prestigious Jewish necropolis. This happened, in part, because many Palestinian and Diaspora Jews alike believed that burial in the land of Israel was to be preferred over burial in the Diaspora (cf. Tosefta, *A.Z.* 4:3: "He who is buried in the Land of Israel is as though he were buried under the altar"). The presence, in the Beth-She'arim catacombs, of the earthly remains of important Jewish religious and political leaders of the time must have been a major attraction as well. In the historical development of the Christian catacombs of Jerusalem, other, comparable factors are likely to have played a role. Inscriptions indicate that the people buried in

the Tomb of the Prophets were pilgrims who had either died accidentally in Jerusalem or who had traveled there with the intention of securing their last resting place in proximity to the Holy City.

Little is known about those responsible for the exploitation and administration of catacombs. In fourth- and early fifth-century Rome, specialized gravediggers *(fossores)* can be shown to have worked by order of the church. At the same time, however, some of these *fossores* are known to have operated as independent entrepreneurs. Whether individual Roman parish churches each administered their own catacomb is a hypothesis that has frequently been advanced but never been proved conclusively (Guyon, 1987). The inscriptional evidence from Beth-She'arim and Acmonia (Asia Minor) as well as rabbinic literature suggest the existence of Jewish burial societies, but it is impossible to determine whether such colleges were also responsible for excavating and supervising catacombs (Schwabe and Lifschitz, 1974).

The same factors that led to the development of catacombs also caused its abandonment in Late Antiquity. With the dramatic drop in population in sixth-century Rome, burial shifted from catacombs to the exterior of churches within the Aurelian city wall. Beth-She'arim, perhaps destroyed during the Gallus Revolt of 351–352, had already ceased to be a center of importance. A decrease in the number of Christian pilgrims to Jerusalem must have been the determining factor that led to the discontinuation of burial in catacombs there.

From the Hellenistic and Roman Near East, several underground complexes are known whose walls are dotted with small niches, known as columbaria, measuring, on average, 20 × 20 × 15 cm. Examples of these columbaria are preserved in, among other places, Roman Palestine (Beth-Guvrin, Dor, Gezer, Masada, Ramat Raḥel, Samaria); Roman Arabia (Petra); and Asia Minor (Sebaste in Cilicia). Such complexes are normally located in the same general areas as tombs. For that reason and because the niches they contain resemble somewhat the niches of subterranean constructions in Rome whose funerary function is beyond doubt, scholars have suggested that cremated human remains were placed in these Near Eastern counterparts. Inasmuch as there is no archaeological evidence to show that the niches in the columbaria ever contained ashes, the conclusion is problematic. Other scholars have suggested that these complexes may have been used to raise and keep pigeons.

Burial of hundreds or even thousands of animals in catacombs is an exclusively Egyptian phenomenon. Such animals were first mummified, wrapped in embroidered cloth, and then deposited in either limestone sarcophagi or pottery jars. They were layed to rest in winding underground galleries that could be hundreds of meters long. In Alexandria (Rhacotis), such "animal catacombs" were found to contain the mummified remains of dogs. In Memphis they contained the cadavers of bulls, while catacombs in Saqqara, Baklija (near Hermopolis), and Tuna el-Gebel testify to the cultic veneration of the ibis and, at the latter sites, also to that of the baboon. The practice of burying mummified animals in catacombs seems to have begun as early as the thirtieth dynasty (380–342 BCE) but did not gain widespread popularity until the Hellenistic and Roman periods (Kessler, 1983).

Iconography and Inscriptions. The artistic remains from catacombs represent not only the development of art in antiquity but also burial customs, ideas about death and afterlife, social relations, the economy, and gender (Peskowitz, 1993). For example, the discovery and scientific study of the Beth-She'arim catacombs profoundly changed the ways in which scholars view the genesis of rabbinic Judaism and the interaction of Jewish and non-Jewish cultures in antiquity.

Little is known about the aesthetics of the few catacombs discovered so far in the Near East, except at Beth-She'arim, where the iconography represented on the walls includes menorahs, the Ark of the Law, human figures, animals, ships, and geometric designs. Impressive portals with elaborately rendered stone doors and courtyards with mosaic floors lend monumentality to the entrances to its catacombs. [*See* Mosaics.] Inside, many of the sarcophagi, mostly of local production, show a rich iconographic repertoire consisting of crudely carved human figures and animals. A combination of three elements characterizes Beth-She'arim's artistic corpus: a lack of narrative themes, the absence of scenes taken from the Hebrew Bible, and a preference for motifs that are not only often religiously neutral, but that sometimes (especially on sarcophagi) are of clear pagan derivation. That the users of these catacombs were indeed vividly aware of the artistic achievements of non-Jewish workshops located on the Phoenician coast, or in Greece and Asia Minor, can also be inferred from the remains of imported marble and lead sarcophagi (Avigad, 1976). Another noticeable feature about the Beth-She'arim catacombs is that elaborate cycles of wall paintings are absent; this contrasts markedly with the evidence preserved in the Jewish and Early Christian catacombs in the western Mediterranean, where such wall paintings do decorate most catacombs.

At Beth-She'arim, many small finds—lamps, pottery, glass vessels, bronze and iron artifacts, and items of personal adornment—further enrich what is known of ancient art, manufacturing techniques, and Jewish burial customs and have enabled the dating of individual catacombs.

Often characterized by great conciseness, painted and incised funerary inscriptions as well as graffiti inform about a wide variety of issues, including the deceased's social, economic, and religious status, place of origin, onomastic practices, language, and religious beliefs and practices. Thus, it is known that the people buried in the Tomb of the Prophets

and in the catacomb of Viri Galilei spoke Greek, and that some of them hailed from such cities as Harpagia (Asia Minor), Bostra, Palmyra, and Batanea (Schick, 1989; Vincent, 1901).

The inscriptions from the Beth-She'arim catacombs document the extent to which the Greek language, Greek literary form, and Greek ideas about death and afterlife had made inroads into a community in which the rabbinic element was unmistakable, if not dominant. Eighty percent of the Beth-She'arim inscriptions are in Greek, one of them a metric inscription composed in Homeric hexameters. Other inscriptions found at Beth-She'arim are in Hebrew, particularly in catacomb 14, which may contain the grave of Judah I the Patriarch, a well-known rabbinic figure traditionally regarded as the redactor of the Mishnah. Still other inscriptions are in Palmyrene. [*See* Palmyrene Inscriptions.] Together with the Greek inscriptions, the Palmyrene epitaphs indicate that Beth-She'arim rapidly evolved into a funerary center of supraregional importance: leaders of Jewish Diaspora communities as far apart as Byblos, Sidon, Tyre, Beirut, Antioch, Palmyra, Nehardea (Mesopotamia), and southern Arabia all had their mortal remains brought to Beth-She'arim for final interment (Schwabe and Lifschitz, 1974; Nagakubo, 1974).

[*See also* Burial Sites; Burial Techniques; Grave Goods; Necropolis; Sarcophagus; *and* Tombs. *In addition, many of the sites mentioned are the subject of independent entries.*]

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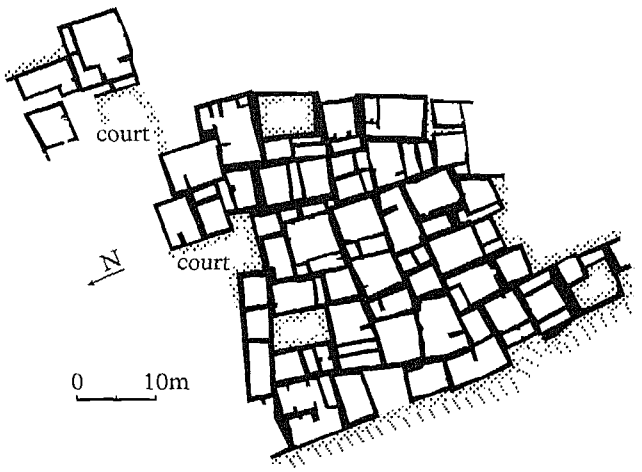
LEONARD V. RUTGERS and ERIC M. MEYERS

ÇATAL HÖYÜK, ancient name unknown, a double mound located at 37°06′ N, 32°08′ E, on the Konya Plain in south-central Turkey, about 260 km (156 mi.) south of Ankara and about 40 km (24 mi.) southeast of the town of Konya. Çatal Höyük, the largest Neolithic site known on the Anatolian plateau, was discovered by James Mellaart of the British Institute of Archaeology at Ankara and his colleagues during a field survey in 1958. Subsequent excavations, mainly directed by Mellaart between 1961 and 1963 and again in 1965, revealed extensive evidence of a large Neolithic settlement on the east mound; small-scale excavation



ÇATAL HÖYÜK. Figure 1. *Plan of a building, level VI B.* (After Mellaart, 1967, fig. 9)

on the west mound indicated the presence of a sizable Early Chalcolithic village, but the full sequence of occupation of the site as a whole remains to be established. No evidence has been found for occupation of the immediate area in the Aceramic Neolithic, but more extensive excavation may reveal its presence. Fieldwork on the site was resumed by another British team under the auspices of Cambridge University in 1993.

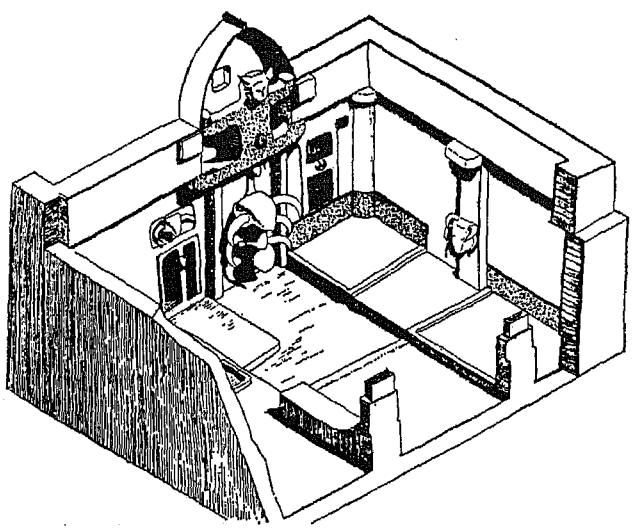
The oval east mound (500 × 300 m) rises to a height of 17.5 m above the plain. It is situated 28 km (17 mi.) from the nearest edge of the plain, in an agriculturally rich region, at an elevation of about 1000 m. The nature of the soils upon which the settlement was established is uncertain; it is likely that a branch of the Çarsamba Çay river flowed nearby in the Neolithic period, perhaps in the area now between the east and west mounds; the village may have been founded on the alluvial fan delta of that river. Proximity to a perennial river or stream may have made settlement feasible in this area of low average annual rainfall (249 mm).

Excavation on the east mound was principally concentrated on a one-acre area on its west side. Virgin soil was not reached in the deepest excavation area; approximately fifteen building levels were encountered (0–XIII, in descending order, with two phases in level VI). A sounding in 1963, close to the edge of the mound, is stated to have revealed occupation deposits to a depth of 5 m below the present plain level; if this is correct, a total depth of occupation of 22.5 m or more is to be found on the site.

Information about the settlement's architecture was predominantly obtained from levels VIII–II. Despite the paucity of evidence for the earliest and latest phases, no radical architectural changes could be discerned, and many aspects of the site indicate continuity. In all levels, the building plans are rectilinear (see figure 1). In the best-represented levels, houses and associated storerooms were built against each other, with abandoned houses and open areas serving as courtyards and dumps. A general tendency toward a more open plan is visible after level VI. The buildings are constructed of sun-dried, mold-made mud bricks; extensive use was made of a wooden framework, especially in the earlier levels. Floors and walls were plastered, and the flat roof was constructed of beams, lighter timber, and a thick mud coating. Most of the buildings were entered from the roof by means of a ladder; there are no doorways, except between a house and its associated storeroom. A degree of standardization is visible in many structures: the ladder is placed against the south wall, in association with hearths and ovens, benches and lower platforms appear in all houses.

One of the site's most notable features, in addition to the excellent state of preservation of some of the architecture and artifacts, is the elaborate decoration evidenced in a considerable number of buildings Mellaart classified as shrines (see figure 2). Decoration takes the form of wall paintings, plaster reliefs, cut-out figures, and other features that, in some cases, combine several techniques. The subjects of the wall paintings are geometric designs, sometimes reminiscent of textile patterns; animal and human figures, sometimes in combination; and, in one case, a possible landscape with the settlement shown with a mountain in the background. Several hunting scenes depict various species of birds and animals, especially a large red bull, in association with numerous human figures, each dressed in a kind of spotted loincloth. Some of the figures may be dancing, and a general atmosphere of levity is indicated. More macabre are scenes showing large red birds (perhaps vultures) hovering over headless human figures, no doubt alluding to the excarnation of bodies before burial.

The main subjects depicted in plaster relief are animal



ÇATAL HÖYÜK. Figure 2. *Shrine VI.B.10, restored.* (After Mellaart, 1967, fig. 38)

heads, human figures (sometimes in association with animal heads), complete animal figures, and rows of what seem to be human breasts, often molded over the jawbones or skulls of animals. The face, hands, and feet of the human figures are always damaged and appear to have been intentionally mutilated. The bodies are arranged parallel-sided with their arms and legs branching out at right angles to the body and turning up at the ends. One figure bears extensive linear painted decoration, perhaps representing a netlike dress. The figures may be goddesses, in a birthing position. In some cases a figure is shown immediately above a plaster bull's head. Pairs of leopardlike animals in relief and painted with spots or rosettes appear on the walls of several buildings. A representation of a stag looking behind him was found, as were silhouettes of animal heads and complete animal figures, also cut into the plaster on walls where the plaster was thick enough. The features in some buildings are complex: pairs of bull's horns were sometimes set into the sides of benches or into the top of small, rectangular, free-standing mud-brick pillars.

Burial customs are well evidenced by the 480 or so complete or partial burials found within the settlement below the floors of houses. The dead were usually placed under the platforms, in a contracted position, on their left side, with the head toward the center of the room and the feet near the wall. Some, if not all, of the bodies were wrapped in skins or textiles, placed in baskets, or laid on mats. The skeletons were sometimes found in rather chaotic heaps; later burials disturbed earlier interments. Clear evidence for secondary burial (burial after the flesh had at least partially decomposed) was found, and some skeletons (both male and female) were decorated with ocher or paint. A wall painting that may portray a lightly built structure with schematic human skulls shown below it has been interpreted as a charnel house, where the dead were laid out for excarnation. Grave goods of various types were buried with the dead, including wooden vessels that were preserved in carbonized form by the fire that destroyed the overlying building.

Handmade pottery in simple shapes was found in all levels at the site; the most characteristic product is a hole-mouth jar with a dark, streakily burnished surface. Baked clay was also used in the manufacture of stamp seals. Male and female figurines made of clay and stone were sometimes found in association with animal figurines. Other artifacts include quantities of finely fashioned tools, weapons, and some mirrors made of obsidian; ground stone tools; and objects made of animal bone. Despite the application of the term *Neolithic* to the site, copper and lead had been used to manufacture small items such as beads, pendants, and rings; a lump of copper slag in level VI suggests that the initial steps toward true metallurgy had already been taken.

According to a series of twenty-seven uncalibrated radiocarbon dates, the earlier excavated levels are to be dated to the late seventh millennium, whereas level VI and the later levels fall after 6,000 BCE. The latest levels at Çatal Höyük East may just overlap with the beginning of the Late Neolithic occupation of Hacılar in the Anatolian Lake District to the west of the Konya Plain.

The excavations at Çatal Höyük East cast a completely new light on Neolithic civilization on the Anatolian plateau and in the Near East as a whole. Subsequent excavations in Turkey and elsewhere have still not revealed a contemporary site with more advanced art forms, religious ideology, or general level of sophistication than were found at Çatal Höyük.

[*See also* Hacılar.]

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IAN A. TODD

CATON-THOMPSON, GERTRUDE (1888–1985), pioneering British archaeologist in Egyptian and East African prehistory. Caton-Thompson was born in London and in 1921 began to study archaeology there with Flinders Petrie at University College. From 1921 to 1926, she attended the British School of Archaeology in Egypt, where she continued to work with Petrie. From 1934 to 1951, she was a fellow at Newnham College, Cambridge. Caton-Thompson also did research on Malta (1921–1924) and in Yemen, her work established for the first time some of the prehistoric sequences in Egypt, and her thorough archaeological publications usually included excellent geological studies as well.

In Egypt, she excavated at Abydos (1921–1922) and at Qau and Badari (1923–1925). She also conducted archaeological and geological surveys in the Faiyum (1924–1928). From 1930 to 1933, she excavated at the Khargah oasis. In 1928–1929 she excavated at Zimbabwe, demonstrating that the culture was not as ancient as had been proposed. Her archaeological and geological work in the Hadhramaut (now

in Yemen) was important: she excavated a pre-Islamic temple and tomb site at Ḥureidha (1937–1938).

Caton-Thompson received a number of awards and honors, including the Cuthbert Peek Award from the Royal Geographical Society in 1932, the Rivers Medal from the Royal Anthropological Institute in 1934, and the Burton Medal from the Royal Asiatic Society in 1954. In 1944 she became a fellow of the British Academy and in 1954 was awarded an honorary doctorate from Cambridge University.

[*See also* Abydos; Faiyum; Ḥadhramaut; Ḥureidha; Malta; Yemen; *and the biography of Petrie.*]

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JAMES A. SAUER

CATS. The principal ancestor of the domestic cat, the wild cat *Felis silvestris*, is a single species with a worldwide distribution that varies in appearance and behavior across the northern and southern extensions of its range. Behavioral studies suggest that the African/Arabian form of wild cat, *F. s. libyca*, is the most amenable to forming commensal relationships with humans and habiting their settlements. This behavioral trait, as well as alloenzyme analyses and philological and archaeological evidence, strongly suggests that the *libyca* form was the direct ancestor of the domestic cat, formally designated *F. s. catus*.

Cat domestication probably began in Egypt, but because the skeleton of *libyca* differs little from the domestic form, it is difficult to document the earliest stages of the process. The first purposeful interments of *F. s. libyca* are found with Egyptian human burials from the early fourth millennium. Although there is no evidence to indicate that these cats were domestic, the burials may signal the beginning of the domestication process. Other wild cats from the region, notably the larger jungle or marsh cat *F. chaus*, have been identified in early burials as well, but in smaller numbers. This led some authorities to suggest that *chaus* may also have contributed to the domestic cat genome, but recent genetic studies show that any significant contribution is unlikely. The ancient Egyptians kept wild animals in captivity without domesticating them, and this was probably the case with the jungle cat.

A fifth-dynasty (c. 2494–2345 BCE) tomb painting from Saqqara depicts a cat with a band that may be a collar around its neck. This may demonstrate human control of the animal but is not proof of domestication. However, by the early Middle Kingdom period (c. 2050–1785 BCE), pictorial and textual evidence point to the cat as a domesticate. Both functional and religious reasons are advanced to account for its domestication. As with most domestic animals, however, a primary stimulus, assuming there was one, eludes archaeological detection.

Animals played a prominent role in Egyptian religion from the predynastic period or even earlier. Most deities were associated with one or more animals that were intrinsic to the performance of their cult. Cats, large and small, were sacred to a number of Egyptian gods. The goddess Sekhmet was usually represented by a lioness, the goddess Pakhet by lions and cats. The most popular cat deity, the fertility goddess Bast was portrayed as a lioness from the protodynastic period (c. 3100–1700 BCE) until the Second Intermediate period (c. 1800–1570 BCE) and thereafter mostly as a female cat. In the New Kingdom (sixteenth–twelfth centuries BCE), the solar deity Re is associated with male cats. Cats, and other animals, were kept and raised within the confines of the temples of their special deities.

When Bubastis, a center for the worship of Bast, assumed leadership of the country is the early first millennium BCE, the cat gained new prominence. Prior to this time, cats appear to have been pets of the elite. As the symbol of a national protectress, however, the cat as a pet became extremely popular across all classes.

By the Hellenistic period (c. 332–200 BCE), cats had become big business. Priests raised them by the thousands in and around temple precincts, to be used as votive offerings by pilgrims. Herodotus (2.65–68) described at length the affection of the Egyptian populace for their pet cats and the sacred burial grounds that received their mummified remains. Archaeologists have discovered enormous numbers of cats in cemeteries at Abydos, Giza, Bubastis, and Saqqara, to name a few examples.

Nowhere in the ancient world were cats as beloved or important to religion as in Egypt. Indeed, their religious role may have hindered their export, as it greatly overshadowed

the utilitarian role they played in vermin control. Except for Egypt, the domestic cat is not mentioned in the region's ancient texts, and there is no evidence for it beyond Egypt's borders until the first millennium BCE. Its popularity appears to have spread rather slowly, reaching Crete in the ninth century, mainland Greece during the sixth century, and China only in the second century BCE.

In neighboring Syria-Palestine, there is little early evidence for the domestic cat. An ivory statuette from Lachish, dated to about 1700 BCE, may be of a wild or domestic cat. Osteological evidence for cats of all forms is sparse. Several bones of a small wild cat (probably the sand cat, *F. margarita*) were found in Middle Bronze II levels (c. 1900–1600 BCE) at Tell Jemmeh in Israel's northern Negev desert. Cut marks consistent with skinning reveal that the animals were hunted for their pelts. A small number of bones referred to *F. chaus* has been recovered at the coastal site of Ashkelon in Israel from various periods, some with cut marks. Not until the Persian period (c. 538/39–332 BCE) do several bones of domestic cat appear. In the ensuing Hellenistic period the numbers began to rise, and about one hundred specimens of domestic cat have been identified to date from Hellenistic to Islamic deposits at Ashkelon. Domestic cat bones, and the occasional skeleton, have been reported from historic-period sites throughout the ancient Near East. The numbers are always small, however, perhaps an indication that dogs, whose bones are much more common, were preferred as pets.

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CATTLE AND OXEN. During the Late Pleistocene and Early Holocene, the aurochs (*Bos primigenius*), the wild ancestor of domestic cattle, ranged over diverse environments across the Near East. Aurochs remains are common in Upper Paleolithic levels at sites in the southern and eastern Levant. According to artistic evidence, the aurochs was still present in this region during historic times. It is unclear just when the animal finally became extinct.

With few exceptions, the number of identified large bovid bones in Neolithic sites is small. Therefore, criteria based on mortality are rarely available and the evidence for domestic cattle is primarily osteometric. [*See* Animal Husbandry.] Domestic stock are considerably smaller than their aurochs ancestors. However, the application of this criterion is complicated by sexual dimorphism and the resulting danger of identifying a bone from a wild female as one from a domestic bull. Furthermore, dependence on morphological signs means that the earliest phases of domestication will not be recognized. It is not clear how the incorporation of such a large and powerful animal as an aurochs into human settlements was managed. Perhaps the provision of salt to wild herds was a strategy for conditioning the animals to human presence and initiating the process of taming.

However it was accomplished, the first claim for "predomestication," on the basis of mortality data, comes from Pre-pottery Neolithic A (PPNA) Tell Mureybet in Syria. Osteometric evidence has been cited to assert that the cattle from sixth-millennium deposits from Çatal Höyük and Hacılar, Neolithic sites in central Anatolia, were domestic, but this has been challenged. Domestic or wild, the cattle at Çatal Höyük are particularly interesting because the site also yielded extensive evidence for the animal in a ritual context. Not only are aurochs included in the spectacular mural art, but horns were mounted on a bench and associated with human figurines and what may be fertility symbols. On the basis of size diminution, domestic cattle are certainly present in central Anatolia, northern Syria, and the Levant by 5000 BCE, though the process must have started earlier. The sex ratio of morphologically wild PPNB (late seventh millennium BCE) cattle favors females, which may be evidence for the onset of husbandry. There is insufficient evidence to pinpoint the appearance of domestic cattle in Iran and Iraq prior to the fourth millennium. [*See* Mureybet; Çatal Höyük; Hacılar.]

Because cattle are extremely adaptable to diverse habitats, a degree of isolation between regional populations arose. This resulted in stock of varied appearance by the end of the second millennium BCE. The zebu, or humped cattle (*Bos indicus*), is present in Jordan in the Late Bronze Age on the basis of osteological evidence. Figurines found at Tell Jemmeh in Israel's northern Negev, as well as the vertebrae distinctive of this bovid, place it there in this period as well. Because zebu cannot always be reliably distinguished from their taurine cousins, there is a possibility that they were both earlier and more important than is currently recognized. [*See* Jemmeh, Tell.]

Aurochs were hunted for their meat and hides. It is not

known how long it took before domestic cattle produced sufficient quantities of milk or became sufficiently tractable to mark a significant change in how they were used. The earliest reliable evidence for dairying is from fourth-millennium sites in Egypt and Mesopotamia. Similarly from the fourth millennium comes the earliest (artistic) evidence for the plow in southern Mesopotamia. Osteological evidence for cattle as plow or draft animals at this time is noted in collections from the Levant and Anatolia. The advent of plow agriculture utilizing cattle as motive power was a major threshold. Because cattle assumed much of the work previously supplied by humans, surplus labor could be redirected to other pursuits in the community, thereby enhancing the potential for increased socioeconomic complexity.

In historic periods cattle were usually the third most common domesticate at a site, after sheep and goats. However, their larger size and utility for draft made them much more valuable, animal for animal, than either of the "small cattle." Oxen (neutered bulls) began to be employed in the fourth millennium BCE, based on osteometric data. However, textual evidence from Mesopotamia and the Hebrew Bible is equivocal about whether the technique was actually practiced in all periods.

[*See also* Agriculture; Animal Husbandry; Ethnozoology; Leather; *and* Paleozoology.]

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CAVE TOMBS. Burial in cave tombs was practiced from the Chalcolithic period onward, primarily in the hill country of Canaan, where caves occurred naturally. Both natural and hewn caves appear to have been conceived of as an ancestral dwelling for families and generations, based on the selection of mortuary provisions: common household ceramic vessels and assorted items used for food production, clothing, hunting and warfare, farming, fishing, amusement, personal grooming, symbolic protection (amulets), and personal identification (seals). In undisturbed examples, individuals lay extended on their back, with objects positioned around their body, near the center of the cave. Bones and objects scattered around the cave's periphery suggest that bodies were later moved to the sides to clear a space in the center for additional burials.

Extramural cemeteries first appeared in the Chalcolithic period (4300–3300 BCE). Individual remains buried in caves were frequently collected and deposited in a ceramic receptacle shaped like a jar or a house, called an ossuary (Azor, Ḥadera, Jerusalem, Palmaḥim, near Shechem). [*See* Ossuary.] Objects and vessels found in the caves accompanying the dead include V-shaped bowls, pedestaled bowls, holemouth jars, and flint tools, many characteristic of the Ghassulian culture. Ossuaries were not used in the three cave tombs at the Judean Desert site of Naḥal Mishmar: the cave 2 man, woman, and four children, aged 2–6 years old, were wrapped in blood-stained linen cloth and covered with mats. The deceased are thought to have been family members who met with violence.

Highland settlers in the Early Bronze I (3300–3050 BCE) buried from five to up to two hundred "kin" together in caves (Ai, Tell el-Farʿah [North]), Gezer, Jericho, Tell Taʿanach), along with pottery vessels, jewelry, weapons, and other personal items. At several sites (Bab edh-Dhraʿ, Gezer, Jericho, Tell Taʿanach) skulls were separated from the other bones, continuing a Neolithic practice interpreted as an element in an ancestor cult. It is commonly assumed that multiple burial in caves was the practice of extended families in sedentary agrarian societies, yet no settlement has been located in the vicinity of the Tell el-Farʿah (North) cemetery.

After a paucity of burials in EB II–III, and divergent practices during EB IV–Middle Bronze I, cave burial resumes in MB II (2000–1550 BCE) with the reuse of earlier burial caves at sites including Tell el-Farʿah (North), Jericho, and Megiddo. By the Late Bronze Age (1550–1200 BCE), the distribution of cave tombs was concentrated in the hill country (Tell el-Farʿah [North]), Gezer, Hebron, Jericho, Jerusalem, Lachish). As in the preceding periods, new or used caves accommodated multiple burials with a modest assemblage of domestic pottery and few imports or metals. Gibeon and Hebron provide further examples of cemeteries with no nearby settlements.

Through all the social and political upheavals of the Iron Age, the pattern of burial practices changed little from that in the Bronze Age. Cave tomb burials continued as before, and in several tombs (Tel Aitun, Jericho, Lachish) skulls were separated from the remaining bones, recalling the earlier practice. A commensurate number of gifts accompanied the large numbers of individuals buried in cave tombs. Locally made bowls, lamps, jars, jugs, and juglets predominate, with a wide assortment of other ceramic forms, household items, and personal possessions. Through the course of the Iron Age, as the number of sites employing the bench tomb increased, a decreasing number of sites buried their dead in cave tombs. There are two likely explanations for the decreasing use of the cave tomb. One possibility is that adherents of LB highland culture, the Amorites and others, lived

among the bench-tomb-burying population (later the Judahites) and continued to bury their dead in caves. A second possibility is that highland settlers, regardless of ethnic or religious affiliation, continued to bury their dead in caves because caves required less of an investment of time and labor than did hewing a bench tomb.

[*See also* Burial Sites; Burial Techniques; Catacombs; *and* Grave Goods. *In addition, most of the sites mentioned are the subject of independent entries.*]

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ELIZABETH BLOCH-SMITH

ÇAYÖNÜ, type-site of a Neolithic culture in southeastern Turkey (38°16′ N, 39°43′ E), with a long and uninterrupted sequence from 8250 to 5000 BCE (in uncalibrated years), located along the foothills of the East Taurus range, in the plain of Ergani, 60 km (37 mi.) north of the district center of Diyarbakır. The site is a low, flat mound (300 × 150 m) along a small tributary of the Tigris River. Evidently, the paleotopography of the terrain was significantly different in antiquity. A second stream, forming a brook or a pond, encircled the site on the north, and the settlement developed on two natural hills, separated by a shallow depression. Çayönü was recovered in 1963 during an extensive surface survey of the region. It was excavated for sixteen field seasons from 1964 to 1991, within the framework of the Joint Prehistoric Project, initially founded by the Prehistory Department of the University of Istanbul and the Oriental Institute of the University of Chicago, and later joined by Karlsruhe and Rome Universities. The project was run initially by Halet Çambel and Robert J. Braidwood (1963–1985) and later by Mehmet Özdoğan.

Culturally, earlier parts of the Çayönü sequence represent the era of Incipient Food Producing, more commonly known as the Pre-Pottery Neolithic A (PPNA), which in time gradually develops into Effective Food Producing (PPNB) and into Developed Village Communities (Early Pottery Neolithic). This represents almost the entire range of the transition from a food-collecting to a food-producing way of life and to the formation of a village economy. With an exposure exceeding 7,000 sq m, Çayönü is the most extensively excavated Neolithic site in the Near East. The well-preserved and stratified architectural remains evince every stage in the development of village architecture, from simple, round huts in wattle and daub, to very complex rectangular structures in mud brick. The site is also unique in revealing some remarkable aspects of this transitional period: strict rules in the plans and measurements of buildings; preplanned functional and status areas; sophisticated building techniques, such as "terrazzo" flooring (see below); and monumental buildings with special functions, all of which are indicative of a rigid but complex social system. Also significant at Çayönü is the earliest known practice of metallurgy, mainly native copper and malachite.

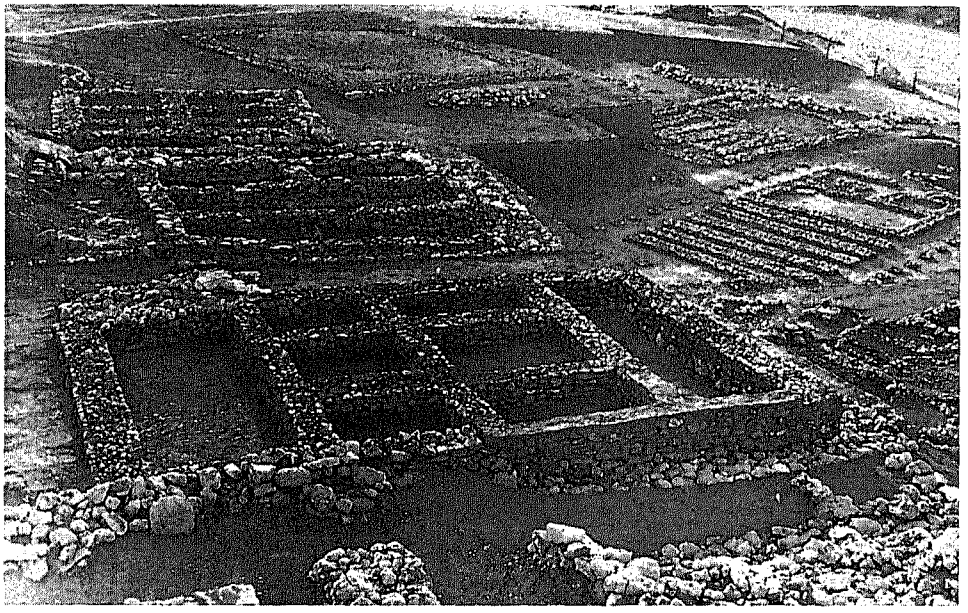
Archaeological Sequences. The Çayönü sequence is divided into three main phases: the Pre-Pottery Neolithic (PPN), or Main Çayönü Phase (I); the Pottery Neolithic (II); and later occupations of minor importance, ranging from Late Chalcolithic to medieval (III). During the later part of the Early Bronze Age, the settlement shifts to the other side of the river, and the site was used as a burial ground.

Phase I. Çayönü phase I is subdivided into six subphases. Each subphase is named after its prevailing building type.

Round building subphase. The earliest structures at Çayönü are radiocarbon dated to 10,230 BP and are round or oval huts, of wattle and daub construction, with semisubterranean floors. In the course of this long-lasting period, covering at least a thousand years, there is a gradual development in construction techniques to structures with stone-lined foundations.

Grill plan subphase. As a further development of round huts with stone foundations, living floors were raised on multiple rows of stones laid parallel to each other, almost resembling a large grill (see figure 1). Twigs and branches were laid over the grill-like foundations and then coated with a thick layer composed of a mixture of lime and clay. This insulation from groundwater increased the amount of living area available. The grill technique was a revolutionary architectural concept in the transition from round to rectangular plans.

The grill plan at Çayönü developed gradually. The standard model had a tripartite layout, a large living area raised on low-lying grill foundations, a closed inner court, and a small binlike storage area. Wattle and daub were still the main materials used to construct the buildings' vaulted upper structures. The grill plan subphase constitutes numerous building layers, each layer manifesting further elaboration of the building plan. However, at any given layer, all buildings are arranged in a checkerboard pattern, were all



ÇAYÖNÜ. Figure 1. *Cell and grill buildings.* Excavated foundations of grill buildings appear at the upper right, cell buildings to the left. (Courtesy M. Özdoğan)

alike in size, plan, and orientation, suggesting a communal construction effort according to a preset plan.

Channeled building subphase. Gradually, the openings between the grill-like foundations became narrower, merging into subfloor drainage channels. Mud, as a prototype of mud brick, was used on walls for the first time. There was also a substantial change in settlement pattern: the houses became more sparsely scattered and the area of the settlement expanded considerably.

Cobble-paved building subphase. Additional innovation in building techniques included high stone walls, small buttresses, and possibly a flat roof. Drainage channels disappeared and insulation from groundwater was ensured by a cobble fill.

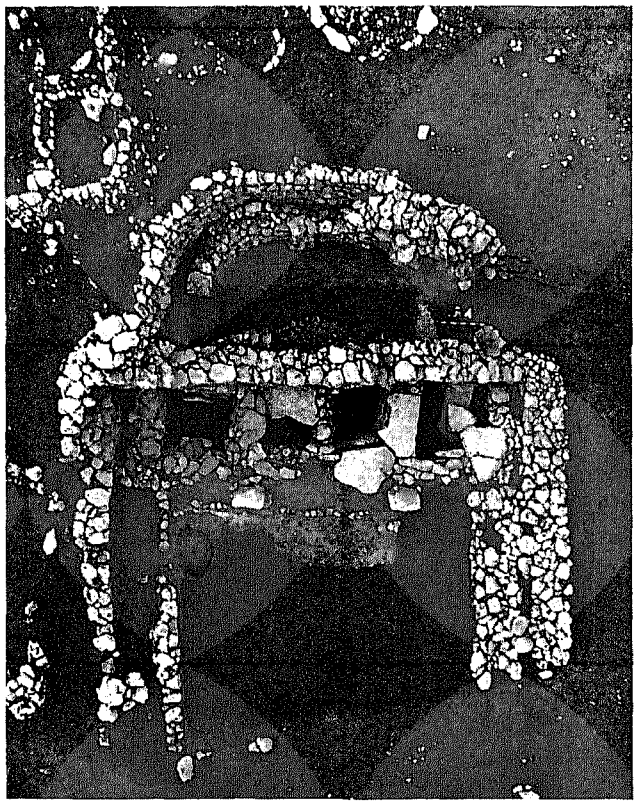
Cell building subphase. Cell-like small compartments with living floors raised on stone basements were used for burials and storage (see figure 1). The buildings are considerably larger than in the previous phase, with high standing-stone and mud-brick walls. Houses were arranged around large courtyards in which all domestic and industrial activity took place. There was considerable diversity in plan, size, and in the artifactual yield of these buildings, implying social and functional differentiation.

Large-room building subphase. The last subphase of the PPN settlement is poorly documented. The buildings consisted of one or two large rooms with claylike floors and the settlement itself became smaller.

Phase II. Pottery appears suddenly at Çayönü (c. 8,020 BP), indicating that the concept was borrowed from elsewhere. There are no indications of a break in the sequence, as most elements in the material assemblage continue. The settlement, then restricted to the eastern part of the old PPN mound, seems to have developed as a conglomerate of houses and narrow passages with numerous annexes and alterations. Three distinct horizons are apparent within this phase. Settlement seems to cease completely during the Halafian period, just before 7,000 BP.

Communal Buildings and Areas. Only the Large-room Building subphase and the Pottery Neolithic occupation lacked communal buildings. The earliest one, a large round structure, was followed by a large rectangular building, named the Flagstone Building because of the large polished slabs used for its flooring. Megalithic stones were set upright into its floor. The next public building is the so-called Skull Building, named for the recovery of seventy human skulls during the first exposure of the building (see figure 2). The building was rebuilt at least six times, with considerable changes in plan—but it held numerous human skeletons or skeletal fragments in each phase. Bones of 295 individuals were collected from the building, some placed carefully and others tossed in. The last of the public buildings is the Terrazzo Building, a large single room with inner buttresses; its floor is of pinkish limestone, elegantly burnished and set into a thick lime mortar.

During the channeled building subphase a large part of the eastern area of the settlement was reserved as an open area for special functions that are not yet understood. Two rows of huge standing stones were set into its meticulously leveled and prepared clayey floor, which was was kept very clean. During the cells subphase, the most important build-



ÇAYÖNÜ. Figure 2. *"Skull building."* (Courtesy M. Özdoğan)

ings in the settlement encircled this open area, which had been empty of buildings. Later, during the large-room building subphase, it was turned into a refuse area.

Subsistence and Social Structure. When settlement began on Çayönü it was a sedentary village hosting a considerable population. Up to the end of the cell subphase, however, subsistence depended mainly on hunting wild animals and gathering wild fruit—though cultivation of some cereals, including wheat and lentils, had been known by the latter part of the round-house subphase. By the end of the cell subphase, herds of domestic sheep and goat were suddenly introduced to the site from elsewhere, resulting not only in a sharp decline in hunting activities, but also in the collapse of the traditional social structure. During the hunting stage the site must have been tightly controlled by a socially stratified society. Status objects, as well as public buildings and the appearance of an organized settlement, disappear almost completely by the time of the large-room building subphase.

Technology, Assemblages, and Trade. The artifactual assemblage includes bone and ground, polished, or chipped stone (mainly basalt, flint, and obsidian) objects. The latter were traded from a distance of at least 150 km (93 mi.). Long obsidian blades with retouched steep sides, also known as the Çayönü blade, are the most significant implements in this assemblage. The presence of seashells also indicates long-distance trade. Beads, numbering in the thousands, must have been a specialized craft at Çayönü. Native copper and malachite, available in the vicinity of the site, were used in the grill building subphase, but there was an upsurge in metallurgy in the period of the channeled buildings. Metal was shaped by heating and used in making either simple tools or beads and inlays. Pyrotechnology included burning lime, which was used both in producing primitive vessels and constructing the terrazzo floor. The earliest known "lime vessels" are from Çayönü. Among specialized crafts, weaving is significantly documented at Çayönü by the recovery of a cloth impression made of domestic linen, being the earliest known cloth.

Dating. Çayönü is dated by a series of radioactive dates. As noted above, the earliest dates for the round house subphase are around 10,230 BP and 8,020 BP for the pottery phase. It is clear that the "Çayönü culture" is a part of the "Near Eastern" Neolithic tradition, developing along the same lines, and sharing numerous cultural innovations. However, in contrast to the other Near Eastern cultures of the southern semiarid zones, an almost completely different model of subsistence seems to have developed in the environmentally rich areas of the East Taurus range. Recent excavations of sites such as Hallan Çemi, 150 km east of Çayönü, has clearly indicated the autochthonous character, as well as the antiquity of this culture, going as early as the Proto-Neolithic Period. The earliest subphase of Çayönü, being a direct descendant of Hallan Çemi culture, also shares typical elements of Near Eastern PPNA horizon, such as the round buildings, the so called "Nemrik points," and so forth. Of the other excavated Neolithic sites in the region, Nevalı Çori revealed architectural layers parallel with the "channeled building" and "cobble-paved building" subphases of Çayönü, while Cafer Höyük layers parallel the "cell" subphase and those at Gritille the terminal part of the pre-pottery sequence.

[*See also* Çatal Höyük; Hacılar; *and* Nevalı Çori.]

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CENTRAL MOAB. The region immediately east of the Dead Sea, known as Moab in ancient times, consists of a narrow strip of cultivable land between the rugged Dead Sea escarpment and the Syrian (or North Arabian) desert. This is rolling plateau for the most part, but it is interrupted by the deep Wadi el-Mujib canyon that separates northern Moab from central Moab, and the less steep but equally formidable Wadi el-Hasa canyon that bounds Moab on the south. Northern Moab is much better known from epigraphic sources, the Hebrew Bible, and archaeological exploration, but presumably central Moab, the region between the Mujib and the Hasa, would have been the heartland of ancient Moabite settlement. Later, central Moab was part of the Nabatean realm, until 106 CE, when Trajan joined Nabatea with Perea and the Decapolis to form the Roman province of Arabia Petraea. Written sources from the Roman period indicate that Rabbathmoba (present-day er-Rabbah) and Charachmoba (present-day Kerak) were important cities at the time. Because central Moab is situated between Mecca and Damascus, it would have been central to the Umayyad caliphate. The Crusaders built a major castle at Kerak to protect the southeastern flank of the Latin kingdom of Jerusalem. The Mamluks expanded the castle and Kerak flourished during the thirteenth and early fourteenth centuries CE, when it served as a favored city of political exiles from the Mamluk court in Cairo. Central Moab experienced increasing urban decline thereafter, especially during the Ottoman period, when it was dominated by fiercely independent bedouin tribes. All towns and villages had been abandoned by the beginning of the nineteenth century CE, except for four straggling settlements (Kerak, ʿIraq, Kathrabba, and Khanzira), and outsiders entered the region at risk. [*See* Kerak; ʿIraq el-Amir.]

This situation continued throughout the nineteenth century; the results were that while other parts of Palestine were being mapped and explored for archaeological remains, central Moab was largely bypassed. Among the travelers who did enter the region and noted in their travel accounts its many abandoned ruins were Ulrich J. Seetzen (1805), Johann Ludwig Burckhardt (1812), Charles L. Irby and James Mangles (1818), Félicien de Saulcy (1851), C. Mauss and Henri Sauvaire (1866), Henry Baker Tristram (1872), Charles M. Doughty (1875), and Grey Hill (1890, 1895). As the century drew to a close, however, even the topography of central Moab remained poorly understood, and none of its ruins had been examined in any detail. Then, between 1894 and 1910, the Ottoman government reasserted its authority in southern Transjordan, rendering central Moab and its archaeological ruins more accessible for investigation. During that brief period Rudolf-Ernst Brünnow and Alfred von Domaszewski conducted a systematic study of the Roman road system and associated fortifications, while Alois Musil explored the geography of southern Transjordan and prepared a 1:300,000 scale map that included the names and approximate locations of more than one hundred ruins between the Mujib and the Hasa.

Thereafter, except for a brief excursion by William Foxwell Albright in 1924, the archaeological remains of central Moab received no further attention of consequence until 1930, when Reginald Head discovered the Baluʿ stela [*See* Baluʿ.] This discovery prompted John Winter Crowfoot and Albright to mount a two-week expedition in 1933, at which time Crowfoot made soundings at Khirbet el-Baluʿ and Albright conducted soundings at Ader. That same year Nelson Glueck began his important survey of Transjordan. Paul W. Lapp excavated Bab edh-Dhraʿ in 1965–1967 and Fawzi Zayadine cleared a first-century BCE Nabatean tomb near Dhat Ras in 1968. [*See* Bab edh-Dhraʿ.] Otherwise, Glueck's survey report, published in the *Annual of the American Schools of Oriental Research* (1934, 1935, 1939), stood as the final word on the archaeology of central Moab until the late 1970s.

Specifically, in 1976 (and returning in 1982), Emilio Olávarri (1983) conducted soundings at Medeinet el-Muʿarrajeh (i.e., Khirbet el-Medeineh north overlooking Wadi Lejjun), which proved to be an Early Iron Age fortress. [*See* Medeineh, Khirbet el-.] That same year S. Thomas Parker (1987) began a study of the Roman *limes Arabicus* in Transjordan; the project has involved, beginning in 1980, excavations at the Late Roman legionary fortress of Lejjun and a survey (led by Frank Koucky) of archaeological features in the immediate vicinity. [*See* Limes Arabicus.] Meanwhile, from 1978 to 1983, J. Maxwell Miller (1991) conducted a general survey of the whole plateau between the Mujib and the Hasa, complemented by less extensive surveys along the wadis leading from the plateau to the Dead Sea. Siegfried Mittmann and Linda K. Jacobs explored Wadi ʿIsal in 1979 and 1981, respectively (Mittmann, 1982; Jacobs, 1983). Udo Worschech examined sites in Wadi Ibn Ḥammad and the northwest quadrant of the plateau in 1983–1985. Worschech also (1986) began new excavations at Khirbet el-Baluʿ in 1985 that produced primarily Iron Age remains. Robin M. Brown (1989) conducted a sounding in the Palace Reception Hall in the Kerak citadel in 1987 and distinguished Mamluk and Ottoman phases. Jeremy Johns and Alison M. McQuitty (1989) examined several medieval Islamic sites on the plateau in 1986 and have excavated Khirbet Faris [*See* Faris, Khirbet.]

Although attention from archaeologists to central Moab increased, its archaeological features remain poorly known. Much of what is known is derived from surface surveys conducted with benefit of very little stratified pottery from the

region itself to provide control. It does seem clear, however, that central Moab was occupied to some degree throughout historical times. Moreover, to the extent that the relative density of sites with surface pottery from a given period corresponds to the density of sedentary population during that period (which may not be the case), some trends are noticeable. Central Moab seems to have had significant sedentary occupation during the Early Bronze Age, for example, with the strongest showing during EB II–III and slightly less during EB IV. Fewer sites present surface pottery for the Middle Bronze Age, a trend that seems to have continued well into the Late Bronze Age. At that time, an upward trend in sedentary population seems to have begun, probably near the end of the Late Bronze Age, that continued until Iron II. The transition from Iron II to the Hellenistic/Nabatean period is unclear, but the latter period is strongly represented, especially with Nabatean pottery, throughout central Moab. Numerous sites with Roman and Byzantine pottery indicate a continuation of relatively dense sedentary population until early Islamic times. Relatively few sites produced surface pottery clearly attributable to the early Islamic periods, in contrast to the Ayyubid/Mamluk, which is well represented.

Two intriguing basalt stelae have been discovered in central Moab, the Balu' stela mentioned above and the so-called Shihan stela, which actually was discovered at Rujm el-'Abd/Faqu' by de Saulcy in 1851. The Balu' stela bears an illegible inscription and depicts three figures, apparently a local ruler flanked by a god and a goddess. The script and language are uncertain, but the scene reflects Egyptian influence suggestive of the New Kingdom period—for example, the central figure wears a headdress of the sort usually worn by Shasu in Egyptian scenes, while the god wears the double crown of upper and lower Egypt and the goddess wears a crown similar to that of Osiris. The Shihan stela presents in bas-relief a man in helmet and short skirt, holding a spear, with an animal, possibly a lion, at his left. Stylistic similarities with monumental art of the "Neo-Hittite" cities in northern Syria suggest an Iron Age date. An inscription fragment, reportedly discovered at Kerak, exhibits parts of four lines in Canaanite (Moabite) script similar to that of the famous Mesha inscription discovered at Dibon. In one of the broken lines it is possible to read "*K]mšyt* king of Moab." [*See* Dibon; Moabite Stone.] Finally, a large proto-Ionic pilaster capital was found at Medeibi that resembles those found at several Iron Age sites west of the Jordan River (Hazor, Jerusalem, Megiddo, Ramat Raḥel).

[*See also* Moab.]

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CERAMIC ETHNOARCHAEOLOGY.

Archaeologists who study living peoples and their pottery for the purpose of addressing problems encountered with ancient pottery engage in ceramic ethnoarchaeology. In contrast to the social and political topics ethnographers investigate

among extant communities, ethnoarchaeologists examine material culture to document sources of variation in contemporary artifacts. This enables them to make inferences about the diversity detected in excavated artifacts. One goal is to understand better the human behavior responsible for the artifacts. All material culture is suitable for examination. Ceramic ethnoarchaeology among potters practicing traditional technologies (i.e., without the use of electrical or other modern conveniences) and whose finished products (cooking pots, jugs, jars, lamps) are for use by local clientele rather than tourists, is especially relevant given the abundance of pottery archaeologists find in excavations.

In the ancient Near East and Mediterranean basin, the material used most commonly to produce containers of all sizes and shapes was clay. Pottery was inexpensive and highly breakable. Because fired clay becomes rock-hard, sherds of broken pots, which litter ancient sites, are virtually indestructible.

Ancient pottery is important to archaeologists both because of its high rate of survival and the rapidity with which changes in shape and decoration occur. It has been used to establish relative chronologies; to establish the function of buildings; to trace the social and economic implications of the repertoire of forms; and to make inferences about cultic practices. Ceramic ethnoarchaeology enhances these studies because it can explain sources of diversity in form and finish that may have little to do with chronology but, rather, reflect cultural preference: archaeologists want to know whether two jugs with similar but distinct painted patterns reflect different, yet coexisting, sources or two consecutive time periods.

The goal of ethnoarchaeology is not only to observe and record potters and their society, but to do so with the intention of addressing the specific questions ancient ceramics pose. Ethnoarchaeologists initially state the questions under investigation and then select an appropriate community for a long-term field project. During the project, wares of a representative sample of potters are recorded using quantitative means whenever possible. A sample ideally includes people of different generations, gender, and families and those born in the community as well as newcomers. It is essential to learn if and how the manufacturing technique, division of labor, family association, and potter's age and gender impact on the finished product. Interviews with potters and other members of the community are part of the field research. Rather than rely on verbal accounts alone, ethnoarchaeologists systematically observe whatever occurs relating to pottery. On the next level, the ethnoarchaeologist might conduct a similar study at a nearby community, a contemporaneous production location, to compare wares and dynamics of production.

Without long-term field work and a representative sample, the result may be a distorted and incomplete picture. Representative samples ideally include as many variables as possible—a difficult task because the number of potters is decreasing steadily in many parts of the world. Unless an appropriate community is selected, the results may not be suitable for addressing the issues archaeological materials raise. An industry of wheel-thrown tourist wares is not suitable for comparisons with ancient handmade wares produced and used by household potters and sold or bartered with a neighboring community.

Ethnoarchaeologists examine topics related to clay procurement and processing; manufacturing techniques; surface treatments; firing techniques; breakage rates; sales and distribution; seasonality; organization of the industry; discard and reuse of newly made and used wares; the artifacts, layout, and remains (material correlates) associated with pottery production locations; and the sources of variation in all aspects of the industry. Attention is focused on issues such as vessel longevity, use, and reuse; the relationship between wealth and the number of pots in individual homes; the number of people and pots in a home; the presence and use of nonceramic containers; the potters' social status; and local names and pottery classification systems. Ethnoarchaeologists can test the validity of terms (such as *full-time* or *part-time craft specialists*) archaeologists use in describing ancient potters. The considerable ambiguity in these terms, in light of the data from ethnoarchaeological studies, suggests that the terms are too rigid and divisive.

One outcome of recent research suggests that at any given time in antiquity the ceramics industry was never a monolithic, static, homogeneous enterprise characterized by potters working at a single level of production; it is more accurately represented as different traditions coexisting. On Cyprus today, for example, potters in a secluded rural village continue to make goat-milking pots and jars to store cheese and water; at the same time these old-fashioned vessels have disappeared from the repertoire of rural village potters who live and work close to an urban center, yet the two villages coexist (London, 1989, p. 227). In Jordan, village women continue to build pots by hand from locally available clays, while male potters nearby throw pots made of imported clays and surface treatments (London and Sinclair, 1992). Diversity characterizes the industry rather than uniformity.

Broken pottery was recycled throughout antiquity: sherds were suitable surfaces for writing transactions and notes with ink. [*See* Ostracon.] Ethnoarchaeological research on Cyprus (London, 1989) demonstrates that sherds are also suitable building materials; animal feeders; protection for seedlings; carriers (of charcoal from the kitchen to the kiln); wind protection for candles in cemeteries; and for separating pots from kiln walls during firing.

Potters in traditional societies are able to identify the work of individual potters by considering a vessel's overall pro-

portions, its surface treatment, and its finish. These same criteria can help archaeologists identify the work of individual potters in antiquity in order to address the issues that concern how society and the industry were organized.

[*See also* Ethnoarchaeology.]

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CERAMICS. [*This entry surveys the history of ceramic artifacts with reference to the technologies used to create them, the uses to which they were put, and their overall role in the cultures and societies in which they figure. It comprises seven articles:*

Typology and Technology
Mesopotamian Ceramics of the Neolithic through Neo-Babylonian Periods
Syro-Palestinian Ceramics of the Neolithic, Bronze, and Iron Ages
Ceramics of the Persian Period
Ceramics of the Hellenistic and Roman Periods
Ceramics of the Byzantine Period
Ceramics of the Islamic Period

The first serves as an overview, providing a discussion of the importance of typology for dating purposes and the development of specific typologies. The remaining articles treat the artifacts of specific periods and regions.]

Typology and Technology

Archaeologists excavating ancient sites find thousands of artifacts that must be described, defined, and interpreted in order to reconstruct the societies responsible for them. Ceramic wares, or pottery, represent one of the most abundant finds throughout the ancient Near East and the eastern Mediterranean. Given the plastic nature of clay, the raw material of pottery, a range of basic shapes can be formed, and when the clay is fired it becomes virtually indestructible. To describe the pots and sherds (broken pieces of pottery) they find, archaeologists have created typologies, or classifications, that group pieces based on stylistic similarities. Today, new technological considerations (how and of what a pot was made) are contributing to the construction of those typologies. The first goal of a typological ordering is to generate types defined by specific attributes and then to discern the meaning or significance of the types. The concept of "type" refers to a group of artifacts that resemble each other and that can be differentiated from other groups. Distinguishing attributes include aspects of form: morphology, or shape, and size; style: surface treatment and decoration; and technology: a pot's materials and method of manufacture. Each typology addresses specific questions and serves a different, specific purpose.

Ceramic Typologies. Initially, ceramic typologies were devised to address chronology. Because ceramic wares are fragile, the rate of breakage is high; thus, there is a constant need to replace what breaks. As forms are replaced over time, the tendency is to change their shape and surface treatment. It is the periodic changes during replacement that make pottery a chronological marker: sequences can be discerned for the local culture or for the history of a region. Comparative chronological studies focus on the superficial modifications in vessel morphology and surface treatment (decoration)—the most obvious changes over time. Because shape and decoration can change relatively quickly, archaeologists can assign a relative date to each pottery style. Once the pottery is dated, archaeologists can date the deposit in which it is found. Based on ethnoarchaeological studies in Cyprus, the life span of portable jugs used for drinking water is no more than six months to two years before the walls become clogged with rock and mineral deposits (G. London, F. Egoumendiou, and V. Karageorghis in *Traditional Pottery in Cyprus,* Mainz, 1989, p. 33). In contrast, immobile water storejars could last for more than a century. As a consequence of the differences in their daily use, the former change more rapidly than the latter. However, finding similar pots at two different sites does not mean that the sites were either contemporaneous or similar. The pottery may have been curated or saved from one generation to the next, or types may have reached one site a decade or more later. Such relative ceramic chronologies are important, but they cannot address the complex issues of where, how, and by whom pottery was made. Answers to those questions have important implications for understanding how ancient societies and economies functioned.

The earliest typologies focused on style—on both form and finish (morphology and decoration)—rather than on manufacturing technology. Aspects related to form are body shape and function (bowl, jug, etc.) and the shape of the rim, base, handles, and other accessory elements, such as a

spout or a lid. Surface finish involves decoration and various treatments such as adding paint, slip, or clay appliqué; removing clay by incising and carving; texturing by scoring, stamping, impressing, and rouletting; rubbing, polishing, and burnishing with a tool; and treatments created by the firing process, such as mottling. While most stylistic attributes and changes are apparent to the eye, subtleties exist that are sometimes understood subjectively, with experience. In contrast, the technological aspects of manufacture require sophisticated laboratory techniques (mineralogical and chemical analysis, radiography) and an understanding of how pottery is made. A ceramic technologist investigating why a pot looks the way it does (its form and finish) considers its stylistic *and* technological features. The resulting analysis is therefore more objective than a reliance only on form and finish. For a typology to be useful for making comparisons, each type of pot must be accurately and concisely defined and described, based on objective criteria: the steps that led to its final form and surface finish.

Ceramic Technology. A technological study involves discovering the potter's choice of clay and nonplastic inclusions; manufacturing technique; surface treatment; and drying and firing. In creating a ceramic typology, the raw materials must be characterized—including the type, frequency, and condition of the nonplastic elements, rather than the clay particles (when fired, plastic clay particles shrink, while aplastic, or nonplastic, rock and mineral tempering materials remain virtually unchanged at low temperatures).

Reconstructing an ancient ceramic technology reveals how each stage of pot creation influences subsequent stages. Thus, the factors that combined to produce the final pot—as well as its range of potential variations—emerge. In particular, clay type influences each of the potter's successive decisions. The clay's texture determines manufacturing technique, surface treatment, drying, and firing. For example, certain clays are best suited for constructing pots using the coiling process. These are known as lean clays, and they contain relatively large quantities (more than 30 percent) of aplastic material (tempering material or inclusions) in the form of rocks, minerals, and organic materials. When a potter works with lean clay, the nature of the surface treatment has already been determined: any tool used to incise patterns into the surface will pull up and drag with it some of the aplastic material protruding from the surface, unless a slip layer is first applied. A slip is a thin coating of very watery clay (with or without the addition of a coloring agent) that covers either all or part of a pot's surface. A slip layer allows the potter greater decorating choices with a pot made of heavily tempered clay than would otherwise be feasible. Paint (slip to which a pigment has been added) is applied in a pattern rather than over an entire surface because paint does not adhere well to a surface from which inclusions protrude. Surfaces to be burnished similarly benefit from an initial application of a slip to coat and cover the inclusions and alleviate "drag" lines. For this reason, intentionally burnished pots are usually slipped. However, primary manufacturing can produce burnishing as well. When pots are made in the process known as turning, the potter first shapes a thick-walled vessel and allows it to dry slightly. When the potter judges the pot ready, it is returned to the turntable and thinned, or "turned down," to the desired thinness. This process will produce a burnish only if the clay has reached a particular stage of drying and if the pot is fired at a certain temperature. If the clay is too wet when it is turned, burnishing is less likely to occur. It is the clay that largely determines the two final stages of the work, drying and firing. Heavily tempered pots require shorter and less carefully controlled drying and firing. Certain aplastic inclusions, especially of the limestone group, do not tolerate a high temperature unless they have been finely ground before being added to the clay.

By assessing technological features, questions can be addressed about where certain pottery was made and who made it (whether it was local, regional, or arrived at a site via international trade), the continuity and breaks in ceramic traditions, and the organization of the ceramics industry. These issues and others are relevant to understanding ancient societies. Typologies based on style and technology not only address issues about relative chronology, but can also explain why and how some shapes changed through time—some quickly and others barely at all. Numerous revisions are necessary during the initial stages of creating a typology, which can be expanded at any time to include new information. It is, however, difficult to use typologies to address issues for which they were not initially designed. For example, by arranging pottery in terms of what is earlier or later based on shape and decoration, it can be difficult to identify other potential causes for differences in appearance. Pottery that looks different can be the work of two workshops operating at the same time, but in different communities. Differences in the shape of rims or bases, or other diagnostic parts might reflect two distinct pottery production locations rather than chronological differences. By classifying pottery with chronology as the prime consideration, one can overlook evidence of the organization of the pottery industry, or the signatures of individual potters who worked at the same time, but in different villages.

Once the functional pottery (bowls, jars, jugs, etc.) belonging to a single period at a site are collected, typologies can be designed to provide relative chronologies. Two questions are traditionally posed: how does the collection differ or coincide with the assemblages from the periods that precede and follow it; and how similar or different is the collection to contemporaneous material from nearby sites? The results are chronological/functional typologies. Such typologies allow archaeologists to establish relative dating schemes, which are critical for sites and deposits that lack

other internal dating evidence, such as inscriptional remains (names or references to kings) and organic material.

Development of Ceramic Typologies. The first ceramic typology was designed by William Flinders Petrie in 1890, based on pottery he had excavated from Tell el-Ḥesi in southern Israel. There, stream action had cut a vertical section into the tell, providing a roughly stratified chronological sequence at the site. By recognizing pottery similar to the wares he had excavated in Egypt, Petrie could accommodate the Ḥesi material into the system of sequence dating he had developed for Egyptian funerary ceramics and epigraphic data. Pottery at Tell el-Ḥesi provided a stratified sequence of both plain and decorated wares that enabled Petrie to draw attention to the chronological value of domestic undecorated pottery. Until this development, classical archaeologists had relied exclusively on decorated wares. Nevertheless, undecorated and coarser wares continued to receive far less attention than decorated wares in subsequent pottery studies and typologies. [*See* Ḥesi, Tell el-; *and the biography of Petrie.*]

As more sites were excavated and new pottery forms were discovered, an emphasis was placed on improving and completing Petrie's initial chronological typology. J. Garrow Duncan compiled the *Corpus of Dated Palestinian Pottery* (London, 1930) to provide a system for identifying well-known pottery types and to alleviate the repetitious publication of such pots in future reports. In later excavation reports, pottery was sometimes listed according to Duncan's *Corpus* identifications, but it soon became outdated. Its emphasis was on whole vessels (sherds belonged only if they bore a special surface treatment). However, increasing reliance on stratigraphic methods of excavation and recording the precise location of sherds and pots, as exemplified by the work at Samaria of George Reisner (see Reisner et al., 1924), resulted in an increased appreciation and use of sherds in the Near East and in the New World. Reisner later influenced his students at Harvard to study sherds. [*See the biography of Reisner.*]

Chronological typologies enabled archaeologists to compare and cross-date assemblages from different sites, especially in the early days of archaeological research. A cross-cultural study by Henri Frankfort (London, 1924) dealt with pottery from Mesopotamia to Egypt. However, it emphasized chronological questions, ignoring variation within and among local and regional wares. Local cultural uniformity (ceramic similarity) characterized the basis for research with few exceptions. Ceramic typologies continued to revise the functional/chronological typologies over the years. G. E. Wright's important study *The Pottery of Palestine from the Earliest Times to the End of the Early Bronze Age* (New Haven, 1937) dealt with chronological issues of Early Bronze Age material while noting ceramic analysis's potential to deal with other issues. An unusual typology, based on geometric-shape analysis, by Pinhas Delougaz (1952) for Mesopotamian pottery, and analyses of clays by other researchers, unfortunately has a minimal impact on how ancient pottery was studied and published. [*See the biographies of Frankfort and Wright.*]

In 1963 Ruth Amiran and her associates published *Ancient Pottery of the Holy Land,* first in Hebrew and then in an English translation (Jerusalem, 1970). In it, they collected examples of whole pots and some sherds typical of different regions in Israel from the Neolithic period to the Late Iron Age. Little was known then about the pottery of more recent periods, although publications since have helped to construct typologies for them: Ephraim Stern's *Material Culture of the Land of the Bible in the Persian Period, 532–332 B.C.* (Warminster, 1982); and Paul W. Lapp's *Palestinian Ceramic Chronology, 200 B.C.–A.D. 70.* (New Haven, 1961). Amiran's widely used typology was the guide for all subsequent studies, as local heterogeneity became recognized with the ever-increasing number of sites excavated. Studies of specific types of decorated pottery, from Cyprus to Mesopotamia, are too numerous to mention. Most, but not all, concentrate on stylistic features, with little or no reference to the wares' technological aspects.

Technological Studies. An exceptional study for its day is the Iron Age pottery from Tell Beit Mirsim excavated by William Foxwell Albright. James L. Kelso and J. Palin Thorley (1943) studied it, addressing various aspects of its manufacturing techniques. Their technological analysis was separate from the functional/chronological typology Albright devised for the assemblage. William F. Badè developed an approach for studying pottery that drove the methodology and techniques he used in his excavation at Tell en-Naṣbeh (*A Manual of Excavation in the Near East,* Berkeley, Calif., 1934). He advanced the idea of pottery's local and regional heterogeneity, rather than follow the established view of cultural homogeneity in ancient Israel. [*See* Beit Mirsim, Tell; Naṣbeh, Tell en-; *and the biographies of Albright and Badè.*]

With the first edition of Anna O. Shepard's *Ceramics for the Archaeologist* (Washington, D.C., 1956) a text to explain ceramic technology became available. It had considerable impact in New World archaeology but less elsewhere. Frederick R. Matson worked in the Near East with both ancient pots and with contemporary potters using traditional techniques. As the editor of Robert Ehrich's *Ceramics and Man* (Chicago, 1965), among many other publications, Matson focused on the technology available to the people responsible for making and using ceramic wares. Despite the number of studies that concentrate on nonchronological issues, most ceramic typologies continue to present catalog formats of pottery, used for chronological purposes, that are classified according to stylistic criteria alone.

An important exception accompanied the publication of the excavations at Tell Deir ʿAlla in Jordan. The archaeologist H. J. Franken and the potter Jan Kalsbeek (1969)

introduced an approach to ceramic analysis that avoids classification based on stylistic criteria. It considers pottery-making techniques to be critical to the presentation of the material. After examining the clays at Deir 'Alla from the perspectives of a potter and a geologist, Kalsbeek systematically described and defined the ancient pottery and manufacturing techniques in potters' terminology. The result is a typology based on form and function. It begins by explaining how each form was created. Thus, pots that may appear to be different can be understood to represent a single technique. Knowing how vessel bodies, rims, bases, and handles are made enables an understanding of the ancient potters decisions and the variations in excavated pottery: if the rim is the last part of the body to be made, its length may simply be the result of how much clay remained by the time the potter reached the rim. Variations in rim forms, thus, do not always need to represent chronological differences, and this applies to virtually all of a pot's features, including surface treatment and decoration. [*See* Deir 'Alla, Tell.]

In addition, Franken and Kalsbeek redefined the terms archaeologists commonly use to describe pottery: wheel thrown, well levigated, and self-slip, to name a few. The vast majority of ancient wares published as "wheel made" were made on a turntable capable of movement but lacking momentum—consequently, the pots technically were not wheel thrown. Imprecise use of terminology in archaeological reports generally characterizes descriptions of the firing process, as well. Archaeologists tend to describe wares as poor or well fired depending on clay color: if the entire piece has fired one color, the pot is well fired, but if more than one color is present in the cross section the ware is said to be poorly fired. Nevertheless, the end result was a usable pot, made and fired by a potter who may have been conscientious about not wasting precious fuel. Potters could have learned from experience that burnished wares fired too high lost their sheen. As a result, many burnished vessels are not fired red throughout—of little significance to a pot's use-life—but have a darkened core visible only in the profile of a sherd.

The goal is to create a more objective typology based on style and technology, which are inseparable. The ultimate objectives are to find the potter behind the pot, the people who used it, and the society in which they lived. One achievement of technological analyses, which has been demonstrated repeatedly in recent ethnoarchaeological studies of traditional potters, is that more than one tradition and technology can and will coexist; they are not always replaced by a new technique. This discovery has considerable implications for every chronological typology.

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GLORIA ANNE LONDON

Mesopotamian Ceramics of the Neolithic through Neo-Babylonian Periods

A group of crude, low-fired clay containers found at the Syrian site of Mureybet and dating to about 8000 BCE is the earliest known in the Near East. [*See* Mureybet.] During the latter half of the eighth millennium, the inhabitants of Ganj Dareh in west-central Iran also began making vessels of fired clay, but another half-millennium would pass before pottery came into more general use across the Near East.

Proto-Hassuna through Halaf Periods. In lowland northern Mesopotamia, the first ceramics were produced early in the seventh millennium. They represent the earliest phase of the Hassuna sequence, known as the proto-Hassuna. Like the type-site of Hassuna, located near the Tigris River south of Mosul, sites with proto-Hassuna and/or Hassuna levels have, for the most part, been found within the dry-farming region of northern Iraq. The best-known proto-Hassuna site, Umm Dabaghiyeh, was located well beyond the southern edge of the rainfall zone, however. [*See* Hassuna; Tigris.]

The characteristic proto-Hassuna pottery, consisting of

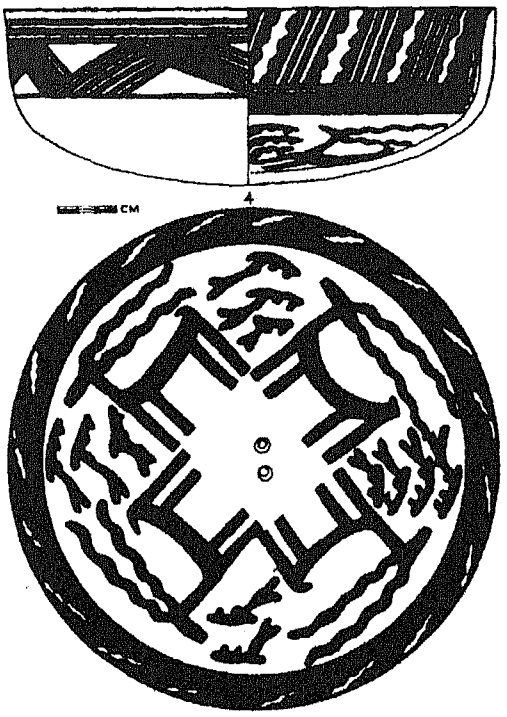
low-fired vessels formed by hand from heavily vegetable-tempered clay, belongs to what is known as the Coarse group. Jars in this group typically had a low carination separating a convex upper body profile from a lower body that frequently had a concave profile. Small lumps of clay, sometimes shaped to represent animal heads or human faces, were often added to a vessel's surface. Among the most elaborate of these applied designs were whole animals (onagers) and the upper bodies of women. Simple painted designs—dots, circles, lines, and squiggles—appeared in early levels at Umm Dabaghiyeh.

Pottery from the small site of Ginnig in northwestern Iraq may represent the earliest stage in the evolution of Mesopotamian ceramics because typologically and technologically it is the simplest assemblage of Coarse ceramics. Confirmation of this, however, must await further excavation (Campbell and Baird, 1990). Sherds of a thin, well-fired shell- or sand-tempered ware with a burnished red or gray slip have been found alongside typical proto-Hassuna ceramics. This pottery, which represents a separate, more advanced ceramic tradition, may have been imported from Syrian and Anatolian sites to the west.

The pottery of the Standard Hassuna group, the principal assemblage for the Hassuna period proper, represents a technological advance over the Coarse ceramics of the proto-Hassuna. Domed, two-chambered kilns, examples of which have been excavated in Hassuna levels at Yarim Tepe I, permitted higher firing temperatures, which produced less porous, more durable vessels (Merpert and Munchaev, 1973). The use of such relatively sophisticated kilns indicates that pottery making was becoming a specialized craft at a very early date. The Standard Hassuna assemblage has been divided into incised, painted, and painted-and-incised groups. The most common was the incised group, with vessels typically coated with a thick, light-colored slip and incised with simple geometric designs like cross-hatching, chevrons, and sprigs.

Archaic Painted Ware, a separate pottery group, characterized by highly burnished surfaces and glossy red-painted decoration, was first produced in later proto-Hassuna levels and continued into the Hassuna, thus linking the ceramic assemblages for the two periods. The distinctive "husking tray," an oval basin with a corrugated bottom, chronologically overlapped the proto-Hassuna and Hassuna as well.

Painted Samarra Ware appeared in northern Mesopotamia toward the end of the seventh millennium. Although it has been found together with Standard Hassuna pottery on sites in the Hassuna heartland, the Samarra, with its geometric and naturalistic designs in fugitive brown or gray paint, stemmed from a ceramic tradition that originated in the region to the south and southeast, at sites like Samarra, Tell es-Sawwan, and Chogha Mami. [*See* Samarra, *article on* Chalcolithic Period.] Characteristic of Samarra designs were horizontal bands filled with a variety of geometric patterns, some of which may have been taken from textiles. [*See* Textiles, *article on* Textiles of the Neolithic through Iron Ages.] Among other typical motifs is the centrifugal arrangement of horned animals around the bottom of large, shallow bowls.



CERAMICS: Mesopotamian. *Painted Samarra bowl from Tell Hassuna.* (After S. Lloyd and F. Safar, "Tell Hassuna: Excavations by the Iraq Government Directorate General of Antiquities in 1943 and 1944, with Prefatory Remarks by Robert J. Braidwood," *Journal of Near Eastern Studies* 4 [1945]: fig. 1)

The latest Samarra pottery from Chogha Mami showed technological improvements both in terms of its firing and in the quality of its paint. However, it was still similar to the classic Samarra in shape and decoration, although naturalistic designs had largely disappeared. Dubbed Chogha Mami Transitional, this last stage in the evolution of the Samarra had close affinities with pottery from both Chogha Sefid in Iranian Khuzistan and Tell el-'Oueili in southern Iraq. [*See* 'Oueili, Tell el-.]

The Halaf culture, named for the site in northeastern Syria where its distinctive pottery was first discovered, succeeded the Hassuna in the northern rainfall zone. [*See* Halaf, Tell.] It has frequently been interpreted as intrusive, but work in northern Mesopotamia and Syria suggests that it may have developed indigenously out of local cultures, including the Hassuna, during the early part of the sixth millennium (Campbell, 1992). The lustrous painted pottery of the Halaf period represents a high point in the history of Mesopotamian pottery in terms of both technical and aes-

thetic achievement. As the potters achieved mastery over their medium of expression, their geometric designs became increasingly elaborate. Animals occasionally appear on early Halaf vessels, while stylized bucrania are a common element in later designs. The surpassing skill of the Halaf potters is best represented by a group of intricately decorated polychrome plates from the latest Halaf level at Tell Arpachiyah, a site near Mosul. This was clearly a luxury ware produced for trade and export by highly skilled artisans. Neutron activation analysis of potsherds has identified major regional centers of production at Arpachiyah and at Chaghar Bazar in northeastern Syria. These centers dominated the local pottery trade and apparently exported ceramics to locations as far as 200 km (124 mi.) away (Davidson and McKerrell, 1976, 1980).

In the latter part of the sixth millennium, locally made pottery bearing designs characteristic of the Ubaid 3 culture of southern Mesopotamia began to appear alongside the Halaf in northern Mesopotamia. After a transitional period during which ceramics of both types were produced, the Halaf was finally completely supplanted by the Ubaid.

Ubaid. The Ubaid culture, which has been traced back as far as the early sixth millennium, takes its name from the small site near Ur where its distinctive ceramics (belonging to the phases now called Ubaid 3 and 4) were originally recognized. [*See* Ubaid.] Ubaid pottery was characterized generally by geometric decoration in dark paint (black, brown, red) on a light-colored surface. Changes over time in the designs on the pottery have been used to divide the period variously into five or six phases.

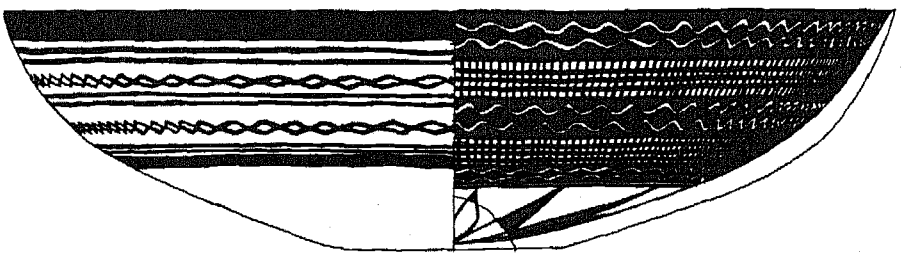
Tell el-'Oueili, near the ancient city of Larsa in southern Iraq, has yielded the earliest known phase of the Ubaid sequence, sometimes referred to as the 'Oueili phase of the Ubaid. More frequently, however, it is called Ubaid 0, because the pottery assemblage found at 'Oueili was both earlier than and developmentally related to the Ubaid 1. Until the mid-1980s, Ubaid 1 had been believed to be the earliest pottery in southern Mesopotamia. The lowest levels at 'Oueili have not yet been reached, and the presence of Neolithic-looking sherds out of context in higher levels make it almost certain that still-earlier phases will have to be added to the southern Mesopotamian ceramic sequence (Huot, 1992).

Ubaid 0 vessels were decorated with simple geometric designs—zigzags, crosses, and parallel vertical lines—in a dull, powdery black paint. Sherds belonging to this phase have thus far been identified at only a few sites in a relatively small area in southern Mesopotamia. However, affinities with ceramics from Chogha Mami east of Baghdad and Chogha Sefid in Khuzistan (see above) indicate that the geographic range of Ubaid 0 ceramics must have been significantly larger.

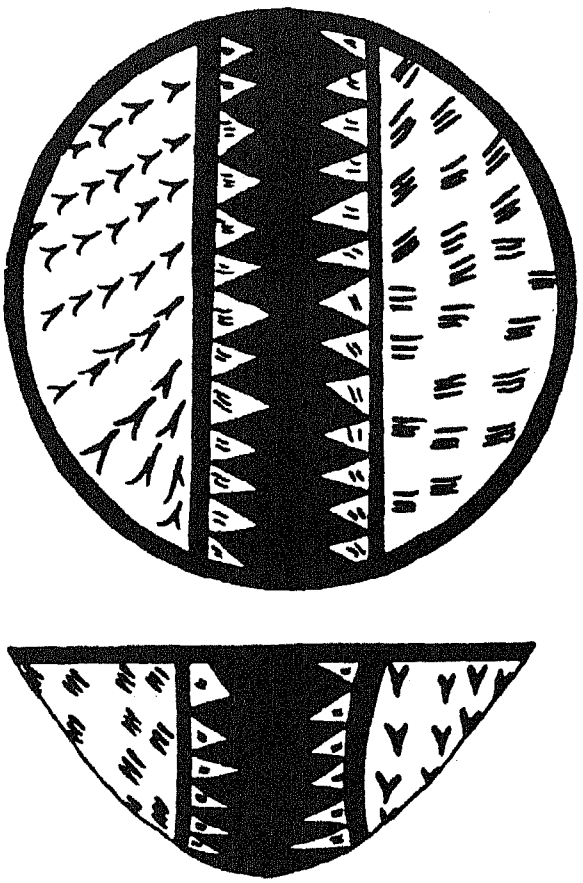
Ubaid 1 (Eridu phase) pottery was first identified in the lowest levels at the site of Eridu, where archaeologists were able to excavate a stratigraphic sequence containing all the post-Ubaid 0 phases. [*See* Eridu.] Ubaid 1 decoration included elaborate geometric designs (particularly on the interiors of open forms) delicately rendered with a shiny, strongly adhering dark-brown paint. By this phase, Ubaid material culture had definitely spread across southern Mesopotamia and into the western foothills of the southern Zagros Mountains.

Ubaid 2 (Hajji Mohammed phase) ceramics were discovered at Hajji Mohammed, a small site near ancient Uruk. The site had been completely buried by several meters of alluvial deposits but had been cut through by an arm of the Euphrates River, so that it was visible in the riverbank only when the water was low. [*See* Euphrates.] Because of heavy alluviation, only a fraction of the earliest sites in southern Mesopotamia have been located. In Ubaid 2 there was a marked change in pottery decoration. In contrast to the delicate designs of Ubaid 1, surfaces were typically almost completely covered by purplish-black paint, creating a reserve pattern of numerous small, pale areas. Ubaid 2 vessels manufactured in southern Mesopotamia have been found along the eastern coast of the Arabian Peninsula, perhaps indicating the activities of Ubaid traders or fishermen.

In the latter phases of the period (Ubaid 3–4, Terminal Ubaid) the Ubaid cultural tradition extended across both southern and northern Mesopotamia and into northern Syria. Though they display some regional differences, northern and southern ceramics were closely related during



CERAMICS: Mesopotamian. *Polychrome Halaf plate from Arpachiyah.* (After M. E. L. Mallowan and J. Cruikshank Rose, "Excavations at Tall Arpachiyah, 1933," *Iraq* 2 [1935]: pl. 13)



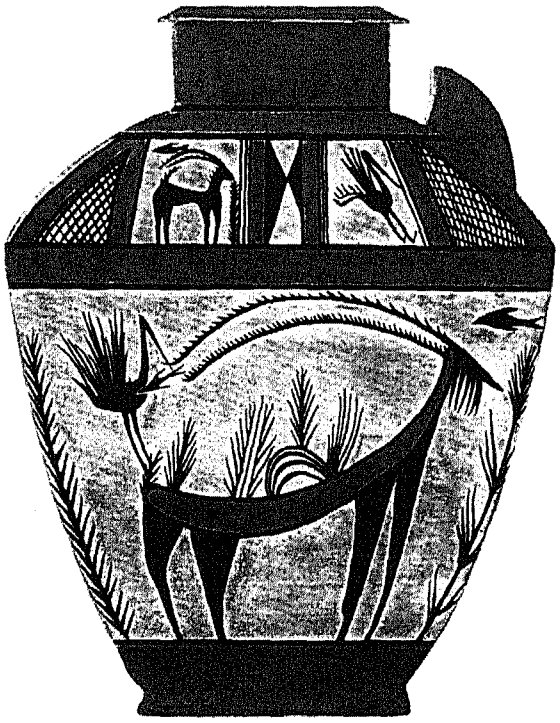
CERAMICS: Mesopotamian. *Late Ubaid bowl from Eridu.* (After F. Safar, M. A. Mustafa, and S. Lloyd, *Eridu*, Baghdad, 1981, fig. 84)

the later phases of the Ubaid. For example, a vessel of unusual shape, the so-called tortoise jar, was a part of both the southern and northern assemblages. The designs on the later Ubaid pottery—lines, scallops, chevrons, and triangles—became simpler and more horizontally oriented. The use of more intricate decoration was abandoned in the face of an evolving technology for the mass production of pottery. Instead of being painstakingly applied stroke by stroke, later Ubaid designs were frequently created simply by holding the brush to the surface of a vessel that was turned slowly in front of the potter. Toward the end of the Ubaid period in the south, the quality of the painted designs deteriorated markedly as vessel painting in general became increasingly rare. Ubaid pottery from Mesopotamia continued to be used at sites along the Arabian coast, though no other elements of Ubaid material culture have been found there. Affinities in ceramic decoration indicate that there were links with Khuzistan as well (Oates, 1983, 1987).

Uruk–Early Dynastic I. The similarity of material culture that characterized southern and northern Mesopotamia during the latter part of the Ubaid period did not endure as southern Mesopotamia began to outpace the north in terms of both political and technological development. The introduction of the fast wheel during the latter half of the fifth millennium vastly increased the speed and scale of pottery production in the south in order to meet the growing demands of a newly urbanized population. The widespread adoption of the fast wheel, together with the not-unrelated demise of painted decoration, heralded the advent of the Uruk period. The period is named for the ancient Sumerian city where the trend toward urbanized life manifested itself most spectacularly. [*See* Uruk-Warka.] It is the only site where the entire Early, Middle, and Late Uruk sequence has been excavated stratigraphically. Paradoxically, the most frequently encountered and most readily recognizable component of the Uruk ceramic repertory was not thrown on a potter's wheel; it was shaped by pressing coarsely mixed, chaff-tempered clay into a mold. This was the beveled-rim bowl, tens of thousands of which have been found across the Near East from southern Iran to southeastern Anatolia. Its discovery attests to the economic penetration of neighboring regions by the new cities of southern Mesopotamia.

The reappearance of monochrome and polychrome ceramic decoration toward the end of the fourth millennium marked the transition to the Jemdet Nasr period, itself a short-lived transitional period between the Late Uruk and Early Dynastic periods (Wilson, 1986). These and other Jemdet Nasr characteristics disappeared early in the third millennium with the emergence of new ceramic features that are diagnostic for the Early Dynastic I: fenestrated stands, solid-footed goblets, and, in the Diyala River valley and areas to the east, Scarlet Ware, with its geometric and naturalistic designs (plants, fish, birds, quadrupeds, humans) in red and black paint (Delougaz, 1952). [*See* Jemdet Nasr; Diyala.]

Post-Ubaid Developments. In the north, the period that followed the end of the Ubaid is sometimes referred to as the Gawra period. It is named for the site with the longest excavated sequence of Ubaid and post-Ubaid levels, Tepe Gawra. [*See* Tepe Gawra.] However, the Gawra assemblage is not typical for the north as a whole; indeed, each site excavated thus far appears to have unique ceramic characteristics (Roaf and Killick, 1987). Adding to an already complicated situation, there is ample ceramic evidence from sites along rivers and other trade routes attesting to the presence of people from southern Mesopotamia in the north toward the end of the Gawra period (the Late Uruk in southern terms). The presence of Late Uruk pottery influenced ceramic development in the north, but the post-Ubaid northern tradition remained distinct from that of the south and followed its own evolutionary trajectory. The fast wheel began to be used in the north much later than it had been in the south. Wheelmade pots first appeared at Tepe Gawra and elsewhere during the fourth millennium, contemporary with the Late Uruk period in the south, when connections between south and north were at their closest.



CERAMICS: Mesopotamian. *Scarlet-ware jar (Early Dynastic I) from Tell Agrab in the Diyala.* (From P. Delougaz, *Pottery from the Diyala Region,* Chicago, 1952, pl. 11; courtesy Oriental Institute, University of Chicago)

The next northern cultural assemblage, Ninevite 5, was named for stratum 5 of the Prehistoric Pit at Nineveh, in which several styles of decorated pottery were identified—although their chronological relationships could not be established. [*See* Nineveh.] More recent work has shown that the painted style was the earliest, apparently having developed from a painted northern variant of Late Uruk pottery at about the beginning of the third millennium (Roaf and Killick, 1987). Painted Ninevite 5 vessels were decorated with all-over geometric designs, as well as birds and horned animals, in red or brown paint. Ceramics with incised and excised decoration, divided into early and late subgroups, appeared only later in the sequence. They continued to be produced until the middle of the third millennium, after the painted pottery had gone out of use.

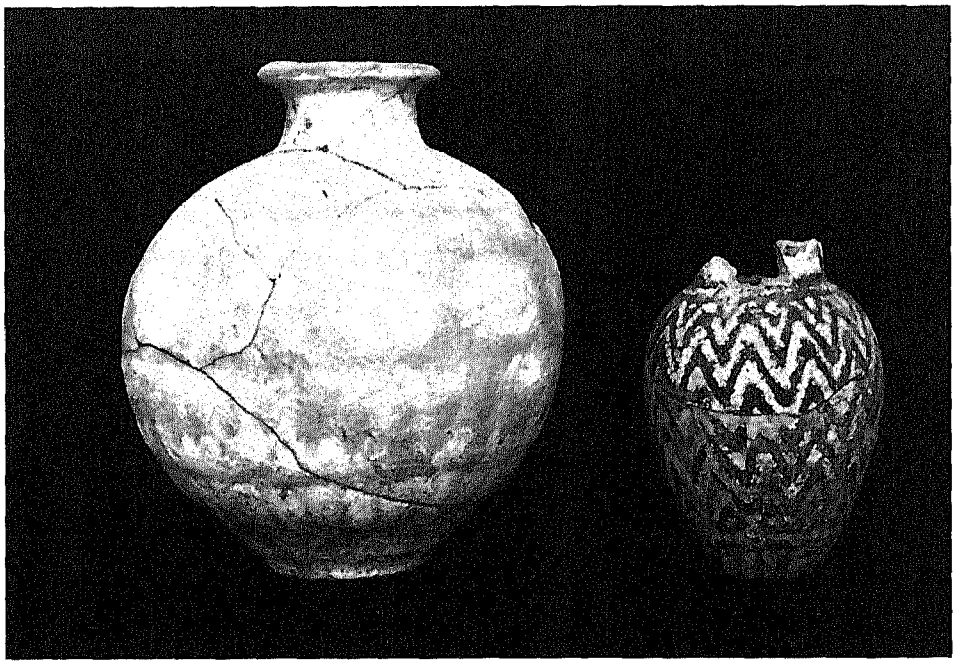
Historical Periods. Several factors combine to make it more difficult to present a period-by-period ceramic survey for the historical periods than it is for the prehistoric. First, the later ceramic sequences—post-Early Dynastic I in the south and post-Ninevite 5 in the north—are inadequately documented and poorly understood, especially in the case of northern Mesopotamia. One of the most crucial tasks confronting the field of Mesopotamian archaeology is to remedy this situation. Although progress is being made, the present state of affairs will persist until additional multiperiod stratigraphic sequences are excavated and published.

Second, the historical periods, in contrast to the prehistoric periods surveyed here, are not defined by their ceramic assemblages but by political events. Ceramics were, of course, sometimes indirectly affected by such events—as, for example, when the unification of a region resulted in an increasing homogenization of its pottery. However, even when certain ceramic features happened to be characteristic for a particular historical period, the temporal range of such features was only coincidentally coterminous with the events that defined that period.

Finally, the pottery of the historical periods, with several notable exceptions, consisted of undecorated, mass-produced vessels in plain wares. Their shapes evolved only gradually, creating, at least in the south, what appears to be a continuous sequence that extended well beyond the final political eclipse of Babylonia in the sixth century BCE. Aesthetically, the nadir in southern Mesopotamian pottery production was reached in the Kassite period, during the fourteenth and thirteenth centuries BCE. [*See* Kassites.] At this time the ceramic corpus was reduced to a regionwide homogenized assemblage of only six principal forms, none of them decorated and all of them indifferently, and sometimes even crudely, manufactured (Ayoub, 1982; Armstrong, 1993).

Although a thorough presentation of the ceramic sequence for the historical periods is beyond the scope of this discussion, developments in the ongoing evolution of ceramic technology can be highlighted. From finds at Nuzi, a Hurrian city in northern Mesopotamia, it is clear that, by the fourteenth century BCE, at the same time the potter's craft in southern Mesopotamia was reaching its low point, northern potters had mastered the ability to throw vessels with walls of near-eggshell thinness. [*See* Nuzi; Hurrians.] Having such thin walls, these vessels could not be removed from the wheel without being dimpled, so the potter would add more indentations to create a pattern. In the early first millennium BCE, elegant dimpled cups continued to be produced for use by the wealthy classes of the Late Assyrian Empire; examples of these cups have been found at sites stretching from the border of Egypt to southern Mesopotamia (Oates, 1959). [*See* Assyrians.]

Glazed ceramic objects began to appear at Nuzi in the fourteenth century BCE, concurrently with the emergence of a substantial glass industry in northern Mesopotamia. [*See* Glass.] Glaze technology at that time seems to have been at an early experimental stage, not fully under the potter's control. Moreover, the pale blue-green glaze developed was used at Nuzi only on items associated with the religious cult, including numerous ceramic wall decorations (nails, plaques), several small statues, other sculptural items, and an offering table, but surprisingly few vessels (Vandiver, 1982.



CERAMICS: Mesopotamian. *Glazed bottles from Nippur (c.* 600 BCE). (Courtesy J. Armstrong)

However, it was soon recognized that glazed pottery vessels, because their walls were completely sealed against transpiration, were a relatively inexpensive alternative to stone or glass vessels for storing valuable liquids like perfumes and oils. By the early first millennium BCE, both Assyrian and Babylonian potters were producing large numbers of glazed vessels, especially small bottles and jars. [*See* Babylonians.] Decoration in both the north and the south consisted mainly of geometric designs in white, yellow, blue, green, and brown. On larger Assyrian vessels, stylized flowers and even animals sometimes appeared. After the end of the Neo-Babylonian period in the sixth century BCE, the polychrome geometric designs in Babylonia were replaced by solid-color glazes of blue-green, green, and gray during the Achaemenid (Persian) period.

[*See also* Mesopotamia, *articles on* Prehistoric Mesopotamia *and* Ancient Mesopotamia.]

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JAMES A. ARMSTRONG

Syro-Palestinian Ceramics of the Neolithic, Bronze, and Iron Ages

This article will treat the pottery of ancient Syria-Palestine with specific reference to the history of its analysis; technology, form, decoration, and typology; and the distinguishing characteristics of archaeological phases from the Neolithic to the Iron Age.

Uses of Pottery in Archaeology. Archaeologists in many fields, not just Syro-Palestinian archaeologists, seem almost obsessed with pottery, for good reasons. Pottery, once it is invented, is relatively abundant on all archaeological sites; when fired it is virtually indestructible; even broken sherds are diagnostic enough for analysis; and its plastic qualities and almost limitless possibilities for form and decoration are particularly expressive of human ideas, behavior, and even socioeconomic organization. As the well-known archaeologist Robert Ehrich has put it: "Pottery is our most sensitive medium for perceiving shared aesthetic traditions—in the sense that they define ethnic groups—for recognizing culture contact and culture change, and for following migration and trade patterns" (1965, pp. vii, viii).

Brief History of Ceramic Analysis. Although scattered over the surface of innumerable mounds in what was ancient Palestine, pottery was not appreciated at first by early explorers. Even Edward Robinson, the father of Palestinology, who visited and correctly identified dozens of long-lost biblical sites in 1838, failed to recognize pottery as a clue to the antiquity of places. The great British Survey of Western Palestine (1871–1878) paid no attention to pottery (and did not, in fact, recognize tells, or mounds, for what they were). Not until the brief field trip to Palestine made by the legendary Sir William Flinders Petrie in 1890 did pottery analysis begin to play a role in archaeology.

Petrie had already applied his own inituitive typological instincts to a large corpus of pottery from predynastic tombs in Egypt. He had worked out the fundamental principles of what is now known as seriation (his sequence dating), to yield a reasonably accurate relative ceramic chronology. Noting the abundance of local, undecorated pottery on the multilayered mounds of Palestine, he argued that the systematic and detailed classification of the common pottery could yield a suitable chronology. He argued, furthermore, that such a ceramic typology would be a useful guide in excavating mounds stratigraphically (creating the twin principles of all subsequent archaeological method: typology and stratigraphy). As Petrie put it with characteristic verve: "Pottery is the essential alphabet of archaeology." To appreciate Petrie's achievement, it must be recalled that before he laid the foundations for ceramic typology, almost nothing from archaeological sites in Palestine could be dated, even within centuries. Nevertheless, Petrie, who did not return to Palestine to excavate until the 1920s, did not follow through on his own original insights. [*See the biography of Petrie.*]

In their excavations in the Judean Shephelah (1898–1900), Frederick J. Bliss and R. A. S. Macalister developed the first ceramically based scheme of absolute chronology, departing from Petrie's suggested dates, but their idiosyncratic dates were several centuries off. Macalister's own work at Gezer (1902–1909), based on very faulty stratigraphy, represented something of a retrogression. [*See the biographies of Bliss and Macalister.*]

Little progress in ceramic analysis was made until the work of William Foxwell Albright, who in his excavations at Tell Beit Mirsim (1926–1932) had worked out a ceramic sequence, with suggested terminology and a range of dates. With minor modifications, it still serves as the basic chronological framework for Palestine in the Bronze and Iron Ages. This brilliant achievement alone would qualify Albright to be regarded as the father of modern Palestinian archaeology. [*See the biography of Albright.*]

Albright also encouraged others in ceramic analysis. During Albright's tenure as director of the American School of Oriental Research in Jerusalem in the 1920s and 1930s, Clarence S. Fisher followed up Petrie's typical nineteenth-century notion of developing a complete catalog, or corpus, of pottery. This had been attempted in Petrie's own two corpora of Egyptian pottery and in J. Garrow Duncan's corpus, (1930), based on Petrie's later excavations at Tell Jemmeh. Although Fisher's work, "A Corpus of Palestinian Pottery," was never finished (the manuscript exists at the Smithsonian Institution, however), it had some valuable features, such as classification according to function, and it gave impetus to the ideal of a corpus. [*See the biography of Fisher.*]

Albright's own protegé, G. E. Wright, worked out the Neolithic, Chalcolithic, and Early Bronze Age pottery, as it was then known, in his doctoral dissertation (1937). Later, several of Wright's students at Harvard and elsewhere sought to complete this enterprise with dissertations on the Early Bronze IV, Middle Bronze, Iron Age, and Hellenistic periods (based largely on Wright's excavations at Shechem). Only Paul W. Lapp (1961) and Dan P. Cole (1984) ever published, however. [*See the biographies of Wright and Lapp.*]

Meanwhile, Israeli archaeologists, particularly after the establishment of the State of Israel in 1948 and the flowering of the Israeli national school, were mastering the pottery of

ancient Palestine, also in the Albrightian tradition. This research culminated in the only published effort at a complete corpus, Ruth Amiran's handbook *Ancient Pottery of the Holy Land* (1970), but it stops short of the Persian period. Amiran's work remains, however, the indispensable handbook and basis for all future studies. Beyond this general compendium, there are now detailed studies of individual periods and problems, as well as many exhaustive comparative studies that are published in the course of preliminary and final field reports. There also are newer methods supplementing traditional typological approaches, to which we now turn.

Ceramic Typology and Its Application. Typological principles in general can be applied to pottery, metals, house forms, tombs, and even ideas. "Type" refers to a cluster of essential attributes that occur frequently enough that they serve to characterize an object, enable it to be recognized in other examples, and distinguish it from objects of another class. The attempt to isolate those attributes that capture the "essence" of a thing or category of things often involves the postulation of an ideal "prototype," either real or imagined, from which all the actual variations can have derived—a kind of theme, on which there are many possible variations. Such a procedure, however, is much debated among archaeologists, who tend to divide themselves on the question of "discovered," or empirical, types that actually exist; and "designed" types, invented for the convenience of the cataloger, that do not necessarily correspond to actual reality. Archaeologists who hold to the latter view are often skeptical about the value of typological analyses of any sort. They are usually reacting, however, to the excesses of typology, which is always somewhat subjective and can indeed go to absurd extremes. Nevertheless, typology, reasonably utilized and with presuppositions that are clearly spelled out and tested against adequate stratified data, can be a useful tool.

Typological analysis of pottery in Syro-Palestinian archaeology has from the beginning been largely preoccupied with questions of chronology. This is undoubtedly because of the dominance of biblical archaeology, with its overriding interest in "political history," and the concomitant problem of fixing dates for great public events that could be correlated with biblical history. There are, however, other, more sophisticated aspects of typology that are typical of general archaeology and are increasingly appreciated in the discipline. Following David H. Thomas's *Predicting the Past* (1974), several uses of typology can be distinguished, depending on the questions being asked.

1. *Morphological typology.* What is indeed most fundamental in Palestinian pottery is form. Morphological typology is therefore largely descriptive; it is an attempt to define what a thing is, in terms of such basic attributes as shape: an ovoid storejar, flat-based cooking pot, and piriform juglet, for example.

2. *Technological typology.* The investigation of how a vessel is made and finished reveals its technological typology. It is an attempt to determine ways in which a vessel can be distinguished from other vessels: is the vessel coil made, wheel thrown, or hand burnished? It includes the study of clay types and sources, tempering agents *(dégraissant)*, forming methods, kiln usage, and finishing or decorative techniques. Ceramic technology is a relatively new specialization, aided substantially by sedimentological and petrological studies; kiln refiring experiments; use-wear analysis under a high-powered electron microscope; and especially by neutron activation analysis to "fingerprint" clays and pinpoint their sources.

3. *Temporal typology.* More familiar in Syro-Palestinian archaeology, temporal typology is an analysis of the evolving shape of ceramic vessels over time, charting the changes along a time line and assuming that the observed evolution of form (and often of decoration) corresponds, more or less, to historical-cultural developments and can help to date these. In practice, the relative chronology that is first established is concerned only with determining which are the earlier and which are the later developments. With multiple tomb groups or other mixed deposits (such as Petrie started with), intuition and/or theoretical principles may be the only recourse. However, stratified materials—preferably from large and representative samples on short-lived living surfaces—yield the only reliable sequences. Then, at some stage of research, an absolute chronology must be developed by fixing as many pegs as possible on which to hang the entire framework. This can be done only by correlating archaeological assemblages (or groups of stratigraphically related and contemporaneous materials) to events known in history through datable texts. In the case of ancient Palestine, the biblical texts are of some value chronologically. These depend in turn on Mesopotamian and Egyptian king lists and the like, which are often dated precisely through ancient astronomical observations. Thus, gradually there is built up an elaborate network of synchronisms that date pottery groups; and the basic types of the repertoire known in these fixed contexts can then yield relatively accurate historical (i.e., calendrical) dates when the same ceramic forms are encountered in different and otherwise undatable contexts. If imported pottery or other artifacts are found that are datable in their country of origin, these can be incorporated into the synchronism. Best of all are written remains found in situ, which can be independently or epigraphically dated, but these are exceedingly rare for ancient Palestine. Radiocarbon-14 dates promise scientific precision, but their range is too broad to improve much on historically determined dates. For most periods, the common pottery of ancient Palestine can now be dated to the century, and often to one half or the other.

4. *Functional typology.* The attempt to determine how an artifact is used defines functional typology. In the case of pottery vessels, the objective is to catalog separate groups of

vessels on the basis of supposed function. Distinguishing some types is largely a matter of observation and common sense—separating cooking pots, storejars, and dipper juglets, for example. The use of some vessels, may remain enigmatic, however, unless they are subjected to laboratory analysis that can identify food or other remains in skims or they are duplicated and actually used experimentally. Of course, many vessels may have had multiple uses. Finally, it should be cautioned that some functional terms are either whimsical (Early Bronze IV "teapots") or based largely on guesswork. Note that the Cypriot Late Bronze Age bilbil carries an ad hoc onomatopoeic name that duplicates the sound of pouring from the restricted neck of the juglet (although it may in fact have been for opium use). Vessels thought to have been designed for cultic usage are sometimes so designated; but apart from obvious vessels like kernoi ("trick vessels" with deceptive pouring spouts) or censers, cult vessels may be difficult to identify positively. Functional typology is surprisingly undeveloped in Syro-Palestinian archaeology. There is, however, the pioneering effort of James L. Kelso (1948), a biblical scholar, who, under Albright's influence, worked with a professional potter in an attempt to identify excavated Iron Age vessels with terminology in the Hebrew Bible.

5. *Cognitive typology.* Developing a cognitive typology (getting at the ancient artisan's "mental template") is the most difficult of the typological challenges. It is usually achieved by extrapolating from all the known individual examples of a presumed type, to arrive at a theoretical prototype on the basis of which all the variations can be explained. This effort, moving beyond description toward explanation, reaches the outer limits of the archaeological inquiry. It asks: Why is a particular vessel made the way it is? What was the intent of the maker? What cultural and aesthetic values does the vessel embody? Ultimately, answers are needed to such questions as: Why was the pottery of Iron Age Palestine "utilitarian," while that of Cyprus was "exotic"? Do the presence of many vestigial features, as in the pottery of the Early Bronze IV period, suggest that the period in general was one of decline—that is, does ceramic degeneration signal cultural degeneration? As has been seen, some more functionalist investigators are skeptical at this point—perhaps mindful of Lewis R. Binford's oft-stated observation that "archaeologists are poorly equipped to be paleopsychologists." Clearly, however, artifacts do express human behavior and the thought behind it; and there were cultural norms in ancient Palestine, as in all societies, that governed both. Formidable as the task may seem, the ultimate goal of ceramic typology is precisely to discover what cultural values did lie behind ceramic production, not just to fix the dates of pottery forms.

This leads to a concluding observation on ceramic typology. Attempting to "read" pottery may be compared to mastering the grammar of a language. Children and native speakers may use the language properly without any formal knowledge of the principles of grammar. The latter are worked out inductively by linguists, for their own purposes, in order to analyze the language and compare it with others, as well as to enable non-native speakers to learn it. Thus, even though the ancient potters would have been puzzled by modern attempts to impose order on what appears to be chaos, the effort is legitimate, indeed essential, for an understanding of ceramics. At its best, typology may actually enable the grasping of something of the reality of an extinct social system, its technology, its aesthetic values, and its contacts with other cultures.

Some practical advances in fieldwork, analysis, and publication have been made in recent years, many of them largely mechanical: thin-section microscopic observation of tempers, or ingredients, in the clay, and the neutron activation analysis of clays. Improvements in processing pottery include simple sectioning and profile drawing techniques that speed up preparation for publication, even in the field; more sophisticated descriptive methods, such as the use of the *Munsell Soil Color Charts* to describe clay and paint colors, and the Moh's Hardness Scale to determine how brittle the ware is; kiln refiring to establish the original temperature at which the vessel was fired; microscopic examination to determine both how a vessel was made and how it may have been used or reused (use-wear analysis); and the use of scanning computers and sophisticated multivariate statistical analyses to produce complete comparative corpora of certain classes of vessels (such as all the Mycenaean wares found in Palestine and their prototypes). Some of these recent attempts to make ceramic study more precise and objective, more "scientific," actually go back many years, to the simple "punch-card" hand sorting of the 1960s, which anticipated computerization. Notable attempts were made to reduce analysis of form, always somewhat subjective, to mathematical principles as early as 1952 by Pinhas Delougaz in Iran (*Pottery from the Diyala Region,* Chicago, 1952). Anna O. Shepard (1956) has attempted to work out a comprehensive catalog of virtually all possible ceramic shapes, based on easily recognizable geometric forms.

Pottery from the Neolithic to the Iron Age. The major ceramic developments for each period in the long archaeological history of Palestine are highlighted here.

Neolithic period (c. 6000–4000 BCE). Pottery appears almost simultaneously throughout the Levant in about 6000 BCE, at the beginning of what was called by Kathleen M. Kenyon the Pottery Neolithic A (PNA) and by others Neolithic 3 or Developed Neolithic. This is some two to three millennia after the early Neolithic domestication of plants and animals, the beginnings of village life, and the transition from hunting and gathering to a food-producing society and economy. The long delay is surprising, considering the unique utility of ceramic vessels for so many domestic functions, as well as for artistic purposes, cultic and other sym-

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bolic uses, and trade. Nevertheless, once introduced, pottery seems to have caught on very quickly throughout the ancient Near East, Cyprus, and Egypt (for the latter two, in c. 5000 BCE); and it developed rapidly, in technology, form, and decoration. Thus, the delicate polychrome wares of the Hassuna, Samarra, and Halaf Neolithic phases in Mesopotamia are astonishingly sophisticated.

The origins of pottery production probably lie in the highly developed pyrotechnic capabilities of the earlier Neolithic, which had already experimented with minerals and clays, as well as with advanced kiln-firing techniques, to produce the period's ubiquitous fine plaster. It was only a step farther to apply this technology of clays to produce ceramic vessels. The actual stages in the experimental process are probably reflected in the *vaissals blanches,* or "white wares"—unfired plasterlike containers of the Prepottery Neolithic (PPN)—found at several sites in Syria.

The Neolithic pottery of Palestine is relatively crude: handmade, with coarse, low-fired clays; with straw or heavy grit temper; limited to a simple, utilitarian repertoire of shapes; and having decoration that consists of heavy slip applied like paint in geometric patterns, sometimes with incised chevron patterns. Little improvement distinguishes the Pottery Neolithic B (PNB) pottery from that of PNA, except for a slight improvement in wares and the addition of some new forms.

Chalcolithic period (c. 4000–3300 BCE). The Chalcolithic period in Palestine—the transition between the Stone Age and the fully developed urban Early Bronze Age (overlapping with Kenyon's Proto-Urban phase)—witnesses the flourishing of the ceramic industry. A whole new repertoire of forms is introduced, most of them innovative and not directly related to the Neolithic tradition. These include a large range of pithoi (storejars), with a variety of ledge and loop handles; large kraters of several kinds; holemouth jars, some of them cooking pots; a family of globular and flaring bowls; cornets and other globular chalices; pedestal chalices; churns modeled after goatskins; and even crucibles for copperworking. Decoration includes incision, scalloping, thumb molding, and other plastic devices, as well as quite exotic geometric patterns in red and/or black paint over a cream-colored ground. Clays are well levigated, especially the kaolin-rich "cream ware" of the Beersheba region; and high kiln temperatures produced some thin, quite metallic wares. Some vessels, like the small flaring bowls with a thinned rim, are finished, if not actually formed, on a rotation device, probably a simple wooden platform or mat that could be rotated. Reed impressions on the bases of some vessels give evidence of the latter.

A striking phenomenon of the Late Chalcolithic period (c. 3600–3300 BCE) is the development of several regional assemblages that, although they overlap somewhat, have distinctive diagnostic features. These assemblages include, at a minimum (1) the original Ghassulian culture of the Dead Sea area, together with the related complex from the Beersheba valley; (2) a central coastal culture around modern Tel Aviv and somewhat inland; (3) the central hill-country sites, still poorly known; and (4) the Golan Heights group, only recently discerned.

Early Bronze I–III period (c. 3300–2400 BCE). The Early Bronze Age is conveniently divided into an initial proto-urban EB I phase and then the urban EB II–III phases that are followed by a decline and transition in EB IV (treated separately below). The pottery of EB I (c. 3300–3200/3100 BCE) follows somewhat in the Late Chalcolithic tradition, indicating a basic cultural continuity. There are, however, many new forms that herald the full-fledged EB II–III era, as well as a decorative tradition that signifies several regional cultures—not peoples, and certainly not newcomers, as Kenyon maintained. (1) Red-painted wares with parallel bands of decoration (line-group or multiple-brush techniques) are largely confined to the south and parts of the Jordan Valley, while streaky grain-wash wares dominate in the north; (2) a gray-burnished class of knobbed bowls and footed chalices, possibly a descendant of the earlier widespread dark face-burnished ware, is found at sites around the Jezreel Valley (giving it the name Esdraelon ware, first thought to be Late Chalcolithic); and (3) red-burnished wares occur throughout the country, now widespread for the first time. Among the diagnostic EB I forms are storejars with simple thumb-indented ledge handles; high loop-handled mugs or juglets; omphalos-based bowls; and ear-handled juglets. While wares are less well made than those of the Chalcolithic, the earliest known potter's wheel (i.e., the basalt bearing stone) belongs to this period, found at Beth-Yerah (Khirbet Kerak) on the Sea of Galilee. [*See* Beth-Yerah.]

The pottery of EB II–III, which can be considered together, develops out of the EB I repertoire in basic form. However, the gray burnish and most of the red geometric paint disappear, while a heavy red burnish predominates on many forms. The latter include, in particular, storejars with wavy and pushed-up/scalloped ledge handles; large shallow

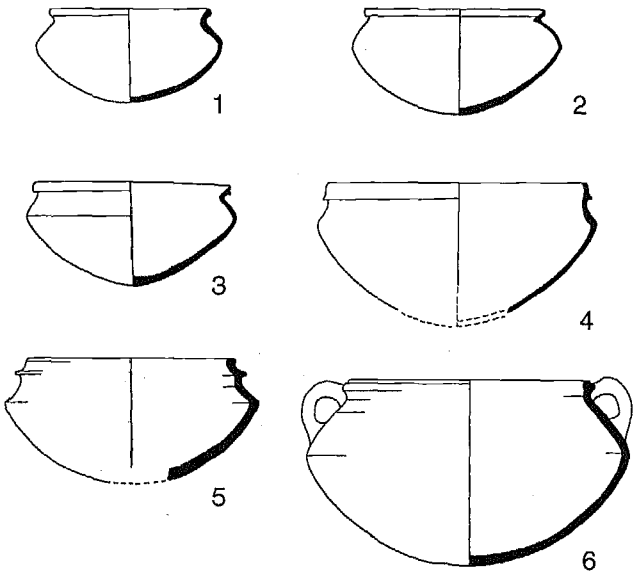
◀ CERAMICS: Syro-Palestinian. *Examples of Palestinian pottery of the Chalcolithic, Bronze, and Iron Ages.* (1) Late Chalcolithic cornet; (2) EB I painted jug; (3) EB II Abydos-style pitcher; (4) EB III burnished platter bowl; (5) EB IV "teapot"; (6) EB IV corrugated cup; (7) MB I-II "Tell el-Yehudiyeh" juglet; (8) MB III trumpet-footed chalice; (9) LB I bichrome jug; (10) LB II "Canaanite" storejar (half-scale); (11) LB II cooking pot; (12) LB II lamp; (13) Early Iron I "collar-rim" storejar; (14) twelfth-century BCE Philistine bichrome krater; (15) Iron II neckless jar; (16) Iron II decanter; (17) Iron II burnished juglet; (18) Iron II "beerjug"; (19) Iron II Phoenician flask. (After Amiran, 1970)

platters; small carinated bowls in metallic ware; large hole-mouth storejars and cooking pots; two-handled amphorae; and footed chalices. Particular mention should be made of a class of graceful handled pitchers and jugs in fine red-burnished ware (sometimes a painted geometric decoration) called Abydos ware because it was first found by Petrie as imported ware in royal tombs of the first dynasty at Abydos in Egypt. It thus gives a valuable synchronism: the first dynasty (c. 3200/3100 BCE onward) equals the floruit of EB II in ancient Palestine. A complete potter's workshop found at Tell el-Far'ah (North) includes a wheel, burnishing tools, clays and coloring agents, and a kiln.

The EB III phase (c. 2650–2400 BCE) is marked principally by the further development of many forms, such as platters; a few new forms, like spouted jars and flaring goblets; and especially by the brief appearance in the north of exotic red- and black-burnished vessels of Anatolian-Caucasian inspiration and the distinctive Khirbet Kerak ware (named after the site on the Sea of Galilee where it was first distinguished).

Early Bronze IV (c. 2400–2000 BCE). The pottery of Early Bronze IV (Albright's Middle Bronze I and Kenyon's Intermediate Early Bronze–Middle Bronze), a transitional nonurban interlude that represents a major socioeconomic decline, is of interest chiefly because of its many distinctive features. These include a combination of hand forming and wheel finishing; many unique vestigial features, such as nonfunctional handles and spouts; very strong and consistent regional "families"; and a clear influence from the calciform repertoire (cuplike shapes) of central and southern Syria. Red burnish and paint are rare, except in the north; and many wares are incised and/or band combed, especially in the south. Distinctive EB IV forms include ovoid storejars with vestigial handles; "teapots" and other spouted jars; many kinds of cups, goblets, and chalices; flasks; one-handled flask-pitchers; offset-shoulder bowls; and four-spouted lamps. It has been argued that EB IV pottery has some links with that of the first phase of the Middle Bronze Age; but in fact it represents the last, dying gasp of the long Early Bronze Age tradition.

Middle Bronze I–III period (c. 2000–1500 BCE). Albright's MB IIA, B, and C are termed here, as increasingly by others, MB I–III (his MB I having become the EB IV here). This is the second urban period in ancient Palestine and represents the zenith of the Canaanite culture. The pottery, which is entirely new in every regard, clearly reflects the wealth, sophistication, and international connections of the country in this period. Although there are recognizable inner divisions (thus the MB I–III phasing), the strong continuity throughout allows the Middle Bronze Age pottery to be treated as a whole. It begins in MB I with a new repertoire of exquisite wheelmade forms (the first use of the fast wheel), many of them related to Syrian styles, as well as fine red-burnished and painted wares. The basic repertoire,



CERAMICS: Syro-Palestinian. *Typical development of cooking pots.* (1) MB III; (2) LB I; (3) LB II; (4) twelfth-eleventh century BCE; (5) ninth century BCE; (6) eighth century BCE. (After Amiran, 1970)

which continues until the end of MB III (and even into the Late Bronze Age), consists mainly of large, tapering ovoid storejars; globular cooking pots; large kraters; many styles of graceful jugs and juglets (e.g., dipper, piriform, cylindrical, and Tell el-Yahudiyeh ware), many of them slipped and burnished; platter bowls; globular bowls; sharply carinated bowls (with a shoulder or cyma profile), some footed; and single-spouted saucer lamps. Syrian styles of paint are evident (the North Syrian simple wares); and the first imports from the Mediterranean now occur, principally in Cypriot White-Painted IV–VI styles.

The MB II–III phases are marked by general continuity, but also by a certain degeneration in form and finish. Imports from Cyprus increase, however, and in the late MB III a number of new Syrian imports appear, such as Gray Lustrous ware. Cypriot Bichrome (and its local versions), Monochrome, Base-Ring I, and White-Slip I wares accompany the transition to LB I (below), as does a local Chocolate-on-White ware that may be of Cypriot inspiration.

Late Bronze Age (c. 1500–1200 BCE). The Late Bronze Age represents a final revival of urban Canaanite culture, by then in decline. It extends from the Egyptian destructions in about 1530–1460 BCE until the end of the Bronze Age (c. 1200 BCE). The pottery, as expected, continues the MB tradition, but it is exhausted by the end of the period. Virtually no new forms appear, except for flasks, kraters, and chalices; but there are imports. The imports are surprisingly numerous, and they include more from Cyprus: White-Painted IV–VI, White-Slip I–II, White-Shaved, and Base-Ring I–II wares; a few from Syria: red-burnished flasks; Mycenaean IIIA–B wares, and even a few Late Minoan vessels; and an

occasional vessel from Egypt. The local wares, while rather poorly made, now feature relatively common painted decoration, with both geometric and naturalistic and animal motifs (e.g., a pair of ibexes and the sacred tree; a palm tree and panel).

Iron Age (c. 1200–600 BCE). The Iron Age witnesses a succession of new, local peoples and cultures, replacing the Bronze Age Canaanite culture, including "Sea Peoples," or Philistines, and the biblical Israelites. The common Iron I pottery of the twelfth–eleventh centuries BCE is, however, still strongly in the LB tradition. Philistine bichrome ware, a locally made offshoot of Late Mycenaean IIIC:1b ware, with beautiful geometric and bird designs, appears in about 1150, principally along the coast. Diagnostic ceramic forms for the Iron I proto-Israelite settlements now increasingly being brought to light include collar-rim storejars, as well as certain types of flanged-rim cooking pots (neither exclusively Israelite, however).

By the tenth century BCE (styled either Iron IC or Iron IIA), the Israelite state emerges, and with it a standardized ceramic repertoire that has few LB reminiscences and represents the fully developed local Iron Age cultures. Imported wares are now extremely rare, except for several Cypriot fabrics of the tenth century (e.g., Black on Red II, White Painted, Bichrome, Red Slip) and occasional Greek imports, which begin sporadically in the late eighth century. Some Phoenician ware appears along the coast, as early as the tenth century that has locally made derivatives in such luxury wares as the ninth–eighth-century BCE Samaria Ware. Apart from imports, painted decoration is rare in the tenth–seventh centuries BCE. Red slip and burnish, however, characterize much of the repertoire, particularly on bowls; in the tenth century it is done by hand, but in the ninth century wheel burnish takes over, gradually dying out toward the end of the period. The somewhat different repertoires of the Iron II coastal or "Neo-Philistine" culture along the southern coast, as well as the repertoires of the Transjordanian states of Ammon, Moab, and Edom, are now beginning to be better known to researchers.

All in all, the utilitarian pottery of the Iron II period represents the culture of a series of relatively isolated, petty regional states. When the Neo-Assyrians advance in the late eighth century, their presence is felt in Assyrian Palace Ware. By and large, the local pottery continues, even after the Babylonian destructions in 586 BCE (in what might be called an Iron III phase), throughout the 6th century).

Later periods. The Persian, Hellenistic, and Roman-Byzantine periods see Palestine becoming part of a larger international, imperial world. Thus, the pottery of these periods is both part of the classical tradition in the eastern Mediterranean and a separate study beyond the purview here. For the subsequent Arabic and Turkish periods, from the seventh to the nineteenth century CE, Palestine is part of the Islamic world, and the local pottery reflects that reality.

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WILLIAM G. DEVER

Ceramics of the Persian Period

Local Palestinian pottery in the Persian period was made of three different clay compositions, two of which were characteristic of the coastal region, while the third was found mainly in the mountain regions of Judah and Samaria. On the coastal plain the pottery was composed most frequently of a yellowish-green or a reddish clay. The visible differences in the clay (used for pottery in other periods as well) may have been created during firing. This pottery is for the most part crudely made, and the clay is not finely levigated; its most distinctive feature is its very poor firing, which left the clay extremely porous. Most of the pottery from Judah and Samaria, by contrast, is made of a brown-gray clay (a continuation of the material used earlier, in the Iron Age), is well fired, and is pleasing in its shapes.

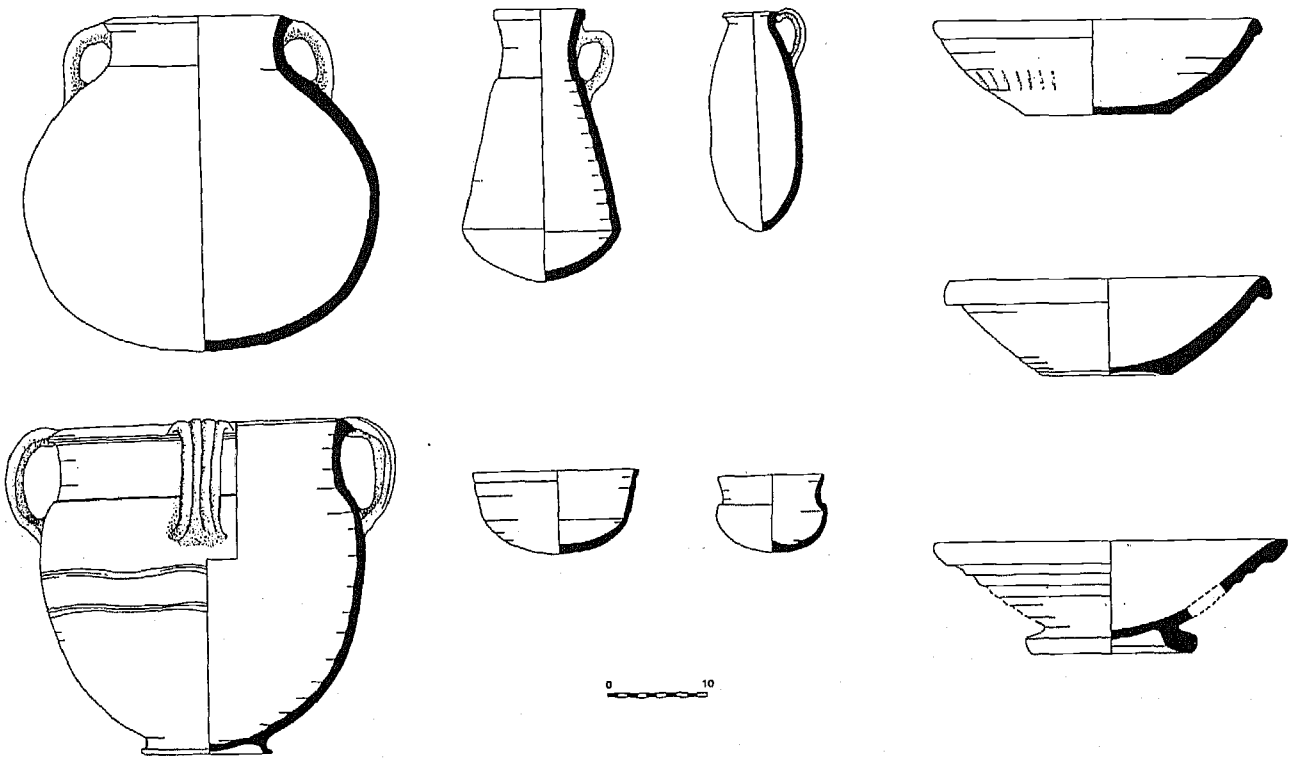
The pottery types of the Persian period can be divided into three major groups: (1) local pottery that continues the

ceramic tradition of the end of the Iron Age; (2) local imitations of imported pottery of "eastern" origin; and (3) local imitations of "western" prototypes.

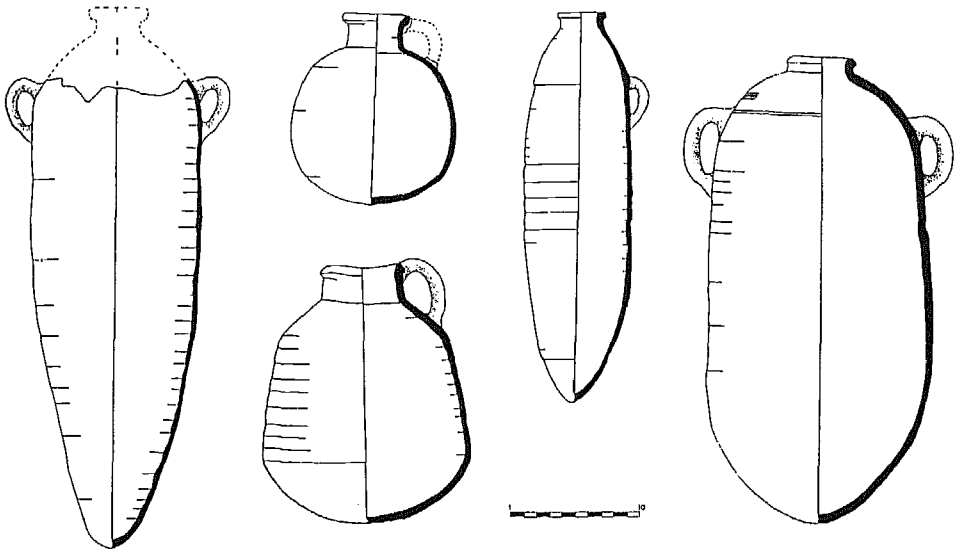
The first group comprises most of the bowls, cooking pots, hole-mouth jars (an important jar family, especially those jars that continue the tradition of the *lamelekh* type), flasks, certain types of jugs and juglets, lamps, twin vases, funnels, and stands. Because the production and use of these vessels were generally confined to the areas of Judah and Samaria, the Israelite ceramic traditions persisted longer there than in the other parts of Palestine.

Vessels belonging to the second group, imitations of "eastern" prototypes, exhibit Assyrian, Persian, Phoenician, and Egyptian influences. The Assyrian pottery, especially the Palace Ware from the close of the seventh century BCE, is now well known from the excavations at Nimrud. The original vessels and the Palestinian copies appear almost simultaneously at the end of the Israelite period; by the Persian period they are already a constant feature in the local pottery repertoire. An Assyrian influence is evident mainly in the carinated bowls, in both pottery and metal, as well as in most of the bottles. However, in their crude shapes and especially in their lack of typical painted decoration, the vessels of the Persian period are inferior to both the Assyrian originals and their Iron Age imitations. No attempts were made in Palestine to duplicate the Achaemenid pottery, for its quality was generally very poor and it was not commonly found outside the borders of Persia. Among all the pottery finds in Palestine, only two or three vessels can be designated with any certainty as direct Persian imports. The magnificent Achaemenid metalware, on the other hand, was a significant source of inspiration for Palestinian potters, who imitated it in clay. The most outstanding imitations are the rhytons. It is also possible that the impressed wedge and reed decoration, which appears on a ramified class of Palestinian pottery in the Persian period, is modeled after the decoration on this metalware. Other Palestinian vessels can be attributed to a Phoenician origin by analogy with the earlier Phoenician vessels (from the end of the Iron Age) discovered at Phoenician sites and in tombs. The Phoenician influence is particularly marked in the jugs and juglets, in the face and Bes vases, in several types of jars, and in the lamps. Egyptian influence, on the other hand, can be observed only in the alabastra, which seem to be copies of an alabaster original.

The imported pottery of the period was mainly Greek. The earliest Greek vases found in Palestine are Late Proto-Geometric, which dates to the end of the eighth century BCE. Later Greek vessels came from a variety of regions. In the Babylonian and Early Persian periods, most came from Corinth, which then possessed mastery of the seas. Those ves-



CERAMICS: Persian Period. *Pottery types from Qadum.* (a) cooking pot; (b) krater; (c) jug; (d) dipper juglet; (e) five examples of bowls. (Courtesy ASOR Archives)



CERAMICS: Persian Period. *Pottery types from Qadum.* (a) torpedo jars; (b) jugs; (c) storage jar. (Courtesy ASOR Archives)

sels were still rare in Palestine, and only a few have been found. It is only from the sixth century BCE onward that imports from the eastern Greek islands increased: from Rhodes, Kos, Cnidus (Knidos), Chios, Samos, and Lesbos, for example, as well as from the Greek settlements along the northeastern Mediterranean coast, such as Al-Mina. These East Greek vases included bowls with painted bands and horizontal handles, jugs with black-painted decoration or geometric designs on their upper part, and vessels in the Wild Goat style. During the sixth century BCE, especially toward its close, Greek vessels from Athens began to arrive. Although initially they only reached Palestine in small numbers, they were quickly integrated with the vessels in common use.

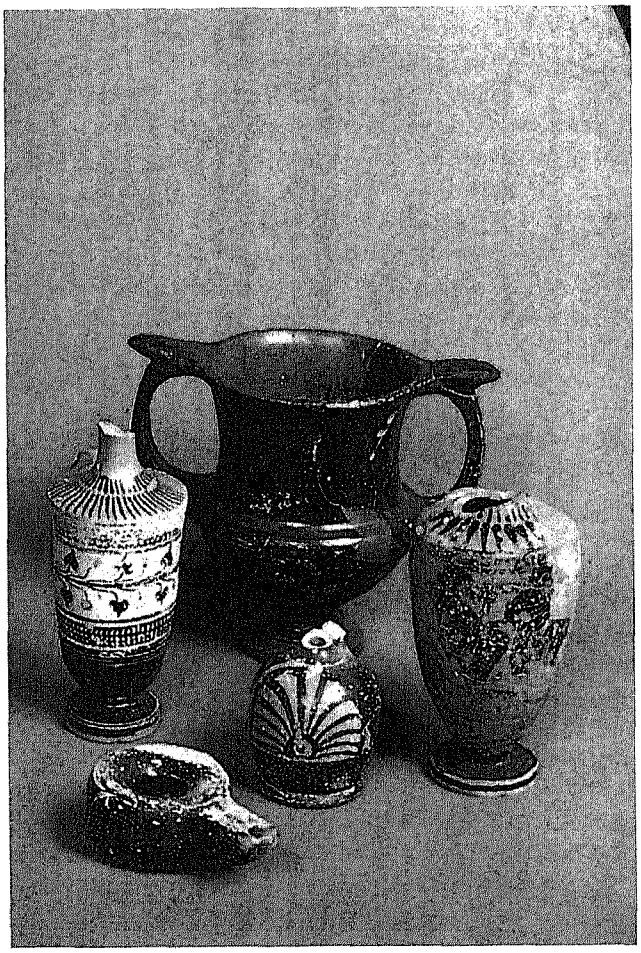
The first Greek vessels to arrive were painted in black on a red background (black figured). Later, the colors were reversed: figures painted in red on a black background (red figured). Last to arrive were plain black-glazed types. The changes in the source of the imported Greek ware and the absolute dominance of the Attic pottery throughout the Persian period in Palestine is conclusively proven by comparable finds in neighboring lands and throughout the Mediterranean area, as well as on the Mediterranean islands.

The influx of Greek goods to coastal sites in the eastern Mediterranean brought with it Greek colonization on the coasts of Phoenicia and Palestine. Clear evidence for this process was recently recovered at Al-Mina, Tell Sukas, Tabat el-Ḥammam, and elsewhere along the Phoenician coast.

There also is evidence for the settlement of Greek merchants in Israel. At Tel Akko, a rich assemblage of Attic-Greek pottery was discovered in a well-planned quarter on the western part of the mound; on the basis of this find, the excavator, Moshe Dothan, proposed that the mound's northwest section had, in the Persian period, contained a quarter of rich merchants, most of them Greek, and that it had been the finest section of the town. In excavations at Jaffa, a large warehouse from the Persian period was found to have close affinities with the plan of the recently published warehouses at Al-Mina. A sizable amount of pottery was found on the floor of one of the rooms. All the vessels were of a single type and all bore similar red-figured decoration. It is very likely that, as at the northern Phoenician port city of Al-Mina, a group of Greek merchants resided in Jaffa during the Persian period and engaged in the wholesale trade of the products of Athenian potteries.

Athenian pottery apparently was also brought to Tell Jemmeh. The discoveries there included about a dozen of the red-figured cups that were evidently painted by the Pithos Painter; although not found on the same site, they may have been purchased at the same time in Athens and carried over on the same vessel to the eastern Mediterranean coast, whence they were distributed to several merchants. The best examples to date of the phenomenon of Greek settlers are perhaps the finds from Tel Dor, Meṣad Ḥashavyahu, and Migdol. At many other sites—Tel Michal, Tell el-Ḥesi, and Ashkelon, among them—also produced rich assemblages of imported Greek pottery, have been unearthed, however.

Undecorated everyday ware from Greece also began to appear in Palestine during the Persian period. It included heavy bowls, cooking pots, and, prominently, wine amphorae from the eastern Greek islands. It seems that even though Palestine produced large quantities of excellent wine,



CERAMICS: Persian Period. *Imported Attic vases from Tel Dor.* Dated from fifth to fourth century BCE. (Courtesy E. Stern)

a considerable amount still had to be imported from abroad, undoubtedly for consumption by the increasing numbers of Greeks who had settled there.

In the Babylonian-Persian periods, and even before, Greek pottery was plentiful in Palestine, exerting a strong influence on local ceramics. However, while the eastern vessels were for the most part merely imitations, and often very late ones, the western pottery comprised both imported ware and contemporary local copies. This pottery was widely imitated, especially the types of vessels, though the Palestinian potters did not succeed in duplicating the excellent quality and exquisite decoration. The East Greek bowls probably were the original models for the small bowls and kraters with horizontal handles that were widespread in Palestine. The locally produced closed lamps, made of coarse clay without the typical burnish, were certainly patterned after Attic lamps. Juglets found at Tel Megadim bear a close resemblance to the Attic lekythos, and one from Tel Mevorakh imitates the *laginos*.

In most cases, the difference between the imported ware and the Palestinian imitations can be readily distinguished. It is also possible to detect the source of the copies. There is a large group of vessels whose form is nearly identical to the above-three imported western groups; however, because they lack distinctive decoration, it is impossible to determine whether they are imports or local products. This group includes the "Persian" bowls with a flat base, a large group of straight-shouldered jars, jars with basket handles, and amphorae that were the prototype of the Rhodian amphorae of the Hellenistic period. These vessels were all used in transporting goods by sea and are found widely dispersed along the eastern Mediterranean coast. Only mineralogical and petrographic analyses can provide more exact conclusions as to their place of origin. Nevertheless, even if the majority of these jars, bowls, and amphorae were indeed locally manufactured, their origins are to be sought on the East Greek islands and on Cyprus. Their appearance in the eastern Mediterranean is certainly connected with the early Greek trading colonies: Al-Mina and Tell Sukas in Syria; Meṣad Ḥashavyahu in Palestine; and Migdol, Daphnae, and Naukratis in Egypt.

Cypriot pottery, of which only a small part has been studied, is among the pottery imported from the west. The following survey is based on Einar Gjerstad's summary. It includes only examples that are clearly Cypriot types, with painted decoration. Cypriot vessels were often also found in context with local ware of the Persian period, but their dates are as yet unverified. Some have been attributed, apparently incorrectly, to earlier periods. It seems, however, that most belonged to the White-Painted V group.

Only one vessel among all of the pottery from the Persian period has been interpreted as an Achaemenid import: it is a cup made of a light-greenish clay with high, very thin ribbed sides. Fragments of another cup were found lying next to it in an unstratified context at Samaria. Even though direct imports of Achaemenid ware were nonexistent in the Persian period—the ware was not outstanding either for its quality or beauty—Achaemenian metal vases specifically had an indirect influence on rhyta and several types of local Palestinian pottery (see above). Because Achaemenid pottery was almost uniformly dull, and because the Achaemenids were not colonizers, the advent of the Persians did not change the local styles of pottery in use in the Near East.

[*Many of the sites mentioned are the subject of independent entries.*]

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EPHRAIM STERN

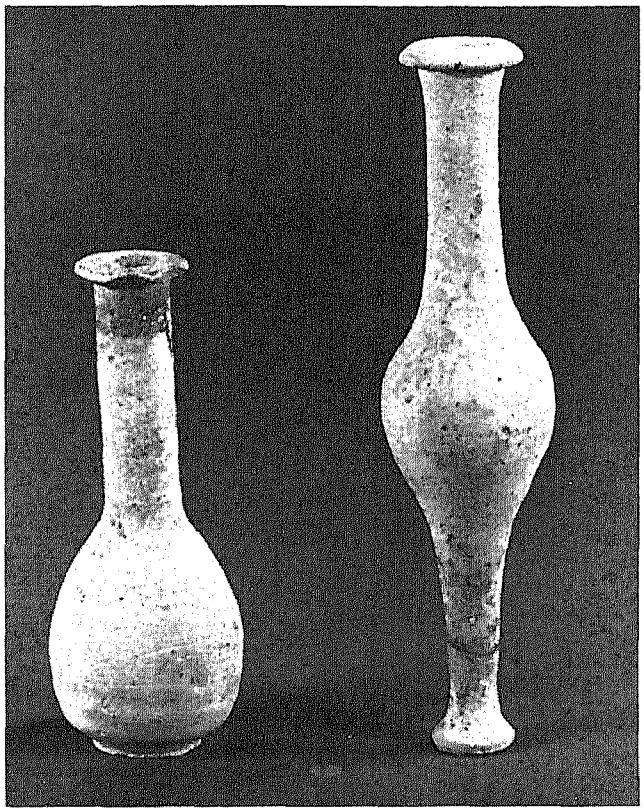
Ceramics of the Hellenistic and Roman Periods

Vast amounts of pottery for the period from about 300 BCE to 300/400 CE (the periods covered in this survey) have been found in Israel/Palestine, but many questions remain unanswered. Numerous preliminary reports, illustrating a few select items, often assigned to unrealistically precise, historically based periods, have been the norm. Synthetic studies of the regional wares by ware and/or shape are few. Finds from Jordan have generally been handled similarly. In other regions (e.g., Syria and Egypt), detailed pottery reports exist on the finds from a few widely separated sites; the reports in local journals are generally of poor quality. A good understanding of the wares in these countries is not close at hand. Throughout the Near East, the care lavished on Bronze and Iron Age wares has not generally been extended to the wares of the later periods. Statistics of frequency are available for relatively few sites, and many excavators have not recorded the bulk of their finds before discard. A lack of excavations on kiln sites impedes our understanding of sources and of production techniques.

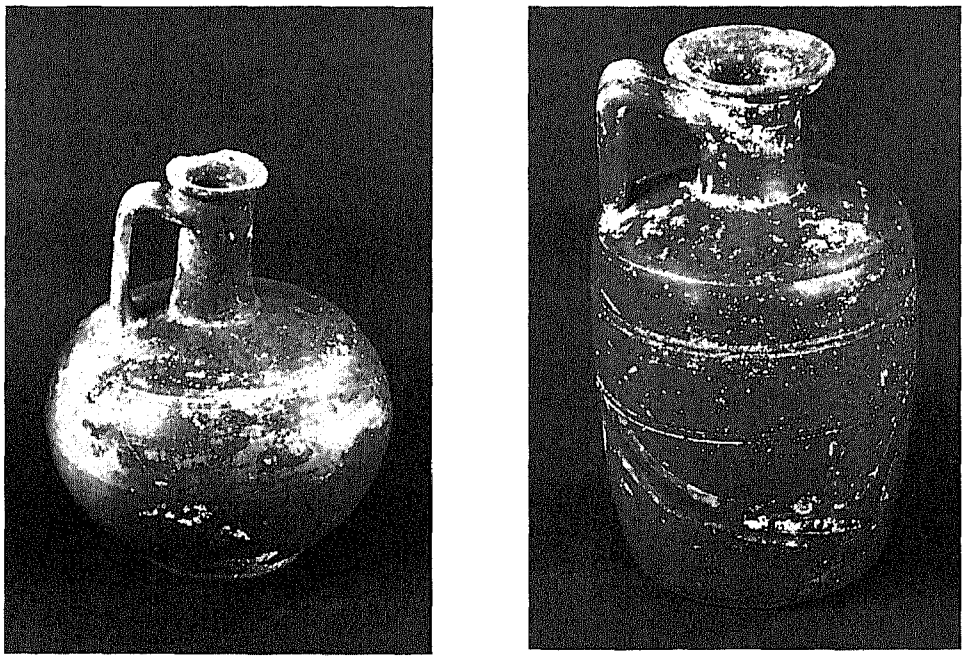
In general, the pottery of the region mixes local traditions (seen in coarse and cooking wares and the storage jar series) with Mediterranean Hellenistic and Roman-type fine tablewares and amphorae (transport containers), both locally made and imported from farther west. Eastern (Seleucid, Parthian) wares are generally absent, except on sites on the Roman frontier on the Euphrates River, and at Palmyra, in Syria. The Nabatean region has its own distinctive local wares, generally thin-walled: a series of round-bottomed painted vessels not matched elsewhere, made alongside a series of close copies of Italian Roman vessels (and clay lamps), owing little to Levantine models. A similar coexistence of "native" painted wares and imitation Roman products—in thin, whitish wares—is evidenced in Meroitic Nubia. Egypt, commercially largely isolated during the Roman period, is a special case: there, traditional wares and Ptolemaic derivatives were supplied to a large local market.

During the third century BCE, Greek-derived fineware types appear throughout the region. True Greek black-gloss wares appear as imports (from Athens and, although rarely, from southern Italy, early in the third century BCE, and thereafter from various ill-defined Aegean and Asia Minor sources). The numerous local copies from the Levant, including Cyprus—Jerusalem wares are a notable exception—generally have a dull, darkish slip coating over a buff fabric. Subsequently, the major regional tableware is the red-slipped (red-gloss) Eastern Sigillata A ware (once termed Pergamene), from unlocated sources (Lebanon?, southern Syria?), current from about 150 BCE to about 150 CE. This is well studied: a Late Hellenistic phase is typified by platters with very heavy feet and small floral stamps around the center (not unrelated to the black-gloss Campana B platters of Tuscany in Italy). These probably were formed with the aid of molds. Small hemispherical footed cups (not modeled on imports) accompany them. The red gloss surface here appears earlier than on other Mediterranean wares; it is applied by a double dipping process, leaving a darker stripe across the middle of the vessel (seen later on some other eastern fine wares). A Cypriot(?) counterpart (Cypriot sigillata) has a more pinkish- or purplish-red clay and slip coloration; the slip tends toward a metallic luster. Eastern Sigillata A is abundant throughout the Near East, whereas the Cypriot ware is sporadic outside Cyprus (except in the lower Nile Delta and in Israel's Negev desert—where, dubiously, local production has been claimed).

Between about 10 and 80 CE, the classic Eastern Sigillata A ware shapes are replaced by ones modeled on those of Italian red-gloss terra sigillata ware, perhaps indirectly through the products of Asia Minor (Eastern Sigillata B and Pergamon-region wares). The Asia Minor wares also bear



CERAMICS: Hellenistic and Roman Periods. *Hellenistic bottles.* Standard bottle is shown at left, spindle bottle is shown at right. Dated c. 100 BCE. (Courtesy Pictorial Archive)



CERAMICS: Hellenistic and Roman Periods. *Terra sigillata juglets.* (Courtesy Pictorial Archive)

stamps inscribed in Greek—a rather short-lived fashion. Cypriot sigillata shows similar changes. Thereafter, new shapes (mainly flat-based, with decoratives moldings on the interior) seem to owe more to Roman metalware. Some late Eastern Sigillata A ware vessels with a sponged mottled slip treatment (current from about 70 to 120 CE) also attest to these new influences. Similar trends are present throughout Eastern Sigillata B ware (which can be fired black or dark brown).

Red-gloss (sigillata) tablewares and thin-walled ware imports, mainly from Italian and Aegean sources, are quite common during the first century CE, particularly at coastal sites, but also as far afield as Petra, in Jordan. Some serve to mark the early Red Sea trade links with India (where a few specimens have been found); many are present at Quṣeir el-Qadim, one of the Egyptian departure points. Adaptations of these imported shapes are seen in other local products, from Cilicia and Syria to Egypt (but rarely, if at all, in Mesopotamia).

Some lead-glazed cups, mimicking decorated silverware, were made at Tarsus from about 1 to 100 CE. These match types made in western Asia Minor and are quite distinct from the essentially Parthian alkaline-glazed wares made in Mesopotamia, of which some forerunners are seen in later Hellenistic Antioch. Finds from Dura-Europos in Syria show that the Parthian series, typically rather heavy amphora jars with peaked handles and gouged ornament, lasted beyond 250 CE.

Other fine wares include a series of buff-ware bowls with partial two-tone (red/black) slip and double-bulge horizontal handles below the rim, common in second-century BCE deposits at Paphos and at Shiqmona in Israel and elsewhere. Many versions of the Hellenistic *lagynos* shape (an angular-bodied, narrow-necked jug with silhouetted floral patterns and horizontal bands painted in brown on a cream slip or surface) appear from about 175 to 50 BCE on Cyprus (probably a major source); Egyptian and other versions are also known. Small figured vessels and lamps made in molds (some depicting heads) were produced in the Nile Delta region (e.g., at Memphis) from about 100 BCE to 100 CE; also found at this time are red-ware painted jars with erotic motifs and busts of favored youths half-hidden on the interiors. Later Egyptian wares bear floral patterns in paint or added raised slip (barbotine); a particular group of shallow beige-ware cups depicts silhouetted pygmylike figures in black. Corresponding treatments occur on the Meroitic wares of Nubia.

Recorded Hellenistic to Roman imports include thin carinated bowls from Knidos, later relief-ware bowls from Corinth, and moldmade relief-ware "novelty" figured vases from Knidos (notably a cache in the form of parts of the human body, possibly for medical use, discovered on Paphos). In contrast to the Mediterranean-type wares, Jerusalem products show a range of thin, well-fired plain wares in the tradition of the preceding Persian period.

Thin-walled Greek-influenced cooking vessels in sandy wares appear in Hellenistic times. A large Cypriot series and those from the Nile Delta show typically Greek features such as internally ledged rims (to support lids) and, on the shallower "casseroles," striplike handles along the exteriors of rims. The typical Palestinian version is fairly shallow, with a sagging bottom and a short neck flanked by small handles;

Early Roman examples are particularly thin. Horizontal ribbing is a feature of these and of related round-bottomed jugs and flasks, as from the later second century BCE; the treatment is copied in Egypt, and, much later, in the Aegean region, and is widespread on later Roman/Byzantine wares from the Levant. In about 170–50 BCE, portable braziers set on tall stands, with three internal knobs set obliquely to support a pot, were made in quantity in the Alexandria region and also in the Aegean; some copies of them appear on Cyprus and elsewhere. Their most distinctive feature, the internal knobs, is regularly molded in the form of plaques (sometimes inscribed) bearing Greek-style Silenos masks or bulls' heads.

The traditional Palestinian storage jars with ringlike handles at the shoulder continue unabated, being commonly accompanied by imported wine and oil amphorae—in Hellenistic times mostly from Rhodes and in Roman times from Italy (Campania, Istria, and elsewhere) and even Spain. Enormous numbers of Hellenistic wine amphorae from Aegean sources (identified by the stamps on their handles) are documented at Alexandria. These spawned local imitations, at first along Lake Mareotis and then throughout Egypt. Similar copies appear on Cyprus and elsewhere. These normally have ovoid or long cylindrical bodies and distinctive necks flanked by two long, upright handles; they taper at the base to a solid toe of variable length. A distinctive version of this shape, with ribbing added and the handles reduced to mere loops under the rim, is seen in Egypt in Roman times. Elsewhere, the most common local amphora types in Early Roman times are modeled on the Italian "pseudo-Koan" type (copied from an Aegean Hellenistic product), with tall handles formed of two rolls of clay set side by side. In Cilicia, a bulging version of the Palestinian torpedo-shaped jar is supplied with handles of this type. Later Roman types, apparently more diverse, are still inadequately studied. Painted commercial "labels" (*tituli picti*) are seen on both imports and copies; those from Masada in Israel include some labels in Latin, indicating the arrival of Italian wines there by about 20 BCE.

Clay mixing bowls with gritted interiors (*mortaria*) are present only sporadically: some wide-rimmed Italian imports bearing potters' stamps (first–second centuries CE) are known from Caesarea and Paphos. In the third–fourth centuries, versions of the Italian type, in a distinctive deep-brown ware with volcanic grits, were made on the northern Syrian coast (in the area of Ras el-Bassit). These bear multiple name stamps in Greek (and occasionally in Latin). They, and later unstamped narrow-rimmed versions, circulated widely around the Levantine coastlands.

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JOHN W. HAYES

Ceramics of the Byzantine Period

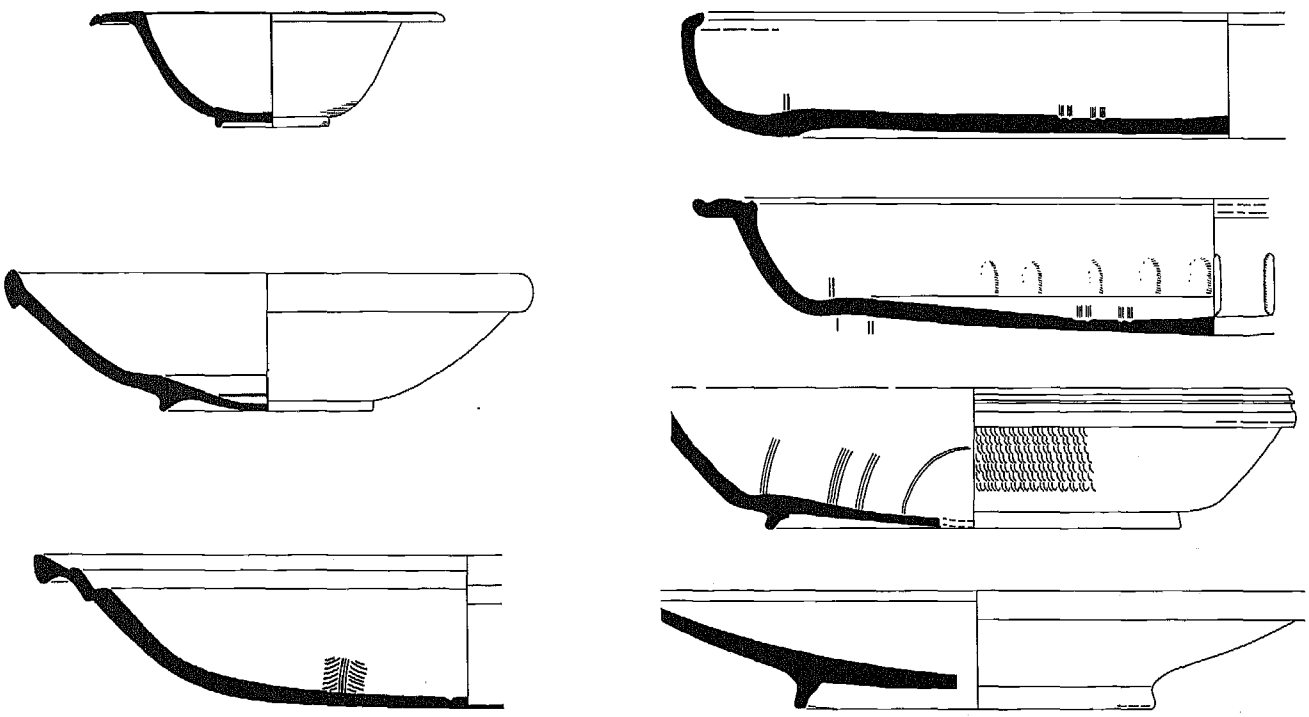
Pottery of the fourth to seventh century found in the Levant is generally labeled Byzantine; elsewhere in the Mediterranean the same wares are normally designated Late Roman (the term *Byzantine* being reserved for later, typically lead-

glazed wares). The modern Levantine usage implies close links with political history. Actual fashions in pottery tend to lag behind political changes, relying on the creation or extinction of markets (which are, in part, affected by major natural disasters such as plagues and earthquakes). Thus, Roman-derived wares continued to be produced through the Umayyad period; the major break in tradition occurred in around 800 CE. Similarly, in Egypt, the religious term *Coptic* is used to designate pottery of this period, although, in Nubia at least, the same tradition can be traced down to the fourteenth century. *Late Roman* as a designation should be viewed here in cultural rather than political terms—for much of the period Rome (or its successor, Constantinople) did not directly rule all the areas under consideration. The influence of (Roman) Christianity was generally strong, however, and this influenced pottery decoration.

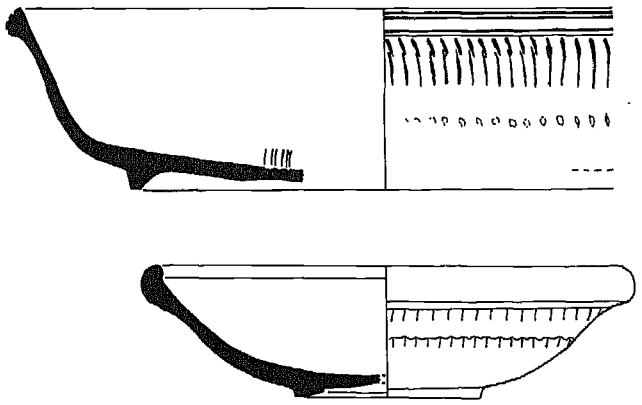
The universal fine ceramic wares of the period are fine textured and red bodied, with a reddish slip finish (not a glazed treatment). A few major centers of production in North Africa, western Turkey, and (probably) Cyprus led the way, in due course providing models for other, more local wares. This concentration of production in a few major centers may reflect the tendency to centralized control and specialization found in the age of Diocletian and Constantine. While the potters themselves remained free agents, the marketing of their products seems to have become more regulated, with a view to maintaining steady supplies to major urban centers such as Constantinople. Eventually, the monetary economy of imperial Rome shrank, and organizations such as the church and local magnates seem to have assumed more control over the circulation of these cheap everyday products.

The various fine wares have attracted the bulk of scholarly attention, mainly from the standpoints of typology and art history. Trade amphorae have also become well known in recent years. The coarser wares are generally more poorly served by the scholarly literature. Statistics of frequency are available for relatively few sites; many excavators have not troubled to record the bulk of their finds before discard. A lack of excavations on kiln sites impedes our knowledge of sources and of production techniques. Chemical and petrological techniques of analysis have not yet been widely used on the wares in question.

Fine Red Wares. The fine red-gloss (terra sigillata) wares of earlier Roman times, represented in the Levant chiefly by Eastern Sigillata A and Cypriot(?) products, died out during the late second century. A general scarcity of well-dated deposits for the period from 150 to about 300 or so containing fine wares may signal reduced use of such imports. With the fourth century, new trade patterns emerged: African Red-Slip Ware, a medium-to fine-grade tableware with a red slip, made in the region of modern Tunisia, circulated widely in the Levant and also in Egypt (a region previously partly closed to imports, owing to its



CERAMICS: Byzantine Period. Figure 1. *African Red-Slip Ware types.* Fourth-seventh centuries. (Courtesy J. W. Hayes)



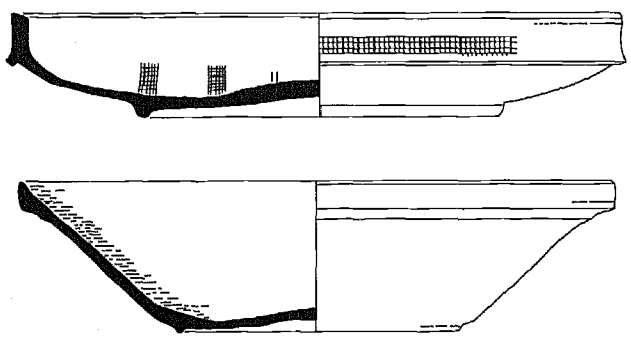
CERAMICS: Byzantine Period. Figure 2. *Examples of Cypriot Red-Slip Ware.* (Courtesy J. W. Hayes)

pre-Diocletianic monetary isolation; see figure 1). Some African wares had already appeared at Dura-Europos (before 256), but their main influx was later. The fourth-century African products (Terra Sigillata africana C and D) are mostly blatant copies of metalware shapes, with analogous decoration, either applied or stamped; these "metallic" types (flat-based dishes and small bowls with wide rims, for example) may generally have been wheel-thrown within molds. Throughout the fourth century floral stamped patterns, mostly based on radiating palm-branch motifs—not derived from metalware—persisted. The stamped patterns of the fifth and sixth centuries, largely Christian in content, more closely match the decor of contemporary silverware.

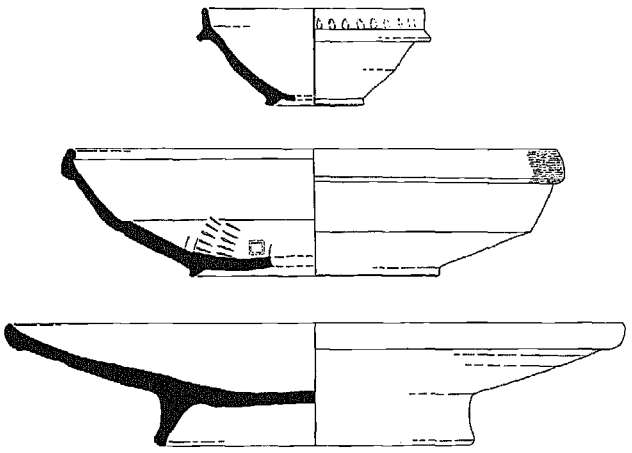
The primacy of the African wares throughout the Mediterranean region is proved by numerous imitations; in the East, these are noted throughout Egypt, in Jordan, and in Athens. Two major fine-ware competitors, widely traded, appeared in around the 360s: Phocean Red-Slip Ware (former name: Late Roman C) from western Asia Minor, and Cypriot Red-Slip Ware (a revival of the earlier Cypriot Sigillata, whose source remains unlocated; see figure 2). The latter ware—current in Cyprus, western Cilicia, the Alexandria region, and parts of Palestine—is first attested in deposits from 365 CE(?) at Kourion on Cyprus and on a contemporary wreck at Yassıada in southwest Turkey. Its principal fifth-century shape mimics an African type. Phocean Red-Slip Ware, at first influenced by the earlier regional (Çandarlı) ware and by the stamped African products, soon developed a characteristic shape—a shallow bowl with an overhanging (often rouletted) rim—along with distinctive stamps (see figure 3). The classic version (c. 450–550) is common on Levantine sites (e.g., at Antioch, in deposits associated with the earthquake in 526, but not in Egypt, where local stamped copies of the African wares predominated. The principal dated contexts for this period are those at Antioch (Turkey), Kourion (Cyprus), Tell Keisan (Israel), Lejjun (Jordan), Kellia and Karanis (Egypt), and Ballana (Nubia); their dates are confirmed by finds from more distant sites such as Athens (the Agora), Constantinople, and Carthage. An alternative dating scheme (for the 350s–380s) has been proposed for Jalame (northern Israel), although exact contexts for the pottery finds there are unspecified. A suspicious absence at Jalame of the African types elsewhere current between 360 and 390, and the frequency of Phocean and other products elsewhere assigned to the early/mid-fifth century, may here point to a need for reassessment. Cypriot Red-Slip Ware of unusual types is common on this site.

Reduced imports of the Phocean ware and a revival of the Cypriot ware (after fifty or more years of decline), accompanied by changes in their vessel forms, occur in the mid-sixth century. The new pattern, already just evident at Lejjun (a probable victim of the 551 earthquake), could be a consequence of the plague of 540–542. Imports of the African ware, at a low ebb for a century, now resume in quantity. All three wares are widespread on numerous Palestinian church sites for the period from about 550 to 625 (cf. also the Beth-She'arim catacombs). The later Cypriot products, typified by flat-based dishes bearing single cross stamps, are particularly common in and around Alexandria.

Renewed imitation of, chiefly, the African wares is seen in various places. In northern Jordan (at Jerash and Pella), dishes in a local thin-walled red-slipped fabric bear painted figures or floral ornaments in two tones (purple and yellow-cream); some early examples have the traditional stamps. In Egypt, the Aswan fine-ware factories continued to produce derivatives of late fifth-/early sixth-century African products (the latest to be imported there) for two centuries or more (see figure 4). These exhibit a flaky pink fabric and a burnished red slip (often obscuring the stamps). Examples were exported to Cyprus and elsewhere in the late seventh century, when the other fine red wares were disappearing. In due course, painted cream-bodied wares supplanted them, particularly in Nubia.



CERAMICS: Byzantine Period. Figure 3. *Examples of Phocean Red-Slip Ware.* (Courtesy J. W. Hayes)



CERAMICS: Byzantine Period. Figure 4. *Egyptian Red-Slip A (Aswan Ware).* (Courtesy J. W. Hayes)

Lead-Glazed Wares. Until the seventh century lead-glazed wares are absent from the eastern Mediterranean. It is then that utilitarian lead-glazed vessels began to be produced in the neighborhood of Constantinople. This functional lead glazing, of uncertain origins (various short-lived wares are noted in Thrace, the Balkans, and the Alpine regions from the fourth century), seems quite distinct from the ornamental tradition of Islamic glazed wares in the period after 775/800. A mid-seventh-century deposit in Istanbul proves medium-scale production (chiefly of internally glazed jars); the earliest closely dated examples of the series come from the Yassıada wreck (c. 625). [*See* Yassıada Wrecks.] Production en masse, chiefly of white-bodied tablewares, such as dishes, followed in about 700, initiating a conservative tradition of plain or minimally decorated wares that persisted for some four centuries. A few early examples of the Constantinople wares, along with occasional derivatives, are noted from Cyprus and elsewhere on the Mediterranean littoral in the seventh–eighth-century contexts. No comparable wares are yet known from Anatolia.

Plain Wares. Marked differences between regional traditions blur the picture for plain wares. Painted decoration is not common in the late Roman/Byzantine period, except in parts of Egypt, where lively figural scenes in two colors are known. A ribbed treatment is more common. In Egypt and Palestine, flasks and jugs often feature internal strainers (to keep out flies?), and small spouts on the shoulder; a few have lids attached by a loop set on the handle (a feature later copied in Constantinople). Combed grooving (mostly wavy lines) appears on sixth–seventh-century Aegean wares. By the sixth century, declining standards are evident in many provincial products; simple squat jugs and jars, lacking any decoration, become frequent. Their bases may be hollowed, with a central knob. On the mold-made clay lamps of the period, the ornament becomes more linear and schematic; the Palestinian Syrian series survive into ʿAbbasid times.

Cooking Wares. Thin-walled cooking vessels, normally with small handles, reflect Roman traditions. The ribbed treatment originating on Palestinian products now becomes universal. A range of typical fifth–sixth-century shapes appears on the Dhiorios kiln site on Cyprus. Deeper vessel types appear in western Asia Minor and the Aegean. Jewish culinary practices are evident in a class of steep-sided casseroles with close-fitting lids—actually thrown by the potter in a single piece and then partly sliced open. The abrupt knife-cut separation of the two elements, found first in Roman times, is seen on "Byzantine" examples from Palestine, Cyprus, and the Nile Delta region until the eighth century. It is possible that Jewish concerns for purity influenced Christian usage also.

Special Types. Small mold-made clay flasks, "souvenirs" from Christian pilgrim shrines, presumably meant to hold sanctified oil or water, were current from about 450 to 650. These imitate precious versions in silver and other materials and bear crude representations of saints or simple Christian symbols in relief, sometimes with an identifying inscription. Best known are the St. Menas flasks from Egypt, but other Egyptian and Palestinian series exist whose sources are unknown; a series with string holes replacing small handles is native to western Asia Minor. Related in function are some spindly flasks with signet-impressed stamps (origin unknown). Like the Menas flasks, they were widely transported. Their stamps embrace monograms that are Christian and also Gnostic/magical symbols.

Commercial Amphorae. Within the Mediterranean orbit, large two-handled clay jars remained the preferred transport containers for wine, olive oil, and certain dry goods (often indicated by markings, mostly undeciphered, made in red paint). The Byzantine examples tend to be rather smaller and more round bodied than their predecessors. Cylindrical storage jars bearing two small ring handles on the shoulder remain the standard Palestinian type; the examples from this period are normally finely ribbed. Among the Palestinian storage jars, buff to orange-brown wares predominate, but one widely exported type, from the Beth-Shean region in Galilee, has a hard gray fabric bearing multiple loops painted in white. Both buff- and gray-ware types survived through the Umayyad period. In Egypt, the standard local type is a slender carrot-shaped vessel with irregular ribbing and crude handles, made of coarse dark-brown Nile silt.

During the period from about 380 to 650, a small number of distinctive amphora types of Levantine and Aegean origin circulated widely throughout the eastern Mediterranean and beyond (e.g., to Constantinople, Nubia, and even distant Britain). The prime types are, in Riley's (1979) Benghazi classification: Late Roman Type 1 (cylindrical, with a sandy

buff ware, uneven ridging, and unevenly grooved handles), made in Cilicia and Cyprus; Late Roman 2 (nearly globular, with a cupped mouth, slanted handles, and straight or wavy close-set grooving covering the upper part), from various Aegean sources; the Gaza type (Late Roman 3), a long, bullet-shaped variant of the common Palestinian ring-handled shape, in a dull-brown ware; and Late Roman 10 (small, spindly, and ribbed, in a silky, micaceous brown ware), from western Asia Minor. In addition, some large cylindrical oil amphorae from North Africa (in brick-red wares, often fired buff on the outer surface) appear everywhere. The successors of these amphorae in the seventh and eighth centuries are less widely distributed, documenting a general decline in Mediterranean trade during that period.

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JOHN W. HAYES

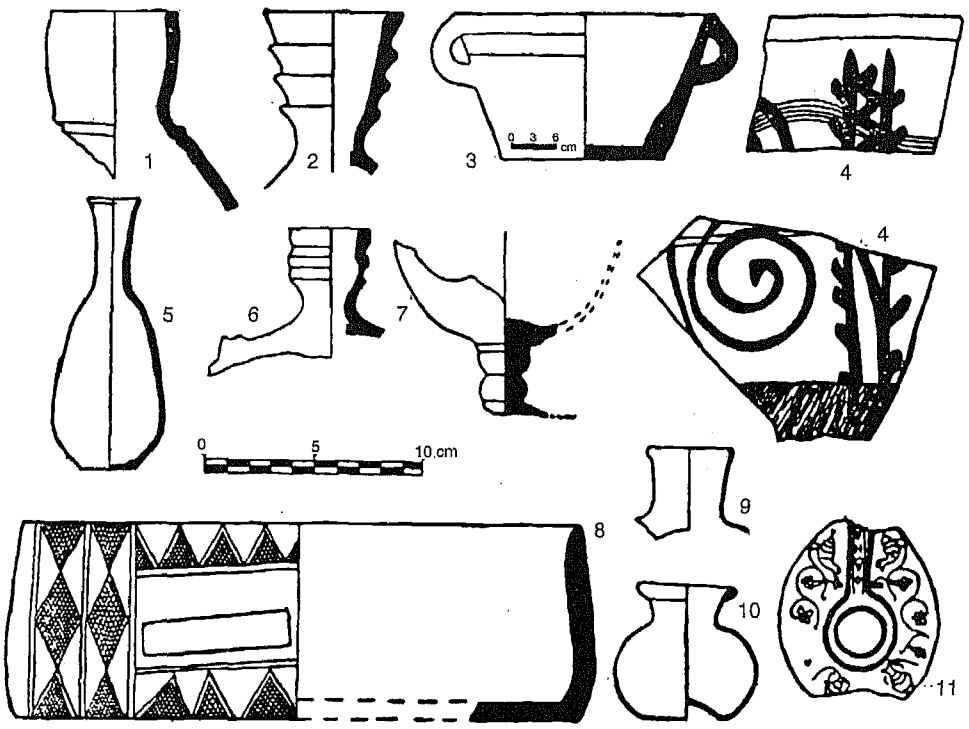
Ceramics of the Islamic Period

The seventh to eleventh centuries in the Near East is not a monolithic period in either historical or ceramic terms. In Palestine, these centuries cover the end of Byzantine rule (up to 640), the Umayyad period (c. 640–750), the ʿAbbasid period (c. 750–969, during the latter part of which the country was ruled by the Tulunids and Ikhshidids), and the Fatimid period (c. 969–1099). To date neither comprehensive ceramic sequences covering these centuries in all parts of the Near East nor definitive regional typological distinctions have been established.

The study of Islamic pottery has been plagued by problems of terminology and historical biases. Historically based typological divisions (e.g., Umayyad, ʿAbbasid, Fatimid) are inaccurate because changes in pottery rarely coincide with political events. Though excavations in Israel have demonstrated that the Muslim conquest was not accompanied by widespread destructions, it is still generally held that the transition from Umayyad to ʿAbbasid rule in the mid-eighth century marked the beginning of a dramatic decline in Palestine's prosperity because the capital was transferred from Damascus to Baghdad. In archaeological terms, however, this has been a self-fulfilling prophecy: post-Umayyad remains have not been found because it was assumed that they do not exist. Part of the failure to identify these remains in the archaeological record in Israel has been the misdating of Islamic ceramic types by archaeologists, many of whom have ignored the clearer sequence in Jordan (e.g., Pella, Amman, Ḥesban, ʿAqaba).

Islamic pottery has traditionally been studied from an art historical perspective, with an emphasis on whole glazed vessels, at the expense of the fragmentary and often unglazed material recovered on excavations. Palestinian sites from which important Islamic ceramic material is published include Ḥesban, Pella, ʿAqaba, the Amman Citadel, Khirbat al-Mafjar, Abu Ghosh, Capernaum, Ramla, Caesarea, Tiberias, Khirbet Kerak, and Nessana. Key sites outside Palestine include Usais in Syria, Samarra and Susa in Iraq, Fustat in Egypt, Istanbul/Constantinople in Turkey, and Siraf in Iran. This article focuses on the Islamic types characteristic of Palestine. The lack of well-excavated and published material leaves open the question of whether some of the eighth- and ninth-century types described here continued into the tenth and eleventh centuries.

Seventh-Century Types. Byzantine ceramic types continued without significant changes until the end of the seventh century: Late Roman Red Wares; Fine Byzantine Ware



CERAMICS: Islamic Period. Figure 1. *Islamic pottery types.* Black stone bowl (no. 8); red-painted basin fragments (no. 4); and a channel-nozzle oil lamp (no. 11). (After P. V. Corbo, *Gli scavi di Kh. siyar el-Ghanam (campo dei Pastori) e I Monasteri dei Dintorni*, Jerusalem, 1995, fig. 40)

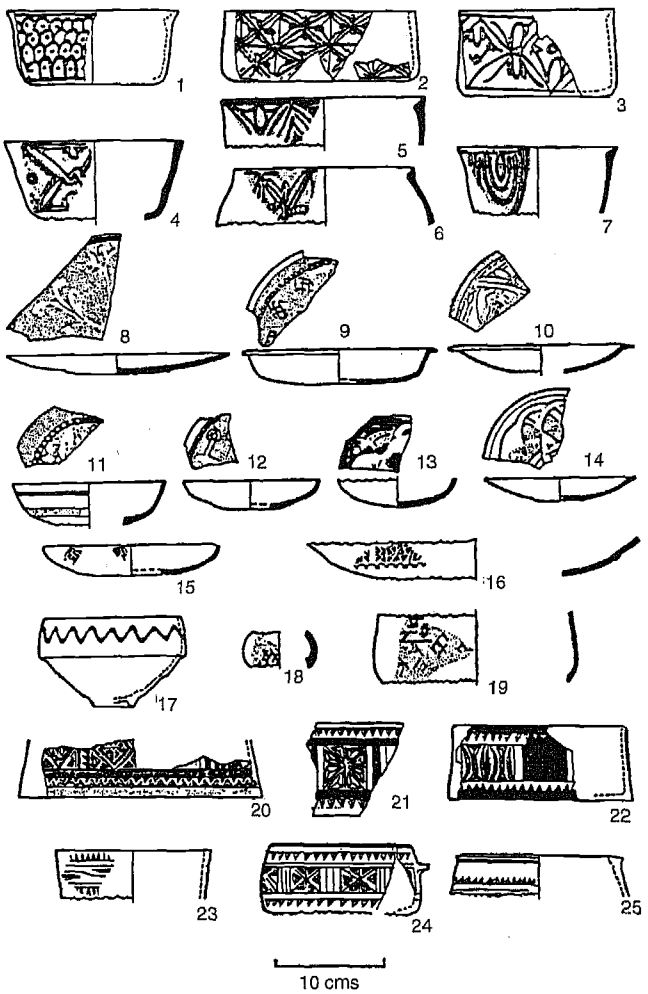
bowls (see below) with incised wavy lines and jars, jugs, and juglets with incised gashes; "Gaza" amphoras, the latest of which have a very short neck and pointed base; and large candlestick lamps, "Persian" (wheelmade) lamps, and Jerash lamps. Painted decoration was rare, except in the case of dark-surfaced, white-painted bag-shaped storejars from Palestine and painted Coptic wares from Egypt and their imitations (e.g., Jerash bowls). Aside from the painted wares, all of these types disappeared sometime between the late seventh and mid-eighth centuries.

Fine Byzantine Ware. A group of vessels of the mid-sixth–tenth centuries, distinguished in form, fabric, and surface treatment, are known as Fine Byzantine Ware. In the early eighth century, the repertoire of open vessels was expanded to include a wide variety of shallow dishes and plates. The burnishing characteristic of the Byzantine period continued, but painted black, white, and/or red designs were sometimes added, perhaps reflecting Coptic ceramic influence. The walls of the vessels tend to be thinner and more delicate than was usual in the sixth and seventh centuries. Islamic small bowls and cups also differ from Byzantine examples in having rounded, flat, or disk bases, and in lacking the incised wavy-line decoration. Some have deep, hemispherical bodies and eggshell-thin walls. Local variants of these deep cups, with thicker walls and combed bands, are common at Islamic sites in Israel's Negev desert.

Black Stone and Ceramic Bowls. One of the characteristic bowl types of the eighth and ninth centuries is the black bowl with a broad, flat base and straight walls (see figure 1). Many have ledge handles and are decorated on the exterior with incised linear designs. The material is either a hard, dark-colored stone described as steatite, or soapstone, or a dark, burnished, handmade ceramic. A related and contemporary group of bowls that seems to have been used as cooking vessels is distinguished by its lack of decoration, large size, and blackened exterior. The type may have its origins in the northwest Hijaz, where similar unfinished bowls have been found in association with ʿAbbasid pottery at steatite mines.

Kerbschnitt Bowls. *Kerbschnitt,* which means "cut-ware," describes a group of thick-walled, handmade bowls decorated with deeply cut patterns (see figure 2). The decorative technique seems to be inspired by woodcarving, while the form is clearly related to the contemporary black bowls described above. The cut patterns became cruder during the course of the ʿAbbasid period.

Red-Painted Ware. Red-painted jars and basins made of a thick, buff fabric were common in northern Israel, Jordan, and Syria during the eighth and ninth centuries (see figure 1). Their painted designs often consist of spirals, wavy lines, and branch or tree motifs. Bowls are also found decorated with red-painted designs, though they usually

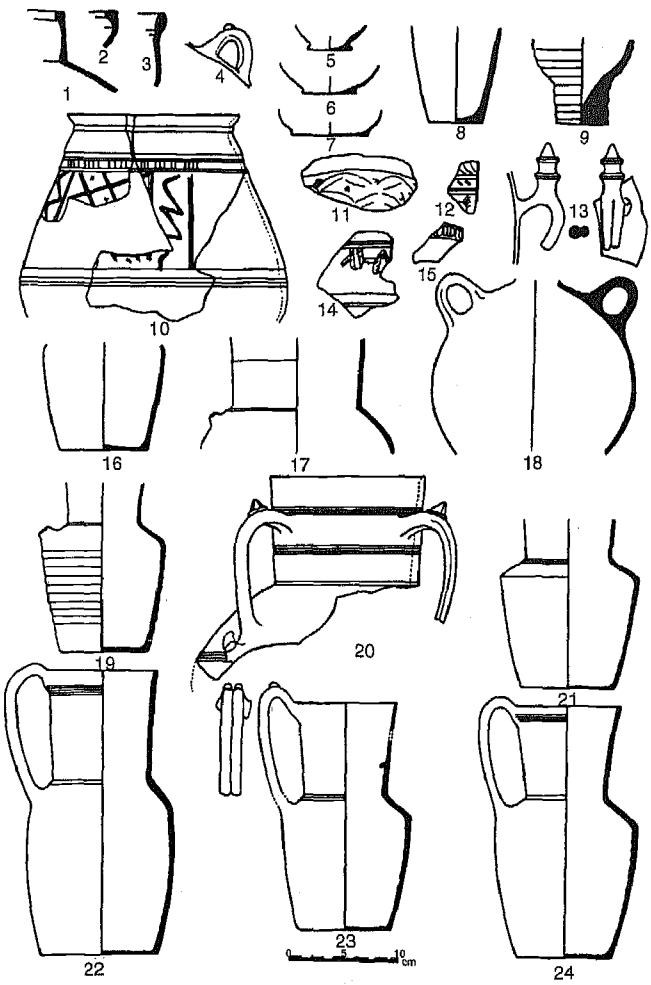


CERAMICS: Islamic Period. Figure 2. *Islamic pottery types.* Examples of painted Islamic variants of Fine Byzantine ware bowls (nos. 8-16, 19); red-painted bowls (1-3); and Kerbschnitt bowls (nos. 20-25). (After Baramki, 1944, fig. 6)

have thinner, hard-fired walls and more elaborate painted motifs. Some have the same flat-based, straight-walled form as the black bowls and *kerbschnitt* bowls described above (see figure 2). The designs on this group also recall the latter's cut patterns and the incisions on the former.

Buff Ware. Sometime in the second half of the eighth century, a new group of vessels made of a porous buff, cream, or greenish-white fabric appeared in Palestine. Archaeologists in Israel use the term *Mefjer ware* to describe jars and jugs made of this fabric, which often have molded, impressed, incised, and/or applied decoration (see figure 3). The ware takes its name from the site Khirbat al-Mafjar, where it was found by D. C. Baramki (who did not use the term). According to Myriam Rosen-Ayalon and Avraham Eitan (1969), both glazed pottery and Mefjer ware were present in the earliest levels at Ramla, which was founded by the Ummayads in the first half of the eighth century. However, these "earliest levels" at Ramla probably represent an expansion of the site in the ʿAbbasid period because neither Mefjer ware nor glazed pottery has been found in Umayyad levels at sites in Jordan, such as Pella, Amman, and Ḥesban. Even at Khirbat al-Mafjar, the earliest glazed pottery and Mefjer ware were assigned by Baramki to the ʿAbbasid period (Baramki, 1994).

This type of buff ware was probably introduced into Palestine from ancient Mesopotamia (areas of modern Iran and Iraq), where it is found in seventh–eighth-century contexts. It continued to be produced through the Mamluk period, as indicated by its presence at Samarra in the ʿAbbasid period and at Hama in contexts dating to the twelfth–fourteenth centuries. Though no typology of Mefjer ware exists, changes can be distinguished over time. The carinated shapes of the ʿAbbasid jars and jugs are clearly inspired by metallic prototypes, as are the protruding knobs on the tops



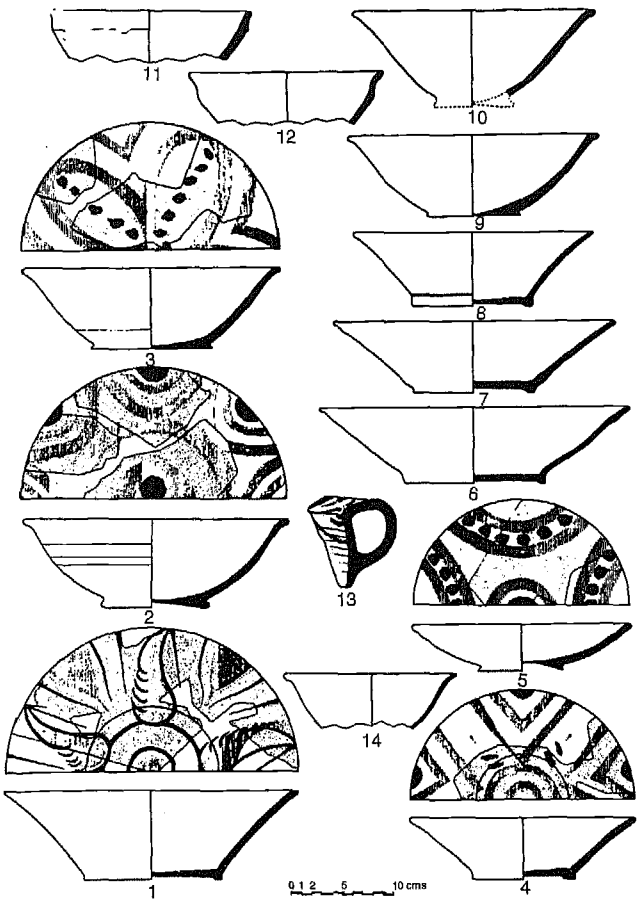
CERAMICS: Islamic Period. Figure 3. *"Mefjer Ware."* (After de Vaux and Steve, 1950, pl. C)

of their handles and their incised or impressed decoration. The jars and jugs of the twelfth–fourteenth centuries have rounded bodies and elaborate, barbotine decoration that combines incised and molded designs and applied and impressed clay strips.

Though the term *Mefjer ware* is sometimes used by archaeologists in Israel to describe any Islamic vessel made of a light-colored fabric, it properly refers only to the decorated jars and jugs described above. Mahesh ware, which was identified by Donald S. Whitcomb at ʿAqaba, represents another group of light-colored Islamic vessels (Whitcomb, 1989b). Like Mefjer ware, Mahesh ware is characterized by its light-colored fabric. However, it includes such open shapes as cups, bowls, and basins and has simple decoration consisting of occasional comb-incised bands. Mahesh ware dates to the ʿAbbasid period and has been found at many of the eighth–ninth-century settlements in the southern Negev.

Glazed Pottery. Aside from an occasional piece of Parthian glazed ware and the seventh-century lead-glazed wares from the area of Constantinople, glazed pottery is rarely found outside Iran and Iraq before the eighth century. Glazing is usually applied to the interiors of bowls, though it also occurs on the exteriors of jars, jugs, and oil lamps. [*See* Lamps.] In the eighth and early ninth centuries, Coptic glazed ware was produced in Egypt. It is decorated with brown and black painted designs on a white slip, with or without a transparent glaze, and covered with a green or brown glaze. The earliest locally produced glazed pottery in Palestine has a monochrome green or yellow glaze or is decorated with polychrome splash glaze (including any combination of brown, yellow, white, green, purple, and black).

Monochrome and splash glazes made their first appearance in Palestine during the ʿAbbasid period, perhaps in the early ninth century. Whitcomb (1989a) has noted that similar polychrome splash-glazed wares were produced elsewhere during the ninth and tenth centuries. One of these is Egyptian Faiyumi ware, which is characterized by its bold, radiating stripes of color (see figure 4). Another is Hijazi ware, which, as its name suggests, seems to have been produced in Arabia. Its dark, red-orange fabric is decorated with bold polychrome spirals and cross-hatched designs. The Red Splash wares common at ʿAqaba, which also fall into this category, include examples decorated with incised (sgraffito) designs. The ceramic types characteristic of Samarra in this period include white-glazed wares, and blue-green glazed barbotine storage jars, which may have served as specialized containers for *dibs*, or "date honey." The Samarran wares, which are common at sites like Siraf, may derive from Sasanian prototypes. [*See* Sasanians.] During the Fatimid period, luster ware (glazed) was a popular luxury item, with local variants produced in Egypt and around the Near East. It derives its name from its shiny metallic gold designs on a white background. During the ninth and tenth centuries, glazed cooking wares appeared in Palestine.



CERAMICS: Islamic Period. Figure 4. *Polychrome splash-glazed ware.* (After de Vaux and Steve, 1950, pl. A)

They are represented by globular cooking pots and open casseroles made of a brittle, dark, red-brown ware with a dark-brown or dark-purple glaze on the interior.

Oil Lamps. Mold-made "channel-nozzle" oil lamps were common in Palestine during the Islamic period (see figure 1). The name refers to a channel that connects the filling hole and the wick hole. Though these lamps vary from region to region within Palestine, general morphological changes can be distinguished during the course of the period. The lamps of the seventh and early eighth centuries still have the low circular ring base and elongated, oval body of their Byzantine predecessors. They have a small knob handle and are sometimes decorated with a Greek or an Arabic inscription, in the Byzantine tradition. During the course of the eighth–tenth centuries, the body became taller and shorter, and the nozzle became more pointed. The handle grew larger and became tongue shaped. The low ring base, which often contains delicate relief patterns, mirrored the outline of the pointed oval body. The relief decoration on the upper half of the body usually consists of floral or geometric motifs, such as the grapevine (Arndt, 1987). By

the ninth and tenth centuries, these lamps were sometimes covered with a monochrome green glaze.

Conclusion. Many of the changes that occurred in the ceramic repertoires of the seventh–eleventh centuries should be understood in light of the reorientation of trade away from the Mediterranean world to the Near and Far East. The fine red-slipped pottery of the Roman world was superceded by Egyptian-inspired painted wares and glazed pottery influenced by Sasanian wares and Chinese imports. By the eleventh century, the subtle interplay of these changes had transformed the pottery of the Near East, especially in the western areas, where contacts with the Mediterranean world had formerly been strongest.

[*Many of the sites mentioned are the subject of independent entries.*]

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JAMES A. SAUER and JODI MAGNESS

CEREALS. The greatest proportion of the diet of the ancient Near East, as today, was supplied by cereals. These annual grasses were likely the first plants cultivated for food: the signs of domestication appear earliest for wheat and barley. Rye may also have been domesticated in the Near East (probably in Anatolia), though, like oats (whose origin is uncertain), it did not become a substantial crop. Millet cultivation appeared only in the first millennium BCE. Two other cereals, rice and sorghum, were transplanted from Asia and Africa, respectively, during the Hellenistic and Roman centuries.

Cereals were initially gathered from bounteous naturally occurring stands during the Epipaleolithic period for thousands of years prior to domestication. Gathering unconsciously selected for ears that resisted shattering, a crucial characteristic for the seed's dissemination among wild grains. Some carbonized seed remains from Pre-Pottery Neolithic (PPN) villages show fracture patterns produced by human threshing rather than natural shattering—unambiguous proof of cultivation. What motivated the transition from cereal gathering in the wild to deliberate cultivation remains an open question. Nevertheless, human sowing, harvesting, and threshing cemented the shift to nonshattering (nonbrittle) ears and brought about other changes in growth habit (abandonment of germination inhibition so that seeds sprout upon planting at any time) and morphology (increased size of grains and decreased attachment of grains in their spikelets). Morphological changes permit paleoethnobotanists to differentiate between wild and domesticated types in the archaeological record. [*See* Ethnobotany; Paleobotany.] Because wheat and barley are self-pollinating, the changes wrought by domestication were more readily secured from one generation to the next.

Morphologically distinct cereals appear at about 9000 BCE: Netiv ha-Gedud and Gilgal in Israel's Jordan Valley have produced domesticated barley, as has Ganj Dareh in western Iran. [*See* Jordan Valley.] Domesticated wheat (einkorn and emmer, see below) occurs at the Syrian steppe region sites of Aswad and Abu Hureyra, as well as at Çayönü in Turkey. [*See* Çayönü.] Prior to this PPN emergence of farming, wild grain seeds are known from the Epipaleolithic period in Jordan at Abu Hureyra, to its north at Mureybet, and at Naḥal Oren on Israel's Mt. Carmel spur. [*See* Mureybet; Naḥal Oren.] Paleoethnobotanists can trace the subsequent spread of agriculture throughout the Near East and beyond. Before the end of the Neolithic period, villages cultivated grain on Cyprus and in Greece. [*See* Cyprus.] By the end of the third millennium, barley and wheat had spread throughout the western Mediterranean basin, the Nile Valley, and central Europe.

Seeds and floral parts are preserved predominantly in carbonized form, accidentally (over)heated but not burned. Occasionally, seed impressions are found in baked clay. More rarely, fully desiccated kernels are recovered. Vegetal remains are routinely retrieved through simple flotation, in which water is used to separate carbonized material from soil samples.

Morphology. At the head of the cereal stalk stands the ear: an arrangement of flowers in a compound spike. The ear consists of spikelets arranged on a central axis or rachis. If brittle (shattering as in wild species), the ear breaks up into its component spikelets. If tough (nonshattering, as in most domesticated forms), the rachis remains intact until threshing, which produces random fractures. Thus, rachis fragments can be diagnostic of domestication. The spikelet contains the flower enfolded by the glumes, which can be strong and hold the grain tightly in the spikelet (glume wheats), or weak, permitting the grain to separate readily from the spikelet (free-threshing wheats). The floral parts themselves are surrounded by two protective layers (lemma and palea), which are either fused to the grain as it develops (hulled barley) or fail to adhere (naked barley). The grain itself is a layered structure in which the active seed is encased by a number of coats, the outermost of which is called the bran.

Wheat (*Triticum* L.). Archaeological literature catalogs an assortment of wheats by a variety of names: the older literature possesses even more terminology, as the botanical classification scheme has been recently simplified. Three of the four chromosomally distinct species of wheat regularly appear in ancient Near Eastern contexts. Within each species, subspecies differentiate themselves by the characteristics of their glume attachment.

Einkorn (*T. monococcum* L.) varieties, both wild (subspecies *boeoticum*) and cultivated (subspecies *monococcum*), are diploid glume wheats. A crucial component of the earliest agriculture, einkorn's place in the village pantry gave way to more productive species. Better suited to poorer soils, einkorn does not have attractive rising qualities when baked as bread.

Emmer and durum (*T. turgidum* L.) appear as wild emmer (subspecies *dicoccides*), cultivated emmer (subspecies *dicoccum*), and durum (subspecies *durum*). These are tetraploid wheats that include both glume (emmer) and free-threshing varieties (durum). Emmer belongs to the preagricultural and early agricultural crop medley and constitutes the principal wheat of the prehistorical period. It continued to sustain Egypt until Hellenistic times. Durum (hard wheat, macaroni wheat) evolved from emmer early on and became the dominant wheat of the Mediterranean basin, probably because of its free-threshing quality.

Bread wheat and spelt (*T. aestivum* L.) appear in cultivated varieties only, likely derived from a cross between a wheat of the species *turgidum* and a wild grass; bread wheat (subspecies *vulgare*) and spelt (subspecies *spelta*) are hexaploid wheats. Bread (common, vulgar) wheat is free-threshing. Finds indicate its availability to Neolithic farmers. Apparently, bread wheat did not become an important crop in the Near East until modern times, perhaps because of its susceptibility to bird predation or seed loss during harvest. Spelt appeared in about 5000 BCE, but finds are numerous only in Europe.

Barley (*Hordeum sativum* var. or *Hordeum vulgare* L.). Although terminological ambiguity exists, barley is taxonomically much simpler than wheat: a single diploid species with variants based on the number of grains that develop at each site on the rachis. Apart from the wild variety (*H. spontaneum*), the barleys also differentiate themselves on the basis of the fusion of the hull and the grain.

In two-row barley (*H. sativum* var. *distichum*) only one grain develops at each attachment on the rachis, resulting in two rows of fruitful spikelets, like its wild progenitor. Most two-row barleys are hulled. Their grains appear among the earliest cultivars at the inception of agriculture. Six-row barley (*H. sativum* var. *hexistichum*) also appeared early, yet subsequent to the two-row variety at a number of sites (e.g., Ali Kosh in southwest Iran). [*See* Ali Kosh.] The six rows are produced by three fertile spikelets at each attachment of the rachis and may have arisen as a mutation under irrigated conditions, which meet the water needs of the extra flowers. By the fourth millennium, it had replaced the two-row variety as the dominant cereal throughout Mesopotamia, presumably because of its higher yield. The occasional preservation of triplet spikelets and subtle differences in seed shape permit paleoethnobotanists to differentiate between the two varieties. Six-row also occurs as a naked grain (var. *nudum*) in the prehistorical periods but declines inexplicably later on.

Production. Wheat demands better soil conditions than barley: well-drained clayey soils that hold more moisture and possess greater nitrogen content. Barley does better than

wheat on less fertile soils and those with higher salinity or alkalinity and under more arid conditions. Both cereals are broadcast sown or deposited by dibbling or seed plow, usually after the tilling of the field in early winter (approximately November–January). Harrowing covers the seed, if broadcast. Repeated irrigations follow in Mesopotamia, while rain-fed agriculture hopes for abundant and well-timed precipitation. Weeding heightens yields, reduces undesirable seeds in the harvest, and provides a fodder resource.

Harvest takes place by uprooting or reaping with a sickle. Barley matures more rapidly than wheat, and its harvest is first. Thus, sowing both barley and wheat can serve to stretch the harvest season in order better to accommodate the labor supply. Sheaves are transported to the threshing floor, and the stalks are beaten, trampled, or sledged to separate ears from straw and to disarticulate the ears. Raking and winnowing ensue, successively refining the product, followed by various grades of sieving. The grain is then packed for transport and storage.

Archaeology can identify numerous tools and installations employed in grain growing. These include plowpoints, hoes, sickles and sickle blades, threshing floors, and storage facilities such as pithoi, stone-lined or plastered grain pits, silos, and granaries. [*See* Granaries and Silos.]

Depending upon the species of grain, a variable number of additional steps intercede before consumption. Kernels of glume wheats must be removed from the spikelets. This process normally involves parching in an oven. The brittle chaff is then broken away by pounding in a mortar. Additional episodes of sieving and hand sorting result in clean grain ready for food preparation. Free-threshing wheat and barley obviate parching and pounding. The most common species of barley, however, requires dehulling for most foods. The hull is removed by pounding moistened kernels. Sieving cleans the grain from the husks. Freed of spikelets and hulls, cereals are processed into a huge variety of foodstuffs, from bulgur to bread and porridge to beer. Mortars and pestles, cooking pots, ovens, bread molds, beer strainers, and saddle querns are notable artifacts of grain processing.

The ancient Near East's preoccupation with cereals extends beyond their cultivation, of course, to their control. Its agrarian societies were based chiefly on the wealth of cereal fields. Grains were the fundamental building block of the economy and principal medium of taxation as well. Cereal production and distribution also underlie an enormous range of ideas and their literary and artistic expression.

[*See also* Agriculture.]

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CHALCEDON (modern Kadiköy), site located on a small peninsula on the Asiatic side of the southern end of the Bosporus, on a strait 32 km (20 mi.) long, between the Black Sea and the Propontis, or Sea of Marmara. The city was founded in 685 BCE by colonists from the Dorian city of Megara, reportedly led by the colony's founder, Archias. Chalcedon was only a short distance across the Bosporus from Byzantium (modern Istanbul), which the Megarians also founded in about 668 BCE, on the Thracian-European side (Herodotus, *Hist.* 4.144; Strabo, *Geog.* 12.4.2). Two rivers, the Himeros and the Chalcedon, flowed into the Bosporus on the east and west side of the peninsula, respectively, forming small natural harbors that have since silted up. The peninsula and part of the mainland (where Chrysopolis was located, farther north, across from Byzantium) were called Chalcedonia (Xenophon, *Anabasis* 6.6.38) and, later, Bithynia.

Byzantium had a large natural harbor and was in an ideal position to control the Bosporus and impose tolls on traffic entering and leaving the Black Sea. The ancients called Chalcedon the "city of the blind" because its Megarian founders had not selected that more advantageous site (Herodotus, 4.144; Strabo 7.6.2; Tacitus *Ann.* 12.63; Pliny, *Nat. Hist.* 5.149). However, it appears likely that Chalcedon was settled as an agricultural rather than a trading colony. Prehistoric remains suggest that it may originally have been a Thracian settlement. Chalcedon and her sister colony, Byzantium, controlled the Black Sea trading traffic (Dionysius of Byzantium, *Anaplus Bospori* 19–20). Chalcedon's prosperity was also based on copper mines and on semiprecious

stones from the island of Chalcitis. Throughout much of their history, Chalcedon and Byzantium were closely allied. Participation in the Ionic rebellion against Persia resulted in the sacking and burning of Chalcedon in 494 BCE by the Phoenician fleet allied with Persia; the colonists then temporarily abandoned the city and, with the Byzantines, founded Mesambria on the west coast of the Black Sea (Herodotus 6.33). During the ascendancy of Athens following the Persian wars, Chalcedon was a member of Athen's Delian League; it paid an extremely large tribute to Athens derived from tolls exacted from Black Sea trade. In 416, Chalcedon's forces defeated the Bithynians (Diodorus 12.82.2). During the late fifth century BCE, Chalcedon was one of the Greek cities that sided with Sparta. The city was again subjugated by Persia in 387 BCE but was later liberated by Alexander (Arrian, *Anabasis* 3.24.5). Lysimachos, one of Alexander's successors, controlled Chalcedon until his overthrow in 281 BCE. The fact that Byzantium and Chalcedon minted copper coins in common during the third century BCE indicates that they had formed a *sympoliteia* (a "civic union") that may have been in effect in the fourth century BCE.

Chalcedon maintained its freedom through much of the fifth and fourth centuries BCE. It became a free city in 74 BCE, when Nicomedes IV of Bithynia bequeathed his kingdom to the Romans. Freedom did not mean independence, but rather the privilege of maintaining ancestral laws and customs and immunity from tribute and a military garrison. Pompey organized the Roman province of Bithynia-Pontus in 65–64 BCE. Byzantium was also part of it, although technically it was located on the Thracian-European side of the Bosporus. The Goths sacked Chalcedon during the reigns of Valerian (c. 258 CE) and Gallienus (267 CE).

When, in 330 CE, the emperor Constantine founded Constantinople as the *Roma Nova*, "New Rome," on the site of Byzantium Chalcedon was relegated to little more than its suburb. In 365–366 CE, Chalcedon supported Procopius, the imperial rival of Valens. After Procopius was overthrown, Emperor Valens had Chalcedon's walls taken apart and used the stone to construct Roman baths, the *Constantinianae thermae*, at Constantinople, as well as an aqueduct (Ammianus Marcellinus, *Historia Augusta* 31.1.4; Socrates, *Historia Ecclesiastica* 4.8). Chalcedon is chiefly known from late antiquity as the site of the Fourth Ecumenical Council, the Council of Chalcedon, convened on 8 October 451 CE in the church of St. Euphemia (martyred under Diocletian in Chalcedon in 303). More than five hundred bishops and imperial representatives attended. The Chalcedonian creed was presented during the fifth session on 22 October. In its final form it emphasized that Jesus Christ was fully human and fully divine and that these two natures should not be confused. Chalcedon was captured by the Persians in 615 and in 626 was taken by the Arabs during their siege of Constantinople.

The site of Chalcedon-Kadiköy has never been systematically excavated. The remains of the ancient city still visible in the sixteenth century have since disappeared. Greek and Latin inscriptions from Chalcedon, now widely scattered, have been collected and edited by Reinhold Merkelbach (1980). Four inscriptions from the hieron, or sanctuary, of Zeus Ouranios and the Twelve Gods have survived, some in the Chalcidian dialect (Merkelbach, 1980, pp. 26–34), but it is a matter of dispute whether this hieron, which existed as early as the third century BCE, was located on the Asiatic (Polybius 4.39.5–6) or European side (scholion on Apollonius Rhodius 2.531–533) of the Bosporus (Long, 1987, pp. 55–57, 153–155). Marble fragments from an ancient temple were incorporated into a castle built in about 1150 CE in a village called Anadolu Kavağli, but the site from which the fragments were taken has never been identified. An oracle of Apollo is also known to have existed in Chalcedon. The Byzantine remains of Chalcedon, including a palace, a hippodrome, and several churches, including St. Euphemia, were destroyed by the Persians when they captured Chalcedon in 615 CE.

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CHALDEANS. The Chaldeans were a group of tribes first clearly attested in the ninth century BCE in southern Mesopotamia. The name *Chaldeans* comes from the Greek *chaldaioi* (cf. Hebrew *kaśdîm*) and goes back to the term *kaldu* in Mesopotamian cuneiform sources. The Mesopotamians used the latter term to refer to both a people and a land.

Outside of a possible mention in an administrative document from the reign of the Assyrian king Tiglath-Pileser I (1114–1076 BCE), the Chaldeans appear first in an inscription of the Assyrian king Ashurnasirpal II (883–859 BCE)

which refers to the land of Chaldea in connection with the king's military campaign into southern Mesopotamia in 878 BCE. The Chaldeans are best attested from the second half of the ninth century through to the middle of the seventh century BCE, but continue to be mentioned into the Persian period. The latest reference to a Chaldean tribe in cuneiform sources probably comes from the time of the Persian ruler Darius II (423–405 BCE). In biblical and classical sources the term *Chaldeans* came to refer to Babylonians in general and priests, magicians, astrologers, diviners, and other such scholars in particular.

When the Chaldeans first appear in the ninth century BCE, they are already well settled in southern Babylonia. Their origin and the manner in which they moved into southern Mesopotamia are not known, although it has sometimes been proposed that they came from eastern Arabia. Nothing is known of their language beyond a few names which appear to be West Semitic in origin. All the Chaldean kings of Babylonia bore traditional Babylonian names, as did most Chaldeans whose names are known. It has often been stated that the Chaldeans were a subgroup of the Arameans, but there is insufficient evidence to decide on this matter. The Mesopotamian sources clearly distinguished between the two groups, while frequently mentioning them next to one another. The Arameans first appear in southern Babylonia about a century after the Chaldeans; they were split into many more smaller tribes and were less inclined to adopt Babylonian customs and manners than Chaldeans. At times the two groups acted in alliance (generally against Assyria) and at other times were at enmity with one another. Aramaic was likely the predominant language in Mesopotamia from about the middle of the first millennium BCE and Chaldeans appear to have spoken either this or a dialect of it. This language came to be associated with them and was even on occasion called Chaldee. The Chaldeans spoke in Aramaic in *Daniel* 2:4, and *Daniel* 1:4 presumably intends to indicate Aramaic when referring to the "writings and language of the Chaldeans." [*See* Arameans; Aramaic Language and Literature.]

The Chaldeans were located primarily in southern and eastern Babylonia, and rarely appear outside of Babylonia. The Sealand, an area of swamps and marshes around the head of the Persian Gulf, and likely corresponding to the modern Ḫor el-Ḥammar marshes, came to be particularly identified with the Chaldean tribe of Bit-Yakin, and its rulers were sometimes called "king of the Sealand" in Assyrian sources. Because Elam bordered on the Sealand to the east, the Bit-Yakin were in frequent contact with that country and often turned to it for military support against the Assyrians and for refuge in time of flight from Assyrian punishment. [*See* Assyrians.]

Most Chaldeans probably lived a nomadic or seminomadic existence dependent upon animal husbandry, hunting, and small-scale agriculture. From the earliest times, at least some lived a settled existence. They are found dwelling in the major urban centers of Babylonia (Cutha, Ḫursagkalama, Kish, Nippur, Sippar, Uruk), and are said to have had numerous settlements. Sennacherib claims to have conquered 88 walled towns and 820 villages belonging to them, but some of these may simply have been settlements located in the general areas inhabited by the individual Chaldean tribes because several old Babylonian cult centers are included among the towns named by Sennacherib. [*See* Kish; Nippur; Uruk-Warka.]

Five Chaldean tribes are known: Bit-Amukani, Bit-Dak(k)uri, Bit-Yakin(i), Bit-Ša'alli, and Bit-Šilani. The latter two, however, are only attested from the reign of the Assyrian king Tiglath-Pileser III (744–727 BCE) through to that of Sennacherib (704–681 BCE). Many Chaldeans seem to have become "babylonianized," taking traditional Babylonian names, becoming involved in Babylonian political life, and turning to agriculture for their livelihood. Nevertheless, they maintained their tribal structure and distinct identity. Tribes were referred to as the "House of PN," with PN standing for the personal name of the eponymous ancestor of the tribe (e.g., Bit-Amukani, "house of Amukani"). Each tribe was headed by one individual, whose power and authority was such that Assyrian royal inscriptions sometimes referred to him as a "king." Led by their own sheikhs and less settled in particular locations than most Babylonians, the Chaldean tribes remained semi-independent of the central government. They often play a disruptive role in events and frequently led the opposition to Assyrian control of Babylonia. [*See* Babylon; Babylonians.]

The first quarter of the first millennium BCE was a time of political instability and economic weakness in Babylonia and the Chaldeans made use of this situation. Several tribal leaders gained control of the throne and came to be included in the canonical lists of Babylonian rulers. None of these individuals, however, succeeded in establishing a lasting dynasty. Each of the three major tribes provided at least one ruler who was recognized as king of Babylonia: Marduk-apla-uṣur (end of the ninth or early eighth century BCE); Eriba-Marduk of Bit-Yakin (at least nine years, ending no later than 760 BCE); Nabu-šuma-iškun of Bit-Dakkuri (c. 760–748 BCE); (Nabû)-mukin-zeri of Bit-Amukani (731–729 BCE); Marduk-apla-iddina II of Bit-Yakin (721–710 and 703 BCE), the Merodach-Baladan of the Hebrew scriptures; and Mušezib-Marduk of Bit-Dakkuri (692–689 BCE).

In addition to these individuals, the tribes provided several important rebel leaders in the fight against Assyria, in particular Nabu-zer-kitti-lišir (c. 680 BCE), Nabu-ušallim (c. 680–675 BCE), and Nabu-bel-šumati (during the Šamaš-šuma-ukin Revolt, 652–648 BCE); all three were descendents of Marduk-apla-iddina II, who was himself a descendent of the earlier ruler Eriba-Marduk. Although the time of the Neo-Babylonian Empire (625–539 BCE) has often been called the Chaldean period, there is in fact no evidence that

the rulers of that time were Chaldeans or that Chaldeans played a major role in affairs of the period. It is unlikely, however, that their influence just disappeared after the installation of the new ruling dynasty.

The Chaldean tribes are frequently found in opposition to the central Babylonian administration and in particular in opposition to Assyrian forces who were trying either to gain or maintain control of Babylonia. The Chaldean tribes were thus targeted for punishment by Assyrian rulers. Assyrian royal inscriptions often mention the destruction of Chaldean settlements. They claim that almost a quarter of a million Chaldeans were deported from Babylonia during the reigns of Tiglath-Pileser III and Sargon II, and these deportations are known to have continued under Sennacherib. The deportees were resettled in Assyria proper and in other parts of the Assyrian Empire. The tribes of Bit-Ša'alli, Bit-Šilani, and Bit-Yakin were particularly hurt by deportations in the eighth century BCE. The various Chaldean tribes did not as a rule act in unison with other groups in Babylonia against Assyria, and this facilitated Assyrian domination. The Chaldeans were not always in opposition to Assyria; at times some served in the Assyrian army.

No archaeological remains have been discovered which can be assigned to the Chaldeans with any degree of certainty. Assyrian reliefs depict them engaged in animal husbandry (horses and cattle), and Assyrian inscriptions state that Chaldean leaders provided a wealth of goods as tribute to the Assyrian rulers (e.g., gold, silver, tin, bronze, precious stones, ivory, elephant hides, valuable woods, colored garments, and aromatic plants). Undoubtedly, the tribal leaders had profited handsomely from the trade routes which ran through the territories controlled by them, and in particular from the sea trade up the Persian Gulf.

Very little is known of Chaldean religious matters. Those rulers of Babylonia who were of Chaldean ancestry referred to the old, traditional gods of Babylonia in their inscriptions and built or restored temples for them. An unusual inscription vilifying the Chaldean ruler Nabu-šuma-iškun states that he despoiled Esagila, the temple of Marduk, the head of the Babylonian pantheon, at Babylon, and then installed in that temple the gods of the Sealand, the Chaldeans, and the Arameans. Nothing more is known specifically as to who these Chaldean gods were. Chaldeans appear to have honored their ancestors and were concerned for their remains. Marduk-apla-iddina II, for example, took the bones of his deceased ancestors with him when he fled to Elam from Assyrian forces in 700 BCE.

(There is no evidence of a connection between the modern people in Iraq known as Chaldeans, who speak a Neo-Aramaic dialect sometimes referred to as "Chaldean," and their ancient namesakes [see Solomon I. Sara, *A Description of Modern Chaldean*, Janua Linguarum, Series Practica, vol. 213, The Hague, 1974].)

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GRANT FRAME

CHAMPOLLION, JEAN FRANÇOIS (1790–1832)

first person to reconstruct the ancient Egyptian language. Having been a child prodigy with an insatiable appetite for languages, Champollion is generally credited with deciphering ancient Egyptian hieroglyphs (picture writing) in 1822 when he presented his paper *Lettre à Monsieur Dacier relative à l'alphabet des hiéroglyphes phonétiques* to the French Academy. Previous attempts at decipherment by Europeans were thwarted by the widely held opinion that hieroglyphs were allegorical cryptograms with encoded arcane information, which had to be "interpreted" rather than translated. This symbolic approach was so rooted in academic circles that Champollion himself was its proponent as late as 1821.

The discovery of a stela (commemorative stone) at Rosetta, near Alexandria, in July 1799 by Pierre Bouchard, an engineer in Napoleon's army and its subsequent surrender to the British after their defeat of the French forces in Egypt in 1801 made such an impression on Europeans that this monument, now known as the Rosetta Stone, became the focus of intense academic scrutiny.

The Rosetta Stone contains a decree issued by Egyptian priests in honor of the Macedonian Greek pharaoh of Egypt, Ptolemy V Epiphanes, in 196 BCE. The text is written in hieroglyphs, demotic (a cursive script), and ancient Greek. Working on the inscription from 1814 to 1818, Thomas Young, a British polymath, identified about eighty words appearing in all three versions. He communicated his findings to Champollion by letter and published them in a supplement (1819) to the *Encyclopedia Britannica*. Champollion never admitted in print his indebtedness to Young. However, Champollion's knowledge of Coptic (the latest form of the ancient Egyptian language) and Greek enabled him to surpass Young's work and to lay the scientific foundations upon which the systematic study of ancient Egyptian as a language is based. The initial work by Young and its perfection by Champollion are astounding because of the great number of hieroglyphs—more than seven thousand—that existed when the Rosetta Stone was written. By contrast, the earlier, classical periods of the ancient Egyptian language used seven hundred signs.

[*See also* Egyptian; Hieroglyphs.]

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ROBERT STEVEN BIANCHI

CHARIOTS. In the Near East the chariot was a light, open vehicle with two spoked wheels, drawn by horses yoked on either side of a draught pole. It was used primarily in warfare, but also in hunting and processions. The first known examples with these features appear in Anatolian glyptics of the early second millennium BCE, followed by those depicted on Syrian seals of the eighteenth and seventeenth centuries BCE.

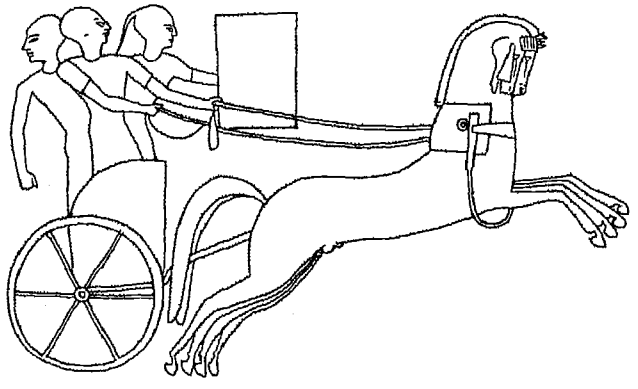
In Mesopotamia the chariot had been preceded by disk-wheeled vehicles with both two and four wheels, pulled by asses or ass/hemione or ass/horse crosses. Five innovations gave the true chariot its superiority: the spoked wheel; the exclusive use of horse draft (with an adaptation of the yoke for this purpose); the replacement of the old nose-ring control by a proper horse bit; the use of the bow as a primary chariot weapon; and proportions permitting a crew of two to stand abreast.

Details of dimensions and construction before about 1000 BCE come from New Kingdom Egypt, where the chariot had been introduced from the Levant at some time during the Second Intermediate period. Large numbers of Egyptian and Asiatic chariots are illustrated in reliefs and paintings, and (all or parts of) eight actual chariots have survived, six of them from the tomb of Tutankhamun. These were constructed entirely of heat-bent wood and rawhide. Their D-shaped floors (about 1.00 m wide × 0.50 m deep) were made of interwoven thongs that not only helped to keep the bent-wood frame in tension, but also provided some springiness. The approximately hip-high siding, in profile shown as rounded or rectangular, extended around the sides and front, leaving the rear open for rapid mounting or dismounting. The siding was solid or fenestrated. Parade and royal chariots might have gilded and decorated sidings.

The light, fast vehicle was given stability by a rear axle and a wide wheel base (1.54–1.80 m). The long draft pole, which ran all the way under the body and helped to support it, was attached only at the front, by being lashed to the floor frame there. A pair of rods, dropped diagonally from the front railing to the draft pole, restricted the tendency of the floor frame and pole to pull apart in rough going and braced the front of the chariot. Two thongs (so-called yoke braces) extended from the pole to each arm of the yoke in order to keep the latter at right angles to the pole and to distribute tractive stress. The yoke, an element originally designed for bovids, was adapted to equine anatomy by means of yoke saddles. These wooden Y-shaped objects were fastened by their "handles" to the yoke, while their "legs," secured at either end by a crescentic strap across the front of the neck, lay along the shoulders of the horse and took the pull in a manner similar to that of the later horse collar.

Chariotry was an important military arm in this period. Two-man Asiatic and Egyptian chariots carrying archers were used as mobile firing platforms to run along the face of infantry to soften it up or to play a flanking or pursuing role (figure 1). Bow cases and quivers of arrows attached outside the chariot body provided reserve arms. The three-man chariots of the Hittites and their allies at the battle of Qadesh, depicted in Egyptian temple reliefs, carry driver, shield bearer, and spearman (quivers are absent) and must have served essentially as transports.

Evidence is scarce in the late second and early first millennia BCE, but Assyrian palace reliefs of the ninth–seventh



CHARIOTS. Figure 1. *Detail of a stone relief of Rameses III, from Medinet Habu.* (After Littauer and Crouwel, 1979, fig. 44)

centuries BCE furnish plentiful documentation. Cypriot chariot models and actual chariot remains of the eighth and seventh centuries BCE provide additional information. They illustrate solid-sided bodies strengthened by a central front-to-back partition. The partition was supported at its rear by a standing loop that could serve as a handhold for mounting as well as a fixture on which to hang a shield. Evidence persists for the woven-thong flooring of the body, which sometimes was large enough to accommodate a third or even a fourth man at the rear.

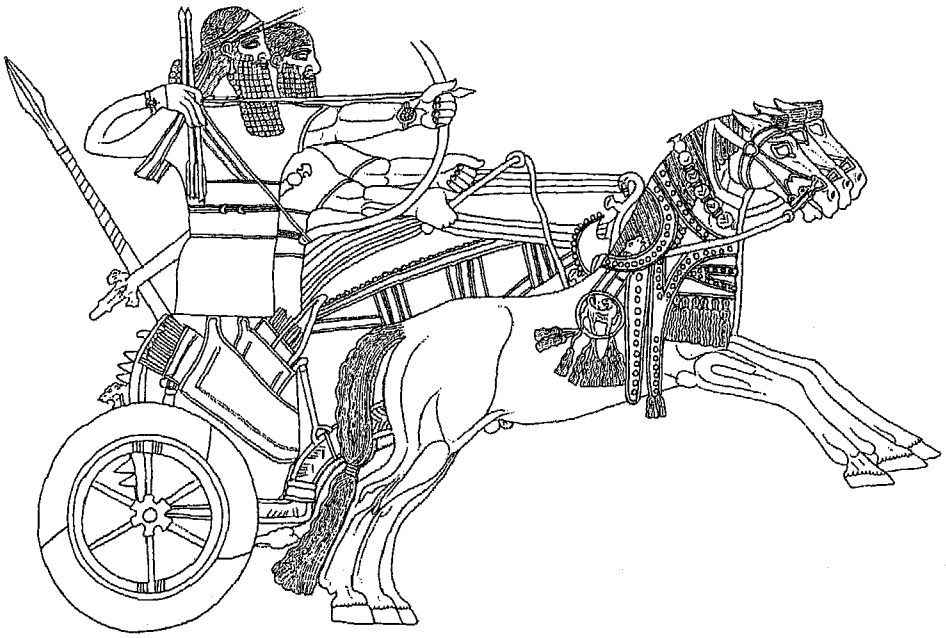
Ninth-century BCE Assyrian chariots (figure 2) appear to have had draft poles in the Y form documented by some later models from Cyprus and the Levant: two poles, one from each side of the chariot, come together in front to become a single pole to the yoke. The pole support/breastwork brace of the previous period was exchanged for a metal rod. A peapod-shaped, apparently rigid element, extending from the breastwork top to the yoke, further strengthened the traction system. By the ninth century BCE, draft teams appear to consist of three or four horses. Only two horses were under yoke, the third and fourth being outriggers.

The rear-axled chariot is still shown as a fast, mobile firing platform for flanking, pursuing, and harnessing. Because only two of the horses were under yoke, the vehicle remained quite maneuverable. Crossed quivers (containing bows and arrows and sometimes axes) were fixed outside the body, and a thrusting spear stood at the rear; the two last, being short-range weapons, were for use dismounted or from a standing vehicle. Protective armor was sometimes worn by both crew and horses.

Reliefs of Tiglath-Pileser III (745–727 BCE) and later Assyrian kings document a marked change in the chariot. The body evidently had a rectangular floor plan and was large enough to accommodate four men (two and two abreast). The iconographic evidence shows only a single pole with the then-prevailing four-horse team under one yoke; however, the fuller Cypriot documentation indicates that two poles might go to a single four-horse yoke or, more often, to two two-horse ones. The yoke saddles were then abandoned in favor of a shaped yoke, with bays for each horse's neck. A bow case was vertically attached at the chariot's front corners and a spear is still shown at the rear. The solid siding is often depicted as armored with small metal plates.

Assyrian chariots of the late eighth and seventh centuries BCE continue to be shown as firing platforms for archers, although they were less mobile, as a result of their greater size, heavier fabric, and the restrictions on maneuverability imposed by four horses under yoke. Under Ashurbanipal (668–627 BCE) archers are, for the first time, shown shooting from a stationary chariot.

Throughout the first half of the first millennium BCE, the chariots of other Near Eastern states (Urartian, Neo-Hittite, and Levantine) are usually shown resembling, in appearance and function, Assyrian models. By late in the first millennium BCE, military chariotry was largely replaced by mounted troops who had greater mobility, the ability to function in more rugged terrain, and economies of man- and animal power. The turreted and scythed chariots of the Achaemenids and others, mentioned by classical authors, are nowhere illustrated; it is known, however, that at the



CHARIOTS. Figure 2. *Detail of a stone relief of Ashurnasirpal II, from Nimrud.* (After Littauer and Crouwel, 1979, fig. 53)

battles of Cunaxa (401 BCE) and Gaugamela (331 BCE) they proved useless against prepared and disciplined Greek infantry. The chariots remaining in use were either processional ones or ones used in the traditional hunt, in which beaters drove the game from cover and across terrain suitable for the chariot to negotiate.

[*See also* Carts; Equids; Transportation; *and* Wheel.]

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CHOGHA ZANBIL (mod. Pers., "hill of the basket"; Elam., al Untash-Napirisha, "city of Untash-Napirisha"; Akk., Dûr Untash, "fortress of Untash"), Elamite royal city and religious center located on the plain of Khuzistan (Iran), some 40 km (25 mi.) southeast of Susa, on the bank of the Ab-e Diz River (32° N, 48°30′ E). The site covers about 100 ha (247 acres) and is composed of a central ziggurat (still standing at 25 m above the level of the plain) surrounded by three concentric walls (see figure 1). Built by King Untash-Napirisha (c. 1340–1300 BCE) early in his reign, in a previously unsettled area, it was mostly abandoned after the king's death. Discovered in 1935, Roland de Mecquenem excavated it on a limited scale (1935–1939, 1946) and Roman Ghirshman uncovered most of its remains (1951–1962).

Functionally, the site consists of two parts: a nearly 16-ha (40 acres) central temenos, or sacred precinct, enclosed by a wall and occupied by a ziggurat and several temples, that its incriptions (see below) call *Siyan-kuk* ("holy place")—the heart of the city and its *raison d'être;* and a royal city of about 85 ha (210 acres) that is protected by a rampart 4 km (2.5 mi.) long.

Ziggurat Compound. The center of the temenos is occupied by a ziggurat that is itself demarcated by a wall and surrounded by several cultic buildings. Built in mud brick with a baked-brick casing, the ziggurat is a square building measuring almost 100 m on each side, with its angles oriented to the cardinal points. Inscriptional and archaeological evidence indicates that its construction went through different phases, of which two have been clearly identified by Ghirshman.

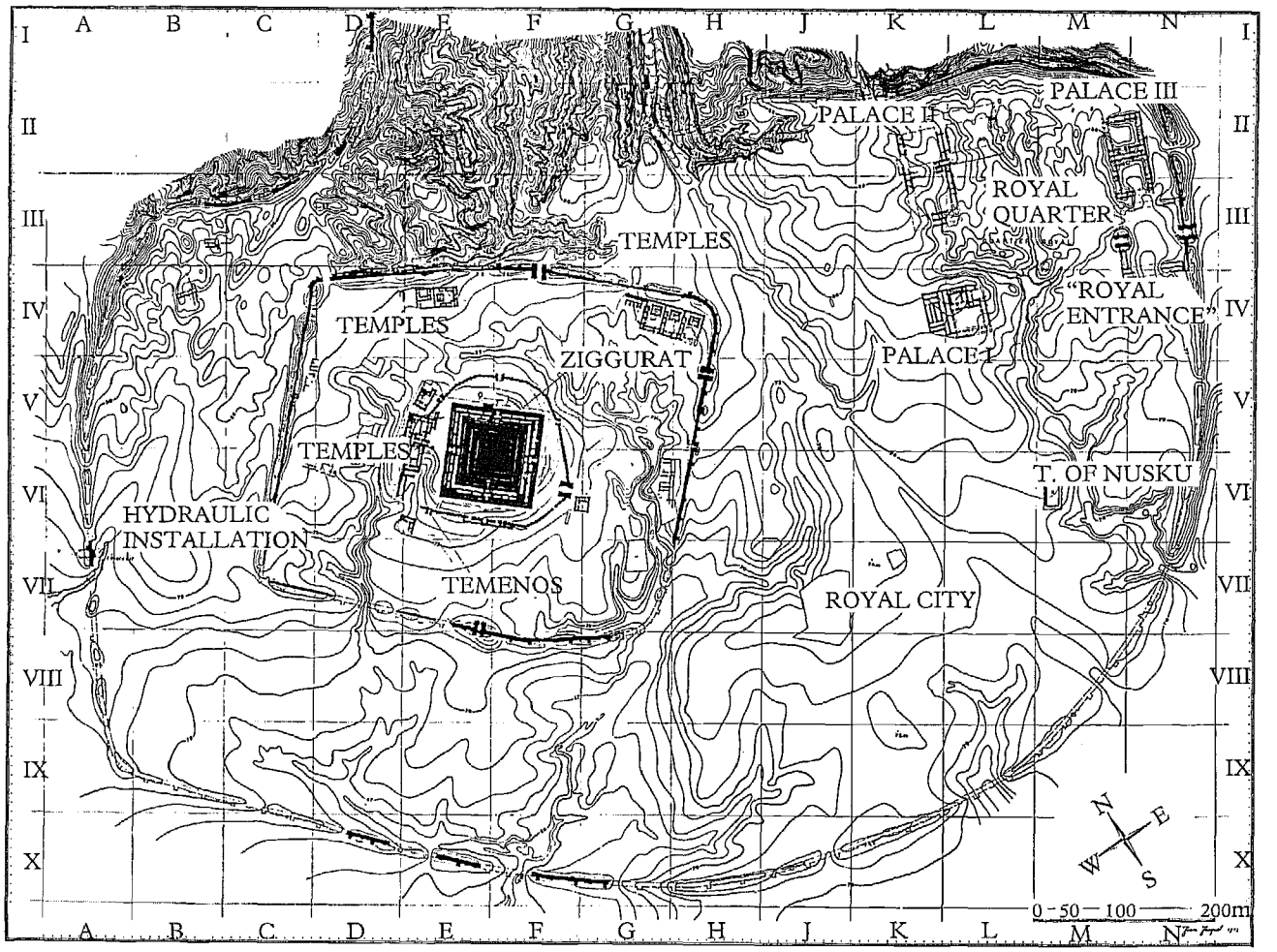
Initially, it was not a ziggurat, but a monumental square building consisting of a large open court surrounded by rooms (see figure 2a).Access to the court was through large doors in the middle of each side that were guarded by bulls and winged griffons in glazed terra cotta. The rooms served as magazines, except on the southeast, where they composed two temples, A and B, both dedicated to the god Inshushinak (originally the god of the city of Susa). Presumably, different rituals were performed in each temple. This square building of the first phase, as well as the entire temenos, was dedicated to Inshushinak, distinguished by the epithet "lord of the *Siyan-kuk.*"

Later in the king's reign, this unusual building was transformed into a ziggurat in the strict sense of the term (see figure 2b). Three concentric blocks of brick were erected in the central court to form the second, third, and fourth stories of the ziggurat. As the original square building became the first story, some of its rooms and Inshushinak's temple A were filled up and blocked; Inshushinak's temple B, however, remained in activity because it was entered from the parvis (enclosed court). The doors in the middle of each side of the original building were transformed into inner vaulted stairwells leading to the top of the first story—except on the southwest, where the stairwell went directly to the top of the second story; from there, another stairwell, possibly located on the southeast, led to the summit of the ziggurat. The ziggurat's appearance was thus quite different from its Mesopotamian counterparts, which had external stairways applied against one side of the tower.

The ziggurat was crowned by a high temple, called the *kukunum* in its inscriptions (see below). Culminating at a height of some 50 m, it was lavishly decorated with silver- and gold-colored glazed bricks. It was dedicated jointly to the gods Napirisha (originally the god of the city of Anshan in Fars) and Inshushinak, who both received the epithet of "lord of the *Siyan-kuk.*" Thus, the dedication of the ziggurat and that of the entire temenos had changed between the first and the second phase of construction.

The ziggurat compound contained several shrines and cultic installations located at the foot of the monument. Along the northwest facade a temple complex with shrines was dedicated to Ishnikarab (a god of Susiana), Nabu (a god of Babylonian origin), and Kiririsha (Napirisha's consort). These temples have no striking architectural characteristics but resemble ordinary dwellings with an inner courtyard, except for Nabu's temple, which is T-shaped. A large collection of votive objects, including several silver and bronze axes and more than one hundred mace heads, was found in Kiririsha's temple. Along its southwestern side a row of four rooms was interpreted as "chapels"; more than one hundred votive cylinder seals were discovered in them.

Several gates gave access to the ziggurat compound



CHOGHA ZANBIL. Figure 1. *Topographic plan of the site.* (Courtesy P. de Miroschedji)

through the enclosure wall; pavement remains indicate that they were linked to the gates of the temenos wall by large processional ways. Immediately outside three of the gates were square temples of unknown designation, except for the northern one, which was dedicated to Napirisha; it is larger than the other and may have had a towerlike appearance.

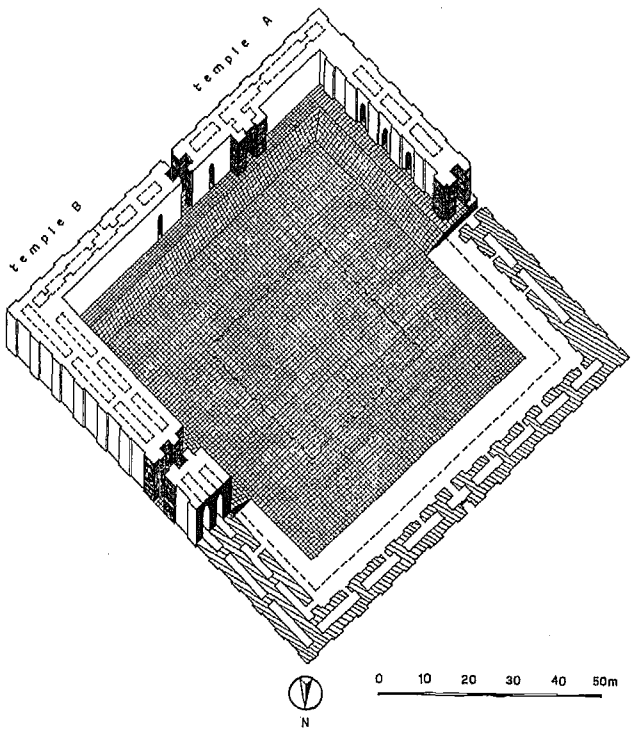
Temenos. Extending around the ziggurat compound, the temenos was enclosed by a thick mud-brick wall with outer buttresses. It was occupied by a series of temples dedicated to divinities originating from all parts of the empire. Only some of these temples were preserved and cleared.

A complex of four temples existed near the east corner. Three were built side by side with an identical plan (a courtyard surrounding a small building composed of an antecella and a cella) and dedicated to Pinikir (an Elamite goddess) and to two divine couples originating from Susiana (Adad and Shala, Shimut and Nin-ali/Manzat). The fourth temple consisted of a row of four small chapels, each containing a pair of altars, and was dedicated to the Napratep (a group of local divinities).

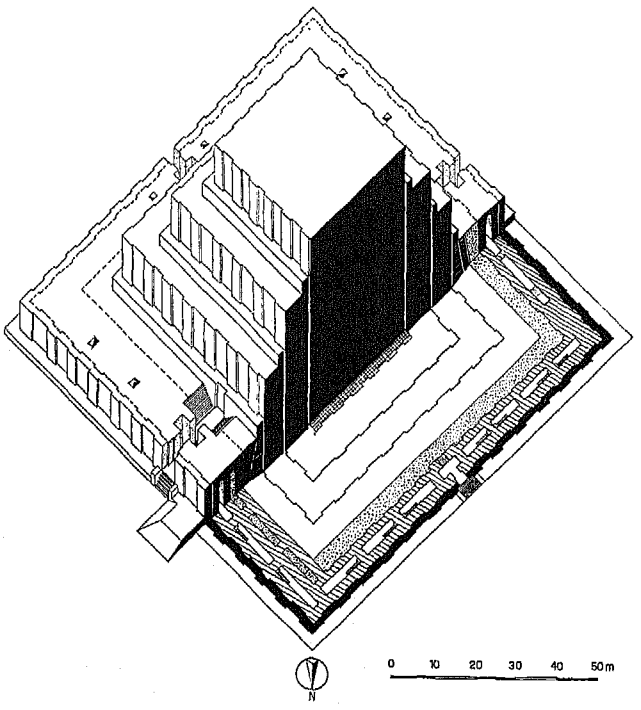
Along the northeastern side of the temenos two other temples were dedicated to the goddess Hishmitik and to the god Ruhuratir (divinities from Shimashki in the Zagros highland); one was comparable to the three temples to the east, while the other was an enlarged version of Napirisha's square temples.

Royal city. The royal city extended around the temenos. It may have been entirely built up, although not necessarily densely. The major buildings were concentrated in the northeast, also the location of the main city gate, called the Royal Entrance. The gate was a double gate with an inner courtyard (64 × 62 m) bordered on three sides by elongated rooms. It opened into a sort of "royal quarter" occupied by three large buildings, presumably palaces.

The most elaborate is palace I (70 × 56 m) also called the palace-*hypogeum* (see below). It is composed of three parts:



CHOGHA ZANBIL. Figure 2a. *Plan of the ziggurat.* Initial phase of construction. (After Ghirshman, 1966-1968, vol. 1)



CHOGHA ZANBIL. Figure 2b. *Plan of the ziggurat.* Second phase of construction. (After Ghirshman, 1966-1968, vol. 1)

an official section with a large courtyard decorated with glazed polychrome bricks and surrounded by long rooms; a private section with apartments around two small courtyards; and a (domestic?) section with a series of elongated rooms. The building is exceptional because there are several tombs under the private and domestic rooms. Built in baked brick set in bitumen and plaster, the tombs were reached by means of a steep staircase and consist of one or two vaulted rooms up to 4 m high and 5–6 m long. With a single exception, all the bodies in the tombs had been cremated with their funerary offerings, a unique example of cremation in Elam.

The two other palaces may have served as quarters for the royal entourage. They are quite different from the palace-*hypogeum* but resemble each other in plan and organization. Both consist of a series of separate apartments (including several bathrooms) organized around two or three square courtyards placed side by side (palace III) or at a right angle (palace II); the organization of each unit is original and recalls that of the first phase of the ziggurat complex.

Some 100 m southwest of the palaces, the sanctuary of Nusku is an unusual building, called *ipillati* instead of *siyan* ("temple") by the inscriptions (see below): it is T-shaped, composed of a transversal anteroom and a large longitudinal hall with a high mud-brick podium in its center; considering its size (30 m × 13 m), the hall was probably unroofed. Because of Nusku's connection with fire and light, this sanctuary is sometimes interpreted as a sort of fire temple.

A hydraulic installation was built on both sides of the city wall to the southwest of the royal city to ensure Chogha Zanbil's water supply. Located at the end of a canal, it is composed of two basins that communicate through small channels—a large basin of decantation on the outside and a smaller basin on the inside.

Finds. The vast majority of the thousands of inscriptions found in the excavations are building inscriptions on baked bricks; they consist of fifty-two different Elamite texts and only five Akkadian texts and represent an invaluable source of information on Elamite language and religion.

The excavations have yielded numerous objects, but no large monuments. A large collection of glazed objects in terra cotta or in frit was uncovered. Many are decorative architectural elements in the shape of glazed plaques with knobs or large pegs of the same material; some seven hundred were found in one of the rooms in the first story of the ziggurat. Glazed sculptures (bulls and winged griffons), figurines (human and animal), and vessels of various kinds were also found.

A cache in palace III has yielded a group of alabaster jugs of Syro-Egyptian type. Noteworthy from palace I is a mosaic panel of ivory showing a winged goddess and a frieze

of wild goats alternating with a sacred tree. Metal objects are represented by axes, daggers, arrowheads, plaques, and personal ornaments. A large collection of stone mace heads, inscribed and plain, and about 160 cylinder seals, the majority in faience and in glass, were found. They illustrate the range of glyptic styles in use in fourteenth-century BCE Susiana. Other examples of such seals were exported as far as Marlik in northern Iran. [*See* Marlik.]

There are relatively few finds from Chogha Zanbil because the site was generally abandoned after Untash-Napirisha's reign and cleared of its major monuments by the twelfth-century Elamite kings. An inscription of King Shutruk-Nahhunte (c. 1185–1155 BCE) specifically mentions the transfer of a stela from the *Siyan-kuk* (i.e., Chogha Zanbil) to Susa. Therefore, monuments found in Susa that, based on inscriptional and/or stylistic and iconographic evidence, originally stood in Untash-Napirisha's city should be added to the finds from Chogha Zanbil. [*See* Susa.] Among these are Untash-Napirisha's stela, a divine bust holding two dragon snakes, the lower part of a divine statue showing intertwined dragon snakes, various fragments of sculptures and reliefs, a large bronze sacrificial table, and, possibly, a bronze statue of Queen Napir-Asu.

Interpretation of the Finds. Chogha Zanbil is best understood as a new capital city built around a federal sanctuary in which the major divinities of the empire resided together under the aegis of the gods of Anshan and Susa. It entails on the part of its founder a political vision of unusual magnitude, aiming to achieve the unity of the Elamite Empire.

The foundation of the new city marks a break from the past: built on new ground and without any direct relationship to the old capital of Susa, all members of the empire could claim it equally as their capital. The temenos was the federal sanctuary that united the major gods of the empire's main cities and provinces. With its concentric plan (the ziggurat compound surrounded by a religious city and it in turn by a royal city) the site was an ideal image of Elam.

The fact that the center of this Elamite microcosm was a ziggurat initially dedicated to Inshushinak suggests that at first Susiana was perceived as the center of the empire. Only later did Untash-Napirisha change his plan and rededicate the ziggurat jointly to Napirisha and to Inshushinak. This placed the new capital city (and by the same token the whole empire) under the joint auspices of the god of Anshan and the god of Susa. The new scheme may imply that the empire was thereafter conceived as the union of the highland and the lowland—a union further expressed by Untash-Napirisha's parallel title "king of Anshan and Susa."

This grandiose enterprise seems to have ended in failure, however. The king died and the construction of Chogha Zanbil was never completed. In the historic record, there is a gap during most of the thirteenth century BCE. When Elamite kings reappear on the scene in the twelfth century BCE, they have abandoned Chogha Zanbil in favor of Susa and again chosen Inshushinak as the major deity of the empire.

[*See also* Elamites; Ziggurat; *and the biography of Ghirshman.*]

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CHORAZIN (also Chorazim), a Jewish village in the Galilee in the Greco-Roman period identified with Khirbet Karazeh and located approximately 4 km (2.5 mi.) north of the Sea of Galilee (map reference 2031 × 2575). Chorazin is first mentioned in the New Testament (*Mt.* 11:21–24; *Lk.* 10:13–16) in regard to Jesus' ministry. It is mentioned in Tosefta *Menaḥot* 9:2 (and parallels), a text that dates to the second or perhaps third century CE. Eusebius (c. 260–340 CE) reports that the site of Chorazin is 2 Roman miles from Capernaum and that the town was in ruins in his day (*On-*

omasticon 174.23). The first modern scholar to identify the town as Chorazin was Charles Wilson in 1869. From 1905–1907 Heinrich Kohl and Carl Watzinger partially excavated the synagogue on behalf of the Deutsche Orient-Gesellschaft; it was completely cleared on behalf of the Mandatory Department of Antiquities in 1926. From 1962–1964 Zeev Yeivin conducted a survey of the town on behalf of the Israel Department of Antiquities, and between 1980 and 1984 excavations were carried out under his direction.

The synagogue at Chorazin is of the Galilean type, which also includes the synagogues of Capernaum, Bar'am, Meiron, Arbel, and Merot. [*See* Synagogues.] Although Michael Avi-Yonah dated this group to the second century, it is now generally accepted that Galilean-type synagogues belong to the third–sixth centuries CE. The building was constructed in the town center of local basalt ashlars on a broad podium. A flight of steps led up to the podium. The facade, which is aligned toward the south, has been partially reconstructed under Yeivin's supervision. In antiquity an exedra was constructed along the length of the facade. The building had three entrances: a large central portal that led into the nave and two smaller portals that led into the side aisles. A wolf, a Medusa, and other figures appear in bas-relief on architectural members of the synagogue. Remains of two aediculae as well as a basalt chair bearing a dedicatory inscription were discovered near the southern wall of the synagogue. The interpretation of this inscription has been the subject of considerable dispute. A translation of this text, following the reading of Joseph Naveh (1978) is as follows:

> Remembered for good Yudan son of Ishmael
> Who made (or, donated) this stoa
> and its steps from his (own) property. May
> he have a portion with the righteous.

The extensive excavations of the Byzantine-period town of Chorazin between 1964 and 1984 disclosed that its shape conformed to the topography of the hill on which it was built. Its housing units are reminiscent of housing excavated in the neighboring Golan Heights. Units A and B are contiguous rooms constructed around a central courtyard, an arrangement reminiscent of the communal courtyards mentioned in numerous rabbinic sources (e.g., Mishnah *B. B.*, ch. 1, and parallels) The town is divided into housing units by streets that join the main street on the east and west. The civic center, which included the synagogue, was built on a broad natural platform in the center of the town. The outer walls of the buildings in the center seem to have been contiguous and enclosed the civic complex. An elaborate ritual bath complex was uncovered in building E, on the northern side of the town.

[*See also* Bar'am; Capernaum; Deutsche Orient-Gesellschaft; Galilee, *article on* Galilee in the Hellenistic through Byzantine Periods; Merion; Synagogue Inscriptions; *and the biographies of Avi-Yonah, Watzinger, and Wilson.*]

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STEVEN FINE

CHUERA, TELL, site located almost midway between the valleys of the Balikh and Khabur Rivers in the province of Raqqa, Syria, (36°40′ N, 39°30′ E). The site belongs to a special type of settlement named *kranzhügel* (Ger., "wreath-like mound") by Max von Oppenheim, who, during his travels in Upper Mesopotamia between 1911 and 1913, was the first to recognize them. The settlements occur mainly on the steppe between the upper courses of the Balikh and the Khabur and on both sides of the Abd al-Aziz Mountains. They are usually almost circular, with a line of low hills at their outer edge, indicating the existence of a fortification wall, and with a flat lower city and a central elevated citadel mound.

Tell Chuera is the largest of these settlements, covering a surface of about 650,000 sq m. Excavation began with a sounding in 1955 carried out by Jean Lauffray on behalf of the Syrian Antiquities Department. In 1958, the Max von Oppenheim Foundation began a long-term excavation project at Tell Chuera, first under the directorship of Anton Moortgat (1958–1976), then of Ursula Moortgat-Correns (1982–1985), and since 1986, of Winfried Orthmann.

Settlement history at Tell Chuera may be divided into two main phases. Period 1 extends from about 2800 to 2300 BCE, and, after a hiatus, period 2 lasts from 1600 to 1100. Settlement reached its largest expanse during period IC. The site was surrounded by a mud-brick fortification wall and a ditch. The lower city, which covered an area of about 220,000 sq m, was apparently completely built up with private houses. Recent excavations have shown that the citadel mound was at least partly surrounded by an inner fortification.

An important sanctuary complex has been identified at the southeastern part of the citadel. It consists of a high terrace, built with rather large stone boulders, accessed from the east via a ramp or staircase; the temple, of which only a few remains are preserved, probably stood on this terrace. Several side terraces were added to the building during its

existence. A second stone building seems to have been a kind of gate to the sanctuary. Another temple on the north side of the citadel is the oldest known example of the traditional North Syrian type of sanctuary: the building, which was erected on a low terrace, consists of a rectangular cella, entered from an open porch on its east side. A small temple in the central part of the citadel, surrounded by private houses, is of the same general type; in the cella and its immediate neighborhood, several stone statuettes have been found that resemble figures from the Diyala region in Mesopotamia, dating from the Early Dynastic II period. They show that at the time northern Mesopotamia was already influenced by the Sumerian culture to the south.

The remains of a large palace (about 70 × 60 m) have been identified in the western part of the citadel. Excavation revealed several courtyards and a large hall with a dais built against its east wall (probably the throne room). In the southern part of the citadel, a quarter with private houses was excavated. The houses were built one against the other along narrow streets. Each house had a courtyard, accessed from the street through a narrow corridor, and a reception room built between the courtyard and the street. About 200 m to the east of the settlement, a double row of irregularly shaped large stelae resembles a megalithic structure. Nearby, a sanctuary with two North Syrian-style shrines has been excavated.

During the period of Mitanni beginning in period 2, Tell Chuera was resettled following a long hiatus. Except for a small shrine, few building remains have been recovered from this period. The Middle Assyrian period, which followed, is represented by two main building levels in the northern part of the citadel. To the earlier of these levels belongs a well-fortified manor house that was the seat of the local Assyrian governor. A small archive of cuneiform tablets found in one of its rooms belongs to the thirteenth century BCE; it made possible the identification of Tell Chuera with the city of Ḫarbe (or Ḫurbe), mentioned in Middle Assyrian texts from Dur Katlimmu.

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ABBREVIATIONS AND SYMBOLS

ACOR	American Center of Oriental Research
AD	*anno Domini*, in the year of the (our) Lord
AH	*anno Hegirae*, in the year of the Hijrah
AIA	Archaeological Institute of America
AIAR	(W. F.) Albright Institute of Archaeological Research
AJA	*American Journal of Archaeology*
Akk.	Akkadian
Am.	*Amos*
ANEP	J. B. Pritchard, ed., *Ancient Near East in Pictures*
ANET	J. B. Pritchard, ed., *Ancient Near Eastern Texts*
AOS	American Oriental Society
APES	American Palestine Exploration Society
Ar.	Arabic
'Arakh.	*'Arakhin*
Aram.	Aramaic
ASOR	American Schools of Oriental Research
Assyr.	Assyrian
A.Z.	*'Avodah Zarah*
b.	born
B.A.	Bachelor of Arts
Bab.	Babylonian
BASOR	*Bulletin of the American Schools of Oriental Research*
B.B.	*Bava' Batra'*
BC	before Christ
BCE	before the common era
Bekh.	*Bekhorot*
Ber.	*Berakhot*
Bik.	*Bikkurim*
BP	before the present
BSAE	British School of Archaeology in Egypt
BSAI	British School of Archaeology in Iraq
BSAJ	British School of Archaeology in Jerusalem
B.T.	Babylonian Talmud
c.	*circa*, about, approximately
CAARI	Cyprus American Archaeological Research Institute
CAD	computer-aided design/drafting
CAORC	Council of American Overseas Research Centers
CE	of the common era
cf.	*confer*, compare
chap., chaps.	chapter, chapters
1 Chr.	*1 Chronicles*
2 Chr.	*2 Chronicles*
CIG	*Corpus Inscriptionum Graecarum*
CIS	Corpus Inscriptionum Semiticarum
cm	centimeters
CNRS	Centre National de la Recherche Scientifique
col., cols.	column, columns
Col.	*Colossians*
1 Cor.	*1 Corinthians*
2 Cor.	*2 Corinthians*
CTA	A. Herdner, *Corpus des tablettes en cunéiformes alphabétiques*
cu	cubic
d.	died
DAI	Deutsches Archäologisches Institut
diss.	dissertation
Dn.	*Daniel*
DOG	Deutche Orient-Gesellschaft
D.Sc.	Doctor of Science
Dt.	*Deuteronomy*
EB	Early Bronze
Eccl.	*Ecclesiastes*
ed., eds.	editor, editors; edition
ED	Early Dynastic
EEF	Egyptian Exploration Fund
e.g.	*exempli gratia*, for example
Egyp.	Egyptian
Elam.	Elamite
En.	*Enoch*
Eng.	English
enl.	enlarged
esp.	especially
et al.	*et alii*, and others
etc.	*et cetera*, and so forth
Eth.	Ethiopic
et seq.	*et sequens*, and the following
Ex.	*Exodus*
exp.	expanded
Ez.	*Ezekiel*
Ezr.	*Ezra*
fasc.	fascicle
fem.	feminine
ff.	and following
fig.	figure
fl.	*floruit*, flourished
ft.	feet
frag., frags.	fragment, fragments
gal., gals.	gallon, gallons
Geog.	Ptolemy, *Geographica*
Ger.	German
GIS	Geographic Information Systems
Gk.	Greek
Gn.	*Genesis*
ha	hectares
Heb.	Hebrew
Hg.	*Haggai*
Hist.	Herodotus, *History*
Hitt.	Hittite
Hos.	*Hosea*
Hur.	Hurrian
IAA	Israel Antiquities Authority
ibid.	*ibidem*, in the same place (as the one immediately preceding)
IDA(M)	Israel Department of Antiquities (and Museums)
i.e.	*id est*, that is

IEJ	*Israel Exploration Journal*
IES	Israel Exploration Society
IFAPO	Institut Français d'Archéologie du Proche-Orient
Is.	*Isaiah*
IsMEO	Istituto Italiano per il Medio ed Estremo Oriente
Jb.	*Job*
Jer.	*Jeremiah*
Jgs.	*Judges*
Jn.	*John*
Jon.	*Jonah*
Jos.	*Joshua*
JPOS	*Journal of the Palestine Oriental Society*
JRA	*Journal of Roman Archaeology*
J.T.	Jerusalem Talmud
KAI	H. Donner and W. Röllig, *Kanaanäische und aramäische Inschriften*
Kel.	*Kelim*
Ket.	*Ketubbot*
kg	kilogram
1 Kgs.	*1 Kings*
2 Kgs.	*2 Kings*
km	kilometers
KTU	M. Dietrich and O. Lorentz, *Die keilalphabetischen Texte aus Ugarit*
l	liter
l., ll.	line, lines
Lat.	Latin
lb.	pounds
LB	Late Bronze
lit.	literally
Lk.	*Luke*
LM	Late Minoan
Lv.	*Leviticus*
m	meters
M.A.	Master of Arts
masc.	masculine
Mal.	*Malachi*
MB	Middle Bronze
Mc.	*Maccabees*
M.Div.	Master of Divinity
Meg.	*Megillah*
mi.	miles
Mk.	*Mark*
mm	millimeter
mod.	modern
Mt.	Mount
Mt.	*Matthew*
n.	note
NAA	Neutron Activation Analysis
Nat. Hist.	Pliny, *Naturalis Historia* (Natural History)
n.b.	*nota bene*, note well
n.d.	no date
Nm.	*Numbers*
no., nos.	number, numbers
n.p.	no place
n.s.	new series
O.P.	Ordo Praedicatorum, Order of Preachers (Dominicans)
p., pp.	page, pages
para.	paragraph
PEF	Palestine Exploration Fund
Pers.	Persian
Ph.D.	Philosophiae Doctor, Doctor of Philosophy
Phil.	*Philippians*
pl.	plate; plural
PN	Pottery Neolithic
ppm	parts per million
PPN	Pre-Pottery Neolithic
Prv.	*Proverbs*
Ps.	*Psalms*
pt., pts.	part, parts
1 Pt.	*1 Peter*
2 Pt.	*2 Peter*
r.	reigned, ruled
RCEA	*Répertoire chronologique d'epigraphie arabe*
Rev.	*Revelations*
rev.	revised
Ru.	*Ruth*
SBF	Studium Biblicum Franciscanum
SBL	Society of Biblical Literature
SEG	*Supplementum Epigraphicum Graecum*
ser.	series
sg.	singular
Sg.	*Song of Songs*
Shab.	*Shabbath*
s.J.	Societas Jesu, Society of Jesus (Jesuits)
1 Sm.	*1 Samuel*
2 Sm.	*2 Samuel*
sq	square
St., Sts.	Saint, Saints
Sum.	Sumerian
supp.	supplement
Syr.	Syriac
Ta'an.	*Ta'anit*
Th.D.	Theologicae Doctor, Doctor of Theology
Ti.	*Titus*
Tk.	Turkish
1 Tm.	*1 Timothy*
2 Tm.	*2 Timothy*
trans.	translated by
Ugar.	Ugaritic
v.	verse
viz.	*videlicet*, namely
vol., vols.	volume, volumes
vs.	versus
Yad.	*Yadayim*
ZDPV	*Zeitschrift des Deutschen Palästina-Vereins*
Zec.	*Zechariah*
*	hypothetical; in bibliographic citations, English language pages in Hebrew journals
?	uncertain; possibly; perhaps
°	degrees
′	minutes; feet
″	seconds; inches
+	plus
−	minus
±	plus or minus
=	equals; is equivalent to
×	by
→	yields

C

CONTINUED

CHURCHES. The earliest Christians called their communities *ekklesiai,* "gatherings," "congregations," "assemblies." *Ecclesia* was used throughout the period of Late Antiquity to denote both the local community of Christians gathered in a specific place and the worldwide Christian community, the church universal. The early fourth-century adoption of the Greek term *kyriakon* ("place" or "house" or "temple belonging to the Lord") to denote the place where Christians gathered to worship is a sign of the heightened awareness of physical place that characterized Christianity at the end of the pre-Constantinian period. From the early fourth century onward, *kyriakon* and *ecclesia* came to be used interchangeably (and with some frequency) to denote Christian places of worship.

Before Constantine. In the *Acts of the Apostles,* Christians are said to have gathered in private houses in Jerusalem, Caesarea, Jaffa, Damascus, Paphos, Ephesus, Colossae, Philippi, Thessalonike, Corinth and Kenchreai, Alexandria in the Troad, and Rome (Finney, 1984, pp. 208, 209). During the period of his missionary activity in western Turkey, Paul aimed his message at heads of households, and it is primarily on this basis that the existence is inferred of mid-first-century communities of Christians or *ekklesiai* gathered in private houses. Archaeology cannot identify the specific buildings used as meeting places within the Pauline missionary territory because they were left intact. As structural types, it would be impossible to distinguish them from the local residential vernacular.

The oldest surviving house that can be given a positive identification as a building that served a small community of mid-third-century Christians is in Syria, at Dura-Europos, a Roman trading city on the west bank of the Middle Euphrates River. Shortly before the mid-third century, the Christian building at Dura was extensively remodeled on the ground-floor level. Thereafter it no longer served as a residence. Instead, the first-floor space was given over to community-related activities, although the arrangement and assignment of space on the second floor are not known. One of the first-floor rooms was converted into a baptistery; another—a large, rectangular room created by the consolidation of two previously small spaces—probably functioned as the worship room. A celebrating priest would have stood on a raised platform (bema) at the east end and presided in the reading of Scripture and perhaps in a community eucharistic meal.

As argued elsewhere (Finney, 1984, p. 224), once the secular functions of the Durene first-floor space were replaced, the community had to readjust its symbolic associations with its place of worship. The way was opened for a new set of symbolic associations centering on the sacral character of the place and its architectural embodiment.

There are other examples of pre-Constantinian structures (residential, commercial, and possibly municipal) remodeled and retrofitted to make way for an emerging ecclesia, but none is so clear or so dramatic as the Christian building at Dura. Most of the material parallels are found in the West (Rome, Aquileia, Parentium-Poreč, Lullingstone in Kent, England), but there is at least one relatively clear Near Eastern example, the so-called Julianos basilica (cf. Piccirillo, 1981, pp. 54–55) at Umm el-Jimal (Butler, 1919, 2.A.3; Corbett, 1957) 18 km (11 mi.) southwest of Bosra. [*See* Umm el-Jimal.]

Although surviving literary/documentary sources, together with bits and pieces of material evidence, favor the view that pre-Constantinian Christians gathered for worship mainly in residential buildings and over time adapted and converted those structures into church buildings, it is also true that this pattern alone does not exhaust the totality of the pre-Constantinian evidence. Other kinds of spaces were needed from time to time, particularly where the size of Christian congregations exceeded imposed space limitations. This became a pressing issue late in the tetrarchy (293–312 CE), as urban churches were increasing their numbers on a dramatic scale. It is in the time frame of the late third century that some Christian communities evidently turned to nonresidential architecture (warehouses and rectangular municipal halls) to solve the problem. L. Michael White calls this a transitional phase, sandwiched between the so-called house church *(domus ecclesiae)* period of Christian worship and the basilical architectural settings that came in the wake of Constantine's building program (White, 1990, pp. 127–139). Two examples of early fourth-century hall-like rectangular structures that fit White's typology were designed and constructed de novo as church buildings: the

Roman Church of San Crisogono in Trastevere and the church at Qirk Bize, one of the so-called Dead Cities west of Aleppo (and west of Jebel ʿAla) in northern Syria (Tchalenko, 1953–1958, pp. 319–332; Donceel-Voûte, 1988, pp. 259–260; also Georges Tate, "Qirk Bizah," in *Encyclopedia of Early Christian Art and Archaeology* [hereafter *EECAA*]).

Geographic Setting. The geographic extent of the evidence in the Near East is impressive. Church buildings and church-related structures (e.g., baptisteries and martyria) that predate the seventh century survive either intact or in fragments over a broad area. [*See* Martyrion.] In the north and northwest, churches are found in the Caucasus Mountains (e.g., Georgia [see Kleinbauer, no. 375] and Armenia [see R. Edwards, "Armenia," *EECAA*]) and in central and eastern Turkey, including the Pontic region (Kleinbauer, 1992, no. 207), Cappadocia (Restle, 1971–), and Cilicia (Hild et al., 1971–). At the other end of the Near East, in Africa to the far south, Early Christian architectural remains are attested in the Nile Delta and on both banks of the Nile River, south to Syene/Aswan (Grossmann, 1991, pp. 552–553; Grossmann, "Egypt," *EECAA*) In Nubian territory, from Aswan south to the confluence of the White and Blue Niles, there is little or no material that predates the seventh century and can be positively identified as Christian (Adams, 1991), but east of Khartoum, on Ethiopian soil (M. E. Heldman, "Ethiopia," *EECAA*), Early Christian architectural remains of church buildings appear at several sites, the most important being Adulis, Axum, and Maṭara. Across the Gulf of Suez in the southern Sinai (Wadi Feiran and the region of Jebel Musa), there are monastic churches and chapels from Late Antiquity (Tsafrir, 1993, pp. 315–350). For the territories opposite Nubia and Ethiopia across the Red Sea—namely Saudi Arabia, Yemen (especially Najran), southern Yemen, and the island of Socotra (at the eastern end of the Gulf of Aden)—literary traditions and selected epigraphic evidence attest the presence of Christians from the late-fourth century onward but no church architecture (Trimingham, 1979).

Within the central Near East—Cyprus, the Syro-Palestinian littoral (and the adjacent inland territories), Lebanon, Israel, Syria, Jordan, Iraq, and the western third of Iran—there is extensive evidence of Early church buildings. The evidence is greatest in roughly the western quarter, from the Mediterranean coastline east for approximately 300 km, or 186 mi.: in Lebanon (Donceel-Voûte, 1988); Israel (Tsafrir, 1993); and Cyprus (Kleinbauer, 1992). There is considerable evidence of pre-seventh-century church buildings on Cyprus. From the late fifth century onward, Cypriot church architecture was substantially influenced by Constantinopolitan models; hence, for the period from about 450 to 650, Cyprus must be studied with particular attention to its Greek progenitors (Megaw, 1974; Papageorghiou, 1986).

Inland from the Syro-Palestinian littoral, the western third of Jordan, from the Gulf of ʿAqaba north to the Jordanian/Syrian border, also contains numerous early Christian church buildings (Piccirillo, 1981, 1993). This distribution pattern continues northward, also within roughly the western third of Syria (Butler, 1919–1920) from Bosra (Bostra; Butler, 1919, 2.A.4; Dentzer-Feydy 1985) at the southern end of the so-called lava lands (the Hauran; Dentzer-Feydy, 1985) to Jebal Arab (also known as Jebel Druze and Jebel Hauran) in the south to Ḥalab (Aleppo) in the north and to the architecturally extraordinary territory west of Aleppo, the region of the so-called Dead Cities. The region is one of the richest centers of Early Christian architecture in the ancient world. It is there, for example, that the great monastery-church of St. Simeon Stylites is located (at Qalʿat Simʿan; J.-P. Sodini, "Qalʿat Semaʿan," *EECAA*). [*See* Qalʿat Simʿan.] Across the Syrian/Turkish border, in southeastern Anatolia (Osrhoene, fourth–seventh centuries), stretching from Urfa/Edessa to Mardin, Nusaybin, and Cizre on the Tigris River, are remains of numerous church buildings from Late Antiquity (Wiessner, 1981–1993). There are also important Early Christian remains along the Syrian Euphrates River: at Membij/Hierapolis, Rusafa/Sergiopolis (T. Ulbert, "Rusafa," *EECAA*), Halabiyya/Zenobia, and, of course, at as-Salihiyeh/Dura-Europos (Kraeling, 1967). [*See* Rusafa; Dura-Europos.] Both Iraq and Iran, within roughly the western third of the Sasanian Empire (226–651), once contained an extensive Early Christian material culture—church buildings, chapels, baptisteries, monasteries—but the surviving remains are meager (Lerner, 1982–).

The most important urban centers for church architecture in the Near East before the seventh century were Jerusalem and Syrian Antioch (now located in the province of Hatay, Turkey). Alexandria was also an important city for Early Christian culture (Epiphanius and Eusebius; Pearson, 1992) It housed numerous church buildings, but almost no material evidence survives (for a twelfth-century list of Alexandrian churches, many of them alleged to be pre-seventh century, cf. Atiya, 1991). Jerusalem, more firmly rooted (than Constantinople) in tradition, was arguably the most important center of church architecture from the fourth through sixth centuries. Constantine built two churches there, the Holy Sepulcher (now within the city's Christian Quarter; see figure 1) and the Eleona Church on the Mt. of Olives. Each commemorates events in the life of Jesus, and hence both served martyrial purposes. At Antioch, Constantine also became a church builder, of an eight-sided church with a gilded roof, of which nothing survives (Kleinbauer, 1992, no. 2064). In general, direct material evidence of Early Christian church buildings in Syrian Antioch is slight (excluding the martyrion of St. Babylas outside the city in suburban Kaoussie; Kleinbauer, 1992, no. 1894a).

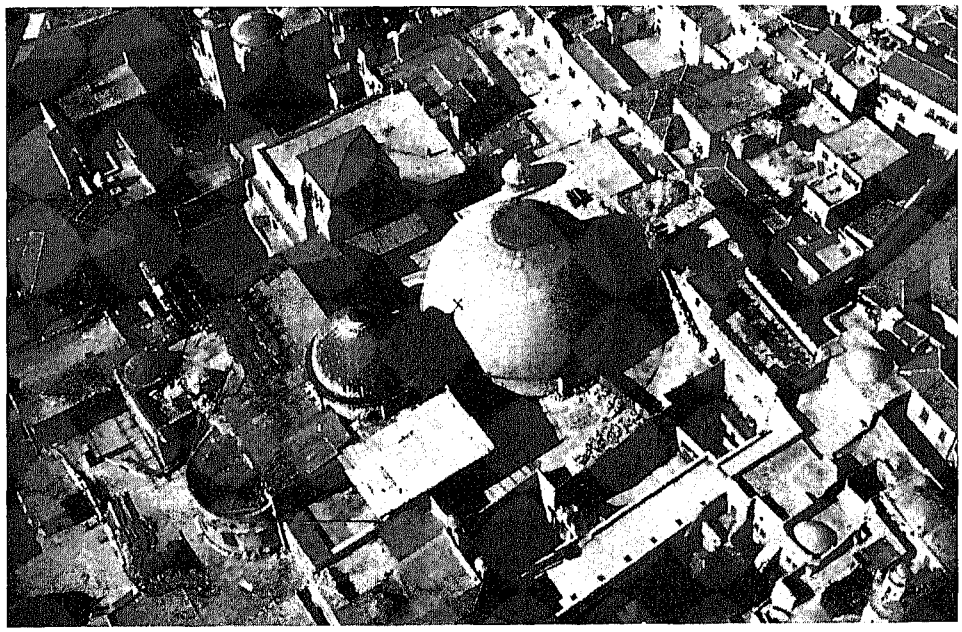
Fourth Century. The fourth century was a watershed for church design and construction; it was a period of invention, innovation, diversity and creativity. The architectural legacy

of Constantine I the Great cast a long shadow beyond his death in 337 (Krautheimer, 1967). Beginning as early as 305, the emperor and his architects had set about creating a tradition of Christian church architecture, in both halves of the empire, but especially in the Byzantine Levant. The degree to which the emperor was directly involved in design is a matter for debate (Krautheimer, 1967), but he provided financial and logistical support and there can be no question about his commitment and determination to see church buildings in virtually all major urban centers: Bishop Paulinus's church in Tyre; the Holy Sepulcher (Church of the Anastasis) and the Eleona Church on the Mt. of Olives (over a cave associated by tradition with the Ascension of Jesus) in Jerusalem (Taylor, 1993, pp. 143–156); the Church of the Nativity in Bethlehem (Taylor, 1993, pp. 86–95); the basilica built at the sacred oak tree in Mamre/Ramat el-Khalil, where God spoke to Abraham; the Hagia Sophia and the Church (or Martyrium) of the Holy Apostles in Constantinople; and the palace church, called the Golden Octagon, in Antioch.

The growth of Christian communities in the fourth century necessitated large interior spaces to accommodate the faithful. Architectural precedents were lacking within pagan tradition, so builders looked to secular spatial and architectonic paradigms that could be adapted. The best solutions were the imperial halls *(aulae)* and assembly rooms spread throughout the empire that had been designed as indoor markets, law courts, and audience rooms—large interior spaces that served the interests of bureaucrats seeking to govern Rome's subjects.

The Constantinian church building came to be known by the epithet *basilica,* understood as the building belonging to the *basileus,* or "king." The formal architectural precedents of the rectangular building that came to typify it have long been debated (Ward-Perkins, 1954). It is now understood that the term denotes a rectangular building, with two long sides and two short sides, oriented on liturgical and symbolic grounds toward one of the short ends (usually on the east), with or without aisles, with a sanctuary and often an apse (or apses) at one end, and with a gabled roof (often faced with terra-cotta tiles) supported by wooden trusses (Orlandos, 1952–1956). However, for the Constantinian period there was no equivalency between the term *basilica* and these architectural elements. The Holy Sepulcher, the Church of the Nativity, the Hagia Sophia, the Church of the Holy Apostles, and the Golden Octagon are all centrally planned spaces, dominated both spatially and visually by large domes sitting on circular or polygonal perimeters; the domed spaces interrupt the longitudinal flow of space from nave to apse and instead proclaim a rather different symbolic hierarchy. In short, the term *basilica* does not denote a fixed architectural form until the late fourth century—and even at that late date there is still considerable variation in architectural detail.

From the beginning of the Constantinian architectural program, there was a strong pull toward assimilating two distinct functions: community worship and other veneration and/or commemoration of a sacred person, place, thing or event. The Holy Sepulcher was constructed over places where Jesus was thought to have been crucified, buried, and risen, and the octagonal domed structure at the east end of the Church of the Nativity was constructed over a cave that



CHURCHES. Figure 1. *Church of the Holy Sepulcher, Jerusalem.* (Courtesy Pictorial Archive)

came to be identified in one tradition as the place where Mary had given birth. In both, the church building functioned at once as a place for liturgical worship and veneration of the hero of the Christian story.

In the second half of the fourth century, a church building was assimilated to a martyrium (begun perhaps early in the reign of Theodosius I, 379–395) and dedicated to St. Babylas at Kaoussie (Donceel-Voûte, 1988, pp. 21–31). Constructed on the model of a Greek cross, this building contained the buried remains of the saint at the center of the cruciform plan; in the same emplacement aboveground was an altar for celebrating the Eucharist.

Fifth–Sixth Centuries. Architecturally, the fifth century was a period of consolidation and standarization. The Constantinian architectural types were replicated across the Near East. The two basic spatial concepts that animated Early Christian architecture—rectangular, longitudinally oriented, hall-like space and open, centrally planned, domical vertical space—continued to dominate. Fifth-century remains are extensive. Within the Anatolian realm is the remarkable cluster of churches called Bin Bir Kilisse ("the Thousand and One Churches") in southeastern Lycaonia, approximately 80 km (50 mi.) southeast of Konya/Iconium. The Anatolian churches include a few centrally planned structures, but the majority are longitudinally oriented on a rectagonal grid with an apse at one of the short ends. Northeast of Bin Bir Kilisse, across the Cappadocian highlands (Aksaray, Nevşehir, Kayseri) to the Anti-Taurus range, and then south toward the Cilician coast, and east again across Osrhoene, are numerous remains of church buildings from the late fifth and early sixth centuries.

For centrally planned structures and a common architectural matrix for eastern Anatolia (including Armenia) and the adjacent Levantine territories, especially northern Syria, a fifth-/sixth-century example is the octagonal building (now destroyed) at Sivasa, northeast of Aksaray (Rott, 1908, pp. 249–54). A roofless apse projected from the eastern perimeter of this octagon, reproducing the same plan found in the so-called Church of the House of Peter (Virgilio Corbo in Tsafrir, 1993, pp. 71–76; Taylor, 1993, pp. 268–288) at Capernaum in Galilee and the Church of Mary Theotokos (Yitzhak Magen in Tsafrir, 1993, pp. 83–89) on Mt. Gerizim in Samaria.

As in the fourth century, the sixth was a period of innovation dominated by a powerful patron, Emperor Justinian (482–565). Justinian was more directly involved in the design and execution of church buildings than was Constantine. The result was a building type (centrally planned, vaulted, and domed) that appears throughout the sixth century, especially in the Near East. The paradigm is the centrally planned Hagia Sophia built in 532–537 (Mainstone, 1988). Along with domed and centrally planned buildings, longitudinally planned churches continued to be built throughout the Near East in the sixth century.

[*See also* Baptisteries; Basilicas; House Churches; Martyrion; *and* Monasteries. *In addition to the sites individually cross-referenced above, many other sites mentioned are the subject of independent entries.*]

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PAUL CORBY FINNEY

CHURCH INSCRIPTIONS. Epigraphic sources constitute a major contribution to what is known of the historical development of a local or regional church, its specific organization, and its beliefs. Inscriptions from the early centuries of Christianity have been discovered by the thousands and continue to be recovered and published. Only the character and contents of church inscriptions written in Greek, the language most commonly used by Christians in Byzantine lands, are considered here. Relevant epigraphy exists in other languages, such as Syriac, Armenian, Georgian and Coptic. [*See* Syriac; Armenian; Coptic.]

Although methodical studies on church epigraphy exist, there is no general corpus. However, besides those appearing in the *Corpus Inscriptionum Graecarum* (4 vols., Berlin, 1828–1877), inscriptions are published as they are discovered in the region: in Syria (Jalabert and Mouterde, 1929–1959; Moab (Canova, 1954); the Negev desert (Alt, 1921; Negev, 1981); Jordan (Gatier, 1986; Piccirillo, 1993); Israel (Meimaris, 1986); Madaba (Piccirillo, 1989); and others. Monographs may concentrate on a particular subject, such as magical formulas on the lintels of Christian homes in Syria (see William K. Prentice, *American Journal of Archaeogy* 10 [1906]: 137–150) or on a heretical expression typical of Asia Minor (Gibson, 1978). Inscriptions are found in all areas of religious buildings, but especially on the floors of churches and chapels, on liturgic furniture, on column capitals, and on chancel screens; tombstones; lintels of private houses; and objects of daily use. They may also differ from

one another in style and content. In general, however, they tend to be formulaic and do not deviate from the tradition.

Dedicatory Inscriptions. The immediate aim of the dedicatory inscription is to keep a public record of the names and titles of those who contributed in one way or another to the construction, embellishement, or renewal of a religious place or a part of it. This material is of reliable historical value, as much as it records also some information about an inscription's date and circumstances. By way of example, recent excavations of churches in Israel have yielded information about Byzantine emperors as promoters of church construction, such as Justinian I in Jerusalem, or merely as dating references, such as Mauritius Tiberius in Kursi and Tiberius Constantinus in Nessana. References to donors of rank, such as an ex-assessor of the city of Emesa/Homs in such a remote place as Nessana in the Negev (Meimaris, 1986, p. 227), are significant because they reflect the degree of involvement of secular authorities in church life. The names of numerous donors (lit., "fruit bearers" in Greek), however, remain anonymous, even though they are usually the relatives of the person "for whose salvation" a building or some small part of it had been offered.

The main contribution of dedicatory inscriptions is in the field of church organization, as by their nature they refer to local clergy, recording their full titles and epithets, from the highest dignitaries to the lowest ecclesiastical orders. Meimaris's monograph on the church of Palestine lists the following titles: patriarch, metropolitan, archbishop, bishop, country bishop (chorepiscopus), archpresbyter (only two cases), presbyter, assistant presbyter, archdeacon, deacon, deaconess, subdeacon, lector, doorkeeper, *periodeutes,* oeconomus, and *paramonarius* (Meimaris, 1986, pp. 165–226).

Epigraphic references to church officials, who often otherwise would not be known to have existed, thus essentially help in the drawing up of the episcopal lists of a given diocese in periods for which no literary proofs exist. A case in point is the Madaba region in Transjordan, where a number of recently discovered inscriptions unexpectedly attest to the vitality and organization of that diocese during the 'Abbasid period (Piccirillo, 1989, pp. 322–324). An interesting feature of the dedicatory inscriptions appearing on mosaic floors is the occasional reference to the people who worked on the mosaic, suggesting art schools or mosaic workshops. The mosaists appear to add their own names to the list of dignataries and donors, almost as a prayer: "In the time of . . . this mosaic was completed . . . for the (eternal) rest of Basilides and the salvation of Elias son of Elias the mosaist." Other inscriptions start by mentioning the artisan: "This is the work of mosaists Nahum, Cyriakos, and Thomas. . . ."

Funerary Inscriptions. Mortuary epigraphy is an indispensable complement to the historic relevance of dedications. Inscriptions are found on funerary stelae in open cemeteries as well as on the floors of churches. Tomb slabs are often seen in the nave, aisles, presbytery, diaconicum, annexed chapels, and baptisteries. Not all of these tombs have identifying inscriptions, but those that do attest to the presence of clergy, monks, and lay people—men and women—probably of a certain position and particularly related to that specific church or to its patron saint. [*See* Burial Techniques; Churches; Baptisteries.]

The style and formulas of Christian funerary inscriptions may vary from one region to another, but they are always important inasmuch as they include historical data about the members of a specific community, its hierarchy, and its religious culture. Anthropomorphic funerary stelae found at Khueinat in North Sinai, although Christian in intention (they display crosses), include such pagan formulae as "Be courageous. . . . Nobody is immortal!" In other regions they

CHURCH INSCRIPTIONS. *Dedicatory inscription from the Nea Church in Jerusalem.* Dated to the reign of Justinian, sixth century CE. (Courtesy Israel Antiquities Authority)

consist of a nicely planned text including the full names and titles of the deceased and the exact date of the death and/or the burial. An epitaph from Oboda/Avdat gives even the exact hours of the death and burial, as well as the day, according to the two calendars, for better clarity (Negev, 1981, p. 33). So much precision is an exception, but it exemplifies the kind of historic contribution of such records.

The name of the deceased in many cases may reveal ethnic origin (e.g., Arab). The frequency of certain Christian and biblical names helps in developing demographic and church statistics (e.g., the number and kind of clergy serving in a specific church) and in comparisons of the distinctive features of certain communities in different periods, such as before and after the Muslim conquest in the seventh century. Unfortunately, this cannot be done for most regions. Where, however, later building activity has not disturbed a site, such as in the cemeteries in the Moab region in Transjordan (Canova, 1954) and the Negev towns (Alt, 1921; Negev, 1981), interesting results can be achieved. For example, statistics are available for the monastic element in towns of regions for which no literary records are available.

Monastic functions as well as honorary titles and epitaphs have been gathered from the funerary epigraphy in Palestine: superior (hegumenos), archimandrite, mother superior *(hegumene), abbas,* our father, monk (monachos, *monazon*), nun (monacha), recluse, old man *(geron),* cell dweller (*kel-*

CHURCH INSCRIPTIONS. *Tomb inscription from Byzantine Beersheba.* The inscription contains the name "Stephan son of Regimus." Dated to the sixth century CE. (Courtesy Israel Antiquities Authority)

liotes, only in inscriptions from Deir Koziba in Wadi Qelt, probably recent), brother, and sister. [*See* Monasteries.] A deaconess is described as "Christ's servant and bride" (Meimaris, 1986, p. 51), an expression certainly meaning "consecrated virgin," rather than the epithet *parthenos,* "virgin," sometimes also occurring on tomb inscriptions. Actually, one of the most important contributions of such inscriptions concerns women's roles, responsibilities, and general involvement in the life of the Christian communities in the East. The title of deaconess, often occurring in inscriptions, has not existed in the church since the Middle Ages. The deaconess was ordained by a bishop to perform full ecclesiastical functions among women. In the sixth century, the mother superior *(hegumene)* of a monastery, who could also be a deaconess, became totally independent from an appointed father superior, as had been the norm (Meimaris, 1986, p. 240). Hundreds of names in inscriptions refer either to women considered deserving of burial inside the church premises, or to prominent women donors, benefactors, and even founders of churches and monasteries. A case in point is the reference to Lady Maria in a monastery at Scythopolis (Beth-Shean), and the names of two women represented as offering gifts in the mosaic inscription of a monastery church at Kissufim near Gaza (Tsafrir, 1993, p. 280).

Devotional Inscriptions. Both dedicatory and funerary inscriptions expressed religious beliefs and theological credos. They were an appropriate means to proclaim faith and apologetics. There are also, however, thousands of purely devotional epigraphs in the form of spontaneous invocations and short personal prayers in graffito, rather than in inscriptions, that recount popular faith and devotion. On the walls of shrines, martyria, and monastic cells, pilgrims and monks wrote or carved personal prayers and invocations addressing the local patron saints, otherwise unknown, that help to identify certain sites. Short invocations such as "Oh Lord, help!" are frequently found on religious structures along pilgrim routes, such as those leading to Sinai, sometimes accompanied by the name of the patron saint of the place and/or the name of the writer.

Archaeological and epigraphic evidence for the presence of the early Jewish Christians, their veneration of the holy places, and their theology, has been claimed by some scholars (see, in particular, Emmanuele Testa, *Il simbolismo dei giudeo-cristiani,* Jerusalem, 1962), but there is so far no consensus of scholarly opinion, as the risk inherent in misdating and interpreting devotional graffiti is great. On the other hand, recent epigraphic support for the presence of Jewish Christian groups in ancient villages in the Golan is claimed by Claudine Dauphin ("Encore des Judéo-Chrétiens au Golan?," in *Early Christianity in Context: Monuments and Documents. Essays in Honour of Father E. Testa,* edited by F. Manns and E. Alliata, pp. 69–84, Jerusalem, 1993).

Other interesting graffiti include a fourth-century ship drawn in charcoal accompanied by the Latin words *"Domine*

ivimus" (cf. *Ps.* 122:1) on a wall in the Church of the Holy Sepulcher in Jerusalem (Figueras, 1989, p. 1780). There are several instances of the acrostic ICHTHYS, known in inscriptions and graffiti since the late second century CE in Asia Minor and at Dura-Europos on the eastern border of the Roman Empire. [*See* Jerusalem; Dura-Europos.] From the Holy Land shrines, as well as from known martyr's tombs, such as St. Menas in Egypt, ancient pilgrims took home as *eulogiae,* or "blessed souvenirs," oil lamps and water or oil in small pottery, glass, or silver bottles decorated with designs and inscriptions referring to the holy place of origin. Even a piece of the rock of Golgotha was identified by inscription (Bellarmino Bagatti, *The Church from the Gentiles in Palestine,* Jerusalem, 1971, p. 232, fig. 130).

Implicit references to the Old and the New Testaments are numerous in all kinds of inscriptions, though their textual importance is relative (Gabba, 1958). References to the House of the Lord and its holiness (*Ps.* 63:5; Meimaris, 1986, p. 31) and to the Gate of the Lord, where the "righteous will enter" (*Ps.* 117:19–20), are found in churches. Biblical saints, and particularly the patriarchs Abraham, Isaac, and Jacob, are mentioned, either as examples of virtue or of God's fulfilled promises. One tombstone recounts that the deceased has "completed his race in the Lord" (*2 Tm.* 4:7) and another that a deaconess is simply called the second Phoebe (*Rom.* 16:1; Meimaris, 1986, p. 177).

The fragmentary mosaic known as the Madaba map, although replete with biblical references, is of greater value as a sixth-century geographic document for Palestine, with no fewer than 157 extant toponyms (Piccirillo, 1989, pp. 82–86). On another church floor, at Umm er-Rasas in Jordan, Palestinian, Arabian, and Egyptian cities are illustrated and labeled. Although its geographic value is questionable, it is a witness to the life and organization of the local community in 785 CE, a late date (Piccirillo, 1989, pp. 292–301).

[*See also* Inscriptions, *article on* Inscriptions of the Hellenistic and Roman Periods; *and* Synagogue Inscriptions. *In addition, many of the sites mentioned are the subject of independent entries.*]

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PAU FIGUERAS

CILICIA. A geographic region in southern Turkey, Cilicia is circumscribed by the Taurus Mountains on the north and west, by the Amanus Mountains on the east, and the Mediterranean on the south. [*See* Taurus Mountains.] Western Cilicia (Cilicia Aspera) occupies the rough, hilly country between Mersin and Silifke (Seleucia on the Calycadnos) at the mouth of the Göksu Valley. The fertile alluvial plains of eastern Cilicia (Cilicia Campestris) are broken by three major rivers that drain into the Mediterranean from their headwaters in the Taurus range: Ceyhan (Pyramus), Seyhan (Sarus), and Tarsus (Cydnus). Although none is currently navigable, the rock relief of the Hittite king Muwatalli overlooking the Ceyhan River at Sirkili, and

the report of Cleopatra arriving at Tarsus on a boat suggest that in antiquity the rivers served as north–south communication routes as well as water sources.

The road from east to west follows the base of the foothills above the marshy and fertile plains but below the rocky terrain of the Taurus Mountains. At the junction of river and road lay the major settlements of the region: Adana (the modern capital), Misis (Mopsuestia), and Tarsus. Tarsus sits at the juncture of the east–west road and the route north through the Gates of Cilicia and on to the Anatolian plateau. Four other major sites are near good harbors: Silifke, Mersin, Karatepe, and Iskanderun. The combination of Cilicia's fertile agricultural land and excellent harbors, roads, and passes made it an important crossroads throughout antiquity (Ramsay, 1903).

Neolithic and Chalcolithic Periods (6300–4500 BCE). No Aceramic Neolithic sites have been securely identified in Cilicia. Early Pottery Neolithic occurs at the water-table level at Mersin (Garstang, 1953) and at Tarsus (Goldman, 1956). [*See the biographies of Garstang and Goldman.*] M. V. Seton-Williams (1954) and others collected surface materials from a number of other sites. The few excavated remains represent settled villages with a mixed agricultural economy and fairly simple level of social organization. In style and manufacture, the ceramic vessel and chipped-stone industries have links with the ʿAmuq plain and coastal Syria rather than the Anatolian plateau. [*See* ʿAmuq.] Obsidian, however, originated on the plateau and reveals some level of trade. For the Chalcolithic period, excavated remains illustrate more complex forms of architecture and political structure. The level XVI settlement at Mersin is fortified by a double-wide common rear wall for the radiating ring of two-room houses (Garstang, 1953, fig. 79). The architecture indicates both community cooperation and the need for security. Cilicia's local pottery and stone-tool tradition continued to develop in form and technique through the Chalcolithic period. Machteld Mellink (1962) discusses the international connections visible in the pottery with Tell Ḥalaf and Ubaid affinities at Mersin and Tarsus.

Early Bronze Age (3400–2000 BCE). Early Bronze Age levels were excavated at Mersin and Tarsus. The survey noted above collected material from this period from a few sites. The EB I levels at Tarsus are contemporary with ʿAmuq F in the North Syria sequence but show more evidence of interaction in the ceramic repertoire with the southern Anatolian plateau. This includes the first beak-spouted vessels. The small percentage of wheel-made wares is more in line with the north Syrian tradition of ceramic manufacture. Evidence for architecture exists in wall fragments lining the EB I street, however full architectural units were not recovered until EB II levels. Two-room mud-brick houses with party walls were built, modified, destroyed by fire, and replaced with a town wall. Ceramics in the EB II levels shows increasing contact with northern Syria and Cyprus. The sequence testifies both to internal community cooperation and external regional conflict, probably the result of the rise of complex society during this period. In EB III, contact with western Anatolian is illustrated by the bell-shaped two-handled drinking cup (Gk., *depas*), known from the site of Troy (Mellink, 1986).

Middle Bronze Age (1900–1600 BCE). The early part of the Middle Bronze Age is documented only in the excavations at Mersin and Tarsus and the survey material collected by Seton-Williams (1954). At the end of the Middle Bronze Age, texts from Boğazköy, the Hittite capital in central Anatolia, and from Alalakh, a town in northern Syria, testify to Cilicia's increasing importance on the international scene (Kümmel, 1980). [*See* Boğazköy; Hittites; Alalakh.] The ceramic sequence for the early part of the Middle Bronze Age at Tarsus shows a general correspondence with level IV or levels III–Ib in the Assyrian trading colony at Kültepe/Kaneš. [*See* Kaneš.] Bowls, jugs and jars painted with parallel lines, triglyph and metope designs, and solid or hatched triangles called Syro-Cilician painted ware can also be found in the ʿAmuq and at Ebla in central Syria. [*See* Ebla.] The architectural tradition at Tarsus also shows continuity from the Early Bronze through the middle of the Middle Bronze. Known as Kizzuwatna (Götze, 1940), Cilicia was at various times an independent state and the vassal of the Mitanni Empire. [*See* Mitanni.] Cultural and linguistic ties to North Syria correspond to political alliance with the Mitanni (Beal, 1986). The break in architectural tradition at Tarsus is accompanied by some new ceramic forms and a cuneiform document that suggest a date in the Hittite Old Kingdom. The historical document is a land deed sealed with the seal of *tabarna,* a title taken by the Hittite rulers. The presence of a royal land deed suggests that Kizzuwatna had been brought under control of the Anatolian plateau. It is probably this level in which the local king, Išpuhtahšu, concluded a parity treaty found in the Hittite royal archives in Boğazköy. Išpuhtahšu's title is known also from a seal impression found at Tarsus naming him "Great King" of Kizzuwatna.

Late Bronze Age (1600–1200 BCE). The existence of Cilicia as a semi-independent state ended in the mid-thirteenth century BCE with Šuppiluliuma I, who established his son as the high priest of Kizzuwatna and incorporated the territory into his empire. In the thirteenth century BCE the Hittite king Ḫattušili III married Puduḫepa, a Kizzuwatnan princess. During her tenure as queen she gained considerable political power and took an unprecedented interest in foreign relations. The LB archaeology of Cilicia demonstrates the incorporation of Hittite material culture into a strong local tradition. This is particularly evident in the Hittite fortress at Mersin (Garstang, 1953, fig. 151) and the Hittite temple or administrative building at Tarsus (Goldman, 1956, plan 22). The ceramic assemblage contains some handmade items in the local tradition, although the most of the repertoire is inspired by the Hittite bowl and jar sequence. In the

early part of the Late Bronze Age, the Hittites probably used Kizzuwatna as a staging area for military incursions into Syria. After the limits of the Hittite Empire had been secured, Hittite interest in Kizzuwatna was as a source of taxable agricultural products and as an outlet to the profitable sea trade with the Levant, Egypt, and Cyprus. The merchants of Ura, against whom the king of Ugarit protested in a letter to the Hittite king Ḫattušili III, are thought to come from this area. The disruption of the society and economy brought about by the collapse of the Hittite Empire and the movements of the Sea Peoples are reflected in the archaeological sequences at Tarsus and Mersin. A destruction level followed by a rebuilding and continuation of the local ceramic sequence is followed by a level of pits and unstratified fill with Mycenaean Late Helladic IIIC pottery mixed with local wares at both sites (Mee, 1978).

Iron Age (1200–312 BCE). The initial centuries of the Iron Age are documented only in the scanty and disturbed archaeological remains at Mersin and Tarsus. Physical remains of the Late Iron Age exist at Tarsus (Goldman, 1950–1963), Domuztepe, and Karatepe (Bossert and Alkin, 1947). Like their Neo-Hittite counterparts at Carchemish and Malatya, Cilicia was broken into small territorial states with a capital city from which a local dynasty ruled the surrounding villages and towns. [*See* Carchemish.] Karatepe is the best documented example in Cilicia. Located in the eastern mountainous region, where the Amanus and the Taurus Mountains meet, a monumental gate sculpture and inscription dated to the late eighth or early seventh century BCE provide some insight into local dynastic history (Winter, 1979). The inscription is written in hieroglyphic Hittite (Luwian) and Phoenician, and also testifies to the continuity of the Luwian population base in the area. [*See* Luwians.] The agricultural wealth and proximity to mining regions in the Taurus made Cilicia a target for Neo-Assyrian expansion in the seventh century BCE. During this time Cilicia was divided into two kingdoms: Que (classical Cilicia Campestris) on the plain and Hilakku (classical Cilicia Aspera) in the western mountains. Greek colonization of Cilicia is attributed to this period, partly on the basis of the classical legend of Mopsos (Bing, 1968). The Neo-Babylonian Empire took over administration directly from the Assyrians. [*See* Babylonians.] From the sixth century BCE until the conquest of Alexander, Cilicia was ruled from Tarsus by semi-independent rulers with the title *syennesis*.

Hellenistic and Roman Periods (312 BCE–300 CE). For nearly six hundred years, a Greek presence, presumably a merchant class, is documented in Cilicia by the widespread use of imported Greek pottery, the foundation myths of a number of important Cilician cities, and Greek historians (Mutafian, 1988). With Alexander's conquest of the Cilician Gates in 312 BCE, hellenization intensified. Alexander established the first imperial mint at Tarsus, the region's capital. Both Hellenistic and Roman levels are attested in the excavations at Gözlü Kule in Tarsus but appear to be outside the major settlement. The Seleucids acquired Cilicia in the aftermath of Alexander's death and established ports at Aegeae, Alexandretta (Iskanderun), and Seleuia on the Calycadnus (Silifke). [*See* Seleucids.] Royal estates and temple estates formed a major part of the agricultural economy. Sanctuaries included that of Zeus at Olba (Uzuncaburç) and Artemis Perasia at Castabalu (Musti, 1984).

In the first century BCE, pirates based in Cilicia Aspera threatened the Roman sea trade. Pompey defeated the pirates in 67 BCE and took over Cilicia Campestris as well. Recognizing the agricultural potential of the fertile plain, Pompey resettled the area and established new cities, among which was Soli (Pompeiopolis). The presence of citizens who were artisans (linen weavers, dyers, tanners, carpenters) testifies to highly developed trade and craft (Musti, 1984). In 41 BCE, Antony stopped at Tarsus and summoned Cleopatra from Egypt. Her arrival by ship in the lagoon below the town is memorialized by the Roman arch the modern population of Tarsus calls Cleopatra's Gate. In the following centuries the cities of Tarsus, Adana, Mopsuestia, and Anazarbus became wealthy through trade in grain, wine, flax, and linen. Given the region's agricultural basis, it is not surprising that St. Paul pursued the trade of tentmaker in his hometown of Tarsus. The prosperity of Cilicia came to an end when the emperor Valerian was defeated in the third century CE and the Sasanian armies overran Cilician villages and towns on their way through the plain to the Taurus Mountains.

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BONNIE MAGNESS-GARDINER

CIMMERIANS. Since Classical Antiquity it has been believed that the Cimmerians were the early inhabitants of the Pontic steppes, preceding the Scythians there, although an attempt was made recently to use their name only for a small tribe that lived north of Urartu (see esp. A. I. Ivanchik, "K vopprosu o etnicheskoj prinadlezhnosti i archeologicleskoj kulture Kimmerijcev," *Vestnik Drevnej Istorii* [1994]: 148–168 and [1995]: 3–22). Archaeologically, their culture stems partly from the previous Belozerka culture of the Pontic area, partly from the Oka-Kama area and Siberia, and partly from the Caucasian tradition of bronzeworking. More distant parallels are also known from other provinces of the eastern koine of the Early Iron Age Geometric styles in Transcaucasia, Iran (Luristan), and the Balkans. Their own archaeological culture in the Pontic area is called Chernogorovka (ninth–early eighth centuries BCE); its late stage—Novocherkassk (late eighth–early seventh centuries BCE)—may have belonged partly to the latest Cimmerians and partly to the earliest Scythians. Cimmerians were among the first mounted nomads to use real cavalry; the objects from their graves include personal ornaments, weapons, and horse harnesses: most importantly horse bits of North Caucasian types (according to H. Potratz, 1966), bimetallic daggers with an iron blade and bronze handle (the latter either in openwork or tanged, with a mushroom-shaped pommel), socketed arrowheads that are a rhomboid in section, and long spearheads. Natural stone whetstones with a hole for suspension were also part of the equipment of the Cimmerians; in addition to openwork bronze belt finials and "birdcage" rattles, cross-shaped ornaments are sometimes found decorated with spirals. Some of the decorated objects have parallels in Assyria. The belt and suspended weapons are depicted on so-called stag stones used as grave stelae, but not the human figure. Stag stones are known across the steppes from central Siberia (Tuva) to eastern Bulgaria (Belogradec, near Varna), while most of the characteristic objects in metalwork come from the Volga-Oka, Kuban, and North Pontic areas. Of more westerly distribution are related Thraco-Cimmerian bronzes from the eastern part of central Europe, evidence of Cimmerian western raids; the Cimmerian and Caucasian influence on the Thracian bronzes from Bulgaria, and Macedonian bronzes from the Axius valley and Chalcidice, may, at the same time, be connected with Strabo's reports of a military alliance between the Cimmerians and Thracian Treres and Edoni (Strabo, C 61, C 627 and C 329 fragment 11). Some Cimmerian decorated bronzes were probably connected with shamanism (there are ethnographic parallels for this usage; see Bouzek, 1983, pp. 219–220), and were adapted as personal ornaments and jewelry even by the European Hallstatt and Villanovan cultures and in Greek Late Geometric art.

There are two groups of written sources on the Cimmerians: Near Eastern and Greek. Most Cimmerians left their country in the Pontic steppes as the Scythians moved westward under pressure from the Massagetes. Herodotus (4.11–13 and 6.20) expressively mentions Tyras (Dniestre) as the place where the Cimmerian kings fought a fratricidal battle and were buried, and from where the common people left their homes along the Black Sea, west of the Caucasus as far as the area of Sinope, followed by the Scythians. The first Assyrian references to Gumurru (the Assyrian equivalent "Cimmerian") date to early in the reign of Sargon II, prior to 713 BCE; the Scythians are also mentioned within the region of Urartu. [*See* Urartu.] Some small groups of Cimmerians, however, remained on the shores of the Azov Sea even later, as recorded by Plutarch (*Life of Marius* xi). The Cimmerian Bosporus, Cimmerian walls (an earthenwork across the East Crimean peninsula, constructed prior to the Greek colonization there), and Cimmerian peninsula are all in this area and the Araxes River (modern Syr Darya), according to Herodotus (4.11), originally formed the Cimmerians' eastern frontier. The battle on the Dniestre apparently marked the last stage of the retreat of the Cimmerians, which lasted for a considerable time, just as happened later in Sarmato-Scythian relations. During the reign of Sennacherib (705–681 BCE), the Cimmerians attacked large areas of Asia Minor and, according to tradition, destroyed the Phrygian Empire (the Phrygian king Midas committed suicide). This probably took place in 696/95 BCE (Eusebius's date)—although a date twenty years later cannot be excluded. Excavations at Gordion revealed destructions, but no characteristic Cimmerian objects. [*See* Gordion.] Only the arrowheads are known from Anatolia, while a few weapons finds and parts of horse harnesses from northeast Anatolia can be ascribed either to Late Cimmerians or Early Scythians. A group of Cimmerians probably settled near

Sinope; Esarhaddon mentions an Assyrian victory over them in 679 BCE: their leader during the 679/78 military campaign is called Tušpa in Assyrian records. Another group of Cimmerians may well have entered Anatolia from Thrace. This is suggested by Strabo, when he speaks about an alliance between the Cimmerians and the Thracian Treres and Edoni (cf. above). The Lydian king Gyges sought an alliance against them with Ashurbanipal. A second attack in 652 BCE was successful: Sardis (with the exception of the citadel) was sacked and Gyges killed. [*See* Sardis.]

The leader of the Cimmerian troops in 652 BCE was called Lygdamis, and there is a parallel name, Tugdammu, in Assyrian records. According to Strabo, Lygdamis was later killed in Cilicia. This happened between 637 and 626 BCE and, according to Herodotus (1.16), the last Cimmerians were driven from Asia Minor by Alyattes in about 600 BCE.

There are no written records on Cimmerian military activities in the eastern part of central Europe, but the numerous destructions and so-called Thraco-Cimmerian bronzes recovered in the area make it probable that the military activities there were Cimmerian because they resembled those of the later Scythians. Because the Thraco-Cimmerian bronzes show some development and appear in contexts from the ninth to seventh centuries BCE, the dominant position of the Cimmerians (or nomads closely related to them) on the Great Hungarian plain must have lasted for more than a century. There were, however, other inhabitants there, who seem finally to have absorbed the nomadic population.

[*See also* Anatolia, *article on* Ancient Anatolia; Cilicia; Persia, *article on* Ancient Persia; *and* Scythians.]

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JAN BOUZEK

CISTERNS. Designed to collect and store rainwater for drinking, washing, livestock, irrigation, and agricultural installations, a cistern was normally cut out of rock and its interior coated with a thick layer of impermeable plaster. When the rock itself was impermeable, only fissures were coated. Where no solid rock stratum was available, a cistern could be built in an excavated pit in the ground, or partially constructed, incorporating whatever natural rock was available. For built cisterns large stones, sometimes with layers of smaller stones above, were used and then coated with a final layer of plaster.

A cistern's depth would not normally exceed 6 m, so that water could be drawn with relative ease and the cistern could be cleaned by someone upright in it. Neither its width, length, or diameter, would exceed 6–10 m; consequently, a cistern's maximum capacity is a few dozen cubic meters at the most, and no more than 100 cu m. If its dimensions are greater it is properly designated a reservoir. The opening of the cistern was usually narrow in order to prevent falling into it, to prevent evaporation, and to enable convenient pumping.

Canals carved into the earth channeled runoff to a small depression or basin at the side of the cistern, where the soil settled or was filtered. The water was drawn from the cistern by lowering a pail on a rope from the surface through a vertical opening shaped like the neck of a bottle. Sometimes, a pulleylike device made of wood was built above the opening to facilitate drawing water. Pails were also of wood. Al-

CISTERNS. *View from the bottom of a cistern.* Sepphoris, cistern C-125. (Courtesy E. M. Meyers)

though perishable, some have been found in the excavations of the Agora in Athens.

Bell-shaped cisterns are first evidenced at the end of the Chalcolithic period or the beginning of the Early Bronze Age at Meṣar in Israel. Their form prevents the collapse of the ceiling, which could result if the top of the cistern were too broad. These cisterns are hewn in chalky rock, which allows them to store water without the use of plaster. Cisterns dating from the Middle Bronze Age, such as those discovered at Hazor, are bottle shaped. [*See* Hazor.] Although they are cut into chalky rock, these cisterns show evidence of plaster used to block up fissures. The Hazor remains, which are the earliest evidence of plaster in water cisterns, invalidate William Foxwell Albright's suggestion (1940, p. 212) that the Israelites invented plastered water cisterns after the Exodus and conquest. Bell-shaped cisterns from the Late Bronze period have been found at Tel Beth-Shemesh. [*See* Beth-Shemesh.]

During the tenth century BCE, "open" cisterns were in use in the Negev mountains, whose construction also makes them pools by definition. Hewn from the soft rock, they were designed and constructed to store runoff. The region's inhabitants lacked sufficient technical expertise to enable them to create underground cisterns. The depth of the cisterns is not great, and the high rate of evaporation in the region's dry climate suggests that the cisterns were covered with hides to reduce evaporation.

Water cisterns are mentioned often in the Hebrew Bible, and indeed, in the Iron Age II period an increase in the number of cisterns is seen. Excavations at Tell en-Naṣbeh, near Ramallah, have revealed fifty cisterns dating to this period. [*See* Naṣbeh, Tell en-.] At the Urartian fortress Çavuştepe in eastern Anatolia, square royal water cisterns from the eighth century BCE were discovered hewn into the rock, their fissures filled with plaster.

In the Hellenistic period there appears to have been a great increase in the private use of cisterns, to the extent that each household had one. Many cisterns were found cut into the chalky rock at Mareshah in Israel. They are unplastered, except for the use made of clay to block cracks, and bell shaped, with a volume close to 100 cu m. [*See* Mareshah.]

The private use of cisterns increased again in the Roman period, reaching its apex during the Byzantine period. Quarried bell cisterns, constructed cisterns with barrel-shaped arches, and cisterns of indeterminate form all existed side by side. Every household had a cistern, with an average volume of 30–50 cu m, that supplied the family with water throughout the year. In the Negev mountain region, underground cisterns (Ar., *ḥaraba*) were used in the Nabatean-Byzantine period. They are square, with supporting pillars that allow for increased volume. Water cisterns continue to be used throughout the Near East, in areas where a traditional way of life is preserved.

[*See also* Hydraulics; Hydrology; Pools; *and* Reservoirs.]

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TSVIKA TSUK

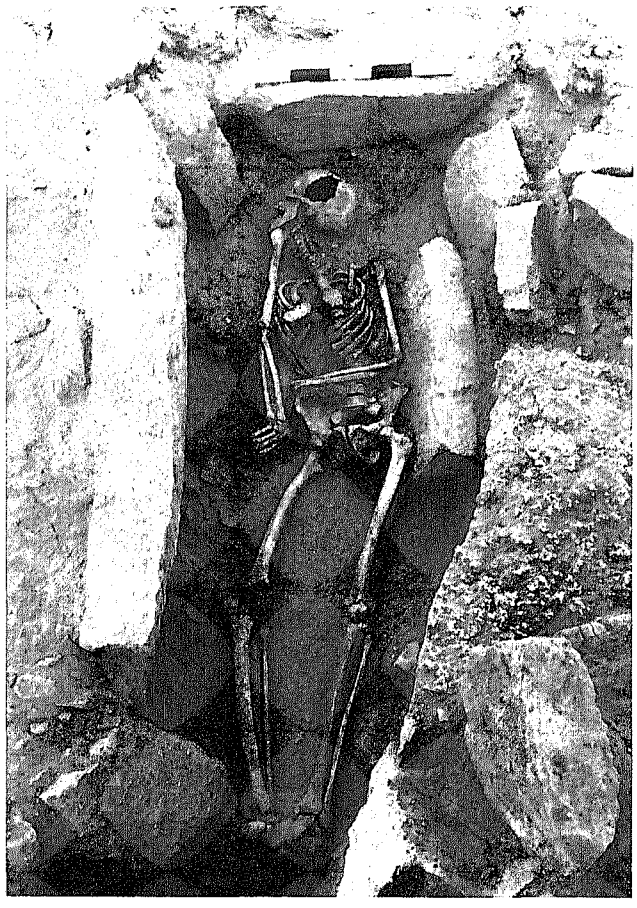
Translated from Hebrew by Ilana Goldberg

CIST GRAVES. To construct a cist grave, a rectangular space roughly 2 m long and 1 m wide was lined with stones or mud bricks; occasionally, the floor was paved with cobbles and a superstructure erected. The form remained the same whether constructed within settlements or in extramural cemeteries, for primary interments and secondary burials. The earliest Chalcolithic (4300–3300 BCE) examples were for secondary interments in extramural cemeteries. Early in the Middle Bronze Age (2000–1500 BCE), the intramural cist burial was introduced into Canaan from Syro-Mesopotamia as an exclusive method of primary burial for wealthy or prominent individuals. Late Bronze (1500–1200 BCE) and Iron Age (1200–586 BCE) cist graves for primary interments in extramural cemeteries are attributed to Egyptian influence.

The earliest extramural cemeteries are from the Chalcolithic period. In Palestine, in the cemeteries at Adeimah and Shiqmim, in addition to cist burials, contained secondary burials were found. At Shiqmim bones were also collected in ossuaries.

During the Middle Bronze II, elaborate stone-lined and capped pits were constructed at Ugarit in Syria and at Megiddo and Aphek, in Palestine. In the Aphek cists, the bodies were flexed and oriented east–west, with their heads facing east. Secondary remains were interred in recesses in the side wall of one grave, and a second grave contained a ceramic vessel whose type shows a strong northern connection.

The popularity of extramural cist-grave burial in the Late Bronze and Iron Ages has been attributed to Egyptian influence. Burials at Tell es-Saʿidiyeh provide the clearest Egyptian or egyptianizing features: an east–west orientation, with the heads usually facing west; Egyptian-linen body wrappings; bitumen-covered bodies; an unusually high incidence of metal artifacts; and an absence of bowls and lamps. Cist graves reached the height of their distribution in Palestine in the thirteenth–eleventh centuries BCE, through the lowland regions of the coast, the Besor River valley, and the Jezreel, Beth-Shean, and Jordan River Valleys (Tell Abu Hawam, Afula, Tell el-ʿAjjul, Tell el-Farʿah [South], Tell es-Saʿidiyeh). These were richly provisioned burials for the pri-



CIST GRAVES. *MB I burial in a stone-lined inner chamber.* Cairn 160, from the central Negev highlands. (Courtesy ASOR Archives)

mary interment of one individual and, rarely, two or three. In the case of multiple interments, one of the individuals was frequently an infant or a child. The mortuary provisions were like those in contemporary pit graves, with bowls for serving food predominating along with jugs and accompanying dipper juglets for liquids, plus luxury items such as jewelry, metal objects, and imported pottery. In some cases, pit graves may have sufficed as a simplified version of a cist grave. In the Tell es-Sa'idiyeh cemetery, the cist graves contained aesthetically finer and more precious items than did the interspersed simpler interments.

[*See also* Burial Techniques. *In addition, the sites mentioned are the subject of independent entries.*]

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ELIZABETH BLOCH-SMITH

CITIES. [*To survey the city as a form of human settlement in the ancient Near East, this entry comprises five articles:*

An Overview
Cities of the Bronze and Iron Ages
Cities of the Persian Period
Cities of the Hellenistic and Roman Periods
Cities of the Islamic Period

The overview article treats the emergence of cities and the process of ubanization; the remainder treat the development of cities and urban life through time in specific regions.]

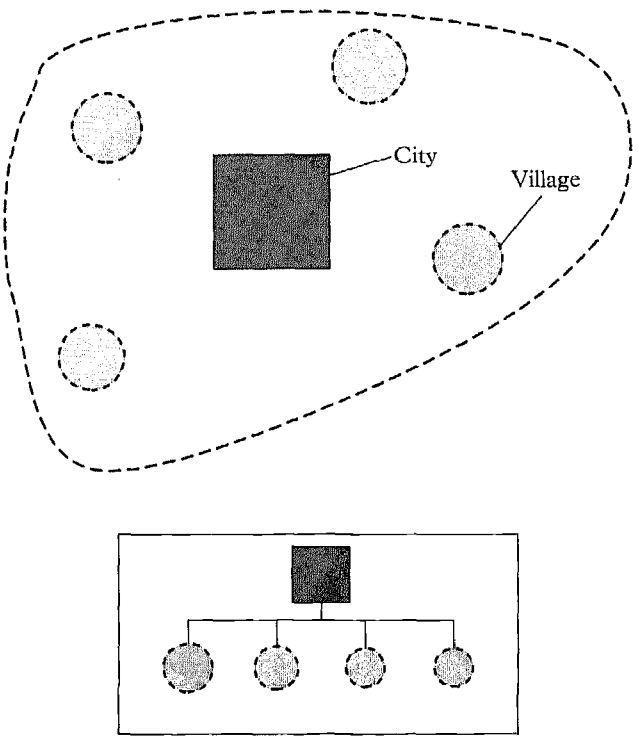
An Overview

Cities were the physical focus for the rise of civilization in the ancient Near East. While what constitutes a city in the modern world is fairly clear, there is no uncomplicated definition of a city in the ancient Near East. In the archaeological literature the terms *village, town,* and *city* are usually used interchangeably. A working definition of *city* is that it is a relatively permanent, compact form of human settlement, having a particular kind of relationship to its surroundings, and populated by a fairly large number of diverse individuals who are socially differentiated. Clarity of definition of the city, and the nature of its relationship to other forms of settlement, emerges only in surveys of the relationships of settlement forms to their surroundings.

Center and Periphery. To understand what cities were in the ancient Near East, the ideas of center and periphery need to be examined. Cities, and other forms of permanent settlements, were parts of interdependent systems that included a center and its surroundings. Thus, the modern idea of a rural-urban dichotomy is not helpful in understanding the city in the ancient Near East. Many modern rural-urban differences are typical only of industrial-urban, not of preindustrial societies. Because all ancient Near Eastern cities were part of an agriculturally based economic system, the city and its surroundings were interdependent. People living in the area around a city were dependent on the city, and urbanites depended on the sustaining area of the city's surrounding region. People living in the area around a city were dependent on the city for many things—temples, storage

facilities, security, specialists of various kinds, craftspeople who could process goods, and administration or social leadership. Definitive urbanization involved the regulation of the agricultural surplus—that portion of agricultural produce not consumed by the primary producers. The capacity to extract and invest this surplus was a principal function of cities and their administrative officials. As payment for this administrative service, urban officials exacted tribute or taxes from the inhabitants of the surrounding area. Similarly, a city's inhabitants required the agricultural produce of the city's hinterland for their sustenance.

The interdependence between center and periphery becomes recognizable in the archaeological record when the people in the city's hinterland are also organized into settlements, creating a two-level hierarchical system: a city (usually walled) and its villages (usually unwalled), as schematically pictured in figure 1. This interdependence of the city and its surrounding settlements limited the size of such a system. A city and its villages had to be close enough together to make continuous exchange possible. If the system was in a geographic area where there were no physical barriers, it was theoretically possible for it to expand as far as available means of transportation between the center and the most remote village would allow. [*See* Transportation.] The expansion of the system was also a function of the productive capacity of a city's surrounding area.



CITIES: An Overview. Figure 1. *A city in relationship to its villages.* (Courtesy F. S. Frick)

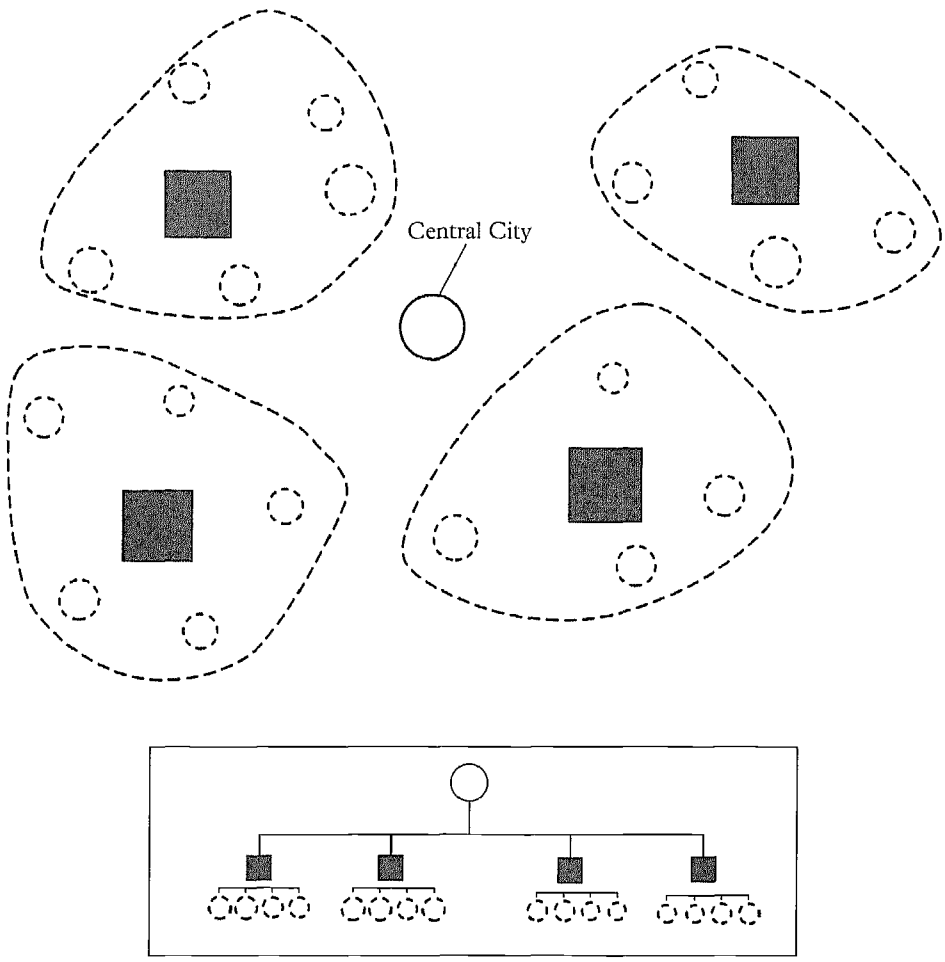
As cities that were part of such a simple two-tier system expanded, their sustaining areas would begin to encroach on those of neighboring city-village systems. When this happened, a competitive situation developed between the centers of the two systems. Because of this, a new kind of sociopolitical organization was needed to channel human energy into production rather than destruction. From several systems of two tiers, a new three-tier system was created: a central city that administered an area consisting of several city-village systems (see figure 2). A city that was the center of a two-level system can be thought of as a local center, while the central city in a three-level system is a regional center in a city-state.

Urbanization Process. The process of urbanization is not a unitary, universally homogeneous process; it assumes different forms and meaning, depending on prevailing historic, economic, and cultural conditions. How did urbanization proceed in the ancient Near East and what technologies and forms of social and political organization were involved?

The earliest traces of human existence in the Near East come from the Paleolithic period, where strata indicating short periods of occupation with long intervals between them and skeletal remains have been found in caves (e.g., at Shanidar in present-day Iraq and on Mt. Carmel in present-day Israel). This situation changes with the beginning of the Neolithic period, when the first relatively permanent settlements based on a combination of hunting and gathering and agriculture appear. It is clear, from the fact that archaeological evidence for both phenomena appears at about the same time, that there is a positive correlation between the beginnings of permanent settlements and of food production.

Neolithic settlements were usually some distance from one another and were located in environments where there was ready access to several different ecological niches (food production was still unreliable and had to be supplemented by hunting and food gathering). One of the best-known Neolithic settlements, Beidha, located southeast of the Dead Sea in modern Jordan, is found in such a setting. Another important Neolithic site is Çatal Höyük in modern Turkey. In addition to being located in a differentiated ecological setting, Çatal Höyük is a settlement where a densely built-up area of about 440 sq m has been excavated, in which there were houses of equivalent size and plan, suggesting a socially undifferentiated community. Neolithic Jericho has often been called a city, mostly because of its massive walls and fortification system. While Jericho and other Neolithic settlements anticipate some developments in later cities, they differ from cities, as defined here, because they were not the center of a settlement system. These Neolithic sites should thus be regarded as protourban settlements.

With increasing experience with agriculture came more dependable food production. The necessity of having to settle at sites that offered the safety net of food gathering de-



CITIES: An Overview. Figure 2. *A central city in relationship to its associated city-village systems.* (Courtesy F. S. Frick)

creased, and it became feasible to establish settlements in a wider range of environments and nearer one another. With higher agricultural yields, the cultivated area required to feed a person was also reduced. [*See* Demography.] With more intensive agriculture, settlements could be located closer together, a prerequisite for the creation of structured relationships between them in the sense of the formation of settlement systems, which was also a necessary precondition for urbanization. There is, however, no single identifiable cause in the nexus of social, economic, and political transformations that was a sufficient cause for the emergence of cities. Changes in social organization induced by commerce, warfare, or technological advances had to be validated by some instrument of authority if they were to achieve institutional permanence. This instrument of authority, rather than any particular form of activity, was the generating force for urbanization. Gideon Sjoberg (*The Preindustrial City, Past and Present,* Glencoe, 1960, pp. 67–68) equates authority with social power. For him, the preindustrial city was a mechanism by which a society's rulers could consolidate and maintain their power.

Urbanization in Mesopotamia. The first true cities emerged in Mesopotamia in the Early Bronze Age, at the close of the fourth millennium. Habuba Kabira (South), a city on the Upper Euphrates River in present-day Syria, appeared in this period. It had a rectangular layout, a defensive wall, and evidence of social differentiation in the form of a separate block of buildings for the upper class at the southern end of the site. [*See* Habuba Kabira.]

By 3600 BCE the development of urban centers was focused in southern Mesopotamia. Uruk (modern Warka in Iraq) offers an impressive example of urban development in this early period, when isolated settlements gave way to regional centers. Uruk was a substantial ceremonial center and became the largest early city in southern Mesopotamia. Around it lay several small towns and villages. Near the beginning of the third millennium it began to expand rapidly, reaching its greatest size by around 2700 BCE. At that time

its population was forty thousand–fifty thousand and its defensive walls enclosed an area of 400 ha (988 acres). [*See* Uruk-Warka.] Uruk has been excavated (intensively in those areas of the city that were temple sites) and is also known from the Gilgamesh epic, which reflects a much older period, although in the form in which it now exists was written later. Gilgamesh, the hero of the epic, was probably the ruler of Uruk in the Early Dynastic I period (c. 2600 BCE), after the city had reached its largest size. At the beginning of the poem, Gilgamesh has oppressed the people of Uruk in order to build up the massive city wall, which has been identified in excavations as having a circumference of 9.5 km (6 mi.), with about nine hundred semicircular towers. Besides the walls of such early cities, evidence leads to the assumption that the highly developed economic organization of such settlements required not only abstract methods of control, but other forms of social organization.

While some early urban sites on the southern Mesopotamian plains had areas of 400 ha (988 acres) or more, those of Upper Mesopotamia appear to have had a maximum size of only about 100 ha (494 acres). This suggests a ceiling beyond which such sites could not or did not grow. Scholars routinely assume that the size of early cities was limited by the productive capacity of their immediate sustaining area. Fundamental to our understanding of early urban systems is the notion that the extraction of agricultural surpluses enabled early centers to expand and to accommodate specialized economic sectors. While some early centers (e.g., early Uruk) may have been self-sufficient for food, typically it was the outlying settlements that produced the surplus supporting the populations and institutions of urban centers. The latter case is illustrated by the Ugaritic texts that record the contributions of outlying settlements to the centralized economy.

During roughly the first half of the third millennium, wide areas of the Mesopotamian countryside were significantly depopulated, as most of their inhabitants took up residence in politically organized city-states. In the general vicinity of Uruk, for example, the number of villages and towns fell precipitously from 146 at the beginning of the millennium, to only 24 by about 2700 BCE. Meanwhile, the number of cities (i.e., sites exceeding 50 ha, or 123.5 acres, in area) grew from two to eight. Structural changes occurred simultaneously in the newly emergent cities. Accompanying urbanization was increasing militarism, reflected in the construction of massive urban fortifications and in a host of myths, epics, and historical inscriptions recounting the internecine struggles of these city-states. There was also increasing social stratification and the decay of kin-based social units.

The cities of southern Mesopotamia were conquered about 2340 BCE by an invasion of Semites from Babylonia to the north, under Sargon (Sharrukin) of Akkad, who is regarded as the first ruler to create an empire—that is, an expanded state based not solely on cities, but upon territorial control. Administratively, Sargon created a new capital rather than basing his power on an established city. He thus set a pattern of imperial rule in which the capital city became only an administrative center, not an essential political unit. The Akkadian Empire, however, lasted fewer than two centuries. It was overthrown shortly after 2200 BCE by the Guti from the north, who exercised loose administrative control for about a century, allowing the reemergence of independent cities. They were succeeded by the first Babylonian kingdom, whose best-known king was Hammurabi (c. 1792–1750 BCE).

Paralleling these developments in the south was the appearance of a new power in northern Mesopotamia, the Assyrians. The Assyrians marked the realization of a trend in urban development that had begun with Sargon of Akkad—the transition in the city's role from an independent center to the tool of territorial empire builders, a useful administrative unit but no longer an entity that was central to the mentality of ruler or subject. Under Hammurabi, city temples no longer managed land, reducing the city's pivotal role. [*See* Assyrians; Temples, *article on* Mesopotamian Temples.] Thus, "empire" began to be conceived of not as the extension of the control of a city and its ruler, but as the government of a territory by a king and his army. As a consequence, the basis of power shifted from an urban-centered economic organization, with its exploitation of agriculture and trade, to military conquest of and exaction of tribute from subject peoples. The Assyrians thus represent the final shift from control by a city to control on a territorial basis, perhaps exercised through cities but not connected with any specific one. This was the pattern followed by the Persians, by Alexander, and to some extent by the Roman emperors.

Urbanization in Palestine. Urbanization gained momentum in Palestine toward the end of EB I and the beginning of EB II (c. 3000 BCE), as indicated by the sudden appearance of many cities, among them Ai, Beth-Yerah, Bab edh-Dhra', Jericho, Megiddo, Tell el-Far'ah (North), and Tel Yarmut. One feature of these early cities was the appearance of large public buildings, some of which may have been temples.

Toward the end of the Early Bronze Age (EB III, 2650–2350 BCE), urbanization peaked in Palestine and a period of rival city-states emerged in Mesopotamia. In Mesopotamia, urban development was linked to changes in water supply, which not only affected agriculture, but influenced settlement patterns. Because major cities in Mesopotamia were located on watercourses, the receding of water into fewer watercourses must have involved a gradual linkage between the settlements and the remaining watercourses. In addition, it led to the tendency for a few settlements to grow larger at the expense of others. In the area of Uruk, for example, the number of settlements decreased from sixty-two in the Early Dynastic I period to twenty-nine in this period.

While urbanization in Palestine peaked in EB III, by the end of EB IV (2350–2000 BCE), there were no urban settlements left. What caused this disappearance of urban culture? Three explanations have been offered. One is ecological and parallels the Mesopotamian situation of scarce water resources. This explanation maintains that there was a decrease in rainfall and a consequent lowering of the water table, which made concentrated settlements impossible. A second explanation suggests that the urban centers were destroyed or abandoned following incursions from either the north or the south. A third explanation sees the city-state system reaching the point of self-destruction as the result of city-states' raids on one another, as evidenced by the repeated strata of destruction and reconstruction at EB II–III sites.

The second urban period in Palestine, the Middle Bronze Age (2000–1500 BCE), saw the reemergence of urban centers. MB city walls had towers built at intervals of 20–30 m and in MB II (1800–1650 BCE), a glacis at the base of the walls that formed a smooth, steep slope to protect the walls from attackers. While some MB cities were reestablished on EB sites, MB II also saw new, large cities established that were enclosed with earthen ramparts (e.g., Qatna [100 ha, or 247 acres] in Syria and Hazor [60 ha, or 148 acres] in Israel). [*See* Hazor.] LB cities in Palestine (1500–1200 BCE) showed continuity with MB cities, with few positive developments and a general decline in urban life.

In Late Iron Age I and Iron II Palestine (c. 1000–587 BCE), urbanization flourished with the support of the monarchy, for which cities were an essential part of the administrative system. A hierarchical order of settlements developed, ranging from the capital cities of Jerusalem and Samaria at the top to small fortified sites at the bottom. Between these were major and secondary administrative centers and fortified provincial towns. Most Israelite cities were about 3–7 ha (7–17 acres) in area, with only the central cities of Jerusalem and Samaria being larger, with an area of 30–50 ha (74–123.5 acres). Unlike their Bronze Age predecessors, the Iron II Israelite cities did not accommodate a large number of farmers but were inhabited mostly by families belonging to the political, military, economic, and religious elite.

Significance of the City. Although they are sometimes used interchangeably, there is a distinction between the terms *city* and *urbanism*. Urbanism implies those characteristics that distinguish cities from simpler settlements, but it also refers to the organization of an urbanized society, which includes those settlements associated with cities. A city, on the other hand, is the physical center that manifests many important characteristics of the urban condition. Urbanization refers not exclusively to the processes by which cities are formed and people are incorporated into an urban-centered sociopolitical system. It refers also to the acquisition of characteristics associated with city life and to the changes in the patterns of life that are apparent among city dwellers. Cities become symbols, as well as things. Humans are not neutral toward cities but surround them with values and beliefs. The city can be seen as the embodiment of good or evil, as representing progress or decline, and as being the site of human alienation or human salvation.

Apart from the usefulness of cities for administration and defense, they appealed to those who felt their individuality was repressed by social organization based on kinship. On the positive side, cities offered these individuals a measure of freedom, anonymity, privilege, the opportunity to develop their skills, and the stimulation of being part of a more heterogeneous sociopolitical unit than a kin-based one. However, the significance of cities in the ancient world was not limited to such opportunities. The status of women, for example, seems to have deteriorated substantially with urbanization. Although archaeologists have only recently begun to examine such issues, inferences can be drawn from ethnographic studies. The advent of permanent settlements initiated changes that led to increased inequality in status between the sexes. The rise of cities also caused more unequal distribution of wealth. Most preurban societies were basically egalitarian with little specialization, except for that determined by age and sex. Urban societies, however, are characterized by specialization of tasks and serious inequalities in the distribution of wealth.

Cities in their physical form are long-lived. At the same time, urban societies change more than any other social grouping. Cities are thus amalgams of physical structures and people. They are settings for daily rituals—the sacred and the secular, the random and the established. Cities are the ultimate memorials of human struggles and achievements: they are where the pride of the past is put on display.

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FRANK S. FRICK

Cities of the Bronze and Iron Ages

In the Near East, the type of settlement known as a city, first developed in Mesopotamia during the second half of the fourth millennium and spread to other areas in the region by the beginning of the third millennium. Since that time, the city has embodied a way of life; in the ancient Near East, except in Egypt, "history" has meant the history of cities. A new level of human civilization began with the emergence of urban life, accompanied by other innovations that developed in the fourth millennium and came to fruition in the third: religions with personal gods and mythical tales that expressed people's beliefs and worldviews; mastery of metalworking (the smelting and working of copper and bronze), and the invention of writing as a means of preserving transactions in all areas of society. This transitional period in human civilization was rooted in certain existing technological features: the building of fixed houses out of a variety of materials, the domestication of plants and animals, the use of the wheel, the production of ceramics from clay, and the manufacture of cloth from plant fibers. In spite of the other decisive changes that took place in economic life, in the ancient Near East agriculture remained the basis of the economy. The city did not supplant other forms of settlement, but coexisted with them.

Early Settlements. The founding of settlements begins with the round houses built in the Natufian period (10,000–8,000 BCE). The first round houses at 'Einan ('Ein Mallaḥa) on Lake Hulah in Israel were constructed of perishable materials on a stone foundation. [*See* 'Einan.] In the Neolithic period, which followed (8000–4000 BCE), air-dried mud bricks became the main building material, combining the advantages of easy manufacture and use with the demands of load-bearing capacity and durability. During this period some settlements already covered a large expanse: Qal'at Jarmo in the region of the Zagros Mountains was about 1 ha (approximately 2.5 acres), Tell Hassuna on the Upper Tigris River was 3 ha (about 7 acres), and Çatal Höyük in Anatolia was approximately 12 ha (30 acres). [*See* Jarmo; Çatal Höyük.] In addition, as the examples of Tell es-Sawwan on the Middle Euphrates River and Tell es-Sultan (Jericho) in the Jordan Valley show, settlements were surrounded by a wall even before it is possible to speak of the city proper. [*See* Jericho; Jordan Valley.] To be sure, fortifications were an important, if not a compellingly necessary criterion in laying out a city; in the Neolithic period, however, all the additional features that legitimate the designation "city" were lacking. In any event, the Neolithic settlements that were fortified were the forerunners of the ensuing urbanization.

Elements of Urbanization. A number of factors inhere in the establishment of the city as a viable community, although not all of them were present to the same degree. Certain natural prerequisites include land that could be cultivated, a sufficient water supply to enable the self-sufficiency of the inhabitants, and a strategic location favorable for commercial traffic. Community life required a stable social order as well as social differentiation. The ruler was at the head of a city and at the top of the social pyramid. The inhabitants in turn formed classes—priests, warriors, merchants, artisans, free workers, peasants, and slaves—in a hierarchy based on the respect accorded to their occupations and their economic strength.

In terms of urbanism's economic foundations, the production of a surplus and the division of labor, which in turn necessitated an exchange of goods and trading activity, is assumed. The invention of writing significantly facilitated the differentiated economic and social systems, as did other organizational mechanisms such as calendars, taxes, and legal systems. In addition to the social, economic, and legal framework, the formal expression of the divine in the form of cult and mythology was a stabilizing element that legitimated the unequal distribution of resources. The combination of characteristics in one place justifies speaking of a settlement as a city. The external appearance of a city devolved from elements of size and planning, fortification, and public buildings that reflect a high level of cultural development.

Earliest Cities. The cities that developed in Mesopotamia in the second half of the fourth millennium had a long history of settlement: the Sumerian settlements at Ur, Uruk, Eridu, and Nippur in southern Mesopotamia and Tepe Gawra on the Upper Tigris. [*See* Ur; Uruk-Warka; Eridu; Nippur; Tepe Gawra.] In these sprawling city complexes the temple precincts, which stood on a raised terrace surrounded by a separate wall, occupied an extraordinarily large area, surpassing the extent of the palace by several fold and reducing the residential quarter to a minimal area of the city. The dominant spatial position of the cult precinct, as well as its social, economic, and political role in urban life, also characterized cities founded later in the third and second millennia (Aššur, Eshnunna; Khafajeh; Ḫursagkalama, and many others), even when the residential quarters occupied a large area, as at Babylon. [*See* Aššur; Eshnunna; Khafajeh; Babylon.] Only in the Assyrian residence cities like Nineveh, Nimrud, and Khorsabad did the palace of the ruler begin to assume a dominant position, while the space occupied by the temples sharply declined. [*See* Nineveh; Nimrud; Palace.] The division of cities into distinct regions

and quarters makes it evident that their layout was planned, a fact also visible in other of its organizational elements, such as the positioning of gates and streets. The city form that was valid for thousands of years came to an end with the decline of the Neo-Assyrian (or Neo-Babylonian) Empire during the middle of the first millennium BCE. [*See* Assyrians; Babylonians.]

City-States. Even before the end of the fourth millennium, elements of urbanization appeared in Syria. The city of Habuba Kabira on the Middle Euphrates River shows all the elements of conscious planning. The temple precinct lies in the southern part of the city, and with the "middle-room house" a well-developed house type was in use (although the city's palace has not yet been discovered). A network of streets divided the residential quarter into individual districts, and the straight city wall displays projecting towers at regular intervals. During the third millennium, the construction of fortified cities spread throughout Syria, with public buildings, a temple, and a palace occupying a dominant position. All the large urban centers—Mari, Alalakh, Ebla, Hama, Ugarit, and Byblos—were founded after 3000 BCE; most of them continued to exist until the invasion of the Sea Peoples at the beginning of the twelfth century BCE. [*See* Habuba Kabira; Mari; Alalakh; Ebla; Hama; Ugarit; Byblos.]

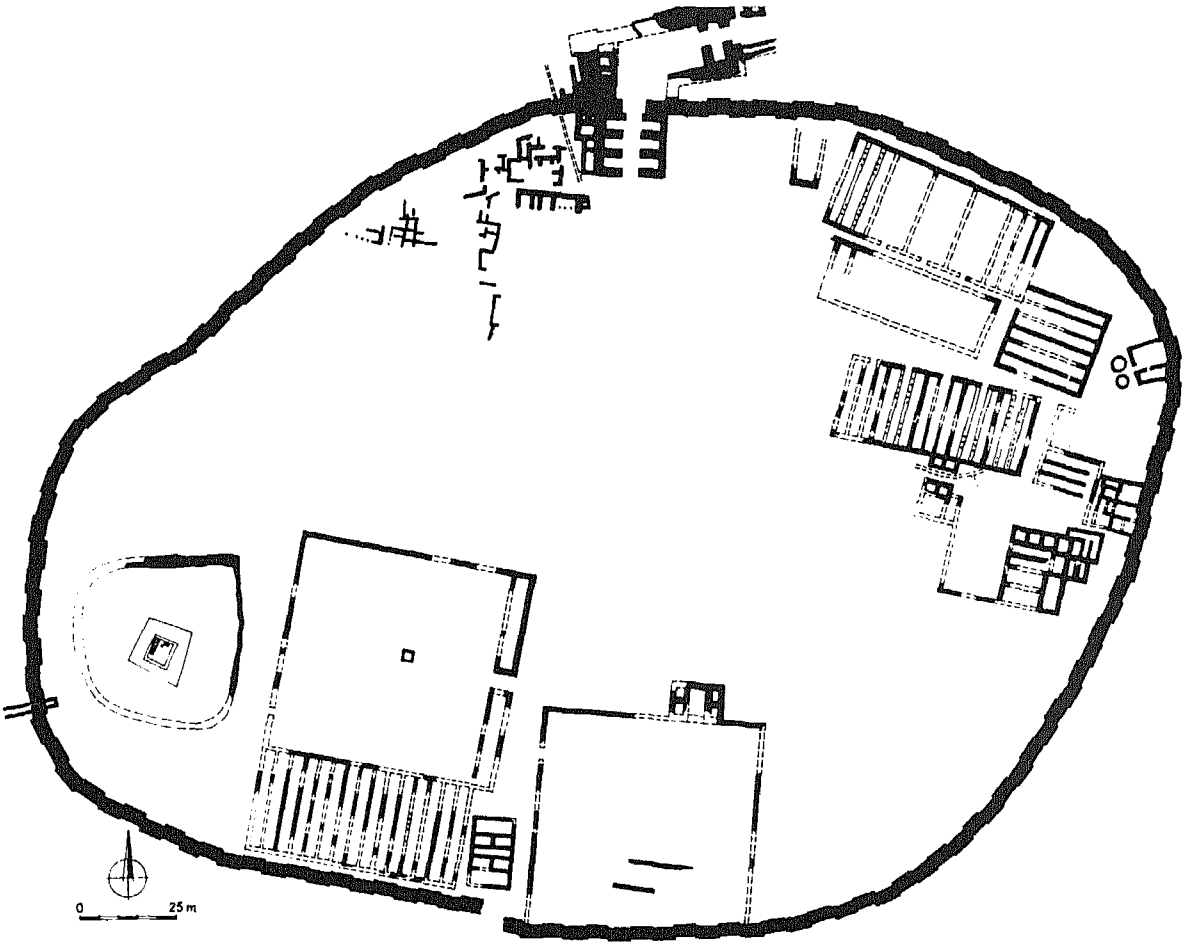
As the area controlled by the city expanded, the palace began proportionally to occupy the largest area. Archives found at sites such as Mari, Ebla, and Ugarit show how the adoption and development of cuneiform script were necessary to facilitate the administrative and diplomatic correspondence this expansion created. [*See* Cuneiform.] Each city was self-sufficient to the extent that its food supply was grown in the surrounding territory and most of its utensils and tools were manufactured within its walls. An extensive trade assured the procurement of necessary raw materials in exchange for certain agricultural products or finished wares. In Syria urbanization led to the establishment of numerouss city-states, whose individual power was reflected in the differing size of the areas under their control. These city-states collapsed during the twelfth century BCE and were not revived until the beginning of the first millennium by immigrant Arameans. [*See* Arameans.] In the center of these new urban centers were extensive palace districts grouped around a building of the *ḫilani* type, as can be seen at Tell Ḥalaf, Tell Taʿyinat, and Zincirli. [*See* Ḥalaf, Tell.]

Bronze Age Palestine. For ancient Palestine there is a lack of the continuity of urban centers found in Syria. Instead, three distinct periods of urbanization are separated from each other by a nonurban interval. The first urban period is identical with Early Bronze II and III (2950–2350 BCE), the second with Middle Bronze II (1950–1550 BCE) and Late Bronze I and II (1550–1200/1150 BCE). At the beginning of the first millennium, during Iron II (1000–587 BCE), a reurbanization, representing a new cultural influx, occurred; this phase may be considered a third urban culture. Each of the three time periods has a distinct character—they do not collectively represent a single culture.

Early Bronze Age. In most places EB I (3150–2950 BCE) open settlements precede the fixed cities of EB II (2950–2650). This continuity of settlement can be firmly established at Kinneret, Khirbet Kerak/Beth-Yeraḥ, Megiddo, Beth-Shean, Tell el-Farʿah (North), Jericho, Tell esh-Sheikh Ahmed el-ʿAreini, and Arad, as well as at other locations. The transition to fortified cities was based on local development and was not the result of foreign influences. [*See* Beth-Yeraḥ; Megiddo; Beth-Shean; Farʿah, Tell el- (North); Arad.] Some cities, such as Hazor and Beth-Shemesh, were founded on previously unsettled territory. [*See* Hazor; Beth-Shemesh.] Others, such as Tell el-Farʿah (North) and Arad, were abandoned again by the end of the period. However, in EB III (2650–2350 BCE) new cities were also founded in some places, such as Ai, Khirbet Yarmuk, Tell el-Khuweilifeh, Tell el-Ḥesi, Tell Beit Mirsim, and Khirbet ez-Zeraqun. [*See* Ai; Ḥesi, Tell el-; Beit Mirsim, Tell; Zeraqun, Khirbet ez-.] None of the EB cities survived the collapse of urban life that took place during the second half of the third millennium.

The large size of some of the EB cities is striking: Khirbet Kerak, Khirbet Yarmuk, and Tell esh-Sheikh Ahmed el-ʿAreini covered an area of 25 ha (62 acres) or more. Somewhat smaller cities include Aphek (12 ha, or 30 acres); Ai (11 ha, or 27 acres); Arad (10 ha, or 25 acres); and Megiddo (6 ha, or 15 acres). [*See* Aphek.] Like the settlements that preceded them, the cities generally lay in the vicinity of water sources on the plains or on hilltops. However, even sloping terrain could be settled, as at Kinneret, Ai, Khirbet ez-Zeraqun, and Arad. The fortifications varied considerably in their means of construction. In some cases, mud-brick walls 2–6 m thick were erected on stone foundations, from which semicircular or quadrangular towers projected. In other cases, the walls were brought to a width of 8–10 m and more when parallel segments were joined; occasionally, the walls were also protected by a glacis. Openings in the city wall were secured by flanking towers, but a separate gate construction had not yet developed. Numerous posterns in the wall and in the towers provided additional entrances. [*See* Fortifications, *article on* Fortifications of the Bronze and Iron Ages.]

In domestic construction the dominant model was the broadroom house, already widely disseminated in the fourth millennium. The single-room basic form could be expanded by extensions and additional rooms, which resulted in farmsteadlike entities that were enclosed by a surrounding wall. The process of subdividing and joining rooms created multiroomed houses and shifted the entrance to the narrow side. Haphazard construction resulted in haphazard streets that occasionally broadened into small squares.



CITIES: Bronze and Iron Ages. *Plan of Megiddo.* City of stratum IVB, ninth century BCE. (Courtesy V. Fritz)

The basic house form was also adopted for public construction; the broadroom temple received an antechamber, however, as the excavated examples show at Megiddo, Ai, Khirbet Yarmuk, and Khirbet ez-Zeraqun. Temples with courtyard altars and subsidiary buildings usually formed a separate cult precinct, which at Ai and Khirbet ez-Zeraqun lay on the highest point of the city. The only EB III palace thus far discovered is at Megiddo, probably depending on foreign influence; like the temple precincts, it was separated from the rest of the city by an enclosure wall. In contrast to domestic construction, the palace was well laid out in groups of rooms accessible from corridors. The ground plan of the palace did not develop from the local types; rather, it is presumed to have been adopted from Mesopotamia. Still, although EB temples and palaces occupied their own districts next to the residential areas, these buildings did not have the spatial dominance characteristic of cities in Mesopotamia.

Overall, during EB II and III urbanization was at a very basic level of development. Only the very beginnings of orderly layout and construction are recognizable, and social differentiation is expressed only slightly in architecture, given the limitations of the broadroom house type; large buildings occur rarely. The defense systems show a great concentration of effort, even though gate construction was not developed. The palace at Megiddo implies the existence of centralized rule and political hierarchy, which can be assumed for the other cities as well.

In spite of their predominantly agrarian character, EB cities did not exist in isolation. Agriculture certainly formed their economic foundation; nevertheless, assorted finds point to extensive interregional and intraregional connections. Copper weapons and tools presuppose an intensive trade with the deposit sites in Feinan on the eastern side of the ʿArabah. [*See* Feinan.] The presence of various pottery forms as well as the use of cylinder seals and stamps on vessels indicate connections with Mesopotamia and Egypt. [*See* Seals.] In addition, pieces of imported Palestinian pottery found in Old Kingdom graves prove the existence of

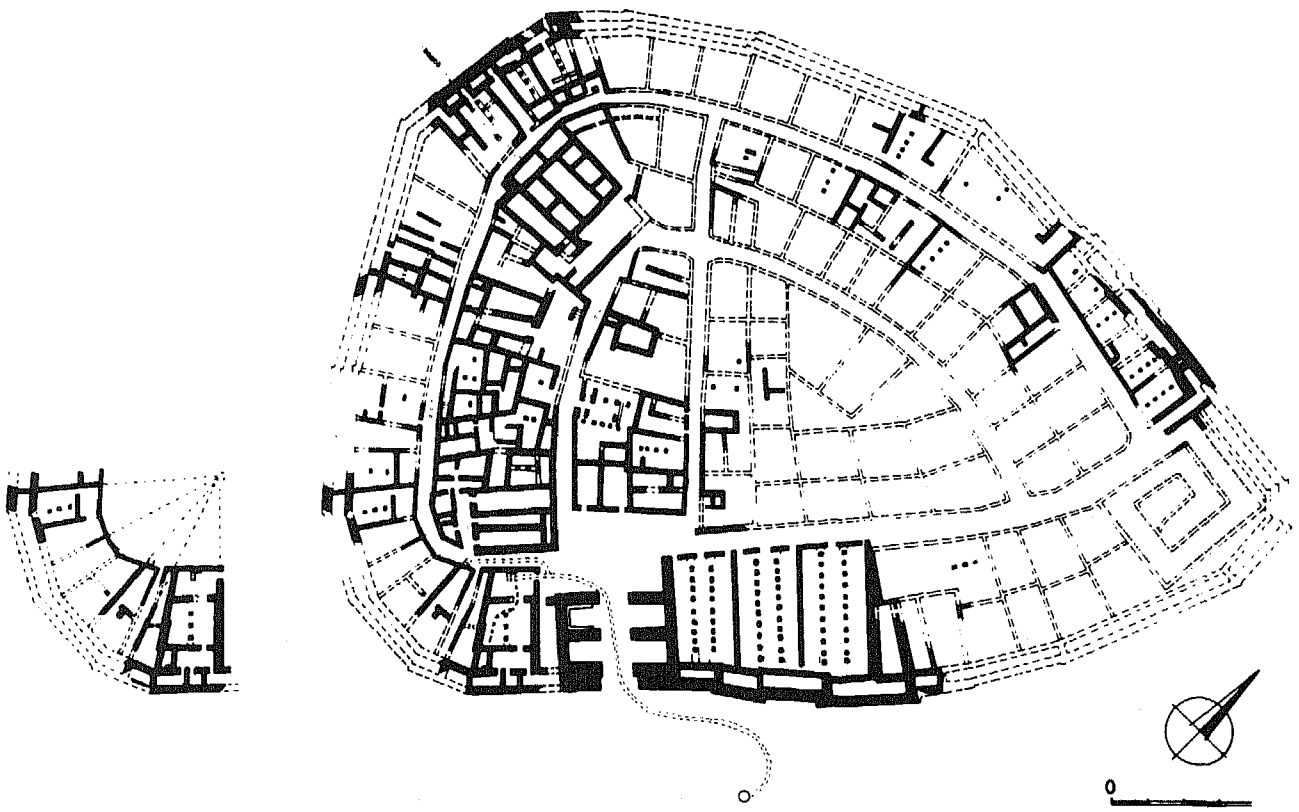
trade relations with Egypt. Although writing had not yet been invented in this region, the administration of the cities functioned. It is not known why the cities at the end of EB III were abandoned, but in the period that immediately followed, urban culture was virtually nonexistent.

Middle–Late Bronze Age. The reemergence of urbanization at the beginning of the second millennium bears the stamp of a new culture, with no connection to that of EB II and III. Because this culture seems fully formed at its inception in MB IIA (1950–1750 BCE), it may not have developed locally—it may have been introduced by outsiders, by new immigrants. The majority of the cities, most of which were extraordinarily large, were erected in two waves in the twentieth and the eighteenth centuries BCE. The Old EB hilltop sites of Dan, Hazor, Megiddo, Shechem, Aphek, Gezer, and Jericho were newly fortified, and previously unoccupied sites were settled, as at Akko, Bethel, and Yavneh-Yam. [*See* Dan; Hazor; Shechem; Gezer; Akko; Yavneh-Yam.] Only occasionally did an unfortified settlement precede the fortified city, as at Shechem and Gezer. The MB–LB cities surpassed the EB cities in size. Megiddo reached 10 ha (25 acres), while Dan and Akko covered a surface of about 20 ha (49 acres). The largest cities, such as Ashkelon and Kabri, were built on about 60 ha (148 acres); Hazor was built on 80 ha (198 acres).

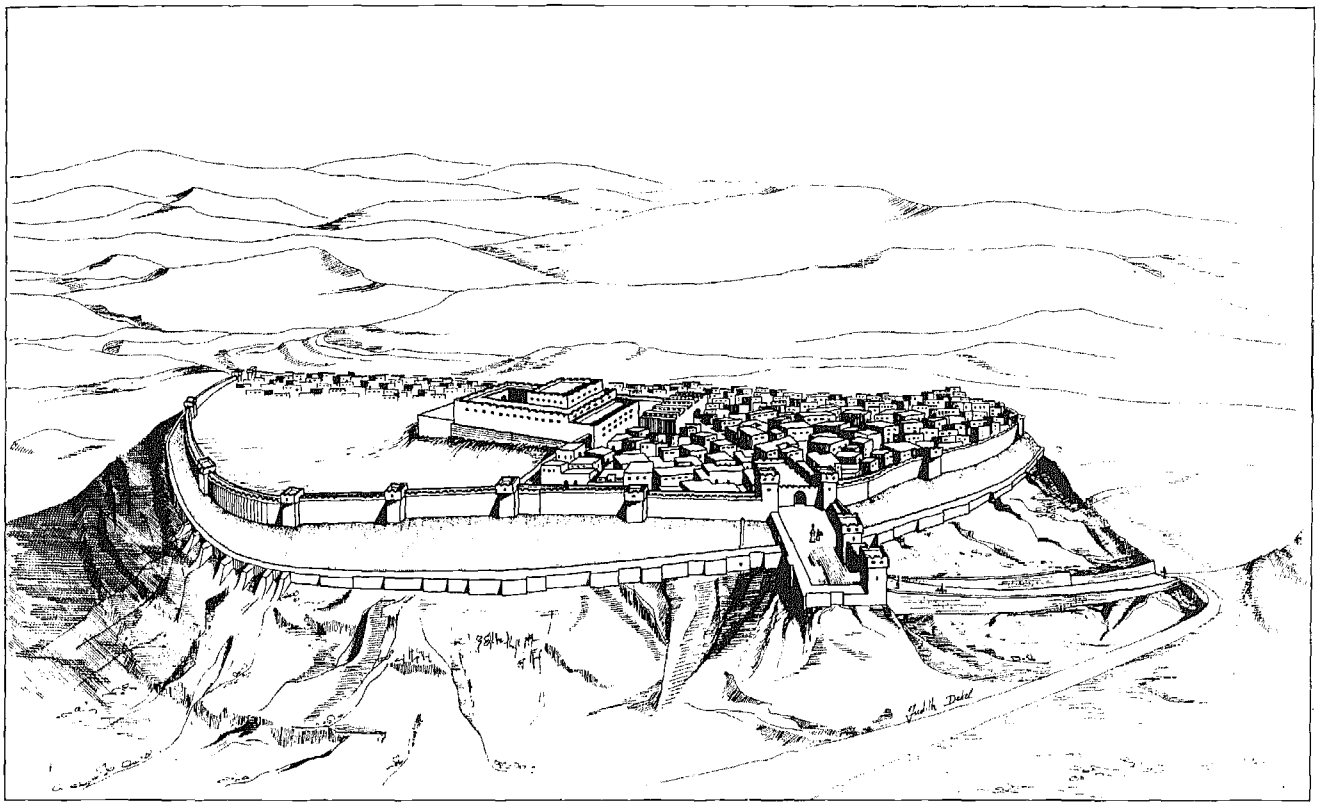
The hallmark of the MB–LB cities is their massive fortifications: in addition to the freestanding wall, which had already existed in EB II and III, innovative earthen ramparts were constructed that, including the defensive wall on top of them, could reach heights of up to 12 m. At Hazor and Yavneh-Yam these wall systems are still visible in the landscape; at Dan, Akko, and many other places they were collapsed and eroded into massive mounds of ruins. Parallel to new techniques to strengthen the city's fortifications was the development of the gate structure as an independent component of the wall system. Various gate forms developed from the basic idea of towers flanking an entryway.

Within the city wall, temples and palaces generally occupied a considerable amount of space. In domestic construction a previously unknown form, the courtyard house, appeared (see above). Its hallmark is the arrangement of rooms around a centrally positioned open space that can be bordered on two, three, or four sides by rooms of different sizes. In the process, an attempt was frequently made to establish an approximately square ground plan. With the addition of more rows of rooms, the domestic unit could grow significantly. Because the courtyard provided lighting and ventilation for the rooms, several houses could be contained in individual blocks (the so-called insulae).

In each city there was at least one palace as a residence



CITIES: Bronze and Iron Ages. *Plan of Tell es-Seba'* (Beersheba). City of stratum II, eighth century BCE. (Courtesy V. Fritz)



CITIES: Bronze and Iron Ages. *City of Lachish.* Reconstruction of the stratum II city, seventh century BCE. (Courtesy V. Fritz)

for the local ruler. A common characteristic of all palaces is the central inner courtyard, around which the rooms were arranged as in the courtyard house. To expand, two rows of rooms could be laid out one behind the other, or the number of inner courtyards could be increased. Although large palace complexes have been uncovered at Hazor, Shechem, Megiddo, Aphek, and Lachish, identifying the functions of their spatial components has so far not been possible. [*See* Lachish.] In temple construction, a new form, the long-room temple, with its entrance on the narrow side, appeared in wide distribution. The type, adopted from a Syrian prototype, was sometimes modified, as at Shechem and Megiddo, by the addition of flanking towers. Other temple forms were also used.

In the course of the millennium, although virtually all the cities were destroyed several times and subsequently rebuilt, their essential elements were maintained. Their complex layout is evidence of a complex social organization: reflections of its defense, domestic life, religious practices, and political features are all visible. Because the city needed commodities from the surrounding countryside, it established control over its hinterland, which presumably consisted of farmsteads and villages. Most of the inhabitants of the city were peasant farmers. Its other inhabitants included the ruling family and the political elite, artisans, merchants, and sacral personnel. In all respects, the MB II city represents a highly developed culture.

Urban culture entered a decline during the Late Bronze Age: the size of cities as well as their number decreased, and the strength of their fortifications diminished. After 1200 BCE, numerous cities were destroyed and not rebuilt. Even at sites such as Megiddo, which were still inhabited in the twelfth and eleventh centuries BCE, there are signs of a clear break in the material culture, which no longer bears an urban stamp. Explanation for this gradual disappearance of the urban centers in the course of several decades of the twelfth century are still being debated by scholars. Among the possibilities are the invasion of the Sea Peoples, internal conflicts, the end of Egyptian hegemony under the later Ramessides, the collapse of trade with the Mycenaean world, and changes in the natural environment. Some combination of these factors is likely.

Iron Age Palestine. In about 1150 BCE the urban culture that had existed since the beginning of the second millennium disappeared from history. Subsequent occupation preserved isolated elements in some places, but the hallmark of the new nonurbanized period was the founding of numerous small settlements, villagelike in character, outside

the territory of the former city-states. It was not until the Israelite kingdom was established in the tenth century BCE, that a reurbanization began within the boundaries of the territorial state. For the royal period the city became the sole settlement form. In that period generally, new cities were founded on the sites of former Bronze Age cities, although occasionally, as at Beersheba, a city could be placed on top of a former settlement from Iron I. [*See* Beersheba.] The hill-country sites, however, offered the necessary prerequisites for survival with respect to food supply, water sources, and defense. With this reoccupation of the old settlement sites, an urban tradition can be seen, despite differences in the size and layout of the newly founded cities compared to the Bronze Age cities.

The most important element of the Iron Age city was its fortifications. Because all the cities were then under the aegis of a central government, large buildings such as temples and palaces generally declined in significance. Even with some local governance, the Israelite city was subject to the monarchy. The city was thus no longer an independent political entity but was part of a state. The city's agrarian economy meant that its inhabitants were peasants who worked the lands around it. The city's most important function became the protection of its inhabitants.

Iron Age urbanization was the product of a new political situation, not the result of a developmental process. Presumably the establishment of the city was related to the military and administrative demands of the emergent nation-state. Contemporaneous with the spread of the cities, an increase in the population can be seen: on the average, cities were relatively small, with an area of 3–5 ha (7–12 acres), the population varied from a few hundred up to two thousand adult inhabitants. On the basis of their spatial organization, the cities excavated so far can be divided into three groups.

1. *Residential cities.* No form of planning is apparent in residential cities, and as a result their streets form a maze. As in the pre-nation-state villages, the houses are crowded ad hoc within the circuit of the walls. There are no public buildings and a single gate provides access, as, for example at Tell en-Naṣbeh (Miṣpe) and Tell Beit Mirsim. [*See* Naṣbeh, Tell en-.]

2. *Cities with limited administrative or military functions.* Unlike residential cities, cities with limited administrative or military functions are exemplified by careful planning throughout (e.g., stratum II at Kinneret, stratum II at Beersheba, and stratum VA at Megiddo, even though it lacks an ordered pattern for its streets). A number of pillared houses that served as public buildings appear in the immediate vicinity of the city gate. Residential houses were arranged in rows or in blocks, and the streets either ran parallel to the city wall or were laid out in straight lines and led into an open area in front of the gate. Although the largest portion of the city's total area was taken up by residential buildings, the city presumably served a broader military or administrative function.

3. *Administrative or military centers.* The development of the city as an administrative or military center appears to have first taken place following the Divided Monarchy, when the demands on and possibilities of the kingdom increased. Buildings with a public function predominated, although a certain number of residential buildings have been excavated (e.g., Lachish strata IV–II, Megiddo stratum IVB). At Lachish a large palace and its subsidiary buildings occupy the center of the site. If this complex was indeed the official residence of a regional governor, Lachish could be described as the earliest provincial capital. At Megiddo several complexes of pillared houses, which may be related to military provisioning, and a palace occupy the largest amount of space. Because troops may have been stationed there, Megiddo may have been a garrison city. Similar arrangements can be assumed for the kingdom's capital cities, Jerusalem and Samaria. In Jerusalem Solomon's royal palace and the Temple and its subsidiary buildings were all in the northern part of the city. [*See* Jerusalem.] In Samaria the palace formed an independent complex with its own surrounding wall in the center of the city. [*See* Samaria.]

The early Israelite city was therefore not a uniform entity; its divisions were structured by function—by different economic and political concepts. The three types of city appear in the ninth and eighth centuries BCE. It is not yet known whether they already existed in this form during the United Monarchy in the tenth century BCE. In spite of their differences, the three types of cities share characteristics: a more or less strongly pronounced oval configuration linked to their strategic siting on a tell or a hilltop (cities on a slope, such as Kinneret stratum V, are the exception); a strong circumvallation system, which included massive walls, casemate walls, inset/outset walls, towers projecting from a linear wall; egress and exit through a single gate, which, in the absence of other structures, served civil and defensive functions and could be expanded to a massive building with up to six chambers; and predominating domestic construction (the Israelite pillared house, the three-room house, and the four-room house). [*See* Four-room House.] A number of cities, such as Jerusalem, Meggido, and Hazor, had their own water systems, which represent not only significant technical achievements but a strong social organization. [*See* Water Tunnels.]

Many of the cities founded after the beginning of the monarchic period show systematic planning. Only a state with the desire to expand must factor in the need for defense and take corresponding protective measures. Iron II urbanization in Israel, in that it coincided with the formation of the state, was integrally related to political concerns. The settlement was placed within a circumvallation expressly to provide security for its inhabitants in time of war. The technical

execution of this arrangement was adapted to the country's construction traditions and topography.

Almost all of these cities were destroyed either during the Assyrian conquest in the second half of the eighth century BCE or in the Neo-Babylonian campaigns at the beginning of the sixth century BCE; they were never rebuilt. The more than two-thousand-year-old continuity of urban construction in the hill country came to an end with the termination of monarchic rule. The few settlements assigned to the end of the Judean monarchy generally lie outside the area of old settlement sites. With the conquest by the Assyrians and the Babylonians, the development of cities in the southern Levant was brought to an abrupt end.

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VOLKMAR FRITZ

Translated from German by Susan I. Schiedel

Cities of the Persian Period

Although a large number of sites in Palestine were settled in the Persian period (538–332 BCE), too few remains have been uncovered and insufficient evidence preserved to allow us to reconstruct city plans. The poverty of architectural remains is surprising, for this is a relatively late period, in which, in Persia and Greece, a high standard of building was reached. The scarcity of finds is considered by some scholars to be a result of the widespread destruction in Palestine at the end of the First Temple period. Carl Watzinger maintained that town life in Judah ceased entirely in the Persian period, a view William Foxwell Albright accepted, noting that the results of excavations indicated that the resettlement of Judah was a slow process, and it was not until the third century BCE that the country recovered anything like its old density of population. Kathleen M. Kenyon, in her general discussion of this period, speaks of the decline in town life in Palestine and the concentration of the population in villages. As evidence, she cites both the Persian-period stratum at Tell en-Naṣbeh, in which rich finds were discovered without building remains, and the situation at Samaria, where a densely populated urban area was converted into a garden for the Persian governor. However, these theories reflect less the actual situation at that time than the fragmented remains.

Three characteristic features of Persian-period strata have contributed to the archaeological picture and the disappointing results from the excavations at the large mounds: (1) after the Persian period, numerous mounds were abandoned and never resettled (e.g., Megiddo, Tell el-Ḥesi, and Jericho, among others), and because the stratum from this period was the topmost on the site, it was exposed to the dangers of denudation; (2) at those sites where settlement continued (at Samaria, Shechem, Ashdod, Ashkelon, and Ramat Raḥel, for example), the Persian-period level of occupation was severely damaged by intensive building activities in the Hellenistic-Roman period; and (3) at most of the large sites excavated (such as Hazor, Megiddo, Tell Jemmeh, Tel Sera', Lachish, and Tell el-Far'ah [South]), the mound was largely occupied by a palace-fort or other large building.

City Planning. Surveys and excavations of Persian-period settlements throughout Palestine reveal that the coastal plain and perhaps Galilee were very densely populated, while a full account of the cities in the mountain region is yet to be made. The contemporary Greek historian Herodotus describes Gaza as "not inferior to Sardis" (3.5). Indeed, architectural remains in Gaza reveal several examples of well-planned settlements.

Outside Palestine, most cities were built according to the Hippodamic plan (principles of town planning developed by Hippodamus of Miletus in Asia Minor, in the fifth century BCE). The plan divides residential areas into symmetrical blocks, separated by streets that cross each other at right angles. Different functions were assigned to different parts of the town: residential, public, cultic, and recreational (for sport). A fine example of the classic Hippodamic plan is Olynthos, in Macedonia.

There are also examples of well-planned towns along the coast of Palestine, such as at Akko. In the latest city at Tell Abu Hawam, the front of a building was uncovered facing a main road that ran roughly parallel to the city's longitudinal axis. At Shiqmona, a residential quarter consisting of two streets set at right angles to one another contained houses built with considerable symmetry. A similar discovery was made in the excavations at neighboring Tel Megadim, where a quarter was found to be intersected by a broad,

straight thoroughfare. The large blocks of buildings flanking the road were separated by lanes that crossed the main road at right angles. The houses themselves were divided into a number of smaller units with a similar plan. Along the southern coast, excavations at Jaffa and Tell el-Ḥesi have revealed a similar well-planned Persian-period stratum.

The recent large-scale excavations at Dor have uncovered another coastal town in which all the strata and remains from the Persian period were strictly laid out according to the Hippodamic plan. Dor's residential quarter is the finest and best-preserved example of Hippodamic planning yet found in Palestine. Its closest parallel is Olynthos. The picture emerging at Dor is that a row of stores and workshops stood along the length of the inner face of the Persian-period city wall. The doors of the shops opened onto a ruler-straight street running parallel to the north–south wall. On the opposite side of the street, whose width is about 2 m, is a fine facade belonging to a long, narrow residential block of buildings. The eastern door of each unit in the row opens onto the street opposite the row of shops. The building is about 20 m wide. Its western side, which faces a street that runs parallel to one on its east, was also uncovered. This elongated block of buildings, preserved to a height of more than 2 m and traced for a length of dozens of meters, was probably crossed by passages leading from one street to the other, but these seem to fall outside the areas excavated so far. Another, identical, building or block of houses existed to the west of this second street. Partition walls divided the block by length and width into small units, or "apartments," whose doors opened, in each case, onto the closest street. In one or two places there are traces of basements. It seems also that the easternmost street, between the residences and the stores, was originally roofed, to provide shelter for pedestrians.

Based on the finds, the latter structures were in use throughout the Persian and Hellenistic periods. There is no indication of violent destruction, but rebuilding took place periodically. With each reconstruction the floor was raised, which resulted in as many as two Persian and three Hellenistic floor levels: the openings were blocked and the walls rebuilt on a higher level. Thus, from one phase to the next, the inner divisions of the building and the function of its rooms varied; for example, in one stage, two small plastered water reservoirs were added. However, none of the alterations affected the external walls. Many coins were found on the different floors, as well as stamped handles from Greek wine amphorae, especially from Rhodes and Knidos, that yielded reliable dates for the building stages. The outer walls of the building were constructed in the style of the period, mostly of well-hewn, hard sandstone ashlars laid in headers. The inner walls and divisions, however, were built in typical Phoenician style: ashlar piers with a rubble fill.

The surprising feature of these plans is that, while the town plan of Olynthos seems to belong to the fourth century BCE—after the time of Hippodamus—Dor was probably laid out in its earliest form in the late sixth century BCE. Dor may thus have served as one of the models from which Hippodamus developed his theories.

Domestic Architecture in Palestine. Remains of houses as well as fortresses and public buildings have been uncovered at Ayyelet ha-Shahar, Hazor, Megiddo, Akko, Gil'am, Tell Abu Hawam, Shiqmona, Tel Megadim, Dor, Tel Mevorakh, Tel Michal, Tell Qasile, Tell el-Ful, Lachish, Tell el-Ḥesi, Ashdod (fortress north of Ashdod), Tell Jemmeh, Tell el-Far'ah (South), Tel Sera', 'Ein-Gedi, Tell es-Sa'idiyeh, and elsewhere. The plan of these structures indicates that design and construction in the Persian period were surprisingly uniform, whether buildings were private or public. The plan, known as the open-court plan, features an open court surrounded by rooms on several or all sides. The one exception is the Residency at Lachish, which, in addition to an open court, also has two monumental entrances flanked by two columns, typical of the *ḫilani* type. There is no scholarly consensus on the origin of the two building types.

Open-Court Plan. W. F. Petrie sought parallels for the fortress he discovered at Tell Jemmeh and in the two fortresses he had excavated earlier at Daphnae and Naukratis in Egypt. Unfortunately, the data were inadequate for dating. Carl Watzinger accepted Petrie's chronology but rejected his correlation with the Egyptian fortresses, maintaining that fortress A at Tell Jemmeh derived from a Babylonian or an Assyrian source. When similar buildings were subsequently discovered at Megiddo, particularly the fortress and building 736, its excavators, Robert S. Lamon and Geoffrey M. Shipton, recognized the similarity between Building 736 and the earlier open-court buildings at the site, such as buildings 1052 and 1369. They made the comparison with the Residency at Lachish, but their conclusions were too general to be useful. Later assessments usually agree on a Mesopotamian source, either Babylonian or Assyrian (Shmuel Yeivin; Amiran and Dunayevsky, 1958). Ruth Amiran and Immanuel Dunayevsky, after a comprehensive typological analysis of examples from Palestine, Syria, Assyria, and Babylonia, concluded that this type of open-court building was Assyrian and reached Palestine as Assyria's influence spread. Their distinction between an "Assyrian plan," which has rooms flanking the court on all sides, and a "Persian plan," which has rooms only on three sides, may be too fine. The excavators of Megiddo, for example, stated that their fortress may very well have had a fourth row of rooms but that, built so close to the edge, it slid down the slope. This may also have been the case for their building 736, which lacked rooms on the fourth side, perhaps lost to a trench dug by Gottlieb Schumacher that damaged the building on that side.

A survey of the plans of the open-court buildings from the Persian period discussed by Amiran and Dunayevsky

and those discovered later reveals that although the basic layout is retained, it is not always uniform. In the Persian period, as in the Iron Age, the arrangement of rooms around a court took on different forms. At Hazor, the rooms of the fortress and the farmhouse enclosed the four sides of the court, a layout also found at Tell el-Ḥesi in F. J. Bliss's city VII and in phase 5d of the recent excavations; at Tell Jemmeh in building B; at Tell Sera' in area D, stratum V; in the fortress recently discovered north of Ashdod; and in the fortresses at Tell es-Sa'idiyeh. The courts are surrounded on only three sides in area A at Akko, at Tell Qasile, and in building A at Tell Jemmeh. In some instances, the grouping of rooms varies from place to place (Shiqmona, Tel Mevorakh, Lachish building G/12/13, and 'Ein-Gedi building 234); in others, it is impossible to ascertain (Ayyelet ha-Shahar, the stratum I buildings at Megiddo, Gil'am, Tell Abu Hawam, Tel Megadim, Ashdod, Tell el-Ḥesi, and Tell el-Far'ah (South), although all the available evidence points to a central court enclosed by rooms. It seems reasonable, nonetheless, to conclude that the open-court plan was introduced into Palestine at the end of the Assyrian period and continued without modification into the Babylonian and Persian periods.

Lachish Residency. Of all the buildings in Palestine attributed by their excavators to the Persian period, only the palace at Lachish deviates in construction from the rest. The main distinction is the two *ḫilani*-type entrances, not found elsewhere in Palestine. Olga Tufnell (in her final report of Lachish) concurred with Watzinger's earlier interpretation of the building as "Syro-Hittite." Like Watzinger, she encountered difficulties locating appropriate parallels. The closest she found is the palace of the Assyrian governor at Arslan Tash (whose plan it in no way resembles). Finding examples similar to the Lachish Residency led Albright to a strained comparison to early Parthian palaces, such as the small palace at Nippur in Babylon. Yohanan Aharoni's assessment of the plan of the Residency as a combination of a Syrian *ḫilani* building and an Assyrian open-court house accurately conveys its essence, which is a fusion of two distinct building styles. Moreover, architectural fusion is a characteristic of provincial Persian palaces. The Lachish Residency therefore clearly seems to have been constructed under Achaemenid influence. The reason for its unique appearance among the buildings of the Persian period in Palestine may be that it is the only building that can be interpreted with certainty as a palace; the others may have served different purposes. [*See* Lachish.]

The Fortifications. Defensive walls assigned by their excavators to the Persian period have also been uncovered at Akko, Tell Abu Hawam, Megiddo, Gil'am, Tel Megadim, Tel Mevorakh, Jaffa, and Tell el-Ḥesi. These towns are on the coast and in the Shephelah, the region between the coast and the Judean hills. Remains of other walls have been cleared at Samaria, Jerusalem, Tell en-Naṣbeh, and Lachish, as well as at Rabbat Ammon and Heshbon in Transjordan. In the Late Persian period, many city walls were demolished and replaced by smaller fortresses: at Hazor, Megiddo, Dor, Tell Qasile, Tell Jemmeh, Tel Sera', Tell el-Ḥesi, Ashdod, and Tell es-Sa'idiyeh, for example.

At Tell Abu Hawam, a wall was discovered surrounding phase B of stratum II on the south and east. It was built in small sections—each of which stood at a slightly different angle—of fieldstones, with ashlars added for reinforcement at each of its turns. Another small segment of this wall was discovered on the west side of the site. A very similar multiangled wall was also found at Gil'am belonging to the site's second phase of the Persian-period settlement (fourth century BCE). The wall, which enclosed a rectangular area 100 × 200 m, consisted of two faces of worked or otherwise well-dressed stones taken from the preceding settlement. Between the two faces was a fill of fieldstones. Two segments of this wall, each about 30 m long, were uncovered, one on the east and the other on the north.

The settlement at Tel Megadim was also defended by a wall that enclosed a rectangular area of about 15 dunams (approximately 4 acres). It was built of bricks on a stone foundation. Three sections of the wall have been uncovered so far: about 170 m on the west, about 100 m on the north, and 20 m on the south. This was a typical casemate wall, whose outer and inner walls were divided into rooms that served as dwellings and storerooms. It was apparently erected in stratum III and may have been in use in stratum I. A similar casemate wall was uncovered at Tel Mevorakh in stratum IV (fourth century BCE). The Persian settlement at Tell Abu Zeitun was fortified with a brick wall only in its last phase, according to its excavator, Jacob Kaplan.

Stratum II at Jaffa, which Kaplan assigned to the end of the fifth and beginning of the fourth centuries BCE, was also enclosed by a city wall. One section, about 12 m long and 2.5 m wide, discovered on the east side of the city, was built of well-dressed local sandstone. The stones were shaped like bricks lying on their sides and were set perpendicular to the wall, like headers. At set intervals they were strengthened by piers of stretchers. At Tell el-Ḥesi, the remains of a wall that enclosed both the early and the later phases of the city were found. According to Bliss, its excavator, the north sides of the buildings of city VII (500–400 BCE) leaned against the city wall. This wall continued in use in city VIII (400–332 BCE), during which time it was broadened and strengthened. At Sheikh Zuweid, according to Petrie, city F, which he dated to 497–362 BCE, was enclosed by a thick wall on the west. It was a continuation and repair of the previous wall of city G. It is difficult, however, to establish the true date of the various strata from Bliss's excavation report, leaving the chronology in doubt.

The second group of defense walls from the Persian period in Palestine comes from the cities of Judah. In Jerusalem, Kenyon in her excavations (1961–1967) on the crest of

the eastern hill, discovered a fragment of the city wall from the Persian period (which she called Nehemiah's wall) erected on high bedrock. She found settlement levels from the fifth–fourth centuries BCE against it (to which a large tower had been added in the Hasmonean period). Jerusalem in the Persian period had therefore been confined to a narrow strip on the summit of the eastern hill. In Kenyon's opinion, the "Valley Gate," or western gate, uncovered by J. W. Crowfoot, also belonged to the fortifications of that city. The walls were built of large, worked stones whose interstices were filled with smaller stones, a method of construction considered by the excavator to parallel that of the Valley Gate. At Tell en-Naṣbeh, Joseph Wampler assigned a small wall erected outside the large Iron Age city wall to the later phase of stratum I. He interpreted this wall as a modification of the city's defenses which took place after the destruction of the large (previous) wall. Wampler dated this wall to 575–450 BCE.

Clearer remains of Persian-period city fortifications were uncovered at Lachish, where their date parallels that of the Residency (450–350 BCE). Aside from the area of the city gate, which will be discussed subsequently, remains of a wall assigned to stratum I were discovered above the lower wall of the First Temple period. A section of wall investigated was constructed above a 2-m layer of collapsed debris that had piled up after the destruction of the last wall of the First Temple period (stratum II). The upper courses were of worked stones, most of them taken from earlier buildings. The spaces between the stones were filled with clay or small stones. One section of this wall cleared in square E-19 was constructed of fieldstones. The wall was built at a right angle to the road and blocked direct access to the outer gates. The main upper city wall (on the summit of the mound) was built above the course of the stratum II wall. Two sections of this wall were uncovered flanking the gate; in comparison with the previous wall, they were badly constructed. These meager data suggest that the towns in the Judean hills were also fortified, albeit poorly, in the Persian period. [*See* Judah.]

Towns in Transjordan were also fortified at this time, as is evidenced by recent excavations at Heshbon. A stone wall, 1.10 m thick and preserved to a height of 3–5 m, has been assigned by its excavators to the Persian period. The wall defended the acropolis. Remains of a tower and perhaps also the beginning of a gate were discovered on the eastern side of the excavated area. It recently became clear that the fortresses encircling Rabbat Ammon definitely continue into the Persian period.

Throughout most of the Persian period, Dor's fortifications were the last Iron Age city wall, actually the "Assyrian" wall, with insets and offsets and a two-chambered inner gate. The wall protected the city for the length of time it was a provincial capital: at first of an Assyrian, then of a Babylonian, and finally of a Persian province. It seems that this was also the case at Megiddo. The massive and sophisticated fortification system at Dor was destroyed under Ptolemy II, when the great Phoenician revolt against Persian rule was suppressed in the mid-fourth century BCE. Judging from the archaeological evidence revealed in the excavations, a new fortification system was built at Dor very shortly after, in the late Persian period.

A significant feature of this fortification system is its method of construction: it is clear that the Phoenician building tradition was still alive in Palestine in the mid-fourth century BCE. The outer wall and all of the inner dividing walls were built in its characteristic style: ashlar piers built of headers and stretchers—one stone laid lengthwise and two widthwise across the pier, with a fieldstone fill. As far as we know, all the city walls of coastal Palestine and Phoenicia were built in this way from the tenth to the ninth centuries BCE, as seen at Megiddo and Tyre, down to the third century BCE, at Dor and Jaffa and elsewhere along the coast. The gate of the wall at Dor has not yet been cleaned. Some parts of this Phoenician wall have been preserved to a height of more than 2 m and are among the most impressive examples of their kind yet found in Palestine.

In the third century BCE, when this last "Phoenician" wall from the fourth century, together with its adjacent buildings, was apparently still standing, the city received a new fortification system. This time the wall was built in the Greek style previously encountered only rarely in Palestine (in particular at Samaria, Akko, and Mareshah [Marisa], which had become Greek settlements at the very beginning of the Macedonian conquest).

This new wall was built entirely of large, thick rectangular blocks of sandstone (about 1 m long), most of them laid in headers facing the exterior. The relative flexibility of sandstone and its ability to receive blows without breaking enabled the blocks to withstand the advanced siege machines of the period. It was a massive construction, about 2 m thick, whose foundations cut through all the preceding walls on its eastern side. Square towers, set about 30 m apart and built in the same style, projected beyond the wall. Two of these towers have been uncovered so far, the earliest examples of their type in Palestine. The new wall's distinctive style and towers are unmistakably Greek innovations.

The change at Dor from fortifications built in the Phoenician style to those in the Greek style represents the final stage in the transformation of the Palestinian city from a largely "oriental" city to a Hellenistic one—a process begun much earlier. With this change in the walls, the gates of the eastern tradition, such as those at Megiddo and Dor, were replaced by purely Greek-style gates. These changes were certainly the result of the introduction of the new Greek siege weapons, such as the ballista, as has recently been shown by Ilan Sharon (1991).

The picture that emerges in Ilan Sharon's discussion of Dor's fortifications and their resemblance to those at nearby

Megiddo makes it necessary to reevaluate the latter's fortifications. Scholars have long accepted that the Assyrians established stratum III at Megiddo, rebuilding the offset-inset wall and constructing the two-chambered gate. The findings at Dor will now enable the exact date of the destruction of that advanced system of fortifications at Megiddo to be fixed.

Persian-period remains at Megiddo consisted of three complexes. The third complex, in area D, was interpreted by Ephraim Stern as the entrance gate of the city and dated to stratum I. It includes a building in the north, near the gates from the Israelite period. The building stands somewhat south of these Iron Age gates. Its two parallel rectangular rooms (nos. 603 and 604) are constructed at a distance from each other and are oriented in a line with the Israelite gate. Two other structures near the "gate" are also attributed to the Persian period: a complex of three rooms (nos. 634–635, 576), which is joined by wall 1045 and with it constitutes a separate fortified area; and another complex of rooms (nos. 1346–1348). These two complexes have been interpreted as the barrack of the garrison force.

The wall, gate, and settlement at Megiddo were destroyed in about 350 BCE by the Persian army during the Phoenician revolt. Thus, at both Dor and Megiddo, a two-chambered gate and offset-inset wall existed from the time of the Assyrian conquest to the mid-fourth century BCE. The fortress in area C at Megiddo was built above the offset-inset wall, replacing it, and was the only fortification on the site. Built after the rebellion, this fortification was in place until the city's final destruction by the Greek army and its abandonment in 332 BCE.

The phase at Dor contemporaneous with the fortress at Megiddo contains the "casemate wall," or more precisely, the row of houses that formed a wall around the periphery of the city. These too were built after the destruction of the offset-inset wall in approximately 350 BCE and were later replaced by a solid Hellenistic wall erected by Ptolemy II. It is possible that the Persians—after their bitter experience with the Phoenician rebellion—refused to permit strongly fortified settlements. This may be why so many fifth- and especially fourth-century BCE Palestinian sites have no city walls and small fortresses. For example, at Hazor (strata III–II), the date of fortress III could not be established because it yielded no datable remains. The date of fortress II was fixed by coins to the late fourth century BCE, specifically to the reign of Artaxerxes III (359/8–338/7 BCE). Destroyed during the conquest of Alexander the Great, that fortress also existed only during the last phase of the Persian period, exactly as at Megiddo and Dor.

Fortresses with a similar plan, dating to the same period, have been found at other sites—at Tel Michal, Tell Qasile, Ashdod, Tell Jemmeh, Tell el-Ḥesi, Tel Seraʿ, and Tell es-Saʿidiyeh among them. The poverty of the remains of Palestinian fortifications from the Persian period provides us with only the barest hint of the period's construction practices. What is clear is that the major towns of Palestine in the Persian period were either thoroughly fortified or defended only by fortresses. This can be deduced both from the historical sources and from what is known of the siege techniques of the period, such as those described by the Greek historian Thucydides in the *Peloponnesian War.*

[*See also* Dor; *and* Furniture and Furnishings, *article on* Furnishings of the Persian Period. *In addition, many of the other sites mentioned are the subject of independent entries.*]

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EPHRAIM STERN

Cities of the Hellenistic and Roman Periods

Unlike the Mesopotamian temple-cities that emerged in about 2700 BCE whose view of the world was sacral and which were controlled by a priestly caste, the earliest forms of the Greek cities show signs of competing forms of preurban social arrangements—aristocratic warlords, status, property, and kin groups. A radical reorganization in the emerging polis was called for, by which arete, or courage, as the supreme value, was transformed into loyalty to the city and its institutions. Religious commitment played an essential role in terms of devotion to the patron god or goddess, bequeather of the constitution which bound all together.

From its very inception, therefore, the Greek city fostered a more independent character, further developed in the classical period as various forms of government—monarchic, aristocratic, oligarchic, and democratic—established themselves successively between 800 and 400 BCE. The political circumstances of Greece's wars with Persia had led to the formation of various intercity leagues in the fifth and fourth centuries BCE, while leaving intact those institutions that had developed, the hallmark of polis society—the *demos,* or people, *ekklesia,* or "general assembly," and the *boule,* or coun-

cil. These and other institutions had received theoretical underpining through the writings of Plato and Aristotle and hence became a permanent legacy of the Greek city to Western civilization. In addition, certain architectural features had also emerged, distinct visual expressions symbolic of the city's self-understanding.

Alexander is reputed to have established seventy cities, as his all-conquering campaign took him to the heart of the Persian Empire and beyond. Even if Plutarch's numbers are exaggerated and not all foundations were of equal splendor, the city of Alexandria demonstrates that for Alexander the Greek city had a cultural as well as a defensive or administrative role to play in his grand scheme. Natives were invited to join with Greek settlers to wed east and west into one great cosmopolis. New cities were established and older, Oriental ones were transformed from their hieratic and aristocratic character in accordance with the Greek ideals. The typical institutions of the polis spread the Greek way of life, as can be seen from the many architectural remains, inscriptions, and other signs of the Greek presence in the East. Despite his best intentions, Alexander initiated a subtle change in the role of the city, which was accentuated in succeeding centuries, first under the Hellenistic monarchies and later by Rome (Jones, 1971). The city was to become the instrument of empire and those aspects of its character that impeded this had to be adapted to meet the new agenda. Thus, the Ptolemies and Seleucids continued the policy of establishing new cities, upgrading older ones, or bringing about a synoecism of smaller settlements in their various territories. Some, such as Alexandria, Antioch on the Orontes, and Palmyra were to continue to flourish because of their political and/or strategic locations on the main trade routes between East and West. [*See* Alexandria, Antioch on Orontes; Palmyra.] Thus the increase in the commercial life of the city in the Hellenistic age, as new trade routes were opened and travel between cities was greatly developed, led to an increase in the ethnic mix within cities and to the establishment of separate quarters in some instances—as, for example, the Jewish quarter in Alexandria. Because cities were no longer fully free and autonomous but subordinate to monarchical rule, the democratic style of government was considerably curtailed. New elites of wealth emerged, favored by central administrations in a patron/client relationship. This in turn meant architectural development, as local wealthy people vied with each other in honoring their patron in the form of public buildings or, as in the case of Herod the Great and his sons, actually founding cities in their honor (Samaria/Sebaste, Caesarea Maritima, Caesarea Philippi, Tiberias). [*See* Samaria; Caesarea; Tiberias.] Even external appearances were modified as the classical Greek style was blended with more ornate Oriental ones or made to conform to Roman conservative taste, for example, regarding nudity.

These developments continued under the Romans, as they gradually replaced the Hellenistic monarchies from the second century BCE onward (Stambaugh, 1988). The role of the cities then had less to do with the spread of culture than being administrative centers within the provincial system or being rewards for veterans of various campaigns through the founding of colonies. Older cities Rome had destroyed (Carthage, Corinth, Philippi) were reestablished by Julius Caesar. [*See* Carthage.] These colonies were closely tied to Rome, both politically and culturally, imitating Rome's senatorial form of government and even its architecture: aqueducts, bathhouses, and amphitheaters. [*See* Aqueducts; Baths.] In some instances their citizens were allowed to vote in Rome itself. Gradually, the right of Roman citizenship was extended to some provincials, thus replacing the privilege of being a citizen of an individual city with the rights of citizenship of the mother of all cities (*Acts* 21:39, 22:38). Despite these close bonds with Rome, the provincial administration remained intact, acting as a kind of watchdog at the regional level, on behalf of Rome (Sherwin-White, 1963). Cities allowed to mint their own coins, a mark of some independence, had to ensure that the coins bore emblems of Roman imperial rule. Local magistrates were particularly concerned not to prevent anything that could be construed as civil disturbance because this could cause trouble with Rome, as in the case of Paul's visit to Thessalonike (*Acts* 17:5–9). Yet, they were caught between the task of maintaining law and order and not offending Roman sensibilities when a citizen was involved (*Acts* 16:37–39).

In the Byzantine period, previous policy with regard to cities continued—namely, to develop them wherever possible, provided there were enough locals willing and able to take on the administrative burdens, particularly the collection of taxes. Throughout the third century CE, there was a serious decline in imperial rule, arrested militarily by Diocletian (r. 284–305). A centralized bureaucracy developed which in time became unwieldy—one reason the Byzantine emperors sought to support local municipalities wherever possible. A network of loyal clients, they allowed local elites to reemerge, curtailing the power of the central civil service. Constantine's declared policy to found new cities and revive others resulted, by the sixth century, in almost all imperial territory being ruled by the cities, with the remnants of the old provincial system carved up among them. In the process, the cities were reduced in importance, their status almost wholly dependent on their performance as outposts of imperial rule. Increasingly, the number of men of substance who might fulfill the role of decurions or magistrates declined, either because they were drawn into the imperial administration or because they decided to withdraw from public life entirely. The architectural trappings of grandeur were maintained, with the development of domed roofs and the free representation of classical motifs, but internally the life had been drained from the towns in supporting a tottering empire. Increasingly, the large villas in the countryside, and of course the Christian monasteries, were the places where

the cultural role of the cities of a previous age were maintained and carried forward. [*See* Monasteries.]

Architecture of Ancient Cities. Many handbooks on town planning and architecture are known from Hellenistic and Roman times (e.g., Vitruvius), as well as from the accounts of travelers and geographers, such as Strabo and Pliny, which add to what is known of the visual aspects of ancient cities. The period eclectic styles and conceptions—Etruscan, Greek, Roman, and Semitic—influenced each other at different locations. (Pompeii's state of preservation by the lava from the eruption of Mt. Vesuvius in 79 CE provides a unique example of that eclecticism.) Certain characteristic features emerge with great regularity, however, confirming that it is possible to talk about the ancient city and about architecture playing a role in determining when a settlement was a city.

There is ample evidence to suggest that proximity to a plentiful supply of water was the determining factor in settling most ancient sites, and elaborate measures were taken to ensure one, as can be seen from the arrangements at Hazor, Megiddo, and Jerusalem itself. [*See* Hazor; Megiddo; Jerusalem.] In addition to the supply from a local source, the numbers of cisterns, underground storage pools, channels and conduits which have been unearthed indicate that collection of rainwater was important, for both civic and domestic purposes. [*See* Cisterns; Reservoirs.] The aqueduct, often carrying water from a considerable distance, is associated with Roman hydraulic engineering. It is estimated that in the first century CE Rome itself had as many as nine different ones drawing water from sources 19–80 km (12–50 mi.) away. The remains of aqueducts are scattered throughout the Roman territories, the one at Caesarea Maritima being the most notable in ancient Palestine. The absence of such an amenity was noted and to be remedied at the citizens' expense. Despite the preponderance of Roman remains, however, there is evidence that the Greeks had mastered the technique earlier (Owens, 1991, p. 158). Sometimes water was transported through underground channels, such as at Sepphoris in Galilee, which is fed from two springs, 3 and 5 km (2 and 3 mi.) from the city and with an elaborate system of storage and pressure tanks at various levels along the way. A similar installation has been found at Gadara, Jordan, possibly designed by the same architect (Tsuk, 1995). Population increase meant an extra demand on the water supply, and this was further accentuated in Roman times with the introduction of the public baths, found at almost every significant site from the first century CE onward.

Health needs also demanded sewer and drainage systems. The location of many cities on elevated ground was a natural aid, but the existence of the famous *cloaka maxima,* from the sixth century BCE, still in use in Rome, shows how early this feature had become a part of town planning. At Caesarea there is evidence to suggest that Herod's architects designed the underground sewer chambers so that maximum advantage could be gained from the tides to wash the city's waste out to sea. This feature of Roman towns in particular has been attributed to Etruscan influences on the basis of the evidence from Veii, where rock-cut and stone-built channels have been found. The literary evidence suggests that the sanitary conditions in many cities, especially in the poorer quarters, were virtually nonexistent, however. Thus, the building of public latrines, often ornately decorated on the outside, became a feature of many Roman towns.

The acropolis/*arx* was the city's highest point and also its religious focal point. The temple of the city's chief patron deities (the Parthenon of the goddess Athena in Athens and the temples of Jupiter, Juno, and Minerva in Rome) and their cultic personnel were located on it. It both symbolized the city's freedom and independence and served as a place of refuge, at least for the chief citizens in times of attack. Hence, the notion that walls were essential for the true city was prevalent, even when this was not always the case. Sometimes natural features, such as deep ravines, determined the siting of cities on jagged promontories or inaccessible hills (Pergamon in Asia Minor). [*See* Pergamon.] Josephus's description of Gamla, where Galilean Jews resisted the Romans in 66 CE, also shows a consciousness of the value of natural terrain for defense (*War* 4.4–10). [*See* Gamla.] The Greeks seem to have developed walls as a system of fortification independently of the street plan, so there were interior open spaces which could cause problems if the city came under attack. The Romans, on the other hand, integrated streets and walls to the point that casemate houses formed part of the wall and could function as further support in times of attack or siege.

In the late Roman period walls made a symbolic statement. City walls were poorly constructed in terms of defense, yet functioned as clearly demarcating spatial distinctions between insiders and outsiders: interior walls separated patrician from plebeian quarters and religious from secular ones, and provided toll boundaries and controls for the movement of goods both into and within the city. Walls could also function as status symbols similar to public monuments. In particular, gates took on this feature of public adornment, becoming the focal point for commerce and meeting, sometimes rivaling the agora or forum, which was always located at the center of the settlement. In later times, the streets leading to the gate and from there to the forum were also suitably adorned and were occasionally interrupted with smaller squares which provided for social interaction. Such places also provided welcome for the visitor on the approach to the forum, which otherwise might have appeared forbidding and hostile.

The agora, or forum, was thus the most important central place within the city, not merely for commercial transactions but also for legal, administrative, and religious functions. Their developing location within the overall city plan dem-

onstrates the ways in which the institution of the *polis* was itself transformed over time. As a human community, the polis institution portrayed an ordered way of life in which law was supreme. The idea of a town plan is associated as early as the fifth century BCE, with Hippodamos of Miletus, to whom the notion of the grid system of streets crossing each other in a regular pattern is attributed. [*See* Miletus.] This plan seems to have been almost universally accepted at a relatively early period. In Roman times cities were bissected by a main thoroughfare, running north–south, the *cardo maximus,* which usually led to, and sometimes through the forum. This was intersected by an east–west main street, the *decumanus,* or "tenth street." Shops and other public buildings were located along these two main axes, while the residential areas, the insulae, or blocks of apartments, were on narrower and sometimes unpaved streets.

In some instances, the *cardo* formed a T junction with the *decumanus* and did not carry on beyond the forum, terminating in a basilica, portico, or temple. [*See* Basilicas.] This represented a more conservative approach to spatial organization, suggesting a less open perspective to the visitor. The actual forum area itself seems to have developed from an open area in which everyone intermingled freely to being walled in from the Augustan Age onward, and therefore with controlled entry and egress, as can be seen in the various imperial fora in Rome itself. This development would seem to suggest a concern with policing crowds and the possibility of a more differentiated approach to public social relations between urban elites and ordinary people. Amphitheaters, as enclosed areas for the live animal shows, and bathhouses, both hallmarks of Roman architecture, even when the amphitheaters were not located centrally, indicate similar attitudes: the desire of the imperial administration to offer entertainment and leisure for the masses, while avoiding popular movements of unrest. Despite these developments, architectural evidence for ongoing and varied activity in the forum, essential to the life of the city as a political community—temples, law courts, senate house, rostra, shops—is clear. The theater, which already was very much a feature of the Greek city, continued into Roman times. It was centrally located, which indicates its continued importance to civic life. [*See* Theaters.]

In an honor/shame culture, the endowment of buildings was seen as an act of piety and a demonstration of munificence or generosity, thereby gaining public esteem for the donor. Wealthy people vied with each other in honoring their political master, which from the first century CE onward was the emperor or some member of his family. The Herodian building program in Palestine is an outstanding example, corresponding to the watershed in art and architecture of the Augustan Age generally (Zanker, 1988). The aim was to celebrate Rome's victory in the new age of peace that had dawned. The buildings are larger, more majestic and ornamental; the decorative art was more elaborate, exploiting suitable themes from the classical period to express the new order symbolically—the ultimate political realization on a universal scale of classical ideals. The new artistic expression combined the best traditions of Greek aesthetics and Roman virtue. Statues and busts were not just used for propaganda but to adorn the fora and main thoroughfares; fountains and water houses (nymphaea) were a constant feature, even in private houses. The adornment of buildings with marble facades and the erection of columns, commemorative niches, stairways, and stoas along main thoroughfares all contributed to a splendor which celebrated Rome's glory. Mosaic pavements and frescoed walls were standard decorative elements of both public and private buildings, imposing a uniformity of style and taste throughout the vast territory, often at the expense of local traditions and native habits. [*See* Mosaics; Wall Paintings.]

City as Social System. The Greek polis was first and foremost a community rather than a settlement *(astu)* and this involved political, economic, and cultural organization. These aspects were already well defined in the classical period, and while modifications inevitably occurred under the Hellenistic monarchies, and to an even greater extent under Roman imperial administration, the essential function of its institutions nevertheless continued in place.

Political life. Essential to the very notion of the city was the demos, or people, the body of free citizens who shared in all the rights and privileges associated with such membership and who felt obligated to the maintenance of the polis institutions through services of various kinds as circumstances demanded (Finley, 1983). Not everyone in the settlement was a citizen—slaves, foreigners, and other unpropertied inhabitants were not. In theory, women were equally capable of discharging the duties of the citizen, but in practice their role was restricted to that of the private sphere, except in exceptional circumstances of the wealthy. Thus, despite the evolution from oligarchy to democracy in both Greece and Rome, citizenship was a privilege, not a right. Regular assemblies *(ekklesiai)* of all the citizens were held, but the running of the city's affairs on an on-going basis was delegated to the boule, or council, elected from the citizens with one of its members acting as chief (politarch or archon). There was in addition, a host of other city officials, such as the market manager *(agoranomos),* the chief of police, and tax collectors, among others. As well as the privileges of citizenship there were also responsibilities *(leitourgiai)*—to support a war effort, to sponsor a theatrical performance or religious ceremony, or, in Roman times, to pay for a temple, statue, or other public building. Under the empire the tendency was to revert more and more to the oligarchic style of government as the one which could best be trusted to maintain Roman interests (MacMullan, 1974). Some of the older cities of the east, such as Tyre, were allowed to continue to mint their own coins, as well as Roman imperial ones. [*See* Tyre.] When the right was granted to

other, newer foundations, such as Sepphoris (66 CE) and Tiberias (100 CE), Rome was always clearly acknowledged in the emblems and the legend. [*See* Tiberias.]

Rome came to rely more and more on the towns to impose and maintain imperial rule, a policy already well exemplified in the first century through the increased urbanization of Palestine after the First Jewish Revolt (Jones, 1931). [*See* First Jewish Revolt.] Michael Avi-Yonah (1966) has attempted to map the boundaries of the various cities on the basis of such archaeological remains as milestones and such literary sources as Eusebius's *Onomasticon*. More recent archaeological work based on central-place theory and relying on archaeological surveys has developed computer-aided models to understand the role of towns as centers within larger administrative and commercial configurations (Rihll and Wilson, 1991). These studies help to underline the fact that the institution of the city with its own territory was deemed to have on-going relevance in political terms, long after its independence had been drastically curtailed in the interests of empire.

Polis as economic system. The preindustrial city was very dependent on resources available from the immediate hinterland. Scholars agree that the relationship was quite different from that obtaining since the industrial, public health, and transport revolutions. The relationship was symbiotic, but without both benefiting equally from the single most important resource, namely the land (Finley, 1985; Hopkins, 1978, 1980; Wallace-Hadrill, 1991). There is a need to differentiate among the urban elites (a small minority of the total population), the retainer and merchant classes, and the poor, on the one hand, and the large landowners (who often resided in the city and formed an important segment of the urban elite), the small freeholders, the lessees, day laborers, and agricultural slaves, on the other. Thus, access to the basic resource was uneven, and the few at the top of the social pyramid that was the polis stood to gain much more from its successful exploitation than those farther down the social scale. Urban elites needed the peasantry in order to live the life of luxury, and those among the peasantry who had a disposable surplus of grain or other produce needed the cities as places of local demand or as depots and collecting centers for the larger market.

Scientific study of the pottery of Galilee shows that certain villages specialized in supplying the household wares for a wide region, including the urban center of Sepphoris (Adan-Bayewitz, 1993). [*See* Galilee, *article on* Galilee in the Hellenistic through Byzantine Periods.] This is a sign of a developing economy, in which the notion of the village as remote hamlet where peasants lived in total isolation from the larger culture has to be considerably modified, at least beginning in the Hellenistic period. A similar pattern repeated itself in Egypt and Syria as well (Harper, 1928; Bagnall, 1993), so that the prevalent idea of the ancient city as being totally parasitic on the surrounding countryside, following the influential studies of Moses Finley (1977, 1983, 1985), is perhaps overstated (Whittaker, 1990). Nevertheless, it remained true that, as far as peasants were concerned, the countryside was not the city and different norms prevailed. (The peasantry is said to have formed a subculture rather than an independent class.) It was only in the Late Roman and Byzantine periods that the signs of affluence associated with the city flowed into the countryside, as wealthy Romans abandoned crowded cities for their country villas.

Within the confines of the city conceived in narrower terms of the urban center itself, financial considerations loomed large: the costs of building a city and maintaining its public space, even when forced labor and the freely rendered tasks, or *munera*, of the citizens could be relied on to cover a wide range of services. According to a later version of a letter attributed to Hadrian (fl. 130 CE), philosophers, rhetoricians, schoolteachers, and doctors were exempted from the responsibilities of the gymnasium, marketplace, priesthoods, maintaining the supply of corn and oil, jury service, embassies, and obligations to local and provincial offices. However, these exceptions were rare and honor demanded undertaking them with a display of munificence. The competition among the wealthy for popular esteem had its own hazards, as they were expected to make cash handouts to all comers at weddings and other family celebrations. The financial pressures even on the elites were considerable, and the financing of the urban system, which on the whole was not economically productive, was ultimately draining. Little wonder that in some instances, especially at the lower end of the spectrum, people sought to avoid the duties of office. The situation varied enormously from one city to another, especially in the case of older cities in the east that had their own constitutions and other wealth-generating activities, such as their location or a hinterland. By the end of the third century CE, there were signs of increasing state compulsion with regard to the assumption of office, a clear indicator of how the old order had been eroded (Brown, 1971).

Cities as cultural systems. As mediums of culture, cities functioned in many different ways and at several different levels. The spread of Greek as the lingua franca is widely attested from inscriptions, coins, and literary sources. Initially, this was partly the by-product of the cities as administrative and commercial centers, a system in place since Alexander and his immediate successors settled veterans and other Greeks in the new cities. A policy of active hellenization was also part of the underlying philosophy of the new cities within the "one world" vision that inspired the encounter between Greece and the East. Thus, the gymnasium, or Greek school, became one of the essential features of the city, where the *epheboi*, or "elite youth," were given a special education according to Greek ideals comprising both literary and physical aspects. The links between

epheboi training and citizenship were very strong, but not absolute: these youths could be disqualified from citizen status on other grounds, such as not being freeborn (Tcherikover, 1964; Doran, 1990). The links between the educational system and citizenship remained very close, however.

Religion, as well as education, was intimately bound up with the life of the city and life in the city, from the perspective of a worldview in which there was no separation between the sacred and the secular (Zaidman and Schmitt-Pantel, 1992) The very act of foundation was itself associated with the religious rite of consulting an oracle or the auspices (auguries). Failure to do so might provoke the ire of the gods. The whole subsequent life of the citizens was surrounded by various rituals, private and public, enshrined in laws often inscribed in stone in public places. While certain officials were designated to carry out religious functions on behalf of the citizenry, essentially this was the responsibility of the whole *demos*. The city's charter was a gift from the patron deity, and its due observance meant divine protection for all who dwelt within its walls. The temple in honor of the patron deity; other temples in the fora of the larger cities; shrines, including those in private houses, and sacred groves; and mosaics and frescoes with religious themes all indicate the pervasive role religion played in the life of the average inhabitant of the Greco-Roman city.

It would be a mistake to see the official religious practice of the city as a purely formal affair, devoid of any devotional appeal for the individual. Nevertheless, the Hellenistic period witnessed an amazing increase in the mystery religions, offering the experience of personal intimacy with the divine and mutual support of the members of the various cult groups (*collegia*), in addition to the public religious ceremonies of the city (Cumont, 1956). The various mysteries—Isis, Magna Mater, Dionysus, and Mithras being the most popular and most widely diffused—became a feature of the cosmopolitanism of the age. Originating as local cults in Egypt, Phrygia, and Syria, they traveled widely, even to Rome itself, where they were treated with suspicion, if not downright hostility, at first. Gradually, however, their popularity grew, and the Roman army played a significant role in disseminating them in the West, especially the cult of Mithras. This phenomenon is highly significant to understanding the social situation within the cities and the need for social organizations other than those of the city itself and the extended family or tribe. In addition to the mystery cults, burial associations ensured a decent interment for their members, often consisting of the poor and slaves. [*See* Catacombs.] The insight into urban social relations that can be gleaned from these developments of religion in the city suggest a considerable amount of isolation, even alienation, especially as far as the lower orders were concerned. They also indicate a growing preoccupation with individual identity and uncertainty about life's meaning in an "age of anxiety" (Dodds, 1965). This was fertile soil in which Early Christian groups could sprout. The evidence from the Pauline letters, *Acts of the Apostles*, and the correspondence between Pliny and the emperor Trajan make clear that within less than a century of its inception, the religious movement which had originated in rural Galilee had adapted well to the urban life of the empire (Meeks, 1983; MacMullan, 1984; Stambaugh and Balch, 1986). In this they were merely following patterns already established by Jews in the Diaspora synagogues (Kasher, 1990; Feldman, 1993).

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SEÁN FREYNE

Cities of the Islamic Period

Islamic urbanism maintained and built upon the traditions of the ancient cities and civilizations of the Near East, creating a vibrant urban culture, but one with numerous regional variations in architecture and morphology. Most of what is known about cities in the Islamic period comes from written historical sources and analyses by art and architectural historians of existing monuments published in journals and edited collections. Archaeological excavations of Islamic sites are the exception rather than the rule: many contemporary cities in North Africa and Southwest Asia are built over core Islamic settlements and even earlier ancient sites, inhibiting major excavations.

Islam began in the early seventh century CE and was confined principally to the region of Mecca and Medina until Muhammad's death in 632. Yet, within the next several years most of the Arabian Peninsula was conquered, followed quickly by the Arab conquests to the north in which the weakened Sasanian Empire and the eastern parts of the Byzantine Empire were soon absorbed into the caliphate, the greater Islamic state. [*See* Sasanians; Arabian Peninsula, *article on* The Arabian Peninsula in Islamic Times.] Damascus fell in 636 and northern Syria by 641; Iraqi cities were taken within the first years of the conquests; Hamadan/Ecbatana, Isfahan, and the main cities of western Iran fell by 644; Egypt was conquered by 642 and the rest of North Africa by 711; Spain was absorbed between 711 and 759; and Bukhara and Samarkand were taken in 712 and 713, respectively. [*See* Damascus; Ecbatana; Isfahan.] Within a century after Muhammad's death, the Islamic state reached from Spain and Morocco to Transoxania.

The Muslim conquerors usually established themselves on the outskirts and suburbs of established cities, becoming the ruling and military elites. The local population was subject to taxation but otherwise left to continue its commerce, agriculture, and local customs, including religion. Conversions to Islam for most of the conquered peoples did not, in fact, take place for several centuries (and fully developed Muslim urban societies emerged only by the eleventh and twelfth centuries). Some new garrison towns were initially founded, and these *amsar* (sg., *misr*) housed many of the bedouin warriors from the Arabian Peninsula. Basra and Kufah in Iraq and Fustat in Egypt were the three most important *amsar,* being used as military bases for furthering the Arab conquests. Fustat, founded in 642 just north of the Byzantine fortress of Babylon on the Nile River, is the only early *amsar* that has been excavated. [*See* Fustat.]

Damascus became the capital of the Umayyads (661–750), the first major Islamic empire. The transformation of the Greco-Roman street grid of this city into a more irregular pattern under Islam (Jean Sauvaget, "Esquisse d'une histoire de la ville de Damas," *Revue des Études Islamiques* 8 [1934]: 421–480) became the classic case study that helped promote the erroneous view that all Islamic cities lacked form and order. Baghdad was the newly built capital of the second great Islamic empire, the ʿAbbasids (750–1258), a round city possibly based on a Sasanian, Parthian, and/or Median city plan. Located on the southern, or right bank, of the Tigris River, in the center of contemporary Baghdad, there is no trace of the round city today. Continuing an ancient tradition, ʿAbbasid caliphs often built new palaces, or even capitals, which sometimes lasted only the lifetime of the ruler. Samarra, located 100 km (62 mi.) north of Baghdad, was such a ninth-century capital. Strung along the Tigris River for many kilometers, the now long-abandoned capital has been the focus of considerable archaeological work, including the German excavations by Ernst Herzfeld in the early twentieth century and the more recent survey operations sponsored by the British School of Archaeology in Iraq. [*See* Baghdad; Samarra, *article on* Islamic Period.]

Islamic cities in Spain often developed on the foundations of Roman towns that had deteriorated for several centuries under the Visigoths. Cordoba, Toledo, Seville, Valencia, and Zaragoza were revived as cities. They contributed to a brilliant Hispano-Arab civilization that, however, began to decline by the eleventh and twelfth centuries and was finally

ended by the Christian *reconquista* and the fall of the last Islamic dynasty of Granada in 1492. There were several smaller and newly planned royal cities, including Medina al-Zahira and Medina al-Zahra, the latter on the outskirts of Cordoba and the focus of extensive archaeological excavations by the Spanish.

In Iran many of the Islamic cities were built on Sasanian foundations, which in some instanced represented even earlier settlements. Hamadan, for example, was built on the Median and Achaemenid capital of Ecbatana. Siraf, one of the few excavated Iranian Islamic sites, was built partly over the Sasanian port city of Gur. The Congregation, or Friday, Mosque in many of the first Islamic cities in Iran was often founded on existing Zoroastrian fire temples, providing an additional sacredness to the location and making a symbolic statement: an Islamic building was replacing the principal Zoroastrian place of worship (similar to the Dome of the Rock on the Temple Mount in Jerusalem).

The importance of the religion of Islam in the lives of the inhabitants of the Near East led to the idea by Western Orientalists that there was a unique Islamic city. This model, begun in particular by French scholars working in North Africa, is largely a myth. The cities of the Islamic period resembled their antecedents in morphology and characteristics, except that many Islamic towns became considerably larger and were less likely to be located on a tell. The structure of the towns was often determined by settlements expanding into adjacent agriculture fields; hence, as in many Iranian cities, irrigation systems could also influence morphology. There were palaces, city walls, fortresses, principal places of worship and shrines, residential quarters, and major commercial areas. Major streets were rather straight (only sometimes influenced by the Greco-Roman grid system, as in Herat and Damascus), while residential areas often consisted of numerous dead-end alleyways. Courtyard houses were common in both the ancient and Islamic periods, and where there are tall, multiple-stories buildings, as in Yemen, these types also existed in pre-Islamic times. [*See* Yemen.] The city continued to be a center for a local agriculture-based hinterland, with long-distance trade being characteristic of certain settlements as well.

By at least the eleventh century, Islamic cities did begin to have some specific characteristics and institutions: religious schools *(madrasah)* for training clergy; mosques, shrines, and mausolea, which proliferated; great bazaar complexes; religiously endowed property *(waqf);* and merchant guilds *(senf).* There also developed a rather distinctive separation of public and private space, encouraged by some local interpretations of Islam. How this division differs from the use of space by ancient cities of the Near East is still poorly understood.

Significantly, however, there are considerable similarities in form and function between ancient and Islamic cities within a region, while there are even greater differences in morphology among Islamic cities (and ancient cities) from one region to another. Islamic urbanism, in the guise of a new religion, continued the traditions and patterns of the cities of the ancient Near East.

[*See also* Mosque.]

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MICHAEL E. BONINE

CLERMONT-GANNEAU, CHARLES (1846–1923), French epigrapher, archaeologist, Orientalist, and diplomat and pioneer in the study of ancient Palestinian inscriptions. Born in Paris, Clermont-Ganneau excelled as a student of Semitic languages and was sent to Jerusalem in 1867 as dragoman-chancellor for the French consulate. In 1869, he was the first to recognize the significance of the Mesha stela discovered at Dibon (Dhiban) in Moab. [*See* Moabite Stone; Dibon.] He subsequently facilitated its purchase and transfer to the Louvre Museum in Paris. Among his later epigraphic discoveries in Jerusalem were the eighth-century BCE Hebrew inscription in the Siloam Tunnel and the Greek inscription from the Herodian period prohibiting the entry of Gentiles into the Temple Court. [*See* Siloam Tunnel Inscription.]

After a transfer to another diplomatic post in Constantinople in 1871, Clermont-Ganneau returned to Palestine in 1873–1874 on special assignment for the British-sponsored Palestine Exploration Fund. His wide-ranging researches included studies of the history of the Dome of the Rock and of ancient Jewish burial customs in Jerusalem and architectural surveys of Gaza, Nablus (Shechem), and Jericho. In his discovery of bilingual Greek-Hebrew boundary inscriptions in the vicinity of Tell Jezer, he was the first scholar to identify the site conclusively with ancient Gezer. [*See* Shechem; Jericho; Gezer.]

Clermont-Ganneau alternated for the next few years between diplomatic and scholarly careers: in 1874, he was appointed to the faculty of the École des Hautes Études in Paris; in 1881, he served as French vice-consul in Jaffa; in 1882, he was chief translator for the foreign ministry in Paris; and in 1883 he was the French consul in London. Following his appointment in 1891 to a professorship in archaeology and epigraphy at the Collège de France, Clermont-Ganneau devoted himself entirely to antiquarian studies. He led an expedition to Crete and Cyrenaica in 1895 and undertook excavations at Elephantine Island in Egypt in 1901. [*See* Crete; Elephantine.]

Clermont-Ganneau was an aggressive and outspoken critic of artifacts he considered forgeries. In 1873, he exposed as modern fakes the so-called Moabite pottery purchased by the Berlin Museum and succeeded in turning scholarly opinion against the *Deuteronomy* manuscript fragments brought to London by a Jerusalem antiquities dealer, Moses Shapira, in 1882.

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NEIL ASHER SILBERMAN

CLIMATOLOGY. Paleoenvironmental reconstructions for the ancient Near East rely in part on investigating past weather patterns. These investigations are based on the presumption that a better understanding of ancient climate, should help us know more about the conditions under which a number of civilizations flourished and declined. The region is one in which agriculture and animal husbandry were often marginal even under the best climatic conditions.

Temperature and Precipitation Records. In the Near East, where written records have existed for millennia and significant temperature and precipitation records might be expected to have been kept, there exist, in fact, very few sets of meteorological station records that cover more than one hundred years. The most extended instances of record-keeping available were begun in the nineteenth century: Samsun, Turkey (1819); Haifa, Israel (1842); Beirut, Lebanon (1842); Jerusalem (1846); Athens, Greece (1858); Kom el-Nadura, Egypt (1868); Rome, Italy (1871); Tehran, Iran (1884); Nicosia, Cyprus (1887); Baghdad, Iraq (1888); and Hebron, then Jordan (1896). Other stations have been in existence for only a few decades, so the prospect of developing a long set of gridded records—in which the data from each station are compared with those north, south, east, and west and then analyzed for internal accuracy—is not promising; in addition, the range in time is severely limited for most of the area. The Cyprus Meteorologist's remark about the quality of his own data might well serve as a commentary on that of the rest of the Near East: "Some gauges have been moved so often that they can fairly be described as perambulating. Details are generally, and perhaps mercifully, lacking."

A few nongovernmental records exist such as the diaries of British Residents in Smyrna, Turkey, but at best these cover only the nineteenth century. Some Ottoman archival records were sent to Berlin for analysis at about the time of World War I, but the building in which they were housed burned down. Thus, instrumental data—specifically, temperature and precipitation records—have severe temporal limitations. The data exist for little more than a century and a half at best. Even more limited in time and number of stations reporting are such records as soil moisture, soil temperature, wind speed and direction frequencies, and sunshine, or solar radiation.

Pollen Records. Proxy records, substitutes for thermometric and rain gauge records, such as pollen analyses from stratified cores taken from geological or lake sediments are another step toward developing a climatological record. The most notable work in the Near East has been by Willem van Zeist and his coworkers (1975) in Iran and Turkey; by Aharon Horowitz (1979) in Israel; and by Donald George Sullivan (1994) in Turkey. The spatial coverage is sparse (only two cores for all of Israel, for example); yet, Van Zeist concludes that, although there have been relatively minor fluctuations, there has been no significant change in the cli-

mate over the past 7,500 years. Hans J. Nissen (1988) echoes these conclusions for Mesopotamia, Karl W. Butzer for Iran, and Richard Hodges and David Whitehouse for the Late Roman and early medieval world. The potential for pollen records can be measured in millennia, but where hundreds of cores would be desirable in order to get a complete picture of the Near East, only a dozen or two long cores have been taken and properly published. Another problem with pollen cores is dating. Unless multiple radiocarbon determinations are made, which is not always possible with the amount of material available, the time control for each core is severely limited. Recent work by Harvey Weiss and others (1993) at Tell Leilan in Syria is a useful attempt to extract climatic information from a single site, although the method is controversial.

Dendroclimatology. Another proxy technique only now in its initial stages of being exploited in the Near East is dendroclimatology. The work of the Aegean Dendrochronology Project (Peter I. Kuniholm et al.) has produced some six thousand years' worth of tree-ring chronologies, and the tree-ring data are being linked to the observed meteorological record for the last century and a half. The project hopes to extrapolate backward in time to the Early Bronze Age and perhaps even earlier. The potential is for several millennia of information, but limited to the areas where long tree-ring records can be built. This includes all of the Anatolian Plateau, the Taurus Mountains, the Anti-Taurus, and the Lebanon. The method is accurate to the year and sometimes to a specific season.

Historical Climatology. The development of a historical climatology, in which the written record for several millennia is merged with other climatological observations, is the most tantalizing aspect of any consideration of Near Eastern climate. To date, no reliable corpus exists of the entire hieroglyphic, cuneiform, biblical, Greek, Roman, Byzantine, Ottoman, and other records. Once that has been built, the cause-and-effect relationship between a climatic event and a historical event will remain to be demonstrated. The record of Nile floods and their effect on the Egyptian economy is one such example (Lyons, 1905; Bell, 1971, 1975); the time spanned is four to five millennia but with a very uneven distribution of information.

Tentative steps, linking several of the methods noted above, are reported by Kuniholm (1990). For example, a four-decade-long drought in the late 1500s and early 1600s observed in the tree-ring record coincides with a long list of shortages, crop failures, and famines in the same years recorded in the Ottoman Archives in Istanbul. The same kind of linkage among proxies for an instrumental record should some day be possible for the ancient Near East as well. Significant perturbations, still under investigation and not without controversy, include a possible climatic event around 1159 BCE (probably the eruption of Hekla III) associated with the end of the Late Bronze Age; another linked to the eruption of Thera in 1627/28 BCE that pins down the transition from Late Minoan IA to IB; and a possible event in the twenty-third century BCE that interferes with life in the Early Bronze Age in northern Syria.

[*See also* New Archaeology; Paleoenvironmental Reconstruction.]

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PETER IAN KUNIHOLM

CLOTHING. Archaeological remains of garments are scarce, with usually only fragments of textiles recovered. What is known about clothing often can be deduced from accessories, which are generally of metal; from the tools used to manufacture cloth—spindle whorls, loom weights, pat-

tern sticks, spools, and needles; and from representations of garments on stone and terra-cotta statuary cut in stone reliefs, engraved on ivory or metal, painted on ceramic, or executed in mosaic. There are text references, but relating them to the archaeological evidence is not reliable. [*See* Textiles.]

In the ancient Near East, the basic garment for men was a simple wraparound skirt—a strip of cloth perhaps 60–75 cm wide wrapped around the waist, descending to just above the knee. In Egypt it was worn to just below the knee and was of plain white linen (*ANEP* 3, 16); in Syria-Palestine it was a brightly patterned linen or wool fabric and often had colored fringes (*ANEP* 3, 6, 35, 36). Early Sumerian carvings show this skirt made of fleece, with hanging locks of wool (*ANEP* 23, 24, 27, 163).

Reliefs and wall paintings show this cloth skirt held in place by a sash of woven cloth, usually in a colored pattern and ending in knotted fringes and tassels (*ANEP* 6, 40, 56). The pin found in burials at the hip of skeletons indicates that it could also be pinned. [*See* Grave Goods.] This was the garment commonly worn by workers (*ANEP* 84, 85, 106) and soldiers (*ANEP* 1, 177) in warm weather; additional upper-body clothing would have been necessary in the cold rainy season (*ANEP* 35).

In Syria the basic garment for women was also wrapped and draped over one shoulder, leaving the arms bare, and reached to mid-calf or slightly below. It was held in place by a pin at the shoulder and was woven in a great variety of bright patterns (*ANEP* 3). In Egypt women wore plain white linen wrapped around the torso and sometimes held in place by a strap over the shoulder. A more elaborate version was gracefully pleated (*ANEP* 407, 408).

Men too wore an over-one-shoulder garment (*ANEP* 3) or sometimes a long garment formed of two separate lengths of cloth woven in elaborate design that were wrapped around the lower body to reach the ankles. The upper ends covered the chest and back and were brought forward over the shoulders to form a cape (*ANEP* 43, 52, 54; *ANEP* II, 3). They may also have worn a separate cape (*ANEP* 5, 62).

In tomb paintings and stone reliefs, in addition to the sash, common clothing fasteners are frequently illustrated: the simple pin, toggle pin (Bronze Age), and fibula (Iron Age and later). The first was of metal or, more commonly, of bone (it can be distinguished from a needle because the needle, whether of metal or bone, has a hole in its upper, thicker end). The bone pins found in many excavations are 5–10 cm (2–4 in.) long, smoothly polished so as not to snag or tear the cloth, and usually have a small head to keep them from slipping through fabric. Many also have decorative bands incised around their circumference. Fashioned out of the bones of domestic animals, they were probably the cheapest clothing fasteners to produce, except perhaps for pins of wood or thorn, which have not knowingly been found in excavations. Small, graceful bone pins were used in all periods to fasten light clothing of linen or wool.

The toggle pin was metal, 15–25 cm long. [*See* Jewelry; Metals.] It had a hole through it halfway down the shaft, through which a fastening cord passed, and decorative bands were worked around it (*ANEP* II, 5). Its size, diameter, and weight indicate that it fastened a coarsely woven heavy woolen cloak rather than a light summer garment, as it would damage a fine fabric.

The fibula (Lat., "safety pin") is a light metal rod fine enough to be bent into a circle and a half in the middle, to form a spring. To use it, both ends are squeezed together and the sharp end is placed into a bend at the other end; when the pressure is released, it fits there firmly. The bent end is sometimes in the form of a tiny metal hand, whose fingers clasp the pointed end; this whimsical form endured for centuries. Both plain and "hand" fibulae are frequently found in excavations.

The number of needles excavated attests to how extensive sewing was in the ancient world. The needles are of metal or bone. [*See* Bone, Ivory, and Shell.] Sewing was essential for tent making, for joining tent panels, and for reinforcing the bands that kept the tent poles from piercing the roof panel. [*See* Tents.] Sewing was also essential in agriculture: folded lengths of heavy cloth were stitched up their sides to make the numerous bags needed for storing the year's harvest of wheat, barley, and lentils; after the bags were filled, they were sewn closed across the top.

Sewing was less essential in the manufacture of clothing because the most common garments had no seams (see above). However, garments did need mending or the decorative colored stitching apparent in carvings and paintings. Those garments that would have needed sewing had an opening at the neck (*ANEP* 3), down the front, or at the arm openings. Garments with sleeves (tubular sleeves, in contrast to a fold of cloth hanging off the shoulder) also would have required sewing. Egyptian tomb paintings show men's robes from Syria with sleeves to the wrist; the seams are covered with decorative embroidery in a contrasting color (*ANEP* 2, 4, 5, 45, 46, 47).

Common headgear for both men and women was a headband tied to hold the hair in place (*ANEP* 3, 4, 5, 6, 27, 43, 54). What may be a hat from the Neolithic period was found in a cave in Naḥal Ḥemar in Israel. To judge from stone reliefs, hats were also commonly worn by men in particular social classes and reflect status or public office (*ANEP* 11, 26, 36, 37, 61; *ANEP* II, 47). Tall, elaborate, and symbolic hats identify deities in monumental stone reliefs and small sculptures, distinguishing them from humans; special hats or crowns commonly appear on reliefs of kings and dignitaries. Ivories from Late Bronze Age Megiddo show women in stiff caps with fabric hanging down behind, like a short veil, but one that does not cover either the face or the ears. (*ANEP* frontispiece, 125) In the Assyrian relief of the con-

quest of Lachish (*ANEP* 373), women wear hooded cloaks. [*See* Megiddo.]

Sumerian reliefs show men wearing fleece skirts and jackets. Leather was used for shoes and clothing—probably more commonly for military clothing—but it is difficult to identify it in art. Two types of shoes are, however, identifiable in reliefs and paintings: the sandal and the closed shoe. In Egypt, at Beni Hasan, a tomb painting shows women wearing closed shoes with high tops that reach above the ankle; the men are wearing sandals (*ANEP* 3, 39, 40). Both kinds of footwear appear to be of leather, although less costly sandals of woven plant fibers were probably common. Hittite reliefs show men wearing closed shoes that are turned up at the toes, to facilitate walking on rocky terrain (*ANEP* 36). The earliest reference to the different fit of right and left shoes also comes from Hittite culture, from about 1500 BCE.

The Mari tablets and other ancient contracts stipulate that workers are to receive one new garment a year as part of their wages. This rule of thumb indicates that in good times each person would possess more than one garment—perhaps one best dress and several worn ones. The latter would gradually be cut down for children's clothes and the scraps reused for household and pastoral/agricultural purposes. Scraps of cloth could be used to patch other garments, to strain milk, wrap cheese, drain yoghurt, tie small packages of spices, hold seeds, cover the udders of goats when weaning the young, and to wash with; they were also useful as diapers, as parts for donkey and camel harnesses, and as saddle blankets.

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DOROTHY IRVIN

CODEX. Roman administrators throughout the empire used wooden tablets (Lat., *codices*; sg., *codex*) as registers. Eventually, *codex* became a technical term for an accounting or other financial book or authoritative collection of official or legal writings (cf. *code*). This is how the Romans in the imperial period, the romanized people of the East, and the Byzantines, who succeeded the Romans in the East, understood the word *codex*, regardless of the material out of which it was made.

In modern usage the term refers to ancient or medieval transpositions of an archaic wooden book onto sheets of soft material (papyrus or parchment). These sheets were usually folded down the middle, to form leaves that were then superposed or gathered in various ways. Modern paper books are still codices in form. Historically, this format replaced the papyrus roll (Lat., *volumen*) which, in the Classical East, had been the standard medium for literary, religious, and official writings. The historical problem with the codex is to determine how it came so successfully to rival the scroll in use. This question can be set out in chronological, technical, economic, and cultural terms.

The first archeological examples of ancient codices come from Egypt. Among the literary texts, the codex first appeared in the second century CE. In the third and fourth centuries, it challenged the scroll more and more strongly, eliminating its use by the fifth century. Among administrative texts, the codex appears later (first half of the fourth century); its triumph over the scroll is also late (seventh–eighth century) and not so complete. Although these dates are somewhat precarious, depending in part on paleographic considerations, the Egyptian evidence suggests that the codex appeared during the Roman imperial period, that it was most probably a Roman innovation, and that its diffusion in the East was a correlate of the romanization of the ancient Mediterranean world.

Although it eliminated the scroll (except in Jewish liturgical practice, where it remains in use), the codex borrowed from it a part of its Greek or Latin terminology (e.g., tome, volume, page). Moreover, contrary to the prevalent modern opinion linking codex and parchment, many ancient codices were papyrus books, whose sheets were nearly always cut from rolls. The codex thus appears to be an adaptation of or an improvement on its predecessor: the codex is genuinely technically superior to the scroll (e.g. it gives easier access to a given place in the text and is easier to cross reference).

The material out of which the codex is made, with its attendant physical properties and its economical constraints, determines the shape of the final product and, to some extent, its internal features. Papyrus codices often preserve the height of the roll from which their leaves and sheets were cut (usually about 25–30 cm). The sheets (e.g., in the well-known Nag Hammadi Gnostic manuscripts) were frequently gathered in single quires, sometimes to a considerable thickness. Such an assemblage is not only technically weak, but also unfeasible with parchment sheets, which were always gathered, as paper is today, in superpositions of thin quires, most often of two sheets and four leaves (Lat., *qua-*

terniones, hence, "quire"). Being an inexpensive and ubiquitous material, papyrus had a broader range of use than parchment. Although luxury papyrus codices, with calligraphy and illuminations, do exist, most known codices are of average or low quality and contain mundane texts, such as accounts or private copies of literary works. Expensive parchment was generally preferred for luxury editions or for reference or professional works (e.g., liturgy and law).

Given its Roman background and its coarse wooden archetype, the codex must at first have been perceived by the hellenized Eastern upper classes as a pedestrian format, alien to the liberal Classical culture, whose texts were normally on scrolls. The codex eventually won out, as a consequence of the growing importance in the Roman Empire of religious and intellectual milieux, that had no prejudice for established book standards, namely the Christians and the local academies.

If there is one clear conclusion that the Egyptian evidence permits, it is that the codex was favored by Christians as the exclusive medium for their Holy Scriptures. In addition to the societal generality described in the preceding paragraph, there is no obvious explanation for this fact. Some scholars see the preference as an aspect of the Christian break with the synagogue, where the use of the Torah scroll has survived. It is also possible that the codex appeared to the Christians a better tool than the scroll for teaching purposes.

Thanks to Roman peace and prosperity, many schools flourished in the East, as did other scholarly activities, such as philology and law. This was a time of didactic and practical culture, with bookish tendencies, and that culture was disseminated by a proliferation of handbooks, lexicons, collections of texts, encyclopedias, and codes, for which the practical format of the codex was more suitable than the scroll.

[*See also* Literacy; Nag Hammadi; Papyrus; Parchment; Scribes and Scribal Techniques; Scroll; *and* Writing Materials.]

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JEAN GASCOU

COELE-SYRIA, the Greek name ("hollow Syria") for the Biqaʿ Valley in southern Syria, between the Lebanon and Anti-Lebanon ranges north of Palestine (i.e., in modern Lebanon)—in the Hellenistic era, considered the southern province of coastal and inland Syria. Under the Ptolemies and Seleucids, all of Phoenicia, and even Palestine, could be designated Coele-Syria. Some modern historical geographies have used the term *Coele-Syria* to distinguish Palestine east of the Jordan River (i.e., Transjordan). This usage derives from Josephus (*Antiq.* 14.ix.5), based on the fact that Herod ruled this territory under the Romans, calling it Coele-Syria in contrast to Judea (Judah), Samaria, and Galilee west of the Jordan River. In the New Testament period, Coele-Syria designated part of the tetrarchy of Philip in northern Transjordan (Josephus, *Antiq.* 12.xiii.3).

[*See also* Phoenicia; Ptolemies; *and* Seleucids.]

WILLIAM G. DEVER

COINS. By interesting coincidence, the initial time range of coinage coincides closely with that of recorded history of the Greek tradition. As strictly defined, its first appearance occurs during the seventh century BCE. By the last quarter of the sixth century it had developed varied and sophisticated forms. Its first currency was in the Lydian kingdom of eastern Anatolia, reflected in the proverbial association of such Lydian rulers as Gyges (c. 679) and Croesus (560–546) with wealth and possession of gold. Simultaneously or soon afterward, coinage began to appear in the Ionian merchant cities of the eastern Aegean, such as Miletus, Ephesus, and Phocaea. Thereafter the spread of coinage continued to parallel that of Greek culture, and its decorative types are noted as fully representative of Greek art. Thus students of Greek and ancient culture and history follow closely the development of coinage and emerging numismatic evidence. In contrast, coin evidence has been of less relevance to prehistorians; and indeed to Assyriologists, though in recent years it has become clear that monetary evidence of a sort was widely present, if formerly unrecognized, in the earlier Mesopotamian archaeological evidence. Though not strictly coinage, this material, broadly categorized as "ingot currency" or "bulk silver," can provide, when studied on numismatic lines, economic and even political data.

The classic definition of coin is that provided by Aristotle in *Politics* 1257a:

> When the community's partners, from whom to import requirements, and to whom to export a surplus, began to extend farther afield, the employment of coinage was devised. For natural commodities are not conveniently transported. Consequently for exchange purposes a medium was agreed to pay and receive, which itself was useful, and had a convenient application in everyday life, such as iron or silver. At first this was measured by size and weight. Eventually an emblem was impressed upon it, so as to free (the users) from the need to measure it. For the emblem (itself) was an indication of the quantity.

Thus, in true coinage the units bear a stamp of authenticity applied by the authority responsible for weight and content. This authority was in most demonstrable cases the state. Suggested ascriptions to merchant guilds, goldsmiths, and other commercial bodies have rarely been substantiated, though these groups may have been responsible for certain punchmarks found on coins. The issue of temple tokens provides a special province of numismatics, going back even to Assyrian times, and later well represented at Palmyra. Thus the *emblems* struck on coins designate the issuing states, often indicating the place and, inferentially, the date of issue. Explicit dates, however, are almost completely confined to the Parthian, Roman, and Islamic series. Because different states maintained specific standards of weight and composition, these—especially the weight—are also characteristic of the issuers. Serious losses could be incurred by a mint issuing precious metal if the weights were inaccurate; therefore, great care was taken to ensure exact standards.

Almost invariably, throughout the history of coinage—normally a prerogative of the state—coins were produced by striking. A blank, which might be cold or hot, depending on size and the practice of the mint in question, was suitably adjusted for dimensions and weight. It was then placed between two dies of bronze or iron, or, by the Islamic period, of steel. The lower die was often fixed in a wooden block, or placed in a fitted recess of an anvil. The upper die, often a punch held freely in the hand or with tongs, was struck once or repeatedly with a sledge-hammer to produce the impression. The decorative subjects of the coins were engraved on the dies in intaglio, commonly freehand, so that every die was distinctly individual. Only in some later periods, and especially in the Islamic era, is there evidence of mass production of the dies by casting or by hubbing, a process of marking out the design on the die by striking this with a punch bearing the subject in relief, before finishing with tools.

The official production of coins by casting has been employed only sporadically, especially in the early Roman, and in the Indian series. Casting from genuine coins is of course the simplest proceedure for producing coin forgeries, detectable by their "soapy" surface, and prevalence of bubbles. In some periods, ancient counterfeits were also produced by casting, and may occasionally even reflect genuine varieties not currently available (Morton, 1975, p. 163).

Since the anvil- or obverse (sometimes also called the "staple") die lasted longer in use, it was customary to engrave here the more difficult or sophisticated subjects. During periods of portrait coinage, especially in Hellenistic times, the royal portrait, the most difficult part of the work, was engraved on the obverse die, whence the present-day terminology of "heads" and "tails" for obverse and reverse. The more ephemeral reverse dies lasted only half, or a third, the life of the obverse. Thus we find coins which are "die duplicates" (i.e., obverse and reverse struck from the same pair of individual dies), and others which share only an obverse (or less frequently a reverse) die, and are said to be "die-linked." It is normally assumed that die-linked coins would be products of the same mint, and close together in time. At the same time, rare instances are known of coin-dies under the Seleucids, and possibly other Hellenistic kingdoms, being sent to branch mints that are far distant, so that they are linked with issues from totally different series.

From considerable bodies of coinage (coin hoards or museum collections) die-sequences of linked issues can be built up, establishing the chronological series, even when explicit evidence of date is lacking. The rule is now broadly accepted that if in a coin series six examples from each die are present, it may be assumed that every die in the series is known. If however there are some dies represented by fewer than six specimens, allowance must be made for the possibility that several dies are missing, and the sequence consequently incomplete.

The reverse dies (sometimes also called punch dies, or trussels) might for striking, as already noted, be held loose in the hand. The "die-axis," or relation between the orientation of obverse and reverse types upon the resulting coin, would then be haphazard. Sometimes however it appears that guiding lines were marked on the punch die, and upon the anvil, enabling the worker to line up the two dies consistently, though only, of course, with approximate accuracy. Again, in certain series, especially that of Periclean Athens, square-headed dies appear to have been used, which would fit in one of four possible orientations. In other cases, the dies appear to have been hinged, so that a single, mechanically accurate orientation was achieved. This was usually either upright ↑ ↑, or reversed ↑ ↓; and can be expressed more simply with a single arrow as ↑, or ↓. In some periods, variations in die axis help to distinguish the output of different mints or define the chronology of blocks of coinage.

The earliest coinages, in seventh–sixth-century BCE Lydia and Ionia, had a decorative subject engraved only in the obverse die. The reverses were impressions of simple punches, single or double, and designated as "incuse" squares or rectangles. On some thin Greek coinages of southern Italy, the reverses, cut in relief on the dies, closely followed the outlines of the obverse types, producing what are sometimes called "repoussé" coinages. From the late sixth century onward, however, it became customary to engrave both obverse and reverse dies in intaglio, each producing relief impressions on the resulting coins.

The obverse of a coinage is usually distinguished by its convexity, the reverse being concave, a feature resulting from the blow of the die. However, in Islamic coinages, characteristically thin and flat, it is difficult to determine the "technological" obverse. Consequently cataloguers have resorted to the convention that the face bearing the name of Allah and the declaration of faith (*shahādah*) should be considered the obverse. Sometimes the true obverse can be detected as a result of a striking-error known as a brockage, in

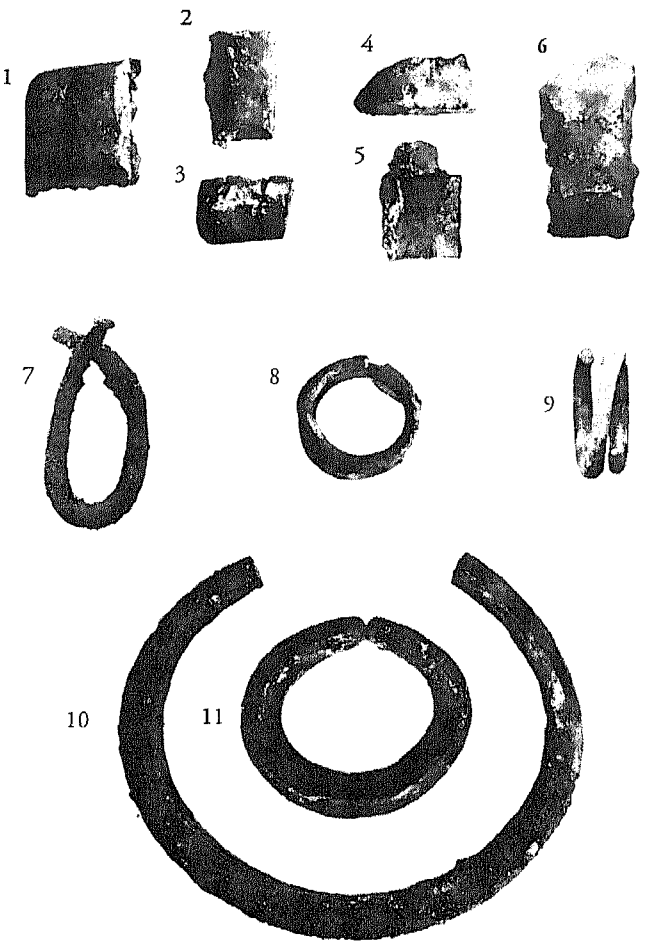
which a struck flan adheres to the punch die; and the next blank receives, instead of the reverse impression, an intaglio version of the obverse, which thus appears on both faces of the succeeding coin (Bacharach and Awad, 1973, pp. 187–188.)

In this way it will be seen that the technology of coinage, here only briefly outlined, provides special facilities for the analysis of the extensive numismatic evidence surviving from ancient and medieval times (cf. Philip Grierson, *Numismatics*, London and Oxford, 1975, p. 94ff.). The printing of motifs and inscriptions on the metal of coinage preceded by many centuries the introduction of printing on paper. Thus it came to provide perhaps the first historical medium for communication between governments and population. Though full exploitation of this potential for official propaganda was characteristic of the Roman Empire, eastern monarchies such as those of the Parthians and Sasanians used coinage to present an image of the ruler, and to display the ideology and aspirations of the realm.

Coins have several characteristics helpful for conveying historical information. The output of individual mints form *sequences*, from which the chronology of succeeding issues can be deduced. Again, during ancient times, especially in periods of upheaval, a frequent practice was to bury deposits of coins for security. Such coin hoards often come to light, and constitute time capsules, conveying *chronological* information. For study purposes, it is important first to determine which are the latest specimens in each hoard. The sequences contained in overlapping hoards then throw special light on the order of successive issues. "Treasury hoards" consist of stocks of fresh and related coins. "Cumulative" and "savings" hoards may cover long periods of accumulation. "Foundation" deposits (as at Persepolis) have a distinctive character. Sporadic coin *finds*, on the other hand, carefully plotted on the map, throw light on the places of issue when the mints are unknown. "Area finds" recovered in excavation illustrate the economic history of a settlement, and "location finds" contribute to the dating of structures.

Even before the destruction of Assyria in 614–612 BCE by the Babylonians and the Medes, "ingot currencies" of several types circulated in the Near East (see figure 1). It is now realized the "silversmiths' hoards" mentioned in old excavation reports were not mere working stocks, but had a monetary character. The oldest forms in circulation were probably "ring money" of several types, especially the so-called "earrings," also perhaps worn on ringlets of hair. These forms seem characteristic of Babylonia, possibly from the early second millennium. Their weight approximates that of the shekel, but often on standards older and higher than that of the typical Babylonian shekel of 8.40 g. Current later were the rare "slab ingots," monetary "torques," and "cake ingots" (German *Silberkuchen*). These last are known from Zincirli (Luschan, 1943, pp. 119–121) and bear the inscription, incised not impressed, BRRKB BR PNMW, naming a local ruler who held office around 712 BCE. Although this person is the first ruler named on currency, his ingots do not count as coins since the legend was not mass-produced by stamping; and the weights, though some approach the Babylonian *mina* of 504 g, are very irregular. Cake ingots were also found, with Greek coins among other items, in the Syrian Ras Shamra hoard (Thompson et al., 1973 [hereafter *IGCH*], 1478; Schaeffer, 1939, pp. 464, 466, 486), and in several hoards from Egypt, notably those of Beni Hasan (*IGCH* 1651), Damanhur (*IGCH* 1637), and Mit Rahineh (*IGCH* 1636).

Another form of ingot currency, found at Nush-i Jan in Iran, are the "bar ingots," apparently characteristic of the Median Empire in Iran (seventh–sixth century BCE). The thirteen specimens in this find illustrate a weight range of 12, 18, 24, and 100 g, suggesting a shekel standard around 12g, and representing units of 1, 1½, 2, and 8 shekels. As mentioned, a single piece at 8.40 g represents the Babylonian standard, later revived by the reform of Darius the Great. This last unit, the most influential weight standard of the



COINS. Figure 1. *Ingot currency.* From Nush-i Jan, Iran, seventh century BCE. Nos. 1-6, "cut-silver" pieces; nos. 7-9, ring-money (shekels); nos. 10-11, large rings ("torques"). (Courtesy David Stronach)

ancient Near East, is hexagesimal, and gives rise to the following correspondences:

60 minas	= 1 talent	=	30,240.00 g
60 shekels	= 1 mina	=	504.00 g
1 shekel	=		8.40 g
1 *zwz* (drachma)	= ½ shekel	=	4.20 g

Bar ingots apparently continued in use under the Achaemenids, inspiring the development of the bent bar and punch-marked coinages of ancient India. Finally, "cut-silver" (Ger., *Hacksilber*) makes its appearance as a monetary form, which consists of small chunks of silver cut from larger ingots, bars, or slabs to provide small denominations, usually shekels and their halves. The weights of such fragments are very approximately adjusted, small scraps of silver being used to make up units of weight and bulk payments being weighed out on the balance. Because the shekel standard often fluctuated in the system of ingot currency, payments in silver were simply reckoned on the balance, using the standard weights in force at the time. An increase or reduction of the standard—such as for taxation purposes—could be effected by simply increasing or reducing the weights.

By the end of the sixth century BCE and the beginning of fifth, deposits of bulk silver recorded in Asia east of the Taurus and in Egypt begin to include, together with ingot currency of several kinds, quantities of coined Greek silver, mainly from the areas of silver extraction in Greece (see figure 2). Such regions are the Thraco-Macedonian area; Siphnos, island source of silver used in the Aiginetan "turtle" coinage; and also Athens, a noted producer from the Laurium mines. The mints of Phoenicia, especially Tyre, Sidon, Byblos (Jubayl), and Aradus, probably obtained their bullion by international trade. Hoards of this type are those of Ras Shamra (c. 510–500), the Taranto hoard of 1911 (500–490) with its rare slab ingot, Asyut (c. 475), and the "Jordan 1967" hoard (c. 445). Close dates can be established from the Greek coins present, often heavily chopped or gashed with a chisel—a test for purity of silver probably imposed by the Achaemenid treasuries. The "bulk silver" content probably consisted of pieces retained in circulation from earlier periods. By the second half of the fifth century BCE, the widely distributed hoards of Greek silver in Asia tend to consist entirely of coins. As the study by Daniel Schlumberger (1953) shows, this coinage, received in the Achaemenid Empire by tribute or trade, was widespread in Mesopotamia, Iran, and Afghanistan—a phenomenon illustrated by the hoards of Malayer (discovered 1934), of the Chaman Huzuri at Kabul (discovered 1933), and by C. J. Rich's Tigris Hoard described by G. K. Jenkins (1964).

Although a "silver standard" thus prevailed in the Aegean and in Asia beyond the Taurus, a "gold standard" dominated in the east Anatolian kingdoms of Lydia and Phrygia and the cities of the Aegean coast. The earliest issues were in electrum, a natural alloy of gold and silver. These were "dumps" marked with parallel striations on the obverse, and threefold incuse punch on the reverse. Coins with the legend *Walweš* are ascribed by some to Alyattes, king of Lydia (c. 580), and must come early in the series. Later, respective gold and silver issues of "heavy" standard (about 10.9 g), with types of a confronted lion and bull, are ascribed to Croesus, king of Lydia (560–546). They are followed by issues on a lighter standard with similar emblems, in gold and silver respectively, now increasingly ascribed to Cyrus, king of Persia (550–530), after his conquest of Lydia. These issues, of which the silver denominations reckoned twenty to the gold shekel, weighed respectively 5.4 g and 8 g. Examples were found in the Persepolis foundation deposit toward 511 BCE (Herzfeld, 1938, pp. 413–414; Schmidt, 1957, p. 113). They were quickly followed by the famous "daric-siglos" series, inaugurated no doubt by Darius the Great. The obverse featured a Persian archer, and the reverse had rectangular incuse. It is now known that the sequence of types for both silver and gold was as follows: (1) half-length figure (daric 8 g, siglos 5.4 g); (2) archer shooting with bow (daric 7.87–8.34 g, siglos 5.4 g); (3) archer running with bow and spear, two pellets vertically beneath ear (daric 8.35 g, siglos 5.4 g); (4) archer running with bow and spear, no pellets beneath ear (daric 8.35 g, siglos 5.60 g); and (5) archer running with bow and dagger (daric 8.35 g, siglos 5.60 g). Although the silver coin is known in Greek as the *siglos* (i.e., shekel), it was in fact the gold daric which was to weigh 8.35 g, representing (with a small discount for seigniorage) the standard of the Babylonian shekel (8.40 g) revived by Darius's monetary reforms. The silver denomination of 5.4 g or 5.6 g was adjusted so that it rated twenty to the daric at a silver/gold ratio of 13:1 or 13.3:1. The small fluctuations in the weight standards of silver and gold gave critical clues to the sequence of the daric issues, otherwise differentiated only by details of posture and ornament. Thus, the famous Persian archer series of daric and siglos, effectively the coinage of the Lydian satrapy at Sardis, is recognized by numismatists as typical of the Achaemenids. It is represented in finds far across the empire, although the siglos was treated as bullion in the eastern satrapies (provinces), where there were still no mints for the manufacture of circular coinage until the advent of Alexander the Great. Reports of the minting of sigloi under the Achaemenids elsewhere in the Near East than Sardis (e.g., in Egypt under Aryandes, in Anatolia, or in Babylon) have not yet been confirmed decisively.

If the gold daric was typical of the Lydian satrapy, in some of the Greek cities and islands coinage of the gold-silver alloy electrum persisted. Sometimes it was the natural metal, but increasingly produced as artificial alloy, which was called by numismatists *white gold.* Important centers were Phocaea and Mytilene. Because the Achaemenid satrapy of the Hellespont in northwestern Anatolia produced no coinage of its own, however, the electrum *staters* (units) of Lampsacus

COINS. Figure 2. *Typical contents of Near East silver hoards.* Nos. 1-17, from Kabul, Chaman Huzuri hoard, 1933 (courtesy Kabul Museum, 1962): (1) Kerkyra, (2) Acanthus, (3) Athens (archaic), (4) Athens (c. 430 BCE), (5, 6) Aigina, (7) Chios, (8) Samos, (9) Lesbos, (10) Phaselis, (11) Aspendos, (12) Soloi, (13) Tarsus, (14) Mallus, (15) Kition (King Azbaal), (16) Salamis (Cyprus), (17) Paphos. Nos. 18-19, British Museum (Courtesy of the Trustees): (18) Sidon, (19) Tyre. Note chisel cuts typical of Achaemenid treasury usage. All fifth-fourth century BCE.

and especially of Cyzicus appear to have supplied the need and played an international role in the Black Sea trade. The Cyzicene series, current from the late sixth century until the advent of Alexander, had an extensive repertoire of changing types, always characterized by the accompanying symbol of the tuna fish, the local product. The main *stater* denomination was adjusted to a standard of 16.05 g, and the *hekte* ("sixth") was a common subdivision. The electrum series of Lampsacus bore the winged forepart of a horse and weighed about 15.35 g. Both these coinages bore on the reverse the incuse impression of a plain "mill sail" punch. Toward 400 Lampsacus gave up electrum and produced a distinguished coinage in pure gold with changing obverse types, weighing 8.40 g. This was exactly the standard of the daric and presumably valued against it at par. Important Greek silver coinages of the fifth century BCE circulating in the Near East were the Aiginetan "turtles," the Athenian "owls," the large Thraco-Macedonian pieces and issues of the Phoenician cities of Tyre, Sidon, and Aradus, together with Citium (Kition) in Cyprus.

Hellenistic and Parthian Coinage. Only under Alexander the Great (332–321) was the attempt made to impose a uniform coinage across his territories extending from Macedonia to Iran. The imperial obverse type for gold was a helmeted Athena with her head to right, and the reverse featured a winged Victory holding the *stylis*, a nautical attachment. Athena's helmet was usually ornamented with a coiled serpent, but on some late varieties there was a eagle-griffin, lion-griffin, or sphinx. Remarkably this series seems to have commenced before any victory had actually been won. The silver had the obverse head of Heracles (Herakles) attired in the lion scalp, and on the reverse the Olympian Zeus is enthroned, holding an eagle on his right hand. Separate issues are distinguished in both series by symbols or monograms or both; and the mints, even when not so differentiated, have often been recognized from die links and engravers' styles. Initially the main mints are thought to have been Amphipolis and Pella. Later, as the conquests advanced, coins were issued in many regional centers. The most easterly mint in Alexander's lifetime appears to have been Ecbatana (Hamadan) in Iran. Further east, mixed coinage, "bulk silver," and bars continued to circulate.

The obverse type of Alexander's coinage was not originally a portrait but was quickly taken as such. After the conqueror's death and deification, his portrait in various forms appeared on the coins of the Hellenistic monarchies: on that of Antigonus in Phrygia retaining the Heracles; on that of Ptolemy in Egypt wearing the elephant-scalp commemorative of the Indian conquests; and on that of Lysimachus in Thrace with the ram's horns recalling his sojourn in Egypt. This last was a coinage widely diffused and known throughout the Near East.

Ultimately the diademed portrait of the living ruler became the characteristic obverse of the Hellenistic monarchies, producing some of the finest known Greek portraiture. The Attic standard introduced by Alexander, with a tetradrachm of 17.2 g (.6 oz.), became the most common metrology, but it soon slipped marginally to 16.8 g (.6 oz.), coinciding with the long familiar Babylonian shekel at 8.40 g (.30 oz.), of which it thus represented the double.

The Seleucid kingdom (312–88) in its heyday stretched from the Aegean to Central Asia, and the studies of its mints by Edward T. Newell (1938, 1941) still constitute a model of numismatic method. A characteristic reverse type depicted the god Apollo seated on the Delphic *omphalos* (a rounded stone in his temple regarded as the center of the world) and holding his bow and arrows. Their number, one to three, indicated the mint. Soon the Seleucid eastern territories fell either to the independent Bactrian kingdom or to the advancing Parthians, who pressed forward down the Asian highway from the Caspian to Qumis-Hecatompylos, Rayy (modern Tehran), Hamadan and Seleucia on the Tigris. At first their coinage largely conformed to the Hellenistic pattern, but later the bearded obverse portrait was normally turned to the left. The reverse was soon standardized as the dynastic founder, Arsaces, seated on the *omphalos* or on a throne and holding his bow and arrows. The royal name was inscribed simply as Arsaces, usually accompanied by titles. Thus the absence of the ruler's personal name causes difficulties of identification. Although the drachma denomination was copiously issued at the cities on the Iranian plateau, the large tetradrachms were struck exclusively at Seleucia on the Tigris, where the practice was established of inscribing dates according to the Seleucid era of 312 and frequently also the exact month. Frontal portraits represent pretenders to the Arsacid throne.

The Greek inscriptions on Parthian coins became increasingly conventionalized, and by the reign of Vologeses I (51–78 CE) they are supplemented by initially abbreviated inscriptions in Parthian indicating the royal names, such as WL for Vologeses, later *wlgšy mlk'* ("King Vologeses"). These have the advantage of designating the ruler individually.

COINS. Figure 3. *Early Sasanian coins.* Coins 3, 12, and 15 are gold; otherwise all are silver. No. 1, Shapur (207 CE), king of Persis. Nos. 2-3, Ardashir I (208-223-241 CE) with successive crowns as king of Persis; no. 4 (223 CE) after defeat of Artabanus V; no. 5 (226 CE) with mural crown after capture of Ctesiphon; no. 6, with definitive crown as Shahanshah, after 228 CE; no. 7, with prince Shapur as heir. No. 8, Shapur I (241-272 CE) with eagle crown as successor in accession year; nos. 9-10, Shapur I with plain crown and crown with cheek-piece. No. 11, Ohrmazd I (272-273 CE). No. 12, Vahram I (273-276 CE). No. 13, Vahram II (276-293 CE). No. 14, Vahram III (293 CE). No. 15, Narseh (293-302 CE). British Museum (Courtesy of the Trustees). ▶

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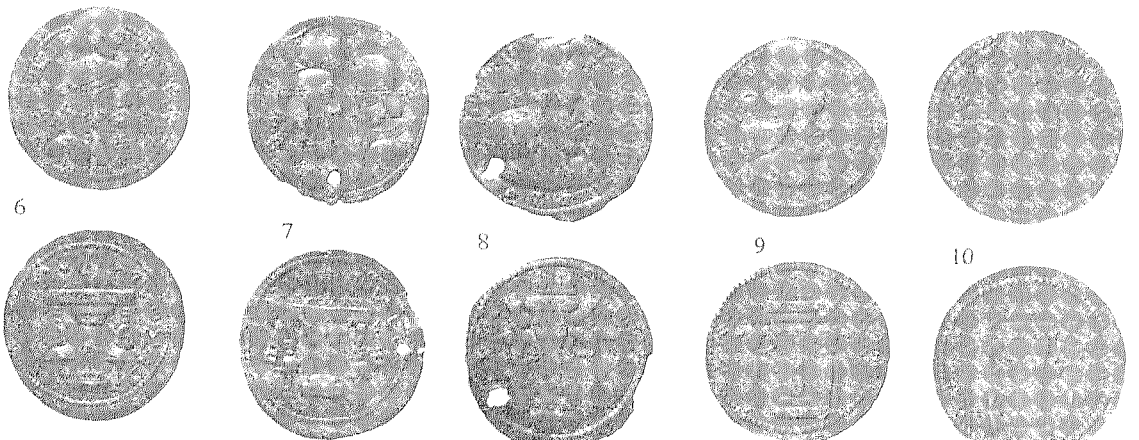
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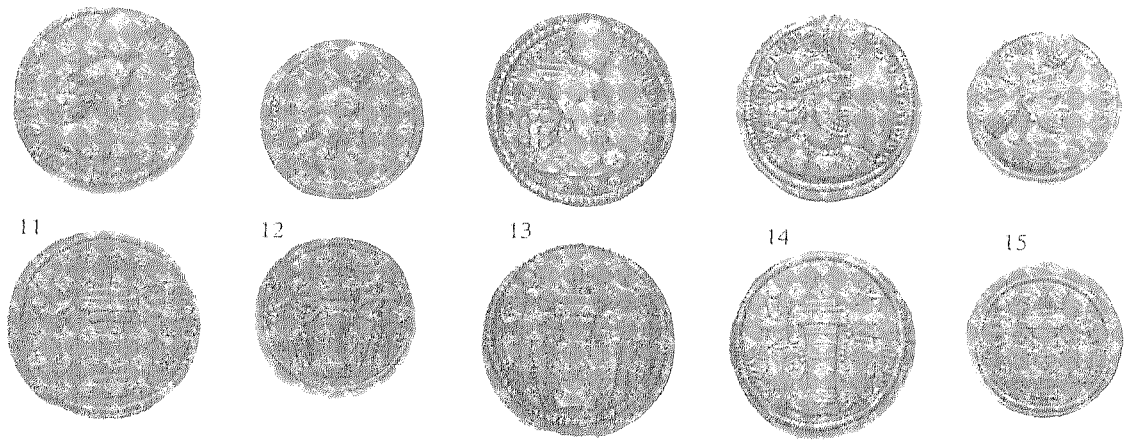
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Besides the main series of Parthian coinage, the subordinate kingdoms that were a feature of the Arsacid dispensation—Persis, Elymais, and Characene—intermittently issued their own coinages. Persis indeed produced autonomous tetradrachms and drachms of the Attic standard soon after the death of Seleucus I in 280 BCE. The series is sometimes styled the "Fratadara" coinage from a reading by Ernst Herzfeld (1938) that is now known to be incorrect but nevertheless provides a useful label for the series. These issues bear the Aramaic inscription *frtrk' zy 'lhy'*, apparently "administrator of" (i.e., appointed by) "the gods," in opposition, presumably, to those appointed by the Seleucid kings. Rulers named include Bagadata, Oborzus (*whwbrz*), Artaxerxes ('rthštr), and Autophradates (*wtprdt*), besides others less clearly decipherable. The usual types show the ruler on obverse, wearing the satrapal *tiara*, and a fire temple or fire altar on the reverse. Subsequent coinages on a lighter standard continue until the advent of the Sasanian dynasty (see below).

Elymais, the kingdom in the Zagros foothills east of Susa and Ahvaz, also produced a coinage under its founder, Kamnaskires, a title deriving from that of the Achaemenid treasurers residing at Susa. This quaint designation long remained the throne name of the Elymaean kings. Soon after the start of the Christian era, Greek types and inscriptions gave way to "Oriental" portraits and legends in a local form of Aramaic, naming as kings Phraates, Orodes (*wrwd*), and Chosroes. At the head of the Persian Gulf again lay Characene, a state founded by a chief named Hyspaosines (c. 125), who once more struck large silver coins with Greek legends, beardless portraits, and Heracles on the reverse. His successors Apodakos, Tiraios, and Artabazos continued the tradition until 48–47 BCE. Under later rulers there was progressive debasement of the silver denominations, and here too after about 143 CE, Greek was replaced by a variety of the Aramaic alphabet.

Sasanian Dynasty (223–631 CE). In 223 CE Ardashir I, the local prince of Persis, rebelled against his Parthian overlords, defeated Artabanus V (Ardavan V, sometimes also numbered Artabanus IV), the last Arsacid king, and embarked on the consolidation of Iran. Rigorous reforms were introduced in every theater. Military, administrative, and religious centralization were accompanied by a complete renovation of the coinage. The debased Parthian silver was replaced by a brilliant series in gold and fine silver respectively, the former commemorative, the latter constituting henceforth the principal currency (see figure 3). The weight standard of the silver at 4.1 g, was effectively that of the Attic drachma. The characteristic types showed the royal bust on the obverse now turned toward the right and identified by a specific individual crown. On the reverse was the fire altar symbolic of the dynasty's Zoroastrian faith. This image in the following reigns was flanked by two "guardians." In the initial period the Pahlavi inscriptions were often blundered because the engravers were not literate. The legends were intended to give on the obverse the name and titles of the ruler with the formula "Mazda-worshiping lord N., king (of kings) of Iran (and non-Iran, whose descent is from the gods)," and on the reverse "fire of N." is written with reference to the royal sacred fires established for every ruler at his accession. With the passage of generations the individual crowns become increasingly complex, occasional mint names appear on the reverses and are eventually standardized in abbreviated form (see figure 4). By the reign of Kavad (488–531 CE), such abbreviations regularly appear to the right of the fire altar, and the regnal date of the issue is indicated in words on the left. The script evolves from the "epigraphic Pahlavi" with its separate characters to the cursive "Book Pahlavi" forms. The volume of coinage was greatly increased under Khusrau I Anushirvan (531–579), revenue thereafter being levied in cash rather than kind. The epic wars against Byzantium waged by Khusrau II Parvez (592–628) demanded vast output of coinage, no doubt often struck from the enormous booty. The Sasanian drachma was by this time a flat and thin module with widely spread flan. It provided the pattern not only for certain Byzantine silver coinages but especially for the dirhams of Islam.

Islamic Coinages. When in 637 the Muslim Arab armies overran Syria and Mesopotamia, they entered a world of two distinct currency systems. That of the Byzantine Empire, based on gold and bronze, functioned farther to the west. That of Sasanian Iran, consisting chiefly of silver, was active to the east. At first the huge quantities of coinage available as tribute or booty sufficed for current needs. Yet already there was being laid the foundation of a coinage system in all three metals. As the Arab armies advanced through Iran, drachmae of the Sasanian pattern continued in issue. Prototypes were naturally coins of the last Sasanian king, Yazdgird III (632–651), dated to regnal year 20, his last, but with slight variations of detail and decoration. For some decades dating continued in Yazdgird's era. The numerous issues of Khusrau II were also imitated and soon began to predominate. Typically, short inscriptions in Arabic appear in the second quarter of the obverse margin, especially *bi-ismi'llāh* ("in the name of Allah") and *jayyid* ("excellent"). The names of the Arab governors, replacing the name of Khusrau, came to be written in Pahlavi in front of the con-

COINS. Figure 4. *Early Sasanian drachmae with mint names.* No. 1, Vahram I (273-276 CE), mint, rev. above fire altar, Skst'n (for Sistan). No. 2, Vahram II (276-293 CE), with consort, and to right, hier; mint, rev. above fire altar, Ldy for Rayy. No. 3, Ohrmazd II (302-309 CE); mint, rev. on fire altar, Ldy for Rayy. Enlarged about 2x. Note ornate individual crowns of kings. No. 1, Indian National Museum, Parieck Collection. Nos. 2-3, British Museum (Courtesy of the Trustees).

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ventionalized portrait. Eventually around AH 60/679–80 CE, the Muslim Hijrah reckoning was introduced for the dates. With the transfer of the caliphal capital to Damascus by the Umayyads, under the caliph ʿAbd al-Malik, the quest began for a definitive Islamic coinage. In gold, the Byzantine "three emperors" type of Heraclius was progressively modified by elimination of the crosses: the "cross on steps" and those on the crowns. Finally, the Arabic declaration of faith appears in the reverse margin. A similar type in silver with the central figure in an attitude of prayer was issued for Bishr ibn Marwan at al-Kufah (Aramaic ʿAqula) and Basra, respectively in 73/692–93 and 75/694–95. Next, the "standing caliph" type appears on the obverse of gold issues for 76/695–96 and on silver from Damascus dated 75/694–95 (cf. Walker, 1956). A remarkable type of 72/691–92 from Sistan has the Muslim Declaration of Faith in Middle Persian written in the Pahlavi script.

The definitive Islamic typology (the "reformed coinage") appears in 77/696–97 for gold and in 79/698–99 for silver. Figural representations are now banned. The types are exclusively inscriptional, obverses bearing simply the Declaration of Faith (*shahādah*) in the central area and the "Prophetic Mission" (Qur'an 9:33) in the margin. The reverse has the Surat al-Ikhlaṣ (Qur'an 112:1–3) in the central area. These words—"Allah is one, Allah is eternal, He did not beget, nor was He begotten"—were a formula said to have been inscribed on the banners of armies marching to fight the Byzantines. In the reverse margin is the date-legend with the numeral written in words. On gold, mint names are uncommon. It is assumed that the bulk of coinage was issued at Damascus, although the mint names *Ifriqiyah* (Africa), *al-Andalus* (Spain), and *Maʿdan Amir al-Muʾminin bi al-Ḥijaz* ("Mine of the Caliph in the Hijaz") are sometimes found. On silver, mint names appear for more than sixty-six provincial and district centers, constituting the main interest of the series. On the Umayyad gold and silver coinage, remarkably no name of any ruler is found. The extensive copper coinage, issued from innumerable local municipalities, at first has only religious formulae. Mint names, names of governors, and ultimately dates progressively make their appearance. Although of humdrum appearance, Islamic copper coinage, which every excavated site introduces in new varieties, has probably the greatest research potential in Near Eastern numismatics. Local knowledge is required to attribute the many "mintless" varieties.

The classically angular Arabic script on these early Islamic coins is designated "Kufic." The diacritical points distinguishing letters of similar form are sparingly found, but they do occur sporadically. Although evolving in detail, forms of the angular script continued until the later twelfth century CE when they were replaced by the joined and flowing "Naskhi" style. Coins of the ʿAbbasid dynasty, who ousted the Umayyads in 132/749–50, are distinguished from earlier issues chiefly by the replacement in the reverse legend of the Surat al-Ikhlaṣ by the words "Muhammad is the Prophet of Allāh." In 146/763–64, the official name of the new ʿAbbasid capital—Baghdad—appeared as Madinat es-Salam ("the city of peace") in the margin. The second city of the ʿAbbasids was Rayy, the ancient predecessor of Tehran, under the designation al-Muhammadiyah. Although the ʿAbbasid gold dinars continued the Umayyad form largely unchanged, the dirhams evolved a slender and elongated Kufic script, which persisted until after the death of Harun al-Rashid in 170–193/786–809. Gradually the brief names of officials begin to appear on the coinage: mint supervisors, princes, ministers, governors, and eventually, the caliph himself with full titles. It was only in the tenth century CE with the increasing fragmentation of caliphal power that local princes bearing the title *amir* became effectively sovereign. They issued coinage, often even gold, in their own names, but still always acknowledging in the legends the ʿAbbasid caliph as overlord. Such rulers were the Ṣaffarids and Ghaznavids in Afghanistan; the Samanids and Qarakhanids in Central Asia; the Buyids, Zaydids, and Musafirids in Iran; and the Hamdanids and Marwanids in Syria and Mesopotamia. Finally, the Turkish dynasty of the Great Seljuqs overshadowed all lesser rivals, and from their capital at Isfahan established perhaps the most stable dispensation, dominating Asian Islam from 429/1038 until 590/1194. During this last phase a "silver famine," variously explained, overtook the treasuries of Islam, coinage seemingly being confined to gold and some copper. This interlude as a whole provides material of striking variety, issued by a galaxy of local mints, and documenting every stage of the complex history. After the brief interlude of the Khwarazmshahs, ʿAla ad-Din Tekish (567–596/1172–1200), and his son ʿAla al-Din Muhammad b. Tekish (596/617–1200–1220), the Mongol avalanche swept away the ʿAbbasid caliphate and its satellites. Their onslaught utterly destroyed the old world of Islam and introduced in due course the late medieval coinage of the Near East with its Naskhi script and innovative designs.

[*See also* Weights and Measures. *In addition many of the ruling dynasties and individual sites mentioned are the subject of independent entries.*]

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A. D. H. BIVAR

COLONIZATION. The term *colonization* has strong semantic associations with imperialism, especially that of nineteenth-century Europe where colonies were the political, military, and economic possessions of metropolitan powers, held by force and controlled by a bureaucratic machinery. Typical colonial situations involved dominant foreign minority populations that enjoyed juridically privileged access to land, labor, and raw materials, and that retained adherence to metropolitan imperial powers. Ancient empires differed from modern empires in their political structure and in their general emphasis on war loot and tribute payments. Even so, ancient systems minimally involved garrisons and bureaucratic outposts; the Akkadian "palace" at Tell Brak and the Gasur (Nuzi) archive reflect this military and administrative presence in northern Mesopotamia during the twenty-third century BCE. Imperialism could also involve direct control of land, whether by settling soldiers in the margins of empire (e.g., the Ur III state in the twenty-first century BCE and also the Athenian and Roman empires of later times), or by creating *latifundia,* large plantations worked by bound or slave labor (e.g., Achaemenid Persians in Babylonia). The Assyrian and Babylonian policy of deporting conquered peoples to create pacified labor pools in the first millennium counts as another form of imperial colonization.

New Foundations. Although these imperial situations contain aspects of colonialism, several other kinds of situations in the ancient world created nonimperial colonies. The new Phoenician and Greek foundations around the Mediterranean basin during the Iron Age (eighth–sixth century) exemplifies one of these situations. Here, a population emigrated from an existing city-state to establish another. Unlike imperial colonies, these new communities were politically and economically independent from the founding city-state and displaced the indigenous population. The motives for the colonizing movement were variable, including competition for land and for the wealth that land represents, creation of trading stations with access to new markets, relief from overpopulation and food shortage in the mother city-state, and exile of disaffected political factions.

Trade Colonies. Commercial communities that formed foreign quarters in cities were another, common "colonial" situation in the ancient Near East. In such cases, the foreigners were temporary residents who invested in financial instruments, not land or labor. The activities of these communities were commonly based on agreements between the local ruler and the trading association or foreign state in order to make more predictable (reduce risks) the commercial colony's legal standing, the conditions of trade, and protection costs. These agreements also acted to limit the political, and even economic, power of trading communities. Designated ports-of-trade established analogous legal conduits of trade in which trading privileges and restrictions were established by the local authority. Commercial colonies should be distinguished from trade diasporas in which dispersed members of an ethnic group (e.g., Jews, Greeks, Armenians, and Indians in more recent Asian history) possessed special status as traders across vast regions, but did not enjoy connections to a metropolitan government.

The Akkadian word *karum* refers to the port or commercial quarter of Mesopotamian cities in general where explicit rules of conduct enforced peaceful and profitable trade with neighboring city-states and with more distant regions. The *karum* institution could operate in both nonimperial and imperial settings. For example, the *karum* at Sippar in northern Babylonia provided the institutional setting for traders from other Babylonian kingdoms and from Aššur, early in the second millennium; Sippar also hosted permanent communities from Eshnunna, Isin, and other Mesopotamian cities. Similarly, the Assyrian empire maintained *karums* for trade with Egypt and with Arwad (and from there with the Mediterranean), in order to regulate and supervise trade with places still outside direct imperial control. Other ex-

amples of a similar system, though less well known, include the community of Old Babylonian traders in the Persian Gulf (the *alik Dilmun*), and the Greek emporia (trade centers) at al-Mina (Syria) and Naukratis (Egypt).

The Old Assyrian Cappadocian *karum* system provides the best-known example of ancient commercial colonization. In operation during the early centuries of the second millennium, the *karum* system involved the presence in autonomous (and previously existing) cities of Central Anatolia of Assyrian traders and their families (which often included local wives). The traders represented private family firms or joint investment ventures based in Aššur, under the provisions of treaties between the local Anatolian king and the Assyrian authorities. The traders formed their own institutional structure and offices, to regulate the activities of, and to adjudicate disagreements between, members of the *karum* community, and to represent the *karum* in the local royal court. The best-known Assyrian *karum* in Anatolia is Kaneš (Kültepe) in Cappadocia; the textual evidence indicates that Assyrian trading colonies also existed at Alişar, Boğazköy (the later Hittite capital), and other places. The Kaneš archives record the transactions of Assyrian traders bringing woolen textiles and tin to Kaneš and beyond, where these commodities were exchanged for silver and other commodities to be trafficked in Aššur.

Archaeological Cases. As the review of colonies in the ancient Near East suggests, many of the clearest examples date to the second and first millennia BCE, when the textual sources provide most of the evidence. In earlier periods or in less habitually literate areas of western Asia at any time, archaeological evidence suggests colonialism in certain cases.

The Uruk expansion. The Late Uruk period of southern Mesopotamia presents very strong evidence for a colonial expansion into the surrounding regions. The archaeological evidence falls into several distinct patterns. In the Susiana plain of western Iran, an essentially Uruk assemblage replaced the indigenous culture. The transformation was virtually complete; the previous tradition of painted pottery and stamp seals disappeared, replaced by Uruk pottery and the Uruk administrative technology (cylinder seals, jar sealings, *bullae* [impressed tags of metal or clay that in Uruk times formed hollow balls] and tokens, and eventually numerical notation tablets). This cultural replacement strongly suggests colonization and cultural absorption of the Susiana plain into southern Mesopotamia.

New foundations outside southern Mesopotamia represent a second pattern, best seen at Habuba Kabira, Tell Qannas, and Jebel ʿAruda on the middle Euphrates in Syria. Habuba Kabira South, the town, and Tell Qannas, the acropolis, formed a walled settlement at least 20 hectares (50 acres) in size. The settlement possessed regularly laid-out streets, and gives every indication of being a planned foundation. Just to the north Jebel ʿAruda contained monumental buildings surrounded by residential structures, and may have been the administrative center for the Uruk communities in the area. The material culture in these sites was almost entirely Uruk in nature, including a wide variety of southern Mesopotamian pottery, administrative devices, and styles of public and private architecture. Habuba Kabira and its sister sites seem to have been occupied 150 years or fewer, toward the end of the Late Uruk period.

Godin, in the Zagros mountains of southwest Iran, presents another distinctive pattern; Uruk materials are associated with a walled compound that contains small rooms arranged around a courtyard (Godin V) within an otherwise local settlement (Godin VI). Inside the Uruk compound, roughly one-third of the pottery is local and the rest Uruk related; in addition to the pottery, Uruk materials include seals and sealings, and numerical notation tablets. Like Habuba Kabira, the Uruk presence at Godin V appears to have been relatively short-lived and dates toward the end of the Late Uruk period. Some scholars have attributed Godin V to the slightly later Proto-Elamite phenomenon.

Other sites combine Uruk and local traits. For example, at Hassek Höyük in southeastern Turkey the architecture is strongly Uruk in character, but the local Late Chalcolithic pottery outnumbers the Uruk-related assemblage and both local and Uruk seals occur. Elsewhere, southern Mesopotamian materials, often only beveled-rim bowls and a few other pottery types, appear as minor elements in otherwise local Late Chalcolithic sites in western Iran, Syro-Mesopotamia, and eastern Anatolia. Southern Mesopotamian materials even appear in the eastern Nile Delta, at Tell Fara'in (Buto).

The Uruk expansion has received several different interpretations. Some have considered it to represent flight from the growing power of state government in southern Mesopotamia. Others have appealed to a Greek analogy, thinking of colonization as relief from overpopulation as well as a search for trading opportunities. The most common explanation is commercial, in which the Uruk settlements and enclaves were optimally situated to direct both riverine and overland traffic into southern Mesopotamia. In its strongest form, this argument considers the Uruk expansion to have been a conscious, state-directed policy of empire, probably the consequence of competition among the emerging city-states. Although sites like Habuba Kabira and Godin V date to the late Late Uruk period, the Uruk expansion actually began in Middle Uruk times. The expansion therefore was not simply a sudden explosive state-administered enterprise, and took several distinct forms (e.g., new foundations, commercial colonies) through time, for which no single explanation can adequately account.

Egypt in Early Bronze Age Palestine. A similar situation appears in southern Palestine and northern Sinai during Early Bronze (EB) Age I times (c. 3400–3000). Surveys and excavations in northern Sinai and southern Palestine have

revealed a complex picture of intensifying Egyptian involvement with the southern Levant. Early Gerzean (Naqada II) pottery, both imported and locally made, appeared in sites like Tel 'Erani, Fara H, and Taur Ikhbeineh during the early EBA I period, and the evidence hints that some Egyptians lived in southern Palestine (e.g., the concentration of Egyptian artifacts in a single building at Fara H). In the reciprocal direction, notable amounts of early EB I pottery and some cast copper objects in Palestinian forms appeared at Maadi and Minshat Abu Omar in Lower Egypt. These early EB I manifestations of an Egyptian involvement with southern Palestine culminated during the late EB I, when evidence for colonies becomes widespread.

The two best-known sites are Tel 'Erani and 'Ein-Besor. Egyptian pottery appears virtually throughout the Tel 'Erani sequence, and accounts for nearly half the pottery in stratum V, to which is also assigned a *serekh* (palace-facade design pattern) of dynasty 0 (3200–3100 BCE). Petrographic analysis of the Egyptian pottery indicates that most of it was made in southern Palestine, and only a small proportion was imported from Egypt. The pottery locally made in Egyptian styles significantly has a diversity of functional forms, whereas the imported pottery is mostly containers. At 'Ein-Besor III, roughly 90 percent of the pottery is Egyptian in style, and most of it seems to have been imported; as at Tel 'Erani, the pottery assemblage covers a wide range of functional forms, and other Egyptian objects also occur. A small house built according to Egyptian standards contained a corpus of Egyptian-style clay *bullae* used to track grain and other goods collected as taxes, and their subsequent distribution. Petrographic analysis indicates that the *bullae* were locally made, and the seals impressed on the *bullae* differ in workmanship and sign combinations from those found in Egypt. The *bullae* seem to reflect the internal administrative regulation of an Egyptian community at the site.

Clusters of very small sites of this period are strung out along the northern Sinai coast. The heavy erosion or deflation of these sites may account for the lack of stratigraphy and the apparent absence of architecture. The sites contain cooking and baking installations, domestic pottery (including baking trays and bread molds), and stone tools. Roughly 80 percent of the pottery is Egyptian (dynasties 0–1, c. 3200–2900 BCE); petrographic analysis indicates that it was produced in Egypt. In contrast to the wide functional range of the Egyptian pottery, the local pottery consists mostly of storage jars.

The EB I episode of an Egyptian presence in southern Palestine has been variably interpreted. Most recent assessments of Egyptian colonization indicate that it endured some 150 to 200 years and involved at least several hundred people whose communities performed the full range of activities expected in both domestic and public administrative contexts. Some scholars see these communities as Egypt's first military foray into the area. In this scenario, the Egyptian settlements in northern Sinai and southern Palestine represent way-stations and forts in a crown-sponsored system of administered trade. Other interpretations strip away the aspect of military control, and describe the Egyptian communities as forming a purely peaceful commercial network. State sponsorship of the commercial network is unnecessary to this interpretation, and the local nature of the 'Ein-Besor sealings suggests minimal, direct crown involvement in this community. In both scenarios, the basic incentive for colonies was improved access to Asiatic commodities, which may have included various woods, resins, honey, turquoise, and copper.

Other early cases. The Proto-Elamite period (c. 3100–2900) of southwestern Iran witnessed a phenomenon of expansion similar to that of Uruk Mesopotamia. During this period, an assemblage of beveled-rim bowls, painted pottery, Proto-Elamite seals and sealings, and Proto-Elamite tablets appeared at Susa (immediately after the Late Uruk period) and at Tal-i Malyan in Fars (the Banesh phase). This same complex of items also appeared in local contexts at places like Tepe Sialk on the Kashan plain and Tepe Yahya in Kirman, and elements of the complex have been found as far east as Shahr-i Sokhta in Seistan and Hissar on the Damghan plain. The Proto-Elamite expansion is often seen as an effort to control trade routes and to acquire foreign materials; less thoroughly documented than the Uruk case, however, its use of commercial colonies, new foundations, and/or imperial colonization remains uncertain.

The Indus (Harappan) civilization provides a final example of early colonization, revealed by an enclave of small Harappan settlement in eastern Bactria, and strongly Harappan settlements around the Gulf of Oman. Shortugai in Bactria and approximately 700 km (435 mi.) from the Indus Valley contains a completely Indus assemblage, including painted pottery, inscribed sherds, stamp seals, and construction along Indian standards. On the southeastern Arabian coast, the buildings at Ras al-Junayz belong neither to local nor to Harappan architectural traditions; but the artifacts from these buildings include numerous Indus-style objects (painted pottery, inscribed sherds, seals, beads, and ivory objects) alongside pottery painted in local Arabian styles and locally made stone bowls. The location of Shortugai and Ras al-Junayz at strategic points on trade routes or near raw materials (lapis lazuli, copper, possibly tin) have lead many scholars to interpret them as trading communities. But these settlements represent different situations—Shortugai appears to have been a thoroughly Harappan settlement inhabited by people from the Indus valley, whereas Ras al-Junayz expresses a strong Indian presence in a local context.

Conclusions. In the above examples, a basic distinction is made between nonimperial and imperial varieties of colonization. The clearest examples of nonimperial colonization were commonly associated with trade. In many cases, commercial colonies were permanent communities that op-

erated under formal agreements between local authorities and the metropolitan government or trade association. Greek colonization of the Mediterranean basin aside, these commercial colonies typically were uninterested in agricultural land or labor. Ancient empires focused on extracting tribute payments, rather than direct control over land and labor. This kind of imperialism required that military garrisons and bureaucratic officials be stationed in subject areas, but often did not encourage the presence of wider segments of the dominant society. Accordingly, colonization was a secondary aspect of ancient empires before the Achaemenids. Moreover, empire and trading colony were alternative ways of acquiring foreign goods, and trade often led to empire. An early (literary) example is Sargon's excuse for campaigning in eastern Anatolia to protect Mesopotamian traders there, and the Akkadian habit of referring to places by their desirable products (e.g., the Silver Mountain). The Late Uruk expansion may present an older example, in which new foundations at places like Habuba Kabira may have attempted direct control over trade that previously had been less formally conducted.

[*Most of the sites and civilizations mentioned are the subject of independent entries.*]

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CHRISTOPHER EDENS

COLOR. *See* Munsell Chart.

COMPUTER MAPPING. Geographic information systems (GIS), also known as computer mapping technologies, are digital databases that store, manipulate, capture, analyze, create, and display spatially referenced data. The spatial component of these systems make them readily applicable to archaeological research, where archaeologists record location information for everything from individual artifacts to sites in a regional survey. Many projects also record environmental data and such modern features as roads and villages. All of these data are spatially referenced and often best understood when stored as maps, an easy and relatively inexpensive task for a GIS.

Data for building a GIS can come from a number of sources. Remotely sensed data, such as satellite images, aerial photography, and geographic positioning systems, along with more traditional sources, such as paper maps and archaeological databases, can be used to construct a GIS. Unlike paper maps, which store multiple data themes on a single sheet, GIS store data themes in individual layers: a layer

for roads, a layer for elevation, a layer for Iron Age sites. Because these map layers are referenced to a common coordinate system, they can be electronically overlaid to create any combination of data themes. The advantage of this type of system is obvious: maps can be quickly and easily revised as new data become available without the expense of traditional cartography.

GIS come in two basic types, vector and raster. Because of the differences in how they manage spatial data, each has its own particular strengths and weaknesses. Vector-based GIS are easily understood because, like paper maps, they store their data as points, lines, and polygons. These entities form the basic data units of a vector GIS, for which spatial information must be explicitly encoded. For example, if a road network is put into a vector GIS as a series of lines, specific X and Y coordinate data must be encoded for each line before the spatial relationships between the various road segments have meaning.

The strengths of vector-based systems lie principally in their familiar format, accuracy, high-quality cartographic output, connectivity to powerful databases, and the relatively small amounts of computer space they require. These strengths make vector-based systems ideal for managing data across large regions and producing detailed and accurate maps. For example, archaeological resource management on a state or national level would be an ideal application for a vector-based system, especially if publication-quality maps are needed. The weaknesses of a vector GIS stem primarily from the necessity to encode spatial data explicitly. This means that continuously changing surfaces, such as elevation and slope, must be generalized as elevation contours or polygons representing slope categories. These are ultimately unsatisfactory for many types of archaeological modeling.

In a raster-based GIS, data are stored in a grid of columns and rows, much like a spreadsheet, that represent X and Y coordinates in the real world. The intersection of each row and column is known as a cell. Each cell represents a specific area in the real world and contains a Z value, or number that can represent anything from elevation values, to sites, to soil types. Unlike vector systems, the basic data unit in a raster GIS is a spatial unit (the cell) for which entity information must be explicitly encoded. For example, if a road network is put into a raster GIS, the X and Y coordinates are implicit because they are determined by their position in the grid; however, Z values corresponding to the various components of the network must be explicitly encoded in each cell for them to have meaning as roads.

The strengths of raster systems are found principally in their ability to manage data that are continuous across a surface, in their simple data structure, and in their ability to use remotely sensed data, such as satellite images, which are stored in a raster format. These strengths make the creation of complex mathematical models possible. For instance, with a raster GIS, it is possible to reconstruct large portions of the paleoenvironment, especially terrain-related data, as continuous surfaces. Rather than representing elevation as a series of contours, each cell in a raster GIS contains a Z value corresponding to the elevation at that location. Because these surfaces are constructed of numbers in cells, they can be subjected to sophisticated mathematical manipulation to create new surfaces. Any equation that can be devised, such as surface 1 + surface 2 = surface 3, can be carried out in a raster GIS. The disadvantages of a raster GIS lie principally in file size and cartographic output. Raster files use large amounts of computer disk space. Even grids representing relatively small areas will contain tens of thousands of cells, and grids with hundreds of thousands of cells are common. Also, because of the raster structure, the traditional cartographic output of points, lines, and polygons is less accurate and of generally poorer quality.

An example of the types of analysis possible with a GIS can be drawn from the Tell el-ʿUmeiri regional survey in Jordan. The ceramic record from this region indicates a substantial increase in human activity with the change from Iron I to Iron II. To investigate how this increased activity may have modified subsistence strategies, a raster GIS containing several environmental variables was constructed. Eight of the variables were selected and probability models based on a logistic regression were created. This modeling process involved a comparison of the sites from each period with a random sample of 250 nonsite locations. The environmental variables were then weighted, according to their relative importance as revealed by the regression, and summed to create models of the environmental signature for sites from each period. The models illustrated that during the Iron I period the areas considered environmentally suitable for settlement were limited, but that the pressures of increased human activities forced a change in subsistence strategies during the Iron II period, leading to an expansion into areas previously considered unsuitable.

[*See also* Computer Recording, Analysis, and Interpretation.]

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GARY L. CHRISTOPHERSON

COMPUTER RECORDING, ANALYSIS, AND INTERPRETATION.

The introduction of microcomputers in 1976 began to change dramatically and substantively the way in which archaeologists record and analyze data. Suddenly, what had been a scarce resource was nearly universally available. As this technology evolves, researchers will be developing applications not yet envisioned.

Word Processing and Desktop Publishing. Using computer technology, archaeological reports can be prepared quickly and revised conveniently. Archaeologists can now take portable computers into the field to record information at the excavation site. With the advanced capability of software for text manipulation and word-processing software becoming more like desktop publishing software, archaeologists can create reports that include photographs, charts, graphs, diagrams, and drawings in a format ready for publication, substantially decreasing the time between excavation and publication. Powerful new technologies for the dissemination of archaeological information in hypertext format, both on compact disk and on the World Wide Web, are transforming the nature of archaeological publication.

Database Management. Most archaeological projects deal with vast numbers of artifacts. The use of an electronic database to catalog artifacts improves the efficiency of this essential recordkeeping. It is possible to obtain information about excavated material that was once time-consuming or labor intensive: database management programs can quickly sort and reorganize data, making it possible to query, for example, all objects of a particular material or type, from a particular period, and associated with a particular context. Such processes allow a researcher to detect patterns and relationships and to form hypotheses for further investigation that might not have emerged from a simple handwritten or printed catalog. Optimal results are obtained when the software chosen is a fully relational database system, which allows the user to combine information drawn from several different files or catalogs (e.g., an artifact registry, a pottery registry, a file of information about individual loci). The software should allow the inclusion of graphical information (photographs or drawings) and extensive notation. The ability to export data for use in other computer programs (e.g., for inclusion in reports prepared using a word processor or desktop publishing program or in a spreadsheet or other program for statistical analyses) is very important. Similarly, interactive connections to other computer programs, particularly computer-aided design (CAD) software, are very useful. The context of a particular item recorded in a database can be displayed by a symbol inserted into a drawing to show precisely where the artifact was unearthed. Selecting a particular symbol in a drawing will retrieve the associated information from the database file and display the complete (or selected) material from the catalog. Database management programs easily produce reports that can guide excavation and enhance publication.

Quantitative Analysis and Statistics. Recording and reporting the presence of materials of a particular type (i.e., cooking pots, lamps, nails) or from a particular period (i.e., Early Bronze II, Iron I, Early Roman), is quantitative information that can be very useful in the interpretive process. If the pottery from a particular locus, to take one example, includes a high percentage of vessels used to prepare and consume food, it could support the conclusion that the area in which it was excavated was a kitchen or dining facility; the presence of a very small quantity of such wares, as a percentage of the whole, would weigh against such a conclusion. Similarly, quantitative information about the ceramics from a particular historical/cultural period can be very revealing. When one period is compared with another, relative quantities of material can indicate an increasing or decreasing population, the extent to which an area was used in a given period, or other changes in the demographics or economy that might have occurred over time. The recording, manipulation, and reporting of such numerical information about artifacts constitutes descriptive statistics, which are extremely important for the careful reporting of archaeological excavation and the effective presentation of conclusions drawn by the investigators.

More important, however, are analytical statistics, also referred to as inferential statistics. Archaeology involves the reconstruction of the human past on the basis of the material evidence, and archaeologists' hypotheses about human activity are based on a very small sample of the surviving material. This may be envisioned as follows:

1. *Life assemblage.* In the past there was a complete material culture, including numerous structures and artifacts that were part of a society of living, active human beings.
2. *Deposited assemblage.* When one cultural environment is replaced by another (whether by abandonment, destruction, or natural evolution), there is a residue from the earlier period of those artifacts that come to rest or remain at the site.
3. *Preserved assemblage.* Only a portion of the deposited

assemblage will survive the ravages of time and subsequent activity and be available for excavation and collection.

4. *Sample assemblage.* Only a small portion of the preserved assemblage will actually be recovered and studied by archaeologists.

It is important to note that the several assemblages referred to above become increasingly smaller as the list moves from 1 to 4. This is why analytic, or inferential, statistics are crucial. As the archaeologist theoretically moves from sample data to conclusions about larger populations, there are many computer programs available that will enhance the sophistication and efficiency of statistical analyses.

Computer-Aided Design and Drafting. CAD (or CADD) software offers great potential for recording and interpretating archaeological data. Related tasks, not treated here, are mapping and surface modeling. Drawings are a staple in archaeological recordkeeping, ranging from simple schematic diagrams, to accurate "stone for stone" drawings of individual areas of excavation, to composite drawings of larger fields or sites. They include drawings of individual artifacts (such as the technical rendering of individual potsherds) and projections of buildings and other structures that illustrate their complete form and function. Electronic ("digitized") drawings have many advantages over their paper counterparts: they can be more easily edited, more easily combined into larger wholes, and more easily and precisely compared. If drawing to a different scale or combining elements from several drawings into a new, composite whole is needed, it can be accomplished quickly and easily. Furthermore, with drawings produced accurately to scale, measurements of size or distance and calculations of area become trivial tasks, as "overlays" can be easily and dynamically manipulated. As with numerical data, CAD drawings allow archaeologists to engage in "what if" explorations of hypotheses. That can both guide excavation and assist interpretation.

Archaeologists employ several methods to produce CAD drawings. The following are among the procedures in use:

1. *Tracing.* Conventionally produced drawings can be traced, using a digitizing tablet, to produce an electronic copy of the original.

2. *Scanning.* Conventional drawings, photographs, or slides can be scanned to create copies that can be imported into CAD software. Scanning, however, produces rasterized (bit mapped) images that require raster-to-vector conversion in order to obtain drawings that exploit the full potential of CAD technology. Even with the use of autotrace utilities conversion can be very labor intensive and slow.

3. *Direct entry.* A drawing can be generated electronically from directly entered x–y (or x–y–z) coordinates. These coordinates can be obtained and entered manually or directly through linked electronic surveying equipment.

4. *Photogrammetry.* A number of techniques exist for obtaining digital images from conventional film or digital photography. Photogrammetry can produce highly precise graphic images in either two or three dimensions.

Digital Photography and Scanning. Digital images have become increasingly important for archaeological recording. Whether they are obtained indirectly (e.g. by scanning slides or photographs produced using conventional photography) or directly (i.e, using a digital camera or "frame grabber" and video camera), they offer many advantages over conventional photography. Photographs taken with a digital camera are almost instantly available because they do not require the processing associated with photographic film. Furthermore, digital images, especially those stored on optical disks, are much more stable than images on photographic film. If the electronic data remain intact (multiple backup copies can be maintained to ensure this) the quality of the image will not deteriorate over time. Digital images are also more efficiently kept in archives, where they require far less space and are more easily cataloged and accessed. They can be easily edited (cut, cropped, and enhanced) and quickly imported into documents (from field notes to final publications) or database records. It is quite feasible for a catalog of artifacts, maintained as an electronic database, to include pictures of each object along with text information. Furthermore, digital images can be sent, almost instantly, over computer networks to others throughout the world. Finally, Quick Time™ images, (essentially digital motion pictures) allow an object to be displayed dynamically and seen from all sides and with changing light and shadow, to reveal important detail. Such images can be included with other information as a part of a permanent archeological record or report.

Geographic Information Systems (GIS) and Remote-Sensing and Global-Positioning Systems. Several computer technologies have had an impact on archaeological data collection and interpretation. Geographic information systems (GIS) provide a dynamic link between computer-generated maps or CAD drawings and database files. Thus, the location of any item in a database file can be shown on a map or drawing. Similarly, objects on a map or in a drawing can be linked to related information in a database file. Furthermore, GIS software allows the researcher to explore the spatial relationship of objects to each other as well as to other spatial relationships. Using a survey map and its associated data, relationships can be explored among occupied sites along with their relationship to such ecological and topological features as the availability of water, the proximity of roads, and the nature of the terrain. Similarly, the plan of a building can be used to show the relationship of the artifacts found in it, providing the archaeologist with data to determine the kinds of human activity that took place in it and in its vicinity after it was destroyed or abandoned.

Remote-sensing and global-positioning systems offer the archaeologist means for more rapid and accurate data collection and recording, particularly during surveys, than manual techniques allow.

Advances in computer technology are encouraging archaeologists to adopt standards for data collection and recording and to share information more easily. Computer software programs are facilitating the collection and storage of data and enabling the results from many excavation projects to be drawn together to enhance the understanding of increasingly wider geographic regions and more extended periods of human history.

[*See also* Computer Mapping; Recording Techniques; *and* Statistical Applications.]

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THOMAS R. W. LONGSTAFF

CONDER, CLAUDE REIGNIER (1848–1910), principal surveyor for the Survey of Western Palestine (1871–1877). Conder, who as a colonel was to spend much of his career attached to the Ordnance Survey of Great Britain, was commissioned into the Royal Engineers in 1870, having distinguished himself in surveying and drawing. After a two-year professional course at the School of Military Engineering at Chatham, his services were requested by the Palestine Exploration Fund (PEF) for the Survey of Western Palestine, which he joined, as officer in charge, in 1872. Conder also earned honorary Doctor of Civil Law and Doctor of Laws degrees (the latter from Edinburgh, 1891).

The survey's ambitiously wide-ranging undertaking embraced not only the topographical survey itself, but also the recording and investigation of all potential biblical sites, geology, and natural history. To all this, Conder brought his graphical skills and undoubted learning, but these were not matched by his ability to interpret the evidence correctly and many of his identifications were subsequently disproven. Like Charles Warren before him, Conder lacked the technical skills which characterized excavations of the last decade of the nineteenth century and beyond. His outstanding contribution to the archaeology of Palestine lay in his major share of the production of the twenty-six-sheet map of western Palestine which the PEF published at a scale of 1:63,360 in 1880. This project is acknowledged to have contributed more to the understanding of the archaeology and ancient history of Palestine than any other undertaking in the nineteenth century. Conder's popular account of the survey, *Tent Work in Palestine*, first published in London in 1878, had achieved six editions by 1895.

Apart from the maps, the most important publication to result from the survey was The eight-volume *Survey of Western Palestine: Memoirs of the Topography, Orography, Hydrography, and Archaeology* (1881–1885), of which Conder was a principal author and which includes the earliest site-by-site reconnaissance of Palestine. Misinterpretations are substantially compensated for by the richness of meticulous detail Conder recorded. Similarly, his unfinished Survey of Eastern Palestine (1881) is notable for the recording and drawing, in the published maps and *Memoirs*, (London, 1889), of the unusually large number of dolmens in that region. In addition to his prolific contributions over thirty-five years to the PEF *Quarterly Statement*, Conder was the author of fifteen major books on subjects related to the ancient Near East.

[*See also* Palestine Exploration Fund; *and the biography of Warren.*]

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YOLANDE HODSON

CONSERVATION ARCHAEOLOGY. In the past, archaeologists treated most sites as mere sources of objects and information, eventually abandoning them to erosion and neglect. Only unusual sites like Jerash (Jordan), Babylon (Iraq), and Qumran (Israel) were treated with conservational care similar to that devoted to the objects taken from them. Today, both regional authorities and archaeologists are becoming more conscious of the archaeological site itself as an object subject to policies and theories of conservation, and rules and strategies for site conservation are being installed everywhere in the Near East. In Jordan, for example, implementation of such strategies has become a cooperative venture involving the local Department of Antiquities, local universities, foreign research institutes and their archaeologists, and cultural and development agencies of foreign governments. International standards for site conservation are overseen by UNESCO and other agencies.

Regional strategies for conservation include setting priorities for exercising damage control on a vast number of known sites, rescuing new sites accidentally exposed, caring for new sites exposed by archaeologists, and developing sites with spectacular cultural remains for touristic and scholarly use. To develop such priorities, ongoing cultural resource management (CRM) programs are essential. CRM involves advance planning, including systematic regional surveys to locate and identify all knowable sites, computer catalogs of those sites with basic archaeological information and significance-priority ranking, archaeological site assessment in advance of commercial site development, rescue archaeology, regulating touristic use of antiquities, setting priorities for sites and site elements for conservation, selecting sites and site features for restoration and antiquities park development, and, tragically, setting criteria under which a site's destruction is to be permitted.

Rescue and maintenance conservation can overwhelm local agency resources. Rescue is frequently built into the planning of major development projects, but a CRM program also must be able to deal with the unexpected, such as the 1993 discovery of a Late Antique mosaic under a modern street in Jerash. The rapid rate of modern development is presently exposing ancient stone surfaces to damage ranging from the tourist's touch to automobile-generated pollution.

New-site conservation follows rescue and maintenance. Primary selection principles are monumentality and extent of preservation. Jerash, for example, has been the focus of numerous Jordanian and international efforts since the 1930s, including the restoration by a French team of the Temple of Zeus and the South Gate, and the restoration by a Polish team of the Hippodrome. Such a site deserves attention not only because its remains are spectacular, but also because it is perceived as an essential component in a widely appreciated human cultural heritage. Other sites may be selected because of specifically focused interests: the mundane architecture at Qumran might not have received such careful attention had it not been associated with the Dead Sea Scrolls. The difficult conservation of the friable granite and sandstone masonry of Islamic Ayla (Aila/Eilat) in ʿAqaba received international funding and local support because of its importance to Jordan's Islamic heritage. Similarly, the extensive reconstruction and development of the antiquities at Sepphoris, in Israel, have received government and private support because of that site's importance for early Judaism and Christianity. Places like Jerusalem, Petra, Giza, Palmyra, and Ur receive conservation attention because of their universal appeal and touristic value. National conservation strategies will tend to count tourism potential in setting priorities.

On-site conservation strategies may range from the complete rebuilding of structures based on archaeologists' theoretical reconstructions, to limited restoration based on components available from collapse debris and to consolidation to prevent still-standing masonry from further collapse and erosion. A classic example of the first is Arthur Evans's restoration of Knossos, Crete, in which the palace superstructure was reconstructed without sufficient archaeological evidence. Although still practiced on occasion, such a procedure is no longer acceptable. Its obvious disadvantages are that the result is more the product of the historical architect's design than a restoration of the ancient structure; the high percentage of new masonry causes the building to lose its aura of antiquity, even if the architectural shape is a faithful reproduction; and such massive reconstruction cannot be reversed to incorporate revisions based on subsequent studies.

In limited restoration, missing fragments may be replaced with newly dressed stones in order to maximize the reuse of existing pieces. A precedent-setting example is the Erechtheion restoration on the Athenian acropolis, which provided the methodological inspiration for the limited restoration of the Temple of Hercules in Amman. Another is the French restoration of the Temple of Zeus temenos wall at Jerash. The most conservative and usually preferable approach is the consolidation only of surviving in situ masonry. This may involve the resetting of dry-laid masonry or the injection of compatible materials into mortar-laid walls.

In all these cases the obvious prerequisite is the careful

study remains by historical architects, including the preparation of preconservation drawings of remains, historical reconstruction drawings of structures, and a detailed method for implementing conservation procedure. Such drawings can be used both for scholarly publications and for site displays to supplement the conserved remains.

Whatever degree of consolidation, conservation, or restoration is adapted, specific technical/structural principles must be followed. The primary one is reversibility, which means that it must be possible to undo all consolidation procedures in case subsequent research indicates contrary procedures. Another is compatibility, which means that new materials introduced into the ancient architectural environment must be in structural balance with it. For example, the structural density of patching mortar has to match that of the masonry being patched, in order to prevent the introduction of stresses destructive to the ancient masonry. For professional results, it may be necessary to engage trained conservation architects and structural engineers to plan and oversee the work.

[*See also* Artifact Conservation; Field Conservation; Tourism and Archaeology. *In addition, many of the sites mentioned are the subject of independent entries.*]

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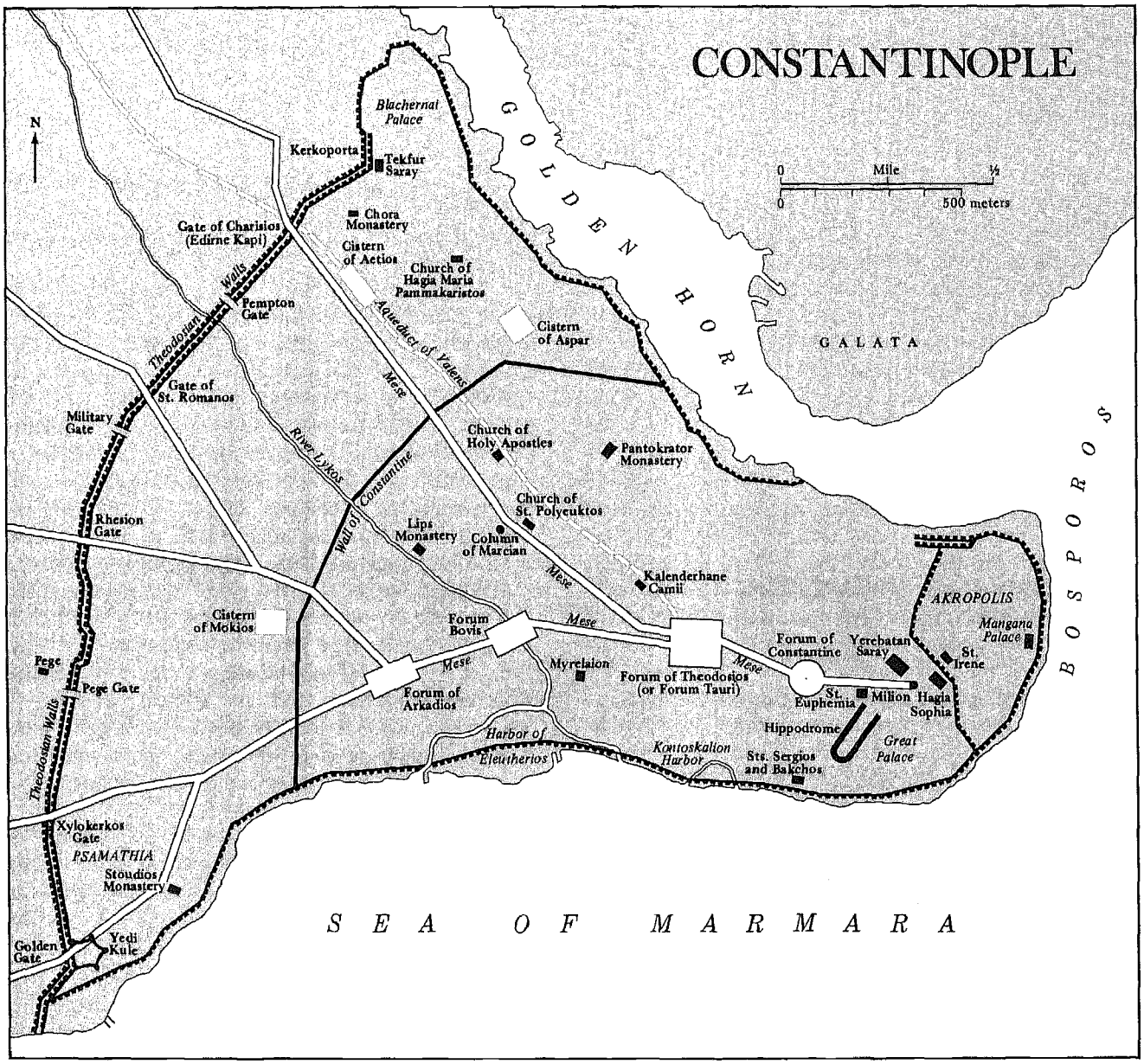
BERT DE VRIES

CONSTANTINOPLE, capital of the eastern Roman empire built by Constantine I in 324 CE on the site of the ancient Greek colony Byzantion (41°02′ N, 28°57′ E) and inaugurated in 330. Situated on the Bosporus, Constantinople (modern Istanbul) controlled the entrance to the Black Sea and roads to the East and the West. The development of Constantinople in the early Byzantine centuries was rapid. It extended to the west without disrupting the layout of the ancient city (see figure 1). Constantine I built the Great Palace next to the Roman hippodrome and extended the central colonnaded avenue (known as *Mese*) to the west outside of the ancient walls. There was built the new circular forum of Constantine and the Capitolium at a distance of 1.2 km (.75 mi.). The first line of land fortifications was built by Constantine I and completed by Constantius II in 413. Theodosius II built the second line of walls 1.5 km (.9 mi.) to the west, 6 km (3.7 mi.) long with six gates. Parts of the latter survive. The sea walls along the Propontis and the Golden Horn were built in 439. A third line of fortifications 45 km (28 mi.) long was added by Anastasius at a distance of 65 km (40 mi.) from the city. It was abandoned in the seventh century. Constantine I built the churches of St. Irene (Peace) and the two *martyria* (shrines to martyrs) of St. Acacius and St. Mocius.

In the course of the fourth century, large-scale building construction secured provisions and water supply: to the two ancient harbors on the Golden Horn, the Julian harbor was added in 362 (later renamed Sophia), and the largest Theodosian harbor around 390 with a total length of 4.5 km (2.8 mi.). Several granaries were constructed near the harbors. The long aqueduct of Valens brought water from a distance of 100 km (62 mi.). In the area between the Constantinian and the Theodosian walls three huge open cisterns were built (of Aetius in 421, of Aspar in 459, and of St. Mocius by Anastasius) with a total capacity of 1,000,000 cu cm (59,319 cu. in.). Of the eighty covered cisterns the most impressive is the Basilike cistern (Yerebatan Sarayı) with 336 columns. The forum of Theodosius or Forum Tauri (c. 393) has a spiral-fluted column, two triumphal arches of which one survives, and a basilica copied from Trajan's forum in Rome. In the fifth century were built the forum of Arcadius (c. 403) with arches and a monumental column whose pedestal survives, and the Forum Bovis (after 425).

The next phase of Constantinople's development was marked by a great construction of churches. In the second half of the fifth century and in the early sixth century, large districts of the capital were destroyed by fires and civil riots, the most famous being the Nika revolt in 532. The great building activity of the emperor Justinian (527–565), expressing the spirit of the time focused on Christian structures, churches (thirty-three are mentioned), and philanthropic institutions (Procopius, *Buildings* 1). After the beginning of the seventh century construction in Constantinople ceased. The harbors were reduced to one quarter of their former size; of the five granaries only one survived. The system of water supply was neglected, and the fountains and public baths were closed. The size of the population declined dramatically. This development was a consequence of the unfortunate military circumstances and reduced economic conditions created by the loss of the eastern provinces and Egypt to the Arabs and by the invasion and permanent installation of the Slavs in most of the Balkan territories. In the ninth century Constantinople emerged as a clearly medieval city: there was no longer interest in public buildings other than palaces and churches.

Excavations at the Great Palace started after the fire of 1912–1913 burnt down the district southwest of St. Sophia



CONSTANTINOPLE. Figure 1. *Plan of the city.* (After A. Kazhdan, ed., *The Oxford Dictionary of Byzantium*, New York, 1991)

(1935–1938, 1952–1954). Most important are the remains of an apsed hall, in front of which a peristyle court (66 × 55 m [216.5 × 180 ft.]) is adorned with a magnificent, mosaic probably Justinianic. (Today, contrary to the government's restrictions, most of the area of the Great Palace is covered by new buildings.) The Roman hippodrome, to which Constantine I added an *exedra* (open recess frequently containing seats), was no longer used for athletic competitions but for imperial proclamations, triumphs, and other ceremonies. The *spina* (median) dividing the arena in two parts was adorned with obelisks, statues, and other ornaments. In 1203 the west wing burned down, and in 1204 the Crusaders, who occupied Constantinople, melted the bronze statues and removed the four gilded horses to decorate the facade of S. Marco in Venice. The east wing of the hippodrome is preserved, and part of the west wing was excavated in 1952. Three of the monuments of the spina survive: the Egyptian obelisk of Thutmosis III (c. 1479–1425 BCE) on a marble basis with reliefs depicting the emperor attending the games (obelisk of Theodosius from 390); the

serpent column, the central shaft of the Delphic tripod dedicated to Delphi after the battle of Plataea (479 BCE); the obelisk or colossus with an inscription of Constantine VII.

Two palaces of Byzantine magnates have been excavated. The palace of the *praepositus sacri cubiculi* (grand chamberlain) Antiochus was built around 410–420 CE and confiscated by the emperor about 420. Early in the sixth century its central hexagonal hall was transformed into the church of St. Euphemia. The palace of Lausus was built around 420–430; it included a famous collection of classical statues. After it burned in 476, a hospice was constructed on the same site.

The church of St. Sophia (Holy wisdom) was built near the Great Palace and the hippodrome by Constantius II, (which was inaugurated in 360). Burned by the supporters of the bishop of Constantinople, John Chrysostom, in 404, it was rebuilt by Theodosius II in 415. The colonnade of the facade of the atrium belongs to this period. Destroyed by fire during the Nika riot in 532, it was rebuilt by Justinian and dedicated 27 December 537. The technical problems that the architects Anthemius of Tralles and Isidorus of Miletus encountered in building this domed basilica and their solutions are described in Procopius's *Buildings* 1.1.21–78. The dome collapsed in 558, and it was rebuilt by Isidorus the Younger and rededicated on 24 December 562. The complexity of the architectural plan and the splendor of the mosaic and sculptural decoration are praised in the *ekphrasis* (rhetorical praise) by Paul Silentiarius (P. Friedländer, *Johannes von Gaza und Paulus Silentiarius: Kunstbschreibungen justinianischer Zeit,* Leipzig, 1912, pp. 227–265). The north baptistery survives. To the south was attached the patriarchal palace with offices for the ecclesiastical administration. To the southeast a passage led to the Great Palace.

The second largest church (domed basilica) that survives in Constantinople, the church of St. Irene, was perhaps built on the site of a pagan temple by Constantine I, and it was the cathedral until 360. Forming an architectural complex with St. Sophia, it shared a common administration. The lower part of the church belongs to the Justinianic restoration of 532. The basilica of the Holy Apostles built by Constantius II next to the mausoleum of Constantine I was rebuilt by Justinian in the shape of a cross imitating the plan of the church of St. John at Ephesus with a second mausoleum. The Byzantine emperors were buried there until 1028. The church was demolished and the mosque of Mehmed II Fatiḥ was built on the site. Several imperial sarcophagi are preserved. Of the monastic complex of Sts. Sergius and Bacchus only the church survives. It was built by Justinian and Theodora in the palace of Hormisdas, its octagonal nave inscribed in a rectangle with a dome. Founded before 454, the original three-aisled basilica of St. John Stoudios is partially preserved. The monastery with a renowned library and scriptorium became famous in the fight against the iconoclasts (end of the eight century). The church of St. Polyeuktos, which was built by Anicia Juliana between 524 and 527 on her estate (district of Constantianae, modern Saraçhane), was identified after blocks with the dedicatory epigram (known from the *Anthologia Graeca* 1.10) were discovered in 1960 (Cyril Mango and Ihor Ševčenko, "Remains of the Church of St. Polyeuktos at Constantinople, *Dumbarton Oaks Papers* 15 [1961]: 243–247). Part of the church and a baptistery are excavated. Their sculptural decoration is very elaborate. After it was abandoned in the twelfth century, the architectural ornaments were stolen (e.g., the Pilastri Acritani near the southwest corner of St. Mark's in Venice). Of the church of St. Mary of Chalkoprateia (the copper market), built by the empress Pulcheria or Verina, the apse and parts of the north and south walls survive.

[*See also* Byzantine Empire.]

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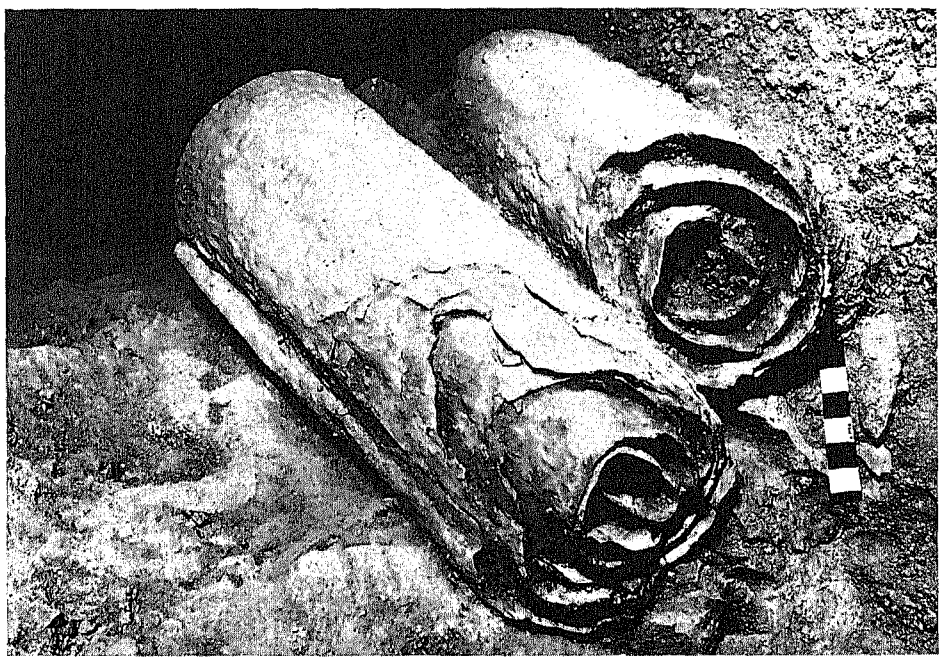
HELEN SARADI

COPPER SCROLL. The manuscript designated 3Q15, the *Copper Scroll*, was discovered in a cave near Qumran, on the shore of the Dead Sea, on 20 March 1952 by a joint expedition of the École Biblique, the American School of Oriental Research, and Jordan's Department of Antiquities. The scroll contains a list of buried treasure, engraved in Hebrew on thin copper sheets. The sheets were found rolled and so thoroughly oxidized they crumbled to the touch (see figure 1). In 1955–1956, the scroll was opened at the Manchester College of Technology by H. Wright Baker, professor of mechanical engineering, who sawed it into twenty-three segments using an electric circular slitting saw. The nature of the scroll's contents was made public in a press release on 1 June 1956, but the official edition of the Hebrew text, accompanied by a French translation and extensive commentary by J. T. Milik, a Polish member of the international team assembled to edit the Dead Sea Scrolls, was not published until 1962. In the interim, John M. Allegro, a British member of the team, who had supervised the cutting open of the scroll, had published an edition and an English translation of his own in 1960 and had organized unsuccessful attempts to find the buried treasure.

In many ways, the *Copper Scroll* is unique among the Dead Sea Scrolls. It is distinct not only in its subject matter and in the material on which it is written, but also in its script, orthography, language, and literary structure. Moreover, it is the only one of the documents found near Qumran that appears to be an autograph, an original manuscript, rather than a copy.

The text of the *Copper Scroll* breaks down into sixty-four short sections, each typically containing the description of a hiding place and the treasure hidden in it. Enigmatic greek letters appear at the end of sections 1, 4, 6, 7, and 10. The first section establishes the pattern for the text: "In the ruins which are in the Valley of Achor, under the steps which go eastward, forty rod-cubits: a strongbox of silver and its vessels—a weight of seventeen talents." Most of the identifiable hiding places are located in or near Jerusalem, and the treasures usually consist of a specified number of talents of silver and gold, and sometimes other valuable items such as scrolls and cultic vessels or vestments. Section 64 states that a duplicate of the *Copper Scroll*, "and its explanation" (*wprwšh*) is included in the last treasure. If the numbers in the treasure descriptions are to be taken at face value, the total weight of the buried treasure is in excess of 200 tons.

Scholarship on the *Copper Scroll* has been sharply divided on two pivotal issues of interpretation: its authenticity and its date. Allegro and others have argued that 3Q15 is an authentic record of buried treasure and is to be dated to around 68 CE, when it was hidden near Qumran together with the other scrolls. Milik and others have claimed that it is a fiction, that it is to be dated well after 68 CE, and that it



COPPER SCROLL. Figure 1. *The Copper Scroll, in situ.* (Courtesy ASOR Archives)

has nothing to do with the other scrolls. Still others, like Frank M. Cross, have followed the original press release of 1956 in suggesting that the Copper Scroll, while not describing real treasure, does belong in date with the other scrolls. Finally, we have those, like E. M. Laperrousaz and B. Z. Luria, who accept the authenticity of 3Q15 but date it to the time of the Second Jewish Revolt in 135 CE.

Although there are significant difficulties with each of these positions, it is likely that the majority of scholars are correct in accepting the authenticity of the *Copper Scroll.* (It is possible that the mysterious "explanation" mentioned in the last of the sixty-four sections might be the key to interpreting the improbably high numbers in the treasure descriptions, as well as the puzzling Greek letters.) Furthermore, the archaeological evidence reported by Bargil Pixner suggests that the *Copper Scroll* was hidden at the same time as the manuscript fragments found in the same archaeological context.

If the treasure was real, it almost certainly belonged to the fabled wealth of the Jerusalem Temple and was hidden shortly before the destruction of Jerusalem by the Romans in 70 CE. A connection with the Temple may also be indicated by the high incidence of cultic terms used in the scroll. It is even possible, as Norman Golb has suggested, that 3Q15 had nothing to do with sectarians at Qumran but should be explained simply as a Temple document.

Apart from its possible historical value, the *Copper Scroll* is also significant for the history of the Hebrew language. In morphology, syntax, and vocabulary, the language of the *Copper Scroll* shares with Mishnaic Hebrew linguistic features that distinguish the latter from the Hebrew of the Bible and the other Dead Sea Scrolls. This suggests that a Hebrew dialect similar to Mishnaic Hebrew was spoken in Palestine in the first century CE.

[*See also* Dead Sea Scrolls; Qumran.]

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AL WOLTERS

COPTIC. The latest form of the Egyptian language, Coptic was used from the third century CE onward. The origin of Coptic was concurrent with the rise of Christianity in Egypt and the term *Coptic* is often also applied to the Christian inhabitants of Egypt, their church, and their culture. Coptic remained in use as a language of daily life as late as the twelfth century, although Arabic had already begun to supplant Coptic as early as the ninth century. Coptic as a literary language was moribund by the fifteenth century but was never entirely replaced by Arabic and is still used as a liturgical language.

Coptic and earlier forms of Egyptian constitute a special language group that falls into the Afroasiatic language family. Coptic is very similar to its immediate predecessors, Demotic and Late Egyptian, which favored external marking of forms over the internal changes common in Old and Middle Egyptian. The vocalization of Coptic is more certain than that of its predecessors but is still largely theoretical; the modern pronunciation of liturgical Coptic is heavily influenced by Arabic and is of little use for reconstructing Coptic phonology. Coptic was the only form of Egyptian to indicate vowels and thus the only form in which morphology can be known with certainty. In general, Coptic is characterized by consonantal clusters (especially at the beginnings of words) and doubled vowels in certain contexts; vowelless syllables were marked by a superlinear stroke.

Syntactically Coptic developed many features of Demotic and Late Egyptian. Coptic used nominal, verbal, and adverbial clauses, which were paralleled by nominal, verbal, and adverbial uses of words and phrases. Nouns distinguished number and gender, which were morphologically marked in some cases but usually indicated by articles; case was indicated by sentence position or prepositions. The system of independent, prefix, and suffix pronouns extended and streamlined Demotic and Late Egyptian usage. Adjectives were almost entirely replaced in Coptic by adjective

verbs or the attributive use of nouns. The different forms of the verbal infinitive and stative (or qualitative) were often morphologically differentiated; verbs could be conjugated and marked for tense by prefixed conjugation bases or preceded by subject and other markers. As in Demotic, adverbials were usually prepositional phrases placed at the end of a clause. Both verbal and nonverbal clauses could be further marked by converters for preterite, circumstantial, or relative meaning; another converter was the "second tense" marker, which was used to emphasize an adjunct. Negation was accomplished by negative particles, conjugation bases, or infixes (bound morphemes inserted into words), and passive voice was indicated by an impersonal use of the third person plural.

Although Coptic is morphologically and syntactically a direct descendant of Demotic, it marks a radical break in terms of script. Coptic was written with an alphabet of thirty letters (thirty-one in some dialects), twenty-four of which are Greek letters. The remaining letters are derived from Demotic signs. Unlike the Demotic system of ideographic and phonetic characters, the Coptic alphabet included vowels and was much simpler to write and read. It also lacked pagan associations, which made it attractive to the early Christians. Given the importance of Greek in Egypt during the development of Coptic, it is not surprising that Coptic vocabulary derived from both Egyptian and Greek words. Greek terms in Coptic were primarily theological, administrative, or technical; they were treated grammatically as Coptic and were not inflected (except for a few set expressions). A limited number of Latin and Semitic words came into Coptic indirectly through Greek transcription, and later Coptic texts sometimes include transcriptions of Arabic names and words.

Scholars have identified at least ten major dialects of Coptic, with many additional subdialects. Scarcity of evidence makes the earliest dialect history of Coptic uncertain. The main dialect from about the fourth to the eleventh century was Sahidic, in which most early Coptic literary texts were written. Exceptions were mostly regional: the Bohairic dialect prevailed in parts of northern Egypt, and Faiyumic, Akhmimic, and Lycopolitan (among others) are named after their regions of origin in central and southern Egypt. The language of nonliterary texts was highly variable and reflected the dialect geography of Coptic. Most dialects died out by the ninth century, but Bohairic survived and replaced all other dialects. Bohairic remains the dialect of liturgical texts in Coptic to the present.

Although the earliest occurrences of Coptic are in pagan texts, Coptic was ultimately the language of Christianity in Egypt. The earliest Christian writings in Coptic were translations of Greek originals for Egyptians: the New Testament, the Septuagint, apocryphal and patristic works. Early Coptic translations also include important Gnostic and Manichaean texts, including the Nag Hammadi codices, the *Pistis Sophia*, and the Manichaean *Kephalaia*. Original compositions in Coptic are known after the third century. The fifth-century abbot Shenoute, the most important author whose works were originally written in Coptic and not Greek, was one of the earliest writers to treat Coptic as a vehicle for literary expression. Later Coptic authors and translators were highly prolific, resulting in a large body of original compositions, adaptations and translations of a wide range of literature. Saints' lives, homilies, and martyrdoms were popular among monastic audiences, and an extensive body of liturgical texts served the needs of the church. Historiography was limited mostly to church histories, although there are fragments of chronologies and historical "romances." Coptic poetry is attested in a number of forms, culminating in a lengthy poem called the *Triadon*. The decline of Coptic led to the compilation of Coptic-Arabic vocabulary lists known as *scalae*, as well as Arabic grammars of Coptic. Magical texts that combine elements of paganism and Christianity are well attested in Coptic, as are medical, alchemical, astronomical and other scientific writings. Coptic epigraphic texts (mostly stelae and graffiti) and documentary texts (including letters, legal documents, and accounts) are important sources for the economic and social history of Late Antique Egypt. Coptic texts of all genres are essential sources for Christianity and the Christian Community in Egypt.

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CORBO, VIRGILIO C. (1918–1991), Franciscan priest, teacher, and archaeologist who excavated in the Holy Land: at Jerusalem, Herodium, Magdala, Daburiya, Machaerus, Capernaum, and in the Church of the Holy Sepulcher. After obtaining a degree in Oriental sciences in Rome, Corbo spent his life in the Holy Land. Among his personal discoveries were a number of monasteries in the Judean Desert and St. Peter's house at Capernaum. These monuments were known only through ancient literary sources. It is as a result of his research and archaeological excavations that the location of these sites has been determined. For each site he published a final report; although they are not rich in bibliographic data, they are extremely meticulous. His findings contributed considerably to a better understanding of the structural, historical, and environmental character of the places he excavated.

[*See also* Capernaum; Franciscan Custody of the Holy Land; Herodium; Jerusalem; Machaerus; *and* Magdala.]

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COSMETICS. In the ancient Near East the popular use of cosmetics began with the dawn of civilization and later spread westward, to Greece and then to Rome. Until the advent of Christianity cosmetics were extremely popular, at times even used to excess. Christian thought, which stressed the life of the spirit while rejecting bodily pleasures, led to a decline in the demand for cosmetics and perfumes, although in the East the Arabs continued to enjoy them.

In antiquity, cosmetics first served magicoreligious and healing purposes. To propitiate the gods, cosmetics were applied to their statues and to the faces of their attendants. From this, in the course of time, the custom of personal use developed, to enhance the beauty of the face and to conceal defects.

The most extensive information on personal hygiene and cosmetics in the third and second millennia BCE comes from Egypt. Written and pictorial depictions, as well as rich archaeological finds, all show how important body care and aesthetic appearance were in the lives of the Egyptian aristocracy. For example, bathing for pleasure was a common practice in Egypt, while among other peoples of the ancient Near East it was limited mainly to religious requirements—although it also had hygienic associations. [*See* Baths; Personal Hygiene.] The use of oils and ointments was prevalent in order to protect the face and body from sun, dust, and dryness. These perfumed oils and ointments were not regarded as luxuries and were used by men and women in all strata of the population. It is known that during the reign of Rameses III, the gravediggers of Thebes went on strike to protest a decline in the quality of the food and the quantity of the oils supplied to them.

The Hebrews used ointment in the Temple in Jerusalem and in coronation ceremonies, as recorded in the description of the anointing of David (*1 Sm.* 16:13). The Bible makes no mention of other uses of cosmetics during the First Temple period, but there is evidence of their use for secular purposes in the Second Temple period. Over time, this custom presumably became quite commonplace: in the Talmud it is said that a husband is obliged to give his wife ten dinars for her cosmetic needs (B.T., *Ket.* 66b).

Cosmetic preparations included powders, ointments, perfumes, and fragrant oils, which were produced from various plants and resins mixed with vegetable oil or animal fat. Because of their high price, all these cosmetic substances were marketed in small quantities. This led to the development of an entire industry for the manufacture of tiny containers that became beautifully fashioned luxury articles in their own right. The containers were made of such materials as stone and alabaster, which kept their contents cool. In Egypt, most containers were made of stone, whereas in Greece and Rome they were made of exquisitely painted pottery. When the technique of glassblowing developed in the first century BCE, the perfume industry immediately adopted this lightweight and impermeable material for making perfume containers.

Many perfume containers have been found in tombs, where they were funerary offerings—gifts to the dead or buried with them as cherished personal belongings. The large quantities of perfume bottles found indicate that they were also brought in to freshen the air in the tombs during burial (*Mk.* 16:1; *Jn.* 19:39–40).

Great importance was attached to the care of the hair in antiquity. Long hair has always been considered a mark of beauty, and kings, nobles, and dignitaries grew their hair long and kept it well groomed. Ordinary people and slaves usually wore their hair short, primarily for hygienic reasons: they could not afford to invest in the kind of care that long hair required. The art of hairstyling and hair care reached its apogee during the Roman period, as can be observed from the numerous heads of statues that have survived from that time.

Very early evidence of the use of facial makeup is available from ancient Egypt: cosmetic utensils and materials, numerous written records, and artistic depictions of the subject. The eyes played a central part in facial makeup. Painting the eyes, besides being part of magicoreligious ritual, also served a medical purpose: it protected against eye diseases. Eye paint repelled the little flies that transmitted eye inflammations, prevented the delicate skin around the eyes from drying, and sheltered the eyes from the glare of the desert sun. When Egyptian women realized that the painted frame also emphasized the eyes and made them appear larger, they began using makeup to enhance their beauty. Egyptian women used to paint their upper eyelids and eyebrows black and the lower line of the eye green. They also rouged their lips and cheeks, coloring their face dark red with hematite and red ocher. The Babylonians, too, used red ocher for facial makeup, but the Sumerians preferred yellow (Dayagi-Mendels, 1989, pp. 36–37). The Babylonians painted their faces with vermilion and white lead and their eyes with kohl (*qukhlu;* see R. J. Forbes, *Studies in Ancient Technology,* vol. 3, Leiden, 1965, p. 18).

Whereas the purpose of makeup was to embellish the face and emphasize its features, ointments were used to soften and protect the skin, to preserve its freshness, and rejuvenate its appearance. Ointments were prepared from vegetable oils or animal fat, at times in combination with aromatic resin or perfumed beeswax. An Egyptian papyrus from the sixteenth century BCE contains detailed recipes for ointments to remove blemishes, wrinkles, and other signs of age. Almost nothing is known of the makeup practices among Hebrew women during the Israelite period. However, there is no reason to doubt that making up the face was customary in Israel, mainly because of the many implements and accessories found in excavations, whose shapes attest that they were used for makeup.

The use of kohl for painting the eyes is mentioned three times in the Bible, always with disapprobation (2 *Kgs.* 9:30; *Jer.* 23:40; *Jb.* 42:14). By the Second Temple period, makeup was considered part of a woman's adornment (B.T., *Moʿed Q.* 9b). Jewish sources distinguish between makeup used for therapeutic purposes and makeup meant merely to embellish the eyes. It was customary to put light-red makeup on the cheeks, and the Mishnah mentions a white cosmetic powder made of flour (*Pes.* 3:1).

In Greece and Rome, facial treatment was very highly developed and women devoted hours to it (Dio Chrysostom, 7.117). They used to spread various creams on the face and apply makeup in vivid and contrasting colors. Greek women would cover their face with a "beauty mask" that consisted mainly of flour, leaving it on all night. The next morning, they would wash it off with milk. This mask was intended to remove blemishes and to endow the skin with a smooth and fresh appearance, ready to receive makeup.

Creating and manufacturing cosmetics and perfumes have always been important and intriguing occupations. People working in this field had to be endowed not only with skill and knowledge, but also with a memory for fragrances and an ability to identify them and to distinguish their combinations. Perfumers in antiquity guarded the secrets of their trade closely, passing on their skills from father to son. The Bible mentions various plants from whose flowers, fruits, leaves, bark, or resin perfumes and ointments were produced (aloe, myrrh, frankincense). Although there is much to be learned in ancient sources about the uses of perfumes, very few describe methods of preparation. Tablets from the second millennium BCE found in Pylos, Greece, list the allocation of raw materials for perfumes but contain no precise recipes. More extensive literary information about per-

fume production has come down from various classical sources (Theophrastus, Dioscorides, Pliny). The equipment required for perfume manufacture was similar to that in an ordinary kitchen: basins, small pots for steeping and mixing, large jars for storing the oil, and juglets for storing resin.

As perfumes and spices were considered a precious commodity, they were stored with silver and gold. It is recounted in the Bible that when King Hezekiah of Judah received royal guests from Babylon, "he showed them all his treasure house, the silver, and the gold, and the spices, the precious ointment" (*2 Kgs.* 20:13). Classical sources emphasize the widespread use of perfumes in sixth-century BCE Greece, as well as their central place in cultural and social life. Perfumeries functioned as meeting places for all strata of the population (Athenaeus, 12.526A; Xenophon, *Conviv.* 2.3). Philosophers, statesmen, artists, and writers who wished to discuss matters of state would gather in such establishments, and their presence attracted others. Some, however, frowned on such self-indulgence: the renowned fifth-century BCE Athenian statesman Solon prohibited the sale of perfumes and ointments in his state, and the Spartans banished the perfumers from their city. The most lavish consumers of perfumes were the Romans, who perfumed each part of their body with a different scent, sprinkled perfume on their guests at banquets, and even perfumed the walls of their bathrooms. In the houses of the wealthy, beds and banquet couches were filled with fragrant dried flowers. Pliny criticized this excessive and wasteful use of scent, commenting that, despite their costliness—sometimes more than 400 denarii an ounce—perfumes gave pleasure only to others because the user cannot smell them (*Nat. Hist.* 13.20–22).

Perfumes were also commonly used in Palestine during the Second Temple period, and not only among women. The Talmud mentions the priests of the Abtinas family, who maintained a monopoly preparing incense for the Temple. The family refused to let others share in the knowledge of their craft, fearing it might be used for profane purposes. Also, to prevent suspicion that they might be exploiting their skills profanely, their wives were forbidden to use scent, even when they were brides (B.T., *Yoma'* 38a). It is also recorded that perfumers took strict precautions to protect the secrets of their craft and to prevent imitations. Perfumes were sold in shops located in the market, which was often a meeting place for harlots, who used especially large quantities of perfumes (*Shemoth Rabbah* 43:7).

The plants and resins used in producing perfume had to be imported from distant lands, mainly southern Arabia and the Far East. To facilitate their transport, extensive trading networks developed, and the countries the caravan routes traversed enjoyed great economic prosperity as a result. Major land and sea routes led to all the great trading centers in the ancient world. In Palestine the Nabateans functioned as middlemen in the perfume and spice trade. The country played an important role in the overland transportation of those luxury goods to the Mediterranean coast and to the West.

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MICHAL DAYAGI-MENDELS

COUNCIL OF AMERICAN OVERSEAS RESEARCH CENTERS. Established by the U.S. Congress in 1981, the Council of American Overseas Research Centers (CAORC) is housed in the Smithsonian Institution, with which it is directly affiliated and through which its limited budget for staff is funded. Originally eleven members, and in the mid-1990s fourteen, CAORC's original mandate was to speak with a unified voice in petitioning the government for funds; to act a resource base and clearinghouse for ideas and for other funding; to facilitate and promote overseas research centers; to clarify the role of research centers in enabling cultural exchange, academic programs, and field projects across national boundaries; to promote area studies as a viable discipline; and, where appropriate, to establish new centers. The three centers of the American Schools of Oriental Research (ASOR)—in Jerusalem, Amman, and Nicosia—were among the founding group of eleven.

All of the member centers were formed in response to American interest in fostering primary research in the host country. Their interests are mainly in the humanities and social sciences, though some centers have a keener interest in the natural and technological sciences, which is especially appropriate where archaeology is pursued. CAORC's primary vehicle for promoting scholarly exchange is fellowships for pre- and postdoctoral scholars and senior scholars. Research at the centers is normally devoted to studying either the particular host culture or that of an adjacent region. Most centers were established as consortia of universities in the United States and are governed by the member institutions. Each is independently incorporated as a private, not-for-profit organization. One of CAORC's important roles is to bring together the centers' leadership to exchange scholarly ideas, share management experience, and seek support from government agencies.

In addition to the ASOR group of three centers, CAORC acts as the umbrella for maintaining ties to the following organizations where research pertains to the Near East: the

American Institute for Yemeni Studies, American Institute of Iranian Studies, American Research Center in Egypt, American Research Institute in Turkey, American Academy in Rome, and American School of Classical Studies at Athens. CAORC publishes occasional monographs and papers. It is housed at the Smithsonian Institution in Washington, D.C.

[*See also* American Institute for Yemeni Studies; American Institute of Iranian Studies; American Research Center in Egypt; American Research Institute in Turkey; *and* American Schools of Oriental Research.]

ERIC M. MEYERS

CRESWELL, KEPPEL ARCHIBALD CAMERON (1879–1974), prominent British archaeologist who specialized in Islamic architecture. Creswell was educated at Westminister College in London and began studying Islamic architecture in 1910. He first traveled to the Near East while serving in the Royal Air Corps during World War I. After the war he was assigned to conduct a survey of the monuments in Syria and Palestine. When this was completed, he launched a project to study the history of Muslim architecture in Egypt. In 1931, he was appointed to the faculty of the Egyptian University in Cairo, where he founded and directed the Institute of Muslim Art and Archaeology. In 1956, as a result of the Suez Canal crisis, all British citizens were to be exiled and forced to leave their possessions behind. Creswell, then 75 years old, refused to leave Egypt and his extensive library; he took refuge at the American University in Cairo, where he served as Distinguished Professor and Chair of Muslim Architecture until his death in 1974. His personal library, now known as the Creswell Library of Islamic Art and Architecture, still houses one of the most extensive collections on the subject in the world. His publishing record, which includes several bibliographies of Islamic art and architecture, reflects his passion for the subject and is an invaluable resource for archaeologists. Creswell is best known for his two-volume work *Early Muslim Architecture* (1932–1940), which serves as compendium of the subject. He later condensed and updated his magnum opus as *A Short Account of Early Muslim Architecture* (1989).

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JOHN D. WINELAND

CRETE. The largest island in the Aegean Sea, Crete is 260 km (about 161 mi.) from east to west. The island is diverse in its geography, with high and rugged mountains, fertile plains, and many low hills that were suitable for flocks and herds as well as agriculture. The climate is Mediterranean, with dry, hot summers and cool winters.

Neolithic Period. The first settlers in Crete arrived in the Early Neolithic period, possibly even before pottery was being used. The earliest pottery on the island, from the second level above sterile soil at Knossos, has affinities with Anatolia. In the subsequent development of the island, this pattern of contacts with the East would never be broken for long: the history of Crete always included a give-and-take with the cultures of West Asia.

The Neolithic period was a time of slow development. Animal husbandry and agriculture were established as the society's economic base, and they would remain such throughout antiquity. By the end of the period, the island was sparsely settled from one end to the other. Contact with the more eastern regions was never close during this time, but it was frequent enough for Crete to benefit from new discoveries, such as better kilns for pottery. A few new settlers seem to have arrived from time to time, especially toward the end of the period.

The earliest phase of the culture known as Minoan is called the Final Neolithic. It must begin well before 4000 BCE, but its dates are far from secure. The phase is first recognized by the beginning of several new cultural traits, probably signaling the immigration of new people into the island. The most important trait for tracing the overseas connections is a dark-burnished pottery in shapes that include jugs with high spouts that look Anatolian. The first beehive-shaped tombs (called tholos tombs) date from this period. The Final Neolithic folk were farmers and herdsmen, and they were probably seafarers as well. They used obsidian from the island of Melos, and their technology for ceramics was on a par with contemporary developments in the Cyclades and Anatolia.

Early Bronze Age. On Crete, the Early Bronze Age is divided into three periods: Early Minoan I, II, and III. In the middle phase of the second period (Early Minoan II), the first real cultural explosion since the advent of the Final Neolithic took place. New objects testify both to an increased technological skill and to a desire for new possessions: sealstones, stone vases, new types of pottery, figurines; and metal objects in a surprising variety of designs. Some writers have seen metallurgy, in its new form as portable wealth, as the main stimulus behind these changes. Certainly, metals played a vital role. Copper was used for jewelry, for tools, and especially for daggers. Silver and gold assumed new roles as symbols of prestige. Because Crete is poor in metallic ores, it is likely that all or almost all of this metal was imported.

Some of the jewelry gives us our best hints about the sources for these new metals. The rich Early Minoan II–III tombs at Mochlos in northeastern Crete have yielded hundreds of pieces of jewelry. They include earrings and pendants with strong stylistic parallels with Troy and nearby parts of the northeast Aegean and with a number of ties to Mesopotamia; quadruple spirals, complex link chains, pierced bands, and flowers and leaves all occur both at Ur in Mesopotamia and at Mochlos on Crete. In addition, the technology of fusing with added fluxes to create filigree and granulation also appears in both areas. Although the lines of transmission are mostly lost, and they were surely distant and indirect, the situation suggests that a general level of technology and a few stylistic details were being transmitted over extremely long distances.

Although invasions and cultural disruptions occurred in Greece and the Cycladic Islands at the end of the Early Bronze Age, Crete does not seem to have been affected. The Middle Minoan period lasted from about 2000 BCE until just after 1700 BCE. The Old Palaces were built during the period, and there is evidence that Crete may have been divided into several kingdoms then, administered from palaces at Knossos, Phaistos, Malia, Zakros, and other centers. The volume of Minoan objects in the East and of Eastern objects on Crete increased appreciably. They suggest economic links in several directions.

Egyptian scarabs and a few other objects occur at several Middle Minoan sites. Minoan pottery, especially the fine Kamares ware of MM II, found its way to Egypt in enough quantity to suggest that it was traded for its own sake rather than as a container. Most of this pottery is palatial (most likely from Knossos), suggesting that the palaces were taking the lead in foreign trade. Objects from Syria, Anatolia, and Cyprus can also be identified on Crete. Among these locations Cyprus is most important, and it may have acted as an intermediary between Crete and ports farther to the east. Eastern products that can be identified from this period include ivory, a few stones, and metals.

Late Bronze Age (Late Minoan I). At the beginning of the Late Bronze Age on Crete (the Middle Bronze IIB in Palestine and Syria), a group of important Minoan wall paintings appears in the East. Examples survive from three sites: Tell ed-Dabʿa in Egypt, Tel Kabri in Palestine, and Alalakh in Syria. At Tell ed-Dabʿa, the Hyksos capital of Avaris, the paintings included bull leapers, Aegean floral motifs, several animals, and abstract designs of Cretan type. Floral ornaments and other designs decorate the palace of Yarimlim at Alalakh. Both a gridded floor and a miniature fresco with buildings, a landscape, and human figures were found at Tel Kabri. In all cases, the technique is true fresco, an Aegean practice previously unknown in Egypt and Western Asia. Apparently, Minoan painters were called in to decorate some of the finer local buildings at this time, using Cretan motifs and techniques. [*See* Dabʿa, Tell ed-; Kabri, Tel; *and* Alalakh.]

Late Minoan I also marks a new height for Cretan trade with the East. Imported commodities are sometimes difficult to trace, but they make a long list. Raw materials include stones like blue lapis lazuli from Afghanistan; white-spotted obsidian from the island of Ghyali; copper; and possibly also tin, ivory, ostrich eggs, gold, silver, and the many products that leave no trace, such as woods, spices, and leathers. If the archaeological record is any indication, finished goods were mostly made at home on Crete. Eastern pottery is rare on Crete. A few pieces came from Knossos, Kommos, Zakros, Pseira, and a few other places, but they were mostly closed containers presumably brought in for their contents. Sealstones from the period are a tiny percentage of the local Minoan seals. Minoan metal objects from this period were almost all manufactured on Crete. It is reasonable to conclude that Crete was an agricultural and a manufacturing center that traded mostly for its raw materials. It must have exported foods, textiles, and especially finished metal goods.

The manufacture of metal objects must have played a large role in this scenario. The final evidence is not in yet, but the best guess is that copper and tin came from somewhere to the east. Large stores of copper ingots must have been needed to supply the bronze-working industry. Hoards of copper ingots have been found at Aghia Triadha and at Zakros, but studies of the ingots by lead isotope analysis have produced a pattern with no known parallel from the eastern Mediterranean. The copper must come from a Precambrian ore body that has not yet been identified. Geographical candidates are Afghanistan or the Caucasus, but little archaeological work has been done in this region. A shipwreck from near Bulgaria, in the Black Sea, with copper ingots on board and with clay weights that are disk-shaped, with holes near the margins (an, Aegean shape), raises the possibility of a seaborne trade in the right direction, but too little research has yet been done to reach any firm conclusions.

At the end of Late Minoan IB, most Cretan sites were destroyed. Many of them were abandoned in LM II, and those that survived have an increased amount of evidence from Mycenaean areas of southern Greece. Most scholars believe that this date marks the arrival of the Mycenaeans on Crete.

Knossos continues to be important in the years of Mycenaean domination, and it must have participated in the international Mycenaean trade in LM III that knit together a great economic network in the eastern Mediterranean. In LM III, the language of Crete was Mycenaean Greek, preserved on tablets written in the script called Linear B. Tablets come from Knossos and Khania on Crete as well as from Mycenae, Pylos, and other sites on the Greek mainland. The tablets, all tallies and other economic documents, describe a thriving economy. Weaving, bronze working, and other crafts were done for the international market as well as for home consumption. Crete's dominant position in the wool trade is demonstrated by the fact that the clay tablets from Knossos list more than 100,000 sheep. By the thirteenth century BCE, iron began to be used in larger quantities than previously, and new customs such as cremation began to appear.

Early Iron Age. Toward the end of the second millennium BCE, all of the Mycenaean world was experiencing disruption. Wars were frequent, and by 1200 BCE most of the great centers had been attacked. A wave of new settlers on Cyprus at about this time coincides with the abandonment of several of the Mycenaean sites. This is the period of the "Sea Peoples," displaced populations who attacked Egypt during the reign of Rameses III. One group of the Sea Peoples, with Aegean population elements, settled in Palestine and became the Philistines. Other groups are more difficult to trace. The coasts of Crete, were so insecure at the time that many harbors were abandoned as people moved inland. Refuge sites on high peaks like Karphi, Vrokastro, and Kavousi-Kastro testify to the new need for defense, rather than access to the coast for trade.

In this period of the Early Iron Age, the Dorians can first be recognized archaeologically on the Greek peninsula and Crete. They spoke a dialect of Greek that was distinct from that of their Mycenaean predecessors, and by the eighth-century BCE they were dominant throughout Crete. The new society was aristocratic, based on land tenure managed by wealthy citizens and worked by slaves and a serf population that was probably the remnant of the island's Bronze Age residents.

Trade revived in the Early Iron Age, and by the ninth century Crete was again a stepping-stone from east to west. In the north, Knossos remained the most important site. In the south, the port of Kommos, on the prosperous plain of the Mesara, was a busy port of call. A temple here, with a shrine of standing stones of Phoenician type and many eastern offsprings, suggests that the Phoenicians used the port on their way east or west. As before, Crete was a link between the eastern and western Mediterranean.

[*See also* Cyprus; *and* Minoans.]

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PHILIP P. BETANCOURT

CROWFOOT, JOHN WINTER (1873–1959), director of the British School of Archaeology in Jerusalem (1926–1935). Crowfoot, the son of John Henchman Crowfoot, chancellor of Lincoln Cathedral, was educated at Marlborough College and Brasenose College at Oxford University. His early and lifelong devotion to archaeology led in 1897 to a year of travel in Asia Minor and Greece. He was a lecturer in classics at Birmingham University for two years before going to Egypt as assistant master of education. In 1903 he became deputy principal of Gordon College, Khartoum, in the Sudan. Returning briefly to Egypt as an inspector in the Ministry of Education in 1909, he married Grace Mary Hood, who became a pioneer in the study of ancient and modern textiles and women's crafts. As director of education and principal of Gordon College (1914–1926), he also oversaw the Antiquities Department as well. He was appointed C.B.E. (Companion of the British Empire) for wartime service.

In Palestine from 1926 he directed the British School–Yale University excavation at Jerash (Gerasa) in Transjordan (1928–1930); the joint expeditions to Samaria/Sebaste (1931–1935); and excavations for the Palestine Exploration Fund (PEF) on the Ophel in Jerusalem. On his return to England, he became chairman of the PEF (1945–1950). In

1958 he received the honorary degree of Doctor of Letters from Oxford University.

As recalled by R. W. Hamilton, late keeper of the Ashmolean Museum, Oxford, who first worked with him at Jerash, Crowfoot was known for his tolerance and humor. These qualities proved particularly important in the British School's excavations at Samaria, where his direction facilitated cooperation between his British School, the PEF, the British Academy, Harvard University, and the Hebrew University of Jerusalem. Perhaps his most important achievement was his innovativeness at a time when archaeologists in Palestine were obsessed with the desire to "prove" the truth of the Hebrew Bible. Crowfoot instead turned the activities of the school and its students to Early Christian archaeology, so rich in its architecture, art, and epigraphy, as well as to the classical roots of Western society.

[*See also* British School of Archaeology in Jerusalem; Jerash; Jerusalem; Palestine Exploration Fund; *and* Samaria.]

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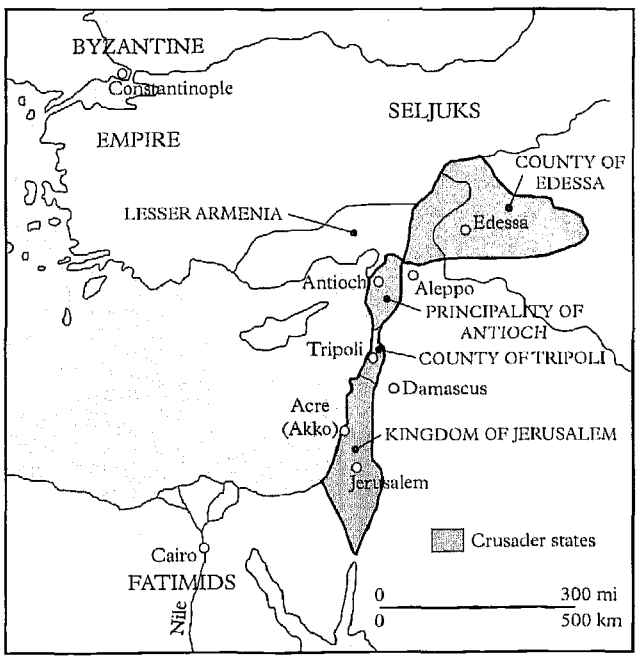
ELISABETH CROWFOOT

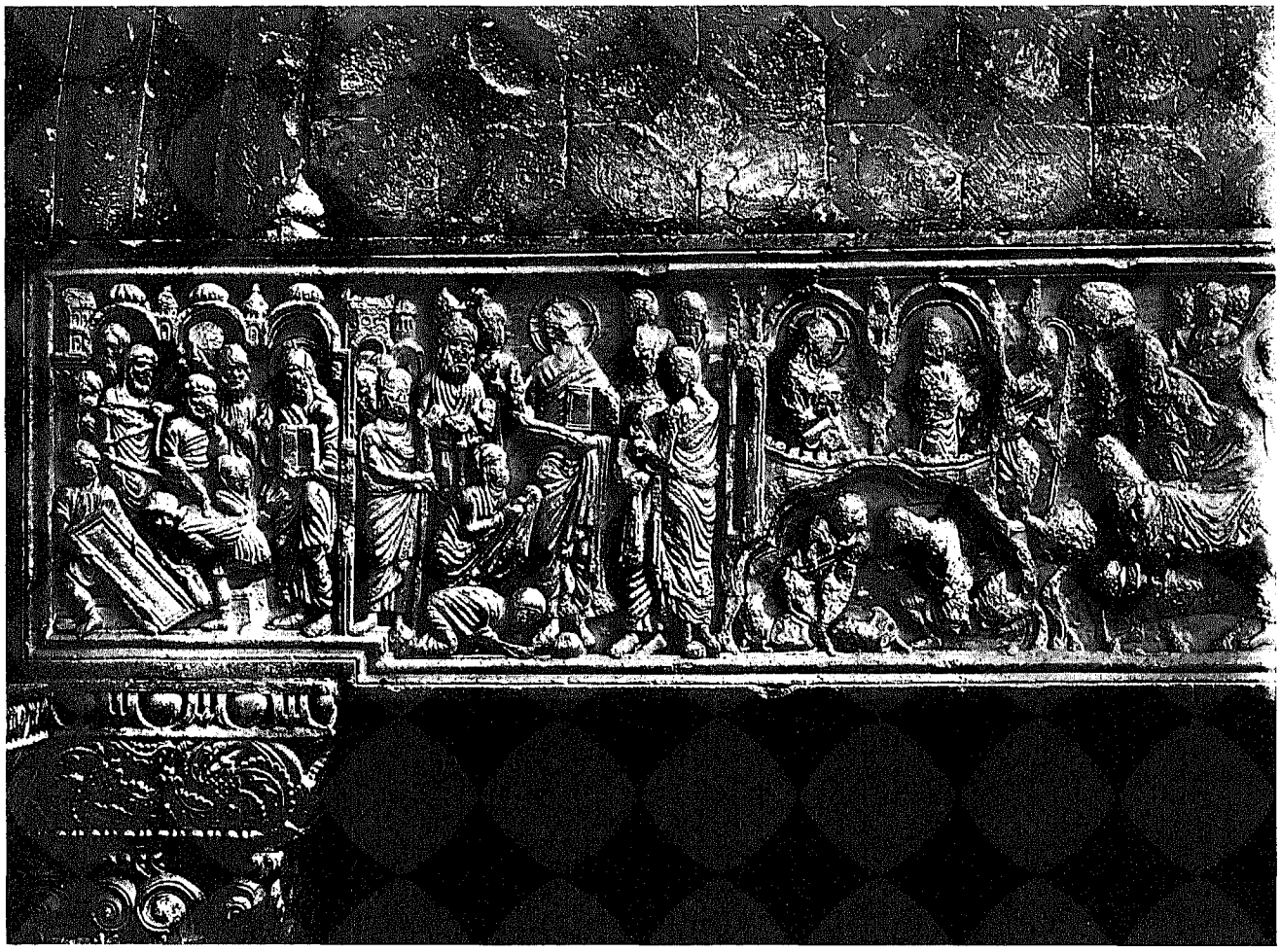
CRUSADER PERIOD. On 27 November 1095, Pope Urban II issued a call at Clermont in the Auvergne, France, for European Christians to go to the aid of their Eastern Christian brethren in the Holy Land and to wrest control of the holy sites from the infidels who had desecrated and destroyed them. The four main armies of the First Crusade marched to Constantinople in 1096–1097 and set off across Asia Minor in June 1097.

History. The First Crusade entered Syria-Palestine in 1097, taking Antioch and Edessa in 1098. Continuing south, the Crusaders occupied Bethlehem in June 1099 and conquered Jerusalem on 15 July 1099. Nazareth was taken later in the year by Tancred. Godefroy de Bouillon was elected *Advocatus Sancti Sepulchri* and retained the office until his death on 18 July 1100. Baldwin of Boulogne was crowned king of Jerusalem in the Church of the Nativity in Bethlehem on Christmas day 1100. Gibelin of Arles became the first uncontested patriarch of Jerusalem in 1108. On 12 July 1109, Tripoli fell to Crusader forces. Thus, during a ten-year period the gains of the First Crusade were slowly consolidated into the establishment of four Crusader states: the Principality of Antioch, ruled by Bohemond of Otranto and his nephew, Tancred; the County of Edessa, ruled by Baldwin of Boulogne and Baldwin of Le Bourg; the Kingdom of Jerusalem, ruled by Baldwin I; and the County of Tripoli, ruled by Bertram, son of Raymond of St. Gilles. By 1110 most of the important port cities on the Mediterranean coast had been taken, with the conspicuous exceptions of Tyre and Ashkelon, which were still in Fatimid hands.

In the newly organized Crusader states, fortifications and churches were needed everywhere. The early kings of Jerusalem, Baldwin I (1100–1118) and Baldwin II (1118–1131) sponsored important castle building in Syria-Palestine near Ashkelon (Israel), at Shaubak (Jordan), and on the Isle de Graye (in the Gulf of 'Aqaba); other patrons built Jubayl (Lebanon) and Saone (Syria). Important commercial arrangements were made by which the Genoese, the Pisans, and the Venetians were given holdings in the port cities, providing the means of trade and a de facto Crusader navy. Coinage generated the earliest Crusader artistic images, in many cases distinctive amalgamations of Byzantine-influenced designs and Western currency types. Metalwork, and especially reliquaries, also proved to be much in demand. A relic of the True Cross became the ensign of the Latin Kingdom and was carried by the patriarch on all important campaigns.

By the time Fulk of Anjou became king, crowned in the Church of the Holy Sepulcher in 1131, the second genera-





CRUSADER PERIOD. *Figural lintel.* A lintel from the south transept facade (west portal) of the Church of the Holy Sepulcher in Jerusalem, c. 1150. Scenes from left to right include Jesus raising Lazarus; Mary Magdalene and Mary, mother of James and John, meeting Jesus; and Jesus directing his disciples to prepare for the Last Supper. (Courtesy École Biblique, Jerusalem)

tion of settlers was in place and social and cultural interpenetration was a feature of life in "outremer" (as the Frankish East was known). As an example of royal intermarriage, the king came from France, but his queen, Melisende, was Greek Orthodox, born of an Armenian mother. Melisende became the most remarkable woman in the Crusader East—daughter, wife, and mother of kings, and patroness of the arts. For her the Melisende psalter was done, the most remarkable illuminated Crusader codex produced in the twelfth century. She, Fulk, and the patriarchs of Jerusalem were responsible for the rebuilding and redecoration of the Church of the Holy Sepulcher: pilgrimage church par excellance, state coronation church, and burial church of the Crusader kings. The aedicule of the Holy Sepulcher had been refurbished immediately after 1099, but an ambitious plan to unify Calvary and the Prison of Christ with the aedicule in a single church was initiated after 1131 with most of the construction carried out in the 1140s. The church was dedicated on 15 July 1149, after the members of the ill-fated Second Crusade had returned home.

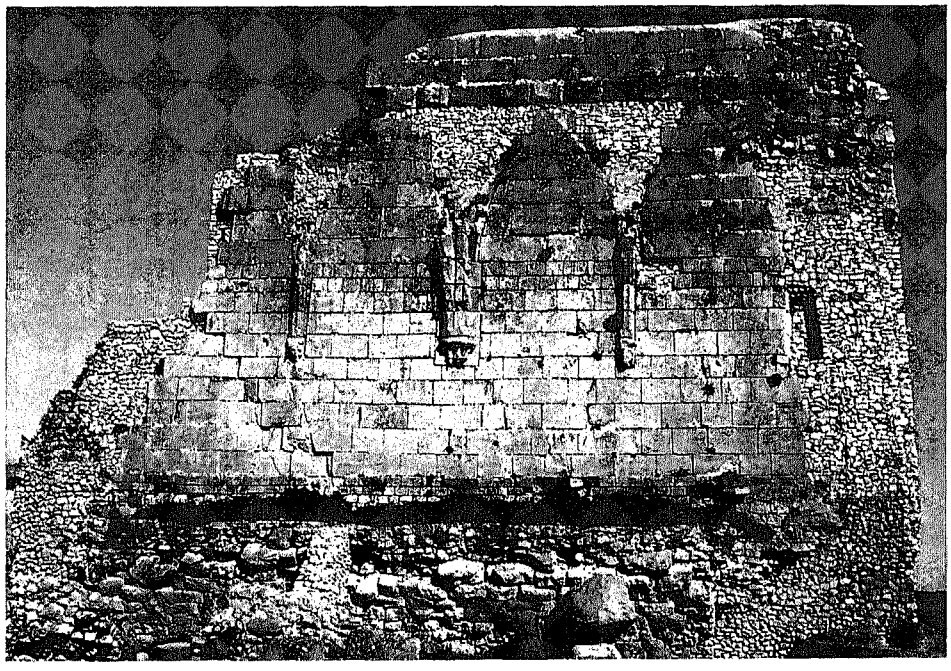
The Holy Sepulcher was the first major holy site to be redone in a distinctive Levantine-Romanesque style of architecture, with complex programs of sculpture and mosaics on the interior and exterior. The Church of the Nativity in Bethlehem was also redecorated in 1167–1169, in a unique joint patronage arrangement between Amaury, king of Jerusalem, the Byzantine emperor, Manuel; and Bishop Ralph of Bethlehem. This church dated to the sixth century CE, but a completely new program of Byzantine- and Crusader-inspired mosaics and frescoes transformed its interior and grotto. By contrast, a third holy site, the Church of the Annunciation in Nazareth, was rebuilt with a very extensive program of figural sculpture making it distinctively different from its predecessors. These holy places strongly shaped the

Crusader artistic agenda in the twelfth century. The Templar and Hospitaller orders, founded in the early part of the century, grew in military power and in their control of castles used to defend these sites and their pilgrims. Otherwise, the Crusaders were less successful on the political and military fronts.

Although the Crusader states proved viable commercially there was the constant threat of Muslim incursions. Edessa had fallen in 1144 and the Second Crusade could do nothing to restore it. It became increasingly evident that the threat from the Turks in the north and the Fatimids in Egypt could successfully be warded off only while the Muslims were divided. When the Crusaders failed to enlist the Byzantines in an efficacious alliance to conquer Egypt in the 1160s and 1170s, Saladin (Salah ad-Din) unified Muslim forces against the Crusaders. Saladin eventually invaded the Latin Kingdom and inflicted a disastrous defeat on the Crusaders at the Horns of Hattin on 4 July 1187. By the end of that year, the Crusaders held only Tyre and Beirut and a few major castles, such as Crac des Chevaliers and Marqab (Syria); all of the major holy places were again in the hands of the infidels.

To regain these sites, the Third Crusade was mounted in 1189. Although it was led by three crowned heads of Europe, including Richard the Lionheart, who delivered Cyprus into Crusader hands, and although it restored the coastline to the Crusaders, symbolized by the retaking of Akko (Acre) in 1191, the Third Crusade failed to regain a single major holy site or to damage a single Muslim center of power. Mindful of this failure, Pope Innocent III organized the Fourth Crusade. It was, however, diverted to Constantinople in 1203–1204. After a terrible sacking of that city in April 1204 a Latin Empire was established for fifty seven years. With Constantinople as its capital, the empire included the territories of Romania, Thessalonike, the Morea, and Crete. Yet, other expeditions were attempted. The Crusade of Pelagius (papal legate and leader of the Crusade to Damietta) attacked Egypt directly in 1218–1221 but was forced to withdraw. Ironically, only Frederick II, twice excommunicated in the process, was able to restore the holy places to Crusader control, by treaty—not by force of arms—with Sultan al-Kamil in 1229.

Crusader jurisdiction over the holy sites after 1229 was tenuous because their military and political power was largely consumed by civil war between 1229 and 1243 and was thus inadequate to reestablish control. In 1244 the Khwarazmian Turks overran Jerusalem, definitively removing the holy city from Crusader access. Yet another Crusade was organized: King Louis IX came east, but his attempt to attack Egypt was repulsed. He then went directly to the Latin Kingdom to aid the Holy Land. Residing in Akko (1250–1254), he set about rebuilding the fortifications at Caesarea, Akko, and Tyre, and he built a new castle at Sidon. He seems to have reinvigorated Crusader painting with his commissions of royal manuscripts, such as the Arsenal Bible. He personally visited the holy site of Nazareth to refocus Crusader goals, but he was unable to restore a single holy site to Crusader control.



CRUSADER PERIOD. *'Atlit castle.* The North Tower wall, looking east with remains of vaulting and three corbels, 1218 CE. (Photograph by J. Folda)

With the Mongol invasion in 1258–1260 and the rise to power of the Mamluk Sultan Baybars, the future of the Crusader states was put in serious jeopardy. Baybars pursued a policy of conquest and destruction, and by 1268 he had taken Nazareth and Antioch. The alarm was sounded and a new Crusade was organized, with Louis IX once again leading the expedition. Louis died in Tunis, en route, in 1270 but Edward I of England continued on to Palestine. Even he could not deter Baybars, however, and in 1271 the Mamluks captured one of the greatest of Crusader castles, Crac des Chevaliers. Only Baybars's death in 1277 foiled his resolve to eradicate the Franks.

In 1280 Baybars's successor, Qalawun, resumed the Mamluk assault on the Crusaders. By 1289 Tripoli had fallen, and Qalawun prepared to attack Akko. Qalawun failed to take Akko only because he died on the march that began the siege; however, his son, Sultan al-Ashraf Khalil, assumed command and the battle was joined. St. Jean d'Acre fell on 28 May 1291. By August, the Mamluks had pushed the Crusaders into the sea, having taken every mainland Frankish fortification. The Latin Kingdom was terminated in Syria-Palestine, and only Cyprus and parts of Greece remained in Frankish hands.

Art and Archaeology. The study of Crusader art was essentially founded and initially carried out by the great French "archéologues" such as Melchior de Vogüé, Emmanuel Rey, Charles Clermont-Ganneau, L.-H. Vincent and F.-M. Abel, and continued by Prosper Viaud, Camille Enlart, and Paul Deschamps, with significant contributions by certain Englishmen such as Claude R. Conder and H. H. Kitchener, William Harvey, and C. N. Johns between 1860 and World War II. In this period the early investigation of the major castles and churches was done with intensive work during the French and British Mandates after 1917, at Crac des Chevaliers and 'Atlit; the site of the Church of the Annunciation, Nazareth, was excavated; archeological studies were done on the Crusader churches of Jerusalem; and specific architectural surveys were carried out on the Church of the Holy Sepulcher, Jerusalem, and the Church of the Nativity, Bethlehem.

Since World War II, archeological investigation has continued with important investigations of the Church of the Holy Sepulcher and specifically the aedicule of the tomb, the castles of Belvoir and Belmont, the Crusader cities of Acre (Akko) and Caesarea, and Crusader settlement in the plain of Sharon. There have been important investigations of the coins and pottery from the Crusader period as well. However, significant art historical research also appeared, starting with the work of T. S. R. Boase, H. Buchthal, and K. Weitzmann. In contrast to the archaeological reports and studies on sites and architecture, the art historical publications have focused more on painting (manuscript illuminations, frescoes, mosaics, and icons), sculpture, and metalwork. These studies have emphasized the figural arts and have made considerable progress in redressing the balance between archaeological and art historical research. For architectural history and archaeology the British School of Archaeology in Jerusalem has recently sponsored important surveys of Mamluk architecture in Jerusalem and a corpus of Crusader churches from the Latin Kingdom of Jerusalem, of which the first volume has appeared (Pringler, 1986). A significant group of Israeli art historians located at Jerusalem, Tel Aviv, and Haifa has also begun making important contributions on painting, sculpture and the minor arts since about 1980.

Of the four Crusader States on mainland Syria-Palestine, the greatest number of Crusader sites and monuments (churches, castles, fortified cities, and towers), including the most important holy places for pilgrimage, is found in the territory of the Latin Kingdom of Jerusalem, which includes today Israel and parts of southern Lebanon, and western Jordan between the Dead Sea and 'Aqaba. In the County of Edessa (Urfa; 1098–1144), which now includes parts of southeastern Turkey and northern Syria, there are some important castle remains, and in the Principality of Antioch (1098–1268), which includes today mainly northwestern Syria and a bit of southern Turkey, there are also important fortifications, but few Crusader churches are extant in either area. The County of Tripoli (1109–1289) was the smallest of these states. running along the coast from Gibelet (Jubayl, Byblos) to the Castle of Marqab (Margat), that is, northern Lebanon and a part of western Syria. Significantly, however, the most impressive extant Crusader castles are located in this region—Crac des Chevaliers. Marqab, and Saone (Sahyun), all in present-day Syria, of which the latter two have never been seriously investigated archaeologically. Indeed, few Crusader castles have been excavated, although several, such as Crac des Chevaliers, have been cleared. Finally, two of the finest extant Crusader churches, at Gibelet and Tortosa (Tartus) are also found in the region of Tripoli.

Jerusalem in the twelfth century and Acre during the thirteenth century were the two primary Crusader artistic centers, along with the important pilgrimage sites such as Bethlehem, Nazareth, and St. Catherine's on Mount Sinai in the Sinai Peninsula. Apart from the decoration of their churches. Jerusalem and Acre were centers for manuscript illumination; in Jerusalem there was also a thriving quarter for goldsmiths and metalwork; and in Acre and at St. Catherine's are found important Crusader panel painting. No Crusader manuscripts from other important centers such as Antioch, Tripoli, or Cyprus have been identified for certain at present, but Antioch may have been important for metalwork, and Lydda, Tripoli, and Nicosia have had Crusader panel paintings attributed to them recently. As with all portable works of art, however, the archaeological evidence for the sources of works such as manuscript painting, icons, and metalwork is difficult to identify in these locations.

[*See also* Akko; Antioch on Orontes; Ayyubid–Mamluk Dynasties; Byblos; Caesarea; Constantinople; Fatimid Dynasty; Jerusalem; Sidon; Tyre; *and the biographies of Abel, Clermont-Ganneau, Conder, Kitchener, Vincent, and Vogüé.*]

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JAROSLAV FOLDA

CTESIPHON, city located on the east bank of the Tigris River, 35 km (22 mi.) south of Baghdad in Iraq, and opposite the Seleucid capital of Seleucia on the Tigris and the nearby Sasanian "round city" of Veh Ardashir. Ctesiphon flourished as the Partho-Sasanian capital from the second century BCE until the Arab conquest in 637 CE. The origins and meaning of the Latin name *Ctesiphon* are unknown (Gk., Ktesiphon; Syr., *qtyspwn;* Parthian, Pahlavi, and Sogdian, *tyspwn;* Ar., Taysafun). Contemporaneous classical, Christian, Jewish, and Arab sources refer to several other centers in the vicinity known as "the cities," which has led to considerable confusion as to Ctesiphon's precise location. The most likely site is al-Ma'aridh, where limited German excavations uncovered large Late Sasanian private houses (Kröger, 1982). The origins of Ctesiphon are obscure. It appears to have been founded as a Parthian city following

their capture of Mesopotamia from the Seleucids and westward transfer of their capital. It was used as a place of coronation and royal winter residence with treasuries and a garrison; according to one classical author (Ammianus Marcellinus, 23.6.23), the city walls were built by Pacorus I. Owing to its position on the left bank of the Tigris, Ctesiphon was well sited for communicating with the Iranian plateau. (Seleucia, the Parthian foundation of Vologesocerta/Abu Halefija, and the Early Sasanian city of Veh Ardashir controlled access to Babylonia, particularly along canals linking the Euphrates River with the Tigris at this point.) Parthian Ctesiphon was sacked on three occasions by Roman armies, namely by Trajan (116 CE), Avidius Cassius (165) and Septimius Severus (198).

In 224 the Parthians were overthrown by Ardashir, crowned in Ctesiphon in 226 as the first ruler of the Sasanian dynasty. Thereafter, Ctesiphon remained the Sasanian capital, place of coronation, royal mint, and one of the empire's most important administrative and cultural centers. It was strongly fortified with walls of fired brick and a moat. Odenathus of Palmyra unsuccessfully besieged the city in 261, but it was sacked by Carus in 283; Julian attempted to capture it in 363 but failed (Frey, 1967). Ctesiphon was physically connected to Veh Ardashir by a pair of bridges, one of which may have been constructed by Shapur II. Its diverse population included important Christian, Jewish, and Zoroastrian communities. Ctesiphon was the birthplace of the catholicos Elisha, the archdeacon Mar Aba, and Rabbi Hiyya. Mani, the founder of the Manichaean sect, was educated but later crucified at Ctesiphon, and within the city there was a market frequented by local Jews. Heraclius attacked Ctesiphon in 627, and a decade later an Arab army commanded by Sa'd ibn Abi Waqqas captured Ctesiphon and huge quantities of booty after first taking Veh Ardashir and fording the Tigris. Major monuments at this time included a large "White Palace," whose founder was then unknown—suggesting that it was already an old building. Several unidentified mosques were founded after the Arab conquest and Ctesiphon became known as "the ancient city." Despite an unhealthy reputation owing to mosquitoes and malaria, it was occupied by "men of the nobility and distinguished houses of Kufa" (a city on the Euphrates River) with "numerous fighters to watch possible disturbances" (Tabari, I, 2677, 2483; II, 980). With the later foundation of Baghdad, the remaining Sasanian public buildings and fortifications suffered heavily through demolition and removal of bricks for reuse. [*See* Baghdad.]

Islamic and later European writers have left numerous descriptions of the Ctesiphon area, particularly focusing on a huge vaulted iwan popularly known as the Throne of Khusrau (Taq-i Kisra). Several attempts have been made to reconstruct the historical topography of the site, notably by Claudius Rich (1836), who recognized that eroded mounds on either bank of the present course of the Tigris belonged to a single round city later cut by the river. This he presumed to be Seleucia and the Taq-i Kisra to mark Ctesiphon. Other writers have proposed the existence of a second iwan opposite the first; in 1908, half of the remaining vault and facade of the Taq-i Kisra collapsed, following flooding. Between 1903 and 1911 Ernst Herzfeld conducted architectural surveys in the area. In 1915, there was fierce fighting on the site between Turkish and British armies. Aerial photographs taken during the 1920s confirmed a suggestion that the extensive mounded area immediately west of the round city probably represented Seleucia, as it was laid out on classical principles of urban planning.

Seleucia had been founded by Seleucus Nicator at the junction of a royal canal and the Tigris. [*See* Seleucia on the Tigris.] A shift in patronage under the Seleucids stimulated its growth at the expense of Babylon. [*See* Babylon.] Seleucia was fortified; it straddled the canal and was said to have had a population of up to 600,000. It functioned as a mint throughout the Parthian period and was only deserted in the third century when Veh Ardashir was founded. Thereafter, Seleucia was referred to by Syriac and classical authors as "deserted Seleucia" (*Sliq kharawata* or *deserta civitas*) and was used as a place of execution and burial. The city was first excavated by American expeditions initiated by Leroy Waterman in 1927 and concluded by Robert McDowell in 1936–1937. These focused on Tell 'Umar and on an insula near the center of the city (Waterman, 1933; Hopkins, ed., 1972). However, because of the water table, the earliest levels were not reached; much of the published material actually dated to the Parthian period. The round city was assumed to represent Ctesiphon, and excavations were conducted both there and across the present course of the Tigris by German expeditions directed by Oscar Reuther (1928–1929) and Ernst Kühnel (1930–1931). Large quantities of Sasanian decorative stucco were recovered from Tell al-Dhaba'i, Tell Dhahab, al-Ma'aridh, and Umm as-Sa'atir; the church at Qaṣr bint al-Qadi and a Parthian cemetery were excavated nearby (Kröger, 1982; Hauser, 1993). Further discoveries of stuccoes at other sites in Mesopotamia and Iran stimulated intense interest in the Sasanian period.

Archaeological research in the Ctesiphon area resumed in 1964 with Italian expeditions from the University of Turin directed by Giorgio Gullini (1966) and later by Antonio Invernizzi (1976). At Seleucia, a large Archive Square building, associated with the administration of a salt tax, and a later terra-cotta workshop were excavated. Within the round city, work was concentrated on a stretch of the city walls and an artisans' quarter within (ceramic, glass, and metalworking). Occupation there is dated from the reign of Ardashir I to the fifth–sixth centuries CE, after which low-lying areas of the city were abandoned because of flooding; later occupation was confined to the mound of Tell Baruda (Venco Ricciardi and Negro Ponzi Mancini, 1985). The excavated

sequences from the round city, and its location relative to Seleucia and the Taq-i Kisra, demonstrate that this was the site of the city of Ardashir (Veh Ardashir, Bahursir), rather than Ctesiphon. Veh Ardashir was founded by Ardashir on the site of an earlier village known as Kokhé, closer to the Tigris, whose course had shifted slightly. It was intended to replace Seleucia and was, hence, called New Seleucia. Veh Ardashir enjoyed a close relationship with Ctesiphon and was also known as the western city of al-Mada'in or the near city in Arab sources. The fortifications enclosed an estimated area of 700 ha (1,729 acres) of housing separated by cambered asphalted roads and smaller alleys. Public buildings included a major Zoroastrian fire temple, a rabbinic academy, and a citadel or prison called Garondagan or Aqra d'Kokhé; a hay market is also attested in Syriac sources.

Early Islamic descriptions indicate that Ctesiphon lay on the Tigris opposite Veh Ardashir and a mile north of a "great Iwan" that formed part of the separate Late Sasanian royal city of Asbanbur (al-'Ali, 1968–1969). The latter was presumably founded because Ctesiphon had become too cramped to allow the large-scale construction necessary for the administration of the expanded Sasanian Empire. This iwan is the Taq-i Kisra, and possibly the same palace of Khusrau said by the Byzantine historian Theophylact Simocatta to have been constructed using "Greek" marble and with the help of "craftsmen skilled in ceilings" sent by Justinian. In 614 the remains of the "True Cross," captured by the Sasanians in Jerusalem, were taken to a royal treasury, probably at Asbanbur. A church, royal stables, parks, and an aviary were located nearby. There were several other important urban centers in this area, including a city founded by Khusrau I after he sacked Antioch in 542. Known as Khusrau's City of Antioch (Veh-Antiokh-Khusrau, also known as Rumiya); its public buildings included a hippodrome and baths and it was populated with Syrian deportees. Located south of Ctesiphon, that city should be identified with the site of el-Bustan. Finally, although the Sasanian palaces were stripped of their decoration after the Arab conquest, richly decorated private houses continued to be built nearby at Salman Pak as late as the tenth century (excavated by German and later Iraqi expeditions; see Abdul Khaliq, 1985–1986).

[*See also* Parthians; Sasanians; Seleucids.]

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CULT. Scholars in religious studies and related disciplines use the term *cult* to refer to the various forms of religious devotion attested for a civilization. This entry will focus on the Northwest Semitic cultural sphere, which in the period before 332 BCE included much of the coastal and inland Levant, from north of present day Syria and Iraq and south to the Sinai Peninsula. In the mid- to late second millennium BCE, the Northwest Semitic cultural sphere also included the Nile Delta in Egypt. During the first half of the first millennium, that cultural sphere moved west with the Phoenician colonization of much of the western Mediterranean. *Northwest Semitic* is a linguistic term used to describe Canaanite and Aramaic, the two primary languages spoken by the inhabitants of the coastal and inland Levant during much of the period before 332 BCE; it is also used by specialists to

describe the civilizations of the area and their cults. Canaanite dialects include Phoenician, Punic (Phoenician of the western Mediterranean), Hebrew, Ammonite, Moabite, Edomite, and Ugaritic (though some scholars would dispute this categorization of Ugaritic, viewing it as a separate language). Various Aramaic dialects are also attested in first-millennium BCE texts.

A number of important sources are available for reconstructing religious devotion in the Northwest Semitic cultural sphere. Among these are nonliterary material remains from various excavated sites: altars, temples, cultic utensils, and organic matter (e.g., charred bones from sacrifices); tombs and other burials; figurines, plaques, statues and engraved stelae with representations of deities or their symbols. In addition, literary materials of various stripe are well attested: cycles of myth, "epic" texts, royal inscriptions, treaties, pantheon lists, personal names, dedications to deities, and inscriptions on sarcophagi. The major Northwest Semitic literary corpora from the second millennium of significance for reconstructing cult include the Ugaritic texts (the extant archives of a cosmopolitan center on the northern Levantine coast destroyed in c. 1200 BCE); the Mari documents (letters and other materials from the eighteenth century BCE); and various Egyptian inscriptions from the New Kingdom (c. sixteenth–eleventh century BCE). From the first millennium, the most important sources include the Hebrew Bible (an anthology of Israelite literature spanning 1,000 years); various Phoenician, Punic, and Aramaic inscriptions; and the Canaanite mythic lore attributed to a Phoenician priest, Sakkunyaton, preserved by Philo of Byblos (late first/early second century CE), and transmitted in fragmentary form in Greek by the fourth-century church father Eusebius of Caesarea (in his *Praeparatio evangelica*).

Various aspects of Northwest Semitic cultic devotion have received significant attention from specialists in recent decades. These include general topics that transcend particular cults, such as the relationship of mythic texts to ritual; the functions of sacrifices and offerings; cultic devotion to dead ancestors; gender and the cult; and the relationship of official and popular religion, including attempts to define precisely what constitutes each. In addition, topics pertaining to particular cults, especially that of Israel, have attracted much interest. These include the place of child sacrifice and the role of a goddess or goddesses in the cult of Yahweh, and the broader question of the relationship of Israelite religion to its Northwest Semitic environment. Although all of these topics have attracted sustained attention from the scholarly community and frequently engendered passionate debate, in many cases no broad consensus has been reached.

Deities. Many gods and goddesses appear as actors in mythic and epic texts; they receive dedications from worshipers, support rulers and dynasties according to royal inscriptions, and function as witnesses in treaties; their names are listed in pantheon tabulations and appear as theophoric elements in personal names. Gods receiving cultic devotion are frequently imagined as beneficent parents or kin, providers of progeny and the earth's good bounty to their worshipers. The Ugaritic epic stories "Kirta" and "Aqhat," and *Genesis* 15, each evidence the motif of the heirless patriarch or king provided with a son by his divine benefactor. Various Ugaritic texts state that Baal's rains bring fructification to the earth; in "Kirta," El's command cures Kirta's disease. Names such as Binbaal ("son of Baal"), Bodtannit ("in the hand of Tannit"), Ashtartyaton ("Ashtart gave"), and Yoab ("Yahweh is father") well illustrate the manner in which worshipers imagined their relationship to the divine. Deities such as El, Asherah, Baal/Hadad, and Yahweh are imagined as creators—of the gods, of creatures, of the world. The name *Yahweh* may in fact be a causative form of the verb *to be*, meaning "he creates" with the object *ṣĕbā'ôt* "(the heavenly) armies" (Cross, 1973, pp. 60–71).

Northwest Semitic gods were typically paired with goddesses, as in other ancient Near Eastern cults: El with Asherah or Ashtart (according to Sakkunyaton); Baal/Hadad with Anat, Ashtart, Pidray or other goddesses; Yariḥ with Nikkal (*KTU* 1.24). God and goddess pairs are attested among the hundreds of divine figurines discovered throughout the Levant. According to some scholars, Yahweh was probably no exception to this pattern. Inscriptions discovered in the 1970s at Kuntillet ʿAjrud in the Sinai Desert, as well as biblical texts, such as *Deuteronomy* 16:21, suggest the probability of a consort relationship between Yahweh and Asherah, both in popular devotion and in non-Deuteronomistic state religion. However, this view remains controversial (see further, Saul M. Olyan, *Asherah and the Cult of Yahweh in Israel*, Atlanta, 1988; for a different approach, see P. Kyle McCarter, Jr., "Aspects of the Religion of the Israelite Monarchy: Biblical and Epigraphic Data," in *Ancient Israelite Religion*, edited by Patrick D. Miller, Jr., et al., pp. 137–55, Philadelphia, 1987).

It is clear that the idea of a pantheon or divine council was widespread throughout the Northwest Semitic cultural sphere, including in Israel. In the mythic and epic materials from Ugarit, El heads the divine council; in biblical texts such as Psalm 89:6–9 [Eng. 5–8], Yahweh, Israel's national god and likely a manifestation of El, is described similarly (see further, Cross, 1973, on the relationship of El, Baal, and Yahweh). While, the lesser gods in Yahweh's council are nameless and may possess no independent will or authority, this is not the case in the Ugaritic texts, where gods and goddesses are frequently described in conflict, vying for power. In the Baal cycle, Sea claims kingship over the gods, only to be vanquished by Baal; Anat threatens her father El, head of the council; Shapsh, the Sun, threatens Death in the name of El. A number of scholars have argued that El's authority over the pantheon erodes over time, but this remains unproved; in some formulations, El is thought to be displaced by Baal as head of the council (see, for example,

CULT. *Warrior god figure, perhaps Baʿal-Hadad.* Late Bronze Age. (Courtesy ASOR Archives)

Marvin Pope, *El in the Ugaritic Texts*, Leiden, 1955; and, more recently, U. Oldenburg, *The Conflict Between El and Baʿal in Canaanite Religion*, Leiden, 1969). A tendency to elaborate the pantheon through the fusion of divine names to produce new deities is a widely attested phenomenon (e.g., Tannit-Ashtart, Arshaph-Melqart, Eshmun-Ashtart); the divinization of a deity's attributes (e.g., holiness, justice), cultic elements and weapons (e.g., censer, lyre, lance), or the cult place itself (e.g., temple) is also well known in second and first millennia texts.

Israel's religion as attested in biblical sources is better described as monolatry than as monotheism; even biblical texts that insist on the worship of one god acknowledge the existence of others (e.g., *Dt.* 4:19–20, 29:25) and divine council scenes are not uncommon in biblical narrative. Yahweh's claim to exclusive worship was one component of his covenantal bond with Israel; in a typical ancient Near Eastern suzerain-vassal covenant, after which the Yahweh-Israel bond was modeled, the suzerain demands exclusive rights from the vassal. Israel's monolatry was not altogether different from the national cults of the other kingdoms that emerged in the area at about the same time. What little we know of the cults of Moab, Ammon, and Edom suggest that they too were focused on the worship of a national deity, although devotion to that god was very likely not exclusive.

The preeminent gods of mythic and epic texts, royal dedications, and pantheon lists were sometimes the deities who were most frequently worshipped by elements of the wider populace in a given place at a given time, but not necessarily. A god such as Baal Hadad, a major actor in the mythic cycles from Ugarit and Sakkunyaton's lore, whose name appears near the top of extant pantheon lists from Ugarit, enjoyed widespread popularity in the second and first millennia, among Aramaic as well as Canaanite speakers, given the frequency of his appearance in dedications, treaties, and personal names. A contrasting case is the goddess Astarte, a consort of Baal in some contexts. Though Astarte played a significant role in the official cult of New Kingdom Egypt, appearing in a variety of royal inscriptions, very few personal names compounded with Astarte are attested, suggesting that her role in popular worship might have been limited in that context. More difficult to explain is the evidence attested for the worship of the goddess Tannit (probably an epithet of Asherah) in the Punic colonies of the western Mediterranean. Tannit appears in literally thousands of dedications from the mid- to late first millennium, yet personal names compounded with Tannit are rare. Here we touch on the complex problem of the relationship between official and popular religion on the one hand and of various modes of popular devotion on the other. A deity important in the official cult may not necessarily be important in the quotidian lives of worshipers; a god or goddess important in one class of evidence for popular devotion may hardly appear in another class contemporaneous with it. Such disjunction suggests that there is still much we do not understand about the religious devotion of the ancients.

The study of myth and epic has been the focus of much attention since the initial discovery of ancient Ugarit more than sixty years ago. Three great poetic compositions, the mythic Baal cycle, and the epic stories "Kirta" and "Aqhat," written in a Canaanite dialect in an alphabetic cuneiform script, were unearthed; many lesser mythic texts of interest have appeared as well, some as recently as the last thirty years (see, for example, texts in *Ugaritica*, vol. 5, Jean Nougayrol et al., eds., Paris, 1968). These critical discoveries supplement the largely Phoenician mythological lore of Sakkunyaton from the first millennium; they tend to confirm

the basic authenticity of much of Sakkunyaton's lore, even though the latter is frequently shrouded in a hellenized, euhemerized form. Together, these two corpora form the basis for any serious discussion of Canaanite mythology.

The Baal cycle tells of the storm god Baal's battles with two foes: the forces of chaos represented by Sea (Yamm) or sea dragon (Lotan; cf. the cognate biblical word *Leviathan*) and the forces of sterility and death personified in the deity Death (Mot). The battles with Sea and sea dragon are alloforms, both ending in victory for Baal; a third version of this conflict pattern, in which Baal is vanquished by Sea, occurs in Sakkunyaton's lore. This mythic pattern of conflict is widespread, attested elsewhere in the Northwest Semitic cultural sphere, in various Hebrew Bible texts (for example, *Ps.* 29:10, 89:6–13 [Eng. 5–12]; *Is.* 27:1) and in the Mesopotamian myth *Enuma elish*, and has been the subject of much scholarly discussion. The details of each version may differ, but the general pattern is usually the same: Sea or sea dragon, a threatening force, is vanquished by a warrior god (Baal, Yahweh, Marduk) who assumes kingship after victory. The Baal cycle from Ugarit, which is incomplete and sometimes fragmentary, tells of the building of Baal's temple after his victory and his assumption of divine kingship but contains no creation story; in contrast, the *Enuma elish* tells of the creation of the heavens, earth, and humanity by victorious Marduk. *Enuma elish* begins with theogony; in contrast, the Baal cycle contains no theogonic narrative. No consensus has been reached on whether the Baal cycle represents a primitive version of the conflict myth without theogonic and cosmogonic elaboration, or it is incomplete in its present form, lacking a theogonic and/or cosmogonic element that was once present.

The precise relationship between myth and ritual has been widely debated for many decades, and on this no consensus has been reached. Many scholars believe that mythic and epic materials such as the Baal cycle, "the Birth of Dawn and Dusk" (*KTU* 1.23) and "Kirta" had a ritual, or cultic, setting; however, the function of the narrative in such a setting has been difficult to delimit. Some have even argued that ritual drama played a role in the Israelite cult. We know from a colophon that the Baal cycle extant from Ugarit was recited by the chief priest Attanu-Purlianni in the fourteenth century BCE under royal sponsorship (Niqmaddu II, c. 1375–1345), but the purpose of this recitation appears to have been the production of an official written version for the temple archives (*KTU* 1.6 VI 54–58). It has never been demonstrated convincingly that the Baal cycle, "Kirta," or any other mythic or epic narrative was actually acted out in the cult in some kind of ritual drama. (see further I. Engnell, *Studies in Divine Kingship in the Ancient Near East*, Uppsala, 1943, and Helmer Ringgren, *Religions of the Ancient Near East*, Philadelphia, 1973, pp. 162–164, for favorable articulations of the myth and ritual position).

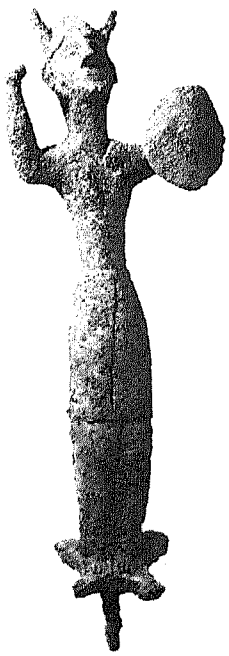
Temples. A deity was worshiped in a holy place that was sometimes located on an elevation, frequently within the confines of a city. A temple, the god's dwelling, or house, often stood within the sanctuary grounds. Divinities were enthroned within their temples; they were served by cultic functionaries—specialists responsible for the upkeep of the sanctuary and its proper functioning. In addition to a cultic image or stelae, the typical temple might also contain incense stands or altars; offering tables, dishes, bowls, or basins; votive items, such as ornaments of precious stone, metal objects, or beads; and burial pits for discarded cultic materials. Where there is evidence for an altar of burnt offerings, it stood outside of the house. A broadhouse structure from Middle and Late Bronze Age Hazor (beginning with stratum III) had a rectangular platform in its courtyard with a drainage channel, evidence of the presence of an altar. An altar of unfinished stones and soil, with plastered channels, was found in the court of the Iron II Israelite temple at Arad (*ANE* 2, picture 105). At Beersheba, a deconstructed horned altar of ashlar blocks was found.

Engraved stelae portray deities receiving offerings from kings (e.g., Yehawmilk of Byblos, *ANE* 1, picture 130, where the goddess, the "Lady of Byblos," raises her right hand in a gesture of blessing). In some cults, royal personages served as hereditary priests or priestesses for their patron deities; Sidon is one example of this, as evidenced in the Tabnit and Eshmunazar inscriptions (*KAI* 13 and 14; English translations in *ANE* 2.227–229). [*See* Eshmunazar Inscription.] Kings frequently boasted of their temple building activities, a pattern ubiquitous in the ancient Near East. When Israel emerged as a significant regional power in the tenth century, a national shrine was constructed under royal patronage for Yahweh in Jerusalem, the imperial capital. A house of cedar, it stood next to the royal palace, a symbol of order, stability, and the eternal rule of both the Davidic dynasty and its patron god. Evidence for the king as a quasi-divine figure, the adopted son of his patron god, is found both in "Kirta" and in Judean royal propaganda (e.g., *Ps.* 2:7–9, 89:20–38 [Eng., 19–37]; *2 Sm.* 7:11b–16).

A number of architectural patterns are attested for temples in the Northwest Semitic cultural sphere. The most common temple design in Canaan proper was the "broad house," with an entry on one long side into a single room; often, a niche was placed in the wall opposite the entrance, within which a divine image or images might rest. This temple design is exceedingly ancient, predating the beginnings of the so-called Bronze Age at Chalcolithic 'Ein-Gedi in Israel (Aharoni, 1982, pp. 43–45); it was utilized at such sites as Hazor, Megiddo, Jericho, and Lachish, as well as at Israelite Arad. Another temple pattern, the "temple tower," is attested at such sites as Shechem, Megiddo, and Hazor in Israel at Alalakh in Syria; it was a broad room with towers flanking the entry area. A third model, the "long house," was used for the Jerusalem temple built by Solomon in the tenth century BCE. It consisted of three rooms, with an entry

on one short side. The closest architectural parallel to the Jerusalem temple comes from Neo-Hittite Tell Ta'yinat (ninth century BCE). It has been argued that this version of the long house, along with other Neo-Hittite cultural features, was borrowed during the tenth century BCE, Israel's imperial era.

Many cultic icons have been unearthed, some of which stood on platforms, in cultic niches, or elsewhere within temples. Some of these are clearly representations of deities or divine pairs in a variety of poses; others, such as images of bulls, appear to have served as thrones for deities; in some instances, deity and throne were discovered attached. Icons were often cast in metals such as bronze or copper; some were covered with silver, gold, or electrum. These figurines are generally quite small, especially in comparison to Mesopotamian examples. One example of a divine image is the seated stone figure found in the niche of the Late Bronze Stela Temple excavated at Hazor (*ANE* 2, picture 103). Along with the statue of the deity, there were a number of standing stones (stelae), well-known symbols of divinity found elsewhere. Interesting metal icons from the Levant include a divine couple standing on the back of a bull (Ora Negbi, *Canaanite Gods in Metal*, Tel Aviv, 1976, no. 14) and a consort pair in a chariot (no. 22). Though the cult of Yahweh apparently eschewed images of the deity, the use of stelae to symbolize Yahweh's presence was probably common before the Deuteronomistic reforms of the eighth and seventh centurie BCE, to judge from the archeological finds at Israelite Arad and the textual evidence (e.g., *Gn.* 28:11–22; 35:14, 20). Besides stelae, some Israelite temples contained icons that functioned as thrones upon which the invisible Yahweh was seated (e.g., the bulls found at Bethel and Dan and, according to biblical texts, cherubs in the Jerusalem Temple). An asherah, likely a stylized wooden tree symbolizing the goddess Asherah, stood in various Yahwistic sanctuaries in Israel and Judah, according to a variety of biblical texts; it is also mentioned in inscriptions from Kuntillet 'Ajrud, Khirbet el-Qom, and Tel Miqne.



CULT. *Bronze figurine of warrior god standing on an oxhide ingot.* From Enkomi, height 35 cm. (Archives CFA Schaeffer, Paris)

Sacrifices. Animal sacrifice and the cultic collection of the products of agriculture and horticulture were activities widely practiced throughout the Northwest Semitic cultural sphere. Sacrifices and offerings had many purposes: they were intended as gifts for deities, from whom worshipers frequently sought blessing; they served as food for the gods; and they were a form of taxation to support the cultic establishment. Other attested purposes include the correction of sin, the fulfillment of vows, and communion with the deity. The system of sacrifices and offerings evidenced in the most detail is Israel's, but there are significant data from Ugarit and the western Phoenician colonies. In many respects, Israelite sacrifice resembled that of other Northwest Semitic peoples. Israelites offered up unblemished sheep, goats, and cattle; birds such as turtledoves and pigeons; oil, wine, and grains in various forms; and incense. From sacrificial lists found at Ugarit there is evidence that cows and sheep were offered to deities of the city's pantheon (*CTA* 34, 35, 36). "Kirta" describes impressionistically a sacrificial ritual in which a lamb and bird are offered, wine is poured out, and prayer is directed toward heaven. Punic sacrifices included goats, sheep, cattle, birds, and grain products. Much Israelite sacrificial terminology is not unlike that found in inscriptional evidence from the Punic west, Ugarit, and elsewhere. Sacrificial tariffs from Marseille (*KAI* 69; English translations in *ANE* 1.221–223) and Carthage (*KAI* 74; translations in *ANE* 1.223–224) list offerings that include such sacrificial terms as *zbḥ*, *kll*, and *mnḥt*, all with biblical cognates [*see* Marseille Tariff]; they bear witness to sacrifices shared by priests and worshipers, as in Israel's cult (cf. Heb., *šĕlāmîm*, "sacrifices," in *Lv.* 3).

Differences between Israelite sacrifice and that of other Northwest Semitic cults are evident. While the manipulation of blood played a central role in the former, there is little or no indication that it did at Ugarit or in first-millennium Phoenicia or the Punic west (cf. Mesopotamia, where blood played no significant role). Furthermore, purity concerns, so central for Yahweh's cult, are virtually unattested outside of Israelite sources. For example, the Hebrew term *ṭāmē'* ("unclean") and other derivatives from its root, are unattested in the Ugaritic-Phoenician lexicon (however, note the apparent concern for the purity of the sanctuary in Lucian's description of the cult at Hierapolis [*The Syrian Goddess* 52–53] and the evidence for purity concerns in the cult in

Mesopotamia). There are indications that a feeding and pleasing element was present in Israelite sacrifice to Yahweh, but it was at best vestigial (see *Gn.* 8:20–21; *Lv.* 21:22; *Nm.* 28:2; and *Dt.* 33:10, where it occurs).

Textual and archeological evidence indicates that child sacrifice was practiced in much of the Northwest Semitic cultural sphere, including Israel. Sacred precincts (tophets) have been unearthed at a number of sites in the central and western Mediterranean where the Phoenicians had established colonies (e.g., Nora, Sulcis, and Tharros in Sardinia; Motya in Sicily; Carthage and Hadrumetum [Sousse] in North Africa); in the east, the only major site to have been discovered thus far is at the Amman Airport in Jordan. The largest site was found at Carthage. This precinct, which was utilized for nearly six hundred years, contains thousands of burial urns filled with the charred bones of infants, children, or small sacrificial animals and birds, which very likely functioned as substitutes for children; the burials were marked in some phases by stelae, some of which record dedications to Baal Hamon (very likely an epithet of El) and his consort Tannit (very likely an epithet of Asherah). Sakkunyaton records two versions of a myth in which El (called Kronos) sacrifices his "only son" in a threatening situation (war/plague). Various Greek and Latin sources bear witness to Punic child sacrifice and may even allude to the myth of El recorded by Sakkunyaton (e.g., Diodorus of Sicily, *Library of History* 20.14.7; Tertullian, *Apology* 9.4). El and Asherah appear to be the preeminent deities of child sacrifice, at least in the Punic West; for the East only conjecture is possible.

A technical term, *molk*, occurs occasionally in Phoenician and Punic inscriptions, usually compounded with a second term (e.g., **molk 'adam*; **molk ba'l*; **molk 'omor*); in such compounds, *molk* seems to mean a type of sacrifice, either of a child or of an animal substitute for a child (see *Eissfeldt*, 1935). The biblical *molek* is best explained as a sacrificial term cognate to the Punic *molk*, although some scholars argue that *molek* is the name of a god of child sacrifice (e.g., George C. Heider, *The Cult of Molek: A Reassessment*, Sheffield, 1986; John Day, *Molech: A God of Human Sacrifice in the Old Testament*, Cambridge, 1989). Child sacrifice in Israel was more likely directed to Yahweh than a supposed god Molek, as the development of the so-called law of the firstborn (*Ex.* 13:1–2, 11–16, 22:28b–29 [Eng. 29b–30], 34:19–20; *Nm.* 3:11–13, 41), certain prophetic texts (*Ez.* 20:25–26; *Mi.* 6:6–8), and *Genesis* 22 all strongly suggest. The cultic function of child sacrifice is not entirely clear. Evidence suggests that parents sacrificed their children to fulfill a vow; to petition for blessing, health, and happiness; to give thanks for blessings received; or to obey the order of a patron god. Some texts present child sacrifice as a response to crisis and danger (*2 Kgs.* 3:27; Diodorus of Sicily; the El myth recorded by Sakkunyaton); *Micah* 6:6–8 suggests that such sacrifices to Yahweh were presented as sin offerings. Whatever the function of child sacrifice, animal substitution was a widely attested option for parents (see especially the second/third century CE Ngaous inscriptions from Algeria, which contain substitution ritual formulas [Eissfeldt, 1935, pp. 1–7]).

Ancestor Cults. Life after death, the abode of the dead, the archaeology of death, the ritual state of mourning, and cults devoted to dead ancestors have all attracted serious attention from the scholarly community in recent years. Ancestor cults were apparently quite widespread, attested among both Aramaic and Canaanite speakers, to judge from the archaeological and textual evidence. Various sources suggest that members of royal and aristocratic elites, and perhaps others, communed with dead ancestors in the home, in temples, and possibly in the context of a property-owning, feasting society called the *marzēaḥ* (there is, however, much that we still do not understand about this institution, including the extent of its associations with ancestral cults). The Hadad inscription from eighth-century Zincirli (*KAI* 214) mentions the obligation of the heir to invoke the name of the dead king in Hadad's temple in a sacrificial context. This notion of the heir invoking the dead father's name occurs in the Hebrew Bible as well, where the erection of a memorial stela by David's son Absalom is mentioned (*2 Sm.* 18:18; cf. the Ugaritic "Aqhat," where the heir is obliged "to set up a stela for his divine [dead] ancestor," *KTU* 1.17 I 26). The heir may have cared for and fed the dead, as in Mesopotamia, although the exact nature of this activity has been the subject of vigorous debate (see Theodore J. Lewis, *Cults of the Dead in Ancient Israel and Ugarit*, Atlanta, 1989, for a discussion). It seems clear that the dead were deified, even in Israel (*1 Sm.* 28:13 and possibly *Is.* 8:19), but the exact nature of their "divine" status remains unclear. Ugaritic pantheon lists typically begin with or include *'il'ib*, most convincingly explained as "the divine (dead) ancestor." A class of ancestors called Rephaim is mentioned in materials from both the second and first millennia BCE. The meaning of their title ("hale ones"; "healers"; "weak," or "sunken, ones"; and even "great ones"?) and even their status as dead ancestors has been much discussed. No consensus has emerged regarding the meaning of their title, but most scholars now view the Rephaim as dead ancestors rather than living heroes.

Cultic Specialists. Religious practitioners and cultic functionaries such as priests, prophetic figures, mediums, diviners, and professional mourners are all attested in texts from the Northwest Semitic cultural sphere. Each specialization had its own area of influence and control; each probably mediated skills through forms of apprenticeship. The priesthood controlled the sanctuary complex, collecting and processing offerings and sacrifices from worshipers; they oversaw the care of the property, provided for the music and song of cultic rites, blessed worshipers, and practiced divination in some contexts. Evidence suggests that priests also functioned to mediate mythic and epic lore and prob-

ably other forms of knowledge (see for instance the role ascribed by tradition to Sakkunyaton, allegedly a Phoenician priest, or the activity of Attanu-Purlianni in fourteenth century BCE Ugarit, as witnessed in the Baal cycle colophon [*KTU* 1.6 VI 54–58]). Aside from priests, other specialists and functionaries are attested in various Northwest Semitic cults. A Phoenician inscription from Kition in Cyprus mentions, among others, "servants" (*nʿrm*), "sacrificers" (*zbḥm*), "barbers" (*glbm*), "masons" (*ḥršm*), and a chief scribe (*rb sprm*); other lists mention singers, musicians, male and female "holy ones" (some claim these were cult prostitutes, others deny it. See further, Kavel van der Toorn, "Female Prostitution in Payment of Vows in Ancient Israel," *Journal of Biblical Literature* 108 [1989]: 193–205, on the problem of sacred prostitution). Sacrifices and offerings functioned partially to support the cult and its specialists, a form of taxation in kind. There is evidence that at least some temple complexes also had their own flocks and herds: lists of cultic functionaries from Ugarit mention *nqdm*, "herders," along with the priests and other temple officials. In Israel, the priesthood of Yahweh was all male, in contrast to the cults of other Northwest Semitic deities, where women sometimes played a priestly role (e.g., Sidon and Carthage). There is evidence that at least some priesthoods were hereditary elites. A stela from Carthage lists three generations of high priests from the same family (*KAI* 81); a tomb inscription lists five generations of priests. In Israel the priesthood developed over time from a group of specialists (Levites) open to the adoption of outsiders as apprentices (e.g., Samuel) into an increasingly exclusive, hereditary elite. Conflict between various priestly clans is well attested in biblical sources.

Prophetic activity associated with the cult is attested in Israel and elsewhere in the Northwest Semitic cultural sphere. Through the oracles of prophets, often delivered in an ecstatic state, a god's message to a king or community was mediated. The twelfth-century narrative of Wenamun, a cultic official from Karnak, reports an incident in which an attendant of Zakarbaal, ruler of Byblos, entered an ecstatic state during a sacrifice and delivered a divine oracle (see *ANE* 1.18). The Mari texts attest to the activity of male and female prophetlike figures (e.g., *āpilu and āpiltu, muḫḫu*). The Aramaic Zakkur inscription from Ḥamath claims that Baal Shamayn (Baal Shamêm) spoke to the king through intermediaries (*KAI* 202). Various anthologies of prophetic oracles survive from Israel, where prophets claimed to mediate Yahweh's word. Intermediation was accomplished by persons peripheral to the cult, as well as by those who occupied a central position, and positions could change over time (see further, R. R. Wilson, *Prophecy and Society in Ancient Israel*, Philadelphia, 1980, for an interesting comparative perspective). Prophetic figures, like priests and others, practiced forms of divination.

Other religious specialists included mediums and necromancers and professional mourners. Mediums and necromancers, many of whom were women, consulted the dead on behalf of the living (*1 Sm.* 28; *Is.* 8:19); some texts suggest that the dead possessed useful information that the living might want to know, as well as the power to bring well-being to those who survived them. Mediums and necromancers apparently communicated with the dead by means of imitating their characteristic speech: bird sounds (*Is.* 8:19, 29:4, 38:14; and cf. "Gilgamesh," *ANE* 1.58; "Descent of Ishtar," *ANE* 1.81; and "Nergal and Ereshkigal," *ANE* 2.9, for Mesopotamian texts in which the dead have the appearance of birds and/or make birdlike sounds). Because they competed with priests and prophets in the arena of divination, mediums and necromancers were attacked by their increasingly powerful rivals in Israel during and following the period of the Divided Kingdom (*Dt.* 18:10–12; *Lv.* 19:31; 20:6, 27). Professional mourners, frequently women skilled in weeping, wailing, and the composition of lamentations, are attested in a number of contexts ("Kirta"; *Jer.* 9:16–18, 19–20 [Eng. 17–19, 20–21]; *2 Sm.* 1:20, 24). It is clear that women

CULT. *Gypsum statuette from Tell Asmar.* (Courtesy Oriental Institute of the University of Chicago)

played an important role in death-related specializations in at least some Northwest Semitic cults.

[*See also* Arad; Beersheba; Canaanites; Kuntillet ʿAjrud; Mari Texts; Temples, *articles on* Mesopotamian Temples *and* Syro-Palestinian Temples; Ugarit. *In addition, most of the other sites mentioned are the subject of independent entries.*]

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CUNEIFORM. The first descriptions of cuneiform writing were brought to the West by travellers in the seventeenth century. They used terms such as *pyramid, triangle,* and *delta* to express the configurations of the eye-catching wedge-shaped heads on top or to the side of strokes incised on clay tablets. The use of cuneiform writing covers more than three millennia from the time of its invention (pictographic precursors) at the end of the fourth millennium to the latest datable text attested in 74/75 CE.

G. F. Grotefend's epoch-making thesis, presented in Göttingen in 1802, "Provisional Report on the Reading and Explanation of the So-Called Cuneiform Inscriptions of Persepolis" used *cuneatus,* "wedge shaped," in its Latin title. The term *cuneiformis,* "in the form of a wedge," has given rise to the modern designations cuneiform writing, *écriture cunéiforme* and *Keilschrift.*

The incision made on wet clay with a stylus, usually cut from a reed, automatically leaves a "wedge" at one end of the stroke, where more pressure is exercised. In the period of the Akkadian dynasty (c. twenty-third century BCE) the wedge was already seen as so characteristic of the writing that, although unnecessary, it was used in inscriptions carved in stone or—more rarely—incised in metal as well. Independently of its formal aspects, the term *cuneiform* is used today for a whole system of writing that is distinct from the other early Near Eastern invention, Egyptian hieroglyphic script. The system of the so-called Proto-Elamite script has not yet been fully evaluated because of its still imperfect state of decipherment and scholars' inadequate knowledge of the (Old) Elamite language.

The cuneiform system consists of signs denoting a word (including morphologic affixes or not); signs denoting a syl-

lable, most of these being phonetic abstractions of the sound of a word sign (e.g., *da*, "side"; syllable *da*); and number signs. The system of syllabograms is remarkable (as compared with other syllabographic systems, both ancient and modern) in that it not only denotes v(owels) alone—[a], [i]—or c(onsonant) + v(owel)—[ba], [gu], [ne]—but also v + c—[ab], [id], [ug]—and even c + v + c—[bar], [kal], [tum]. With this system, during the last quarter of the third millennium, scribes handling cuneiform script were already able to yield "visible speech" with a relatively high degree of phonetic exactitude. [*See* Scribes and Scribal Techniques; Writing and Writing Systems.]

Syllabography as described above does not include consonantal clusters—*[tra], *[stra], *[art], *[arst], *[bart]. This means that languages having such clusters had to break them up in writing—ši-pa- for [spa] in Hittite.

In the course of history, cuneiform writing has been applied to far more languages than Sumerian (a language without known linguistic affiliation) and Akkadian (a Semitic language). The number of "cuneiform languages" includes Amorite (Semitic, practically restricted to the notation of proper names); Hurrian and Urartian (of Caucasian descent); Hittite, Luwian, and Palaic (Indo-European); Hattian (in central Anatolia); and Elamite (perhaps a remote cognate of the Dravidian languages). For Ugaritic (Semitic, fourteenth and thirteenth centuries BCE only) and Old Persian (Achaemenid Empire) signs have been invented that are formally cuneiform but are part of a system only loosely related to the one described so far (see below). [*See* Sumerian; Akkadian; Hurrian; Hittite; Ugaritic.]

Writing Cuneiform. From the inception of cuneiform writing, a distinction has been required between the stroke, or line, incised with the sharp end of the stylus and the impression of circles, semicircles, ovals, and triangles administered with its truncated end. The stylus was cut from a reed as a rule, but there were also luxury examples made of precious metal. It is difficult to reconstruct the exact way the stylus was held in the hand, but modern experiments suggest that it was held somehow between outstretched fingers rather than in a closed fist: only in the first manner would it be possible to keep the stylus at a relatively low angle to the tablet.

Whereas in the earliest texts both strokes and curved lines occur, there soon was a tendency toward straightening curves and replacing them with two or more strokes. Because the great majority of signs were composed of two to more than ten strokes or impressions, there most probably were set rules for their sequence, as is the case, for example, with Sino-Japanese signs. To date, almost no research has been devoted to reconstructing stroke and impression sequences.

There has been a long debate on the direction in which ancient scribes of a given period read and how, consequently, cuneiform signs are supposed to read. Pictographic precursors, such as the signs for bird, fish, or the head of a dog only make sense if viewed in their natural position. On stone, the abstract forms descending from the original signs were still written—and certainly were read—in their original sense as late as the eighteenth century BCE, an example being the stela inscription of the code of Hammurabi. On the other hand, everyday writing on clay tablets, as early as the beginning of the second millennium BCE and sometimes even earlier, only makes sense if read at an angle of 90 degrees turned to the left. Therefore, during several centuries two ways must have existed of looking at a cuneiform inscription—one vertical and one horizontal. It is only in about the middle of the second millennium BCE that stone inscriptions begin to be found that are to be read horizontally. Because inscriptions from the first millennium BCE were the first to be known, Assyriologists have become used to reading any cuneiform inscription horizontally, even if it is from the middle of the third millennium, Modern copyists arrange their specimens horizontally. The reason for the change of direction, whenever it definitely took place, can only be surmised and is not of primary concern here.

Ancient Mesopotamians did, in some way, realize that they were practicing "cuneiform." The individual signs had names (like the names of letters of the alphabet), and the name of the vertical wedge, DIŠ with the reading *šanṭag*, in Akkadian *šanṭakku*, became the geometric term for *triangle*. Also, as mentioned above, the wedge-formed heads were deliberately imitated in stone where, theoretically, strokes alone would have been sufficient.

Origin of Signs. It is mainly the research of Denise Schmandt-Besserat that has elucidated the prehistory of cuneiform writing (Schmandt-Besserat, 1992). Until the 1970s, the general opinion was held that writing was an ad hoc invention for administrators in southern Mesopotamia at the end of the fourth millennium. However, the systematic inspection of small, variously shaped clay objects found frequently in prehistoric strata at Near Eastern sites, but also in North Africa and India, has shown that such clay objects, or tokens as they have come to be called, were not haphazard items but part of a system. There is, in fact, a great variety of these objects: spheres (full, three-quarter, half-, or quarter sized), or disks, with or without incision and/or perforation; cylinders, cones, tetra-hedrons, pyramids; and skittles, sometimes with the suggestion of an animal head. At Susa, in Elam, such tokens have been found enclosed in hollow clay balls. The idea therefore arose that these tokens were meant to represent quantities of given things or animate beings. In a few cases, a strong resemblance can be shown to exist between a token and an archaic cuneiform sign. Consequently, it is possible to conclude that certain three-dimensional tokens were transformed into two-dimensional impressions on clay. [*See* Susa.]

Because there are no inventories of tokens for any given site, it is not possible to tell how widespread a consensus

there may have been on forms and "meanings." Be that as it may, the fact that there seems to have been, even with local variations, a certain series of one-to-one correspondences between a token and a meaning justifies declaring the tokens to be precursors of writing. This would not belittle the achievement of the real invention of writing, which was the arrangement of signs, in an invariable position, on a two-dimensional surface, with the purpose of communicating an idea or, adversely, with the aim of changing visible speech (writing) back into audible signs (hearing).

The earliest cuneiform texts attested so far are from the southern Babylonian city of Uruk. In their great majority, these texts combine number signs with signs denoting things counted. Thus, the predominantly economical and administrative character of the earliest Mesopotamian writing becomes apparent: it seems in fact to have been the needs of economics—and not of historiography or religion—that prompted citizens of early Sumer to "visualize speech," however rudimentary that may have been. [*See* Uruk-Warka.]

Sign Types. In general, cuneiform signs can be classified in the following ways:

1. Signs that were, originally at least, the more or less unabbreviated reproduction of the thing they denote—boat, reed, head, hand.
2. Signs where one part stands for the whole (*pars pro toto*)—different heads of animals standing for the respective animal, or a penis for a man.
3. Other kinds of abbreviations—three hills for mountain, mountainous country, foreign country.
4. Signs where the thing reproduced serves as a symbol—a radiating star (or sun) denoting the sky or a divinity and the reed-bundle, symbol of the goddess Inanna standing for the goddess herself.
5. A token impression.
6. Free invention (difficult to prove, but certainly feasible)—signs for which the form had no association whatsoever with its meaning.
7. A rather complicated system of number and measure signs (measurements of length, area, weight, and capacity) in which only the digits 1–9 are multiplications of 1, with 10 corresponding to an invented sign (see above).

Relatively simple signs were soon exhausted when scribes began putting together a system. This is why one of the means of creating new signs was to combine two (or, more rarely, three or even four) individual signs to produce a new meaning. There were three ways of doing this: juxtaposition, incorporation, and ligature or monogram:

1. *Juxtaposition.* Two (or more) signs are grouped and not given their original meaning (and pronunciation)—that is, A.B = a.b, but the combination of the two (or more) signs yields a new meaning (and pronunciation)—SI.A ≠ * si.a, but *diri(g)*, "exceeding."

2. *Incorporation.* One sign is written within another one, B within A, or, as Assyriologists are used to formulating: A × B ("A times B")—NINDA, "bread" within KA, "mouth," yields gu_7, "to eat."

3. *Ligature and monogram.* In a ligature (joining), signs A and B are put together more closely than would be the case in a simple enumeration of A, then B: for example, MINUS, "woman" + KUR, "foreign country," stands for "slave woman" (*géme*). The border between ligature and juxtaposition is however, a fluid one. A monogram is the ligature of two signs where one element (stroke) is common to both. The sign for *total* (*šunigin*) is very frequently written as a ligature of the signs ŠU and NÍGIN, the final vertical wedge of ŠU and the initial vertical wedge of NÍGIN being identical.

The system of cuneiform signs may have been created in the course of a few generations, but it never ceased evolving.

Signs fell out of use and were completely forgotten; others were newly created, and, most important of all, the forms of the individual signs changed throughout the centuries.

Paleography. The science of studying writing on a given material, with special regard to diachronical change and to different scribal "hands" within a given period, is known as paleography. In the field of cuneiform studies, paleography would ideally imply an ability to determine complete sign inventories for each of a series of narrowly defined periods. Such is not the case, however, in spite of the fact that most publications of cuneiform texts are hand copies of originals that represent individual "hands"—that is, manuscripts in the exact meaning of the word.

The most general tendencies observed in the evolution of cuneiform writing are the elimination of wedges that came to be considered redundant and the reduction of angles at which a stroke or wedge might be written, from the original sixteen to finally only four (horizontal, vertical, oblique upward, and oblique downward). It should be possible, of course, to describe the general aspect of a scribal hand, but next to no preliminary studies have yet been done.

One of the most urgent needs of cuneiform paleography is, as was suggested above, to know the sequence in which the wedges or impressions of an individual sign were made. Close inspection of original cuneiform tablets, but also of first-quality photographs, often shows which of two intersecting wedges or strokes was incised first and which one second: it is frequently possible to see that one incision cuts through or overlaps another. Large-scale work on originals and photos would make significant progress in this area.

Numbers of Signs. Very few cuneiform signs have only a single reading (or value); the great majority have two, three, or, less frequently, even more possible readings. In Sumerian, a single sign may denote only a word or it may

also have a syllabic value—*ra* as a verb means "to strike"; as a syllabogram it denotes the dative (*-ra*) in *lugal-ra*, "to the king." In Akkadian, certain Sumerian word signs are used with their Akkadian reading (so-called Sumerograms)—LUGAL is the equivalent of *šarrum*, "king." RI as a syllabic sign may be read *ri* or *dal, tal*, depending on the context. In Hittite, there are three levels: syllabic signs, Sumerograms, and Akkadograms—that is, Akkadian words spelled syllabically but read in Hittite.

This polyvalence contributed considerably to reducing the maximal number of signs needed to write literary or highly specialized texts with rare words as well as all sorts of proper names (persons, gods, places). Margaret W. Green's list of the signs found in the corpus of the oldest tablets from Uruk (c. 3000 BCE) contains 771 entries plus 58 number signs (Green and Nissen, 1987). One millennium later, the sign inventory at the time of the Third Dynasty of Ur had about eight hundred signs (no exact count is available). A scribe of the Hammurabi period (eighteenth century BCE) could manage to write Akkadian—entirely excluding Sumerograms—with a minimum syllabary of a little more than eighty signs, and the Old Assyrian merchants in their trading colonies in Asia Minor (nineteenth century BCE) used a syllabary of only sixty-eight signs. Considering these widely differing figures, it is possible to suppose that there were various degrees of literacy. A merchant could handle his correspondence and accounts with five-or six-dozen signs but would have been unable to read (or write) a literary text spelled in a more sophisticated way.

Derived Systems. In the harbor and trade city of Ugarit on the Mediterranean coast, a system of only thirty signs was invented in the fourteenth century BCE to write the local Semitic language. Twenty-seven of these signs denote consonants and the other three stand for *aleph* with inherent a, i, or u—that is, 'a, 'i, and 'u. Formally this writing is cuneiform because the components (one-five) of the individual signs are indeed wedges incised or impressed on wet clay. As a system, however, Ugaritic cuneiform has its closest cognates in the Egyptian one-consonant signs and in various consonantal writing systems of Syria and Palestine. The Ugaritic variety of cuneiform did not survive the invasions of the Sea Peoples in the thirteenth century BCE.

The origin of Old Persian cuneiform is still debated. It was Darius I (521–486 BCE) or one of his predecessors who had writing "invented" for the purpose of representing their tongue. The system comprises three vowel and thirty-three consonant signs with inherent vowels a (twenty-two signs), i (four), and u (six). The sign components similar to Ugaritic cuneiform, but totally independant of it, are wedges, varying between three and five per sign. There were, additionally, eight "logograms" (e.g., for Xerxes, Ahuramazda) that are more complicated. Old Persian cuneiform was exclusively used for monumental inscriptions, whereas the administration of the empire used either Elamite (on clay tablets) or Imperial Aramaic. The system was in use until Artaxerxes III (358–338 BCE).

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CYCLADES. *See* Aegean Islands.

CYPRUS.

The third largest island in the Mediterranean Sea (9,251 sq km, or 3,572 sq. mi.), after Sicily and Sardinia, Cyprus has a strategic location in the northeastern corner of the Mediterranean that has proved to be both a blessing and a curse throughout its past twelve thousand years of settlement. Positioned some 70 km (44 mi.) south of Turkey and some 95 km (64 mi.) west of Syria, Cyprus was drawn into the trade and commerce that went east and west between the Aegean and the Levant, as well as north and south between Anatolia and Egypt. Prosperity stimulated plunder and conquest, however. Cyprus caught the eye of the warrior as well as that of the merchant, and there may often have been little difference in motivation between those who came to trade and those out to loot and conquer.

During its long history, Cyprus has been ruled by many groups of people not native to the island: Hittites; Greeks; Phoenicians; Romans (30 BCE–330 CE); Byzantine Greeks (330–1191); Crusaders, including the Knights Templar, Lusignans, and Venetians (1191–1571); Ottoman Turks (1571–1878); and the British (1878–1960). In 1960, Cyprus became an independent republic but was torn asunder only fourteen years later by the Turkish invasion of 1974. Cyprus

remains divided, with the northern 37 percent of the island under Turkish military rule.

While this historical pattern of foreign rule has been an obvious force in Cypriot history, it has had a subtle impact on the modern study of Cypriot prehistory and archaeology. Developments on Cyprus came to be seen in terms of foreign invaders and foreign cultural influences, often at the expense of the contribution of native Cypriots to the island's culture. The Greek element in particular, stemming from a colonization of (initially) the western part of the island in the eleventh century BCE (placed by some scholars in the twelfth), had such a profound effect on the island's subsequent history that many modern Greek-speaking Cypriots look on Cyprus as part of the Greek world. The scholarly consequences of that invasion were the cessation of archaeological work in the north, where many of the best-known archaeological sites on Cyprus lie, including Enkomi, Lapithos, Salamis, Soloi, and Vouni. [*See* Enkomi, Lapithos; Salamis; Soloi; Vouni.] Many Byzantine churches in northern Cyprus have been desecrated. [*See* Churches.] The international trade in looted icons, mosaics, and wall paintings from these churches has resulted in legal cases that have attracted worldwide interest and resulted in important legislation relating to the shipment and sale of illegally exported antiquities. Prior to 1974, with most archaeological work on Cyprus carried out in the north and northeast, the tourist industry was focused on that general area and especially on the sites of Kyrenia and Ammochostos/Famagusta. Archaeology and tourism are today focused in the south, making Cyprus a tragic example of the ways in which modern politics impacts on the study of the past. [*See* Nationalism and Archaeology; Ethics and Archaeology; Tourism and Archaeology.]

Cyprus has a geology and an environment that, in many respects, are as unusual and distinctive as its history. Contrary to what was once believed, the island was not originally part of the Anatolian mainland but emerged through volcanic activity from the sea bed. The main mountain range—the igneous rocks of the southern Troodos Mountains—was formed during late Oligocene or Early Miocene times; the sedimentary rocks of the northern Kyrenia range (also known as the Pentadaktylos) emerged during the Late Miocene. Between these two mountain ranges lies the great central plain known as the Mesaoria, access to which is through three main passes from the northern coast. The island has a series of natural harbors, including those at Morphou and Kyrenia on the north coast, Salamis and Ammochostos on the east, Kition and Hala Sultan Tekke and Amathus on the south, and Paphos on the west. [*See* Kition; Hala Sultan Teke; Paphos.] The special geological history of the Troodos, with their ophiolite copper deposits located in the pillow lavas of the southern part of the range, gave Cyprus its mineral wealth. From the Bronze Age down to modern times, that wealth has been the decisive factor in both the internal and the external affairs of the island.

Even a brief survey of the prehistory and ancient history of Cyprus, seen in light of modern archaeological work on the island, has to include the following periods:

Pre-Neolithic	c. 10,000 BCE
Aceramic Neolithic	c. 7000–5500
Ceramic Neolithic	c. 5000–3700
Chalcolithic	c. 3700–2400
Bronze Age	c. 2400–1125
Iron Age	c. 1125–800
Archaic Period	c. 800–500
Classical Period	499–323
Hellenistic Period	323–30
Roman Period	30 BCE–330 CE

The dating of all periods prior to the Late Bronze Age is based almost entirely upon calibrated radiocarbon dates. The use of such dates is, in some quarters, still regarded as somewhat controversial, but without them it is not possible to study Cypriot prehistory. What gives Cypriot prehistory its special character is that every period prior to the Iron Age has its own group of sites. Long occupation is characteristic of individual sites in the Aegean, Anatolia, the Levant, Iraq, and Iran, but not of Cyprus. For reasons not yet understood, the occupational history of archaeological sites on Cyprus almost never exceeded a single cultural period—nor was a former site ever reoccupied after being abandoned for some period of time. This means that there are no tells in Cypriot archaeology and no long, stratified sequences at major sites, which gives Cypriot prehistory its distinctive episodic character.

The Pre-Neolithic period has only come to light since the mid-1980s and is known only from one site, Akrotiri *Aetokremnos*. This is a rock-shelter at the tip of the Akrotiri peninsula, the southernmost part of Cyprus. It has produced a number of chipped-stone tools plus tens of thousands of fragments of pygmy hippopotamus bones together with a few bones of dwarf elephants (excavated by A. H. Simmons, University of Nevada at Las Vegas). Full-sized elephants and hippos must have made their way to Cyprus during the Last Glacial Maximum, when the distance between the island and the mainland was reduced to about 40 km (25 mi.). These animals, through genetic isolation, eventually evolved into the dwarfed endemic forms (known from Cyprus and from Malta). [*See* Malta.] The human population at Aetokremnos, presumably of Anatolian origin, seems to represent the initial (apparently unsuccessful) colonization of the island and must also have played some role in the extinction of the island's Pleistocene fauna.

At present it is not possible to make any connection between this pre-Neolithic episode and the following aceramic period, long known as the Khirokitia culture because it was

first discovered and is still best documented at the site of Khirokitia *Vouni* (first excavated by Porphyrios Dikaios; current excavations directed by A. LeBrun, CNRS, Paris). The circular, domed houses of Khirokitia, built of river stones and mud brick, were arranged to form a village that is certainly indicative of some degree of town planning and social organization. Ceramics were not in use, but bowls, trays, and figurines of gray-green stone attest to a high degree of technical skill, as well as to a feeling for form and design. One of the houses at the related site of Kalavasos *Tenta* even produced a wall painting, executed in red pigment on an interior plastered wall. It is roughly contemporary with the wall paintings from the site of Umm Dabaghiyah in Iraq (excavated by Diana Kirkbride) and the more elaborate examples from the Anatolian site of Çatal Höyük. [*See* Wall Paintings; Çatal Höyük.]

Following the Aceramic Neolithic of the Khirokitia culture, now known from at least twenty-five sites on Cyprus, there seems to be another break in the archaeological record. There is no evidence relating to the Khirokitia culture later than about 5500 BCE, and nothing from the following Sotira culture (or Ceramic Neolithic) seems to be earlier than about 5000 BCE. Whereas it is conceivable (if unlikely) that the initial human population on Cyprus died out following the abandonment of Akrotiri *Aetokremnos,* (with the Khirokitia culture thus representing a recolonization of the island), it is simply impossible that anything comparable could have happened during the (apparent) hiatus between Khirokitia and Sotira. A deterioration in the climate may have resulted in a change in lifestyle and settlement pattern and the disappearance of major "urban" settlements during the second half of the sixth millennium.

The Sotira culture, named after the site of Sotira *Teppes* (excavated by Dikaios), saw not only the introduction of pottery, but also a significant increase in population. Yet, the period's material culture, as known from such sites as Sotira *Teppes* and Ayios Epiktitos *Vrysi,* has much in common with the earlier aceramic culture. An even greater degree of cultural continuity can be documented for the transition from the Sotira to the Erimi (Chalcolithic) culture, named after the site of Erimi *Pamboula*) (also excavated by Dikaios). Some fifty sites contain traces of both cultures, a very unusual state of affairs in Cypriot prehistory.

As indicated by the use of the term *Chalcolithic,* it is during the period of the Erimi culture that the first evidence exists for the use of metal on Cyprus. It takes the form of a number of small copper artifacts from the sites of Erimi *Pamboula,* Lemba *Lakkous,* Kissonerga *Mosphilia,* and Kissonerga *Mylouthkia* (all excavated by Edgar Peltenburg, University of Edinburgh). It is now claimed (by N. H. Gale, 1991) that these objects were not made of Cypriot native copper and, at least in one case, not even of copper smelted from Cypriot copper ores. Thus, the existence of an otherwise unattested copper trade is implied, presumably between Anatolia and Cyprus.

The Erimi culture represents a great expansion in settlement and population, with more than 125 sites known from across the island. At these sites significant evidence is found for social patterning, emerging social ranking, and control by local elites. A remarkable deposit from Kissonerga *Mosphilia,* including a house (or shrine) model and a number of clay figurines (one of which shows a woman in the act of giving birth), must relate not only to contemporary religious beliefs, but also to some sort of communal ritual activity. [*See* Cult.] The clay figurines from Kissonerga *Mosphilia* must be related to the numerous stone cruciform female figurines made of picrolite, the most distinctive artifact from Chalcolithic Cyprus.

The transition from Chalcolithic to Early Cypriot (marking the beginning of the Bronze Age) is one of the most controversial episodes in Cypriot prehistory. The problem concerns the existence of a distinctive archaeological assemblage known as the Philia culture and the position of that culture in the chronological sequence: is it Late Chalcolithic, Early Bronze, or both? What further complicates the issue is that the Philia culture seems to be associated with major developments in metal technology—including the first use of gold, the use of arsenical copper, and perhaps even the use of bronze—and ceramic links with southern Anatolia, especially the site of Tarsus. All this has suggested to many scholars that the Philia culture (and thus much of the subsequent Early Cypriot period) was brought to Cyprus by invaders (or colonists) from southern Anatolia (cf. Manning and Swiny, 1994; Mellink, 1991).

It seems best presently to discount any strong influence from Anatolia and to regard the Philia culture as a transitional phase, covering a period of about one hundred years (c. 2500–2400 BCE), containing elements of the previous Chalcolithic and the forthcoming Early Cypriot periods. For this reason, A. Bernard Knapp (1990) has proposed that what is represented by Late Chalcolithic, the Philia culture, and Early Cypriot I–III be brought together as Pre-Bronze Age I (with Middle Cypriot I–II being Pre-Bronze Age 2). There is much to be said for this suggestion, save for the fact that changes in terminology almost always create more problems than they solve.

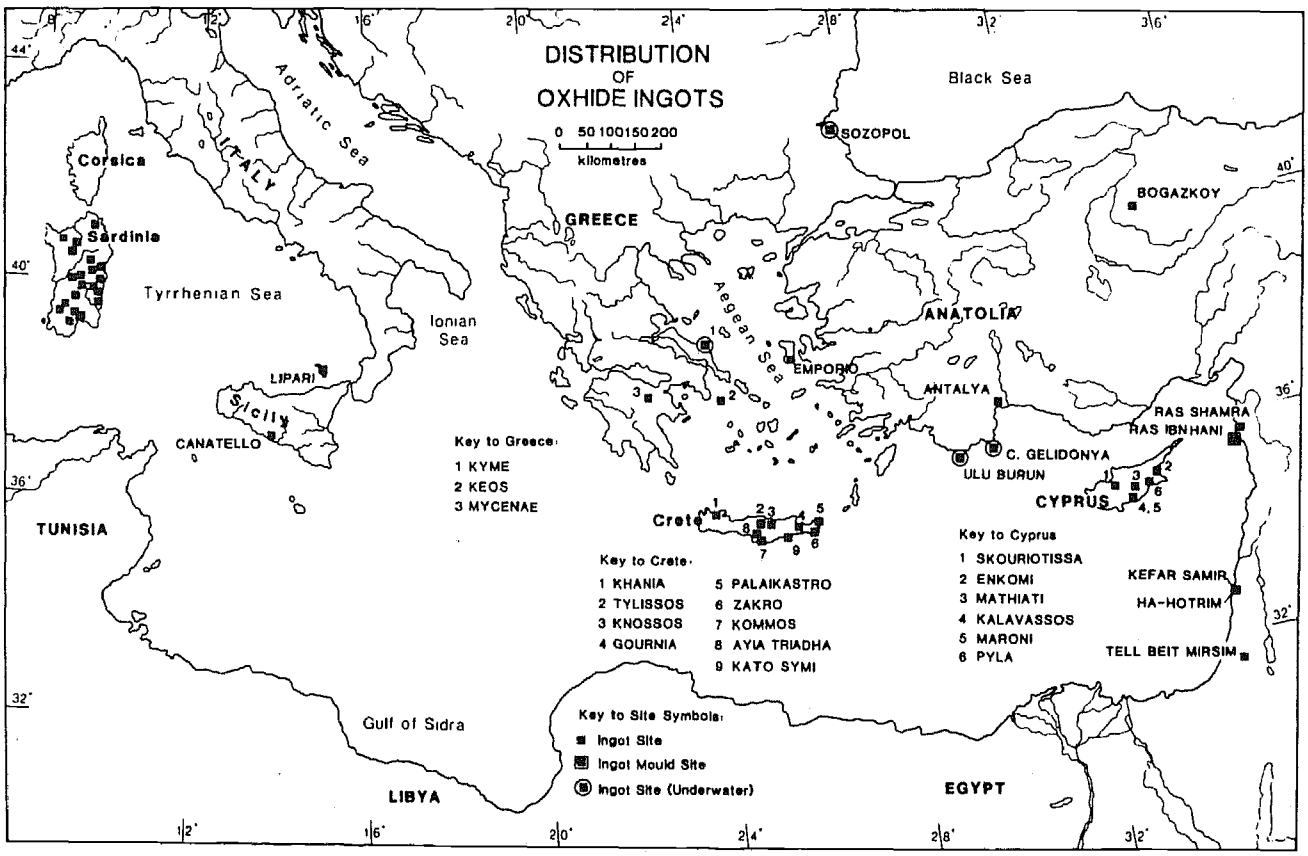
In the Early and Middle Cypriot periods, Cyprus truly became part of the international world of the eastern Mediterranean and the Near East. Prior to the mid-third millennium, imported material was very rare, with the exception of obsidian from Anatolia. Now pottery and metalwork imported from Early Minoan Crete have been found, as well as faience beads and perhaps even the board games Senet and *mehen* from Egypt, and certain metal types from Anatolia. [*See* Glass; Vitreous Materials; Games.] The pair of gold earrings from tomb 6 at Sotira *Kaminoudhia* (excavated

by Stuart Swiny; Cyprus American Archaeological Research Institute), the earliest gold objects known from Cyprus, are typologically almost certainly of Anatolian origin.

There are some 270 Early and Middle Cypriot sites, but almost all of them are cemeteries without associated settlements. There are virtually no Bronze Age settlements known on Cyprus that are earlier than about 1700 BCE. With the excavation of an Early Cypriot settlement at Sotira *Kaminoudhia* and Middle Cypriot ones at Alambra *Mouttes* (excavated by J. E. Coleman and J. A. Barlow, Cornell University) and Marki *Alonia* (excavated by D. Frankel and J. Webb, LaTrobe University), this may change. Agricultural practices underwent major changes during the Early Cypriot period with the introduction of cattle and the ox-drawn plow (although there is new, very surprising evidence from the site of Paraklesia *Shillourokampos* (excavated by J. Guilane, CNRS, Paris) that would put cattle on Cyprus as early as the Aceramic Neolithic). [*See* Agriculture; Cattle and Oxen.] The introduction of equids (asses or horses) at this time must have facilitated overland transport on the island. [*See* Transportation.]

During the Middle Cypriot period, the copper industry underwent a great expansion. The first direct evidence for the mining of copper ores has appeared at Ambelikou *Aletri*. This evidence comes from the early second millennium BCE and is contemporary with the first references, in Babylonian cuneiform texts from Mari, to copper from the land of Alashiya. [*See* Cuneiform; Mari.] Although there has been considerable controversy over the identification, it now seems virtually certain that Alashiya was the name used in the Near East (Anatolia, Syria, Palestine, Egypt, Mesopotamia) to designate the island of Cyprus. As Cypriot international relations and copper exports intensified during the Late Cypriot period (c. 1625–1125 BCE), there was a corresponding increase in the number of textual references to Alashiya, especially to copper from Alashiya. With the end of the Bronze Age—on Cyprus and in the eastern Mediterranean—no more is heard of Alashiya. Kypros, the Greek name for the island, appears early—in Mycenaean Greek—and has survived to the present. [*See* Metals, *article on* Artifacts of the Neolithic, Bronze, and Iron Ages.]

The beginning of the Late Bronze (Late Cypriot) period is marked by the establishment of Enkomi (excavated by Dikaios and, in a separate project, by Claude F. A. Schaeffer), on the northeast coast of the island. Enkomi quickly became the most important site on Cyprus and is most prob-



CYPRUS. Figure 1. *Map showing LB distribution of copper oxhide ingots.* (Courtesy J. Muhly)

ably to be identified as the capital of the kingdom of Alashiya. The Late Cypriot period had its own distinctive ceramic repertoire, with Middle Cypriot Red-Polished and White-Painted wares being replaced by Base-Ring, White-Slip, and White-Shaved Late Cypriot wares. These distinctive Late Bronze fabrics seem to have quickly gained popularity outside Cyprus and have been found in considerable quantity at sites in Syria, Palestine, and Egypt. The Uluburun ship that sank off the southern coast of Turkey at the end of the fourteenth century BCE had a cargo that included a large pithos packed with freshly made Late Cypriot pottery, much like a modern "china barrel." [*See* Uluburun.] This pottery must have been destined for western markets. Late Cypriot wares have now been found as far west as the islands of Sicily and Sardinia.

In addition to Enkomi, other important Late Cypriot sites are Kition, Hala Sultan Tekke (also known as Larnaca *Alyki*), Kalavasos *Ayios Dhimitrios,* Maroni *Vournes,* and Alassa *Paleotaverna* (for references, see Knapp et al., 1994). [*See* Kalavasos.] All were connected with copper production and the copper trade and, in some cases, with the production and storage of olive oil. [*See* Olives.] Hala Sultan Tekke seems exceptional in its wealth of foreign imports, especially from Egypt. Tomb 12 at Ayios Dhimitrios, dating to the late thirteenth century BCE, produced a remarkable Hittite silver figurine depicting a male, almost certainly King Tudaliya IV, standing on a stag. [*See* Tombs; Hittites.] This is one of the few known works of Hittite art in precious metal to be found in a controlled excavation (most examples come from the antiquities market). Its presence on Cyprus probably has something to do with Hittite claims of control over Alashiya in the late thirteenth century BCE (during the reigns of Tudaliya IV and Šuppiluliuma II).

It appears that Enkomi dominated the Cypriot copper industry from 1600 to 1300 BCE. Then, in the thirteenth century BCE (Late Cypriot IIC), a decentralization of authority resulted in the establishment of a number of regional centers along the island's south coast. Inland villages, such as Apliki *Karamallos* (excavated by J. DuPlat Taylor), housed the personnel connected with the mining and smelting of the copper ore. [*See* Apliki.] Cypriot copper, in the shape of so-called oxhide ingots (representing one talent, or about 29 kg of copper), were shipped across the Mediterranean, as far west as Sicily and Sardinia (see figure 1). [*See* Sardinia.] The ingots are even found in the Black Sea, at the Hittite capital of Ḫattuša in central Anatolia (modern Boğazköy), and as far east as the Kassite capital of Dur Kurigalzu (modern ʿAqar Quf). [*See* Boğazköy; Kassites; ʿAqar Quf.]

On the basis of present evidence, such ingots represent the form in which raw (or blister) copper was shipped overseas in the Late Bronze Age (see figure 2). Their distinctive oxhide shape is known only from LB contexts. The question is whether all such ingots were cast on Cyprus, of Cypriot copper. The answer is apparently that they were not—the only mold for casting such ingots comes from the Syrian site of Ras Ibn Hani, not otherwise known as a metallurgical site. [*See* Ras Ibn Hani.] Moreover, all the examples known from Minoan Crete—from Ayia Triadha, Gournia, Knossos, Mochlos, and Zakros—seem, on the basis of lead isotope analysis, not to be made of Cypriot copper. All examples from Cyprus itself, on the other hand, as well as those from the Cape Gelidonya and the Uluburun shipwreck, do seem to be made of Cypriot copper. The same origin is claimed for the oxhide ingots from Sardinia—all on the basis of lead isotope analysis. Clearly, Cypriot copper was in wide use across the Mediterranean world, especially in the thirteenth century BCE, but all conclusions based on lead isotope evidence are now under review.

The international character of the Late Bronze Age seems to have come to an end in the early twelfth century BCE, in a sequence of events associated with the invasions and migrations of the Sea Peoples. [*See* Philistines.] Cyprus seems to have suffered less destruction than other areas at this time, perhaps because Bronze Age Cyprus had never developed

CYPRUS. Figure 2. *Copper oxhide ingot, probably from Enkomi.* (Courtesy Cyprus Mines Company, H. Mudd Collection, Los Angeles; photograph by Tamara Stech)

the highly centralized palace economy so typical of contemporary cultures in the Aegean, Anatolia, and the Levant. [*See* Palace.] Not having been locked into that rigid organization, Cypriots seem to have been better able to respond to the rapidly changing conditions that characterized the Mediterranean world of the twelfth and eleventh centuries BCE. The ability to innovate seems to have been crucial—especially in developing the technology necessary for working in iron, the new metal that achieved such prominence the following centuries come to be known as the Iron Age.

The centuries from about 1100 to 800 BCE were long seen by modern scholars as a dark age—a period of poverty, isolation, and general cultural decline. All knowledge of writing was said to have been lost for several hundred years, along with advanced technological skills in stoneworking, ivory carving, and metal working (precious and base), and that all these skills had to be relearned in the eighth century BCE. [*See* Writing and Writing Systems.] Oriental (especially Phoenician) scribes and craftsmen would have played a key role in this "recivilizing" of the eastern Mediterranean/Aegean world. [*See* Phoenicians; Scribes and Scribal Techniques.] However, this interpretation of the Iron Age is no longer tenable. The evidence now indicates that there was almost unbroken contact between the Aegean (especially Euboea and Crete), Cyprus, and the Levant during those centuries. Three inscribed bronze spits, or *obeloi,* are known from late eleventh-century Cyprus, from tomb 49 at Palaipaphos *Skales* (excavated by Vassos Karageorghis). One of them is not only inscribed in Greek, but in the Arkadian dialect (in accordance with the later Greek literary tradition that claimed Arkadia as the homeland of the Greeks who colonized Cyprus in the years just after the Trojan War). [*See* Greek.] Fragments of bronze tripods and stands from Iron Age Crete, once seens as heirlooms from a thirteenth–twelfth-century BCE workshop at Enkomi, are now regarded as products of local Iron Age Cretan workshops.

Changes certainly did take place. In the mid-eleventh century BCE Salamis replaced Enkomi as the dominant site in eastern Cyprus, while the Phoenicians moved into Kition. According to the Assyrian king Esarhaddon, in an inscription dated to 673/72 BCE, ten kings of Cyprus ruled over ten separate kingdoms. [*See* Assyrians.] Some of these kings had Greek and some had Semitic names, testifying to the ethnic diversity of Cyprus in the first half of the first millennium BCE. Little is known about the early history of these kingdoms, but they almost certainly go back to at least the eleventh century BCE. The gold scepter from Kourion *Kaloriziki* (early eleventh century BCE), with its pair of Eleonaro's falcons perched on a globe, all decorated with gold and cloisonné work, is quite possibly the standard of authority wielded by one of the early kings of Kourion. [*See* Kourion.]

For Iron Age Greeks, as for their Mycenaean ancestors, Cyprus was called Kypros. For the contemporary Assyrians, however, Cyprus was Yadnana, a land "in the midst of the sea." Esarhaddon (see above) even states that "all kings of the midst of the sea, from Yadnana [Cyprus], the land of Yaman [Ionia], to the land of Tarsisi, bowed down at my feet. I received their heavy tribute." This passage has been the subject of much confused speculation, with Tarsisi even being turned into a reference to Tartessos (in southern Spain). What it really means is that Cyprus, along with the adjacent Anatolian coast (with Tarsus, the principal city, standing for the entire region) was, for the Assyrians, inhabited by eastern Greeks, the Ionians. They are the same Ionians against whom the Assyrian king Sennacherib fought when he sacked the city of Tarsus in 696 BCE.

Relations with Assyria and the Near East were a significant element in the history of Archaic Cyprus. The Assyrian king Sargon II (722–705 BCE) even claimed the conquest of Cyprus in 707 BCE, an event commemorated by the erection of an inscribed stela, apparently in the vicinity of Kition. (The stela was found by chance in the late nineteenth century and is now in the Vorderasiatisches Museum in Berlin.) This so-called conquest seems to have left no more of a trace in the material remains of eighth-century BCE Cyprus than did the earlier conquest claimed by the Hittite king Šuppiluliuma II, at the end of the thirteenth century BCE. Both the Hittite and the Assyrian kings claimed tribute from Cyprus, but these claims probably belong more to the realm of rhetoric than of reality.

Of the ten kingdoms of Archaic Cyprus, the most is known about Salamis as a result of the discovery and excavation of its necropolis by Dikaios and Karageorghis for the Cypriot Department of Antiquities. [*See* Salamis; Necropolis; *and the biography of Dikaios.*] The nine so-called royal tombs in this necropolis, which dates to between about 800 and 600 BCE, produced a rich asemblage of burial goods, including bronze horse trappings and chariot fittings, carved ivories that originally decorated pieces of furniture, and vessels of clay (some even tin-covered) and bronze. [*See* Grave Goods; Bone, Ivory, and Shell, *article on* Artifacts of the Bronze and Iron Ages.] The dromos of tomb 79 at Salamis (end of the eighth century BCE) produced a remarkable bronze cauldron on an iron stand (total height: 1.25 m); the rim of the cauldron is decorated with protomes in the shape of griffins and with bearded sirens. Such cauldrons are known from Delphi, Olympia, and Etruria. All examples date from about 725 to 650 BCE and were most likely manufactured at one or more workshops in Syria (not, as commonly believed, in Urartu).

Similar "royal" tombs are known from the capitals of some of the other Cypriot kingdoms, especially Idalion and Tamassos (excavated by H.-G. Buchholz). [*See* Idalion.] The grave goods from these tombs testify to the wealth and international connections of the rulers of Archaic Cyprus. The latest of the Salamis tombs (no. 3) dates to the early

sixth century BCE, shortly before the situation changed dramatically: a short-lived Egyptian rule was followed by the Persian conquest of Cyprus under Cyrus I. Something of the old Archaic lifestyle survived the Persian conquest of about 545 BCE, for Evelthon, king of Salamis in the second half of the sixth century, struck his own silver coins, and the two royal tombs from Tamassos also date to the latter part of the sixth century BCE.

Persian rule over Cyprus seems to have had no more effect on local culture than earlier episodes of foreign rule, although the Persians remained in nominal control down to the conquest of Alexander the Great in 330 BCE. The island seems to have been divided between pro-Greek and pro-Persian camps, a situation that became critical when Cyprus joined the Ionian Revolt in 499 BCE. The intermittent conflicts between Greeks and Persians in the fifth and fourth centuries BCE frequently involved fighting on Cyprus. In 499 the Athenian general Kimon replaced the pro-Persian ruler of Marion with a pro-Greek one—who was then installed in the fortress-palace at Vouni (Nielsen, 1994, pp. 54–61). Kimon, however, was killed shortly thereafter, thus putting an end to this episode of Greek intervention in the affairs of Cyprus.

During the second half of the first millennium BCE, Greek influence was dominated on Cyprus. This can be seen in the numerous terra-cotta figurines from recent excavations (by W. A. P. Childs, Princeton University) at ancient Marion (modern Polis *Chrysochous*), as well as in the Attic pottery and the Attic-inspired grave reliefs from older (informal) excavations at that site, from the magnificent more-than-life-sized bronze head of Apollo from Tamassos (now in the British Museum and known as the Chatsworth head), and the solid cast-bronze cow from the Vouni palace, in the style of the Greek sculptor Myron.

One of the great surprises of recent years was the discovery that there was still a strong Phoenician presence on Cyprus in the fourth century BCE—not only during the first half of the first millennium BCE, the time of the Phoenician temple at Kition. A Phoenician inscription from a fifth-century BCE tomb near Alassa refers to a metalworker named Melekram, and a fourth-century BCE Phoenician inscription from Kition refers to one Eshmounadon, ambassador of the king of Tyre. Recent excavations at Idalion have produced dozens of Phoenician inscriptions, written in black ink on small pieces of local marble. They are administrative texts and, on the basis of an associated coin of Evagoras II, king of Salamis (361–351 BCE), can be dated to the fourth century BCE.

In return for its support, and a gift of one hundred ships, Alexander granted Cyprus its independence. After his death in 323 BCE, however, Cyprus found itself caught up in the power struggle between Ptolemy and Antigonus, two of Alexander's generals. [*See* Ptolemies.] To avoid being captured by Ptolemy, Nicocreon, the last king of Salamis, committed suicide in 311, as did his wife Axiothea and all members of the royal family. In 306 BCE those involved in this mass suicide were given a proper burial in a grand ceremony organized by Demetrios Poliorketes, son of Antigonus and, at that time, ruler of Cyprus. The platform and tumulus erected on that occasion were excavated by Karageorghis in 1964 as Salamis tomb 77. Among the finds, a series of clay portrait heads, in the style of the Greek sculptor Lysippos, are of special interest as they seem to depict members of the royal family.

In 67 BCE, after more than two hundred years of Ptolemaic rule, Cyprus was annexed by Rome and administered, from 58 BCE onward, as part of the province of Cilicia. [*See* Cilicia.] The great orator Cicero was one of the early proconsuls of Cilicia. The Romans bled Cyprus dry, with high taxes and money (to pay those taxes) lent at outrageous rates of interest (as much as 48 percent). Although Salamis continued to be of great importance, the real capital of Roman Cyprus was at Paphos. The harbor town of Nea Paphos (modern Kato Paphos), originally built in the late fourth century BCE, became the center for the Roman administration of the island. Several Roman villas, decorated with wonderful mosaics and dating to the third century CE, have been excavated at Nea Paphos. These include the Villa of Theseus (excavated by W. A. Daszewski on behalf of the Polish Mission to Cyprus) and the House of Dionysus (excavated by Kyriakos Nicolaou on behalf of the Cypriot Department of Antiquities). Similar mosaics are known from Kourion, especially from the House of the Gladiators (end of the third–beginning of the fourth century CE; excavated by D. Christou, Cypriot Department of Antiquities). [*See* Villa; Mosaics; Paphos.]

The monumental (more than 2 m high) bronze statue of Emperor Septimius Severus (193–211 CE), found at ancient Chytroi (modern Kythrea), also attests to the importance of the Roman presence on Cyprus in the third century. The pagan era on Cyprus essentially came to an end with the devastating earthquake of 21 July 365. Following the earthquake, Cyprus was rebuilt as a Christian culture, best seen in the House of Eustolios at Kourion, a public building of the fifth century. A beautiful stone mosaic inscription from this house, written in epic-style verse, proclaims that "In place of big stones and solid iron, gleaming bronze and even hardened steel, this house is girt with the much-venerated signs of Christ" (Soren and James, 1988, pp. 20–23).

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Although archaeological exploration on Cyprus dates back to the mid-nineteenth century when French scholars showed an interest in the distinctly Greek style of sculpture with its perplexing eastern traits, systematic investigation of the island's cultures only began in the 1920s with the arrival of the Swedish Cyprus Expedition. Of considerable importance, however, were the large and rich late nineteenth-century collections made by antiquarians, specifically Luigi Palma di Cesnola, United States consul to Cyprus (1865–1875) and the first American to show an active interest in Cypriot antiquities. Despite the island's proven archaeological wealth, interest in its past was limited and the founding of a foreign school was not contemplated until 1974 when George Ernest Wright, director of the American Schools of Oriental Research (ASOR) Expedition to Ancient Idalion proposed such a move.

In 1978 the president of ASOR, Philip J. King, with the backing of the United States ambassador to Cyprus, approached the Department of Antiquities about establishing a research center to promote dialogue between American and Cypriot scholars and to provide services and facilities for researchers in the fields of archaeology, anthropology, ethnography, history, literature, and related disciplines. The proposal was supported by the far-sighted antiquities director, Vassos Karageorghis. As a result the Cyprus American Archaeological Research Institute (CAARI) came into being and began operating in premises not far from the Cyprus Museum. The board of trustees, which was presided over by Norma Kershaw, appointed Anita Walker as its first director in 1978. Ian A. Todd followed in 1979, and then Stuart Swiny from 1980 to 1995. Initially, the institute's contribution to archaeological research was severely hampered by lack of funds; its impact on Cypriot studies was minimal, being restricted to a one-day symposium on current excavation projects supplemented by the occasional lecture. In 1984, however, the creation of several Fulbright fellowships offered on a yearly basis, the purchase of Claude F.-A. Schaeffer's research library and the reorganization of the board of trustees under the presidency of Charles U. Harris, signaled a change in direction and a period of rapid growth. The combination of library resources, pre- and postdoctoral researchers, as well as increasingly comprehensive reference collections, soon left its mark on American involvement in Cypriot studies.

The emphasis on traditional art historical or archaeological research concurrently began to make way for more problem-oriented, multidisciplinary, and theoretical approaches. A similar evolution occurred in the focus of ASOR-affiliated field projects, both excavations and surveys, which began to be regional and to span several periods.

As CAARI's commitment to Cyprus-based research grew, so too did the number of users, of all nationalities—there is no other foreign archaeological center on the is-

land—and the search for larger, permanent facilities became a priority. In June 1991 the president of the Republic of Cyprus formally inaugurated spacious new premises purchased and renovated through the efforts of CAARI's board of trustees. These fulfilled the requirements of an efficient archaeological research center with a sufficient residence capacity, operating in the 1990s and beyond.

To date the institute's main goals have been to develop its library holdings, to offer more scholarships, to increase its programmatic activities, and to continue sponsoring its own archaeological projects.

Since 1984 the availability of diverse fellowships has significantly expanded the scope and number of researchers in Cypriot studies. In addition to those sponsored by ASOR, there are on average seven grants offered each year by CAARI, lasting from one to ten months. The stipends include travel funds and support for two junior scholars wishing to undertake research projects on ASOR-sponsored excavations. The institute currently offers a full program of lectures and site tours. It also organizes symposia and is now considering a summer teaching program.

In 1981 the first ASOR-sponsored CAARI excavation began work on the Early Bronze site of Sotira *Kaminoudhia.* Other affiliated projects have investigated Akrotiri *Aetokremnos,* ancient Idalion, ancient Kourion, Kalavasos *Ayios Dhimitrios, Kopetra,* and *Tenta,* as well as Koletria *Ortos.* Surveys have been undertaken in the Vasilikos Valley, around Kouklia and Mitsero, as well as underwater in the harbor of Paphos.

Since 1986 *CAARI News* has appeared as an annual newsletter. A major publication project in the form of a directory of Cypriot sites is planned as a cooperative project for the future.

The growth of CAARI over a period of fifteen years to a research center offering a fine library, reference collections, fellowships, and excavation programs, has encouraged classicists and Aegean scholars to turn their gaze east, while urging Near Eastern researchers to look west. Once again, Cyprus is assuming its traditional role as stepping stone between the Orient and the Occident.

[*See also* American Schools of Oriental Research; Idalion; Kalavasos; Kourion; Paphos; *and the biographies of di Cesnola, Schaeffer, and Wright.*]

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STUART SWINY

CYRENE, metropolitan capital of both Cyrenaica and the Libyan Pentapolis during Hellenistic and Roman times (32°48′ N, 21°52′ E). Cyrene is located about 175 km (109 mi.) northeast of Benghazi, 300 km south of Crete and 320 km (198 mi.) west of the Libyan–Egyptian border, and 12 km (7 mi.) inland from the coast on the crest of the Gebel Akhdar or "Green Mountain" at an elevation of 622 m (2,041 ft.). The old village of Shahhat, whose former name Grennah or Gueranna is an obvious corruption of the ancient toponym, has been linked with Cyrene since European travelers first began to seek out its ruins in the early eighteenth century.

The story of Cyrene's foundation around 631 BCE by Therans led by a certain Battus is exhaustively related by Herodotus (4.150 ff.). The founder established a hereditary monarchy that endured foreign attack and internal rebellion until around 440 BCE when Cyrene's last king, Arcesilaus IV, was assassinated. Monarchy was followed by slightly more than a century of erratic republican government, which finally came to an end when Cyrene was brought under Ptolemaic administration in 322.

The Hellenistic period saw the creation of the Pentapolis, or land of the five cities: Cyrene, Apollonia, Ptolemais, Tauchira, and Berenice. Cyrenaica's last Greek ruler, Ptolemy Apion (116–96), willed the region to the Roman Senate, which limited its involvement to collecting the rents from the royal lands previously owned by the Ptolemies. Then, in 74, Cornelius Lentulus Marcellinus was sent out as a quaestor (provincial magistrate) to establish Cyrenaica as a Roman province. The emperor Augustus linked the region administratively with Crete to form a single senatorial province. The unbroken years of prosperity that followed were shattered by a major revolt in 115–116 CE when the province's Jewish inhabitants destroyed much of Cyrene's civic and religious infrastructure. Timely intervention by the emperor Hadrian's government provided a limited recovery, but by the early third century gradual drying up of the climate, extensive earthquake damage, and tribal incursions from the desert renewed the decline. Diocletian (284–305) detached the province from Crete and renamed it Upper Libya or Pentapolis. Its years as a christianized outpost of the Byzantine Empire produced a modest renewal of urban life until the city, along with the rest of the province, fell to the Arabs in 643.

From 1860 to 1861, R. M. Smith and E. A. Porcher led an expedition to collect sculptures for the British Museum. In 1910 R. Norton undertook an investigation, which was aborted, of the acropolis for the American Institute of Archaeology. The subsequent principal excavations at Cyrene

fall into two phases. The first was the exclusive domain of Italian archaeologists working between the two world wars to clear the agora-forum area and the sanctuary of Apollo. The second phase, which was initiated shortly after World War II by the British and continues to the present, reflects separate efforts by the Libyan Department of Antiquities (Valley Street and Roman city center, Theater 2, market-theater complex) and by foreign missions: Italian (agora-forum, sanctuary of Apollo, temple of Zeus) and American (sanctuary of Demeter and Persephone).

A rich archaeological record for the city's monarchic period is provided by the physical remains, which consist of civic and religious buildings, locally produced and imported sculpture and pottery and other miscellaneous objects from the city's agora and two principal sanctuaries (Apollo, Demeter and Persephone). Important additional information has also been acquired by the excavation of Cyrene's monumental temple of Zeus, a group of intentionally buried votives (bronze and stone sculptures, columnar sphinx monument) from a unidentified archaic-period precinct, and its various cemeteries lining the major roadways leading from the city. The line of Archaic defenses has yet to be located.

Archaeological data that includes inscriptions recovered from the agora, main religious sanctuaries, and tombs provides a somewhat sketchier account of the republican years that intervened before Cyrene's absorption into the Ptolemaic empire in 322 BCE. Excavation of the same areas have brought to light a full range of Hellenistic remains. Short stretches of the defensive wall system girdling the Ptolemaic city are preserved.

The city's Roman and Byzantine phases have been well documented by the excavation of the Caesareum (monumental complex dedicated to one of the Caesars) and nearby Roman forum area, the Roman city center, the market theater complex, and the city's intramural cathedral, along with the already mentioned santuaries, necropoleis and the agora. On the other hand, the massive acropolis hill and the extramural "caravanserai" and hippodrome all await excavation.

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White, Donald, et al. *The Extramural Sanctuary of Demeter and Persephone at Cyrene, Libya: Final Reports.* 5 vols. University Museum Monographs, 52, 56, 66, 67, 76. Philadelphia, 1984–1993. The most complete publication of the stratigraphical record and various classes of artifacts of a specific complex.

DONALD WHITE

D

DAB'A, TELL ED- (ancient Avaris), site located in the northeastern Nile Delta in the province of el-Sharqiya, 8 km (5 mi.) north of the market town of Faqus (30°47′15″ N, 31°49′20″ E). The site was the capital of the Hyksos and the southern part of the Delta residence of the Ramessides (nineteenth and twentieth dynasties) under the late name Piramesse (Raamses in the Masoretic Bible text; Ramesse in the Septuagint).

Excavations at Tell ed-Dab'a were begun in 1885 by Édouard Naville. They were resumed in 1941–1942 by Labib Habachi, who suggested the identification with Avaris. Between 1951 and 1954, Shehata Adam discovered a Middle Kingdom temple at 'Ezbet Rushdi. From 1966 to 1969 and from 1975 onward, Manfred Bietak carried out systematic excavations at the site for the Archaeological Institute of Austria, Cairo Department.

Stray finds from the Naqada III period and the beginning of the first dynasty show that the settlement was already inhabited in the fourth millennium. However, the real origin of the settlement at Tell ed-Dab'a was the result of a royal settlement foundation (*ḥwt*) of King Amenemhat I (c. 1963–1934 BCE) to the east of the Pelusiac branch of the Nile River. It probably replaced an older royal foundation of the Herakleopolitan period with the name *Ḥwt R3w3tj Ḫtj* ("royal settlement"), "the two roads" of the Herakleopolitan king Khety.

The center of this settlement during the twelfth dynasty was a royal temple and a palatial building for local officials. An orthogonal, planned workmen's quarter southwest of the town belongs to the construction of this settlement. In the late twelfth dynasty (c. 1800 BCE) Asiatic immigrants were settled to the south of the Middle Kingdom town (stratum H). The type of Middle Bronze weaponry indicates that the settlers were originally soldiers and probably also ship carpenters and sailors in the Egyptian service. Their tombs were found in cemeteries within the settlement, in a layout that is very un-Egyptian. Foreign architectural types also appeared during this period, including a typical Syrian *Mittelsaal* ("middle hall") house and a broadroom house.

During the thirteenth dynasty, the settlement was enlarged to approximately a square kilometer and probably served trading and mining expeditions. A wide palatial building was likely the residence of an Egyptian official, perhaps with the title "overseer of foreign countries" that was found preserved on a magnificent official amethyst and gold seal. While the tombs of the residential officials display Egyptian funerary architectural traditions, the burial customs, such as donkey sacrifices, were Asiatic, as were the Middle Bronze weapons.

During the thirteenth dynasty, one of several kings of Asiatic origin took the throne for a short time. His name was 'Amusa Hornedjherjotef and he was very likely a native of Tell ed-Dab'a. His statue was found in a funerary chapel by Habachi, together with statues of the last queen of the twelfth dynasty, Sobeknofru. The above-mentioned palace dates to approximately this time, as does a smashed colossal limestone statue of a seated Asiatic dignitary with a red mushroom-shaped hairstyle who is holding a throw stick against his shoulder. The destroyed statue and the sudden abandonment of the palace suggest internal political turmoil during the thirteenth dynasty. Soon afterward, the material culture and specific tomb types suggest that new immigrants from Palestine, as well as from Syria and Cyprus, had moved in (stratum G). The percentage of foreign pottery rose from 20 to 40 percent.

In the second half of the eighteenth century BCE there is some evidence that a plague decimated the settlers at Tell ed-Dab'a. Emergency tombs were dug, and bodies were thrown into shallow pits sometimes only 20 cm deep. Changes in the settlement pattern can also be observed between strata G and F, and the eastern part of the town was completely deserted. Soon afterward, an interesting sacred precinct was constructed (stratum F, E/3). In its center was a major Middle Bronze temple of Syro-Palestinian type (approximately 32.7 × 21.4 m). In front of the temple was an altar on which several charred acorns were found. The temple likely belonged to a cult of Asherah, originally the consort of the Canaanite god El, later also considered the consort of Baal. Another broadroom temple in this compound had a separate tower. To judge from inscriptions on door blocks from this area, it seems that this temple precinct, which was surrounded by cemeteries with Egyptian-type mortuary temples, was founded during the reign of King 'Aasehre' Nehesi. (His father, whose name is not known,

had split off from the thirteenth dynasty and had founded a small kingdom in the northeastern Delta whose capital was at Tell ed-Dab'a.) From this time onward, the settlement is known as Avaris ("royal foundation of the desert edge"). Nehesi was the first king with the epithet "beloved of the god Seth, the lord of Avaris" (or "lord of Ro-achet," "door of the fertile land").

A cylinder seal found in the earlier palace of the thirteenth dynasty carries a representation of a Syrian storm god. On the basis of this seal, it is assumed that the god Seth of Avaris was syncretized with the northern Syrian storm god Baal, introduced by Asiatic settlers during the late twelfth dynasty. It was only a matter of time before the kingdom of Avaris was replaced by a local Asiatic dynasty that would form the core of the later kingdom of the Hyksos ("rulers of the foreign countries"). Indeed, from the beginning of the Hyksos period (c. 1640 BCE) the town dramatically enlarged to about 2.5 sq km (1.6 sq. mi.)—that is, it was a provincial center that became a metropolis. Very distinct changes appear in the material culture, especially in the pottery. It is tempting to explain the situation as having been created by an influx of new immigrants from Canaan, probably from the southern region around Tell el-'Ajjul (Sharuhen), except that the settlement pattern shows continuity. If there was a population influx, it took place with the consent of the lords of Avaris.

Before the beginning of the Hyksos period there are already very un-Egyptian cemeteries of families arranged around temples and tombs within house precincts. The construction of the tombs shows types of vaulting that were unknown in Egypt but have parallels in ancient Palestine. In domestic architecture the complete adaptation of Egyptian types had taken place during the thirteenth dynasty. Increasing social differentiation can be observed from stratum F onward, with large houses surrounded by smaller houses belonging to the servant class. Typical for the period shortly before the Hyksos, and for the first half of the Hyksos period, are warrior tombs equipped with weapons. Some contain the burial of pairs of donkeys in front of the tomb entrance. Such burials have Palestinian parallels.

In 1991, at the extreme western part of the town, situated directly at the Pelusiac branch of the Nile, remains of a citadel of the Late Hyksos period and of the early eighteenth dynasty were found (strata D2 and C). Along the river there was a fortification wall, 10 Egyptian cubits (5.25 m) strong, with buttresses set in regular intervals of 45 cubits (23.6 m). It is at present unclear if this was the city wall or the enclosure of the citadel. The wall was later enlarged to 16 cubits (8.4 m) and so were the buttresses. Within this wall two layers of garden remains with tree pits and possibly a vineyard were discovered. This scenario—towering fortification walls and gardens—fits perfectly the one referred to in the insulting speech delivered by Kamose against the Hyksos Apophis during his short campaign to Avaris, known to us from the Kamose stela no. 2. In it he spoke about the wives of the Hyksos peeping through the loopholes in the castle. He also threatens to pull out the trees and to drink the wine from the vineyards of his Asiatic overlord.

At present the structure of the Hyksos citadel is unclear because of the later eighteenth dynasty installations in which older building materials were reused. A part of a monumental doorway of the hitherto unknown Hyksos with the northwestern semitic name *Skr-hr* (= Sikru Haddu, which means "Memories of god Haddu" according to Thomas Schneider, unpublished) was found in the eighteenth-dynasty level (stratum C). It is the first monumental inscription where the title *ḥq3-ḫ3swt* (= Hyksos, ruler of the foreign countries) is used officially. Within this precinct also the stela of the Hyksos Yinassi, who can be identified with the Iannas of the Manethonian list, was found. According to this stela he was the son and probably successor of the great Hyksos Khayan. A house altar dedicated to the Hyksos princess Tany, the sister and possibly consort of the Hyksos Apophis was retrieved by recent channel-dredging within this citadel area.

King Ahmose conquered Avaris about 1530 BCE. From this period there is evidence of an intensive reuse of the citadel after a partial destruction. Near the river was found a palatial construction on a raised platform of 135 × 90 Egyptian cubits (70.5 × 47 m) with a doorway and an access ramp cut through the fortification walls from the riverside. The gardens of the Hyksos period were reestablished. Another much larger palatial compound with huge magazines was constructed south of the platform waiting for future investigation. Both buildings were furnished with Minoan wall paintings, executed by Minoan artists in genuine Minoan style and technique. Motifs such as bull leaping, bull grappling, acrobats, hunting scenes, lions and leopards chasing fallow deer and mountain goats, and representations of griffins display Minoan ideology of hierarchy in nature and are an international scholarly puzzle. Dynastic links with the court of Knossos may explain the wall paintings, which would belong only in a royal palace. It cannot be excluded at present that a part of the Minoan paintings, found in a secondary dump, date from the late Hyksos period, but the only securely dated frescoes came from the early eighteenth dynasty palatial quarter. Perhaps the riddle of the title of the mother of King Ahmose, Queen Ahhotep, as *hnwt idbw H3w-nbwt*, "Mistress of the coasts of Haunebut," a country sometimes associated with the Aegean islands, can contribute in future toward an understanding of this puzzling evidence.

The raised platform building must have been in use for a very limited time, as against its weathered eastern face was constructed a very humble settlement of the first half of the eighteenth dynasty, using the platform already as a quarry for building materials. It seems at present that the citadel was used as a royal residence only for a very short time, perhaps during the last years of Ahmose during his cam-

paigns in Canaan. At that time and subsequently the citadel must have been used as an army stronghold. The presence of Nubian mercenaries can be established by remains of Sudanese Kerma-household pottery and by numerous arrowheads of bone and silex.

According to numerous finds of royal name scarabs the settlement of the citadel must have continued at least till the time of Amenhotep II. That it probably continued until the Ramesside period is inferred from the discovery in 1993 of a huge temple complex to the north of the former citadel. Early in the eighteenth dynasty foreign trade flourished again, as in the Hyksos period: amphorae with olive oil and wine were imported in large numbers from Canaan, and Cyprus became a strong trading partner. While most of Avaris, except for the citadel, was abandoned, the quarter of the temple to Seth, in the eastern central part of the site, shows continuity (according to the dating of a lintel its use was renewed). This renovation was carried out during the time of the restoration of the traditional cults in Egypt under the kings Tutankhamun and Horemheb, in the late fourteenth century BCE. New building projects at the temple were carried out under Seti I, the last of which was a large temple to Seth. According to Papyri Anastasi II and IV (1.4–5 and 6.4–5, respectively), it is referred to as the southern topographical fixed point of the Ramesside town. According to the archaeological evidence, the area surrounding this temple was covered with groves of trees.

The continuity of the Seth cult from the Hyksos period to the Ramesside period can be documented by the so-called "Four-hundred-years stela" that probably originally stood in Avaris/Piramesse. This stela was commissioned by Rameses II, whose family most likely originated in Avaris; it can be viewed as a kind of propaganda designed to legitimize the rule of the new dynasty. Seth, in the image of an Asiatic god, with horns and a high crown with a pommel, is presented as the "father of the fathers"—as the ancestor of the new dynasty.

In the Third Intermediate period, Avaris was severely plundered. It had the same fate as the Ramesside town of Qantir and served as a quarry for the new residences of the twenty-first and twenty-second dynasties at Tanis and Bubastis. This explains the secondary use of stone monuments in the last two towns. The plundered monuments are important sources for the history of Avaris and Piramesse. In the fourth century BCE, cults of the gods of Rameses II appeared independently in Tanis and Bubastis. The cults originated from the cult statues that had been transported there. This situation obscured what was known about the original location of the Rameses-town, which had serious consequences for attempts to locate the biblical town of Rameses and its environment (*Ps.* 78:12, 48; *Gn.* 46:28–29 [Septuagint]).

[*See also* Delta; *and* Hyksos.]

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MANFRED BIETAK

DALIYEH, WADI ED-, valley sloping down, sometimes precipitously, from the central ridge of Palestine, northeast of Bethel, all the way to the Jordan Valley, north of Jericho (32°00′ N, 35°25′ E). Its steep, clifflike walls are honeycombed in places with caves, one complex of which was discovered in 1962 by the Ta'amireh bedouin, who had been the first, in 1948, to locate what became known as the Dead Sea Scrolls. The cave that took the name Wadi ed-Daliyeh was excavated on behalf of the American Schools of Oriental Research in 1963–1964 by Paul W. Lapp, after a cache of Aramaic papyrus documents, now known as the Samaria papyri, appeared on the illegal antiquities market. The source of the papyri had proved to be one of the caves in the complex, the Muhgaret Abu Shinjeh, later called Cave I. Another cave, 'Araq en-Na'asaneh, or Cave II, was also excavated.

Cave I produced material that was largely from the Persian period, thus yielding an appropriate date for the papyri in the late fourth century BCE. This included typical Persian–Early Hellenistic horizon pottery, to which must be added the papyri; some 128 clay sealings from the papyri; coins purchased with the papyri from the cave robbers (plus one that was excavated), all of the same period; a scarab; numerous well-preserved textile fragments; pieces of leather

sandals and other leather fragments; samples of basketry and wooden implements; glass; and beads and jewelry. The skeletal remains of many individuals were found, all of which had been disturbed by the robbers, who reported finding as many as three hundred skeletons, most of them badly burned.

It appears from the finds that Cave I had been used as a dwelling and no doubt as a hiding place, in this case by Samaritans fleeing the wrath of Alexander and the Macedonians after a revolt in the late fourth century BCE in which the prefect of Syria, Andromachus, had been burned alive. It is likely that Alexander's forces found the Samaritan refugees in the caves in the Wadi ed-Daliyeh and slaughtered them there.

The papyri, which have been extensively treated by Frank M. Cross, support this reconstruction. One mentions "[Yesha]yahû, son of Sanballat, governor of Samaria." Another was "written in Samaria." Other documents bear exact date formulae, reckoned from known Persian administrators in the province of Samaria. The range of these dates is about 375–335 BCE. Many of the papyri are legal or administrative documents, such as refugees would be inclined to take with them. Not only do the personal names, many of them Yahwistic, reveal a great deal about the half-Jewish Samaritan community, they also tell us a good deal about the complex religious and political situation that the returning Jewish exiles met in Palestine in the time of Ezra and Nehemiah. This series of several dozen, closely dated historical documents provides valuable fixed dates for the study of Aramaic and Paleo-Hebrew paleography for the period just preceding the earliest of the Dead Sea Scrolls. Finally, the papyri have increased our knowledge of the Samaritan community, enhanced our understanding of the history of the Samaritan Pentateuch, and contributed to textual studies of the Hebrew Bible and its transmission.

Cave II produced some one hundred pieces of late Early Bronze Age IV pottery (c. 2100–2000 BCE) that has been published by William G. Dever. The corpus belongs to his Family CH (for Central Hills), with some overlap with Family J (for Jericho/Jordan Valley). The group is important partly because it is mostly not from burials but constitutes an assemblage of domestic types, rare in this region of Palestine. It is also evidence for the widely held theory that many EB IV folk were nomadic pastoralists who lived part of the year in caves and other temporary shelters. Also from Cave II was a small collection of Late Roman pottery and objects, indicating a final occupation, probably by refugees during the Second (or Bar-Kokhba) Jewish Revolt in 135 CE.

[*See also* Samaritans.]

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WILLIAM G. DEVER

DALMAN, GUSTAF (1855–1941), theologian and first director of the German Protestant Institute of Archaeology in Jerusalem. Dalman was born in Niesky, in southeastern Prussia, a community dominated by Moravians. After studying Protestant theology he taught at the seminary of the Moravian fraternity in nearby Gnadenfeld (1881–1887). During a stay in Leipzig in 1883, he was promoted to doctor of theology. In 1887 he moved to Leipzig to become an assistant at the Institutum Judaicum, where he earned his Ph.D. He was appointed director of the institute in 1893. Dalman also taught Old Testament at the University of Leipzig, where he became an associate professor in 1896. In 1902 he was elected the first director of the newly founded Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes in Jerusalem. During World War I he was forced to give up that position because of the political situation. In 1917 he became a full professor in Greifswald, where he founded an institute for research of Palestine. Following his retirement in 1923, Dalman dedicated his life to his magnum opus, *Arbeit und Sitte in Palästina.* He died in Herrnhut, a Moravian village not far from his birthplace.

The Aramaic language was the focus of Dalman's work prior to his directorship at the German institute. He published a grammar and a dictionary of Palestinian Aramaic and a volume on the language of Jesus. In Jerusalem, he collected data on Palestinian customs and manners that is still an important resource for recovering a rapidly vanishing world. His knowledge of the Holy City and its ancient sites, as well as the topography of the land of Israel, appears in his books *Orte und Wege Jesu* and *Jerusalem und sein Gelände.* His exploration of Petra and its vicinity led to his publishing the first description of the now famous site. Dalman published most of the enormous amount of ethnographic material he had gathered before World War I in seven volumes, under the title *Arbeit und Sitte in Palästina* (1928–1942).

[*See also* Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes; Petra.]

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VOLKMAR FRITZ

DAMASCUS, current capital of modern Syria, located in a basin east of the Anti-Lebanon range, at the foot of Mt. Qasiyun (33°30′ N, 36°18′ E). Rainfall in the area is fairly meager (about 250–300 mm/year), but the plain is well watered by the Barada River. The river, augmented with several major irrigation canals, has allowed Damascus to prosper as one of the great oases of Southwest Asia.

Because the city has been occupied since antiquity, often playing an important role in the history of the Levant, very little excavation has been possible in Damascus, and to date, virtually no remains of the city prior to the Roman period are known. However, literary sources from the Late Bronze Age onward refer to Damascus and make it possible to construct its general history from that period through Hellenistic times, in spite of the lack of archaeological data.

History of the City. Although Damascus is popularly called the oldest continuously occupied city in the world, evidence for its existence currently goes back only to the time of the Egyptian pharaoh Thutmosis III, who lists Damascus as one of the cities whose rulers were captured at the siege of Megiddo in the early fifteenth century BCE. In the Amarna letters, Damascus appears as a town in the land of Upu/Upi, an area under Egyptian sovereignty during virtually the entire Late Bronze Age. The Amarna and other Egyptian texts give no indication that Damascus had any major political significance during this period.

During the Iron Age, specifically in the ninth and eighth centuries BCE, however, Damascus became the capital of one of the leading Aramean states of the Levant. It played a significant role in the political life of the kingdoms of Israel and Judah, usually as an antagonist, but sometimes as an ally against the encroachments of Assyria. Portions of the history of this period are known from biblical texts (especially *Kings*, *Chronicles*, and *Isaiah*), Assyrian records, a few scattered references in Aramaic inscriptions from northern Syria, and the recently discovered Aramaic Stela from Tel Dan in northern Israel (Avraham Biran and Joseph Naveh, "An Aramaic Stele Fragment from Tel Dan." *Israel Exploration Journal* 43 [1993]: 81–98).

In the mid-ninth century BCE, Damascus and the kingdom of which it was the capital (usually called Aram or Aram Damascus) became the preeminent political power in the Levant, and its king, Hadad-idri, led an anti-Assyrian coalition of states in battle against Shalmaneser III in four confrontations between 853 and 845. The reign of Hazael (c. 842–800 BCE) saw Damascus become the head of a substantial empire, dominating most, if not all, of ancient Palestine, including Israel, Judah, and Philistia, and perhaps controlling some parts of northern Syria as well. A decline set in during the reign of Hazael's son, Bir-Hadad, which was not reversed until about 738, when the last independent king of Aram Damascus, Raṣyan (biblical Rezin), came to power and led another anti-Assyrian coalition that included Israel, Philistia, and Tyre against Tiglath-Pileser III. This attempt to secede from Assyrian control was unsuccessful and led to disaster for Damascus, which was captured by the Assyrians in 732 BCE and annexed into the Assyrian provincial system.

Because of its important position on the major trade routes of the Levant, Damascus remained a significant city through the rest of the Assyrian, Babylonian, and Persian periods. The Hellenistic period brought important changes. Following Alexander's conquest of the Levant (333 BCE), the city became the site of a Macedonian colony and was substantially expanded and rebuilt, with new fortifications. In 111 BCE, the city became the capital of Phoenicia and Coelesyria. Following a brief period under the control of the Nabateans, from 85 to 64 BCE, it was incorporated into the Roman Empire. During the Roman period a number of emperors lavished funds on Damascus for public construction: its main temple was spectacularly reconstructed, the city wall was rebuilt, and major colonnaded streets were constructed. The Byzantine period has provided few significant remains, but the city experienced another brief time of glory when it became the Umayyad capital in 661 CE, which climaxed with the building of the Great Mosque. Unfortunately, this period of splendor was short-lived, for in 750 CE the ʿAbbasid caliphs moved the Islamic capital to Baghdad, leaving Damascus without power.

Archaeology of the Site. Archaeological information about the pre-Hellenistic periods of Damascus is scarce in the extreme. Although several limited excavations have been undertaken, none have found those levels. Even the exact location and extent of the ancient site are not yet defined. Scholars generally place the original city within the boundaries of the current "Old City," and propose that the great Umayyad mosque, located on a large, flat plateau in the northwest part of the city, was probably built on the site of the main temple of Iron Age Damascus, which was dedicated to Hadad-Ramman (cf. *2 Kgs.* 5:18). Some scholars argue, however, that the rest of the city was located to the west and south of the temple, while others propose that a group of hills to the east and southeast of the mosque area

covers the remains of the settlement. One hill, located some 300 m to the south of the mosque, is generally thought to be the prime candidate for the location of the Iron Age citadel. Only excavation will further illuminate the problem of the location of the original city.

Although no artifacts from Bronze Age Damascus are known, a few items, discovered in secondary contexts, including a carved orthostat, ivories, and bronze ornaments, can be attributed to the Iron Age. The orthostat (about 80 × 70 cm) is basalt and is decorated with a carved relief of a crowned sphinx, stylistically datable to the ninth century BCE. It was found incorporated into the substructure of the wall around the Umayyad mosque and probably belonged to the temple of Hadad-Ramman. Of the two ivories, one was found in the Assyrian fortress town of Til Barsip in northern Syria and the other at the Assyrian capital Kalaḫ, or Kalḫu (Nimrud), in Mesopotamia. They are inscribed with dedications to "our lord Hazael," who may be the Damascene king of that name. Presumably, the ivories were part of the booty taken from Damascus by the Assyrian kings in the eighth century BCE. Each of two bronze horse ornaments, one found on the island of Samos, the other in Eretria in Greece, has an Aramaic inscription mentioning a Hazael, who may be the Damascene king. The ninth-century Bir-Hadad, or Melqart, stela from the North Syrian town of Breij, often attributed to a Damascene king, Bir-Hadad, is now thought by several scholars to belong to the king of a northern Aramean state rather than Damascus (see Wayne T. Pitard, "The Identity of the Bir-Hadad of the Melqart Stela," *Bulletin of the American Schools of Oriental Research* 272 [1988]: 3–21).

Little is preserved from the Hellenistic period as well, although most scholars agree that the general plan of the current Old City is based on the Hellenistic reconstitution of Damascus. Jean Sauvaget (1949) argued that a rectangular city wall was constructed during the Hellenistic period, and this appears likely. However, clear evidence for this wall has yet to be found. The remains of a hippodrome to the north of the Old City probably belong to this era.

Several elements of Roman Damascus are still visible. The most notable examples of Roman architecture are the remains related to the great temple of Damascene Jupiter (Hadad-Ramman) found in the area of the Umayyad mosque. This temple complex, perhaps the largest in Roman Syria, can be reconstructed from the existing remains. Two inscriptions, which can be dated to 15/16 and 37/38 CE, indicate the time of the initial construction of the complex.

The Temple of Jupiter was surrounded by two concentric enclosure walls. The almost-rectangular outer wall encompassed an area of about 380 by 310 meters, creating a large outer court for the temple. The interior side of the wall was covered by a portico, which was occupied by a bazaar. Parts of both the eastern and western gates of this enclosure wall still stand in situ, as do some of the columns from the interior colonnade of the eastern side. Toward the end of the first century, the west and northwest sides of the outer wall were doubled in thickness to create more space for shops. This section was called the gamma, after the Greek letter it resembled.

Within the great courtyard was a second rectangular temenos wall that surrounded the temple proper. It enclosed an area of about 156 by 97 meters and had entrances on all four sides. The exterior was decorated with pilasters, and there were square towers at each of the four corners. A considerable percentage of this enclosure wall is still preserved as the foundation of the current wall surrounding the Umayyad mosque. Much of the principle entrance on the east side, with its impressive propylaeum still exists, as does almost all of the western wall and the lower sections of the south wall.

Within the enclosure, all traces of the Temple of Jupiter have disappeared, and even its location within the enclosure is uncertain.

A study by Klaus S. Freyberger (1989) has shown that the entire complex was substantially refurbished during the reign of Septimus Severus (193–211), including major reconstructions of the south and east gates of the inner temenos wall.

In addition to the temple complex, the main street of Roman Damascus, usually identified with the "Street called Straight" in *Acts* 9:11, can be reconstructed. This street was the city's main artery and was oriented east-west. The eastern city gate that opened onto the street (today called Bab esh-Sharqi) is well preserved and has undergone restoration. The gate has three entries, the largest in the center, which opened onto the street itself. This entry indicates that the street was 13.68 m wide. The other two entries opened onto the sidewalks, which were colonnaded porticoes that flanked the road all the way across the city. The gate has usually been dated to the early third century CE, but Freyberger argues that the decor includes elements that belong to the early first century CE. Thus, the gate and the grand street were probably constructed in the first century and refurbished during the reign of Septimus Severus, as the temple complex was.

About 500 m west of the Bab esh-Sharqi are the remains of an arch that was also related to the street, although its function is not clear. This arch and one about 250 m farther west (no longer in existence) marked spots where the street made a slight shift in direction (thus, Straight Street was not straight). The west gate has not been preserved.

The current wall around the Old City dates largely to the twelfth century CE, and none of it, besides the east gate, to the Roman period, although many Roman stones have been reused in the current wall. Most of the line of the ancient wall remains unknown, although it is commonly believed that it followed the line of the rectilineal Hellenistic wall, rather than that of the current, oval-shaped one. Most re-

constructions of the Roman wall show the current wall overlapping the Roman one only near some of the gates.

During the reign of Diocletian (287–305) a fortress was built to the west of the temple complex. It is not clear whether it was outside or inside the city wall because the line of the western wall has not been firmly established. However, its location became the site of the medieval citadel that stands today.

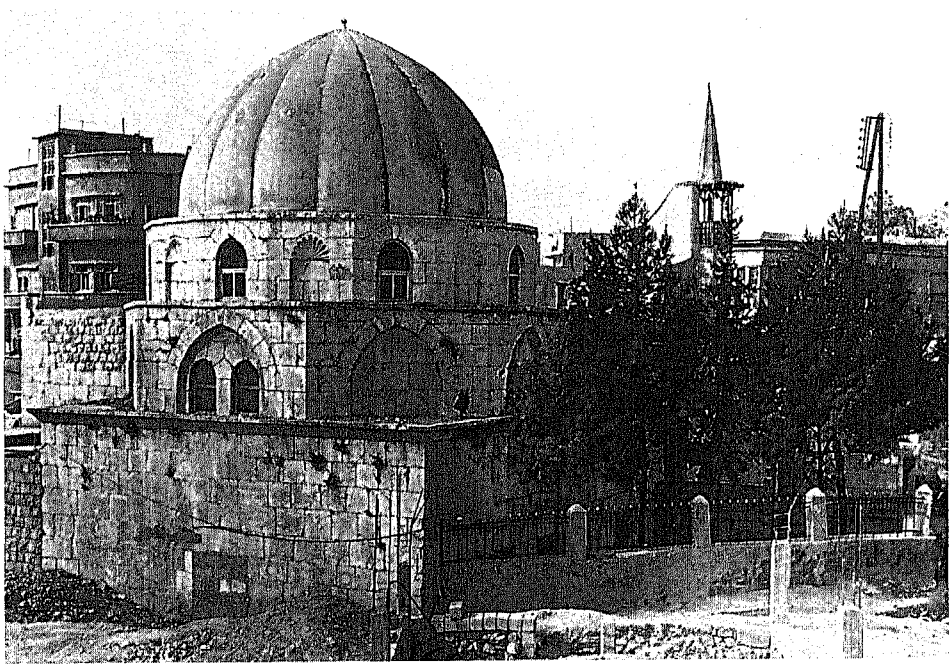
In the reign of Theodosius (379–395), the temple area became the site of a church, dedicated to St. John the Baptist. It is not known whether Theodosius simply converted the old temple into a church or destroyed the temple and constructed a new building within the inner temenos. Very little architectural evidence of this period survives. Virtually nothing is known of the church and the inner court during this period because the entire area within the temenos wall was cleared to build the mosque in the early eighth century. However, the courtyard area between the inner and outer temenos walls was divided up by the erection of colonnades between the entry gates of the outer and inner walls on the north, east, and west. This apparently was done to allow the rest of the outer court to be filled in with new construction while maintaining open ways into the church courtyard. The southern part of the outer court became the site of a new palace at this time. None of the latter has survived, but sections of the western and northern colonnades are still in situ.

The city came under Islamic control in 636 CE, and in 656 the caliph Muʿawiyah made Damascus his capital. This development did not have an immediate impact on the architecture of the city. Muʿawiyah occupied the older Byzantine palace and simply shared part of the inner court of the temple area with the Christians who worshiped in the church. Caliph al-Walid (705–715), however, confiscated the entire complex shortly after coming to power, demolished everything inside the temenos wall, and built the Great Mosque, one of the crown jewels of Muslim architecture.

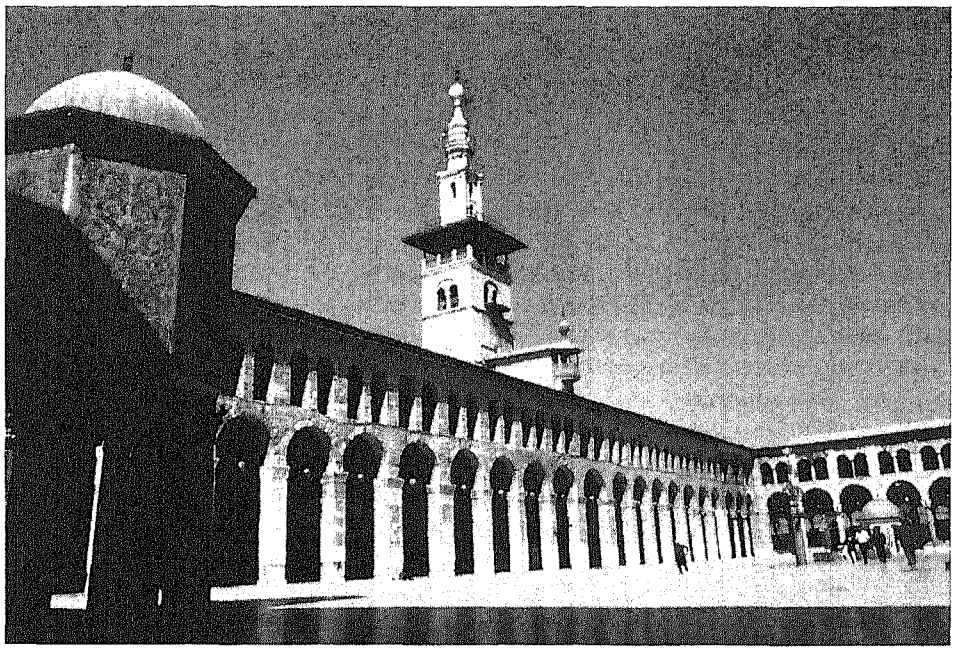
The inside of the temenos was completely changed. A huge sanctuary (136 m east–west and 37 m north–south) was built along the southern side of the court. Its interior is divided by two rows of columns into three almost-equal aisles. The center is intersected by a transept surmounted by a dome. The interior of the sanctuary was paneled with marble to a height of about 3 m, above which were extensive mosaics.

To the north of the sanctuary was a large open courtyard, paved with white marble and flanked on the north, east, and west by a two-tiered arcade built to match the style of the sanctuary's northern facade. The entire face of the courtyard was decorated, the lower part with marble paneling and the upper part with mosaics depicting landscape motifs. The mosaics in the Great Mosque covered the largest surface ever put to this use. Only a small portion of the marble paneling and mosaics has survived the several disasters that have struck the mosque over the centuries. The most famous surviving section of mosaic is the lovely depiction of trees on the northern face of the transept, although a long section on the back wall of the west portico is equally impressive.

The Umayyad mosque in Damascus had a very strong influence on Muslim architecture and is referred to in Islamic documents as one of the wonders of the world. Al-



DAMASCUS. *Thirteenth-century mausoleum of Rukn ed-Din.* (Courtesy K. Toueir)



DAMASCUS. *Umayyad mosque.* The interior court. (Courtesy W. T. Pitard)

though much of its original splendor has been lost, it remains an imposing complex.

Damascus went into a serious decline with the end of the Umayyad dynasty and the rise of the 'Abbasids, when the capital was moved to Baghdad. In 750, the new rulers sacked Damascus and demolished its city wall. The city lost its important position and went into a long eclipse, marked by little architectural development.

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WAYNE T. PITARD

DAMASCUS DOCUMENT. In 1896, Solomon Schechter of the University of Cambridge, England, discovered two Hebrew manuscripts in the genizah (a storeroom for valued texts) of a Qaraite synagogue in Cairo. He brought them to Cambridge, England, where they were subsequently published, in 1910, as the *Damascus Document.* The first of the two, manuscript A (tenth century CE) contains eight sheets of parchment; manuscript B (eleventh/twelfth century) contains one sheet. Both sides of a sheet were used. Schechter numbered the sheets pages 1–16 and 19–20, respectively; page 19 of manuscript B parallels, with some important differences, pages 7–8 of manuscript A, thus enabling a continuous, but conflated, text to be restored. Page 20 is not paralleled in manuscript A.

The document is comprised of two sections. A paranetic section, the Admonition(s), contains Israel's history, the preservation of a righteous remnant after the Babylonian Exile, and criticism of current religious practice (1–4.12); laws governing a sectarian organization (4.13–7.10); and threats of punishments to outsiders and defectors (7.10–8.19; 19–20). The second section is a collection of laws governing settlements in "camps" and in "cities" (9–16). The name *Zadokite Fragments* derives from a reference in the work to the sons of Zadok; the alternate des-

ignation *Damascus Document* derives from a reference to an exile in Damascus.

Fragments of texts that either parallel or are similar to the Cairo manuscripts (designated CD for Cairo Damascus) have been found in three caves at Qumran near the Dead Sea (designated 4Q[umran]D[amascus]a–h, 5QD, 6QD). With the aid of these fragments, some scholars reconstruct an "original" *Damascus Document* in which CD 15 and 16 directly precede CD 9 and other Cave 4 fragments are inserted before CD 1 and after CD 14. However, fewer than half of the QD fragments actually parallel CD.

Schechter and others recognized CD as the product of a Palestinian Jewish sect from the Hellenistic period. Since the Qumran discoveries, CD has played a central role in the dating and identification of the Qumran community. It is acknowledged to contain the most extensive account of the historical and ideological roots of the group that produced it, traced back to the Babylonian Exile, when God revealed to it "the hidden things in which all Israel had gone astray" (3.14)—namely, calendrical and legal observances. These issues surface in other Qumran texts and seem to represent the original cause for the adoption by certain Jews, perhaps in the third or second century BCE, of a segregated life-style governed by a solar year of 364 days (not the standard Jewish lunar year of 354 days) and by their own interpretation of the law of Moses. Their settlements were governed by a *mebaqqer* ("overseer") and a priest, and dealings with the Temple, and with other Jews and Gentiles, were strictly controlled. They regarded themselves as living in an "age of wickedness," in which God's anger with Israel would persist, until "there will arise one who will teach righteousness at the end of days" (6.11).

The relationship between the Damascus communities and the community of the Qumran text known as the *Rule of the Community* (the *yaḥad*) remains unclear. Some scholars identify the two as one because of references in CD to a Teacher of Righteousness as the initiator of a recent penitence movement (CD 1). Many prefer, however, to regard the *yaḥad* as a splinter group because of its clearly different manner of organization and ideology. If so, the *yaḥad* must have written its own creation into the CD's history, perhaps in the light of its belief that the "one who will teach righteousness" had actually arrived. Parts of CD 20 appear to be directed from within the *yaḥad* against those who rejected the "Teacher."

Schechter attributed CD to an otherwise unknown Zadokite sect from which the Dositheans were descended; Israel Lévi (1911) regarded them as Sadducees, but not of the kind depicted in the works of Josephus; Robert H. Charles (1912) saw them as reformed Sadducees. All these scholars identified the Pharisees as the opponents of the sect, although Louis Ginzberg found their laws to be essentially Pharisaic. Since the Qumran discoveries, an Essene identification has been popular; recent studies on CD's legal traditions (which are congruent with the *Temple Scroll*) again favor the Sadducees, however. The origins of the Damascus community have commonly been ascribed to the Maccabean period, but this conclusion is becoming less certain. Reference to "Damascus" may be taken literally, but Frank M. Cross has proposed that it means Qumran, while Jerome Murphy-O'Connor (followed by Philip R. Davies) has argued that it refers to Babylon.

Recent publication of the 4QD fragments has revived the study of the Damascus communities, with emphasis on the important part legal differences played in creating ancient Jewish sects. The nonlegal material in CD (to which the Qumran texts add little) also maintains a central place in research into the historical and ideological context of the Qumran scrolls, although no theory currently dominates.

[*See also* Dead Sea Scrolls.]

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PHILIP R. DAVIES

DAN (Ar., Tell el-Qadi), site located at the northeast end of the Hula Valley, at the foot of Mt. Hermon and at the headwaters of the Jordan River's most important source (map reference 2112 × 2949). The site is a rectangular, cra-

ter-shaped mound that was formed by massive ramparts constructed in the Early and Middle Bronze Ages. It was first identified with biblical Laish/Dan by Edward Robinson in 1838, an identification that has been accepted unanimously since. A bilingual (Greek-Aramaic) stone inscription found at the site also refers to the place name *Dan*. Laish is mentioned in the Egyptian Execration texts, where its king, Horon-Ab is named, and in the Mari texts, in connection with Hazor, in correspondence concerning tin shipments. [*See* Mari Texts.] Later, in the fifteenth century BCE, Laish is again mentioned in the list of cities conquered by the Egyptian king Thutmosis III. Dan is extensively referred to in the Bible, particularly in passages reflecting the Iron Age milieu (e.g., *Jos.* 19:47; *Jgs.* 18; *1 Kgs.* 12:29–31, 15:16 ff.). The latest ancient reference is that in the *Onomasticon* of Eusebius (entry no. 369), who located the place 4 mi. from Panias (Banias).

Trial excavations at the site were carried out in 1963 by Zeev Yeivin, and in 1966 salvage excavations were initiated by the Israel Department of Antiquities under the direction of Avraham Biran. In 1974 the project was transferred to the Nelson Glueck School of Biblical Archaeology of the Hebrew Union College in Jerusalem, still under Biran's directorship. As of 1995 the expedition was still active. Seven excavation areas were opened: A, B, H, K, M, T, and Y. All areas except H and M straddle the perimeter of the tell, exposing the Bronze Age fortifications. The fortifications enclose springs on the west side of the tell, where a high water table and dense vegetation thwart excavation.

Neolithic Period (Stratum XVI). The earliest occupation discerned at Tel Dan dates to the Pottery Neolithic (PN) period, perhaps early in the Wadi Rabah phase (c. 5000 BCE). Occupation remains were encountered in area B, where a deep probe at the base of the MB rampart core reached bedrock. Five stratigraphic phases were distinguished here in 2 m of accumulation. A subsurface infant burial in a jar was uncovered. Significant quantities of PN material were also found in areas M and T, in the fills of the lowest levels, indicating a fairly extensive area of habitation. The material culture features a characteristic flint industry, worked-basalt objects, bone utensils, and pottery—including several complete vessels—of plain, slipped and burnished, and incised wares.

Early Bronze Age (Strata XV–XIV). Surprisingly, Tel Dan seems to be almost devoid of Chalcolithic and EB I occupation. (The exceptions are three or four sherds and a possible "violin figurine," all from fills, objects that may have been transported from elsewhere in a later period.) This implies at least fifteen hundred years of abandonment. EB remains have been found in all the deep exposures (areas A, B, K, M, T, Y)—even those outside the limits of later fortifications—attesting that the EB settlement was the most extensive of all. Massive stone and brick fortifications are in evidence on the north and east side of the tell and there is a possible gate complex in area K. The pottery sequence makes Dan a type-site for distinguishing earlier (EB II or early EB III) from later (EB III) assemblages. Key finds include animal figurines, models of couches, cylinder-seal impressions (one of the largest groups in the Levant), a bone cylinder, Khirbet Kerak ware, and metal implements. [*See* Seals.]

Middle Bronze Age (Strata XII–IX). Tel Dan was occupied during the Intermediate Bronze Age (EB IV), but without leaving more than some flimsy wall remains and pottery sherds. It is not yet possible to say whether there was a gap in settlement over parts of this period or whether it was partially contemporary with either the previous Early Bronze Age or the subsequent Middle Bronze Age. The MB is represented by four strata (IX–XII) that, in area B, achieved an accumulation of 4–5 m, excluding the interior embankment.

The most prominent features of the MB occupation are its robust fortifications and its uniquely intact mud-brick gate. The initial phases of settlement in stratum XII utilized the remains of the existing EB fortification. Late in this stratum, or perhaps in stratum XI, these fortifications were supplemented by additional embankments and superstructures on the north and east; on the south, a new rampart was constructed by erecting, in stages, a vertical stone core with embankments sloping down to either side. This core was 6.5 m thick and preserved to a height of 10.5 m. The width of the rampart at its base was approximately 50 m. The upper part of the rampart has long since eroded away, and it is not known whether it was crowned with a freestanding wall.

A triple-arched mud-brick gate flanked by two towers may have been built at the same time, possibly on the site of an earlier EB gate. At the time of its discovery, it was preserved almost to its original height. This edifice had been plastered in antiquity. Apparently, however, it was unstable and prone to collapse, as evidence was found of unsuccessful attempts at shoring it up. In the end, it was blocked up and covered by the earthen embankment, resulting in the gate's almost total preservation. A new gate, of stone this time, was apparently built in area AB on the tell's south crest.

The remains inside the MB ramparts (and under them, in the case of stratum XII) seem comprised of rather prosaic courtyard dwellings with baking ovens and cooking and storage facilities. Some of these may have had more than one story. Particularly evocative were the stone-built chamber and cist tombs and infants buried in jars under the floors. No extramural cemetery was found, though a few MB I and II tombs have been found at the nearby sites of Hagoshrim, Gonen, and Kefar Szold. The chamber tombs (of which three were excavated) accommodated the remains of adult and adolescent males and females and included the richest

finds: pottery, weapons, bone-inlaid boxes, scarabs, jewelry, and food offerings. Cist tombs held the remains of children above the age of two years and jar burials contained infants or fetuses. The latter two burial types usually included one or two pottery vessels and a scarab or so. These practices appear to be indicative of social status dependent on age. The artifacts from both the tombs (which contain many complete forms) and the floors above them provide a long sequence of material culture from which both typological development and social evolution can be inferred. The MB settlement was destroyed by a great conflagration sometime in the sixteenth or early fifteenth century BCE. [*See* Tombs; Grave Goods.]

Late Bronze Age (Strata VIII–VII). Inside the perimeter of the MB fortifications, LB remains were found in all areas where sufficient depth was attained: stratum VIII represents the LB I and stratum VII the LB II. The occupational remains of stratum VIII were built over the destruction layer of the previous MB stratum and exhibit a similar material culture and a continuation of mortuary practices. At this time the first evidence for metallurgy is found at Tel Dan in the form of melting furnaces, crucibles, slags (especially in area B), and a mold. In area K, a portion of a well-preserved stone-built structure was excavated that contained a terra-cotta mask, a javelin head, and the aforementioned mold (for a scepter?).

Stratum VII was often truncated by the pitting and building activities of the subsequent Iron I strata, VI and V. Its remains testify, however, to public architecture and some degree of wealth. A flagstone pavement or street bordered by structures on either side extended north from the area AB gate. A terra-cotta plaque depicting a dancing figure playing a musical instrument was found under this pavement. During this stage, a metallurgy industry based chiefly on recycling copper and bronze is indicated in areas B and Y by furnaces, slags, blowpipe nozzles, and the like. However, the most impressive assemblage of this period (fourteenth–thirteenth centuries BCE) was found in a large, corbelled, stone-built tomb (T.387) in the MB style, the so-called "Mycenaean tomb." Approximately forty individuals—men, women, and children—were interred over time, with older burials pushed aside to make room for later burials and offerings. Almost five hundred objects were counted among the burial goods, including sheep or goat bones (meat offerings), 108 pottery vessels—28 of which were imported from either the Aegean or Cyprus—alabaster and basalt vessels, bronze tools, weapons and vessels, decorated bone and ivory items, and glass, silver, and gold jewelry.

Iron I (Strata VI–V). Some indications of continuity from the previous period appear in the Iron I strata. In general, pottery forms and metal utensils are clearly descended from LB types. Metallurgy remained an important aspect of the economy, though the Iron I industrial remains are more extensive than those of the previous period. In Iron I the emphasis is on intensive recycling, and there was a cultic association in area AB in the form of a small appended sanctuary containing such ceremonial objects as a miniature shrine. Nevertheless, important differences and innovations are also present. Myriad deep, often stone-lined, pits are featured in almost all of the excavated areas. Frequently these contained a wide variety and large number of pottery vessels—from large pithoi to small pyxides—animal bones, organic residues, and ash. Particularly suggestive are the many collared-rim pithoi found with pithoi of Galilean and Phoenician types. The collared-rim pithoi are most at home in the central highlands of Samaria and are rare in the north of the country, except at Dan and at a few sites in the eastern, Upper Galilee highlands. Their significant presence at Dan has been attributed to the migration of the tribe of Dan described in *Judges* 18. [*See* Ceramics, *article on* Syro-Palestinian Ceramics of the Neolithic, Bronze, and Iron Ages.]

The floors and architecture of stratum VI (c. twelfth century BCE) were rarely preserved, except for pits. This occupation seems to have been a more ephemeral one, but the lack of preservation is chiefly the result of heavy building and leveling in stratum V (late twelfth–mid-eleventh centuries BCE), one of the most substantial levels at Tel Dan. Stratum V shows a dense array of domestic and industrial architecture in almost every area of the tell. Some of these structures were clearly two stories high. This stratum was destroyed in a great conflagration that apparently enveloped the entire tell, resulting in a rich and varied assemblage of artifacts. Interestingly enough, no burial remains were found from this or the succeeding Iron Age.

Iron Age II (Strata IV–II). Dan's eminence as a cultic center for the Israelite kingdom was responsible for its more or less continuous prosperity and growth in Iron II. The high place in area T and the gate complexes in areas A and AB show a series of major building phases that utilized fine construction and masonry techniques. The excavator discerned three major building phases in the Iron II high place and attributed them to prominent Israelite kings:

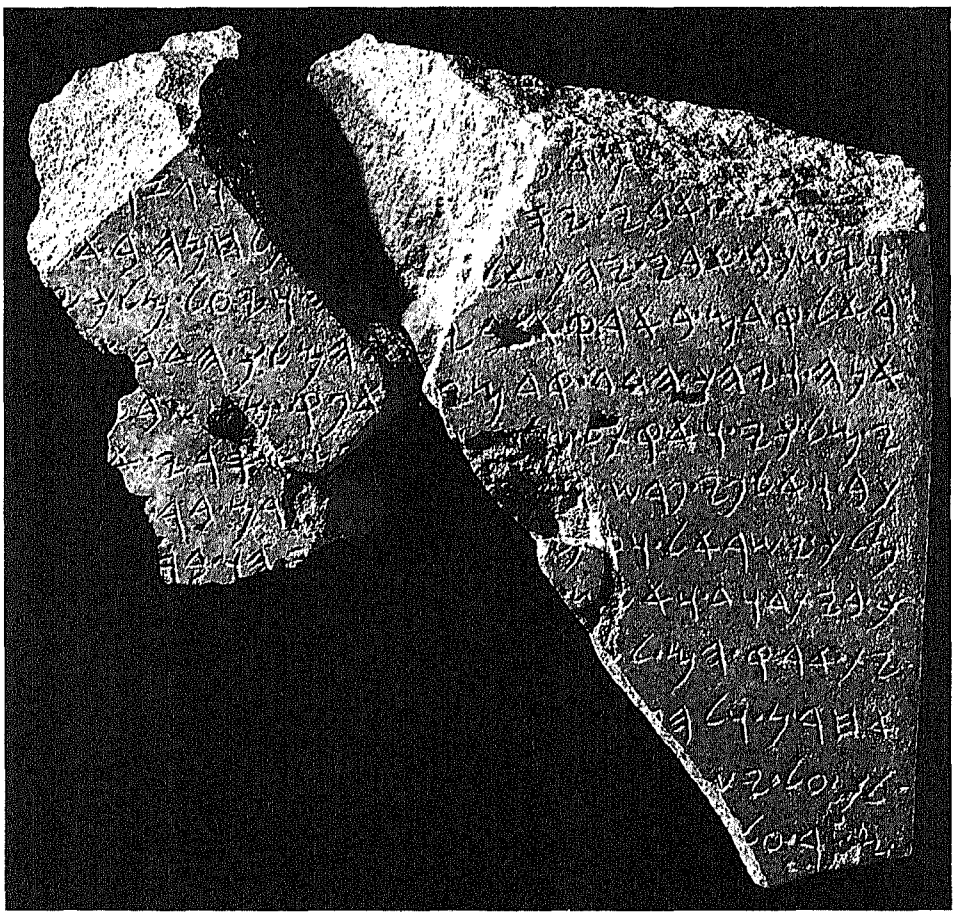
1. *Bāmâ A:* Dating to the late tenth century BCE (Jeroboam I), the stratum-IV *bāmâ* is represented by a row of massive rectangular dressed stones laid out under the southern foundations of *bāmâ* B. An ashlar-constructed altar platform, a libation installation (or olive press), and several other richly endowed rooms were associated with this massive substructure.

2. *Bāmâ B:* The ninth-century BCE (stratum III, reign of Ahab) *bāmâ* gave the structure its present form. It is comprised of headers and stretchers dressed with margins in the classic royal Israelite fashion found at Samaria and Megiddo. Cedar beams were integrated at horizontal intervals (cf. *1 Kgs* 7:12). The altar platform was augmented and a

belt of chambers erected around the temple podium and altar precinct, creating an enclosed temenos (or altering the previous one). The in situ work of the stonemasons left a thick yellow travertine floor surrounding this stage's structures.

3. *Bāmâ C:* The eighth century BCE (stratum II, reign of Jeroboam II) *bāmâ* represents a phase of minor alterations and supplements. It was also the phase that revealed a series of cultic objects—altars, incense shovels, a scepter head, and sacrificial remains—in the exterior belt of rooms surrounding the cultic precinct. This was also the stage to which most of the epigraphic material could be attributed.

Like the cultic precinct, the gate complexes also seem to show successive augmentation and aggrandizement. The tenth- and early ninth-century BCE fortification and gate plans have only been recovered in difficult-to-decipher fragments under the well-preserved remains of the assemblage from the ninth–eighth centuries BCE. By the time of *bāmâ* B, the high place and the gates on the southern periphery of the tell were connected by means of a monumental slab-paved avenue found in areas A, M, and T. The excavator has assigned this and its coeval four-chambered gate and buttressed solid fortification wall to Ahab. The last upper gate and some related architecture have been dated to the eighth century BCE and are associated with Jeroboam II. An impressive array of cultic paraphernalia was excavated in and around the gate complex, including an ashlar canopy platform, decorated stone column bases and capitals in the Assyrian style, groups of *maṣṣēbôt* in small "chapels," altars, groups of complete pottery vessels presumed to have a cultic function, and more. Most significant of all is the recent (1993–1994) discovery of fragments of a stela (see figure 1), inscribed in Aramaic, that mentions a king of the House of David and a king of Israel (perhaps Jehoram). Though much controversy surrounds its interpretation, most scholars are now dating its placement to the second half of the ninth century BCE and its shattering to the first half of the eighth century BCE. The last phase was destroyed in



DAN. Figure 1. *Aramaic inscription fragment.* Found in the wall bordering the outer Iron Age gate plaza. The text recounts the exploits of a victorious Aramean king, probably Hazael, and mentions a king of Israel and the house of David. Dated c. 850-800 BCE. (Courtesy Nelson Glueck School of Biblical Archaeology, Jerusalem)

DAN. Figure 2. *Bilingual inscription.* Found in the cultic precinct; Greek above, Aramaic below. The text reads "To the God who is in Dan, Zoilos made a vow" and comprises forceful evidence for the identification of Tell el-Qadi with biblical Dan. Dated c. 200-150 BCE. (Courtesy Nelson Glueck School of Biblical Archaeology, Jerusalem)

the eighth century BCE, in a great conflagration that preserved these finds.

Iron Age III (Stratum I). The period of Assyrian rule over ancient Israel is surprisingly well represented at Tel Dan. While most of the Galilee was devoid of settlement, and even sites of former prominence (Hazor, Tel Kinnerot) were either abandoned or occupied by fortresses alone, Dan experienced a population explosion of sorts. The entire tell was densely occupied by an orthogonal network of domestic structures and streets. Wide-ranging trade relations are evidenced by the presence of Assyrian, Phoenician, Ammonite, Judahite, and Corinthian pottery and other finds. Later Iron Age remains adjacent to the high place were apparently removed by Hellenistic-period modifications, but cultic activity probably continued there because new monumental buildings were erected nearby. Some of these show Assyrian-style pilaster construction. In contrast, the fortifications and gate complexes—perhaps destroyed by the Assyrians—were left in disrepair. The large number of complete vessels and other artifacts found in this stratum indicate sudden abandonment, though no real destruction layer was detected in most parts of the tell.

Persian, Hellenistic, Roman, and Medieval Periods. Tel Dan appears to have lost much of its grandeur and, by inference, part of its original cultic importance, in the Persian through the medieval periods. Occupation was apparently confined to the environs of the high place, where cultic activity did continue. A large cache of Persian-period figurines was recovered in one of the rebuilt temenos chambers. From the Hellenistic period in particular, there is evidence of the construction of a new cultic precinct based on the same principles that had guided the Iron Age one: a belt of rooms surrounding an open space containing the central platform and altar court. These latter edifices were also supplemented. The most important find from this period came from the area of the cultic precinct: a bilingual (Greek-Aramaic) stone inscription mentioning "the god who is in Dan" (see figure 2). The upper gateway in area AB also continued to function as a passage, if not an actual gate.

The Roman period saw the surfaces in the cultic precinct raised and a new temenos wall constructed. A thick plaster floor was laid over the Iron Age platform. An ashlar-built fountain house was uncovered, fed by terra-cotta pipes drawing water from the nearby spring. All across the southern flank of the tell, above the remains of the Iron Age gates, similar pipes were found in articulation. These carried spring water to irrigate the outlying fields. By this time the cult place at Dan had been largely supplanted by the one at nearby Banias, though the two clearly coexisted over a long period of time. [*See* Banias.] By the end of the Roman period, Tel Dan was abandoned, except for an ephemeral early Ottoman occupation found in area M and its corresponding cemetery found along the margins of the tell, close to the surface.

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DAVID ILAN

DARB ZUBAYDAH, pilgrimage road beginning at Kufah in Iraq and ending at Mecca (Makkah) in Saudi Arabia. According to the Qur'an, a "pilgrimage to the Ka'bah (at Mecca) is a solemn duty to God, for all who are able to make this journey." Thus roads from all Islamic countries converged at Mecca. The origin of the Darb Zubaydah may be traced in sections to the early sixth century CE as a trade route linking the Hijaz and central Arabia with al-Hira in Iraq. It was during the 'Abbasid period, however, that its importance grew, and it developed into a full-fleged highway.

The transfer of the 'Abbasid capital from Damascus to Baghdad in AH 132/750 CE necessitated establishment of direct communication between the political and religious centers. The Kufah–Mecca road, existing prior to the 'Abbasid period was linked to Baghdad by extending it farther north. Several earlier 'Abbasid caliphs, especially, Abu'l 'Abbas as-Saffah, Abu Ja'far al-Mansur, al-Maholi, and al-Rashid, took an interest in the establishment of the Kufah–Mecca road and made arrangements for the provisions and facilities essential for travelers.

The 'Abbasid caliph Harun al-Rashid (170–193/786–809) several times visited Mecca accompanied by his wife, Zubaydah. They realized the conditions on the route and lack of facilities available to the pilgrims. Queen Zubaydah took keen interest in the improvement of the Baghdad–Mecca road; she made an outstanding contribution in providing water facilities by digging wells and cisterns along the pilgrim route and by building rest houses and lodgings. Arab geographers such as al-Harbi and Yaqut and the travelers Ibn Jubayr and Ibn Batutah have recorded vivid details of the constructions, facilities, and provisions provided by Zubaydah along the Kufah–Mecca road. She acquired a great reputation for her work. Several places were named after her, that is, Zubaydiyah (known as Umm Ja'far). Later, the road acquired the name Darb Zubaydah.

So far, about one hundred sites on the route have been recorded. Of these thirteen are located within Iraq, and the remaining are situated in Saudi Arabia. According to early geographers, there were twenty-seven main and as many secondary pilgrim stations on the road. There were several other rest places established along the main branches of the road. The most famous of these were al-'Aqabah, Zubalah, Fayd, Samirah, an-Nuqrah, ar-Rabadhah, Ma'din Bani, Sulaym, and Dhat 'Irq. The 'Abbasid caliphs provided milestones, which had Kufic inscriptions giving distances between the stations. Historians such as al-Tabari and Ibn al-Athir furnish details of the erection of milestones and details of the distances along the road starting from Kufah. The road was also provided with road-signs *(a'lam)* and fire signals.

Along the road, Kufic inscriptions are found on rocks at places such as as-Suwargiyah, Hadha, and Samirah. The condition of the road was maintained regularly; it was cleaned and cleared from various obstacles. It was paved in the sandy areas; steep hills and mountains were cut; and smooth tracks were made with steps at some places.

Of archaeological interest are the ruins surviving on the Darb Zubaydah. These are the pilgrim stations, water tanks, wells, forts, rest houses, milestones, and inscriptions (al-Rashid, 1980). Early Islamic pottery, glass, and coins are the main finds along the Darb Zubaydah. The pottery sherds are of a great variety—luster-painted, tin-glazed, splashed, monochrome green-glazed, and unglazed ware with or without decoration. Fragments of soft stone vessels have also been recovered. Minted in different cities, gold dinars, silver dirhams, and bronze coins of the Umayyad and 'Abbasid caliphates have been discovered along the route.

The most remarkable station is ar-Rabadhah about 200 km (124 mi.) southeast of the city of Medina (Madinah al-Munawwrah). At al-Rabadhah excavations under the direction of Sa'ad al-Rashid since 1979 have produced fine architecture and numerous archaeological finds in great variety, such as masonry foundations of houses, mosques, cemeteries, tombstones, and reservoirs and wells. The architecture of the residential houses reveal typical Rabadhah style; independent units are surrounded by strong walls. The structure of the house are defended by towers built along the walls and on the corners. Remains of other buildings, public facilities, small streets between the houses, industrial

units, washrooms, and sewage disposal channels have been found. Recent research and archaeological studies on the road has revealed abundant information about the archaeological sites and remains of facilities on the road. From Rabadhah come a variety of metal objects, such as an iron dagger, a spouted receptacle, kohl containers, a dagger sheath, an iron chain, a fragment of an instrument, and animal figures, glass, and jewelry in wood, bone, and ivory.

Two large limestone reservoirs, one circular and the other square at Rabadhah are unique features. The circular structure has a diameter of 64.5 m (211.6 ft.) and its walls rise up to 4.7 m (15.4 ft.) above a gypsum floor. Adjacent to it is filter tank of 55 × 17 × 3.15 m (180.4 × 55.8 × 10.3 ft.) through which the reservoir received flood water after filtering. The reservoir dates to the tenth century, is still in good condition, and had a capacity of 14,250 cu m. The square reservoir, which measures 26 × 26 m (85.3 × 85.3 ft.) has gypsum-plastered walls, strengthened by semicircular buttresses. It has two main inlets, one of them fed by a dam. These reservoirs along with about one hundred tanks of different dimensions and capacity are suggestive of water engineering that existed at Rabadhah and the importance attached to a water supply.

Caliph Harun al-Rashid and his wife Zubaydah not only took keen interest in the establishment of the road but spent large sums for its maintenance and protection. They appointed regular officials for its upkeep and provision of facilities essential for the comfort of travelers. When the road was threatened soldiers were despatched. The traffic on the road was constant and considerable. Caravans by the thousands occasionally traveled at the same time. The road declined from the ninth century CE because of the incursions of various tribes and later by the raids of the Qarmatians. The fall of Baghadad in 1258 to the Mongols was catastrophic for the road. From an archaeological point of view, the Darb Zubayadah is an excellent example of early road systems in Arabia. The excavations along the road, especially at al Rabadhah attest to the flourishing of and advanced civilization and to the mingling of different Islamic countries along the road.

[*See also* ʿAbbasid Caliphate; Arabian Peninsula, *article on* The Arabian Peninsula in Islamic Times; Mecca; *and* Medina.]

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SAʿAD ABDUL AZIZ AL-RASHID

DATING TECHNIQUES. Many artifacts and skeletal remains can be dated by reference to an established typological framework. The chronology of such a framework, except within a well-documented historical period, is ultimately based on a chronometric technique such as radiocarbon, thermoluminescence, or dendrochronology. These and other techniques are also used for placement within the framework. The essential characteristic of nearly all these is that they are "absolute," in the sense of giving a date that is based on currently measurable quantities; hence, they are objective, being independent of existing chronologies. The techniques outlined below are: (1) radiocarbon, (2) dendrochronology, (3) luminescence, (4) electron spin resonance, (5) uranium-series, (6) potassium-argon, (7) fission tracks, (8) amino acid racemization, (9) obsidian dating, (10) other chemical techniques, (11) archaeomagnetism, and (12) pollen analysis, climatic change, oxygen-isotope stages, and the Milankovitch timescale. Error limits are quoted at the 68 percent level of confidence (i.e., 1 sigma).

Radiocarbon Dating. The carbon in the carbon dioxide in the atmosphere consists mainly of nonradioactive carbon-12 and carbon-13; there is also a minute amount of weakly radioactive carbon-14 resulting from the interaction of cosmic-ray neutrons with the nitrogen in the upper atmosphere.

Carbon dioxide mixes rapidly throughout the atmosphere, and by photosynthesis enters plant life and hence into animals; atmospheric carbon dioxide also enters the oceans as dissolved carbonate, so that this too contains carbon-14—as do any shells and deposits formed from it. The totality of atmosphere, biosphere, and oceans is known as the carbon-exchange reservoir. The concentration ratio between carbon-14 atoms and nonradioactive carbon atoms is approximately the same (about one in a million million) throughout the reservoir; it also stays approximately constant with time.

In organic matter that is no longer exchanging its carbon with the reservoir, the carbon-14 lost by radioactive decay is not replenished; this is the case, for instance, in the cellulose molecules of wood. From the time of formation, the concentration ratio decreases at a rate determined by the immutable 5,730-year half-life of carbon-14; this means that wood 5,730 years old will have a carbon-14 concentration that is one half of its value at formation; for wood that is 11,460 years old, the concentration will be one quarter of the formation value, and so on—or, the concentration decreases by 1 percent every eighty-three years. Hence, comparing the concentration measured in an ancient organic sample with the assumed value at formation can determine the amount of time that has elapsed.

In practice, the method is useful for the period four hundred to four thousand years ago—although, with special measurement installations, some sample types can reach substantially further back, to about seventy thousand years ago. The error limits on the calendar-year date (i.e., after calibration; see below) are typically in the range ± 50–150 years, being smaller in some millennia than others.

Measurement. The carbon-14 concentration in a sample can be determined by converting the carbon of the sample into a gas or into benzene and measuring the emission rate of beta particles in an appropriate detector system. Since the late 1970s, direct measurement of the concentration by means of accelerator mass spectrometry (AMS) has been increasingly employed. Although such an installation is very expensive, it has the important advantage that the size of the sample required is less by several orders of magnitude—a few thousandths of a gram of carbon instead of a few grams.

Sample types. An essential characteristic of a sample is that over the centuries of burial it should not have acquired any fresh carbon from the atmosphere (e.g., by fungal growth). A minute amount of modern carbon can cause the date that is determined to be substantially too recent, particularly for samples near the forty-thousand-year limit. Conversely, the incorporation of "dead" carbon at formation can cause the opposite effect. Although the sample material itself may have high integrity, intrusive contamination may have been acquired during burial; the humic acids carried in percolating groundwater are an example. It follows that the extent to which a sample is reliable is bound up with the stringency of the laboratory pretreatment that can be applied. The severity that a laboratory can afford to use is dependent both on the size of the initial sample and on the amount of carbon required by the measurement facility; the severity needed depends also on the age.

For wood the use of extracted cellulose avoids lignin and humic acids. For precise dating, a serious problem with wood and charcoal is estimation of the extent to which the wood's formation predated the archaeological event of interest. For bone, use of the extracted protein fraction (collagen, gelatin) is necessary. Unfortunately, the amount remaining decreases with age and in some burial environments, among them the Near East, too little is left in bones from periods earlier than, say, the Neolithic. Charred bone is a good alternative. Grain can be dated reliably, particularly if charred. Single grains can be dated with the AMS technique, but site association is a severe problem. Among other datable sample types are shell, peat, sediment and soils, ivory paper and textiles, straw in mud bricks, and traces of charcoal in iron objects. The golden rule in sample collection is prior discussion with the relevant laboratory.

Calibration. A raw age from a laboratory is given in conventional radiocarbon years BP ("before the present," defined as 1950). This is not the same as the age in calendar years (i.e., sidereal years) because the carbon-14 concentration in the biosphere varies slightly from decade to decade and century to century: thus, wood formed at some time in the past does not necessarily have the same carbon-14 concentration as wood formed today. The variation occurring over the last ten thousand years has now been established by measuring samples of wood for which the age has been determined by dendrochronology. By using this "calibration curve," ages in radiocarbon years can be converted into ages in calendar years or calendar dates—denoted by cal BP, cal BCE, or cal CE. Extension of the calibration curve further back in time is being undertaken by intercomparison with the uranium-series technique using samples of coral.

The terminology just given, BP and so forth, is specific to radiocarbon dating. Most other techniques yield ages directly in calendar years and the use of BP is then confusing (because, it implies radiocarbon years rather than calendar years); exceptions to this are amino-acid dates and obsidian dates calibrated by reference to radiocarbon.

Dendrochronology (Tree-Ring Dating). For some species of trees growing in some climatic conditions, visually recognizable rings form annually with a climatically determined width pattern. This width pattern allows cross dating between trees felled in different periods (the pattern shown by the inner part of a recent tree can be matched with that shown by the outer part of a tree that was felled earlier). In this way a master chronology can be established for a region and building timber of unknown age can be dated by discovering where its pattern fits onto the master chronology. If sapwood is present on the timber, high accuracy is possible; even so, a degree of uncertainty remains as to how

many years elapsed between felling and usage on the site concerned. To obtain a reliable fit onto the master chronology, the piece being dated needs to contain a minimum of about fifty rings.

The Californian bristlecone pine chronology and the European oak chronology have made possible the conversion of radiocarbon years to calendar years. The trees concerned are remarkably long-lived and by leapfrogging back from recent trees to successively older fossil trees, as indicated above, it has been possible to cover the last ten millennia.

Luminescence Dating (LD). Thermoluminescence (TL) and optical dating (OD) comprise luminescence dating (LD); OD utilizes optically stimulated luminescence (OSL). These are based on the cumulative effect of nuclear radiation on the crystal structure of certain minerals, mainly quartz and feldspar. The nuclear radiation is provided by trace amounts of potassium-40, rubidium-87, thorium, and uranium that are naturally present in the sample and its surroundings. The dating signal is obtained, in the case of TL, by heating grains extracted from the sample and measuring the light they emit by means of a highly sensitive photomultiplier; in the case of OSL, the measurement is obtained by shining light on the sample; lasers and halogen lamps can be used, as well as infrared-emitting diodes—in which case the luminescence may be termed IRSL.

The TL technique was first applied to pottery, the event dated being the firing by the ancient potter (thereby setting to zero the previously accummulated TL). It was subsequently extended to stalagmitic calcite (which has zero TL at formation) and to burnt flint (heated accidentally by having fallen into fire, or deliberately). The latter application, along with the ESR dating of tooth enamel, has had a particular impact on hypotheses concerning the relationship between anatomically modern humans and Neanderthals. The TL and OSL signals from quartz and feldspar can also be set to zero by exposure to daylight. Thus, windblown sediment (such as loess) is set to zero during its transportation, as is waterborne sediment, though in this case the zeroing process is less effective and the OSL method has a strong advantage over TL.

For either method it is necessary to evaluate the dose rate of nuclear radiation that the sample was receiving during burial. This is done partly by radioactive analysis in the laboratory and partly by on-site measurement (of the penetrating gamma radiation that reaches the sample from surrounding soil and rock, up to a distance of about 0.3 m). It is also necessary to estimate the water content of the sample and soil/rock because any water present attenuates the nuclear radiation. Uncertainty about water content (averaged over the burial period) can limit the accuracy obtained; sites which have always been bone-dry have an advantage.

For pottery and burnt flint, a half-dozen fragments not less than 30 mm across and 10 mm thick are required. For sediment, about half a kilogram is typically needed. Great care must be taken to avoid exposure to daylight, particularly if the OSL method is being used. Hence, the sample collection of sediment should be done by laboratory specialists with appropriate equipment (e.g., a short steel tube which is driven into the section; the material at the exposed ends is discarded in the laboratory); otherwise, the samples should be collected at night and secured in thick, opaque plastic bags. Even slight exposure to light may cause the evaluated age to be too recent.

Age range is highly dependent on sample type and site; several hundred thousand years is a typical upper limit for flint, calcite, and sediment—although with the latter there is a tendency (if some types of feldspar are present in the sample) for the age to be underestimated, particularly beyond fifty thousand years. The lower limit is on the order of one thousand years. With pottery, the lower limit can be on the order of a decade in some cases; the upper limit is usually beyond ten thousand years. The accuracy attainable is usually in the range 5–10 percent of the age (i.e., ±150–300 years at 1000 BCE, ±300–600 years at 4000 BCE). Hence, the main strength of the technique is for sites where there are no samples suitable for radiocarbon and on Paleolithic sites beyond the range of radiocarbon.

Electron Spin Resonance (ESR). Another way of measuring the cumulative effect of nuclear radiation is with electron spin resonance (ESR). Its principal archaeological applications have been to tooth enamel and stalagmite calcite. ESR reaches back several million years; its lower limit is a few thousand years. The above remarks about dose-rate evaluation apply here, but with additional complexity in the case of tooth enamel because of uranium migration. As a result, two ages are quoted, based on the assumptions of early uptake (EU) and linear uptake (LU), respectively (in some cases the EU age is substantially lower than the LU age). Large teeth (elephant, mammoth) are preferred; usually, separate determinations on about a dozen samples are averaged.

Uranium-Series Dating. Stalagmite calcite and other forms of that mineral and also some products from volcanic eruptions lend themselves to uranium-series dating. At formation, only uranium is present in the sample material. With time, radioactive daughter products (thorium-230, protactinium-231) build up slowly; determination of the ratio of daughter product to parent uranium allows the age to be evaluated. Measurement is conventionally by alpha spectrometry, but recently thermal ionization mass spectrometry (TIMS) has been used, which gives much higher precision and needs less of a sample. With TIMS, the age range is approximately 500–500,000 years; with alpha spectrometry, 2,000–350,000 years. In good circumstances, the error limits using TIMS can be as low as ±1 percent of the age; with alpha spectrometry the limits are usually in the range of ±5 percent to ±10 percent.

Potassium-Argon Dating. Of crucial importance in the

study of early hominids, potassium-argon dating is a technique based on the accummulation, in volcanic lava, for example, of argon-40 produced from the slow decay of potassium-40. During a volcanic eruption, previously accumulated argon (a gas) is released, which is the event which is dated. Obviously, to be useful, human occupation must be reliably associated with volcanic products—for example, between two lava beds. Its age range is enormous: from ten thousand years to about four hundred million years.

Fission Track Dating. The main impact of fission track dating has been on the study of early hominids. Its one or two applications to Neolithic obsidian artifacts are to be regarded as exotic rather than useful. The technique is based on the counting of the miniscule tracks left in some minerals by nuclear fragments immediately after the occurrence of spontaneous fission undergone by uranium nuclei present as impurity.

Amino-Acid Racemization. Dating by amino-acid racemization is based on the slow conversion within a protein molecule of an amino acid (such as aspartic) from its **L** form, at formation, to its **D** form, until an equilibrium mixture of the two is reached. Epimerization of isoleucine is another reaction utilized, notably in the dating of ostrich eggshells. These processes are strongly influenced by environmental conditions—by temperature in particular; site-by-site calibration against radiocarbon is usual, along with extrapolation for samples that are beyond the limit of the latter technique.

In its early application the technique acquired a reputation for unreliability, particularly for poorly preserved bone. However, good reliability is now being obtained when sample types are selected carefully (such as ostrich eggshell, well-preserved bone, and tooth enamel), when strict attention is paid to the validity of the radiocarbon dates used for calibration, and when stringent laboratory procedures are followed. Using aspartic acid the last 50,000–100,000 years can be covered; using the epimerization of isoleucine, reaching a half million years is feasible. In addition to the extension of age range, another advantage over radiocarbon is the comparative ease of measurement and, hence, the lower cost. An archaeologist can undertake a much wider sampling of site with amino-acid racemization than could be afforded using radiocarbon only.

Obsidian Dating. Another technique strongly influenced by environmental conditions, particularly temperature, is obsidian dating. It is based on the slow formation of hydration rims on freshly cleaved obsidian. Until the late 1970s, the favored approach was by regional calibration using known-age samples. Since then the emphasis has been on obtaining absolute ages, independent of other techniques or archaeological chronology. This approach requires two major evaluations (in addition to measurement of the hydration rim itself): the effective burial temperature and laboratory measurement (at elevated temperature and pressure) of the rim growth rate for each type of obsidian that is dated. Dates have been reported in the age range from 200 to 100,000 years ago. Growth rates vary widely between different parts of the world; the comparatively rapid hydration rates in tropical countries allow more recent dating than in Arctic regions.

Other Chemical Processes. The movement of fluorine and uranium into bone and loss of nitrogen are other processes by which some indication of age can be obtained. The bulk contents are strongly dependent on the burial environment; however, this dependence is very much weakened if the depth profile, as measured by a nuclear microprobe, is used instead. Nuclear techniques measuring penetration depth of nitrogen can be used to distinguish between freshly cut surfaces of jade, for example, and those cut in antiquity.

Archaeomagnetic Dating. The direction of the earth's magnetic field (e.g., magnetic north as indicated by a compass) changes very slowly, but it is perceptible over a decade. A fossilized record of past direction is provided by the weak, but permanent, magnetization that is acquired by clay and stones on cooling down after baking and by sediment during deposition (or consolidation). The variation differs from region to region and does not follow a well-defined pattern. Hence, for each region of application it is necessary to establish a calibration curve using kilns, hearths, and silted-up ditches of known age. Consequently, the availability of a reliable archaeological chronology is a necessary prerequisite for applying the method. An alternative possibility is to make measurements on radiocarbon-dated lake sediment, obtained as a long core extracted from the lake bottom.

On a larger time scale, complete reversals of the earth's field provide a worldwide geomagnetic chronology, calibrated by means of the potassium-argon technique. The most recent event (named the Blake event) which is well established and generally accepted occurred at about 110,000 years ago; this was a comparatively brief reversal lasting not much more than ten thousand years. Earlier, at 780,000 years ago, there was the transition from the Matuyama reversed polarity epoch to the present Brunhes epoch.

Pollen Analysis and Other Climatic Indicators. An archaeological site carries a record of past climate notably through preserved tree and plant pollen. Other indicators are faunal assemblage and soil type. This record allows the levels of a Paleolithic site to be described as cold or warm and to be related—often through the intermediate step of a locally defined climatic sequence—to the worldwide climatic chronology, based on oxygen-isotope stages. The successive cold and warm stages of this chronology are defined by the isotope ratio (oxygen-18–oxygen-16) found in marine fossil microfauna. Finest climatic detail is given by the isotope ratio variations measured in long cores drilled into the polar ice cups.

Absolute dating of the marine stages was initially based, via sedimentary remanent magnetization, on potassium-argon dating supplemented by radiocarbon and uranium series. The chronology so obtained has now been refined by reference to the Milankovitch astronomical predictions of the climatic variation resulting from changes in the earth's orbital parameters. The marine stages are now the fundamental time divisions of the Quaternary epoch.

Pollen characteristics (such as the dominant species of tree) can be used to define pollen assemblage zones (PAZ). The succession of such zones can be used as a basis for chronozones, defined in terms of radiocarbon years. For example, at a type-site the boundaries of the major PAZ are dated by radiocarbon and those dates then define the chronozones. Arboreal pollen, expressed as a percentage of total tree and herb pollen, is a useful broad indicator of climate, being high in warm/wet periods and substantially lower otherwise.

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MARTIN J. AITKEN

DCP SPECTROMETRY. Direct current plasma (DCP) spectrometry provides an effective means of analyzing the chemical composition of ancient pottery. Similar to inductively coupled plasma spectrometry (ICP), a related spectroscopic method, DCP offers a highly accurate means of determining the presence of a wide range of elements in any given sample, a necessary first step in all provenance studies. By obtaining chemical "fingerprints" of reference materials (e.g., kiln wasters) of known origin and finding compositional "matches" to pottery samples, one is often able to pinpoint the source of manufacture.

The first application of DCP on archaeological artifacts was conducted in 1994: select fired and unfired Jerash bowl fragments recovered from deposits associated with the late Byzantine pottery kilns in the hippodrome at the ancient Decapolis city of Gerasa (Jerash, Jordan) were examined (Lapp, 1994). In combination with petrographic thin-section analyses, DCP subsequently proved invaluable for the chemical characterization of clay oil lamp samples collected from sites once comprising Roman Palestine (Lapp, forthcoming). The team of F. A. Hart and S. J. Adams first used ICP to determine the provenance of select Romano-British pottery from Hampshire (Hart and Adams, 1983). The recent examination of early Bronze Egyptian pottery from Canaan by means of petrography, neutron activation, and ICP analyses successfully combines the analytical strengths of these archaeometric methods for determining provenance (Porat et al., 1991).

DCP centers on the analysis of samples prepared as solutions. The sample itself, whether a ceramic fragment of a Roman oil lamp or of a Persian storage jar, is brought into solution using a lithium metaborate fusion technique. Following the method outlined by E. M. Klein (1991), Lapp mixed 0.1 g of powdered Jerash bowl sample with 0.4 g of ultra-pure lithium metaborate flux and fused the mixture in preignited crucibles at 1040°C for 13 minutes (Lapp, 1994). After fusion, the pebble-shaped melt was dissolved in 0.24 ml of nitric acid; the resulting concentrated solution was then ready to be analysed for trace elements. For the major elements, a dilute solution of each sample consisting of 0.25 ml of the concentrated solution with nitric acid plus lithium was prepared.

Once in solution, the sample was nebulized and its aerosol directed at the plasma. The plasma itself is created by initiating an electrical discharge within a stream of argon flowing between two electrodes (Potts, 1987). After nebulization, the aerosol particles of the sample solution experienced desolation, vaporization, and atomization. This occurred in the "excitation zone" where the sample temperature ranges between 5700 and 6000 K (Potts, 1987). At this temperature, the elements' atoms undergo transitions to lower electronic states and emit their excess energy as a quanta of light. Because these wavelengths of light are specific to the emitting element, the identification of a tested element can be discerned by a proper spectrometer. The intensities of emission are measured by the spectrometer, measurements of which indicate the elemental abundances in any given sample. Potts notes that samples atomized in a direct current plasma experience significantly lower atomization temperatures than those atomized in the inductively coupled argon plasma of ICP analysis (Potts, 1987).

DCP spectrometry has proven to be an effective, accessible, and affordable means of major and trace element analysis of terracotta wares and lamps alike. Undoubtedly, it should also prove useful in future characterization studies with respect to nonceramic objects, as has already been demonstrated by the related archaeometric method of ICP applied to metal artifacts from late Bronze Age hoards in Slovenia (Trampuz-Orel et al., 1991).

[*See also* Neutron Activation Analysis; *and* Petrography.]

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ERIC C. LAPP

DEAD SEA SCROLLS. The phrase *Dead Sea Scrolls* is used in two senses, one generic and one particular. In the generic sense the phrase denotes documents and literary texts discovered at various sites along the shore of the Dead Sea and extending up to Jericho. These sites include Masada, Wadi Murabba'at, Naḥal Ḥever, Naḥal Ṣe'elim, Naḥal Mishmar, Khirbet Mird, and Ketef Jericho. In the particular sense the phrase specifies the Hebrew, Aramaic, and Greek literary texts found in eleven caves near the site of Qumran.

Qumran Caves 1–11. The first seven of what have since come to be known as the Dead Sea Scrolls (in the particular sense) appeared in the summer of 1947 in Bethlehem. Coming from the hands of bedouin, their original provenance was unknown. As the significance of these scrolls became apparent, authorities made efforts to determine precisely where they had originated. Qumran Cave 1 was soon identified, and excavations began there in February 1949. These excavations lasted for about one month. The excavators discovered many text fragments, along with pieces of cloth and wood, olive and date stones, leather phylactery cases, and pottery sherds. Some of the text fragments belonged to the seven scrolls the bedouin had offered for sale, thus clinching the identification of the original findspot.

From this time began a competition of sorts between the authorities concerned with preserving manuscripts and recording archaeological details and the bedouin, who were concerned with making a small fortune from the sale of scroll materials. Both groups sought new manuscript-bearing caves. In February 1952, bedouin found Cave 2 and sold some of its fragments. Officials immediately set to investigating the cave systematically, along with all the rock cliffs in the Qumran region. Cave 3 thereupon yielded up its treasures to authorities. Subsequently, two additional rock-cliff caves bearing manuscripts were discovered: Cave 6, found by the Arabs in 1952, and Cave 11, found in 1956. The latter cave contained some of the most important and complete scrolls.

In addition to these natural caves, six caves artificially hollowed out of marl terraces eventually came to light: Caves 4, 5, and 7–10. By far the richest manuscript remains belonged to Cave 4, which was discovered first by the bedouin and then, after it had been badly pilfered, excavated by officials in September 1952. This cave contained portions of hundreds of different manuscripts, many showing evidence of deliberate destruction in antiquity. This same 1952 campaign succeeded in identifying Cave 5. It remained for the campaign of 1955 to discover Caves 7–9. The tenth cave, discovered in the vicinity of Cave 4, contained no manuscripts, only an ostracon inscribed in Hebrew. Altogether, the manuscripts found in Caves 1–11 number approximately 825.

Khirbet Qumran. The presence of eleven manuscript-bearing caves that seemed to radiate north and south from the place known by the Arabic name Khirbet Qumran (its ancient appellation is uncertain) suggested that the site itself ought to be excavated. The Jordanian Department of Antiquities, the Palestine Archaeological Museum (now the Rockefeller Museum), and the École Biblique et Archéologique Française de Jérusalem undertook joint campaigns, beginning in 1951 and continuing for five seasons. The results of those excavations were never published scientifically, although preparations to do so are now underway. Preliminary descriptions written by Roland de Vaux, who headed the project, distinguished four basic occupational levels: one in the seventh century BCE and three others from about 100 BCE to shortly after the fall of Jerusalem in 70 CE.

Recently, questions have been raised about a direct connection between the scrolls and Khirbet Qumran that may lessen the interest of the archaeological data. For example, Pauline Donceel-Voute, one of those responsible for full

publication of the de Vaux excavations, has shown that the principal evidence for the "scriptorium"—the plastered "tables" upon which scribes were imagined to have copied out the scrolls—points instead to a triclinium (a dining room). The tables may have been couches on which the diners would have reclined. Furthermore, the identification of hundreds of individual scribal hands for the scrolls and scroll fragments is difficult to square with the notion that Qumran scribes exclusively produced the scrolls at the site. Were that the case, many fewer hands and many more texts traceable to a given scribe could be expected. Recent archaeological investigation has failed to reveal any paths leading from the site to the caves where the texts were cached. This discovery is a formidable obstacle to the popular conception that a community living on the site would have retired to the caves—especially to Cave 4—to study their holy writings.

Finds from Other Sites. Masada, Wadi Murabba'at, Naḥal Ḥever, Naḥal Ṣe'elim, Naḥal Mishmar, Khirbet Mird, and Ketef Jericho have all yielded documentary texts of the late Second Temple period, and in a few cases literary texts were also found. Excavations at Masada from 1963 to 1965, led by Yigael Yadin, discovered seven biblical and nine nonbiblical literary texts. Almost all of the nonbiblical texts seem to have some connection with the Qumran texts, and in at least two cases copies of the same literary work were found at both sites (see below). The Masada excavations also yielded numerous ostraca inscribed in Hebrew, Aramaic, Greek, and Latin, although only the Semitic materials are certainly connected with the Jewish occupation of the years 66–73 (74?) CE. [*See* Masada.]

Excavations in 1952, combined with bedouin cave combing in the several caves in Wadi Murabba'at, resulted in the discovery of nearly one hundred texts, many dating to the time of the Bar Kokhba Revolt (132–135 CE). These finds comprised biblical and nonbiblical literary materials, Hebrew and Aramaic letters and contracts, Greek and Latin documentary materials (mostly from a later date), and five Arabic texts from later centuries. [*See* Murabba'at.]

Naḥal Ḥever, Naḥal Ṣe'elim and Naḥal Mishmar were explored by a joint expedition from the Hebrew University, the Israel Exploration Society, and the Israel Department of Antiquities in 1960–1961. The finds from Naḥal Ḥever number some sixty-five texts in Hebrew, Aramaic, Nabatean, and Greek. Primary among these finds are the Babatha archive (thirty-seven Greek, six Nabatean, and three Aramaic contracts), the so-called Archive of the En-Gedites (six Hebrew and Aramaic contracts leasing state lands), and a packet of fifteen letters to military leaders in charge of 'Ein-Gedi at the time of the Bar Kokhba Revolt. Indeed, like the Murabba'at texts, all of the important Naḥal Ḥever finds date to that approximate period, as do those from Naḥal Ṣe'elim and Naḥal Mishmar.

The materials originally thought to have come from Naḥal Ṣe'elim were discovered by bedouin in 1951 or 1952 and sold to authorities. Later, additional fragments belonging to some of these "Naḥal Ṣe'elim" manuscripts were discovered by archaeologists at Naḥal Ḥever, thereby suggesting that the bedouin finds actually originated there and not at Naḥal Ṣe'elim. The designation remains as a matter of convenience. These materials include four very fragmentary biblical manuscripts, phylacteries, some fifteen Hebrew and Aramaic documents, five Nabatean deeds, two Greek legal texts, and a scroll of the Minor Prophets written in Greek. Written materials from Naḥal Mishmar are exiguous, comprising papyrus lists of names in Greek.

From Khirbet Mird come portions of a lectionary, an inscription, a letter, and a magical text—all inscribed in Christian Palestinian Aramaic—and one hundred Arabic papyri. [*See* Palestinian Aramaic.] These texts date a millennium later than the Qumran texts. Excavations by the Israel Antiquities Authority at Ketef Jericho in 1986 and 1994 uncovered portions of at least six economic documents in Aramaic and Greek dating to the period of Bar Kokhba, and two documentary texts dating to the third or fourth centuries BCE.

Biblical Texts from Caves 1–11. Among the manuscripts that have emerged from the Qumran caves scholars have identified about two hundred biblical scrolls and fragments. The number of texts of each book so far identified (the numbers continue to change somewhat as study continues) is as follows: *Genesis* (15), *Exodus* (15), *Leviticus* (8), *Numbers* (6), *Deuteronomy* (25), *Joshua* (2), *Judges* (3), *Ruth* (4), *Samuel* (4), *Kings* (3), *Isaiah* (19), *Jeremiah* (4), *Ezekiel* (6), Minor Prophets (8), *Psalms* (30), *Job* (5), *Proverbs* (2), *Ecclesiastes* (1), *Song of Songs* (4), *Lamentations* (4), *Esther* (0), *Daniel* (19), *Ezra-Nehemiah* (1), and *Chronicles* (1). As the list shows, every book of the Hebrew Bible appears among the Qumran caches, except for *Esther*. It is hard to know whether the absence of this book is purely fortuitous or is meaningful. In the same way, it may or may not be legitimate to draw conclusions from the relative frequency of the various books.

The Dead Sea Scrolls have revolutionized textual criticism of the Hebrew Bible. Previously, scholars had no Hebrew manuscript of any book antedating the medieval period. Now there is access to the Hellenistic and Roman periods, revealing texts in substantial agreement with the Masoretic text as well as widely variant forms. Readings differing from the Masoretic version often agree with known streams of textual tradition, particularly those represented by the Septuagint and the Samaritan Pentateuch. The fact that the major versional types of texts are already present in the Qumran manuscripts has naturally led to attempts to explain the emergence of the later text families. Three basic

positions have resulted. The first, known as the theory of local texts, is particularly associated with Frank M. Cross. This theory sees different text forms developing in Babylonia, Palestine, and Egypt—that is, in the three major centers of Jewish civilization in the crucial period 200 BCE–200 CE. Few scholars find this theory convincing; it is simply too artificial and does not account for the complexity of the evidence. A second approach is championed by Shemaryahu Talmon, who hypothesizes that the key to the survival of any particular text type was its acceptance by a definable community. The inference would follow that many text types disappeared in ancient times. The third position is that of Emanuel Tov, for whom the scrolls do not confirm the existence of given text types as such. Rather, because they resist typological differentiation (unlike, e.g., the Byzantine text type of the New Testament), the Masoretic text, the Septuagint, and the Samaritan Pentateuch are representative merely of three texts. One thing is certain: the farther back in time the texts go, the less uniform they are. Pluriformity, not uniformity, was the rule. This realization has heightened appreciation of the versional evidence vis-à-vis the Masoretic text. The Septuagint, in particular, has grown in scholarly estimation.

Of course, the scrolls bear on many other critical matters involved with the Hebrew Bible, of which a few examples must suffice. The absence of verses 42:12–17 from the epilogue of *Job* as represented in *11Q Targum Job* (the designation *11Q* means that the text was discovered in Cave 11 at Qumran) may support the view that the prologue and epilogue (that is to say, the prose portions of the book) are linguistically late and were added recently in the book's history. Text *11QPsalms*^{a} raises numerous questions, focusing particularly on the problem of canon in the Second Temple period. The order of the psalms in the 11Q text differs from the Masoretic version, and at least once, the scroll contains a canonical psalm in a different recension (Ps. 145). Certain smaller groupings of psalms, such as the Song of Ascents and the Passover Hallel—viewed by the Masoretic text as units—are scattered throughout the Qumran psalter. Taken together with other "deviant" *Psalms* scrolls, such as 11QPs^{b}, 4QPs^{f}, and 4QPs^{q}, and with the many that appear identical to the Masoretic text, 11QPs^{a} indicates that different forms of the biblical book circulated, all apparently equally acceptable to user communities. Various nonbiblical texts described below, which may have had "canonical" status for some groups, support the conclusion arising from the biblical texts: at least the third division of the canon, the *Writings,* was still fluid at the time of the scrolls.

Nonbiblical Writings from Caves 1–11. Important as the biblical materials are, for the student of Second Temple Judaism the real treasures are the nonbiblical scrolls. After all, the books of the Bible have long been known, whereas most of the six hundred-odd nonbiblical texts are new. They increase exponentially what was known of Jewish intellectual life in that period. Most were written in Hebrew, generally in a form of late Biblical Hebrew, but sometimes in a form of the language nearer to the spoken dialects. Slightly more than one hundred texts are inscribed in Aramaic; about twenty are in Greek (mostly from Cave 7). These materials are so rich that the following description pretends to nothing more than a partial and provisional survey.

Legal and regulatory texts. A substantial proportion of the Dead Sea Scrolls are legal and regulatory texts of various kinds. Two of the longest and most common are the *Damascus Document* and the *Rule of the Community.* [*See* Damascus Document; Rule of the Community.]

A third legal work, extant in six copies from Cave 4, is known as *4QMMT* (an anagram for the Hebrew words "Some of the Laws of the Torah"; 4Q394–399). At least one copy of this text begins with a calendrical exposition. Legal rulings on about twenty-three topics follow, all involving temple purity and priestly gifts. The final section of the work is an admonition to right practice. The *MMT* text may have been a letter, although the names of the writer and the addressee have not survived. The work purports to address its urgings to a king. Scholars are still uncertain whether this king was a Hasmonean or a first-century CE figure such as Agrippa I; for adherents of paleographic dating, only the first option seems possible.

Other legal texts include 4Q159, *Ordinances,* extant apparently in two additional copies (4Q513–514). This work interprets biblical laws governing gleaning by the poor, the half-shekel Temple tax, and the prohibition on selling an Israelite into slavery. Text 4Q251 combines portions from the *Rule of the Community* and the *Damascus Document*—with slight differences—with legal materials drawn from other sources. Text 4Q274, *Toharot A,* treats seven-day impurities incurred by touching the dead, skin diseases, and menstruation. Texts 4Q 276–277, known as *Toharot B,* deal inter alia with the law of the red heifer (*Nm.* 19). Text 4Q477, known by the title *Decrees of the Sect,* is a record of legal discipline that includes actual proper names—a great rarity among the scrolls. One man, Hananiah Nitos, is reproved for "turn[ing] aside the spirit of the community." A major legal work, one copy of which extends for sixty-six columns, is the *Temple Scroll* (11Q19–20). [*See* Temple Scroll.]

Biblical interpretation. Numerous Dead Sea Scrolls pursue other sorts of biblical interpretation than legal application. Perhaps the most important scrolls here are the so-called *pesharim.* These writings understand prophetic portions of the Hebrew Bible (including *Psalms,* conceived as prophecies) to describe the interpreter's own time. Scholars commonly group these works into two categories: thematic *pesharim* and continuous *pesharim.* Thematic *pesharim* constitute unconnected biblical portions organized around a

central theme. Continuous *pesharim* comment seriatim on biblical verses or even whole books. At least fifteen scrolls fit into this latter category.

Continuous *pesharim* ignore what is considered the literal meaning of the biblical text. Their interest is in explaining mysterious truth revealed only to the author and his group. The most complete of these commentaries is the *pesher* Habakkuk. [*See* Habakkuk Commentary.] It preserves thirteen virtually complete columns, covering Habakkuk 1–2. The *pesher Psalms* (4Q171) is also relatively complete, preserved portions commenting on *Psalms* 37:7–40, 45:1–2, and possibly 60:8–9. The writer finds his group's enemies in the biblical text and interprets events in terms of eschatological justification. For the historian, the commentary on *Nahum* (4Q169) is doubtless the cornerstone of the continuous *pesharim*. The author mentions a "Demetrius, King of Greece" and refers cryptically to a Jewish ruler who crucified great numbers of his opponents. These references seem to be to the Seleucid ruler Demetrius III Eucaerus (95–88 BCE) and the Jewish king Alexander Jannaeus, who did indeed—according to the Jewish historian Josephus—put many Jewish insurgents to death in the course of a civil war. Other fragmentary *pesherim* interpreting *Micah, Zephaniah, Isaiah,* and certain psalms have survived.

Of the thematic *pesharim,* none has aroused greater interest than *11QMelchizedek* (11Q13). Thirteen fragments preserve the remains of three columns. The work comments on isolated Hebrew Bible portions, including *Leviticus* 25:9–10, 25:13; *Deuteronomy* 15:2; *Isaiah* 61:1; and *Daniel* 9:26. The events connected with these biblical texts are to take place in "the end of days," which is further identified with the "tenth jubilee." According to the text, Melchizedek will free those who belong to his "inheritance" and (if suggested restorations are correct) "atone for their iniquities." He will further exact divine vengeance upon Belial and those of his "lot." This work presents a conception of Melchizedek approximately contemporary with *Hebrews,* chapter 7, connecting him with heavenly judgment, a day of atonement and a primary role among God's angels. Also of interest is Melchizedek's possible identification with the herald of *Isaiah* 52:7. This identification would represent a combination of scriptural figures and motifs comparable to the New Testament characterization of Jesus.

Two additional thematic *pesharim* are *4QFlorilegium* (4Q174) and *4QTestimonia* (4Q175). The first work combines various biblical portions with interpretive comments relating to the "end of days," when God will have a new "temple of Adam" built. Thus, the author employs an *urzeit/endzeit* typology, according to which those faithful to God will one day return to an idyllic state of peace. The second writing is a catena of quotations that seem to focus on messianic expectation, including a prophet like Moses (*Dt.* 18:18–19). Though they do not overlap, some scholars believe that these two manuscripts are actually two copies of the same literary work.

The *Genesis Apocryphon* was one of the original seven scrolls found by bedouin and represents a previously unknown example of "rewritten Bible" (a frequent exegetical technique in the Second Temple period that wove comments and expansions into the words of the biblical text itself. [*See* Genesis Apocryphon.] A vaguely similar work, bearing the erroneous preliminary title *Pesher Genesis* (the work is not a *pesher*), survives in three copies (4Q252–254). This writing comments on various problems raised by a close reading of *Genesis*. For example, why did God curse Canaan, the son of Ham, when it was actually Ham who "uncovered his father's nakedness" (*Gn.* 9:26)? The author explains that since God had already blessed Noah's sons, he could not retract that blessing, and, a curse being required, it had to fall on the next generation.

Also in the realm of biblical interpretation are the three Aramaic *targumim* (translations, or paraphrases) so far identified among the scrolls. By far the longest and most complete has already been mentioned, the *targum* to *Job* from Cave 11 (11Q10). The importance of this work is considerable because it represents the only incontestably pre-Christian *targum* of any appreciable length. The surviving portions cover parts of chapters 17–42, with the last six chapters of *Job* the least damaged. The Hebrew *vorlage* of the scroll seems to have been the Masoretic text. The other two *targumim* are extremely fragmentary: 4Q156 renders *Leviticus* 16:12–15 and 18–21 into Aramaic and 4Q157, another targum to *Job,* covers portions of *Job* 3:5–9 and 4:16–5:4. Both translations are literal rather than expansive.

Pseudoprophetic works (so-called from the modern perspective; it is doubtful they were so regarded by ancient readers) are notable among the Dead Sea Scrolls. According to Josephus, the biblical prophets Jeremiah, Ezekiel, and Daniel each wrote more than one book, so the discovery in Cave 4 of works attributable to those men is intriguing. An apocryphal Jeremianic work is extant in perhaps five copies (4Q383–384, 385^b, 387^b, and 389^a; their identification is preliminary). Five copies of *Pseudo-Ezekiel* also survive (4Q385, 386, 387, 388, and 391), in which some fragments are of considerable length, allowing the reader to get some feel for the whole. One portion interprets the Vision of the Valley of Dry Bones (*Ez.* 37) in terms of individual resurrection; another declares that in the future "sovereignty will devolve upon the Gentiles for many years . . . in those days a blasphemous king will arise among the Gentiles and do evil things." *Pseudo-Ezekiel* may date from the third century BCE.

A whole series of works is connected with the figure of Daniel. Some of these writings may antedate the biblical book, whereas others are clearly derivative attempts at interpreting some of that book's riddles. In the former category belongs the *Prayer of Nabonidus* (4Q242). This descrip-

tion of a skin disease afflicting Nabonidus (the last of the Neo-Babylonian kings), his healing by an unnamed Jewish exorcist, and his subsequent prayer of thanksgiving may lie behind the story of Nebuchadrezzar in *Daniel* 4. *Pseudo-Daniel* (4Q243–245) falls into the second category, describing what Daniel saw on one or more occasions when he stood before king Belshazzar (cf. *Daniel* 5). The content of the visions given on those occasions goes beyond that of the biblical book, but not much more can be said of it, given the work's extremely fragmentary condition. The *Son of God* text (4Q246) actually quotes *Daniel,* chapter 7, and describes a future figure of some sort. Whether that figure is messianic, angelic, or even a Roman emperor is debatable. Texts 4Q552–553 are two copies of a Danielic work titled the *Four Kingdoms.* They apparently relate to the visions of *Daniel* 2 and 7, wherein four world kingdoms rule in succession until the dawning of a final kingdom of God. This work symbolizes each kingdom not by a bizarre animal or metal, however, as in the biblical book, but by a tree. Finally, two other writings are less certainly related to *Daniel.* Text 4Q558, an extremely fragmentary visionary text inscribed on papyrus, uses important Danielic phraseology. Text 4Q550, *Story Set at the Persian Court,* has been claimed as a precursor to the *Book of Esther,* but it appears rather to be a series of tales about successful Jews in a foreign court, much like Daniel and his friends in the Hebrew Bible.

Also in the category of prophetic works are some dozen pseudo-Mosaic writings of various types. Four copies of a *Pentateuchal Paraphrase* (4Q364–367) admix previously unknown materials—poetry and Temple descriptions—with the books of the Pentateuch. Text 1Q22, the *Words of Moses,* is a type of rewritten Bible. It requires the appointment of priests "to clarify . . . all these words of the Torah." Text 4Q375 relates to the discussion of false prophets in *Deuteronomy* 13 and 18 and raises a point not considered by the biblical portions: What can be done about a false prophet whom one tribe claims is not false? "Then you shall come, with that tribe and your elders and judges . . . into the presence of the anointed priest." A ceremony follows, which would presumably reveal the truth about the disputed prophet. The pseudo-Mosaic *Three Tongues of Fire* (1Q29 and 4Q376) provides guidance on the use of the Urim and Thummim for divination of God's will. A final example of this genre, 4Q390, is particularly concerned with chronology, and also mentions Belial and the angels of Mastemoth. The writing may have been known to the author(s) of the *Damascus Document,* for its view of the apostasy of Israel is similar: "From the end of that generation, corresponding to the seventh Jubilee since the desolation of the land, they will forget law and festival, sabbath and covenant." Only a minority would later know the truth that Israel generally had forgotten.

Calendrical texts. Scrolls concerned at least implicitly with matters of chronology—particularly as measured in jubilee periods of forty-nine years or related to *Daniel*'s seventy weeks (*Dn.* 9:25–27)—and the peculiar "Qumran calendar" number in the hundreds. Indeed, concern with calendric and chronological matters is the greatest common denominator among the nonbiblical texts. The calendar is a purely solar, 364-day system that begins on a Wednesday—because that is the day on which the heavenly lights regulating time were created (*Gn.* 1:14–19). The great advantage of this calendar over lunisolar rivals is that it results in fixed dates for the major festivals. This calendar also guarantees that any given day of any month will always fall on the same day of the week forever.

One calendrical text, 4Q321 *Mishmarot B,* tabulates not only the solar year and the holy days thus measured, but also the rotation of the priestly courses into and out of service in the Temple in Jerusalem. The text further deals with the moon, though it is still unclear whether this aspect is an attempt at synchronizing the solar and lunisolar calendars or whether lunar movements are being calculated for other reasons. A second work, 4Q320, *Mishmarot A,* provides three years of such correspondence between the solar calendar and lunar cycles. These two writings list as festivals only those found in the Pentateuch, but some Qumran calendrical works add new, nonbiblical festivals. One such is 4Q325, *Mishmarot D,* which assigns a Festival of New Wine to the third day of the fifth month and a Festival of Wood Offering to the twenty-third day of the sixth month. These festivals and their dates are also known from the *Temple Scroll* and *4QMMT.* What this apparently fundamental disagreement on festivals may imply about the use of the "Qumran calendar" in Second Temple Judaism is a question worth pursuing.

The scroll known as *Otot* (Heb., "signs"; cf. *Gn.* 1:14) evidently calculates those years in which, on the vernal equinox, the sun and moon were aligned as they had been at the creation. The work seeks to align that cycle with both the seven-year cycle of sabbatical years and the jubilees, which measured longer periods of time. Two other Qumran writings concern themselves particularly with lunar movement, one (4Q503) for liturgical purposes and the other (4Q317) to concord the moon's phases with the 364-day calendar. Text 4Q317 is inscribed in a cryptic writing known as cryptic script A; cryptic scripts B and C also existed, and a fourth system of encryption appears in 4Q186 (see below). The full significance of such systems within the context of the Qumran corpus as a whole has yet to be worked out, but it is unsurprising to find one copy of a second calendrical work, *Mishmarot C,* written in cryptic A. Calendrical matters were numinous, inasmuch as these holy patterns were facts not merely observed, but revealed. Not everyone was worthy to read calendrical texts.

Mishmarot C (extant in six copies, 4Q322–324, 324^a, 324^b,

and 324[c]) is noteworthy in another respect: along with priestly courses and holy festivals, this calendrical work chronicles historical events important to the work's author(s). This writing would be of surpassing importance to the historian, were it only better preserved. It may still be possible to ferret out certain historical data. For example, one line reads "Hyrcanus rebelled." Although the line breaks after these words, it can be inferred that the context is the civil war between Hyrcanus II and his brother Aristobulus in the years 66–63 BCE. It further appears that the writer favored Aristobulus's faction—otherwise he would not describe Hyrcanus's bid for power as rebellion. Where such points will lead to understanding the historical significance of the Qumran caches remains to be seen.

Wisdom literature. After the period of the biblical writings, wisdom literature continued to develop, and various types are well represented in the Dead Sea Scrolls. One particular sapiential composition is extant in at least six copies (1Q26, 4Q415–418, and 4Q423), but its rationale and perspective are not yet really understood. One clear portion reads: "Honor your father in your poverty and your mother by your behavior, for a man's father is like his arms, and his mother is like his legs. Surely they have guided you like a hand, and just as He has given them authority over you and appointed (them) over (your) spirit, so you should serve them." Text 4Q424 is a collection of proverbs, several quite pithy. For example, one suggests "Do not send the hard-hearted man to discern thoughts because his intuition does not measure up."

The Qumran scrolls are rich in one particular type of wisdom literature important in the Second Temple period, the testament. Thus far, testaments of *Levi, Kohath* (4Q542), *Amram,* and *Naphtali* have been identified, and some scholars have seen, in meager fragments, testaments of *Jacob* (4Q537), *Judah* (4Q538), and *Joseph* (4Q539) as well. The *Testament of Levi* is extant in at least two fragmentary copies (4Q213–214) and may be represented by several other manuscripts as well (e.g., 1Q21 and 4Q540–541). Texts 4Q213–214 directly align not with the Greek *Testament of Levi* (part of the *Testaments of the Twelve Patriarchs*), but with the related, yet very different, *Aramaic Testament of Levi.* Scholars have known this work from medieval manuscripts. The *Testament of Naphtali* (4Q215)—unlike the others written in Hebrew, not Aramaic—partially overlaps the long-known Greek *Testament of Naphtali.* It also contains portions unparalleled anywhere in Greek and has an eschatological thrust absent from the Greek version. The *Testament of Amram* (4Q543, 545–548) is notably dualistic in outlook, approaching in this respect the doctrine of the two spirits in the *Rule of the Community.*

Liturgical texts. Whether a given text is liturgical is often debatable—and can be argued for a fair number of writings among the Qumran caches. The *Hodayot* (Hymns of Praise) are perhaps the most notable; these are extant in seven copies (*1QHodayot,* 4Q427–432). The Cave 1 exemplar comprises eighteen columns and sixty-eight originally unplaced fragments, some of which can now be located with the aid of the Cave 4 texts. The order of the hymns varies from manuscript to manuscript; all begin with either "I thank You, Lord," or "Blessed are You, O Lord." Some of the hymns may be the work of the Teacher of Righteousness mentioned in the *pesharim* and the *Damascus Document.* They seem appropriate to his situation, but such historical identifications are virtually impossible to prove.

A large group of poetic writings is similar to the *Hodayot.* One is the work known after its incipit as *Barki Naphshi* (Bless, O My Soul; 4Q434–438). The poetic quality of all these compositions is uneven, but some passages are striking. In 4Q434, for example, one reads of God: "He opened His eyes to the downtrodden and, inclining His ears, hearkened to the cry of the orphans. In His abundant mercy He comforted the meek, and opened their eyes to behold His ways, and their ears, to hear His teaching. And He circumcised the foreskin of their hearts, and saved them because of His grace. . . ."

The *Songs of the Sabbath Sacrifice* is partially preserved in eight copies from Cave 4 (4Q400–407), as well as in fragments from Cave 11 (11Q17) and, significantly, Masada. It describes heaven as a complicated temple consisting of seven sanctuaries, attended by seven chief prince-priests, their deputies, and seven angelic priesthoods. Simultaneous with earthly sacrifice performed in the Temple in Jerusalem, the truly efficacious equivalents take place in heaven. The work is especially important for the study of angelology and early Jewish Merkavah mysticism.

Other notable liturgical writings include the *Words of the Luminaries* (4Q504–506) and *Berakhot* (4Q286–290). Fragmentary remaining instructions show that the *Words* were intended to be recited on given days of the week. With but one exception—the composition recited on the Sabbath, traditionally a joyous occasion—the mood of the daily texts is penitential. Long passages of the *Berakhot* are similar to the *Angelic Liturgy* and strike the reader as an ecstatic visionary recital. Other portions are equally unrestrained but are directed toward cursing; for example, "They shall answer and say, 'Cursed be Belial in his devilish scheme, and damned be he in his guilty rule. Cursed be all the spirits of his lot in their evil scheme, and may they be damned in the schemes of their unclean pollution.' "

One final liturgical work is most significant for its possible historical implications. This is the *Paean for King Jonathan* (4Q448), apparently celebrating Alexander Jannaeus, whose Hebrew name was Jonathan. The "superscription" describes the work as "A sacred poem for King Jonathan and all the congregation of Your people Israel, who are spread in every direction under heaven." The historical implications concern the work's mere presence among the Dead Sea Scrolls, since from early on in scrolls research, most

scholars have thought the scrolls to be anti-Hasmonean. Evidently, the reality was more complicated.

Apocrypha and pseudepigrapha. A fair number of the Qumran writings might easily be designated apocryphal or pseudepigraphic. Copies of some such works known long before the discovery of the scrolls have now turned up in the caves. Most numerous are copies of *Jubilees,* which is represented by fourteen or fifteen manuscripts—more than for any biblical book, except for *Deuteronomy* and *Psalms.* In addition, there are several works designated *Pseudo-Jubilees* (*Pseudo-Jubilees*$^{a-c}$; 4Q225–227), each apparently a separate composition. These Jubilee works, together with the *Genesis Apocryphon, Pesher Genesis,* a *Flood Apocryphon* (4Q370), and *Traditions on Genesis* (4Q422)—to name a few—prove just how lively interest was in interpretating *Genesis.*

First Enoch and other Enochic writings (*Pseudo-Enoch* and the *Book of Giants*) are also numerous among the scrolls. All together, they comprise sixteen manuscripts (4Q201–212, 530–533). At one time, much was made of the absence of the *Book of Parables* (*1 En.* 37–71) from the Qumran *Enoch* texts, but today that lack is no longer considered evidence of a post-Christian origin for the Parables.

Another pseudepigraphic writing, this one not known before the discovery of the scrolls, is the *Psalms of Joshua,* represented by two copies (4Q378–379) and a quotation in the *Testimonia* described above. As for the Apocrypha, there are five or six copies of *Tobit* (4Q196–200; 4Q478 is perhaps another copy): four are in Aramaic and one or two in Hebrew. Which language was original is still uncertain, although there is little question that the most reliable Greek manuscript, *Codex Sinaiticus,* had an Aramaic *vorlage. Ecclesiasticus* also appears among the scrolls (2Q18; a second copy was found at Masada).

Miscellaneous. Some of the most interesting Dead Sea Scrolls resist classification into the admittedly arbitrary categories outlined above. One is a manual for the conduct of holy war, designated the *War Scroll* (1QM). Actually, it is inaccurate to refer to it as "the" *War Scroll,* despite scholarly convention, because the Cave 4 copies (4Q471, 4Q491–496) and related writings (4Q471^{a} and 4Q497) demonstrate that there were various recensions of the work. In this respect, the *War Scroll* is analogous to the *Rule of the Community* and the *Damascus Document.* The weapons and tactics employed in the scroll indicate Roman, rather than Greek, military strategy. For this reason the Cave 1 copy cannot antedate the later decades of the first century BCE. Those reading the final form of the *War Scroll* doubtless conceived of it as a guide to an ultimate revolt against Rome, the foreign power interpreted as the "fourth kingdom" in *Daniel* and related writings. [*See* War Scroll.]

The *Copper Scroll* (3Q15) appears to be a list of treasure removed from the Temple in Jerusalem for safekeeping some time during the First Jewish Revolt. Vastly superior new photographs and renewed scholarly interest in this unique work, inscribed on copper in a "Mishnaic" Hebrew dialect, promise to place it where it belongs: at the heart of discussion about the origins and significance of the Qumran caches. [*See* Copper Scroll.]

Scarcely less intriguing are the several magical and astrological writings found among the scrolls. Magical works include 11QPsAp^{a}; a ritual for exorcism, 4Q510–511, which contain hymns intended "to scare and alarm" demons; and 4Q560. This last work was once tentatively identified as a collection of proverbs, but it is actually an Aramaic incantation against various types of demons, including male and female "wasting demons"—fever, chilling, and chest-pain spirits. Text 4Q318 is an Aramaic brontologion and lunary, based on the distribution of the signs of the zodiac over the days of the 364-day year. If thunder were heard on a day when the moon stood in a given portion of the sky, this text would enable its reader to divine the future. Text *4QCryptic* (4Q186) is another scroll that presupposes astrological notions. Strictly speaking, it is concerned with physiognomy, but it combines references to astrological signs with that method of divination. Written in Hebrew, it is encrypted by the techniques of transposition and substitution. Text 4Q561 is an Aramaic physiognomic writing that may be related to 4Q186, although it differs in important respects.

Perhaps it is fitting to conclude this overview of the contents of the Qumran texts with a mention of what might be the most important of all the finds, if claims for it are ever proven. A Greek fragment from Cave 7, 7Q5, has been identified as a portion of the *Gospel of Mark.* Very little survives of the text, and if the portion is from *Mark,* it contains a previously unattested textual variant. Virtually all Qumran scholars are sceptical of J. O'Callaghan's identification, preferring to see the portion as the remains of an unknown Old Greek version of the Bible, or even as a line from Homer. The most recent and thorough analysis of the question concludes, however—on the basis of sophisticated statistical techniques—that O'Callaghan's claim cannot be falsified. The question must remain open.

Significance of Written Materials from Other Sites. The manuscripts from Wadi Murabbaʿat, Naḥal Ḥever, Naḥal Seʿelim, Naḥal Mishmar, and Ketef Jericho are particularly important for the light they shed on the period of the Bar Kokhba Revolt. They illumine the course of that revolt, Bar Kokhba's administration, and the prosopography of individuals who took part in those events. [*See* Bar Kokhba Revolt.] In addition, the texts provide information on legal and religious practice, the economics of second-century Palestine, Jewish literacy, and onomastics. The linguistic information they supply is considerable; inter alia they clearly prove the use among the Jews of that period of Hebrew, Aramaic, Greek, and Nabatean. The circumstances of each language's use—that is, the sociolinguistic situation—has yet to be worked out, but the materials have

the potential to document such analysis. The texts also provide substantial new information on the development of the Jewish script, especially the cursive varieties, and on the Nabatean cursive and formal scripts.

The Masada discoveries are also important for the linguistic information they supply. In particular, the ostraca are a precious witness to the development of Mishnaic Hebrew dialects. The Masada finds as a whole greatly illumine aspects of the First Jewish Revolt. In this respect, they have the potential to improve understanding of the phenomenon of the Qumran caches because this was when they were hidden. [*See* First Jewish Revolt.]

Unlike the vast majority of the Qumran scrolls, the finds from the other Dead Sea Scroll sites are, as noted, documentary autographs: contracts, letters, bills of sale, leases, and the like. They are the primary sources for which historians have the greatest use. Extracting history from literary texts such as the Qumran materials is a tricky and tenuous process at best. The discovery of so many documentary materials highlights the anomaly of their virtual absence among the Qumran scrolls. For some scholars this problem is sufficient in itself to raise the question of whether the texts in caves 1–11 really did come from Qumran—because any group resident there presumably also possessed autographic and ephemeral written materials of the sort found at the other sites. Thus, the finds at sites other than Qumran are important both intrinsically and paradigmatically.

Essene Hypothesis for Qumran Text Origins. Shortly after the original seven scrolls from Cave 1 came to be known, Eleazar L. Sukenik queried whether they might not be the writings of an obscure Jewish sect, the Essenes, mentioned by a few classical authors. This view came shortly to be the consensus, maintained to this day, although many advocates concede that a large proportion of the Dead Sea Scrolls are not sectarian and presumably could have been agreeable to most Second Temple Jews. Essentially, the theory rests upon two pillars: the identification of Khirbet Qumran with the Essene dwelling place to the west of the Dead Sea mentioned by Pliny the Elder in *Natural History* 5.73; and a series of correspondences between Josephus's descriptions of the Essenes (mainly *War* 2.119–161) and the contents of the scrolls, the *Rule of the Community* in particular. Many of these parallels are quite general, but the most remarkable—precisely because they are specific and not of general application—are perhaps the rules governing spitting and defecation. A recent monograph by Todd S. Beall compiles and analyzes as many of the parallels as he could identify. [*See* Essenes.]

Objections to the Essene Hypothesis. The evidence favoring the Essene view has impressed many scholars, but certain thorny problems have yet to be satisfactorily resolved. The question with regard to Pliny is whether he is describing a postbellum or antebellum situation. If he describes a postbellum (post 70 CE) group of Essenes, he cannot be referring to the site of Qumran because the archaeological research indicates that Romans occupied the site after the war. As for the correspondences between the *Rule of the Community* and Josephus's Essenes, most involve rules for the communal organization of the groups being described. The Essenes are the only Jewish group of the period known to have this communal structure, but they are also one of the few about which we have any substantive information. Many Jewish sects existed: a sample of those named in the sources includes Baptist Pharisees, Boethusians, Galileans, Hemerobaptists, Masbotheans, Samaritans, and Zadokites, in addition to the three groups (Sadducees, Pharisees, Essenes) Josephus mentions. Various other sects are not given names. Together with a proper appreciation of our ignorance, the recent work by Moshe Weinfeld (*The Organizational Pattern and the Penal Code of the Qumran Sect*, Göttingen, 1986) must be factored into the question of Essene identification. He shows that many brotherhood groups of the period—in Egypt, Greece, and elsewhere—shared basic organizational characteristics.

Also problematic are certain fundamental discrepancies between the Essenes of Josephus and the contents of the scrolls. Prominent here are the questions of Essene celibacy and opposition to slavery. None of the scrolls advocates or describes celibacy, and the legal texts regulate slavery just as they do marriage.

To handle such discrepancies scholars choose one of two paths. One way is to argue that, whenever his description conflicts with the contents of the Qumran texts, Josephus was wrong. He was wrong either because he did not know the truth, or because the facts had changed over time. The other way of handling the discrepancies is to say that the Dead Sea Scrolls are not Essene texts. Thus, a sizable number of Qumranologists do not subscribe to the Essene hypothesis, preferring instead to speak of "the sect."

Over the years, several more particular theories have competed with the Essene hypothesis. The most recent challenger is the Jerusalem hypothesis proposed by Norman Golb. This theory holds that the Dead Sea Scrolls represent deposits made by the inhabitants of Jerusalem during the First Jewish Revolt. The texts were not composed at Khirbet Qumran (which Golb believes was actually a fortress), but come from numerous libraries in Jerusalem. In support of this theory, Golb cites the hundreds of scribal hands found in the scrolls—difficult to explain given a thesis that a small group copied texts over several generations. He notes that, with one exception, unlike the other Judean Desert finds, none of the Qumran scrolls is an autograph; all are scribal copies, again problematic if people living at Qumran were responsible for the scrolls. The single exception is the *Copper Scroll*, and for Golb this one autographic text points to Jerusalem as its own place of origin. In his view, the Dead Sea Scrolls are not the work of a single sect, but represent much of the literary heritage of Palestinian Judaism.

While many scholars agree with Golb that a number of the Dead Sea Scrolls probably come from elsewhere, most continue to believe that a sectarian group living at Khirbet Qumran was connected with the texts and was responsible for gathering them into the wilderness caves. Perhaps the most telling objection raised against Golb's position concerns the interrelationship of the texts. In his view, the scrolls should essentially be a random grouping. A few texts might be interrelated, but no intentional principles should link the whole corpus. Yet, most scholars believe such links exist, although they do not always agree on what they are.

Other suggested groups responsible for—or at least connected to—the scrolls include the "Zealots," the Sadducees, and Jamesian Christians. The Zealot connection was argued early on in Qumran scholarship, particularly by C. Roth and G. R. Driver, but was never taken seriously, in part because the editorial team working on the scrolls said that it was wrong. With the recent publication of the materials found at Masada, however, it has become apparent that virtually all of the nonbiblical literary texts found there have connections with the Qumran writings. This new evidence may lead scholars to reconsider some sort of Zealot connection with the scrolls, at least in the final decades before they were hidden.

The Sadducean theory of J. Sussmann and Laurence Schiffman is associated particularly with *4QMMT* because one or two of its laws agree with positions labeled Sadducee in rabbinic literature. This theory has yet to resolve problems of definition (e.g., What does rabbinic literature mean by "Sadducee"? Is that what classical sources mean by the term? How does the term function in each literary context?) and faces the general problem of how—indeed, whether—to use rabbinic literature to write history. Furthermore, many of the scrolls refer to angels and other concepts (e.g., resurrection) that classical sources on Sadducees explicitly say they rejected.

Finally, many scholars have recognized important connections between the Dead Sea Scrolls and early Christianity, especially with John the Baptist. Robert Eisenman, however, has gone much further, arguing for a direct connection between the scrolls and early Christians gathered around James in Jerusalem. For Eisenman, the scrolls *are* Christian—but only because he defines that term much differently than do other scholars. How a collection of texts could be Christian without once mentioning the name of Jesus, Eisenman has yet to explain. His theory has garnered virtually no scholarly support.

Qumran research presently stands only at the end of the beginning. More than half of the texts just recently became available to the generality of scholars, which has had the promising effect of reopening basic issues in the interpretation of the Dead Sea Scrolls.

[*See also* Judean Desert Caves; Murabba'at; *and* Qumran.]

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MICHAEL O. WISE

DECAPOLIS (Gk., "ten cities"), an administrative district or region of Greek cities located in northern Transjor-

dan, southern Syria, and northern Palestine. The original cities, ten in number, were attached to the Roman province of Syria in the first century CE. The earliest sources to mention the term date to the first century CE. The Decapolis appears twice in the *Gospel of Mark*: Jesus is said to have passed through "the region of the Decapolis" (7:31), and a healed demoniac proclaimed Jesus' miracle "in the Decapolis" (5:20). The term is also mentioned in the *Gospel of Matthew* (4:25). The most important ancient source is Pliny's *Natural History* (5.74). Pliny states that the Decapolis adjoined the Roman province of Judea (Judah) and names the ten cities: Damascus, Philadelphia, Raphana, Scythopolis, Gadara, Hippos, Dion, Pella, "Galasa" (usually emended as "Gerasa" [Jerash]), and Canatha. Pliny admits, however, that there was some disagreement about specific cities. Josephus, in his account of the first Jewish Revolt against Rome (66–70 CE), notes that "the chief men of the Syrian Decapolis" complained to the Roman emperor Vespasian about attacks on their territory by Jewish insurgents (*Life* 410, cf. 341–342). Josephus also claims that Scythopolis was "the largest city of the Decapolis" (*War* 3.446).

Later sources include Ptolemy, the second-century CE geographer, who provides the only other list of Decapolis cities (*Geography* 5.14–22). His list includes nine of Pliny's original ten cities (Raphana is missing) and adds nine new ones, for a total of eighteen: Heliopolis, Abila, Saana, Hina, Abila Lysanias, Capitolias, Edrei, Gadora, and Samulis. An inscription of 134 CE found in the region of Palmyra in Syria mentions "the good-messenger-Abila of the Decapolis." Somewhat surprisingly, only one other inscription mentioning the Decapolis is known, despite the fact that hundreds of inscriptions have been found in its various cities. Eusebius (*Onomasticon* 1.16), in about 300 CE, refers to the Decapolis as "situated near Peraea around Hippos, Pella, and Gadara." A few more references to the term are found in Byzantine works of the fourth and later centuries. Stephen of Byzantium notes that the Decapolis once included fourteen cities, further evidence that the number of cities varied.

Individual Cities. Most of the Decapolis cities can now be identified with a fair degree of certainty. Scythopolis, the only city of the Decapolis situated west of the Jordan River, is Beth-Shean (Beisan), in Israel's southern Galilee. The southernmost city, Philadelphia, is Amman, in Jordan. Moving north, Gerasa is Jerash in ancient Gilead (modern Jordan); Pella is Ṭabaqat Faḥil, on the eastern side of the Jordan Valley; Gadara is Umm Qeis, just southwest of the Sea of Galilee; and Hippos is Qal'at el-Ḥusn, at the top of a hill on its eastern shore. Farther east, in northern Jordan, Abila is Qweilbeh, and Capitolias is Beit Ras. Most of the remaining Decapolis cities are located in southern Syria. Raphana is probably to be identified with er-Rafe, and Canatha is probably Qanawat. The location of Dium remains a problem. Some identify it with Tell el-Ḥusn, Kefar Abil, or Edun, all in northwest Jordan. Others suggest Dium is Tell el-Ashari, in southern Syria.

Nature of the Decapolis. Scholars long regarded the Decapolis as a league or confederation of Greek cities organized by the Roman general Pompey when he brought the region under Roman control in 64–63 BCE. However, no ancient source refers to the Decapolis as a political league or confederation. There is no evidence that there were any special political, military, or commercial arrangements among the member cities, nor was there any sort of federal governmental machinery. Instead, the sources refer to the Decapolis as a region or a district formed by the contiguous territories of the Greek cities. A late first-century CE Greek inscription from the Balkans refers to a Roman prefect of the Decapolis in Syria. This suggests that the Decapolis was then an administrative district attached to the Roman province of Syria under the supervision of a single imperial official. Each city retained local autonomy and administered an extensive rural hinterland. Epigraphic and literary sources provide some evidence as to the territorial boundaries of the individual cities.

Archaeological Evidence. The sites of most Decapolis cities have been surveyed and several have been extensively excavated. Undoubtedly, the best-preserved and most thoroughly excavated city is Gerasa/Jerash. [*See* Jerash.] The city developed on both banks of a perennial stream, with most public buildings on the west side and most domestic structures on the east. The city was laid out in a typical Roman grid pattern, with a main north–south street (*cardo*) intersected by two major east–west streets (*decumani*). These paved streets were decorated by colonnades lined with shops and other buildings and terminated at monumental gateways. The city was protected by massive walls studded with projecting towers. Other public structures included a "forum" (actually an oval agora, or marketplace), several temples, a theater, an odeon (concert hall), baths, hippodrome (racetrack), triumphal arch, and nymphaeum (fountain house). During the Byzantine period many churches were erected. The other Decapolis cities display similar features typical of Greek cities in the eastern Roman Empire. The most extensively excavated are Philadelphia, Pella, Scythopolis, Gadara, Abila, and Capitolias.

History of the Decapolis Cities. Nearly all the sites of the Decapolis cities were occupied in some fashion in the preclassical period. Yet, most of the cities claimed to have been founded as Macedonian colonies by Alexander the Great or one of his immediate successors in the late fourth century BCE. Philadelphia was founded by Ptolemy II Philadelphus in the early third century BCE. Excavations at Pella, named for the capital of Macedonia, have also produced evidence of this period. The archaeological evidence for early Hellenistic occupation is lacking at some of the excavated cities, however. The cities were generally established

on strategic sites, astride major roads, and within fertile agricultural districts. The conquest of Palestine and Transjordan by Antiochus III in 200 BCE brought the entire Decapolis region under the control of the Seleucid Empire. Antiochus and his successors continued to foster the development of the cities, as suggested by their later coins, which reveal Seleucid dynastic toponyms such as Antioch and Seleucia. In fact, it may only have been under Seleucid rule, in the second century BCE, that many of these settlements developed into true urban centers. [*See* Pella; Seleucids.]

The decline of Seleucid power and the consequent rise of the Hasmonean Jewish and Arab Nabatean states in the late second and early first centuries BCE threatened the very existence of these cities. The Hasmoneans conquered Scythopolis, Gadara, Abila, Dium, and Pella, and the Nabateans occupied Philadelphia. When Pompey arrived to establish Roman control in 63 BCE, he posed as a champion of the Greek cities. All the towns were freed from Jewish and Nabatean control, granted "freedom" (i.e., municipal autonomy), and placed under the administrative control of the Roman governor of Syria. Many of the cities adopted a new Pompeian era on their coinage, to celebrate their liberation and express gratitude to their liberator.

The Roman emperor Augustus, in 30 BCE, assigned two of the cities (Hippos and Gadara) to the kingdom of his loyal client Herod the Great, despite the objections of their inhabitants. Both cities regained their autonomy and were returned to the province of Syria upon Herod's death in 4 BCE.

The outbreak of the Jewish revolt in 66 CE witnessed attacks by Jewish forces against the territories of several Decapolis cities, including Scythopolis, Pella, Gerasa, Gadara, and Hippos. The people of several of these cities responded by massacring the Jewish minorities in their midst. The people of Gerasa notably did not follow this example, but escorted their Jewish minority safely out of the city. Scythopolis served as an important base for the Roman army of Vespasian during the suppression of the revolt. Eusebius (*History of the Church* 3.5.3) asserts that the Christian community of Jerusalem fled to Pella before Jerusalem fell in 70 CE.

The conversion of the Nabatean kingdom into the new Roman province of Arabia by the Roman emperor Trajan (106 CE) resulted in the effective demise of the Decapolis, for its individual cities were then divided among the Roman provinces of Syria, Arabia, and Palestine. However, the individual cities continued to flourish economically and culturally for many centuries.

Culture of the Decapolis. The uniqueness of the Decapolis was its cultural identity as a group of Greek cities, sharply differentiated from the neighboring Semitic populations. The city plans, individual buildings, tombs, sculpture, and divinities are Greek or Roman, although there are many traces of Near Eastern influences. The vast majority of inscriptions are Greek, with some Latin. Some inscriptions suggest that many of the urban populace were hellenized Semites, although it is entirely possible that some families were descendants of the original Greek or Macedonian colonists. Naturally, much less is known about the population of the rural hinterlands, where Semitic culture may have remained dominant. The high Greek culture of the Decapolis is also clearly reflected by the numerous philosophers, poets, jurists, and other intellectuals from these cities. Among the most famous are the poet Meleager of Gadara (c. 140–70 BCE); the rhetor Theodorus of Gadara (late first century BCE), who was a teacher of the emperor Tiberius; and the mathematician Nichomachus of Gerasa (c. 100 CE).

[*Many of the cities of the Decapolis are the subject of independent entries.*]

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DECIPHERMENT. Of the thousands of languages spoken before modern times, a handful developed scripts. The descendants of a few of those are still in use; of a handful of the others, traces have survived the millennia to be discovered by travelers or excavated by archeologists. If the modern descendants diverged considerably from the ancestors, or if there are none, the ancestors need to be deciphered. It is always a script, rather than a language, that is deciphered; if an (ancient) record can be pronounced, but not understood (as with Etruscan), the problem is one of interpretation rather than decipherment.

Decipherment of Scripts. The prerequisite to decipherment is accurate reproduction of the enigmatic inscription. This may seem trivial now that photography has been commonplace for a century and a half, but before 1850 or so—during the quarter millennium when most of the ancient scripts were first found—only the artist's subjective eye served to disseminate an inscription's appearance. The artist's drawings further passed through the engraver's burin and, at the end of the period, the lithographer's crayon. Only with photography, perhaps, does it become apparent how subjective the artist's vision is: witness the depictions of the Sphinx at Giza or the Assyrian bulls that vary with stylistic fashion and the drafting skill of individual artists. The task is especially difficult when the artist is trying to reproduce unfamiliar writing, where apparently trivial details may distinguish two characters (compare the Roman letters C and G), but rather great differences may be completely insignificant (a Roman "t" may be made with or without the lower curve to the right, on the writer's whim). Successive attempts to delineate ancient inscriptions—but not with increasing accuracy—have been published (Daniels, 1988).

Methodology. Given accurate copies of a graphic image, it must first be decided whether the image is in fact writing. The first cuneiform inscriptions, found on doorframes and such at Persepolis, were sometimes considered mere decoration. [*See* Persepolis.] Kufic Arabic inscriptions in mosques are so stylized as to be almost purely decorative rather than linguistic. [*See* Mosque Inscriptions.] The masons' use of South Arabian letters to guide the arrangement of paving stones at Hajar Kohlan provided the first clue to the canonical order of that script. [*See* South Arabian.] The letters' use was functional rather than linguistic, but their function derived entirely from an incidental property of scripts that their characters are learned in a fixed order. It is uncertain whether "potters' marks" dating to the era of the presumed development of Proto-Canaanite writing that might be letters of a script are in fact such or are arbitrary designs with some function or other. [*See* Proto-Canaanite.] Two modes of decipherment ensue when the marks are established as writing. In the exceptional case, the decipherer is very lucky and the new script occurs alongside an inscription in a known language—in a bilingual text. Usually, it is safe to assume that the two texts render the same content—one is a translation of the other (or both are translations of a third).

More often, the unknown script stands alone, and it is up to the ingenuity of the decipherer to discover a virtual bilingual: some stretch of text in a known language that can be presumed to equate to some stretch of text in the unknown one. Most commonly, virtual bilinguals have been at a phonetic level (personal or place names)—although a morphological/semantic level (numbers) figured in at least one case—and sometimes purely graphic (shapes of letters in a known script). This last category comes into play whenever a new text, even in a very familiar language, is unearthed because the ductus of no two scribes is identical. In addition, ancient inscriptions are sufficiently rare that normal variation in script or language will be magnified by the absence of intermediate forms. The history of decipherment is studded with examples of poorly chosen virtual bilinguals, however, and it is difficult to dissuade the proposers from their beliefs.

While the decipherer may formulate a hypothesis about the identity or relationship of the language concealed behind the enigmatic script, this has sometimes proved to be a misstep, misdirecting the investigator. (Most notably, the assumption that Linear B must be some pre-Greek substrate language such as Etruscan delayed success on that script.) It is more useful simply to identify and count the different characters: a small number, about thirty, suggests an abjad (consonantary) or an alphabet; greater variety, about one hundred or more, suggests a syllabary or an abugida, and several hundred or more, a logosyllabary (or a logography—no purely logographic script, if such has ever truly existed, has been deciphered; candidates include Proto-Elamite, Indus Valley script, and Easter Island script). [*See* Writing and Writing Systems.]

Case studies. The surest results have been achieved by those who concentrated on proper names. Such cases include both the first, (Palmyrene, by Jean-Jacques Barthélemy, in 1756), and the two most familiar decipherments (Egyptian, by Jean-François Champollion, in 1823, and Linear B, by Michael Ventris, in 1953), as well as the one that is arguably the most important of all, the Old Persian and

Mesopotamian cuneiform scripts, whose decipherment was begun by Georg Friedrich Grotefend (1802) and climaxed by Edward Hincks (1846–1852). [*See* Cuneiform.] The decipherments of Ugaritic and Himyaritic illustrate different kinds of virtual bilinguals (see Daniels, 1995; Daniels and Bright, 1996, sec. 9). [*See the biography of Champollion.*]

Palmyrene. Palmyra was an independent pagan monarchy on the eastern edge of the Roman Empire. It was fairly well known in the eighteenth century from classical historians. Monuments written in its language, known to be similar to Syriac, had been known in Europe since antiquity and had received the attention of antiquarians since the early 1600s. It was not until 1753 that adventurers traveled to the ruins of the city and brought back accurate copies of some of its inscriptions. Many of the inscriptions in the Palmyrene script and language were accompanied by Greek inscriptions, and it took no great insight to guess that the pairs were equivalent. Barthélemy (1716–1795), in fact, reports that it took him no more than two days to decipher the script. From the thirteen inscriptions that had been accurately published by Robert Wood and James Dawkins (English adventurers who traveled to the ruins of the city in 1753 and brought back accurate copies of some of its inscriptions), Barthélemy chose one in which the Greek parallel began with a proper name, *Septimios*. The seventh letter of the Palmyrene inscription was the same as the first, so (omitting short vowels) there seemed to be a correspondence; the next word, *Ouorōdēn* in the Greek, confirmed the ⟨w⟩ that spelled [o] and gave ⟨r⟩ and ⟨d⟩ as indistinguishable (a characteristic of Aramaic scripts of the period). When the twenty-two letters were identified, their resemblance to the corresponding Hebrew and Syriac forms became clear. A handful of verb forms were nearly identical to Syriac words that could translate the Greek, demonstrating that the language was Aramaic as well (Daniels, 1988). [*See* Palmyra; Palmyrene Inscriptions; Greek; Aramaic; Syriac; Hebrew Language and Literature.]

Mesopotamian cuneiform. Grotefend (see above) used the virtual bilingual of Persian kings' names (known from Herodotus and from formulae in recently deciphered Sasanian inscriptions) to begin the decipherment of the Old Persian version of the trilingual inscriptions from Persepolis. Work on them was greatly advanced by such pioneers of Indo-European and Indo-Iranian studies as Rasmus Rask and Christian Lassen. Henry Creswicke Rawlinson replicated the decipherment of Old Persian, using the huge trilingual inscription at Bisitun that he copied at great personal risk, but he probably knew of Grotefend's insightful virtual bilingual. Rawlinson usually receives credit for deciphering Mesopotamian cuneiform, but his work lagged behind that of Hincks. Although Rawlinson was stationed in Baghdad, he was kept abreast of Hincks's discoveries by a quite efficient postal system. [*See* Sasanians; Persepolis; Bisitun; Cuneiform; *and the biography of Rawlinson.*]

Edward Hincks (1792–1866) was a Church of Ireland country pastor. Unlike the celebrated Champollion and Ventris (see above), he was not a young man when he achieved his decipherment. He was immensely learned in all areas of classical and Oriental (i.e., Near Eastern) studies, and in his first approach to Old Persian he hoped better to understand Egyptian hieroglyphs. In his first lecture on the subject, on 9 June 1846, at the Royal Irish Academy in Dublin (and published in its *Transactions*), he demonstrated that the Old Persian characters denoted consonants plus particular vowels and not a wide variety of consonants. He also showed that the second of the three languages was written with syllabic characters that could be used in the consonant-vowel pattern CV_i-V_iC (*ta-aš*, not *ta-š*). (The second language is what is called Elamite, and it was decades before real progress was made in interpreting it.) [*See* Elamites.] The most important discovery reported in Hincks's second lecture (30 November) was the equivalence between two styles of cuneiform, which he called lapidary and cursive. This made available a great mass of material, which was being brought to the British Museum and the Louvre in Paris by the first excavators in Mesopotamia. In a third lecture (11 January 1847), he refined his readings of many signs and presented the cuneiform system of numerals. The numerals were taken from extensive inscriptions copied in the late 1820s by F. E. Schulz in western Armenia (now eastern Turkey) but not published until 1840 in Paris, and not seen by Hincks until 1846.

It was Schulz's inscriptions, in a language now called Urartian, that proved to be the most important to the decipherment. [*See* Urartu.] The longest one is a royal annal covering thirteen years; each year is introduced by the same formula, but the formula is not always written identically. Hincks discovered certain signs to be optional and identified them as vowel signs. This enabled him to verify the vowel included in preceding CV signs. Moreover, he analyzed the Urartian texts grammatically; his results, including the readings of 110 signs, were published in the prestigious *Journal of the Royal Asiatic Society* (1848). Six months later, Hincks dealt with the inescapable fact that many signs had more than one phonetic value, and semantic values as well. At that point, he suggested the possibility that a different language could underlie the script. Two years later, on 29 July 1850, at the Edinburgh meeting of the British Association for the Advancement of Science, he asserted that the writing system was devised for a non-Semitic language. At that meeting, also, he showed grammatical patterning in the Assyrian language that was fully parallel to that in Hebrew.

Rawlinson's treatment of the Assyrian version of the great Bisutun inscription was published in January 1852. Hincks's last article pertaining to the decipherment per se is dated 24 May 1852: it gives values to 252 characters and identifies elements of Rawlinson's publication that were taken from Hincks's work without acknowledgment. It also includes the

first mention of ancient textual material that signaled the close of the decipherment phase of the interpretation of cuneiform. This was a fragment of a lexical list, which Hincks saw comprised a list of signs accompanied by a rendition of their pronunciation. Henceforth, most signs were to be identified from their appearance in such documents, of which thousands of fragments have been recovered from throughout the cuneiform world. Hincks's accomplishment was recognized in his own time; his undeserved eclipse by Rawlinson may be attributable to the personalities of the two men. Hincks was shy and unambitious, with no academic position, rarely leaving the village of Killyleagh, in Ulster. Rawlinson was energetic, well placed in the military and the British Museum, and endowed with dual hagiographers in his brother, a prolific historian, and the immensely powerful E. A. Wallis Budge, who ruled British Oriental studies for decades. Both authors downplay—and distort—Hincks's role. Subsequent chroniclers and historians have not known of the existence of the *Transactions of the Royal Irish Academy* (for details and references, see Cathcart and Donlon, 1983; Daniels, 1994).

Ugaritic. It is Ugaritic that was deciphered by means of numerals, and also by the use of grammatical information. The first texts were excavated at Ugarit in 1929 and published immediately; Charles Virolleaud, the epigrapher, supposed from the location and date of the site and the finds that their language was likely to be Northwest Semitic. He was fortunate enough to discover a tablet that resembled Mesopotamian accounting documents and, in a column that might contain numbers (their names were spelled out), a sequence of symbols like XYX appeared. About the only common word in Semitic with such a consonant pattern is *t̲alāt̲*, "three." Meanwhile, the eminent scientist Hans Bauer analyzed the letters that appeared at the beginnings or ends of words, or both, and compared them with the limited inventory of affixes in Semitic. Édouard Dhorme noted that a phrase at the beginning of what looked like a letter was identical to a phrase on a sword, with the addition of one letter at the beginning. He surmised that this was the letter *l*, representing the preposition *to*. The work of the three scholars converged, and the Ugaritic script was soon worked out (Corré, 1966). The unique use of three letters for *ȧ*, *i̇*, and *u̇* was established by Johannes Friedrich. [*See* Ugarit; Ugaritic; Ugarit Inscriptions; *and the biography of Virolleaud.*]

Himyaritic. A Near Eastern script deciphered via the shapes of the characters is the Himyaritic (i.e., Sabaean), as it was called by early researchers. Emil Rödiger discovered two unrelated Arabic manuscripts that contained lists of letters said to be *musnad,* "Himyaritic." The two lists were strikingly similar, suggesting that they might preserve a genuine tradition; indeed, when the first inscriptions from South Arabia were published in 1837 and 1838, Rödiger was able to interpret them fairly successfully, using the manuscript abecedaries. His teacher, the eminent philologist Wilhelm Gesenius, mistrusting that evidence and relying more on comparative philology and limited data from a newly discovered South Arabian language, had an earlier success but went further astray. Unfortunately, the first somewhat extensive text available (ten lines) contained almost nothing but proper names (Daniels, 1986). [*See* Himyar.]

Interpretation of Languages. With the decipherment of ancient scripts came the discovery that they could be used for languages other than those for which they were devised. The recovery of many intermediary forms has enabled the demonstration that all the West Semitic scripts (including Palmyrene, Ugaritic, and Himyaritic, as well as Hebrew and Arabic) belong to a single tree of descent. A productive assumption, as has been seen, was that the languages associated with the unknown scripts were similar to the known Semitic languages: Hebrew, Syriac (Christian Aramaic), Jewish Aramaic, and Arabic. The affinity of the Semitic languages had been recognized since the Middle Ages (previously called Oriental, they did not receive the name "Semitic" until 1781). The four classical Semitic languages are Hebrew, Arabic, Syriac, and Ethiopic, or Ge'ez; the language of the Aramaic portions of the Bible was called Chaldee, as were the languages of the rabbinic writings. It is not yet clear when the Aramaic languages were identified as a group (characterized by the phonological change of Semitic interdentals to stops and by a particular selection of the ancestral verb stems); Barthélemy does not use the term of Palmyrene, but it was established by the mid-nineteenth century.

As the decipherment of cuneiform proceeded, several scholars came to believe that cuneiform Assyrian was a Semitic language. This was an assumption rather than a demonstration; however. It was not until Hincks identified the similarity in grammar as well as vocabulary that the identification could be regarded as certain. The other cuneiform languages are more difficult. Those for which the most materials are available are Sumerian, Elamite, Hittite, Hurrian, and Urartian. [*See* Sumerian; Hittite; Hurrian.]

The interpretation of Sumerian was aided somewhat by the discovery, early on, of tablets containing grammatical paradigms. The first interpretations coincided with a vogue for typological classification of language. The German-English philologist Friedrich Max Müller assigned nearly all the non-Indo-European, non-Semitic languages of Eurasia to a phylum he called Turanian (encompassing many more languages than the modern term *Altaic*), largely on the basis of their so-called agglutinative structure. Early Sumerologists, finding similar patterning in Sumerian, believed it, too, belonged in the phylum. They found a worthy opponent in Joseph Halévy (who was actually familiar with a number of Turanian languages). He, however, was of the opinion that Sumerian was not a real language at all, but a code devised by Assyrian priests to maintain the secrecy of the cult (Coo-

per, 1991). The discovery in the late nineteenth century of archives, notably at Telloh, of the most mundane documents written in Sumerian disproved the notion. Over the following century, attempts have been made to connect Sumerian with virtually every language family on the globe—most recently the Nostratic superphylum encompassing Indo-European and most of its neighbors. So little information is accessible to nonspecialists, however, that no credence can be given to these attempts.

The limited amount of Elamite material and its formulaic nature—even though it crosses several periods in nearly three millennia—make it difficult to analyze. The proposal by David McAlpin to connect it with the well-studied Dravidian family has attracted much notice and entered the handbooks, but it is not accepted by the small corps of Elamitologists. A dispassionate linguist will be immediately suspicious because McAlpin seems to have a Dravidian etymology for *every* Elamite word, an unthinkable occurrence. With cuneiform Hittite, the interpretation is certain. The Czech scholar Bedřich Hrozný (Daniels and Bright, 1996) noted a word that could be transcribed as *watar* in a context that demanded the meaning "water" and successfully interpreted the language as Indo-European. Urartian (so important in the decipherment of cuneiform) resisted interpretation for decades. Extensive studies were published by Archibald H. Sayce in the 1880s, but the ergative type of language was not yet familiar to philologists. Hurrian is known from essentially one document—physically, the largest cuneiform-inscribed clay tablet known—and from many enigmatic ritual bilingual texts with Hittite equivalents. All that can be said is that Hurrian and Urartian are related. It has been suggested they are ancestral to some languages of the Caucasus. Lexical connections with (Indo-European) Armenian have been proposed.

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PETER T. DANIELS

DEDAN, site identified with the ruins of al-Khuraybah in the al-'Ula oasis in Saudi Arabia by Eduard Glaser in 1890, mainly on the basis of geography (26°37′ N, 37°50′ E). This is one of the most fertile valleys in northwest Arabia, where the main route used by the incense trade and pilgrim traffic is restricted by forbidding sandstone mountains, sand desert, and *harra* ("lava flows"). References to Dedan in the Hebrew Bible make it clear that it was one of the most important caravan centers in northern Arabia. The site had been visited by a number of European travelers prior to Glaser, but it was Antonin Jaussen and Raphael Savignac (1914) who were the first (1907–1910) to describe its ruins adequately and to record the many rock inscriptions (in various pre-Islamic Arabian scripts) that amply confirm the identification. Their work remains basic, although it has been supplemented by the more recent, though still very superficial, examination of the site by Fred V. Winnett and William L. Reed (1970), Peter J. Parr and others (1970), and Garth Bawden (1979).

The biblical citations most likely refer to the sixth century BCE, in about the middle of which the site is mentioned (as Dadanu) in an inscription from Harran, in southern Turkey. The inscription records a number of North Arabian centers which the king of Babylon, Nabonidus, attacked at the time of his sojourn in Tayma'. Winnett (Winnett and Reed, 1970), whose reconstruction of the history of Dedan based on the epigraphic material is probably the most reliable, postulates the existence of a short-lived, independent "Dedanite" kingdom in about 500 BCE, after the collapse of the Neo-Babylonian Empire and before the Achaemenid rulers had had time to impose their own control over this strategic part of Southwest Asia. Northern Arabia seems to have prospered under Persian rule, and by about 400 BCE an independent—or semi-independent—kingdom, known from the inscriptions as Lihyanite, was centered at Dedan. By about this time also a small trading colony of Minaean merchants from southwest Arabia was established there, leaving inscriptions in their own language and script. Minaean traders were also to be found in Egypt, and Dedan was probably in contact with them, across the Red Sea. Relations with Egypt seem to have been maintained after the fall of the Persian Empire and the establishment of the Greek Ptolemaic dynasty; Ptolemy II is known to have been active in promoting the Red Sea trade and may well have supported the Lih-

yanite rulers in the face of the rising power of the Nabateans, based farther north at Petra. Nevertheless, Winnett has advanced evidence to suggest that the native Lihyanite dynasty was in fact overthrown by a Nabatean adventurer, Mas'udu, in the second or early first century BCE. Shortly, thereafter, it seems that Dedan was replaced as a trading center by the Nabatean town of Hegra (Meda'in Saleh), a few kilometres farther north. [*See* Meda'in Saleh.]

In addition to the inscriptions, the archaeological remains at al-Khuraybah comprise a number of simple tomb chambers cut into the cliffs, two of which are flanked by pairs of crudely carved lions, and a low mound of ruins, some 800 × 250 m in extent and just a few meters high. The tomb has been badly disturbed by digging for building material—much of it for the Hejaz Railway, which cuts through it—and only a few traces of ancient walling and much broken pottery can be seen on the surface. Jaussen and Savignac were able to detect part of the plan of a monumental structure, adjacent to which were four statue bases with Lihyanite inscriptions. Winnett (1937) dated them to the late fourth or early third century BCE. Fragments of several nearly life-sized sculptures found close by clearly come from these bases, and presumably represent rulers; their style shows marked egyptianizing characteristics of the late dynastic or Ptolemaic period. All of these remains lay close to the surface of the mound and evidently belong to the last major period of building. Apart from a handful of Nabatean graffiti, there is little evidence for a Nabatean occupation of the site.

[*See also* Nabateans; *and the biography of Winnett.*]

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PETER J. PARR

DEH LURAN ("place of the Lurs," an Indo-European-speaking ethnic group in western Iran), site located in southwestern Iran near the northwestern edge of the Deh Luran plain (32°42′ N, 47°14′ E). The plain is bounded by the Kuh-i Siah range of the Zagros Mountains to the northeast; Jebel Hamrin, a low anticlinal ridge to the southwest; and the small Dawairij and Mehmeh Rivers on the east and west. The plain lies from 32°30′ to 32°42′ N and 47°08′ to 47° 24′ E at an altitude of about 150 m and receives an average of 300–350 mm of precipitation during the winter rainy season. The Deh Luran plain, about 60 km (37 mi.) northwest of Susa, is situated between the base of the Zagros Mountains and the international border with Iraq. It is best known for a series of excavations and surveys of archaeological sites that elucidate the region's history from the oldest agricultural settlements in 9000 BP to the modern era. This small, fertile plain lies about midway between passes that lead into the mountains near modern Dizful and Mandali. Because of the limited availability of fresh water and pasturage, Deh Luran has served as a stopping point for travelers and traders; however, settlement there has generally been sparse and always rural in comparison with Khuzistan, to the southeast.

Most of the natural vegetation has been stripped from this region, leaving it barren and treeless, but pistachio trees once grew along the seasonal streams and there were jujube trees scattered across the steppe. The precipitation is sufficient to grow crops without irrigation during average years, but rainfall is quite variable in intensity and timing so that agricultural success is always uncertain. There is seldom frost in the winter but summer temperatures can rise above 40°C, with high winds, leaving all vegetation scorched by late spring. Because of the heat and summer drought, herders usually take their flocks into the mountains.

The history of Deh Luran reflects that of the surrounding regions: Mesopotamia, Khuzistan, and the Zagros Mountains. As early as the third millennium, and subsequently throughout history, Deh Luran comprised part of one or another larger polity or lay in a boundary zone between those polities. No cuneiform texts have yet been found in the limited excavations at historic sites, but the large walled site of Mussian has been tentatively identified as ancient Urua, an Elamite city. By the second millennium BCE, trade may already have passed through Deh Luran on the route used later by the Achaemenid kings traveling between their capitals at Susa in Khuzistan and Ecbatana at modern Hamadan in the mountains.

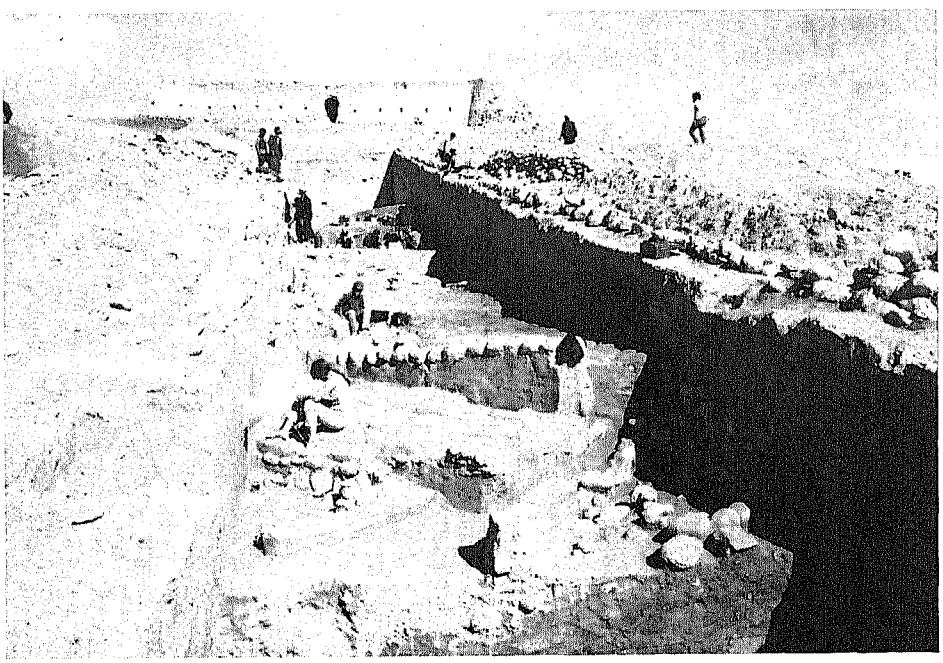
The first archaeological investigations were undertaken by Joseph Gautier and Georges Lampre of the French mission to Iran in 1903. They excavated at Tepes Mussian, Khazi-

neh, Aliabad, and Mohammed Jaffar (later known as Ali Kosh) and reported the existence of numerous other tells. Frank Hole and Kent V. Flannery with support from Rice University and the National Science Foundation surveyed the plain in 1961 and began an excavation at Ali Kosh. In 1963, they returned with James Neely, who excavated at Tepe Sabz while Hole and Flannery continued at Ali Kosh and briefly reexamined an old French trench at Tepe Mussian. In 1969 Hole excavated at Chogha Sefid (see figure 1), Neely carried out an intensive survey of the plain, and Michael Kirkby of Bristol University investigated its geomorphic history. Henry Wright of the University of Michigan excavated at Tepe Farukhabad in 1968.

The history of human use of Deh Luran is closely related to changes in the land itself. When people first settled at Ali Kosh and Chogha Sefid, the surface of the land was quite different from what it is today. Flash floods deposited silt washed down from the mountains over the entire plain, regenerating its fertility and creating marshes that abounded with fish, attracted game and migratory fowl, and provided easily tilled, moist soil for agriculture. As the deposition of silt continued, the marshes gradually filled in; by the second millennium, some 4 m of silt had accumulated. The rivers became entrenched, and silt ceased to build up on the plain, leaving much of it unsuited to agriculture except by irrigation. Today, except during winter flooding, both rivers have only meager, brackish flows; the small springs on the piedmont are also brackish.

The American teams focused on prehistoric sites, from the beginnings of human settlement in 7000 BCE to the third millennium. Most of this research was ecologically oriented, with emphasis given to the recovery of seeds, animal bones, and small finds that would inform on environment, agricultural practices, and trade. Ali Kosh and Chogha Sefid document the first settlements by people who combined limited agriculture and stock raising with hunting and collecting. By 6000 BCE, irrigation was introduced during the Chogha Mami period by people who had developed the technology along the Tigris River. Although there were notable changes in the numbers of sites through the various archaeological periods, until the third millennium settlements were small and scattered and populations sparse.

Although the earlier French excavations were not successful in recovering tablets, they did find abundant Jemdet Nasr–Early Dynastic I-style ceramics in proto-Elamite tombs (c. 3200–2600 BCE) at Khazineh and Aliabad, contemporary with substantial settlements at Mussian and Farukhabad. By the early second millennium, populations had declined and the Ur III kings of Mesopotamia were shipping valuable highland commodities such as silver and timber through Deh Luran. Although new towns were established in Deh Luran at Tepes Patak and Goughan during the last half of the second millennium, these had disappeared by the end of the millennium, perhaps victims of the incessant warfare waged between Middle Elamite kings and Babylonia. The Neo-Elamite period (c. 1000–520 BCE) is one of apparent depopulation of the lowlands, perhaps reflecting unsettled conditions in Mesopotamia generally.



DEH LURAN. Figure 1. *Excavation trench in the prehistoric site of Chogha Sefid on the Deh Luran plain.* (Photograph by Frank Hole)

A number of sites were situated on irrigation canals during the Achaemenid, Seleucid and Parthian periods (520 BCE–226 CE). It is probable that the irrigation system was built on Elamite predecessors because several of the towns are in the same locations. The demographic pattern changed dramatically with the Sasanian and Early Islamic periods (c. 226–800 CE), when an entirely new technique of irrigation, based on the *qanat* system of subterranean channels, distributed water to the northern half of the plain. [*See* Irrigation.] This was augmented by a second system that used terraces and check dams to distribute water from the many seasonal streams as a supplement to both irrigation and rainfall. A similar and much more extensive system was also constructed in the previously unsettled piedmont zone. Each of these local systems was designed to serve one or more homesteads. A third Sasanian innovation was a system that took water from springs through canals and drop towers from the upland hills to fields and houses below. One such system, along which there were twenty-two drop towers, has been traced through a course of 6.5 km (4 mi). The drop towers served as penstocks for mills where the force of the falling water turned the blades of a millstone. As a result of these various systems, some 40 percent of the Deh Luran plain was occupied and settlement probably reached its highest total ever.

The later Islamic periods saw a gradual decline in population. From 800 to 950 CE, much of the piedmont system, including the drop towers, was abandoned, as was the *qanat* system that fed the upper plain. Population may have dropped to half that of the previous period. From 950 to 1250, only two functioning irrigation systems remained, one near the modern town of Deh Luran, the other near Tepe Mussian. By 1250, the plain was devoid of settlements, a situation that existed until the twentieth century.

The recent history of the plain has seen seasonal occupation by tribal Luri, Arab pastoralists, and the Wali of Pusht-i Kuh (an Ottoman title), who used Deh Luran as his winter camp and built a fort on top of Chogha Sefid. In the twentieth century, a customs post was established, the British Petroleum Company briefly exporting petroleum products from a natural tar seep by means of a narrow gauge railroad, and the towns of Deh Luran, Mussian, and Bayat were founded. Seismic work established the presence of a major oil deposit beneath the international border, but productions wells were not developed. Until the late 1960s, fresh water was available in Deh Luran only through rainwater or from ʿAin Girzan, the only freshwater spring on the plain. In the 1970s, pumps to deliver fresh groundwater were installed, agriculture was transformed by modern irrigation systems, and bridges were built over the rivers. During the Iraq-Iran war in the 1980s, Deh Luran was invaded and captured by Iraq and subsequently retaken by Iran.

For the prehistoric periods, Deh Luran has one of the best-known sequences in the Near East, and the information on the late historic irrigation and settlement systems is unique. Despite its small size and remote location, Deh Luran continues to hold much potential for elucidating the dynamic history of this region.

[*See also* Ali Kosh; Elamites; Tepe Farukhabad; *and* Tepe Mussian.]

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FRANK HOLE

DEIR 'ALLA, TELL, site located in the Ghor Abu 'Obeideh in modern Jordan, east of the Jordan River and 4 km (2.5 mi.) north of the bridge over the Zerqa River (map reference 209 × 178). Before considering an identification with a site known from the Bible, the nature of the ruins as Tell Deir 'Alla and its culture must be identified.

The tell was inhabited from the eighth century BCE until late Persian times and was mentioned by nineteenth-century travelers to the Holy Land (including G. A. Smith and Selah Merrill). Excavation has been underway since 1960, first by the University of Leiden, under the direction of H. J. Franken, and, since 1978, by that university in cooperation with Yarmouk University, Jordan. Excavations have shown that in the Bronze and Iron Ages Deir 'Alla was a large sanctuary with auxiliary buildings—storerooms, workshops, and dwellings.

Bronze Age. The site's Middle Bronze remains have not as yet been excavated. In the sixteenth century BCE, an artificial hill was constructed that covered the MB ruins. This hill was restricted to the eastern half of the tell and measured more than 90 meters along its northern slope. Its north–south axis was probably the same length. On its north side, which is 7 meters high, a 2-meter-high podium was built of mud bricks, oriented north–south. The podium held a cella (11 m wide and probably 20 m long) built of large river stones. A towerlike structure on this building's north side contained three small rooms. As the mud-brick buildings and mud roofs adjacent to the cella weathered, they caused the surface area to rise, and several times the cella had to be rebuilt on a higher level. In this process, the cella's thick walls served as retaining walls for the platform on which each new cella was erected. The entrance to the latest Late Bronze cella has not been excavated, as it is buried deep within the tell. An earthquake destroyed the building shortly after 1200 BCE.

Storerooms and workshops were built to the west of the cella, against the podium. On the east, rooms were found containing precious objects and clay tablets pertaining to the administration of the temple. Farther east were the living quarters for temple personnel. The nature of these remains creates a question about the function of the complex. It is not part of a village or town; it is a freestanding structure on the plain of Succoth. Petrographic analysis of the pottery revealed that about 20 percent came from areas at a considerable distance from the site, such as basalt areas.

Because there was a strong Egyptian influence, the most likely identification is that the temple served the trade between Egypt and Gilead. This trade is known from biblical sources, in which Midianite and Ishmaelite caravans travel between Gilead and Egypt (*Gn.* 37:28). It was an entrepôt for Gilead's products, collected and harvested by the local population in the hills to the east and north of the site. In the cella, the storerooms, the treasure room, and in one of the houses, fenestrated pots that could be closed were found that had not been used as ossuaries. They may have contained a "document" that testified to special bonds between the sanctuary and certain groups, such as families or tribes. Each pot may have represented a priestly family whose duty it was to serve during a certain period in the temple.

An Egyptian drop vase with the cartouche of queen Ta-

wosert demonstrates that Egyptian trade interests had not yet waned in the early twelfth century BCE. It is not known whether that trade ended with the earthquake that struck shortly thereafter, destroying the sanctuary. While there would have been enough space for the markets in the surrounding fields, the destruction of the administrative center and locations where contracts could be placed under divine authority must have had a disastrous effect on the people's livelihood.

At some point in the early Iron Age, metalworkers leveled part of the surface of the ruined site and, for a short period, settled the tell, where they produced bronze objects. Little is known about this period because the excavation was focused on only a small area. However, there are indications that large buildings had been erected on the east side of the tell—perhaps a new temple complex serving trade, although no longer tied to Egypt. In the following centuries, after the smiths had left the site, there is a rather nondescript collection of small buildings and open spaces at the center of the tell. At one point the area may even have been walled, with a gate between two small watchtowers.

Iron Age. The tradition of Deir ʿAlla as a sacred place was not lost, and in the eighth century BCE a sanctuary existed, designated phase IX, of which a large area was excavated. It is this phase "proto-Aramaic" texts were found in which the prophet Balaam son of Beor plays a role (*Nm.* 22–24). The texts were written on a wall in a room belonging to the large complex of work and storage rooms. East of this complex, of which twenty-two rooms have been excavated, is another complex of ordinary houses with courtyards.

No architectural parallel to this layout has as yet been found in the region. Although this building was also destroyed by an earthquake that shifted walls at ground level, it was still apparent that some rooms could only be entered through a high window or from the roof. This gives the rooms the quality of an artificial cave. It appears that the room in which the Aramaic texts were written belonged to this group. The complex resembles what is described in myths as a labyrinth, although a small one—a place of death and victory over death, a typical theme in religion in the ancient Near East.

According to the Balaam text people believed that there was a pantheon of gods (Heb., *ʾĕlōhîm*) with a leading goddess, probably Ishtar and Shadday, mythological beings (*Dt.* 32:17). This was a feature of religion in Syria that persisted into the Roman period in Hierapolis (Manbij), where the great Syrian goddess resided. Because the Hebrew prophets describe Canaanite religious practices derogatorily: "under oaks and poplars and terebinths" (cf. *Hos.* 4:13), modern readers may forget that these attributes belonged to a proper religion. Thus, the cult practiced in eighth-century Deir ʿAlla was a primitive "mystery" religion, and not the "state" religion—as was the contemporary cult of Osiris in Egypt and of Attis in Syria itself. The mystery for the living in the latter two cults was the beneficial rising of the Nile water in Egypt and the return of the winter rains in Syria, respectively.

In Israel, the traces of the high places dedicated to Baal disappeared as the hilltops eroded. In Jordan, however, at Tell Deir ʿAlla, later construction buried the remains of a Baal high place and the fertility religion practiced there. A flint inscribed with the name of Sharʿa (the name used by bedouin today for the Jordan River, the "great watering place") was found in a four-room complex with an oversized loom weight and other weaving tools and a libation vessel. Among others, these objects may point to weaving for a water spending deity, a goddess holding power over the water clouds, in the sanctuary.

Tell Deir ʿAlla has often been identified with biblical Succoth (Heb., "huts"), a settlement with "elders" but otherwise unspecified (*Jg.* 8, 16). Succoth may not have been the name used by the local people, but rather was a biblical indication of a place of pagan religion in the Bronze and Iron Ages: the site's sanctuary may have been known as a holy place belonging to certain deities with local names like Beth-Sharʿa (see below). The place name Tarʿalah is Talmudic (J.T. *Shevi'it* 9.2) and comes from the Hebrew root *rʿl;* the verb is used in connection with drunkenness or to quiver, shake, or reel. It may be that exiles expelled from Jerusalem by the Romans settled in the area and took Psalm 60 to refer to their situation: that is, instead of calling the area Succoth they called it Tarʿalah ("thou hast made us to drink the wine of astonishment", *Ps.* 60–63), from which the corruption Deir ʿAlla followed.

[*See also* Deir ʿAlla Inscriptions.]

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H. J. FRANKEN

DEIR ʿALLA INSCRIPTIONS.

Several groups of inscriptions, now in the Archaeological Museum in Amman, Jordan, were found in the various excavations begun in 1960 at Tell Deir ʿAlla (ancient Penuel or Sukkot?) in the Middle Jordan Valley.

In the site's Late Bronze Age level (c. 1200 BCE), an Egyptian cartouche of queen Tawosert (Yoyotte, 1962) and three small clay tablets inscribed in a linear script were discovered

(Franken, 1964). Although various commentators have proposed interpretations for them, no reading seems satisfactory and they must be classified as undeciphered. It is possible, nonetheless, to hypothesize from the general shape and the vertical stance of the letters that they are Old Arabian script, North and South. Indication for such a reading is to be found in a tablet from Beth-Shemesh in Israel, an abecedary, in the order of the letters in the South Arabian tradition (Sass, 1991). Because the tablets are contemporaneous, this conjecture for the Deir ʿAlla inscriptions appears plausible.

In level M/IX (c. 800 BCE) of H. J. Franken's excavations (1967), several inscriptions attest to the use of Aramaic script. Two incised inscriptions mention "the gate" (šrʿ) and another contains the beginning of an abecedary. Inscriptions on plaster found at the site in 1967 are also written in Aramaic script, in black and red ink. These texts, probably originally written on wall plaster (wall no. 36), were found in many pieces among debris. The details of their language, restoration, script, reading, and interpretation are still under discussion; however, following a preliminary paleographic dating to the Persian period, and then in the *editio princeps* to about 700 BCE (Hoftijzer and Kooij, 1976), most commentators now agree that the paleography fits the dating of the archaeological context: about 800 BCE (Hoftijzer and Kooij, 1991) or the first half of the eighth century BCE. Indeed, the earthquake that destroyed level M/IX at Deir ʿAlla could well be the one mentioned in *Amos* 1:1 (cf. also 4:11, 6:8–11, 8:8, and 9:1; and *Zec.* 14:5), dated to about 760 BCE. Although some scholars prefer to describe this script as Ammonite, and others have attempted to classify it as Hebrew, Midianite, or North Arabic, the texts linguistic features seem to contradict these classifications.

Most specialists agree that the writing is either an unknown Canaanite dialect (Gileadite?) or Old Aramaic. Several linguistic features make the second interpretation more probable: the writing of *q* for **ḏ*; the third-person masculine singular suffix *-wh* in *'lwh* (cf. also the plural ending *-n*); the third-person feminine singular *-t* of the perfect tense in the verb in *ḥrpt* and *ḥqrqt*; and the verb *'tyḥdw*, among others. This classification fits the archaeological and historical context: during phase M/IX, Deir ʿAlla seems to have been under Aramaic (Damascene) influence.

The restoration of the broken plaster pieces has produced two principal groups of fragments known as combinations I and II. Even if problems with the details remain, it seems possible to restore most of the ten first lines of combination I. Most commentators agree that line 1 contains the title of this combination, written in red ink: *spr (b)lʿm(.br bʿ)r.' š.ḥzh 'lhn*, "Text of (Ba)laam (son of Be)or, seer of the gods." The text tells the story of the seer Balaam's vision: "The gods came to him at night and *spoke to him according to these words* and told to Balaam son of Beor as follows. . . ." Even though the oracle is difficult to read and interpret, the next lines seem to tell how, on the following morning, Balaam fasts and weeps before telling his vision to his people. The content of this vision is on a plaster fragment and so is incomplete, but it seems to depict a topsy-turvy world overshadowed by an oracle of doom. Combination II is still more difficult to understand because none of the lines can be restored completely (see figure 1). However, from what remains of these two combinations, it is clear enough that they contained literary texts, brief sections of which—probably the most important ones (title, oracle)—were written in red ink.

The original disposition of the text, in one or two columns, also is still debated. Because the inscription on the plaster of wall 36 was in columns, however, it probably resembled a manuscript—a literary text copied from a manuscript by a professional scribe, for the handwriting is both regular and beautiful.

The language of these inscriptions may be an archaic dialect of Aramaic—earlier than the Old Aramaic of the beginning of the eighth century BCE. The redaction of the Balaam text may antedate the Deir ʿAlla copy by one or two centuries, making the Balaam Aramaic text the oldest extant

DEIR ʿALLA INSCRIPTIONS. Figure 1. *Part of Combination II of the Deir ʿAlla Inscriptions.* (Courtesy ASOR Archives)

Aramaic literary text. This example of an Aramaic literary tradition is probably close in time to the origins of the biblical traditions regarding the foreign seer Balaam (especially *Nm.* 22–24).

In addition to an incised "two-shekel" weight (registration number DA 2632) and an Ammonite seal from the seventh century BCE (DA 2550; Kooij and Ibrahim, 1989, p. 106), several Ammonite inscriptions on jars and on ostraca (DA 2555, 2712, 2755; *ibid.*, pp. 103–106) were found in level VI and may date to about 600 BCE. The jar inscriptions have not yet been properly edited but are said to consist principally of personal names, mostly Ammonite. A few Aramaic ostraca (DA 2600, 2768) from the Persian period (fifth century BCE), one of which mentions "stones" (*'bnn*) also awaits a proper *editio princeps.*

[*See also* Aramaic Language and Literature; Deir 'Alla, Tell.]

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ANDRÉ LEMAIRE

DEIR EL-BALAḤ (Ar., "house of the dates"), site located in the Gaza Strip, about 13 km (8 mi.) south of the city of Gaza, close to the Mediterranean coast. In antiquity, it was the easternmost point on the ancient road leading across the Sinai desert from Egypt to Canaan. At the site's virgin soil level, a flourishing Late Bronze Age, Egyptian-type outpost, complete with an Amarna-style residence and artificial pool was excavated between 1972 and 1982 on behalf of the Institute of Archaeology of the Hebrew University of Jerusalem and the Israel Exploration Society, under the direction of Trude Dothan. Superimposed on this stratum was a fortress and an artisans' quarter from the time of Rameses II and a contemporary adjacent cemetery. Above these richly documented levels were traces of Philistine, Israelite, and Byzantine settlements, after which the site was abandoned to the encroaching sand dunes.

There were no modern topographic indications of an ancient settlement because of centuries of shifting sand dunes. A bedouin watchman inadvertently discovered the cemetery when an area was cleared for an avocado grove in the late 1960s. Subsequently, the cemetery was emptied by tomb robbers. It was only the sudden appearance of LB burial gifts and anthropoid coffin fragments in the antiquities' market in Jerusalem that alerted the archaeological community to it. [*See* Grave Goods; Ethics and Archaeology.] The site was first examined by archaeologists in 1968, but because of its precarious security situation excavation could not commence until 1972. Every effort was made prior to excavation to locate, register, and photograph all the artifacts that had been purchased by private collectors and museums. Among the artifacts were some fifty anthropoid coffins, the largest and richest group from Canaan so far known; Egyptian scarabs; jewelry; alabaster and bronze vessels; and fine Mycenaean and Cypriot pottery.

The first few seasons were spent excavating the cemetery to the edge of the 132-meter-high sand dunes that bounded the area. Three more anthropoid coffins were found in situ, all containing burials of several individuals. From these burials and those already recorded, it was evident that the coffins had been placed in groups of three or more, with hundreds of simple burials between them, and marked above ground by a Canaanite storage jar. Alongside the coffins were crude, locally made pottery vessels and a diverse assemblage of imported Mycenaean, Cypriot, and New Kingdom Egyptian vessels. Inside the coffins were bronze objects such as mirrors, bowls, a wine set, and knives, apparently once wrapped in linen; alabaster goblets; and jewelry—carnelian and gold beads, gold amulets, gold earrings, scarabs in gold and silver settings, palmette gold pendants, and seal rings. [*See* Jewelry.] Though distinctive Canaanite traits were manifest in the workmanship of some of the jewelry and pottery, the dead were evidently Egyptians or were under Egyptian cultural and religious influence—but losing touch with the cultic significance of the Egyptian symbols. Four local sandstone Egyptian funerary stelae were also found in the cemetery, bearing hieroglyphic inscriptions and depictions of Mut and Osiris, similar to nineteenth-dynasty stelae from Deir el-Medineh in Egypt.

At some distance from the cemetery, mud-brick walls were found that continued under the high dunes. Eventually 175,000 metric tons of sand were removed, revealing an area of 2,000 sq m down to the settlement's earliest occupation level, the mid-fourteenth century BCE. From the architecture, ceramic finds, and other indications, the closest par-

allels to this stratum are with Tell el-Amarna, the Egyptian capital city of King Akhenaten (1379–1362 BCE). A number of the rooms had well-preserved beaten-earth floors on which were found some locally made Canaanite cooking pots, juglets, bowls, and flasks and a preponderance of Egyptian-type vessels, many painted with "Amarna blue" and some with the additional black and red decoration that was especially popular during the late eighteenth dynasty. Adjacent to the building was a pool or reservoir, also typical of Amarna. [*See* Amarna, Tell el-.]

Of striking interest were ten cylindrical pieces of carnelian and blue frit, dotted with traces of gold and pierced by a square aperture—parts of a scepter or flail, whose closest parallel comes from the tomb of Tutankhamun. Because flails were a symbol of authority, they can be adduced as evidence that the building complex was either a governor's palace or an administrative residence.

To the west of the residence a pit, possibly a *favissa,* was excavated in which there was a clay bulla, or seal, bearing four hieroglyphs—two *udjat*s and two *nefer*s—another parallel with Amarna.

Superimposed upon the residence was a fortress that appears to have been two stories high, with supporting walls more than 2 m thick. The fortress (20 × 20 m) contained fourteen rooms. It had four corner bastions, which indicated that it had been built in royal Egyptian style, similar to the fortresses shown on the relief of Seti I at Karnak, depicting the ancient route from Egypt to Canaan, "the Way of Horus."

Another area contained an artisans' village, in which traces were found of nearly every craft connected with the production of coffins and burial gifts. There were also fragmentary walls of private buildings, apparently the homes of the artisans, that contained typical such kitchen installations as *tabuns* ("clay ovens") and cooking pots.

Whereas the later archaeological levels were shallow, in the new area layers of ash, rubble, and animal skeletons were packed with enormous amounts of crude pottery fragments, sometimes 6 m deep. Gradually, the semicircular outline of a brick structure built on the fill (of the pool) became evident. Its collapsed domed roof and vitrified walls indicated a pottery kiln, one of several that were found. There was also a large, well-planned building with a water installation in one room, used most likely in the preparation of the clay for the pottery-coffin industry. The installation was built of large slabs of worked sandstone, inlaid with shells and plaster. Also found were large fragments of coffins and a flat, perforated clay disk similar to the coffin bases discovered in the cemetery. Hoards of bronze nails and scraps, a fragment of a divine concubine in carved stone, and spinning bowls used in the production of textiles were also found, as were chunks of ocher for coloring the coffins.

Because of the local topography and the site's unique geopolitical conditions, only a small area was excavated. The site's full size is not known. Nevertheless, the excavations at Deir el-Balaḥ provide an in-depth picture of an Egyptian outpost and cemetery in southern Palestine toward the end of Egyptian influence there.

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TRUDE DOTHAN

DELTA. The Nile Delta extends about 200 km (120 mi.) northward from the area of Cairo to the Mediterranean Sea. In antiquity this flat plain, roughly the shape of an inverted triangle, was traversed by seven branches of the Nile River. Today, only two branches survive: the eastern one emerges near Damietta, while the western one reaches the sea near Rosetta. The Delta's principal topographical features have evolved through the deposition of Nile alluvium and the intrusion of the Mediterranean Sea. Beach ridges, lagoons, and salt marshes are common near the northern coast, while farther south the region is crossed by canals and water channels, and swamps are found frequently in the low-lying areas.

Ancient settlements often developed on the small hills rising above the alluvium, close to the Nilotic branches. The region's economy was based primarily on farming and cattle herding. Other significant economic activities included fishing, commerce, and, in the eastern Delta, viniculture. The local Egyptian population was supplemented by influxes of Asiatics, Libyans, and, especially in the first millennium BCE, people from Cyprus, Anatolia, and the Greek world.

The Delta is much less well known archaeologically than the Nile valley. Many ancient sites are buried beneath either the alluvium or modern occupation. Others have been robbed out by peasants searching for old mud brick for fertilizer or ancient building stone for construction.

Little is known about the Delta in Neolithic times; remains of that period probably lie beneath the high water table and modern alluvium. The earliest excavated village is at Merimde Beni Salame, a large Late Neolithic (early fifth millennium) town on the periphery of the Delta some 59 km (37 mi.) northwest of Cairo.

Evidence of human activity increases somewhat for the Chalcolithic period. Recent excavations at Buto in the western Delta and at Tell Ibrahim Awad and et-Tell el-Iswid (South) in the east have revealed stratigraphic sequences covering the Late Chalcolithic–Early Dynastic periods. The

earliest levels at Buto relate archaeologically to finds made years ago at Maadi, which today lies in the southern suburbs of Cairo. In the first half of the fourth millennium, Maadi was a large town that prospered through copper working and trade with Palestine. Buto has also provided evidence for early ties with Mesopotamia, probably via Syria. Finally, a large cemetery from the late fourth–early third millennia at Minshat Abu-Omar in the northeastern Delta has yielded pottery and other imports from Palestine; this site reflects the incursion of Upper Egyptian people into the Delta in the late predynastic period and the expansion of Egyptian trade with the southern Levant.

In pharaonic times the Delta (i.e., Lower Egypt) had a separate series of administrative districts, or nomes, from the Nile valley (i.e., Upper Egypt). Pharaoh ruled over the two halves of the land as "king of Upper and Lower Egypt." The Delta became especially important in the seventeenth–sixteenth and thirteenth–eleventh centuries BCE, and then again during the first millennium BCE. In the fifteenth dynasty (1648–1540 BCE), Asiatic rulers known as the Hyksos dominated northern Egypt from their residence at Avaris (modern Tell ed-Dab'a), along the former Pelusiac branch of the Nile in the eastern Delta; other Asiatic sites of that period have been found elsewhere in the eastern Delta and in the Wadi Tumilat. In the nineteenth–twentieth dynasties, the Ramessid pharaohs made their home at Piramesse (Per-Rameses), which today encompasses an enormous area extending from Tell ed-Dab'a north to Qantir.

The Delta reached its cultural and political zenith during the first millennium BCE, when several dynasties came from that area. At Tanis, on the former Tanitic branch of the Nile, a huge capital developed during the twenty-first dynasty. Many earlier monuments removed from other Delta sites have been found there; Tanis also contained a large temple complex dedicated to the god Amun, as well as the tombs of several kings of the twenty-first and twenty-second dynasties. Bubastis, situated farther to the south, was the home of the twenty-second dynasty. This town, founded during the Old Kingdom (c. 2700–2190 BCE), had a temple dedicated to the lioness goddess Bastet, along with large cat cemeteries. [*See* Cats.]

The twenty-sixth dynasty (664–525 BCE) made its residence at Saïs in the western Delta. In this region, from the sixth century BCE on, there was also a Greek trading colony at Naukratis (modern Kom Ge'if). Located near the old Canopic branch of the Nile, Naukratis was an important commercial center until Ptolemaic times, when the founding of Alexandria on the Delta's northwest coast (in 332–331 BCE) led to the former's decline. The few archaeological remains surviving from Greco-Roman Alexandria include the enormous Column of Diocletian (297 CE) and the theater at Kom el-Dik.

[*See also* Alexandria; Hyksos; Naukratis.]

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JAMES M. WEINSTEIN

DEMOGRAPHY. For periods in antiquity, where societies are similar and where similar methods of construction and traditions of habitation exist, a fixed coefficient of population density can be determined. More elaborate and advanced techniques, made possible by excavation, surveys, and interpretations of ceramic, faunal, and floral material, will allow future scholars to venture precise estimates for all periods.

Considerable evidence exists to show that in the premodern Near East the average density coefficient was very near 250 inhabitants per hectare (or per 2.5 acres). That figure stems from two systems of calculating population density: by analogy with present-day settlements in traditional societies (the ethnoarchaeological method) and by analysis of the layout of excavated sites.

The first approach shows that the density in villages in various communities in the Near East (Palestinian Arab, Iraqi, and Iranian) averages 250 per hectare. It should be

noted though that in ten contemporary "old" cities in the Levant for which data are available, density is 400–500 persons per hectare. Urban settlements in antiquity, as in preindustrial modern cities, must have been considerably denser than in nonurban settlements.

Using the second approach, it can be shown that the mean density of four Iron Age II settlements was fifty-four houses per hectare. If it is assumed that those buildings were occupied by nuclear families, each of five persons on the average, 270 people per hectare can be assumed.

Ancient Sources. Almost invariably, ancient sources supply us with inflated population numbers. The most often-quoted example is the number of Israelites of army age counted during the Exodus—603,550 (*Nm.* 1:45–46 and similar numbers in other places). Because this figure refers to men older than twenty, the total population during the Exodus (the ratio of men of army age to total population is estimated to be 1:3–3.5) would have to have been more than two million—an impossibility. The resources of the Sinai Desert could not have provided enough food or water for such a crowd. The Hebrew Bible contains a wealth of such population figures. Salo W. Baron discusses 345 of them in *Ancient and Medieval Jewish History* (New Brunswick, 1972, pp. 25–38), including the grossly exaggerated results of King David's census: 1,570,000 "sword drawers," which would bring the general population to more than five million (*1 Chr.* 21:5 and elsewhere) and the one million soldiers of Zerah the Ethiopian (*2 Chr.* 14:8).

The figures given by almost all ancient sources are similarly inflated. Flavius Josephus, the first-century Jewish historian who is an otherwise reliable author, supplies mostly fantastic figures when it comes to population estimates. He claims that in 70 CE, during the First Jewish War against Rome, there were 204 villages in the Galilee, the smallest of which numbered 15,000 (*War* 3.43; *Life* 235). This, however, would swell the number of inhabitants in the Galilee in that period to well over three million. It is believed today that at the time the whole country had a population of fewer than one million. Josephus avers that the number of people killed in Jerusalem was 1,100,000 (*War* 5.420)—a figure the city could not possibly have sustained (it must already have been overcrowded, accommodating part of the Roman army).

There are, however, data in Josephus that have the ring of accuracy: the number of the defenders of Jerusalem in 70 CE having been 23,400 (*War* 5.248) and the unrounded numbers and detailed breakdown of troops—how many led by John of Gischala and how many by the Zealots, for example—and their plausible magnitude. Similarly, Josephus's estimate of the number of the inhabitants of Egypt mentioned in the oration of Agrippa II (7,500,000, exclusive of Alexandria) is plausible (*War* 2.385). The reliability of these figures rests on their most probably having been copied from Roman military records, the *hupomnēmata* (Gk., "commentaries") to which Josephus had access.

The best way to achieve a trustworthy estimate of ancient populations is through a combination of agricultural data, which dictates the carrying capacity of a place, and archaeological data, which helps to estimate population densities.

Estimating Population Size Using Modern Archaeological Data. Western Palestine (modern Israel and the West Bank) is perhaps the most excavated and best-surveyed area in the world. The results of the intensive and extensive surveys and excavations carried out since 1967 enable quite accurate maps of the country to be drawn for certain key chronological periods: 2600 BCE (Broshi and Gophna, 1984); 1800 and 1600 BCE (Broshi and Gophna, 1986); 734 BCE (Broshi and Finkelstein, 1992); and 541 CE (Broshi, 1979). The maximum population ancient Palestine witnessed—about one million inhabitants—was in the year 541, a level not reached again until 1931. That was the heyday of the Byzantine Empire and just one year before the onset of one of the three pandemic plagues recorded in history. It decimated the population of the entire country.

Ancient Palestine. The ability of a given area to support life is its carrying capacity. It is derived from the sum of many factors that limit the amount of food an area can produce. In other words, the carrying capacity of a region is an upper limit. Usually, according to D. J. Greenwood (in W. A. S. Tini, *Nature, Culture, and Human History*, New York, 1977, p. 394), the limiting factors will keep population lower than the theoretical maximum. For ancient Palestine, two ways suggest themselves for estimating carrying capacity: an assessment of its grain-growing capacity and an estimate of its overall food-producing capacity. These methods are based on three assumptions: that annual per capita consumption of food in general and grain products in particular can be calculated; that the country's annual grain-growing capacity can be reckoned; and that Palestine in antiquity was self-sufficient in grain growing and, indeed, in raising all basic commodities but not in refining metals.

Ancient sources, as well as modern parallels, suggest that the annual per capita consumption of ancient Palestine was about 200 kg. Including grain for sowing (20 percent), waste (20 percent), and animal feed (10 percent), the gross consumption reached about 300 kg. It seems that the grain-growing capacity of Palestine is well represented by the harvests of the years 1940–1942. These three years during World War II saw peak harvests, not supplemented with imports. Prices soared and every piece of arable land was cultivated. The 1940–1942 average annual yield of grains (wheat, barley, sorghum, and maize) was 266,411 tons. This amount could feed about 900,000 people.

There is ample evidence to show that ancient Palestine was self-sufficient as far as food production is concerned. Thus, the country was supplying bread to fewer than one million people.

Overall food-production capacity is a quantification method that tries to compute the amount of land needed to feed one person according to the agrotechnical standards of ancient Palestine. Grain was the country's main staple, the source of more than 50 percent of the caloric intake. To produce 300 kg of grain, 0.4 ha (one acre) is needed. With fallow land—a minimum of one-third of the cultivable land—the grain-producing area should reach at least 0.6 ha (1.5 acres).

To supply the other components of the food basket, more area was needed—for vegetables, fruits, legumes, wine, and oil. A certain amount of land also was required for growing fibers for textiles, mostly flax. It is difficult to estimate accurately how much land was needed for these crops, but it seems that 0.4 ha is the bare minimum. Thus, the minimum area necessary to feed one person is one hectare (2.5 acres).

Of the 2,600,000 ha (6,500,000 acres) of Western Palestine, only 937,000 ha are cultivable. For purposes of computation and because a certain amount of arable land has deteriorated in the last thirteen centuries, the number of arable hectares in antiquity can be rounded to one million. Thus, ancient Palestine could have fed some one million people. Although this estimate is lower than most others that are current, it is supported by detailed estimates. Antony Byatt (1973) collected thirteen estimates of the population of ancient Palestine. Only one of them ascribes to Roman Palestine fewer than one million people. The rest run between 1,500,000 and 6,000,000.

Ancient Mesopotamia. The only Near Eastern country other than Israel to benefit from archaeological investigations in assessing demographic history is modern Iraq. A series of reconnaissance projects carried out by Robert McC. Adams and his colleagues between 1956 and 1975, under the auspices of the Oriental Institute of the University of Chicago, covered most of southern Iraq. Adam's work enabled him to draw conclusions about the settlement history of Sumer, Akkad, and later of Babylonia. Ancient Mesopotamia was entirely dependent on vulnerable irrigation systems that can only be maintained by a stable centralized administration. As a result, it suffered more drastic vicissitudes than most Near Eastern countries. Population peaks can be shown for the Late Uruk, Ur III, Neo-Babylonian, and Parthian periods, with marked lows in between, when there was no strong central government. Although Adams refrains from offering absolute population numbers, his data on settlements and their size do enable the development of sound demographic assessments.

[*See also* Agriculture; Ethnoarchaeology; Paleoenvironmental Reconstruction.]

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MAGEN BROSHI

DENON, DOMINIQUE VIVANT (1747–1825), French diplomat, artist, colleague of Napoleon Bonaparte, and founder of the Louvre in Paris. This truly universal man may well be considered the first Egyptologist for the detailed and profusely illustrated observations that he published following his participation in the Napoleonic expedition to Egypt (1798–1801). In his fifties and distinguished as a diplomat, art connoisseur, and artist, Denon was one of the more senior and brilliant members of the commission of science and arts attached to the general staff of Napoleon's army of Egypt.

Denon proved to be an energetic explorer and tireless recorder, often working under the most difficult and dangerous conditions as he followed General Desaix's army through Egypt, sketching monuments and recording his impressions in writing. He discovered the zodiac on a ceiling in the temple of Dendera, which the French were the first Europeans to view. Because some of the temples that Denon documented with precision no longer survive, the *Description d'Égypte* and his additional works preserve the only records.

When Bonaparte abandoned his troops in Egypt in August of 1799, he took Denon back to Paris with him. From his large collection of drawings, Denon published his *Voyage dans la Basse et la Haute Égypte* (1802), in two volumes with 141 plates, which appeared twenty years before the Commission of Science and Arts' *Description,* and thus gave to the West the first professional portrayal of the wonders of

Egypt. The book was enormously popular, and went through forty editions, was translated into English and German, and provided the inspiration for the Egyptian revival in architecture and the decorative arts that marked the early nineteenth century.

Denon was appointed director general of museums by Napoleon and went on to be the founder of what is now the Louvre. He played a major role in forming its collections when he accompanied Napoleon on subsequent campaigns in Europe giving advice on the choice of artistic spoils from vanquished cities.

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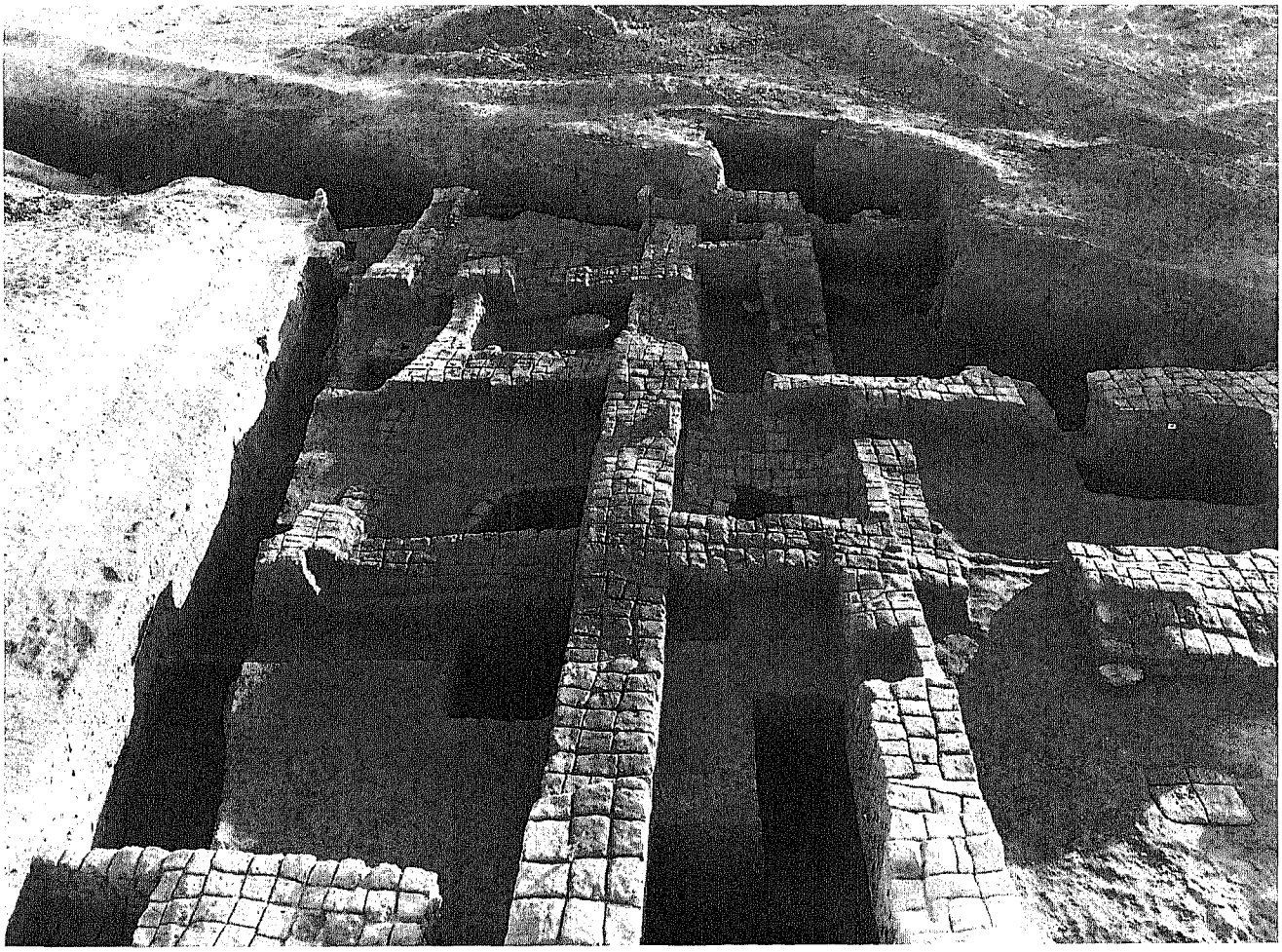
BARBARA SWITALSKI LESKO

DER, TELL ED-, site located in northern Babylonia, halfway between the Tigris and Euphrates Rivers, 25 km (15.5 mi.) south of Baghdad (33°6′ N, 44°18′ E). Tell ed-Der covers an area of about 50 ha (123.5 acres). The site was probably founded slightly before the Ur III period (2112–2004 BCE), but its name at that early stage in its history is not known. However, the information yielded from the archives found in the area its excavators call operation E ascertain its identification with the Old Babylonian town of Sippar-Amnānum that appears in written sources during the reign of Sinmuballiṭ (1812–1793 BCE); on the other hand, Dominique Charpin (1992) has shown that the names of Sippar-Amnānum, Sippar-Annunītum, Sippar-rabûm and Sippar-dūrum probably designate the same town. Later on, only Sippar-Anunītu is cited by the Assyrian king Tiglath-Pileser I (1114–1076 BCE) among his conquests—the name that remained until the Persian period (539–333 BCE). The meaning of *Der* as "cloister" or "enclosure" has not yet been established with certainty.



DER, TELL ED-. Figure 1. *Operation E.* View of the house of Ur-Utu, chief dirge singer of the goddess Annunitum. (Courtesy H. Gasche)

In 1891, E. A. W. Budge drew many thousands of clay tablets out of the mounds at ed-Der. Three years later, Victor Scheil made a more modest find but presumed that ancient Sippar-Amnānum lay hidden underneath the ruins. Walter Andrae and Julius Jordan visited the site in 1927 and drew the first precise plans; it was not until 1941 that excavations were organized, by Taha Baqir and Mohammad Ali Mustafa under Iraqi government auspices. Since 1970 a Belgian team directed by Léon De Meyer and Hermann Gasche has systematically investigated the site. In the area the excavators call operation A an area with private houses was selected for stratigraphic analysis: seventeen successive building stages are represented by some 6 m of cultural debris, from the twenty-first to the end of the eighteenth centuries BCE. The considerable information gathered is featured in various synthetic studies (e.g., urbanization, domestic architecture, graves, pottery, terra-cotta figurines, texts).

The results of the work undertaken on the imposing peripheral levee (operation B) were unexpected. This impressive mass does not hide a traditional city wall, as had been anticipated, but an earthen dike (with a width of a least 45 m; see De Meyer, Gasche, and Paepe, 1971, plan 1), whose function was to protect the town from flooding. It is known, however, that Sippar-Amnānum was encircled by a real fortification wall because King Samsuiluna (1749–1712 BCE) mentions it in a letter. This wall can now be identified with a structure 6 m wide that appeared under the slightly later earthen dike mentioned above. Archaeological evidence has ascertained that the wall was destroyed by floods and then replaced by the earthen dike that, prior to the Kassite period (1595–1155 BCE), was raised several times.

The most important discoveries were made in operation E and came from the house of Ur-Utu (see figure 1), chief dirge singer *(gala.maḫ)* of Annunitum, the main goddess of Sippar-Amnānum. More than two thousand tablets give invaluable information not only concerning social, economic, and religious life but also about the mutable commercial activities of Ur-Utu, a highly placed religious dignitary at that time. Ur-Utu's house was burned in 1629 BCE, that being the date of the latest text found in the archives. The ruins were totally covered with a sandy sediment, which indicates a period of abandonment of the area until it was reoccupied in about 1400 BCE. Installations from that reoccupation were cleared in operation E3, where the most recent remains are probably from the time of Šagarakti-Šuriaš (1245–1233 BCE).

The excavations at Tell ed-Der have not yet revealed material from the Neo-Babylonian period. The question, then, is where the Temple of Annunitu, commemorated in an inscription of Nabonidus (555–539 BCE) as the work of that king, is to be found.

[*See also* Babylonians; Cuneiform; Mesopotamia, *article on* Ancient Mesopotamia; Sippar; *and* Tablet.]

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LÉON DE MEYER

DEUTSCHE ORIENT-GESELLSCHAFT.

Founded in 1898 and charged with conducting excavations in the ancient Near East, the Deutsche Orient-Gesellschaft (DOG) carried out numerous projects under their direction of such noted archaeologists as Robert Koldewey, Walter Andrae, and Rudolf Borchardt. These include Babylon (1899–1917), Aššur (1902–1913), Jericho (1908/09), Abu Sir (1902–1907), Amarna (1911–1914), Boğazköy (since 1906), Uruk-Warka (beginning in 1912/13), and at many other sites. This period of active fieldwork came to end with World War I, but some of the research was later continued in cooperation with the Deutsches Archäologisches Institut (German Archaeological Institute). The necessary funds were contributed by the more than one thousand members of the DOG, the German emperor, and the government of Prussia.

The DOG's most important sponsor was James Simon, a Jewish merchant from Berlin, who donated the finds from Amarna to the Egyptian Museum in Berlin. Publication of the excavation results began in 1900 with a new series, Wissenschaftliche Veröffentlichungen der Deutschen Orient-Gesellschaft, edited by the secretary of the society. More than fifty volumes appeared between 1901 and 1936, when Bruno Güterbock held the office. After 1933, the society lost most of its members; in 1949, it was restituted and Andrae was elected president. Publication of the rich harvest from DOG's early excavations continued with thirty volumes of

the Wissenschaftliche Veröffentlichungen and a new series, Abhandlungen, was established.

Independent fieldwork began again in 1968, with excavations at Habuba Kabira and Munbaqa in Syria, under the presidency of Ernst Heinrich. This work continues, as does publication of the results and the finds from earlier projects. Of special significance is the rich material from Aššur housed in the Vorderasiatisches Museum in Berlin, which is in an advanced stage of preparation for publication. Recent papers appear in the periodical *Mitteilungen der Deutschen Orient-Gesellschaft*. Today the society has about eight hundred members and is actively engaged in scholarly work concerning the ancient Near East, with an emphasis on Mesopotamia and northern Syria.

[*See also the biographies of Andrae and Koldewey.*]

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VOLKMAR FRITZ

DEUTSCHER PALÄSTINA-VEREIN. By 1876 the need for a scientific society to coordinate and support the efforts of German scholars exploring Palestine—Arabists, archaeologists, geographers, historians, Orientalists, theologians—became urgent. In addition the religious and scientific interests of scholars and scientific societies in Palestine were in competition. The initiative to establish the Deutscher Palästina-Verein (German Palestine Society) finally came from the Basel rector Carl Ferdinand Zimmermann (d. 1889). He met at Bâle with the biblical scholar Emil Kautzsch and the Arabist Albert Socin, who was at Tübingen in summer 1876 to discuss founding a Palestine society. Their recommendation was then sent to fifteen distinguished scholars who might serve as its governing committee. The three men presented their plans to the members of the Deutsche Morgenländische Gesellschaft (German Oriental Society) that same year. The conceptualization of the future society was refined and a new proposal was sent to about seventy scholars in Germany, Austria, Switzerland, and Russia requesting support. In 1877 Kautzsch, Socin, and Zimmermann distributed a proposal to the general public bearing the signatures of fifty-two respected individuals. Within a short time about fifty members enrolled in the new society. The three initiators held a meeting of the constituents at Wiesbaden, on 28 September 1877, the Deutscher Verein zur Erforschung Palästinas (German Society for the Exploration of Palestine) was formally founded; rules for the society were adopted and a committee of nineteen and an executive committee of five established.

The society's goals are to advance all aspects of the scientific exploration of Palestine and to make those activities accessible to a wide audience. Their aims were to be achieved through the publication of a journal and by scientific research in Palestine, be carried out by a German field expedition. To that end, a portion of the membership fees and other monies would contribute to an expedition fund. The legal seat of the society was to be at Leipzig. From 1877 to 1903 the society's affairs were managed by the first members of the executive committee: Hermann Guthe, Kautzsch, Otto Kersten, Socin, and Zimmermann. Beginning in 1903, one member of the committee served as chair: Kautzsch (1903–1910); Guthe, (1911–1925); Albrecht Alt (1925–1950); Martin Noth (1952–1964); Otto Plöger (1964–1974); Herbert Donner (1975–1992); and Helga Weippert (since 1993). Membership remains relatively constant: in 1879 it was 268; from 1911 onward it was more than 400; in 1920 it dwindled to 273 but reached a new peak in 1929 of 391; it fell again to 255 in 1942 and to 114 in 1964. Since then membership has climbed to 360 (1995).

The founders of the society planned a journal, the *Zeitschrift des Deutschen Palästina Vereins* (*ZDPV*), to report on topographic, ethnographic, historical, numismatic, epigraphic, and archaeological problems as well as on subjects in the natural sciences (e.g., geology, climatology) relevant to the study of Palestine and its neighboring countries—articles that would advance knowledge of the Bible. It was also to contain critical summaries of relevant foreign scholarly literature and statistical and political news about the conditions of life in modern Palestine. The first issue appeared in April 1878; volume 110 appeared in 1994. The editors were Guthe (1878–1896); Immanuel Benzinger (1897–1902); Carl Steuernagel (1903–1928); Noth (1929–1964); and Arnulf Kuschke (1965–1974). Since 1974 Siegfried Mittmann and Manfred Weippert have been co-editors; Weippert was succeeded by Dieter Vieweger in 1994.

News about the society and reports on different general subjects were published separately from 1895 to 1912 as *Mitteilungen und Nachrichten des Deutschen Vereins zur Erforschung Palästinas* (edited by Guthe until 1901 and then by Gustav Hölscher). In addition, from 1914 to 1927 the society published *Das Land der Bibel: gemeinverständliche Hefte zur Palästinakunde*, a more popular series (edited by Hölscher and then by Peter Thomsen). To supplement the *ZDPV*, a new series, *Abhandlungen des deutschen Palästina-Vereins*, was established in 1969 to publish longer monographs.

Another prominent institution, the German Protestant Institute of Archaeology of the Holy Land, directed from 1902 to 1917 by Gustav Dalman, is organized and financed by the German Protestant Churches; it is completely independent of the German Palestine Society, but a close cooperation exists between them and they share a roster of prominent members, mostly biblical scholars and theologians. [*See*

Deutches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes.]

The history of the German Palestine Society can be divided into four periods, with the activities of major figures often belonging to more than one of them.

1877–1918. As documented in the *ZDPV* and other publications, the society shaped the various aspects of the new discipline of *Palästinakunde* (the historical geography and archaeology of Palestine). Research on the architecture and topography of Jerusalem and its surroundings was carried out by such pioneers at Conrad Schick (1822–1902) who, in 1880, discovered the Siloam Tunnel inscription (*ZDPV* 3, 1880): Schick published about fifty articles in the *ZDPV*. [See Siloam Tunnel Inscription; *and the biography of Schick.*] In 1881 Guthe conducted the first excavations on behalf of the society. His work on Jerusalem's southeastern hill (the Ophel) was carried out on a small scale, before systematic excavation methods had been developed (*ZDPV* 5, 1882). [*See* Jerusalem.] Gottlieb Schumacher (1857–1925), the architect and cartographer, began surveying parts of Transjordan in 1884 on behalf of the society; between 1906 and 1924 he published the maps the work produced. From 1903 to 1905 Schumacher directed the society's first (and last) large-scale excavation at Megiddo, except the fall season of 1903, which was led by Benzinger (Silberman, 1982, p. 169). [*See* Megiddo; *and the biographies of Schumacher and Benzinger.*] Max Blanckenhorn, a geologist, investigated the geology of Palestine; beginning in 1894 he installed a series of weather bureaus for the society and published the results of his observations (e.g., temperature, rainfall, wind) in the *ZDPV* annually. In 1901 the society underwrote the drawing of the mosaic map of Madaba discovered in 1884. [*See* Madaba.] This was completed by the Jerusalem architect Paul Palmer and was subsequently published in 1906 by him and Guthe. The excavations of Ernst Sellin (1902–1904) at Ta'anach, with Schumacher's temporary assistance, and at Jericho (1907–1909) with Carl Watzinger, as well as his preliminary work at Shechem (1913–1914), belong to this pioneering period. In particular, the exactness of the descriptions in the report on Jericho (1913) makes it still useful. [*See* Ta'anach; Jericho; Shechem; *and the biography of Sellin.*] The research of Heinrich Kohl and Watzinger on synagogues in Galilee (published in 1916) represent another aspect of the discipline, now also covering the New Testament period. Gustaf Dalman's research on topography and ethnology was intensive during this period as well. Already in 1908, 1913, and 1915–1917 Albrecht Alt worked in Jerusalem. [*See the biographies of Watzinger, Dalman, and Alt.*]

1919–1932. In spite of Germany's political and economic difficulties after World War I, the interdisciplinary, interreligious, and international cooperation of the society and its foreign members grew constantly. A new generation came into office: Alt was elected to the society's executive committee in 1923 and became chairman in 1925; Noth became editor of the *ZDPV* in 1929 (see above). Whereas the society's only project in Palestine was its series of weather bureaus, the Deutsches Evangelisches Institut in Jerusalem (see above), directed by Alt from 1921 to 1923, gained new importance: German scholars assembled there to continue their research. From 1924 to 1931, Alt conducted an annual *lehrkurs* (seminar) for a period of three or four months. He placed more emphasis on the history of Palestine than on ethnology, as Dalman had done. During field trips, reconnaissance of small areas was carried out by thorough surveys and ceramic sherds at settlement sites were collected and read as basic sources for the history and patterns of those settlements. The stress Alt placed on the close connection between research on the land (archaeology through survey and excavation) and critical readings of the biblical text (exegesis) in reconstructing a history of Palestine was the main contribution he (and his generation) made to the discipline of biblical archaeology.

Other major figures working in Palestine during this period include Sellin at Shechem (1926–1927, 1932 and 1934); Kurt Galling at Shechem with Sellin (1926) and at Tell Beit Mirsim with William Foxwell Albright (1930). Joachim Jeremias a New Testament scholar did research in Jerusalem (1931, 1932); and Noth, scholarship student at the institute in 1925, was a guest there of the *lehrkurs* (1931, 1933). This group of distinguished scholars subsequently published important books or articles based on the research they developed during their respective stays in Palestine.

1933–1964. Hitler's rise to power in 1933 was very soon felt by Alt and others as a danger to the work of the society (and the institute) at home and in Palestine. Because the Nazi authorities did not make sufficient foreign exchange available to the institute and because of the political disturbances in Palestine, Alt was no longer able to offer the *lehrkurs*. In addition, he and a few other scholars could travel to Palestine only sporadically and work there for only some months respectively doing their research: Alt was there in 1933 and 1935, also taking some field trips. From July to September 1935 Galling continued Dalman's research on the necropolis in Jerusalem and finished it (*Palästina Jahrbuch* 32 [1936]: 73–101); he took some short field trips in 1937 and 1938. His *Biblisches Reallexikon* was published 1937. In it, for the first time, mainly archaeological findings were used to describe the subjects of the entries, a first attempt to develop within the discipline of biblical archaeology the topic of "systematic archaeology." [*See the biography of Galling.*] The beginning of World War II put a stop to research in Palestine, only the *ZDPV* was still published, from volume 62 (1939) to volume 67 (1944). In 1943 the society lost its entire archive in Leipzig: all its files and stock of

publications from 1877 onward, its library, and its ethnological and archaeological collections. From 1945 to 1952 the society's activities were—out of political and even legal reasons—completely suspended and therefore the *ZDPV* could not be published. Instead from 1946 onward Noth edited three issues of *Beiträge zur biblischen Landes- und Alterumskunde*, 1951, which was counted as volume 68 of the *ZDPV*. By 1950 the society, whose legal seat was still at Leipzig, was liquidated by the East German authorities, but on 31 July 1952, it was reestablished in West Germany, in Bonn. Noth, still editor of the *ZDPV*, also became its chairman. [*See the biography of Noth.*] After that the *ZDPV* has been published again continuously from volume 69 (1953) onward. Slowly, studies in *Palästinakunde*, mainly by the above-named scholars, began again. The *lehrkurs* at the institute, then located in the Old City of Jerusalem (Jordan), was resumed in 1953, the first conducted by Galling.

Since 1965. The *ZDPV*, again a journal of international repute, is publishing more articles by foreign scholars. In 1964 Noth was nominated director of the institute in Jerusalem. However, expectations for furthering *Palästinakunde* were destroyed by his early death in 1968. Since 1970 young German scholars have begun taking part in excavations: Kuschke, Mittmann, Martin Metzger, Ute Lux, and August Strobel in Lebanon and Jordan; and Volkman Fritz and Diethelm Conrad in Israel. The society now organizes symposia, the first two of which took place in 1977 and 1982. Since 1988 they have been held every two years. It is through these activities that the German Palestine Society and its members hope to make a special contribution to *Palästinakunde*, or biblical archaeology, further developing the best traditions of Alt and Noth.

[*See also* Biblical Archaeology.]

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To date, no comprehensive history of the society has been published. Because the archive of the society was destroyed in 1943, all facts had to be extracted from the society's publications: *Zeitschrift des Deutschen Palästina-Vereins*, vols. 1–67 (Leipzig, 1878–1944/45), and vols. 69/110 (Wiesbaden, 1953–1994); *Mitteilungen und Nachrichten* (Leipzig, 1895–1912); and from *Palästinajahrbuch des Deutschen Evangelischen Instituts für Altertumswissenschaft des Heiligen Landes zu Jerusalem* (Leipzig, 1905–1941). The latter is the organ of the institute, with news on its activities and important articles on results of research. The reader may also consult the following:

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Kautzsch, E. "Vorwort." *Zeitschrift des Deutschen Palästina-Vereins* 1 (1878): 1–9. Preface to the first volume of *ZDPV*, containing details about the founding of the society.

Silberman, Neil Asher. *Digging for God and Country: Exploration, Archaeology, and the Secret Struggle for the Holy Land, 1799–1917*. New York, 1982. Explores the connections between religiously motivated scientific exploration of Palestine in the nineteenth century and the political struggles among rival European powers for dominance in the region.

Steuernagel, Carl. "Ein Rückblick auf 50 Jahre der ZDPV." *Zeitschrift des Deutschen Palästina-Vereins* 51 (1928): 1–4. Review of the main stages of the then fifty-year-old journal.

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DIETHELM CONRAD

DEUTSCHES ARCHÄOLOGISCHES INSTITUT, ABTEILUNG DAMASKUS. The founding of the Deutsches Archäologisches Institut (DAI; German Archaeological Institute) in Damascus in 1980 came out of the long-standing tradition of German archaeological research in Syria. The institute, which opened in 1981, works in close cooperation with the Syrian Directorate General of Antiquities and Museums. The institute supports the investigation of all archaeologically relevant periods in Syria and its neighboring regions. At present, the emphasis of its research is on the Late Bronze Age, Roman, Byzantine, and Islamic periods. In addition to numerous small survey and conservation projects, work is underway at the following sites: at Late Bronze Age Tell Bazi at Tishrin (rescue excavations directed by Berthold Einwag); Roman (first–third centuries CE) temple complexes in the Hauran (at Atil, Brekeh, Mushennef, Qanawat, as-Sanamain, directed by Stefan Freyberger); a Roman (second–third centuries CE) temple complex in Middle Syria, (Temple of Esriye, with a survey of the adjoining settlement, directed by Rüdiger Gogräfe); a third-century temple grave at Palmyra (no. 36, a joint project of the DAI and the Antiquities Administration of Palmyra, directed by Andreas Schmidt-Colinet and Khaled al-As'ad); the first–sixth-century limes on the Middle Euphrates River (Qseir es-Seile/Tetrapyrgium and Sura, directed by Tilo Ulbert and Michaela Konrad); Rusafa/Sergiopolis (first–thirteenth-century martyr's city of St. Sergius, directed by Ulbert); ar-Raqqa, the eighth-century palace city of the ʿAbbasid caliph Harun al-Rashid (rescue excavations directed by Michael Meinecke until his death); and the fourteenth-century Hammam Manǧak at Bosra (restoration and construction of a small Islamic museum, a joint project of the DAI and the Antiquities Administration of Bosra, directed by Meinecke and Riad al-Muqdad).

The institute houses a specialized library, which is open to the public and currently contains about eight thousand volumes, as well as a photo library with about twenty-five thousand negatives and a slide library. Its publications are *Damaszener Mitteilungen* (*DaM*) a periodical with essays by international researchers covering the institute's entire field

of activity—so far volumes 1 (1983) through 6 (1993) have appeared; and *Damaszener Forschungen* (*DaF*) a monograph series, of which five volumes have appeared.

[*See also* Bosra; Palmyra; Raqqa, ar-; *and* Rusafa.]

TILO ULBERT

Translated from German by Susan I. Schiedel

DEUTSCHES ARCHÄOLOGISCHES INSTITUT, ABTEILUNG ISTANBUL. One of the nine branches of the German Archaeological Institute (DAI) in Berlin in countries in the Mediterranean basin and the Near East, the institute in Istanbul was founded in 1929 to organize German archaeological research in Turkey. That research had begun with surveys and excavations in Anatolia in 1828 by F. E. Schulz, A. D. Mordtmann, Heinrich Schliemann, Karl Humann, Theodor Wiegand, Wilhelm Dörpfeld, and many others. As a result of the interest the newly established Republic of Turkey took in the country's history, the goals of the DAI in Istanbul were defined in a much wider sense than just archaeology. They comprise research and publications on all the cultures of Anatolia from prehistoric times until the end of the Ottoman Empire. The DAI's staff of thirty in Istanbul includes eight German scholars in prehistorical and classical archaeology, Byzantine studies, the history of architecture, and turcology. The institute cooperates with Turkish universities in research and teaching and provides a library of about 55,000 volumes, including 245 scholarly periodicals.

An archive of about 150,000 photographs of archaeological objects and sites in Anatolia also includes a collection of negatives and prints from 1860 to 1920. Under the auspices of the institute, prominent scholars have made considerable contributions to what is known of Anatolia's history and culture: Kurt Bittel in prehistory and the Hittites; Rudolf Naumann in Hittite and classical architecture; Martin Schede in classical archaeology and architecture; Alfons Maria Schneider in the history of Byzantium; Wolfgang Müller-Wiener in the topography of Istanbul; Paul Wittek in Ottoman history; and Kurt Erdmann in Islamic art.

Currently, the institute is involved in archaeological excavations and to some extent in restoration at the Hittite capital city of Boğzköy/Hattuša, the ancient city of Miletus, the classical cities of Aizanoi, Miletus, Pergamon, and Priene, and the classical sanctuary at Didyma. In Istanbul, topographic surveys and research on single monuments have always been part of the institute's program.

The institute publishes the yearbook *Istanbuler Mitteilungen* (Tübingen, 1966–) with occasional monographs and the series of *Istanbuler Forschungen* (Berlin, 1932–). Some of its reports appear in the *Archäologischer Anzeiger*, Berlin.

[*See also* Boğazköy; Didyma; Miletus; Pergamon; Priene; *and the biography of Schliemann.*]

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WOLF KOENIGS

DEUTSCHES EVANGELISCHES INSTITUT FÜR ALTERTUMSWISSENSCHAFT DES HEILIGEN LANDES. The German Protestant Institute for Archaeology of the Holy Land, located in Jerusalem, was founded in 1900 by Germany's Protestant churches and has been sponsored by them ever since. The first director, Gustaf Dalman (1902–1917), initiated a wide range of activities—his own major fields having been the ethnography of Palestine, tombs in the vicinity of Jerusalem, and Petra. During the British Mandate, Albrecht Alt was appointed director; Alt did not actually reside in Jerusalem but, conducted the famous summer courses about aspects of his research in historical geography in the country. The institute was closed during World War II but was reopened by Martin Noth in 1964. After Noth's untimely death in 1968, Ute Lux served as director until 1982. Lux excavated at Gadara (Umm Qeis). A branch of the institute was founded in Amman in 1973. The institute in Jerusalem was directed, from 1982 until 1992, by August Strobel, who undertook several excavation projects in Jordan. Volkmar Fritz, appointed director in 1994, is continuing the tradition of geographic research and archaeological projects.

From the beginning, the work of the institute was handicapped by the lack of its own building. Then, in 1982, a house in the compound of the German Augusta Victoria Compound on Mt. Scopus was made available as the institute's center. A board of trustees representing German churches and theological faculties is responsible for its budget and staffing.

Between 1905 and 1941, the institute published a yearbook, *Palästina Jahrbuch*, founded by Dalman and later edited by Alt. In 1989, Strobel revived it as the *Jahrbuch des Deutschen Evangelischen Instituts für Altertumswissenschaft des Heilingen Landes*. Articles on the activities of the institute also appear in the *Zeitschrift des Deutschen Palästina-Vereins (ZDPV)*.

[*See also* Historical Geography; Jerusalem; Petra; Umm Qeis; *and the biographies of Alt, Dalman, and Noth.*]

VOLKMAR FRITZ

DE VAUX, ROLAND. *See* Vaux, Roland de.

DEVELOPMENT AND ARCHAEOLOGY.

Nowhere has the dialogue between the past and the present had a greater impact on current economic, political, and religious realities than in the modern nation-states of the ancient Near East. There, the past is visible in nearly every field, village, town, and city, often creating a sense of identity and continuity, or in some cases alienation, for its modern inhabitants. Throughout all periods of time, the past was visible as ruins above the surface, inspiring curiosity and speculation from travelers and pilgrims, who saw in them their own religious and political heritage, and from local inhabitants, who saw the ruins as landmarks and as part of the natural landscape, often connected with local legend or holding traditional significance.

Since the nineteenth century, archaeological excavation, or the systematic recovery and recording of ancient ruins, has revealed the concealed past. During the period of domination of the Near East by foreign powers and until World War II, most archaeological investigations were directed and sponsored by individuals or private institutions from the industrialized Western world who had religious or academic research goals; they, in turn, were often encouraged by national or government institutions having an imperialistic agenda in the Near East. The excavations were almost exclusively financed by private or foreign government funds and were initiated because of a site's historic or biblical significance—Jerusalem, Megiddo, Beth-Shean, Samaria, and Jericho in Palestine. [*See* Jerusalem; Megiddo; Beth-Shean; Samaria; Jericho.] However, during the last half of the twentieth century, with the creation of independent nation-states and their increasing economic prosperity, locally directed and locally funded excavations often outnumber foreign expeditions. [*See* Nationalism and Archaeology.]

Today, archaeology is financially accountable to economic forces. Private and government agencies concerned with conservation and the presentation of public sites employ large numbers of trained archaeologists and are keen to promote contract archaeology connected with land development. Fewer and fewer sites are being excavated purely for research purposes: they are being excavated because of their impending destruction or their commercial, national, or touristic value.

A recent phenomenon is the growing influx of foreign tourism to the region of the ancient Near East as a result not only of the romantic appeal of its great cultures and their religious significance, but to the open borders resulting from peace treaties between Arab nations and Israel. The massive rise in revenues from foreign tourism has added incentive to preserving and presenting ancient ruins: the past is now understood to be a valuable natural resource. The use of archaeology to encourage tourism and economic development in an underdeveloped town or region has made it a tool for solving social and economic problems, as well.

Thus, archaeological excavation for the sake of tourism is an impetus to development, and development creates a need for more archaeological work in the form of salvage excavation. Conflicting needs exist however: excavation, preservation, and publication costs compete for funds with construction and development and the desires of local populations. This competition often forces difficult compromises between economic profit and the ideal of preserving the past.

Impact of the Past. Although development affects archaeological remains and historic buildings throughout the world, in the Near East the situation is especially complex because multilayered, or stratified, tells characterize many sites. The overlay of periods, cultures, and peoples requires choosing which part of the past is to be preserved: whether the Hittites, Canaanites, Egyptians, Philistines, Israelites, Assyrians, Phoenicians, Babylonians, Persians, Greeks, Romans, Arabs, Crusaders, Mamluks, Ottoman Turks, or Palestinians (both Jewish and Arab) are to be highlighted on the personal, political, or economic criteria of the body within the society that chooses to initiate a project. In short, the "victor" writes and interprets the past.

Economic development and archaeology have been especially intertwined in modern Egypt. Under colonial rule, Egypt experienced massive looting of its ancient treasures, particularly by European explorers, conquerors, and scholars. Following independence from British colonial rule, many Egyptians closely identified with the glories of pharaonic Egypt—most notably during the governments of Gamal Abdel Nasser and Anwar Sadat. Today, however, Islamic fundamentalists view the pharaohs as the evil oppressors they have been portrayed as in Islamic literature and Muslim tradition. It is the ancient monuments of the pharaohs, visited by millions of tourists each year, that provide one of Egypt's most important sources of foreign currency. The significance of tourism generated by the archaeological treasures of Egypt and the vulnerability of this source of income are illustrated by the attacks on tourists by Islamic fundamentalist groups attempting to influence political developments.

Ancient Nubia, located in modern southern Egypt, is the site of perhaps the best-known international archaeological rescue operation of the twentieth century. [*See* Nubia.] In the 1960s, the Aswan High Dam and Lake Nasser were created in this region of Upper Egypt, where the New Kingdom pharaoh Rameses II constructed numerous rock-cut temples. As a result of the construction, a number of those monuments were removed and reconstructed at different sites, following an appeal by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to its member states to assist in a rescue operation. At Abu Simbel, the site of the most spectacular temples, the temple facades and walls were dismantled and re-sited next to Lake Nasser. To-

day, these temples are one of Egypt's most popular tourist spots. [*See* Abu Simbel.]

Ironically, the very source for much of Egypt's economic development also is the greatest threat to its future: Egyptian authorities have become increasingly concerned with conserving the country's treasures—its pyramids, sphinx, and several of the decorated New Kingdom tombs at ancient Thebes. The tomb of Nefertari has been the subject of an extensive renovation and conservation project by the Egyptian Antiquities Organization and the Getty Conservation Institute in California. Now reopened, only a limited number of tourists are allowed to view the tomb, under carefully controlled conditions.

During the 1970s, Carthage, an important Phoenician and Roman port located near Tunis, the modern capital of Tunisia, was the focus of a second international campaign commissioned by UNESCO. Rapid urban and tourist development along the Tunisian coast was threatening the ancient remains of Carthage. With the cooperation of the Institut National d'Archéologie et d'Art, the Tunisian authority responsible for antiquities, and under the aegis of UNESCO, international teams were invited to assist in the excavation and presentation of the city's archaeology. Ten foreign missions participated in the Save Carthage Project in the 1970s and early 1980s. They were required, in addition to funding the excavations and their publication, to finance its touristic presentation. Today, Carthage appears on the World Heritage List and is a national park. [*See* Carthage.]

In the Republic of Turkey, considerable funding has been allotted to excavating Neolithic and Bronze Age sites in Asia Minor, especially ancient Hittite sites, with an eye toward highlighting Turkey's glorious non-Islamic past. [*See* Hittites.] More recently, with the massive growth of tourism, especially along Turkey's western coast, the focus has shifted to the splendors of classical Turkey in the Hellenistic and Roman periods: Ephesus, Pamukale, Aphrodisias, Sardis, and Pergamon have been extensively excavated and restored for tourism, completely transforming the economic base and development of many villages and towns, such as Kusadasi, Bodrum/Halikarnassos, Marmaris, and Antalia. [*See* Ephesus; Aphrodisias; Sardis; Pergamon; Halikarnassos.]

Since achieving independence in 1960, Cyprus has also had to contend with the pressures of local development, especially following the 1974 partition that divided the island into two sections, a Turkish enclave in the north and a Greek Cypriot one in the south. [*See* Cyprus.] This resulted in a migration of Greek refugees to the south and compounded pressures on the island's infrastructure. During the 1970s and 1980s, Cyprus's rapidly developing economy encouraged private, commercial, and government construction. In addition to the needs generated by an increased population, tourism to the south (especially in Limassol and Paphos) demanded rapid development of the coastal cities. [*See* Paphos.] During the course of construction activities, a number of significant sites requiring salvage excavation were revealed. Kalavasos-*Ayios Dhimitrios* (an important Late Bronze Age settlement located between Nicosia and Limassol), Skales (an Iron Age cemetery near Palaipaphos), and Amathus (a Phoenician settlement east of Limassol) have undergone emergency salvage excavations by both the Cypriot Department of Antiquities and foreign expeditions. [*See* Kalavasos; Amathus.]

The premiere site and major tourist attraction on Cyprus, Nea-Paphos, was the capital of ancient Cyprus during the Hellenistic and Roman periods and played an important role in the spread of Christianity. The archaeological site, the only open space in an otherwise overdeveloped area, is known for its richly decorated mosaic pavements dating to the Roman period. [*See* Mosaics.] The site, which since 1980 has appeared on UNESCO's World Heritage List, has become a symbol of Greek Cypriot cultural heritage for its modern inhabitants, especially since the division of the island. Today, Nea-Paphos is a major source of revenue and economic development for modern Paphos.

Jordan, a region largely undeveloped and unexcavated until the 1970s, is now a focus of increasing archaeological exploration and economic development. In 1987, the Jordanian government adopted an organized approach to the problem of archaeological heritage and economic activities, combining governmental, private, and academic agencies and organizations into a cooperative program referred to as the Jordan Cultural Resource Management (CRM) Project. It is supported by the Department of Antiquities of Jordan, the American Center of Oriental Research (ACOR), and the United States Agency for International Development (USAID). [*See* American Center of Oriental Research.] Its goals include encouraging communication and coordination among the departments, organizations, and agencies involved in preserving Jordan's cultural heritage and developing its economy; assisting in salvage excavations at endangered sites; and training and educating professional staff—local and international members of the archaeological community. CRM contributed to the development of a computerized database for ancient sites in Jordan: the Jordan Antiquities Database and Information System (JADIS), designed to assist in planning the future development and protection of cultural resources. Initially, the CRM project focused on salvage excavations—especially in the rapidly growing metropolis of Amman, but in areas outside the capital city as well—and on cultural resource management. [*See* Amman.] In the 1990s, USAID funding of archaeological activities in Jordan shifted from rescue excavations and cultural resource management to tourist-oriented projects, such as those at Aila (the ancient Islamic port of ʿAqaba), restoration of the Amman Citadel, the Madaba Urban De-

velopment Project, the Umm Qeis/Gadara Museum, the Pella rest stop, and the Petra Church Project. [*See* ʿAqaba; Madaba; Umm Qeis; Pella; Petra.]

Antiquities in Lebanon, a country devastated by civil war from 1975 to 1990, were not only damaged during hostilities but were victims of large-scale looting. During the chaos that reigned following the mid-1970s, the country's heritage was plundered for profit on the antiquities market. Although an illicit antiquities market exists throughout the region, Lebanon has been the most severely affected by illegal excavations, to supply the demands of primarily foreign private collectors. [*See* Ethics and Archaeology.]

Lebanon's economic recovery from civil war, beginning in the early 1990s, included the massive development and reconstruction of many of its cities. Its population's urgent needs and the desire for rapid economic recovery clashed with preserving an archaeological heritage that spans the Canaanite, Phoenician, Roman, Byzantine, Crusader, and Islamic periods. An international team of archaeologists from Europe and Lebanon began conducting salvage excavations in 1993 over an area of about 48,000 sq m in downtown Beirut, currently being rebuilt by SOLIDERE, Lebanon's largest commercial enterprise. [*See* Beirut.] While the fate of many of these ancient structures remains in question, on 6 November 1995, Reuter Information Service in Beirut reported increasing public interest and personal identification with the antiquities being uncovered in salvage excavations in the city's center.

Archaeology played a key role in the modern State of Israel's political, cultural, and economic development even before the establishment of the state in 1948. With the increasing Jewish immigration to Palestine following World War I, Palestinian Jewish scholars became involved in the archaeology of ancient synagogues, finding personal identification and political justification in discovering Israelite and early Jewish remains. The focus of Israel's newly established Department of Antiquities was on the excavation, preservation, and restoration of sites exhibiting clear evidence of a Jewish presence in antiquity. In the 1950s, the Government Committee for the Preservation of Landscape and Antiquities (today the Israel National Parks Authority) was created to administer archaeological sites considered to be of national interest. Attention during the 1950s and 1960s was directed toward the excavation and reconstruction of monumental Crusader castles, such as those at Caesarea and Belvoir, and of Christian Byzantine churches, in order to attract Christian pilgrims. [*See* Crusader Period; Caesarea; Churches.] The only two biblical sites open to the public were Megiddo, excavated between the two world wars by the Oriental Institute at the University of Chicago, and Hazor, excavated with support from James A. de Rothschild, the Anglo-Israel Exploration Society, and the Government of Israel, in the late 1950s and early 1960s. [*See* Hazor.]

In the 1960s, Masada was excavated and soon became the most visited site in Israel. [*See* Masada.] Located in the Judean Desert on a cliff overlooking the Dead Sea, the visual impact of the site and evocation of the events that took place there during the First Jewish Revolt against Rome inspired an entire generation of Israelis who saw in Masada a romantic symbol of the besieged modern state. [*See* First Jewish Revolt.] The 1960s also witnessed heightened archaeological activity in the Negev desert, a by-product of Prime Minister David Ben Gurion's vision of developing the Negev for Jewish immigration. [*See* Negev.] Large-scale excavations and reconstruction were conducted at a number of Nabatean sites there—at Avdat, Kurnub, and Shivtah/Subeita—and were opened to the public by the National Parks Authority. [*See* Nabateans; Avdat; Kurnub; Subeita.]

Following the Six-Day War in 1967 and the resulting Israeli sovereignty over the eastern part of Jerusalem, historical and biblical Jerusalem became accessible to Israelis for the first time since 1948. The impact of a unified Jerusalem on the city's economic and archaeological development is reflected in the three large-scale excavations begun in its eastern part shortly after the Six-Day War: along the southern and western walls of the Temple Mount, in the historic Jewish Quarter within the walls of Old City, and later in the City of David, located at the edge of the Kidron Valley in the Arab village of Silwan. [*See* Jerusalem.]

The renewed excavations (1978–1984) in the City of David were sponsored by the City of David Society, the Institute of Archaeology of the Hebrew University, the Israel Exploration Society, and the Jerusalem Foundation. [*See* Israel Exploration Society.] The goals were to excavate, preserve, and restore the archaeological remains on government lands in Jerusalem's historic core. Since the conclusion of those excavations, the site has at times become a focal point of debate regarding land ownership and residential development in Jerusalem. Today the site is an archaeological park. It was there that the opening ceremonies took place in 1995 to mark the three-thousand-year anniversary of the establishment of Jerusalem as King David's capital.

The renovation of the Jewish Quarter by the Company for the Reconstruction and Development of the Jewish Quarter, established by the Israeli government and the Institute of Archaeology of the Hebrew University of Jerusalem, entailed extensive excavations of and below pre-1948 (medieval- and Ottoman-period) buildings. Significant Roman- and Byzantine-period remains are incorporated or preserved as part of or below the restored and reconstructed houses in the Jewish Quarter, and several underground archaeological sites are now open to the public. Jewish families who inhabited the quarter before 1948 were encouraged to return to live in its renovated houses as a means of engendering a strong identification and sense of continuity with the past. Because many Arab families were relocated to ac-

commodate the demographic change, the Israeli excavations in the Jewish Quarter and near the Western Wall of the Temple Mount met with considerable criticism on a political level.

A similar renovation project underway in the Old City of Akko in Israel is the combined restoration of currently inhabited houses and structures of historic interest with the excavation of the well-preserved Crusader city beneath the modern dwellings. [*See* Akko.] This endeavor, under the auspices of the Israel Government Tourist Corporation, the Old Acre Development Company, the Israel Antiquities Authority, and the Ministry of Tourism, involving one of the best-preserved towns of the Ottoman period in the region, is proceeding without displacing the inhabitants. [*See* Israel Antiquities Authority.]

Archaeological sites in Israel are occasionally excavated and developed because of local interest and national identification. The modern Jewish city of Qazrin, located in the Golan Heights, was established in the mid-1970s because of its proximity to the ancient site of Qaṣrin, a Jewish village and synagogue dating to the Byzantine period (fourth–eighth centuries CE). Excavations and subsequent reconstruction of the village, under the auspices of the Qazrin Local Council and the Israel Government Tourist Corporation, have created a popular tourist site that provides employment opportunities for residents. Ancient Qaṣrin has also become, for many Golan residents, a symbol of modern Jewish settlement in the Golan and is the setting for community celebrations and political rallies. [*See* Qaṣrin; Golan.]

A different, and largely ignored, past is significant to the Palestinian population. The Palestinian link with the past is mainly through the traditional village—the settlement type that predominated for the last thirteen centuries of Palestine's history. From 1948 to 1950, during and following the establishment of the State of Israel, many of those villages were obliterated, severing the connection many Palestinians had with the land. As a result, there has been limited interest by, and even the alienation of, the Arab population in the archaeology of Israel. Today, there is renewed interest among Palestinian scholars in documenting and preserving traditional houses in towns such as Ramallah and in excavating Ottoman villages such Jenin and Ta'anach on the west bank of the Jordan River. [*See* Ta'anach.]

The 1990s ushered in a new era of archaeological investigation in Israel closely tied to national economic interests. This coincided with the establishment in 1990 of an independent authority, the Israel Antiquities Authority, with expanded jurisdiction over archaeological sites in Israel, replacing the Israel Department of Antiquities. The decade has been characterized by the excavation of major archaeological sites of national significance undertaken to encourage tourism and development. The year-round excavations at the classical (Hellenistic–Byzantine periods) sites of Beth-Shean, Caesarea, and Mareshah/Beth-Guvrin were initiated primarily to solve local social and economic (employment) problems. [*See* Mareshah.] In addition, large-scale construction (the response, in part, to massive immigration from countries belonging to the former Soviet Union), has required unprecedented salvage excavations at hundreds of sites yearly. The large residential communities currently under construction in the northern suburbs of Jerusalem, in Modi'in (north of Jerusalem), and in Beth-Shemesh; the construction of Highway 6 transversing the country from north to south; and a series of bypass routes on the west bank of the Jordan have not only resulted in an unprecedented number of excavations, but have transformed the local topography. [*See* Beth-Shemesh.] A landscape has been created that never existed. Although a number of sites will be preserved or not excavated, the new residential communities will create artificial "islands" of cultural heritage cut off from their natural setting. Thus, in the 1990s in Israel archaeology became inseparable from tourism, economic development, and growth.

This rapid development and the resulting increase in salvage excavations and attempts to preserve Israel's cultural heritage have been challenged by several sectors of the Israeli populace. At a number of construction sites, Jewish tombs have been inadvertently uncovered, requiring salvage excavations. The removal of human bones from their final resting place, forbidden by Jewish religous law, and their disturbance by bulldozers or archaeologists have provoked violent demonstrations and political upheaval. Compromise solutions have included the rerouting of major roads or the cessation of excavations and the sealing of tombs thought to be Jewish. Development has also been prevented on the Ḥaram esh-Sharif (the Temple Mount), the region's most significant site for Jews, Christians, and Muslims. Today, it is under Muslim jurisdiction, with Israel honoring an arrangement made when the eastern part of Jerusalem was under Jordanian rule before 1967. Because of Muslim concerns over the character and future of the site and of fears enforced by several attempts in recent decades to destroy Islamic structures on the Ḥaram, all archaeological activity there is forbidden. The battle over whose past is presented in Jerusalem has extended to the south of the Temple Mount, where excavations uncovered not only the glories of Herod's Jerusalem but also public structures dating to the Umayyad period. [*See* Umayyad Caliphate.] Municipal plans to reconstruct and preserve the Umayyad monuments were met with demonstrations by nationalistic groups in Israel who oppose presenting Islamic Jerusalem to the public.

Future of the Past. The threat to the past presented by development in the majority of modern nation-states in the ancient Near East is unprecedented in history as a result of population growth, economic prosperity, and the earth-moving machines used in today's building projects. The

ideal is a balanced approach to preserving cultural heritage without unnecessarily impeding economic growth and development. Several measures need to be taken in advance of planned development, including surveys and inventories of sites and historic buildings. This policy has been implemented, with varying degrees of success in Israel and Jordan, and on a smaller scale in surrounding countries. Close coordination needs to be encouraged and enforced by government agencies, municipalities, and private contractors on the one hand, and by departments of antiquities on the other, to minimize damage to archaeological sites and to avoid unnecessary delays or expense to contractors and investors. Cooperation during initial planning stages can often benefit all parties. Local and foreign tourism are encouraged through well-conserved sites accessible to the public and by public buildings and residential neighborhoods in which archaeological remains are preserved or incorporated into modern structures.

To effectively manage historical and archaeological resources, clear legal, planning, policy, and academic frameworks are necessary. Such well-defined guidelines can assist greatly in resolving the conflicts of interest that are unavoidable when development affects archaeological remains. Relevant information must be accessible to decision makers involved in planning and development as well as to those protecting archaeological resources. The management of archaeological sites, particularly in an urban environment, requires a well-trained, professional staff as well as funding and other resources to collect and record archaeological remains and to implement policy.

Tourism requires infrastructure and facilities for visitors to sites in order to avoid adverse effects on the environment of a region and on ancient remains. [*See* Tourism and Archaeology.] In addition to the legal, administrative, and economic factors of archaeological resource management, perhaps the most important aspect of cultural heritage is the relationship between the archaeological site and the public. Public awareness and education are crucial to the conservation of cultural heritage and planned development and can be encouraged through local associations and societies, in schools, and in the media. This communication is essential to raising awareness of the value of archaeological heritage as an endangered finite natural resource.

The past is perceived through the eyes of the living, and as contemporary values and beliefs change, so will interpretations of the past. Historic remains are not static, and each site may have a diversity of meanings for different publics. As interpreters of cultural heritage, it is the task of archaeologists to convey the relevancy of the past, to promote dialogue between professionals and lay persons, and to encourage constructive cooperation between those desiring to preserve archaeological resources and developers responding to the needs of a modern society.

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ANN KILLEBREW

DE VOGÜÉ, MELCHIOR. *See* Vogüé, Melchior de.

DHRA', site located about 5 km (3 mi.) east of the famous Early Bronze Age city Bab edh-Dhra', which is in the Lisan area of the Dead Sea in modern Jordan (31°14′30″ N, 35°35′ E; map reference 204 × 073 [Bennett, 1980, p. 30; Raikes, 1980, p. 56]). The name *Dhra'* is identified with the Arabic word for "arm."

Dhra' was first discovered and investigated in 1976 under auspices of the Department of Antiquities of Jordan by Thomas D. Raikes, who emphasized that its flint industry, which included Khiamian points, could be compared with that of other late ninth- and early eighth-millennium BCE sites in Jordan, Israel, and Syria. Queisa and Sabra I in southern Jordan are similar to and contemporaneous with Dhra' in the very early stages of the Neolithic period.

Wadi Dhra', a perennial stream that runs to the northeast of the site, supplies it with water. Dhra' has been described as a flint-tool factory because of the large number of unfinished tools and wasters found there (Raikes, 1980, p. 56). Blade cores, long thin blades, scrapers, chisels, arrowheads, polished basalt axes, chipped and limestone objects of horn or phallus shape were collected. Raikes also noted the presence of Roman buildings, graves, and a well.

Crystal-M. Bennett made soundings at the site briefly in 1979, excavating six areas. In area I, the largest (27 m north–south × 5 m east–west), she laid out four one-meter-square probe trenches on the east. Bennett (1980) published the flints from these test trenches. She reached bedrock in this and other areas, encountering very well-defined floors as well as a destruction level above floors 5 and 6 (Bennett, 1980, p. 33). In area I, she found pit dwellings with floors ending at thin walls of pisé and stone. Mud brick was also used.

The published pottery from Dhra' all comes from area IV, immediately under the topsoil. Bennett reached bedrock in this area at a depth of 85 cm in the northeast corner and at 40 cm in the northwest corner. The pottery corpus is comparable to Jericho stratum IX, Pottery Neolithic A (PNA), although the Dhra' ware is not crumbly and had been fired at a higher temperature. Bennett argued that some of this pottery assemblage, particularly the thinner ware, seems closer to Jericho VIII/Pottery Neolithic B (PNB) than to Jericho IX/PNA (1980, p. 36). However, other PNA and PNB sites in Jordan, such as Wadi Shu'eib, 'Ain Ghazal, and Dharih, have also recently been sounded or excavated. [*See* 'Ain Ghazal; Shu'eib, Wadi.]

Although Bennett did not find the Khiamian points in good stratigraphic contexts, this does not necessarily mean that the site was not occupied in the Early Neolithic period. Dhra' may have been a base camp during the earliest phase of the Neolithic and a farming village in the sixth and fifth millennium.

[*See also the biography of Bennett.*]

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ZEIDAN A. KAFAFI

DIBON, village in modern Jordan (31°30′ N, 35°42′ E) on the ancient, but still used, main north–south road (the "King's Highway" of *Nm.* 20–22), located about 64 km (40 mi.) south of Amman and 3 km (2 mi.) north of Wadi el-Mujib (the Arnon River of *Nm.* 21:13, 14, 24, 26; 22:36; *Dt.* 2:24; *Jgs.* 11:26; *Is.* 16:2; *Jer.* 48:20). An adjacent hill, northwest of this village, is the site of the ancient Moabite city of Dibon, pronounced Dībôn in Hebrew and possibly Daibôn in Moabite (Septuagint of *Jos.* 13:17) and transliterated as Dhībân in modern Arabic.

Its natural defenses are deep valleys on the southwest, west, and north; on the east, erosion from the tell has made the contour less steep. The southeast corner, however, slopes down more gently and is joined by a saddle to the next hill, on which the modern village lies. When excavation was begun, this area was marked by two knolls: the eastern one supported a ruined building surmounted by a sheikh's tomb; the western knoll remained unexcavated until recently, when illegal digging revealed a small square stone tower, possibly Roman. Between them, the slope is slightly concave; this came to be known as the gateway area.

The site has no natural water supply except from the winter rains that are still conserved in scores of cisterns. The

site's economic importance was guaranteed by its key position at the crossroads of the main north–south road already mentioned and a less obvious east–west track that passes immediately south of the site and joins grain-raising and sheep-goat-rearing lands to the east and west. It was also a major center politically for any power wishing to control territory north of the Arnon River gorge. Evidence for the site's long occupation was the presence, until fifty years ago, of ruins on its surface dating from Byzantine and Arab times.

There seems never to have been doubt that this was the site of the ancient city of Dibon, but the discovery there, in 1868, of a stela bearing an inscription memorializing the deeds of King Mesha (hereafter MI) focused attention on the site. [*See* Moabite Stone.] The inscription refers to events and persons until then known only from the Bible (e.g., *1 Kgs.* 16:23–24; *2 Kgs.* 3:4–27).

History. Such references make it possible to reconstruct, in part, the history of Moab and Dibon. [*See* Moab.] The earliest references occur in the biblical accounts of Israel's traditional movement from Egypt to Canaan via Transjordan. In them (*Nm.* 21:21–31) Sihon, king of the Amorites, whose capital was at Heshbon, had seized the land of the king of Moab as far south as the Arnon River, including Dibon. The Israelites, having apparently bypassed that part of Moab south of the Arnon (*Nm.* 21:11–13), defeated Sihon's forces and took possession of the land north of the Arnon. The tribe of Reuben was assigned this territory (*Jos.* 13:15–23), but it seems to have been partly occupied by Gad (*Jos.* 13:24–28; *Nm.* 32:34; MI 10). Israelite control of the Transjordanian kingdoms was not assured, however (*Jgs.* 3:12–14, 11:1–40; *1 Sm.* 12:9, 14:47), until David conquered Moab north of the Arnon (*2 Sm.* 8:2) and even included it in his general census (*2 Sm.* 24:5). Israel's control, while it probably continued under Solomon, no doubt ceased with the breakup of David's empire under Rehoboam.

Two events—the attack by Moab and its allies against Judah (*2 Chr.* 20:1–30) and the counterattack (?) by Israel and Judah (*2 Kgs.* 3:4–27) against Mesha's (?) rebellion—should probably be attributed to the time of Mesha's father, Kemosh[yat], for both are routed south of the Dead Sea; the latter is directed against Kir-Ḥareśet, Moab's southern capital (usually identified with modern Kerak).

It was Omri of Israel who subdued Moab (MI 4–9), and his heirs held it until Mesha, king of Moab and residing at Dibon, revolted and extended his kingdom some 35 km (22 mi.) northward, as far as Nebo (modern Khirbet el-Mukhayyat). To give thanks to his god Kemosh and to celebrate his victories, Mesha built a new royal quarter adjacent to the earlier city, which he called Qarḥoh "the prominent" or "the eminent" (MI 21–26). It contained a high place for Kemosh, a palace, an acropolis with gates and towers, and houses for the growing population (each of which was to be provided to have a cistern). Finally, he set up his stela, recounting his achievements, quite possibly in Kemosh's high place near where it was found.

There is little information about the history of Dibon and Moab immediately after Mesha. The statement in *2 Kings* 10:32–34) that Hazael of Damascus had seized from Israel the lands as far south as the Arnon River suggests that those lands had reverted to Israelite control. It is, however, difficult to see how, in the face of Syrian threats, Israel could have accomplished this. It is to be noted that *Amos* (1:3) seems to restrict Hazael's conquests to Gilead (in central Transjordan), while the reported raids (*2 Kgs.* 13:20) by Moabites suggest that Moab was by no means powerless. There is no evidence that Jeroboam II was able to restore Israelite control. Furthermore, there is no sign of violent destruction at Iron Age Dibon.

The Moabite kingdom and Dibon came under Assyrian domination by 731 BCE, when a king of Moab paid tribute to Tiglath-Pileser III and continued to do so under three subsequent Moabite kings. The capital appears to have remained at Dibon (*Is.* 15:2 RSV; *Jer.* 48:18). Such pussilanimity (or so it was interpreted by Judah) was infuriating and led to dire oracles against Moab (*Is.* 15, 16:6–13, 25:10–12; *Jer.* 48; *Ez.* 25:8–11; *Zep* 2:8–11), but it was the key to survival. Finally, however, Moab, too, joined a general revolt against Nebuchadnezzar that led to the state's destruction in 582 BCE.

Archaeological Research. Excavation at Dibon did not begin until 1950, when Fred V. Winnett, director of the American School of Oriental Research in Jerusalem, initiated a series of campaigns in the site's southeast quadrant, where the Moabite stone had been found. Expeditions under a succession of directors were in place in 1951–1953, 1955–1956, and 1965. The most recent archaeological results were achieved by William H. Morton on the summit and northern part of the site. Here, for the first time, Dibon's complete archaeological history was defined: from its beginning in the Early Bronze Age it continued directly—without any trace of Middle or Late Bronze Age occupations—into Iron Age II (Moabite), Nabatean, Roman (?), Byzantine, Umayyad, and later deposits.

The Moabite levels included a north gateway (much modified in the Nabatean period), silos for grain, and, nearby, carbonized grain similar to that found by William L. Reed in the southeast quadrant (Winnett and Reed, 1964, pp. 48–50). Most significant were the remains of a major rectangular stone building (42.9 m × 21.10) that Morton called the Moabite Palace Complex (Morton, 1989; pp. 244–246). This palace apparently had an adjoining sanctuary, for cultic objects, including a proposed Iron I incense stand and fertility figurines were found in the vicinity. Perhaps this was the sanctuary of Ashtar-Memosh (MI 17).

Winnett's work in 1950–1951 in the southeast quarter (Winnett and Reed, 1964) identified vertical retaining walls and a great battered stone wall supporting a 10-meter-deep

artificial fill extending to bedrock. He traced the outer sloping wall for about 12 m, including two sharp right-angled turns in its course to enclose a square stone tower (about 6 × 6 m). The wall rests on bedrock and still reaches a height of 10 m in places (section E-E in Tushingham, 1972). The tower was excavated internally for about 11 m without reaching bedrock; its original entrance, approached from inside the city, stands at least 12 m above bedrock. The heavy battered wall has also been found at the south side of the quadrant (Tushingham, 1972, pl. V. 1, 2 and Section G-G [wall]). It was in this area that Reed discovered, on bedrock, the remains of domestic occupation. Its contemporary pottery and quantities of charred grain could be Carbon-14 dated to about 850 BCE. Resting on this deposit or on bedrock were heavy stone walls Reed thought could be defensive. This area was engulfed by a great artificial fill whose depth probably averages about 3 m, as compared with the 10 m of the fill above bedrock Winnett had traced. As all of this fill must postdate about 850 BCE and required both stabilizing walls and the great stone retaining wall revealed on both the east and south sides of the area (see above), it is logical to consider it the podium of Mesha's royal quarter. Its original surface is not preserved anywhere in the area excavated, but the entrance to the stone tower is. It and other clues establish the level on which Mesha's buildings were founded. Few of these can, at present, be identified, but it seems probable that Kemosh's high place lay beneath the later Nabatean temple. It was near here that the Mesha inscription was found.

Several Moabite tombs were excavated, one containing a clay sarcophagus, with quantities of jewelry and pottery that were, however, so mixed they could not provide a datable sequence. These were probably family tombs.

For about five and a half centuries the site was deserted. Then, with the renaissance in Transjordan under the Nabateans, Dibon again became important. The walls on the summit were rebuilt, as was a north gate overlying the Moabite gate. In the southeast quarter, a major temple, reminiscent of the main temple at Petra, was erected; it was surrounded by an unwalled sacred precinct approached by a grand staircase leading up from the south. It is to be dated to the first century CE. [*See* Petra.] Two inscriptions and the remains of a bath indicate that there was a Roman garrison here in the 3rd century CE.

After another break, Dibon shared in the general prosperity of the Byzantine period. Architectural features include a large church dated to the sixth century. There were also many burials in the general area, with some sarcophagi inserted into the ruins of the Nabatean temple.

The Umayyad period was brief but left evidence of construction, including two small, but virtually complete, domed buildings on the summit Morton, 1989, p. 245). The Ayyubid/Mamluk occupation is evidenced by the reuse of Byzantine and Umayyad remains—in many cases scrappily preserved because of a later cemetery. Coins and pottery, however, are sufficient to indicate the presence and date of this occupation. The ancient site of Dibon was abandoned (except as a cemetery) when the village moved to its present location, probably in the 14th century CE.

[*See also the biography of Winnett.*]

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A. D. TUSHINGHAM

DI CESNOLA, LUIGI PALMA (1832–1904), soldier, diplomat, antiquarian and ultimately museum director. Throughout his long life Emmanuele Pietro Paolo Maria Luigi Palma di Cesnola was always a colorful and controversial figure. After seeing military action in Italy and the Crimea, he traveled extensively throughout the Ottoman

Empire and then emigrated to the United States. During the American Civil War, Cesnola distinguished himself as a colonel in the Union cavalry; he was wounded, captured, and exchanged in a release of prisoners. Without private means, he was fortunate later to be offered a consulship in Cyprus, then a backwater of the Ottoman Empire. Shortly after arriving there, Cesnola emulated his French and British consular colleagues by collecting ancient Cypriot art, a pursuit that became a major preoccupation and lucrative source of income. Ultimately, it also brought him fame. With determination the consul toured the island from 1865 to 1875 with his gangs of laborers, opening thousands of tombs and cursorily "exploring" numerous ancient city and temple sites.

The resulting collection of antiquities, ranging from over life-size statues to fine jewelry, numbering in the tens of thousands, was offered to various great museums around the world. Some works went to London and Paris; but after much negotiating the Metropolitan Museum of Art in New York City purchased more than four thousand items, the nucleus of its antiquities collection. They also received Cesnola, who, for better or for worse, became the first director. His tenure was beset by allegations of unethical practices concerning the restoration of statues and the provenance of the so-called Treasure of Curium. The latter, much like Priam's Treasure excavated by Heinrich Schliemann (who Cesnola attempted to upstage) was not a single deposit but a heterogeneous collection of gold jewelry and other valuables from local tombs. Although much criticized today for his lack of scientific method, Cesnola must be given credit for propelling Cypriot art onto the world stage for the edification of future generations.

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STUART SWINY

DIDYMA (formerly Branchidai; modern Yenihisar, formerly Yoran), site in Vilayet Aydın, a regional sanctuary in the area of the Carian-Ionian border (Strabo 14.1.2) situated on a limestone plateau 75 m above sea level on the Gulf of Akbük.

Didyma became famous as a spring/oracle of Apollo (Herodotus 1.92, 2.159; Pausanias 7.2.6) and for the size of the Temple of Apollo (Strabo 14.1.5), one of the best-preserved large-scale buildings from antiquity. From 1765 to 1856 investigations were carried out at Didyma by English scholars, and between 1873 and 1896 a French mission researched the Temple of Apollo. From 1906 to 1925, excavations and the conservation of the temple were conducted by the Berlin Museum; those activities have been continued, since 1962, by the German Archaeological Institute. [*See* Deutsches Archäologisches Institut, Abteilung Istanbul.] In addition to the Temple of Apollo, a sanctuary in the northwest, which was built over in modern times, has been investigated. The oldest archaeological remains date to about 700 BCE, although obsidian artifacts from the Neolithic period were found 4 km (2 mi.) to the south at Didim plaji. Written traditions concerning the site's pre-Greek foundation first appear in the Hellenistic-Roman periods. More than six hundred inscriptions are related to cult, donations, building activities, the "sacred grove," and the settlement. [*See* Cult.] From the seventh century BCE until the seventh century CE, Didyma was the best-known oracle shrine of Apollo in Asia Minor.

The core of the cult place was the freshwater springs on which the shrines of the main god, Apollo, and of Artemis developed. According to cult legend, the union of Zeus and Leto took place in Didyma (*SIG* 590). In the pre-Greek period (Herodotus 1.157; Pausanias 7.2.6) a female nature divinity was probably worshiped there. In the pre-Hellenistic period, the *Branchidae,* likely an association of members of the local oligarchy, were the cult's prophets and priests and gave their name to the place. Royal donations were given by Pharaoh Necho at the end of the seventh century BCE) and by the Lydian King Croesus in the mid-sixth century BCE (Herodotus 2.159, 1.92). The Persian king Darius is said to have confirmed in writing the shrine's right of asylum (Tacitus, *Annals* 3.63). No archaeological evidence exists for the "looting and firing" by the Persians recorded by Herodotus (6.19); its dating to the time of Darius in 494 BCE or to Xerxes in 479 BCE, "during the second defection of Ionia" from the Persians (Herodotus 9.104; Pausanias 8.46.3), is controversial.

Processions from Miletus to the shrine were reestablished in 479/78 BCE. [*See* Miletus.] The purported surrender of the

sanctuary to the Persians by the *Branchidae* (Strabo 14.1.5, 11.11.4) is explained as a Milesian invention. Beginning in the last third of the fourth century BCE, at the instigation of Miletus, the organization and activity of the oracle (Strabo 17.1.43) were fundamentally changed, based on the model of Delphi. An annual official of the polis functioned as the *prophetēs* and sacrificing priest of Apollo. A *hydrophoros,* or the female water-bearer, performed the office of the priestess of Artemis. In this period new building activities took place (Temple of Apollo III), while the older structures were maintained.

The Seleucids supported the sanctuary and returned the city's votive statue of Apollo, the work of the sculptor Kanachos, to Miletus, which the Persians had stolen (Pausanias 1.16.3, 8.46.3). [*See* Seleucids; Persians.] The *Didymeia* were celebrated as a five-year festival, beginning in about 200 BCE. The sanctuary was looted in 277/76 BCE by pirates. In 44 BCE Caesar enlarged the site's area of asylum as a sanctuary. Otherwise, only occasional evidence exists for a Roman presence in the first century BCE. Under Emperor Trajan, the Sacred Way (see below) and the pavement within the sanctuary were rebuilt. "Emperor worship" began under the name of *Kommodeia* in 177 CE. In the fourth and seventh centuries CE the sanctuary was destroyed by earthquakes. Cult practices came to an end with the advent of the fourth century.

The first evidence of the presence of Christians in the sanctuary also dates to the beginning of the fourth century. In the fifth–sixth and tenth–twelfth centuries, new building activities took place at the site, and the seat of a bishop was installed. At the end of the fifteenth century, the site was again destroyed by an earthquake; it was only reoccupied at the end of the eighteenth century.

Architectural Remains. For the most part, local limestone was used as the building material at the site. The spring precincts of Apollo, located in a hollow, and of Artemis, to the northwest on a rocky ledge, have existed since about 700 BCE.

Sanctuary of Apollo. In the western part of the adytum, foundation remains of the mud-brick walls of a courtyard (10 × 30 m, reconstructed) have been excavated. The cult monument of the spring had been located in the courtyard (*Sekos* I). About 100 m east of the spring precinct was a slope marked by five steps. South of it a supporting wall for a terrace was found that had held two hall-type buildings. The slope formed a bow-shaped boundary for an area with an unroofed, round construction. The latter has been called the sanctuary's main altar, but that designation is questionable. In the first half of the sixth century BCE, the spring precinct was enlarged when the Temple of Apollo (II) was constructed, along with a two-winged surrounding colonnade. The building materials used were limestone, poros, and marble. In the western part of the cult courtyard limestone foundations with five pilasters have been preserved. Also preserved are the remains of walls in the so-called *naiskos,* whose function was presumably that of a springhouse to protect the cult monument and the seat of the oracle *(manteion).* The sanctuary's most recent construction phase, according to the entablature reliefs, which show gorgons, belongs to about 500 BCE.

Sometime after the mid-fourth century BCE, the buildings were systematically demolished and construction of the Hellenistic-Roman marble temple (III) begun. This temple was erected upon a seven-stepped foundation that, with the retention of the enlarged cult courtyard and the surrounding colonnades (see above), covers 2.5 times the surface area of its predecessor (the stylobate was 51.13 × 109.34 m). Inscriptions (third–second centuries BCE) and sketches of the construction on the inner courtyard walls document the building process. Marble quarries have been discovered near Heraklea sub Latmus. In about 170 BCE, the sanctuary's central building, with a cult courtyard and *prodomos,* was erected. A pedestal in the courtyard was 5 m high and the courtyard's upper walls, with pilasters, were 20 m high. The *prodomos* (a columned hall) was a dodecastyle with two tunnel passages leading to the cult courtyard and to a Great Gate whose unpassable threshold was 1.5 m high. Still standing are a hall with two columns and staircases, a wall with three doors in it, and an open stairway to the cult courtyard. The construction of the surrounding colonnades (interior 8 × 19 columns; exterior 10 × 21 columns) and its roof was never completed. Literary sources testify that a grove (*alsos,* Strabo 14.1.5) was planted inside and outside the temple precinct.

After 250 CE, the spaces between the columns on the east side were walled up, and steps were built in front of the Great Gate. In the fifth–sixth centuries, a gallery basilica was erected in the cult courtyard. [*See* Basilicas.] After the earthquakes in the seventh century, the temple was fortified; the fortifications were destroyed by fire in the tenth century. The temple itself was finally destroyed in an earthquake in 1493; its stones were looted in the nineteenth century.

Sanctuary of Artemis. The worship of Artemis is attested from the sixth century BCE. Evidence exists for a hieron and a cult statue in the third century BCE. Structures on a rocky ledge in the spring precinct have been identified with the Artemis cult *(hydrophoria).* In about 700 BCE, the southern spring basin was enclosed by a wall; the precinct was enlarged in the sixth century BCE, and in the third–first centuries BCE the spring basins, which had dried out, were replaced with wells. Leveling and the construction of a complex of individual buildings reached the sanctuary's northern boundary. Walls separated the sanctuary from the Sacred Way; colonnades of limestone columns with wooden entablatures were erected in front of the walls. In the second century CE, the sanctuary was remodeled. It was destroyed

in the fourth century, probably by an earthquake, and was then abandoned.

Sacred Way. The construction of a 5–6-meter-wide road more than 20 km (12 mi.) long overland from Miletus to Didyma is attested stratigraphically for the second half of the sixth century BCE and also by the cult regulations of the *Molpoi* pertaining to processions with stations for local divinities. From about 530 to the fourth century BCE, at the top of the pass, there was a cult precinct with a group of seated statues in the middle and sculptured sphinxes. It is assumed that in the last section of the processional road the course veered to the west and south of the Apollo temple (called the "stadium" by Theodor Wiegand).

Hellenistic-Roman constructions. At Didyma, near the Sacred Way and beyond it, burial sites have been identified, mostly dating to the Roman period. The settlement and some secular buildings have also been excavated from the period.

Byzantine constructions. During the fifth–sixth centuries, the Sacred Way was furnished with an arcaded hall, and a basilica was built within the Temple of Apollo. There is archaeological evidence of a village settlement, including churches and interments, from the ninth-tenth centuries. [*See* Churches.]

Finds. Didyma is the site of the richest source of Early Greek sculpture in Anatolia. Starting in the early sixth century BCE, all the important types are represented: *kouroi* and *korai,* male and female seated statues, standing and reclining clothed male statues, lion and sphinx statues, or architectural sculpture. In about 500 BCE Kanachos of Sikyon made a bronze statue of Apollo commissioned by the city of Miletus (Pliny, *Nat. Hist.* 34.75; Pausanias 2.10.4, 9.10.2). Honorific bronze statues from the Hellenistic-Roman periods can only be inferred from their bases. In addition to these, only fragments from a few marble statues and reliefs and terra cottas have been preserved from the period. The ceramic ware is local, and imports are rare. The metal finds consist mostly of vessels but do include weapons and statuettes, however rarely. [*See* Weapons and Warfare.] Only a few pre-Hellenistic coins have been found—the others date to the fourth century BCE–seventh century CE. In addition to animal bones from burnt offerings, there are deposits of unburned bones, which would be in accordance with a "Carian" ritual (*Suidas* s.v. *karikon thyma*).

Divinities. Cult places for Apollo and Artemis have been identified through inscriptional evidence (Callimachus Lyr. 229 v. 11 ed. Pfeiffer; Schol. Clem. Alex. Protr. 45.2). Such evidence also exists for precincts of Aphrodite, Zeus Soter, Zeus Kataibates (?), Angelos, and Phosphorion (Hecate? Artemis?). Most of the dedications are to Apollo and Artemis Pytheie; in addition, there are dedications to Hecate, Zeus and Leto, Dionysus, Kurotrophos, Aphrodite Urania and Katallakteria, Soteria, Pan and the Nymphs, the Muses, Cybele, Telesphorion, Zeus Hyetios and Telesiurgos, Poseidon Seisichthon, Agathe Tyche, Osiris, Serapis-Isis-Anubis, and the Sebastoi. Except for nameless altars from the archaic period, there are altars for Artemis Lykeie, the Curetes, Zeus Phaneios and Hypsistos, Asphaleios Poseidon, Asclepius Soter, Demeter Karpophoros, Sotira Kore, and Tyche. [*See* Altars.]

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KLAUS TUCHELT

DIKAIOS, PORPHYRIOS (1904–1971), one of the most infuential Cypriot archaeologists. Dikaios studied at the universities of Athens, Liverpool, Lyons, and the Sorbonne. In 1929 he was appointed assistant curator of the Cyprus Museum, and two years later he became curator. In 1961, after Cyprus became an independent republic, Dikaios became the first Cypriot director of the Department of Antiquities. In 1963 he left Cyprus for the United States, where he taught at Princeton and Brandeis for the following three years. He then became professor of archaeology at the University of Heidelberg, a post he held until his death in 1971.

While in the Department of Antiquities, Dikaios played a leading role in the reorganization of its administrative system. He was also responsible in 1935 for introducing a new,

scientifically based system for cataloging finds and presenting exhibits in the Cyprus Museum. This accomplishment was followed by the publication of the first modern *Guide to the Cyprus Museum* (Nicosia, 1947; 2d ed., 1953; 3d ed., 1961; Greek ed., 1951).

One of the founders of modern Cypriot archaeology, Dikaios excavated and published widely on a variety of subjects, concentrating mainly on Cypriot prehistory. With his publications of his excavations at Khirokoitia, Troulli, Kalavasos, and Sotira, Dikaios defined the character and lay the foundations for all subsequent studies on Neolithic Cyprus. He also investigated the Chalcolithic Period at Erimi, Ambelikou, and Kalavasos and the Early Bronze Age at Vounous and Philia. Of great importance is his work on the Late Bronze Age sites of Pyla-*Kokkinokremos*, Maa-*Palaeokastro*, and, above all, Enkomi which was the subject of one of his major publications (*Enkomi Excavations*, 1948–1958, 4 vols, Mainz, 1969–1971). Dikaios also excavated the Iron Age necropolis of Salamis, and located a large number of sites, several of which were later excavated by other archaeologists. He lectured widely in the United States and Europe and was honored by many institutions.

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DEMETRIOS MICHAELIDES

DILMUN, the Sumerian name (cf. Akk., Tilmun; Gk., Tylos/Tyros; Lat., Tyrus) given to a country bordering the body of water known in cuneiform sources as the Lower Sea (Persian/Arabian Gulf). Culturally and territorially outside the bounds of Mesopotamia proper, Dilmun is attested as early as the late fourth millennium in the Archaic texts from Uruk-Warka. During the late Early Dynastic period (c. 2500–2350 BCE), Dilmun emerged as an important source of raw materials for the kings of the city-state of Lagash. Ur-Nanshe (c. 2550 BCE) "had ships of Dilmun transport timber from foreign lands" to his city, while Lugalanda (c. 2400) and Urukagina (c. 2380) purchased copper in exchange for milk and cereal products, fat, silver, and wool. Sargon of Agade (c. 2334–2279 BCE) boasted that ships from Dilmun, Magan (Oman peninsula), and Meluḫḫa (Indus Valley?) docked at the quay of his capitol, Agade (Cooper, 1986, p. 22ff.). During the Isin-Larsa and Old Babylonian periods, Dilmun was most famous as a retailer of copper (probably of Omani origin) to the seafaring merchants of Ur, such as one Ea-nasir, some of whose letters were found by Leonard Woolley during his excavations there (Leemans, 1960). At the same time, diplomatic ties linked Dilmun with the Old Assyrian king Shamshi-Adad and his son Yasmakh-Adad, and caravans are known to have traveled up the Euphrates River between Dilmun and Mari. In the Middle Babylonian period, as two letters found at Nippur show, Dilmun was under the control of a Kassite governor with close family ties to the elite of Nippur. By the Neo-Assyrian period Dilmun, though perhaps independent, was nevertheless tributary to Assyria. The Dilmunite kings Uperi and Aḫundara, who lived, "like a fish, thirty double-hours away in the midst of the sea of the rising sun" (e.g. *Annals of Khorsabad*, Sargon II, section 41), both brought gifts to Sargon II, and a later king called Ḫundaru sent tribute to Ashurbanipal's court at Nineveh. A Babylonian "administrator of Dilmun" (Akk., *^{lú}bēl pīḫāti Dilmun^{ki}*) is mentioned in 544 BCE during the reign of Nabonidus.

In addition to these historical and economic references, literary sources attest to the special regard in which Dilmun was held in Mesopotamia. In the Sumerian myth Enki and the World Order, for example, Enki is said to have "cleaned and purified the land of Dilmun," while in Enki and Ninhursag, Dilmun is described as a pure, bright and clean land flowing with the "water of abundance."

Given the relatively abundant written references to Dilmun, it is hardly surprising that many scholars, from the mid-nineteenth century CE onward, have tried to fix the precise location of this land. The French Assyriologist Jules Oppert was the first scholar to link the Akkadian toponym *Tilmun* with the Greek name *Tylos*, the descriptions of which (e.g., by Theophrastus, Strabo, Pliny, and Arrian) leave no doubt of its identity with the largest of the Bahrain islands. The only problem with this identification for the earliest phases of Dilmun's existence (i.e., pre-Old Akkadian) is the complete lack of archaeological evidence for settlement on Bahrain during the late fourth and early third millennia. By contrast, the northeast Arabian mainland contains many sites, such as Tarut Island just opposite the Qatif oasis, Abqayq, Umm an-Nussi, and Umm ar-Ramad, that were inhabited then and show evidence (pottery, carved soft-stone vessels, and statuary) of contact with Jemdet Nasr through Early Dynastic Mesopotamia. It has therefore been suggested that the original center of Dilmun lay on the mainland, and that only toward the end of the third millennium did it shift to Bahrain.

Archaeological investigations on Bahrain since 1879 have documented the existence there of more than one hundred thousand burial mounds dating to the Bronze and Iron Ages, as well as large cemeteries (e.g. at Karranah and Abu Saybi)

of Hellenistic and Parthian date. Danish archaeological excavations led by Peter Vilhelm Glob and T. Geoffrey Bibby from the University of Aarhus during the 1950s and early 1960s revealed for the first time the existence of several settlements (e.g., Qal'at al-Bahrain, Saar) and a number of sanctuaries (e.g., Barbar, Diraz, 'Ain Umm es-Sejour) on the island as well. The British archaeologist T. Geoffrey Bibby proposed a comprehensive periodization for Bahrain, based on the Danish work at Qal'at al-Bahrain, using the terms city I–VI to denote individual periods. A distinctive type of circular stamp seal with a high, perforated boss was developed on Bahrain at the very end of the third millennium and was further elaborated during the first centuries of the second millennium BCE (see figure 1). By contrast, cylinder seals were rarely used except during the Middle Babylonian and Neo-Assyrian periods. A local ceramic industry grew up during the city I (so-called chain-ridged ware) and city II (red-ridged ware) periods (i.e., c. 2300–1600 BCE). In addition, Bahrain has always been in contact with neighboring parts of Mesopotamia, Iran, Oman, and the Indus Valley, and the ceramic repertoire found there is accordingly varied. Shortly after 2000 BCE, a satellite settlement was founded on the island of Failaka off the coast of Kuwait. The material culture of the earliest settlement there is so identical to that found on Bahrain at the same time that it is certain the foundation must have been a Dilmunite colony, probably of merchants and their families.

The rich system of aquifers underlying eastern Arabia ensured a plentiful supply of water on Bahrain in antiquity, permitting the cultivation of dates, cereals, and other fruits. Freshwater springs emerge both on land and in the shallow waters offshore. It was its role as a commercial center in international trade, however, that made Dilmun famous—although the goods it sold to Mesopotamian merchants were not local products but originated farther east. Copper from the Oman peninsula, tin from Afghanistan (?), exotic woods and ivory from India were purchased by Dilmunite merchants and then reexported to cities like Ur, Lagash, and Mari. Throughout most of the third, second and first millennia BCE, Dilmun was Babylonia's most important southern source of copper, timber, and exotic goods; and at Ur, "Dilmun merchants" (Akk., *alik Tilmun*) formed a particular subgroup of merchants engaged in trade with the Lower Sea.

DILMUN. Figure 1. *Circular stamp seal.* A typical stamp seal of early second millennium BCE, showing human and animal figures. (Courtesy D. T. Potts)

[*See also* Bahrain; Failaka; Girsu and Lagash; *and* Qal'at al-Bahrain.]

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D. T. POTTS

DIYALA, a tributary of the Tigris River that catches its water from the Zagros Mountains northeast of Baghdad. After it escapes from the mountains, the Diyala crosses two plains: a triangular basin northeast of a low row of promontories, Jebel Hamrin, and the alluvium surrounding the river south of the Hamrin before it joins the Tigris at Baghdad. The Diyala region is traditionally divided into three

zones: the Upper Diyala, referring to the course of the river through the mountainous Zagros; the Middle Diyala, which includes the Hamrin basin and immediate catchment areas; and the Lower Diyala, the areas southwest of the Hamrin range.

The Diyala River traverses the central western Zagros Mountains and the northeastern part of the Mesopotamian alluvium. One of the oldest known trade routes, the Silk Road, is located in this region. Connecting the Mediterranean with China, the route is also called the Great Khorasan Road between Baghdad and Kermanshah. The route follows the Diyala River up from Baghdad through the Hamrin, where it crosses to the Iranian plateau through passes in the Zagros Mountains. These geographic details are important in reconstructing ancient human exploitation of the region.

In archaeological terms, the Diyala traditionally refers to the Lower Diyala region and includes the countryside receiving water from the Diyala River by irrigation canals. Recent archaeological results from the Hamrin make it plausible to include this region as well. The Lower Diyala region has been identified at the province of Eshnunna, an important city-state during the Isin-Larsa period. Eshnunna is modern Tell Asmar. Other important sites have also been identified, such as Khafajeh as the ancient town of Tutub.

The first systematic archaeological investigation of the Lower Diyala plain took place from 1930 to 1938 with the Iraq Expedition, directed by Henri Frankfort. It was the first large-scale expedition from the Oriental Institute of the University of Chicago to Iraq. Among others, the staff also included Thorkild Jacobsen as epigrapher, Seton Lloyd, Gordon Loud, and Pinhas Delougaz. One reason for choosing the Diyala region was the increasing number of clay tablets and art objects being brought to the antiquities market in Baghdad from illicit digging into the mounds in the area. It was also assumed that the region was historically important and that Tell Asmar was indeed the ancient city of Eshnunna. The Oriental Institute expedition concentrated on the excavations of four sites: Khafajeh, Tell Asmar, Tell Agrab, and Ishchali. It built its expedition house at Tell Asmar. [*See the biographies of Frankfort, Jacobsen, and Lloyd.*]

Extensive surveys of the Lower Diyala plain combined with excavations were carried out in 1957–1958 by Thorkild Jacobsen, Robert McCormick Adams, and Fuad Safar under the Diyala Basin Archaeological Project. [*See the biography of Safar.*] The project, aimed at investigating agricultural history and irrigation—the salinity of irrigated fields and its impact on social and economic subsystems—mapped the cultural landscape through more than six thousand years. It was the first comprehensive archaeological regional analysis of the Mesopotamian alluvium.

During the 1970s, intensive archaeological rescue operations took place in the Hamrin Basin as a result of construction for a new dam at the point where the Diyala River cuts through the Hamrin Mountains. The aggregated archaeological investigations of the Diyala region have made it one of the best-documented provinces of Mesopotamia.

The excavations at Tell Asmar, Khafajeh, Tell Agrab, and Ishchali resulted in the development of a long-range chronology for the Lower Diyala region. These sites cover a period from the Late Uruk into the Old Babylonian Period (c. 3500–1800 BCE). Their stratigraphic sequences partly overlap and provide the basis for a diachronic study of architecture and artifacts. In 1952, Delougaz (1952) published a comprehensive pottery corpus, still one of the most useful references for studying the third- and early second-millennium BCE pottery of Mesopotamia. The repertoire of seals also has contributed essentially to establishing a sequence for glyptic styles in Mesopotamia (Frankfort, 1955). The architectural remains from the beginning of the third millennium, in particular temple buildings, have resulted in the subdivision of the ED period into three phases: I–III (Delougaz and Lloyd, 1942). The terminology Frankfort and others introduced does differ at some points from that traditionally used (e.g., the Protoliterate period equals the Uruk and Jemdet Nasr periods; late ED III is labeled the Protoimperial period).

Robert McC. Adams's 1957–1958 surveys added details about settlement patterns and canal systems from the Ubaid period through the nineteenth century CE. The intensive investigation of the Hamrin basin by many international archaeological teams extended the chronology for the entire Diyala region and widened its geographic range.

Except for a single aceramic site, the earliest settlements in the Hamrin date to the Samarra period (c. 6000–5500 BCE). This could be expected, as the region is in the middle of traditional Samarran territory, the marginal zones for dry farming. The first substantial human activities can be attributed to the Ubaid period (5500–4000 BCE). At Tell Abada, located south of the Diyala River in the Hamrin, almost an entire Ubaid village was excavated by an Iraqi expedition under the direction of Sabah Abboud Jasim (1985). The village consists of several building compounds in which a central building differs both in size and finds from the rest and suggests an advanced state of social stratification in the order of chiefdoms. Houses show a typical tripartite ground plan, with a T-shaped central room. These are prototypes for the following Uruk and ED temple and house plans. At Tell Madhhur, in the northern part of the Hamrin, a particularly well-preserved house with almost a complete household inventory was excavated by a British-Canadian team (e.g., Roaf, 1989). In the Lower Diyala Region, sparse Ubaid remains were observed, but the location of sites shows the basic outline of the irrigation canal system. There, as at several other Mesopotamian sites, the fact that Ubaid remains were found under the major urban sites shows that

the principle urban settlement pattern took shape during the Ubaid with the establishment of villages at natural or artificial watercourses. [*See* Ubaid.]

Few finds are available from the Uruk period (4000–3100 BCE). In the Hamrin, villages founded during the Ubaid disappear, while in the Lower Diyala region there is an increasing area of land under exploitation. This development can be tied to the urbanization process for the entire region, in which centers experiencing strong population growth became large towns.

During the Jemdet Nasr and Early Dynastic periods (3100–2400 BCE), the Diyala region experienced steady population growth, to judge from the increase in the number of sites and in settlement size. In the Lower Diyala region, urban centers surrounded by a pattern of sites in hierarchical clusters developed at Khafajeh, Tell Asmar, and Tell Agrab. Of ninety-six surveyed sites, ten can be classified as large towns (greater than 10 ha, or 25 acres), nineteen as small towns (4–10 ha, or 9–25 acres), and sixty-seven as villages (fewer than 4 ha, or 9 acres). The ED period is one of the best documented in the region. Extensive excavations at sites in the Lower Diyala and the Hamrin give a comprehensive impression of the architecture, burial traditions, art, and material culture in the early third millennium. At Khafajeh and Tell Asmar, sequences of temples were found, some of them identified by historical sources. In Khafajeh a sequence of temples dedicated to Sin dates back to the Jemdet Nasr period. The temple type is initially tripartite but evolves into a closed compound with internal courtyards. In contrast to contemporary and earlier temples, these temples were originally built on the ground floor. In the ED II period, a large temple complex was constructed at Khafajeh, characterized by two large oval enclosure walls. Between the two walls was a house interpreted as the house of the priest. Inside the oval enclosure walls the temple rose on a platform. It was surrounded by workshops, perhaps a production center administrated by the priest of the temple (Delougaz, 1940). At Tell Agrab a monumental temple was dedicated to Shara. The ground plan shows a traditional Mesopotamian building pattern, in which the cella is located within a large square complex of rooms and courtyards and the entire building is enclosed with a heavy outer wall. At Tell Asmar, the temple sequence produced several spectacular finds. Best known is the hoard of sculptures from the ED II period found in a pit under the floor of the so-called Square Temple. The sculptures are carved in stone and are typically Sumerian in style and dress. ED domestic architecture is less well known. In the Hamrin remains of round structures were found that are dated to the beginning of the ED period. Both at Tell Gubba and Tell Razuk, complete round buildings were preserved to a degree that had left part of the corbelled vaulted ceilings intact. These round structures are assumed to have served as fortifications along the northeastern frontier, constructed and maintained by the large town centers in the Lower Diyala region. One reason for setting up such strongholds was to protect the vulnerable outlets for the vital irrigation canals at the point where the Diyala River cuts through the Hamrin Mountains.

The excavation of ED sites gives detailed insight into the technological and artistic level of the population. In particular many cylinder seals, bronze tools, sculptures, and carved relief plaques were recovered. The pottery tradition during the ED I–II periods shows regionalization at the southeastern fringe of Mesopotamia: polychrome painted Jemdet Nasr pottery develops into local styles; and in the Lower Diyala and the Hamrin, so-called Scarlet Ware, a jar painted in red and black with geometric and naturalistic motifs, appears. This distribution of ceramic styles makes it possible to recognize the Diyala region as one cultural entity during ED I–II.

In the Akkadian period (2400–2200 BCE), the region continues to develop along the lines laid out during the ED period. At Tell Asmar, private houses and monumental buildings have been exposed. The Northern Palace, a large building complex with several domestic sectors, may have already been built at the end of ED III. While the palace was apparently ruined with the Guti invasion at the end of the Akkadian period, the private houses and dwellings continued in use. The town lost its administrative function, but it remained inhabited. In the Hamrin, Akkadian cuneiform tablets have been found, probably within an administrative context (Whiting, 1987).

The archaeological record remains poor through the Ur III dynasty, during which period Eshnunna/Tell Asmar was controlled by governors appointed by the kings of Ur. During the following era, the Isin-Larsa period (c. 2000–1800 BCE), the region reached a political peak, beginning with the move toward independence by the governor of Eshnunna, Ituriya. Although the settlement pattern continued, there was a tendency for a few centers to grow, perhaps as a result of the centralization of administrative institutions and power in Eshnunna. The importance of the region and its history during the Larsa period is well documented because of the finds of archives and inscriptions. Large temple complexes were constructed, and, in the case of the Shu-Sin temple at Eshnunna, the temple was combined with a palace. At Ishchali, the monumental temple of Ishtar-Kititum comprises interior courtyards and broadroom antecella and cella temple plans. From this era, several sites in the Hamrin that most likely profited from the interest of Eshnunna have produced remains, particularly towns that dominated the main routes.

The flourishing of the Diyala during the hegemony of Eshnunna ended with the reign of Hammurabi of Babylon. According to survey results (Adams, 1965), the larger towns entered a period of decline that lasted for several hundreds

of years. Data from the Hamrin speak of a population settled primarily in villages scattered over the plains. A regeneration of the settlement pattern and population growth first occurs in the Seleucid-Parthian period. Despite poor archaeological documentation, survey data suggest extensive urbanization. Development culminated in the Sasanian period, during which the region, in ecological terms was brought to its limits. As the agricultural hinterland for the Sasanian capital at Ctesiphon, large canal systems were laid out and the agricultural potential exploided to a maximum. During the Islamic period, the Diyala region again experienced a decline in organization and population size, despite the rise of Baghdad.

[*See also* Eshnunna; Hamrin Dam Salvage Project; *and* Khafajeh.]

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INGOLF THUESEN

DODECANESE. *See* Aegean Islands.

DOGS. The dog (*Canis familiaris*) evolved from the wolf (*Canis lupus*) in a number of parallel and independent episodes of domestication. Domestication is inferred in the archaeological record from skeletal changes in the teeth and skull—in particular, crowding of the tooth row. Additional changes include an overall diminution in size and increased variability in domesticates. The earliest claim of domestic dog in the Near East comes from the Palegawra cave in Iraq, in a deposit dated to about 10,000 BCE. However, both the date and the morphological identification of this canid is contested. In Natufian levels (c. 9600 BCE) at 'Ein Mallaha in northern Israel, a woman was buried with a wolf or dog puppy. Although, the wild or domestic status of the puppy cannot be determined, it documents the first ceremonial relationship between humans and canids in the region.

The ceremonial treatment of dogs took several forms. Interment, with or without accompanying human burial, is known throughout the ancient eastern Mediterranean, but only in Egypt and Israel was it practiced on a large scale. Dogs were used in sacrificial and exorcistic rites in Anatolia. Among the western Semites, puppies were specified for sacrifice to conclude a covenant. In Mesopotamia and Anatolia, dogs and puppies played a role in cultic healing and rites to eliminate impurity. Dogs were used in healing rituals in Greece, but they were also sacrificed and apparently eaten in conjunction with human burials.

In Egypt, in a few cases, dogs have been found accompanying human burials in deposits as early as the Neolithic and Badarian periods. Large-scale burial of mummified remains are known from the Hellenistic and especially Roman periods. At the Chalcolithic cemetery at Gilat in the Negev, two dogs with grave goods were recovered. Also in southern Israel, more than 1200 dog interments were excavated from Persian and Early Hellenistic levels at the site of Ashkelon. In Mesopotamia, the dog was associated with the goddess Gula in her function as healer, and a number of puppies and adults were found in a ramp of her temple at Isin (c. 1000 BCE). Dog burial was widespread but does not seem to have been similarly motivated in each region. At Ashkelon, for example, the dogs were carefully interred in separate pits, but no grave goods accompanied them, and the burials were not associated with architecture of any notable scale. The reason for their burial remains a mystery.[*See* Gilat; Ashkelon; Isin.]

Egyptian and Mesopotamian art contains numerous im-

ages of dogs that have been identified as representing ancient breeds, often greyhounds and salukis or mastiffs. These are not confirmed by the osteological evidence from Egypt and the Near East, however. Reconstructions of the size, weight, limb proportions, and head shape of ancient dogs shows that prior to the Roman period selective dog breeding was not practiced in a way that produced distinctive populations. Rather, the osteological evidence reveals that the dogs of the region can be referred to the "pariah"—medium-sized animals varying in body and head from a sheep dog to a greyhound type.

[*See also* Animal Husbandry; Cult; Ethnozoology; *and* Paleozoology.]

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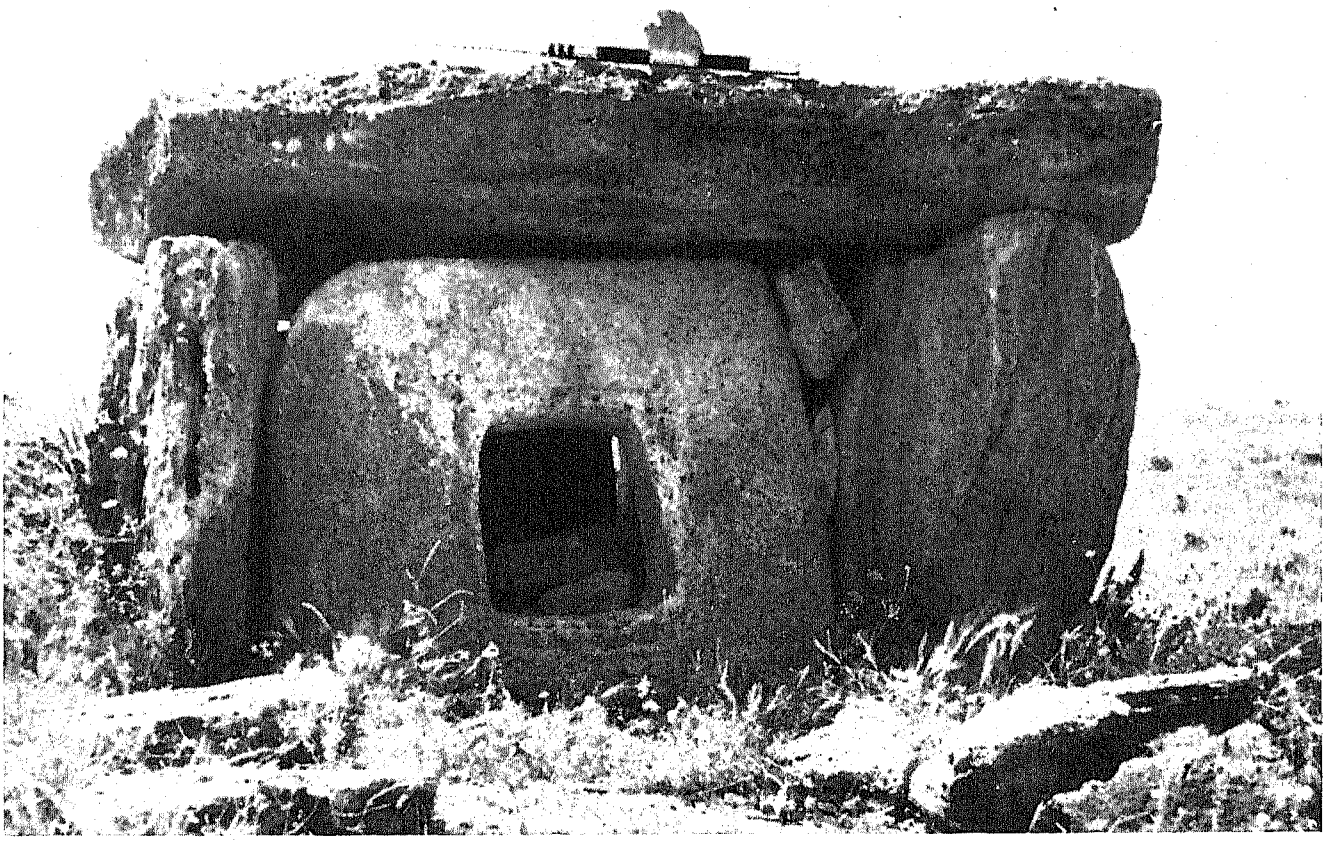
PAULA WAPNISH and BRIAN HESSE

DOLMEN. A megalithic burial structure shaped like a table (from whence its Breton name) a dolmen is usually comprised of a capstone resting on upright stones. It most often occurs in groups and is frequently associated with enigmatic stone circles, one-course stone rows, and tumuli.

Dolmens can take on a number of forms. Though their typologies do not completely coincide, both Claire Epstein (1985) and Mattanyah Zohar (1992) have discerned six general types, based on shape, size, depth, and association with



DOLMEN. *Dolmen with a carved stone aperture from ed-Damiyeh, Jordan.* (Courtesy D. Ilan)

other features such as stone tumuli, rings, and walls. The simplest type, the trilithon, is the most common form. Different forms often occur together, but specific fields and certain regions generally show a preponderance of a particular type—perhaps an expression of tribal traditions. Many dolmens show signs of originally having been enclosed by tumuli, and it is possible that all were. [*See* Tumulus.]

In the Levant, dolmen fields are concentrated along the Syro-African Rift, as far north as southern Turkey and as far south as Ma'in in Jordan. They do not occur in the southern deserts of Sinai, Arabia, and the Negev, nor are they found in southern Mesopotamia or northern Anatolia. Dolmens most commonly occupy lands best suited for pasture and that are less amenable to field-crop agriculture, leading most researchers to associate them with nomadic pastoralist populations. However, Lipaz Vinitzky (1992) has shown a clear nexus between Early Bronze Age settlements and dolmen fields in Israel's Golan Heights and Galilee region. Topographically, dolmens tend to be concentrated on escarpment piedmonts (e.g., Shamir in Israel or Adeimah in Jordan) and along wadi slopes (e.g., the Golan Heights), where large slabs can be transported downslope, or in places of prominence on extensive plateaus. It is now recognized that dolmens were erected at least as early as the late fourth millennium (EB I) and at least as late as the second or early third millennium BCE (Intermediate Bronze Age). Disagreement exists as to whether the floruit of the phenomenon came about in the Early Bronze (e.g., Vinitzky) or the Intermediate Bronze Age (Zohar, Epstein). Finds indicate that some monuments continued to be utilized throughout the second millennium BCE and even later.

Dolmens are most often found empty or containing only fragmentary and exiguous artifacts. Nevertheless, the fact that a few dolmens have been found to contain human skeletal material has lead virtually all researchers to conclude that they functioned as tombs. The scarcity of bones suggests to some that dolmens were intended for primary burial, after which the bones were moved elsewhere for final, secondary burial; this is unlikely, however, because few, if any, necropoli containing secondary burials can clearly be related to dolmens. They may represent a netherworld abode or locus of transition between the realms of life and death. For the living, they may have served as local territory markers—particularly in times of scarce pasture—or as symbols of power and ideological affiliation.

[*See also* Burial Sites; Cave Tombs.]

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DAVID ILAN

DOR, eastern Mediterranean seaport mentioned in biblical accounts in connection with the Israelite conquest of Canaan. The site is located on the Carmel coast, about 21 km (13 mi.) south of Haifa, at the site of modern-day Khirbet el-Burj.

History. An Egyptian inscription found in Nubia that dates to the reign of Rameses II (thirteenth century BCE) contains the earliest known reference to Dor in a list of Syro-Phoenician coastal cities. Dor is cited also in the account of the Egyptian emissary Wenamun's journey to Byblos (c. 1100 BCE), as is Dor's ruler, Beder, king of the Tjeker (Sikels), one of the marauding Sea Peoples who invaded the Levant in the twelfth century BCE.

In the Bible, the king of Dor is listed among the many defeated Canaanite rulers whose lands were distributed to the Israelites (*Jos.* 12:23). Material remains suggest, however, as does *Joshua* 17:12–13, that the site, allotted to the tribe of Manasseh, was populated by Canaanites until the reign of King David in the tenth century BCE, when Dor was finally conquered by the Israelites. Later, when King Solomon reorganized Israel into administrative districts, he made Dor the capital of the fourth administrative district, with his son-in-law Ben-Abinadab as governor (*1 Kgs.* 4:11).

After the entire coastal region of the northern kingdom was conquered by Tiglath-Pileser III in 732 BCE, Dor became the capital of an Assyrian province extending from the Carmel range to Jaffa. Sidon apparently ruled Dor in the Persian period (sixth–fourth centuries BCE), but in the Hellenistic period the city became a powerful fortress that two Seleucid kings were unable to take, either by land or sea. Dor and its fortified neighbor, Straton's Tower (later Caesarea), were ruled by the despot Zoilus until the two cities were conquered by Alexander Jannaeus in the late second century BCE. [*See* Caesarea.] The Hasmoneans then ruled Dor until 63 BCE, when the Roman general Pompey conquered the city but granted it independence. Coins minted at Dor during the Roman period indicate that the inhabitants worshiped Zeus and Astarte, but there are literary ref-

erences to a Jewish community and synagogue during the reign of Agrippa I (41–44 CE). At the beginning of the third century Dor was abandoned.

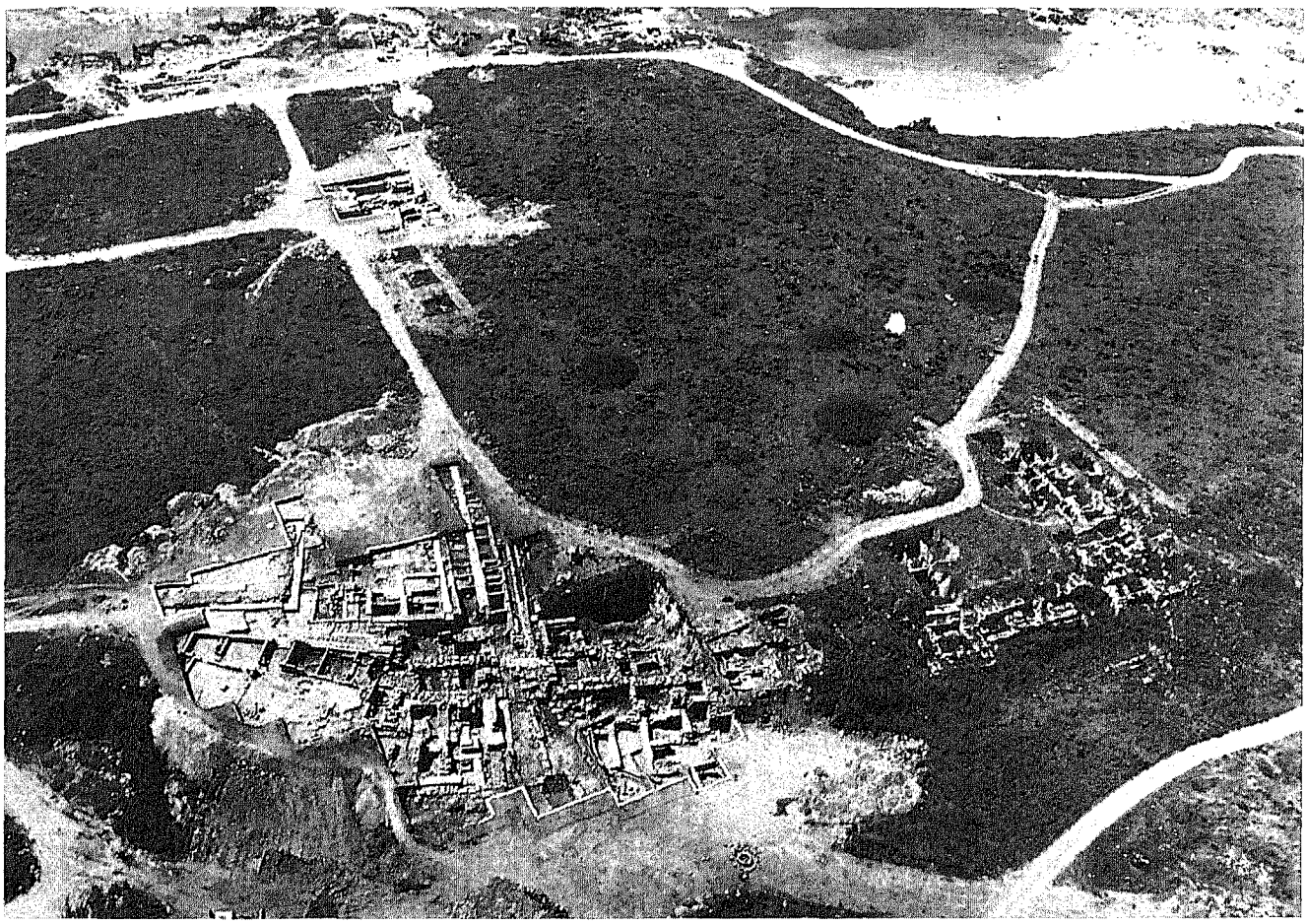
In the late fourth century CE, St. Jerome described Dor as lying in ruin, but excavators have uncovered two distinct periods of Byzantine church constructions, beginning in the fourth century and ending in the seventh century CE, outside and at the front of the mound. The area lay uninhabited until the eleventh century, when the Crusader fortress of Merle was built on the mound; it was destroyed shortly thereafter.

Excavations. The first excavations at Dor were conducted in 1923 and 1924 by the British School of Archaeology in Jerusalem under the direction of John Garstang. J. Leibowitz, on behalf of the Israel Department of Antiquities, excavated north of the mound in 1950 and 1952. Leibowitz discovered sections of a Roman theater as well as the Byzantine church mentioned above. Located east of the mound, the church complex, comprising about 1,000 sq m, was fully excavated between 1979 and 1983 by an Israel Department of Antiquities and Museums team led by C. Dauphin.

Beginning in 1980, large-scale excavations were resumed at the site by Ephraim Stern under the auspices of the Institute of Archaeology at the Hebrew University of Jerusalem and the Israel Exploration Society. Findings from seven main areas of the mound indicate that Dor was first inhabited at the beginning of the Middle Bronze Age IIA (c. 2000 BCE) and was occupied virtually without a gap until the third century BCE. After Herod the Great built the harbor at Caesarea in the first century BCE, Dor began to decline and eventually was abandoned.

Archaeological Remains. A few MB IIA buildings were uncovered along the western edge of the site, which the sea has eroded to bedrock. No Late Bronze buildings were uncovered, but scarabs and pottery from the period were found.

A massive mud-brick wall running north–south along the eastern fringe of the mound is the characteristic feature of Early Iron Age Dor. This wall (about 3 m high and 2.5 m deep) was reinforced along its exterior by a sand rampart. Two rooms were partially excavated along the wall's interior and several vessels, similar to ones uncovered at other sites



DOR. *View of excavated areas from the east.* (Courtesy E. Stern)

along the Syro-Phoenician coast, were found in situ. These rooms were destroyed by a conflagration, after which the wall went out of use. These Early Iron remains at Dor probably date from 1150 to 1050 BCE and likely are evidence of an impressive fortified Sikil settlement.

Several new settlement phases dating from the second half of the eleventh century BCE were uncovered in various areas of the mound. Among the important material finds from these Iron Age strata were Early Cypriot vessels, some Phoenician bichrome ware and black-on-red vessels, and local pottery. Dor was destroyed at the end of the tenth century BCE, probably at the hands of the Egyptian pharoah Sheshonq (biblical Shishak). The town was refortified during the ninth century BCE with the addition of a solid offset-inset wall and a four-chambered gate. Not long after the destruction of this fortification by Tiglath-Pileser III, at the end of the eighth century BCE, the Assyrians rebuilt the wall and added a two-chambered gate; this fortification system lasted until the mid-fourth century BCE, when it was probably destroyed in the Sidonian revolt against the Persians (348 BCE).

Dor's cosmopolitan character during the Persian period is indicated both by abundant and varied material remains and by evidence of imported city planning. The eastern part of the mound was a residential district laid out according to the orthogonal Hippodamian plan, in which living units were divided into long, narrow blocks (about 15 m wide) separated by streets intersecting at right angles. Lengthwise streets ran parallel to the city wall. Unusually large quantities of local and imported pottery, especially Attic ware, were uncovered in two Persian period strata; some types were rare—such as large wine amphoras, the first found in coastal Israel. Many figurines, statuettes, and seals also were uncovered, as were several ostraca—among them the first Greek inscriptions from the Persian period discovered in Israel—and many Phoenician cult objects, primarily pottery figurines, stone statuettes, and faience amulets, some recovered in situ.

The orthogonal layout remained virtually unchanged during the Hellenistic period, when urban planning was evident in the southern as well as eastern areas of the mound. Houses at least two stories high were built on the same narrow blocks as in the Persian period, but with different partitions between them, and in the same Phoenician style, with outer walls of alternating ashlar piers and a rubble fill. Some residences had cellars.

The remains of some of the largest temples yet uncovered in Israel were exposed on the western slope of the mound. These temples—all located near the seashore—probably were built in the Hellenistic period but continued in use into the Roman period. A virtual ceramic typology of Hellenistic Palestine was uncovered in these strata. By this period Dor had become a thoroughly Greek city, as indicated by such pagan finds as a marble head of Hermes, the head of a pottery figurine (probably of Aphrodite), and a "temple-boy" pottery figurine.

Late Roman remains were uncovered in two main strata. In the earlier stratum a spacious piazza was discovered at the intersection of the city's main street, which extended out from the eastern gate, and a long north–south street. A well had been dug in the center of the piazza, which was paved with large, dressed stones. A drainage system, with its main drain running east–west and auxiliary channels joining it from the north and south, was uncovered under the pavement of the street and the piazza. Public buildings surrounded the piazza in this period. One of them—a storehouse, khan, or barrack—had an internal courtyard surrounded by rows of rooms. One row abutted and ran parallel to the long north–south street; each of its rooms opened onto the courtyard, but only the entrance hall also opened onto the street. Other building remains from the earlier Roman stratum included a spacious and well-planned residential quarter with intersecting streets and a large ashlar structure; the latter was uncovered at the foot of the mound, indicating that construction in this period extended beyond the boundaries of the mound.

Four large square piers were exposed outside and east of the city gate. These piers mark the western terminus of the Roman aqueduct through which water was brought to Dor from springs in the Carmel range. A paved path ran between the piers, at least one of which apparently had an arch. A sacred enclosure on the western slope of the mound seems to relate to a massive retaining wall whose orientation follows that of an earlier north–south street just east of it that was the main access road to the Hellenistic temples (see above). In the later Roman period the street was blocked by the retaining wall. Sherds were uncovered along the wall of the enclosure that seem to belong to the foundation trench of the retaining wall—further evidence that these remains belong to the later Roman stratum. Also part of that stratum was a large piazza at the center of the mound. Two massive foundations north of the piazza extend east and west of it and may have carried a portico that surrounded the city's forum. Two more structures dating to the later stratum were uncovered on the mound's western slope. One was a bath, in which two rooms, perhaps the caldarium and tepidarium, were excavated. The other structure, which had a barrel-vault roof, was only partially excavated.

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EPHRAIM STERN

DOTHAN (Ar., Tell Dothan), site located in the northern Samaria Hills on the east side of the Dothan Valley, some 22 km (about 14 mi.) north of Shechem. Dothan is a prominent mound, composed of nearly 15 m of stratified remains superimposed on a natural hill nearly 45 m high. The summit comprises approximately 10 acres, and the occupied area of the slopes includes another 15 acres. The plain has always been of strategic importance as the most easterly of the three main passes of the coastal plain from the Sharon to the Jezreel Valley through the mountainous ridge created by the northern Ephraimite hill country and the Carmel ridge.

Dothan has been identified with the biblical city of the same name, mentioned in *Genesis* 37 as the place where Joseph found his brothers in the course of their wanderings with their father's flocks. The narrative describes the intrigue that led to Joseph's being taken to Egypt by a caravan of Ishmaelites (or Midianites) traveling via Dothan from Gilead. During the period of the monarchy, Dothan is described as a well-fortified city to which the Aramean king sent emmisaries in search of the prophet Elisha (2 Kgs. 6:13–14). Other literary references include three notations in the *Book of Judith* and one in the *Onomasticon* of Eusebius.

The site was excavated by Joseph P. Free of Wheaton College, Illinois, in nine seasons between 1953 and 1964. According to the excavator, Dothan yielded a nearly continuous occupational sequence from the Chalcolithic (3200 BCE) through the Byzantine period with later occupation as late as the fourteenth century CE. The site was investigated in six major areas of excavation (T, B, A, D, L, and K, moving from east to west.) The western cemetery is located in area K.

From 1960 to 1964, Robert E. Cooley excavated three tombs in area K. Tomb 1 is the western cemetery's largest, richest (more than 3,400 objects), and best-preserved of the burial chambers. In addition to an abundant collection of human bones, a variety of small finds was recovered from it: pyxides (most with painted decoration), lamps, bowls, biconical jars, kraters, chalices, flasks, juglets, stirrup jars, jewelry, bronze weaponry, beads, bone-carved objects, an important group of scarabs, and several unique artifacts, such as a figurine lamp.

The tomb's architectural plan is tripartite: a basically rectangular tomb chamber with rounded corners, a stepped entryway on the west, and entry through a vertical shaft. The shaft gave access to the stepped entryway that, in turn, led into the tomb chamber. Eight loculi, or crypts, were located along the walls of the chamber, whose orientation is west–east.

Tomb 1 is a successive multiple-burial tomb. Five distinct levels of stratification were discerned, dating from the Late Bronze II period into the Early Iron Age. The total number of burials has been calculated to be between three hundred and five hundred. Although tombs 2 and 3 appear to share the chronology of tomb 1, they were not stratified.

Area D, on the south side of the summit of the tell, yielded a massive city fortification that was dated to the earliest phases of the Early Bronze Age. Area T, located on the highest part of the mound, was designated by Free as the acropolis area. Notable among the discoveries there was a medieval fortress-palace from the fourteenth century CE. Published data for area B are exceptionally lean and consist only of the observation that the area embraced remains from the Roman and Hellenistic periods. The central section of the top of the mound (area A) was occupied by a Hellenistic settlement, embracing the third and second centuries BCE. Substantial remains of an Iron Age settlement were uncovered beneath the Hellenistic occupation. Notable among the architectural features of the Iron Age was a substantial section of a wide street (33.5 m long and 1.20 m wide) bordered by well-preserved structures. The largest of the areas of excavation was area L, on the western summit of the mound. The sloped section of this area yielded substantial fortifications from the Early Bronze Age. The area also produced sections of the city's Middle and Late Bronze Age fortifications. Substantial remains of an Iron Age administrative building were also discovered in this area. Several structures were uncovered in area L that were reminiscent in architectural plan of the so-called open-court building regarded as a hallmark of Assyrian influence. The associated pottery was clearly in the Assyrian tradition of the eighth–seventh centuries BCE.

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ROBERT E. COOLEY and GARY D. PRATICO

DOUARA, cave located about 18 km (11 mi.) northeast of Palmyra in central Syria (34°38′42″ N, 38°25′58″ E). Excavation has shown that the site was inhabited during the

Middle Paleolithic and Epipaleolithic periods. Douara is unusual because it is one of the few Paleolithic sites that have been excavated in Syria's semiarid interior. The sequence of occupation at Douara is unusually long, although the episodes of use were separated by long intervals of abandonment. The material recovered has provided extensive information about the history and nature of its human occupation.

The cave is set in the south face of a steep rock scarp on the southern edge of the Jebel Abu Rujmein, a range of hills that extends northeastward across central Syria. The cave is more than 10 m wide at the entrance and extends 14 m back into the hillside. The site was identified in 1967 by a Japanese team from the University of Tokyo and was excavated by them in 1970 (under the direction of Hisashi Suzuki), 1974 (Kazuro Hanihara), and again in 1984 (Takeru Akazawa).

The archaeological sequence consisted of two upper deposits, horizons I and II, and two lower ones, horizons III and IV (Endo et al., 1978, pp. 88–93). Horizon I contained mainly modern and Neolithic material. The deposits of horizon II filled a pit 1.5 m in diameter near the cave's entrance. The artifacts in this horizon were characteristic of the Geometric Kebaran phase of the Epipaleolithic period. The two lower horizons were much older: both contained Middle Paleolithic artifacts that were presumably made by Neanderthal people. The flint tools from horizon III were typical of the Levantine Levalloiso-Mousterian culture, whereas the assemblage from horizon IV, although still with Middle Paleolithic affinities, was significantly earlier (Akazawa, 1987, pp. 155–156)—it was principally composed of flint blades that had been struck from prismatic cores. The lower part of horizon IV, level IVB, consisted of a large hearth full of ashes.

The excavators experienced some difficulty in determining the ages of these deposits, in part because horizons III and IV were too old to be dated satisfactorily by the radiocarbon method. They obtained a fission-track date of about 75,000 BP for a burnt pebble from the IVB hearth. The date was confirmed by the thermoluminescence dating of other burnt pebbles from the same deposit. This date is probably of the right order of magnitude for the horizon IV deposits, although horizon III could be twenty thousand years younger. A weathered layer at the junction of horizons III and IV suggested that the site was little used by humans between these two episodes of occupation. The horizon II Epipaleolithic deposits would date to about 13,000–14,000 years BP, based on analogy with other sites.

The main animals hunted by the inhabitants of the cave in all periods were wild sheep, goats, camels, and a small equid. These species are typical of a semiarid steppe like that around Douara today, suggesting that conditions were quite similar to the present during each period of occupation (Payne, 1983). The inhabitants also collected seeds of perennial steppe plants and the fruits of hackberry trees that grew in the hills behind the site. People probably occupied the cave seasonally, perhaps during the winter and spring.

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A. M. T. MOORE

DUNAND, MAURICE (1898–1987), French archaeologist best-known as the director, for more than fifty years, of the excavations at Byblos in Lebanon. Dunand was born and died in Haute-Savoie. His interest in Levantine archaeology began when he participated in the 1919–1920 French military campaign in Syria. After graduating from the École du Louvre, he continued his education at the École Biblique et Archéologique Française in Jerusalem (1924–1925). While working at the 1924 Palmyra and Byblos excavations, he initiated excavations at Eshmun, near Sidon. In 1925, he undertook epigraphic expeditions to Safa, the Hauran, and on Jebel al-Druze and reorganized the Museum of Suweida. In the following year he excavated in Syria in the Ledja and the Jezireh and farther east, at Arslan Tash, Til Barsip, and Luristan.

From 1940 to 1945, Dunand served as director of the French high commission for Syria-Lebanon and excavated Hellenistic Umm el-ʿAmad (1943–1945). In 1948, with the end of the French Mandate, the Lebanese Department of Antiquities authorized him to continue the Byblos excavations. With his wife Mireille, he developed a ceramic typol-

ogy, plus field techniques using the 10-m × 10-m site grid and the excavation of 20-cm levels. Byblos architecture and forty-five thousand artifacts were analyzed by level, as opposed to natural stratigraphy. This now-outmoded system was Dunand's attempt to objectify excavation. From 1954 to 1974, Dunand excavated the Greco-Persian temple of Amrit (Syria) and Tell Kazel on the Syrian coast. From 1961 to 1976 he continued his work at the Eshmun temple.

The French government awarded Dunand the Legion of Honor and made him an honorary conservator of the national museums. He left Lebanon during the civil strife of the 1970s. His prolific publications include five Byblos volumes, *Fouilles de Byblos* (1937–1958), *Oumm el-'Amed* (1962), and *Le Temple d'Amrith* (1985), and his bibliography appears in fasicle I of *Mélanges de l'Université Saint-Joseph de Beyrouth* (1970).

[*See also* ʿAmrit; Byblos; Kazel, Tell al-; Suweida; *and* Til Barsip.]

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MARTHA SHARP JOUKOWSKY

DUNAYEVSKY, IMMANUEL (1906–1968), consulting architect for many important early excavations in Israel. Born in Odessa (Ukraine) and educated as a structural engineer, Dunayevsky emigrated to Palestine in 1934. He worked first as an engineer, but after participating part-time at Benjamin Mazar's excavations at Beth-Sheʿarim, Beth-Yerah, and Tell Qasile (1949–1951), he abandoned engineering and joined Yigael Yadin's excavation at Tel Hazor as staff architect (1955). Dunayevsky joined the Department of Archaeology at the Hebrew University of Jerusalem and, until his death, served either as the architect or consulting architect for the excavations at ʿEin-Gedi, Hammath Tiberias, Masada, and Megiddo, among many others.

In addition to surveying and preparing and drawing final plans, Dunayevsky applied himself to architectural and stratigraphic analysis, in which he was gifted and insightful. Through on-site checking of walls, floors, and their interrelationships, he established the true sequence of strata and the architectural history of a site. It was, perhaps, because he was not trained as an archaeologist that he was free of the burden of preconceived theories. Dunayevsky was a master at reading a site's relative chronology, as preserved in its architectural history. His contribution to the Hazor expedition (1954–1956, 1968), was the final and perhaps the best example of his work.

[*See also the biographies of Mazar and Yadin. In addition, the sites mentioned are the subject of independent entries.*]

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RONNY REICH

DURA-EUROPOS, site located near the modern village of as-Salihiyeh, 92 km (57 mi.) southeast of Deir ez-Zor (Dayr az-Zawr), Syria, on a promontory along the southern bank of the Euphrates River (34°46′ N, 40°46′ E); the escarpment down to the river formed a natural rampart on the east with deep wadis on the north and south. The ancient city covered approximately 180 acres, with its main gate facing west, toward Palmyra. The ruins were first noted in the late nineteenth century by travelers and archaeologists but were generally assumed to be Arab because Greek, and, especially Roman, sites were not thought to extend this far east. A city with the double name "Dura, called Europos by the Greeks" was known from the first-century geographer Isidore of Charax/Bosra, but the name had been erroneously attached to the unexcavated tell at Abu'l Hassan. The ruins at as-Salihiyeh yielded some ancient materials in a 1912 survey by Friedrich Sarre and Ernest Herzfeld, but the advent of World War I precluded further investigation. [*See the biography of Sarre.*]

The site was rediscovered in 1920 by a company of British soldiers in the aftermath of World War I. While digging emplacements for bivouac among the visible ruins, they uncovered "some ancient wall paintings in a wonderful state of preservation . . . in the west corner of the fort." After reporting to the garrison commander at Abou Kemal (now in Iraq), a request was made to James Henry Breasted, who had been surveying potential excavation sites in the region, to confirm the find. He viewed the finds (located in what is now known as the Temple of the Palmyrene Gods) and identified the scene from the depiction and *dipinto* as the Roman tribune Julius Terentius in the act of sacrifice. It was

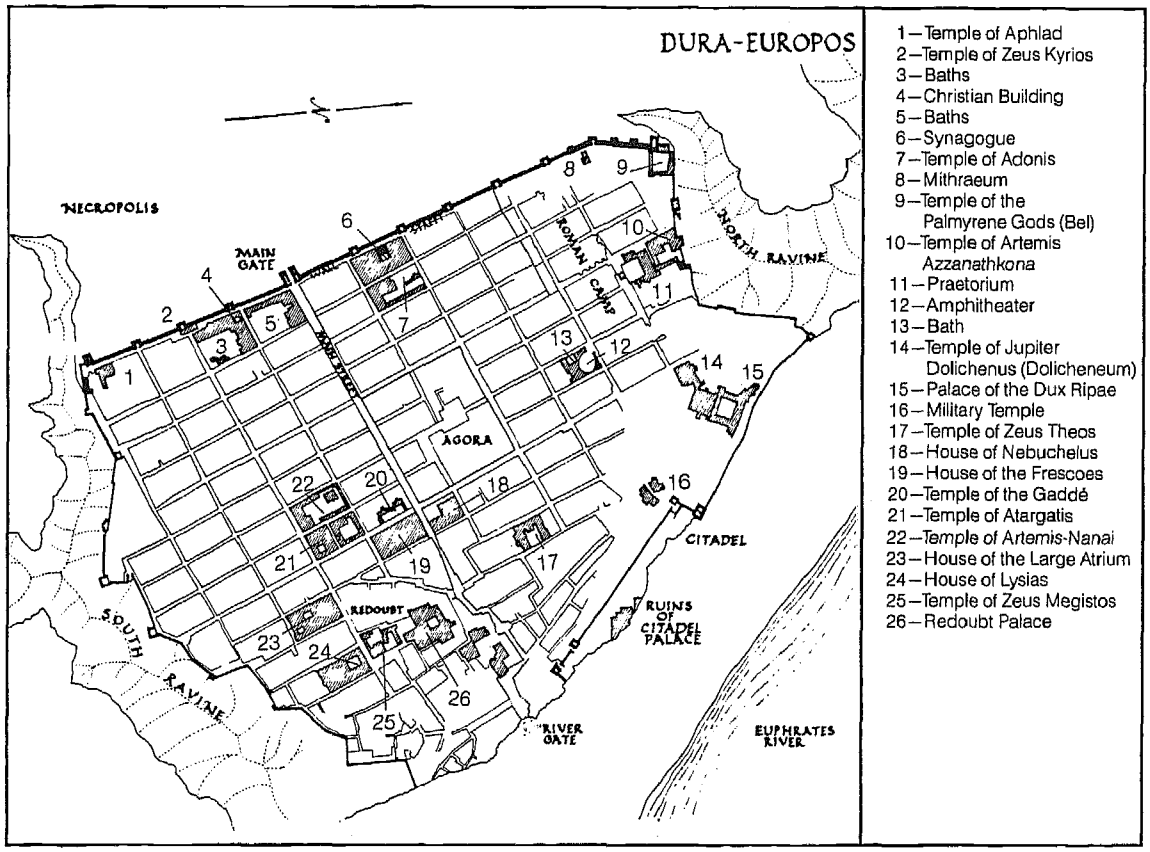
to date the easternmost find of any Roman remains. Another *dipinto* from the same painting referred to the *Tyche* ("Fortune") of Dura, thus providing clear identification with the double-named city of Isidore. [*See the biography of Breasted.*]

In the following years, the area came under the French Mandate. In November 1922 and October–November 1923, the first brief seasons of archaeological work were conducted by Franz Cumont under the auspices of the French Academy of Inscriptions and Letters in Damascus. While some initial discoveries were made, largely in the northwest corner of the city, the excavations had to be abandoned because of political unrest. When relative peace was restored in 1926, the site's remoteness hindered resuming work until a joint expedition between the French Academy and Yale University was arranged. Mikhail I. Rostovtzeff, who had just joined the Yale faculty, was eager to involve the university in the burgeoning archaeology of the region. The first joint expedition was conducted in 1928, and ten campaigns were completed through 1937. Cumont and Rostovtzeff initially served as the project directors, with Maurice Pillet of the French Academy as field director. The field directorship continued under Clark Hopkins (1931–1935) and Frank E. Brown (1935–1937), both of Yale. The field seasons were published serially under the title *Excavations at Dura-Europos: Preliminary Reports* (New Haven, 1929–1952). Subsequent research and analysis of the finds removed to the Damascus Museum and the Yale University Art Gallery resulted in a series of *Final Reports* (New Haven, 1943–1977), as yet incomplete.

The site may have been settled in earlier periods, but no significant levels of occupation are known prior to the establishment of the Hellenistic city by Seleucus I Nicator in about 300 BCE. In 114 BCE it was ceded to the Parthians, who remained in control until the Roman expansion under Trajan (116). Following the Roman withdrawal (118), it returned to Parthian control. [*See* Parthians.] Eventually, the campaign of Lucius Verus (168) brought the entire region firmly under Roman control. The city was a fortified station along the ancient trade routes between Seleucia/Ctesiphon and Charax/Bosra to the east, and to the west either Antioch (by way of Ciresium and Aleppo) or Damascus (by way of Palmyra). In 209–211 it was garrisoned by the Romans and in the 220s–230s was further reinforced against the rising Sasanian kingdom. After withstanding an initial attack under Ardashir in 239, it was besieged in 253/54 by his son Shapur I (240–264). Despite substantial defense efforts, including sacrificing the area along the interior of the western city wall as fill for an embankment, it fell and was razed in 256. While much of Dura is now known through excavation of the foundation plans and debris from the destruction, it is the embankment that has yielded the most remarkable finds left intact from the time they were buried (see below).

Excavation of this single-stratum site revealed a complex and intersecting pattern of habitation that included influences from periods of Hellenistic, Parthian, and Roman control as well as local cultures including Persian, Palmyrene, Aramaic, Safaitic, and other Semitic linguistic groups. The Hellenistic and Early Parthian city was grouped around the central area. The western defense wall and the main gate (called the Palmyra Gate) were added by the Parthians, probably sometime in the late first century BCE. Under the Romans (or later the Parthians), a regular grid plan was imposed on the city; it provides the basic plan from which the excavators developed their reference notation (see figure 1). Epigraphic, papyrological, and documentary remains have been found in Greek, Latin, Aramaic, Palmyrene, Safaitic, and Middle Iranian (Pahlavi). At least by the later Parthian and Roman periods, Dura seems to have had strong cultural, commercial, and administrative ties to Palmyra. In addition to the Temple of the Palmyrene Gods (J3–5; a triad of military deities associated with Bel and Iarhibol), the *Tyche* of Palmyra was publicly displayed. There is also a Temple of Palmyrene Gad(de) (H1). Other regional cults include two temples for the Parthian deities Aphlad (N8) and Artemis-Azzanathkona (E7). The latter is a compound of Anat; the name and iconography suggest affinities to Atargatis (also called Dea Syria), where Aphlad would be the expected consort. In addition, there is a separate temple to the Syrian/Phoenician Atargatis (H2) with her regular consort, Hadad. Traditional Hellenistic and Roman cults are represented by temples to Adonis (L5), Greek Artemis (H4), Zeus Kyrios (N7), Zeus Theos (B3), Zeus Megistos (C4), and Jupiter Dolichenus (X7). In several of these cases the central cult figures, either in frescoes or reliefs, were also found. These religious monuments clearly show the mixture of regional Syro-Phoenician, Palmyrene, and Parthian traditions with both Hellenistic and Roman elements. [*See* Phoenicians; Palmyra.] Zeus Kyrios is identified with Baʿal Shamin (Baʿal Shamêm), and Zeus Theos is depicted in Parthian-style dress. The art also shows a mixture of Hellenistic and so-called orientalizing influences and has sometimes been labeled proto-Byzantine, especially in its use of frontality.

The temples span several phases in the occupation of the city and continued in use to the end, with some reflecting continued expansion. Some peculiarities in their plan and architecture are collectively known as "the Durene temple type." This type of planning seems to have stretched from the Late Hellenistic occupation of the city down through end of the Roman period. Typically, these Durene temples employed a spacious walled temenos (sacred precinct), often with multiple small chapels or dining rooms around the outer walls. The main sanctuary of the god(s) was a smaller enclosure (the naos proper), usually set off at one end and sometimes with flanking chambers. The archaeological evidence further indicates that considerable renovation and enlargement occurred in these temples (especially of the Palmyrene Gods) over time; some of the temples were built



DURA-EUROPOS. Figure 1. *Plan of the city.* (Drawing by David O. Kiphuth, Courtesy ASOR Archives)

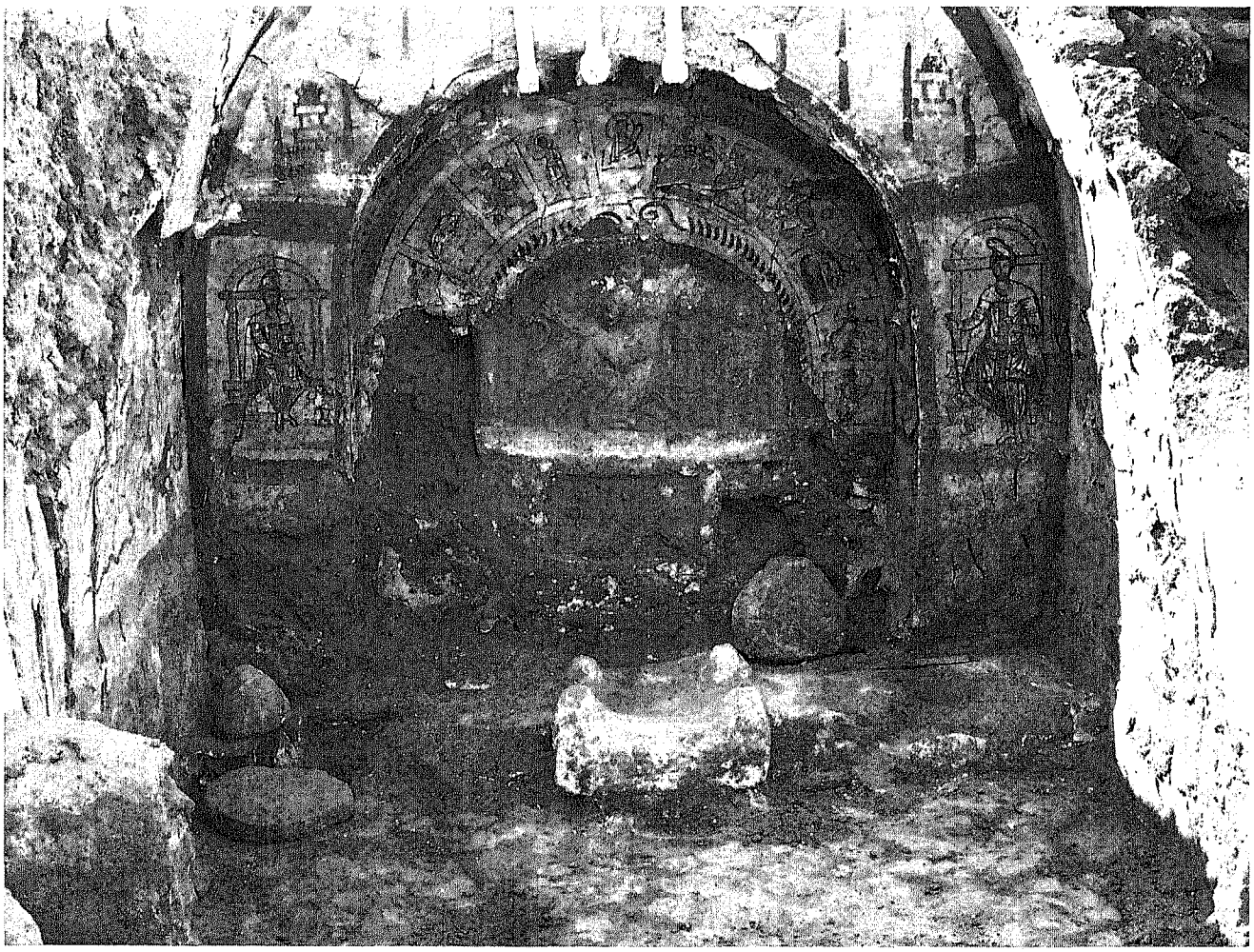
on or from existing residential areas (especially those of Atargatis and Gadde).

The Hellenistic city was clustered in the center of the walled area around an open central agora (G1–8) that had, in earlier stages, functioned like a bazaar. By the Roman period, the agora had been developed architecturally into a market center, with less open space. A proliferation of domestic blocks and other, larger buildings during the late second and early third centuries CE filled the walled areas, especially along the city's western and southern sections. This phase of civic building corresponds to the consolidation of Roman control and the period of reinforcement of the garrison under the Severan emperors. At this time, the northern section of the city was partitioned off for the military garrison, and a new palace (X3–5) of the river commander and a bath (E3) were begun in upper part of the city. [*See* Palace; Baths.] The garrison incorporated the areas around the temples of Azzanathkona and the Palmyrene Gods; added to the same area was a sanctuary of Jupiter Dolichenus, a favorite among the legions. Under Caracalla, the city was reinforced by troops from the Fourth Scythian and Sixteenth Flavia Firma Legions, under the commander Antonius Valentinus. Later detachments of the Third and Fourth Cyrenaica (from Bosra) are also recorded. In its final days, the city was the headquarters of the Twentieth Palmyrene Cohort, under the military tribune Julius Terentius. A graffito records that the Persians first attacked the city in 239 CE, at which time Julius Terentius was killed. The city was further reinforced by elements of the Second Paphlagonian (Galliena Volusiana) Cohort. In addition to numerous inscriptions, contracts, and literary documents, the excavations yielded a number of military records, including pay rosters and census records. A number of the records referring to Roman cleruchs indicate that Dura was considered a colony for veterans of these eastern legions. Military accouterments were well preserved in the fill. One such find was a Roman wooden shield with decorated leather covering; among the painted decorations was a ship and a list (partially damaged) of the posts of the legionnaires from the Black Sea to Dura. Individual studies of parchments and papyri, coins, textiles, glassware, and several ceramic classifications appear in the *Final Reports.*

The excavations along the city's western wall produced the most interesting finds because of their level of preservation (they had been buried during the final siege of the city). One such edifice was a suite of rooms renovated from two neighboring houses that had served as the offices of a scribal guild. Most of the areas along the western wall had

earlier been domestic blocks (insulae) of contiguous private homes. Three of the most significant discoveries for the city's religious history were found in such houses along the western wall. In each case, the existing domestic edifice had been renovated in one or more stages for use as a religious center. These include a sanctuary of Mithras (or mithraeum; see figure 2), a synagogue, and a Christian building. The mithraeum (block J7) went through three distinct phases of renovation and enlargement from its original form as a private house; the first occurred shortly after the Roman takeover in 168 CE, and abundant graffiti and inscriptions make it clear that the membership was largely from the military. In the middle phase (c. 209–211), when a major structural renovation project transformed the building into a more formal religious hall, the main donor was the garrison commander Antonius Valentinus. The final renovation (c. 240s) included an elaborate decorative program. While the mithraeum should not be overlooked as a contribution to the study of the Roman cult of Mithras, it is really the other two that have attracted the most attention. The Christian building at Dura is the earliest clearly identifiable church building from the Roman world. The Jewish edifice is one of the earliest known synagogue sites from the Diaspora and is especially important for its development of synagogue planning and decoration. [*See* Churches; Synagogues.]

The synagogue (block L7) was originally installed in a house facing the western wall in the middle of an insula of ten houses. The house was typical of Durene private architecture: several rooms were grouped around a central open court, from which a corridor gave access to the street. The function of some of the rooms in the house continued to be domestic, but one room was adapted for use as a Hall of Assembly. There is some evidence of minimal decoration and seating in this early hall. The first synagogue installation



DURA-EUROPOS. Figure 2. *The late sanctuary of the Mithraeum.* Dated to the last half of the fifth century CE. (Courtesy ASOR Archives)

dates to the last quarter of the second century CE. Numismatic evidence indicates that there might have been Jews present in the city from the earlier Hellenistic and Parthian periods, especially during the Hasmonean dynasty (late second–first centuries BCE). No other direct evidence exists for a permanent synagogue community prior to the adaptation of the house, however.

It would appear that the early Hall of Assembly had a Torah niche or ark *('aron ha-qōdeš)* installed along the western wall, although it may have been a secondary installation. Nonetheless, it would be one of the earliest known Torah niches from all ancient synagogues. In approximately 244–246 CE this edifice was extensively remodeled to form an even larger and more formal synagogue. The renovation involved gutting the interior of the earlier house (including the hall) and tearing down two exterior walls. New, heavier walls were built, and the area of the earlier house was divided into two main areas: a large, rectangular Hall of Assembly and an entry court with *tristoa* colonnade. In addition, the adjacent house to the east was annexed to the synagogue building and used as a suite of entry chambers and for the quarters of a resident caretaker. Thus, the total area of the new complex was more than double that of the earlier one. Within a few years of the renovation, the Hall of Assembly was further decorated with an elaborate series of figural paintings depicting biblical scenes. [*See* Wall Paintings.] These paintings seem to be a professional commission, perhaps by Jewish artists from Lower Mesopotamia using an established pattern of artistic renderings of biblical stories. Many of the paintings are signed with Pahlavi *dipinti,* while the other signatures on the paintings and inscriptions in the hall are in Greek and Aramaic. The paintings are grouped in patterns around the center of the hall's long, western wall, in which an integral single-block Torah niche had been installed opposite the room's main door. Stepped benches also lined the walls. The plan of the hall and the paintings clearly reflect a focal orientation toward the Torah niche. There is no indication of other areas for assembly in the later synagogue hall.

The Christian building was installed by a single stage of renovation of a private home (block M8) just a little farther to the south. [*See* House Churches.] A graffito in the undercoating of the wall plaster indicates that the house was built (or rebuilt) in 231 CE; therefore, the renovation for Christian usage likely occurred in about 241. No other direct archaeological evidence of a Christian presence in the city is known prior to the renovation. The basic domestic plan was retained, but regular household activities ceased. The renovations were concentrated in two main areas. On the south side, the partition wall between two adjoining rooms was removed in order to create a long, rectangular hall oriented toward a low dais on the eastern end. No other decoration or accouterments are known from this room, except for some damaged graffiti that seem to refer to some of the Christian leaders. On the other side of the courtyard, a small room in the northwest corner of the house was converted into a baptistery. [*See* Baptisteries.] It is, to date, the earliest known from archaeological sources. The square baptismal font (approximately one meter deep) was set into the floor; above, an arched canopy was carried by two columns. The room was fitted with a low ceiling just above the canopy. The baptistery was finished with a program of figural paintings depicting a combination of biblical scenes (Adam and Eve, David and Goliath) and scenes from the life of Jesus (the Samaritan Woman at the Well, the Healing of a Lame Man, and Jesus and Peter Walking on Water). The central scene in the arch lunette of the canopy above the font is that of a Good Shepherd. Unfortunately, the rear portions of the room were more heavily damaged and the upper register of the artistic program is lost. In the lower register, the main scene stretched as a single narrative composition from the rear (east) wall around the side (north wall) and up toward the font itself. It seems to depict five women bearing torches in procession toward a sarcophagus. The scene is usually read as the Women at the Tomb of Jesus. The fact that there are five women likely comes from a blending of the different Gospel stories, such as in Tatian's *Diatessaron,* a second-century harmonized version of the four Gospels known to have been used in some Syrian churches. A fragment of a Greek version of the *Diatessaron* on parchment, the earliest manuscript evidence for the document, was also found in the fill along the western wall, although not in the immediate context of the Christian building.

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L. MICHAEL WHITE

DUSSAUD, RENÉ (1868–1958), French Orientalist and archaeologist who organized the Syrian Antiquities Department and, over a period of twenty years, various French expeditions to Syria. Dussaud graduated from the École Centrale des Arts et Manufactures in Paris, with an assured career in engineering. He chose to investigate the Near Eastern world of his father, who had worked on the Suez Canal. Trained in the classics, Dussaud embarked on learning Arabic and Classical Hebrew. He was encouraged in his work by Charles S. Clermont-Ganneau, whom he accompanied on several archaeological missions to Syria and Lebanon. Dussaud was an energetic scholar who published Nabatean, Greek, and Latin inscriptions. Submitting his thesis to the École des Hautes Études in 1899, he thereafter published *Introduction à l'histoire des religions* (1914) and *Les Arabes en Syrie avant l'Islam* (1907).

Dussaud theorized about Near Eastern cultural exchanges. Enthusiastic about Arthur Evans's discoveries on Crete, he visited the island and in 1910 produced *Les civilisations préhelléniques dans le bassin de la mer Égée* (1914). Following World War I, Dussaud returned to Syria, which was then under French mandate. There he presided over the opening of the Byblos excavations and ensured French expeditions to Ras Shamra/Ugarit and Mari.

Dussaud was codirector of the *Revue de l'histoire des religions*, and in 1920 founded the periodical *Syria*. In 1923 he was appointed to the *Académie des inscriptions*, replacing his mentor, Clermont-Ganneau. He continued to research Canaanite cults and their interconnections with the Hebrew Bible in a two-volume work, *L'art phénicien du IIe millénaire* (1949).

[*See also* Mari; Ugarit; *and the biography of Clermont-Ganneau.*]

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Dussaud was a prolific writer, interested in many fields, including philology, epigraphy, numismatics, and archaeology. He published articles on Safaitic, Nabatean, Greek, Arabic, Aramean, Phoenician, and Neo-Punic. His early bibliography, listing almost three hundred articles and volumes, appears in *Mélanges Syriens* 30 (1939). Other works by Dussaud include the following:

Les Arabes en Syrie avant l'Islam. Paris, 1907.
Les civilisations préhelléniques dans le bassin de la mer Égée. Paris, 1914.
Introduction à l'histoire des religions. Paris, 1914.
Les origines cananéennes du sacrifice israélite. Paris, 1921.
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Les découvertes de Ras Shamra (Ugarit) et l'Ancien Testament. Paris, 1937.
Les religions des Hittites et les Hourrites. Paris, 1945.
L'art phénicien du IIe millénaire. 2 vols. Paris, 1949.
La pénétration des Arabes en Syrie avant l'Islam. Paris, 1955.

MARTHA SHARP JOUKOWSKY

E

EAST AFRICA. *See* Ethiopia; Nubia.

EBAL, MOUNT, located some 50 km (30 mi.) north of Jerusalem, one of the highest peaks in Israel, rising to about 940 m above sea level. It is located in the Manasseh tribal allotment in the heart of the hill country of Samaria. Opposite, to the south, is the slightly lower Mt. Gerizim, with several excavated ruins. Between the two mountains, in a well-defined pass, lies Shechem (Tell Balaṭah), once the capital of ancient Israel, on the main road leading north from Jerusalem to the Esdraelon Valley.

No archaeological sites on Mt. Ebal were known before 1980, when a survey team, led by Adam Zertal, discovered what appeared to be an Early Israelite mountaintop high place on a rocky ridge high on the eastern slopes, 800 m above sea level (map reference 1773 × 1829). The survey covered 2,000 sq km (or 1,240 sq. mi.) of the Manasseh hill country. The site overlooks the eastern Samaria hill country, the Wadi Far'ah region, and parts of Transjordan. It was excavated by Zertal in the course of eight seasons (1982–1989), on behalf of Tel Aviv and Haifa Universities and the Israel Exploration Society.

The site was founded during the Late Bronze Age IIB/Iron Age IA transitional period (late thirteenth century BCE). The dating is based on pottery, including a few Mycenaean IIIC sherds, a dated stone seal, and two egyptianized scarabs from the latter part of the reign of Rameses II (c. 1240–1215 BCE).

Both of its levels were excavated. In level 2 (c. 1240–1200 BCE), a small stone circle 2 m in diameter was found filled with ash and animal bones; near it were two walls and an area covered with large potsherds. The circle had been arranged directly on the bedrock. Sections under later courtyards (level 1B) revealed intensive use of fire on the rock and many animal bones. On a lower terrace west of the circle, between a low rock cliff and an enclosure wall built with large boulders, a structure resembling an Iron Age four-room house was excavated and attributed to level 2. [*See* Four-room House.] Southeast of it, along the same wall, a portion of a storehouse was unearthed, with eleven large pithoi of the collared-rim type lying in stone "cells."

Sometime in the early twelfth century BCE, the site underwent major changes (level 1B), without evidence of destruction or abandonment. At the center of the site was a structure measuring about 9 × 14 m; built of large, undressed stones, it is preserved to a height of 3.25 m. Two walls led from the structure's outer section to its inner section, which was filled with stones, ash, burnt animal bones, sherds, and other debris. The excavators distinguished four fill levels in the debris, which seemed to have been sealed over by a stone pavement. Surrounding the central level 1B structure on three sides, and about 0.8 m lower than it and connected to it, was a stone wall about 1 m wide. A double stone ramp led up from the outside to the central structure: the main ramp, leading to the top, was 1.2 m wide; the secondary ramp, joined to it and leading to the surrounding wall, was 0.8 m wide. The structure was built as part of a stone enclosure (26 × 26 m) whose southwestern side consisted of two adjoining, stone-paved open-air courtyards. Built into these courtyards were eleven pitlike installations, containing ash, animal bones, and pottery vessels. Some ninety similar installations were found outside the central structure on all sides. These contained metal objects, seals and scarabs, and vessels of different types.

Other changes in level 1B included the closing and covering over of the level 2 four-room house, converting it into an open square in front of the central structure, and the building of a double temenoslike enclosure with a central complex inside it. The two enclosures were connected by a flight of three stone steps 7.5 m wide. Level 1B was occupied for fifty-seventy years (c. 1200–1130 BCE); pottery finds indicate that it did not survive into the eleventh century. The site was systematically abandoned: there was no sign of destruction or fire, and it had been deliberately sealed with a stone cover (level 1A).

The excavators suggest a connection between the twelfth-century BCE level 1B complex and the traditions in *Deuteronomy* 27:1–9 and *Joshua* 8:30–35. These describe a large, stone-built sacrificial altar erected by Joshua on Mt. Ebal, under the command of Moses, where the people of Israel gathered and an important ceremony took place. Evidence for this identification—one of the few instances in Syro-Palestinian and biblical archaeology where a structure men-

tioned in biblical texts can be correlated with a specific archaeological discovery—is seen in the level 1B complex as a whole. It is interpreted as a raised altar surrounded by a temenos wall. The stone installations, intended for offerings; the absence of living quarters in level 1B; some special types of pottery; and, particularly, the nearly three thousand animal bones, 96 percent of which are from cattle, sheep, goats, and fallow deer (17 percent of the total sample of burnt material) attest to the area's cultic use. All but fallow deer are considered sacrificial animals in biblical and later rabbinic traditions. The installation itself can be compared with similar altars mentioned not only in *Deuteronomy* and *Joshua,* but also in *Ezekiel,* in the writings of Josephus, in the Temple Scroll, and in the Mishnah. Moreover, the site conforms with the biblical account in date, in the character of the place, and in geographic setting.

The cultic and biblical interpretation of the site, while strongly maintained by the excavator, has not gone unchallenged. Some archaeologists (Aharon Kempinski, 1986; Anson F. Rainey; and William G. Dever) deny the cultic connection altogether and suggest that this be seen as an isolated house or watchtower. Other specialists, however, concur as to its cultic nature, but interpret it differently: Michael David Coogan suggests a non-Israelite cult; Israel Finkelstein (1986) accepts that it is an early Israelite cultic high place, but not an altar; and Amihai Mazar (1990) concurs with its possible biblical connection. Such biblical scholars as Moshe Anbar (1985) and André Lemaire (1990) accept the site's cultic character but go no further. Finally, some historians (Nadav Na'aman and Gösta W. Ahlström) suggest that the Mt. Ebal installation may be the biblical "Tower of Shechem," the cultic center of Israelite Shechem mentioned in *Judges* 9. Nevertheless, there is wide agreement over the dating of the site to the late thirteenth/early twelfth centuries BCE.

The vigor of the debate concerning the Mt. Ebal site is related to its importance regarding the problem of the date of the Israelite settlement in Canaan, the origins of Israel, and, above all, the historicity and dating of the pentateuchal traditions, thought by many to be late and ahistorical.

[*See also* Altars; Samaria; Samaritans; *and* Shechem.]

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ADAM ZERTAL

EBLA (mod. Tell Mardikh), large Bronze Age site in northern Syria, located 60 km (37 mi.) south of Aleppo. The tell, a slightly irregular oval, has a surface area of nearly 60 ha (148 acres). The large lower town surrounds the acropolis, which reaches a height of 431 m and is located almost at the center of the settlement. At the tell's extreme periphery, the outline of the town's ancient outer fortification, 22 m higher than the level of the surrounding fields, is relatively visible. The Italian Archaeological Expedition of the University "La Sapienza" of Rome has worked at the site every year since 1964, under the direction of Paolo Matthiae.

Before the excavations at Tell Mardikh, Ebla was known from two copies of Old Akkadian royal inscriptions by Sargon and Naram-Sin of Akkad, who both boasted of conquering the town; from the Sumerian statue B of Gudea of Lagash as the region of provenance of precious wooden objects; and from economic texts of the Third Dynasty of Ur. [*See* Akkadian; Akkade; Lagash; Ur.] During the seventeenth and fifteenth centuries BCE, Ebla appears in rare quotations in the texts of Alalakh VII and IV; after its final destruction, at the beginning of the fifteenth century BCE, Ebla is mentioned in a Hurrian fragment dealing with ritual from the archives of Ḫattuša and on the hieroglyphic list at Karnak of Pharaoh Thutmose III's Syro-Palestinian conquests. [*See* Alalakh.] The identification of Tell Mardikh with Ebla was made in 1968 after the discovery, in the western part of the acropolis, of a basalt torso with an inscription of Ibbit-Lim, son of Igriš-Khep, king of Ebla, dedicated to the goddess Ishtar (c. twentieth century BCE). The formative period of Mardikh I (c. 3500–3000 BCE) is known from fragmentary levels of its central and final phases on the acropolis.

Stratum IIB. The city's development peaked in Mardikh IIB1 (c. 2400–2300 BCE), the period of Royal Palace G and of the cuneiform tablets in the state archives (see below). [*See* Cuneiform; Tablet.] The extent of the urban center probably reached nearly 50 ha (124 acres) before the end of Mardikh IIB1, whose destruction is attributed to Sargon II of Assyria. [*See* Assyria.] That destruction brought to an end a phase of great economic and political expansion. The settlement was then reduced in size and may have been limited

to only its northern region in Mardikh IIB2 (c. 2300–2000 BCE).

The Mardikh IIB2 period corresponds to the chronological horizon of ʿAmuq J. [*See* ʿAmuq.] It is thus far represented in the lower town on the northwest only by an imposing building, called the Archaic Palace, nearly 500 sq m of whose trapezoidal plan have been exposed. The still poorly known intermediate palace of Mardikh IIIA was erected over part of this building, and, later, the large and quite well-preserved northern palace of Mardikh IIIB (see below). The Archaic Palace was quite probably the royal residence contemporary with the Third Dynasty of Ur. [*See* Palace.]

Stratum III. Following a presumed second destruction, a renaissance took place in the urban center in the Mardikh IIIA phase (c. 2000–1800 BCE), whose ceramic horizon largely corresponds to Hama H (twentieth century BCE). [*See* Hama.] The settlement at Ebla was rebuilt according to a precise urban pattern: the town had a double fortification wall composed of an inner wall surrounding the citadel, and an outer circumference wall with four imposing gates that enclosed a belt of large secular and religious buildings in the lower town and public buildings on the citadel. The outer wall, nearly 3 km long, was a typical earthen rampart that enclosed nearly all of the site's 60 ha. It was limited at the bottom by a revetment of large stone blocks; a relatively shallow wall was constructed at the top, lost almost everywhere except east of the southwest gate. The inner wall also had a high sloping revetment rising out of stone blocks at its base; a high slope in the middle was dug from the side of the ancient tell on the acropolis; and, at the top, a mud-brick wall had a deep scarp at its base, also constructed of mud brick. The stratum IIIA buildings underwent reconstruction in the following phase, Mardikh IIIB (c. 1800–1600 BCE). After the total destruction of Mardikh IIIB (c. 1600 BCE), provoked by the invasion of the Old Hittite king Ḫattušili I (or, more probably, of his successor, Muršili I), a large part of the town was finally abandoned. [*See* Hittites.]

Palace G. Large sectors are known of the extensive Royal Palace G, from the first great period at Mardikh (IIB1), which corresponds to Early Bronze IVA. Nearly 2,400 sq m of the palace have been excavated, mostly on the western and southern slopes of the acropolis; the complex probably extended across the top of the acropolis. The peripheral quarters of its western wing specialized in food production, and the southern wing was devoted to storage; both are quite badly preserved. The well-preserved area on the southwest slope was the most important: it included a large exterior space with a porch, called the Court of Audience; the royal dais was on its north. On the east, a monumental stairway (22 m long) overcame the nearly 6-meter difference in the level between the lower town and the acropolis. South of the gateway, which was really the main entrance to the palace, the administrative quarter was divided into a limited outer sector below the porch and an inner sector with a court (also with a porch) that opened, to the south, to the throne room (L. 2866); the throne room was nearly 16 × 11 m in size.

Archives. The cuneiform tablets of the state archives, which include more than seventeen thousand inventory numbers of complete and fragmentary documents, were placed in the major archive room (L. 2769) in the outer sector of the administrative quarter; a smaller number were found in a lesser archive (L. 2712) below the eastern porch of the Court of Audience, but north of the gateway, in a trapezoidal storeroom (L. 2764). [*See* Libraries and Archives.] The archives, which include economic, administrative, juridical, and lexical accounts and literary texts and letters, offer exceptional documentation of the city's social and economic structure, as well as information about administrative organization, religion, and literature. Particularly important is the contribution they make to linguistics: the language of the archives is a very archaic Semitic language that some scholars consider to be a dialect of Old Akkadian; others believe to be an older, independent Semitic language called Eblaic; and still others consider an antecedent of later Northwestern Semitic languages. The texts cover a period of not more than forty or fifty years and are contemporary with Kings Igriš-Halam, Irkab-Damu, and Išar-Damu, who ruled with the help of some very high officials—Ibrium, Ibbi-Zikir, and Dubukhu-Adda, who also succeeded from father to son, like the kings.

Small finds. The discovery, in the inner court of the administrative quarter, of several fragments of Egyptian bowls of diorite and alabaster from the pharaonic period and a lid with the name of Pharaoh Pepi I of the sixth dynasty, offers a basic synchronism between Sargon of Akkad, Pepi I of Egypt, and Išar-Damu of Ebla, at about 2300 BCE. In the royal palace of Mardikh IIB1 (see above), whose ceramic horizon corresponds to phases J8–6 at Hama, and perhaps to the final phase of ʿAmuq I, several fragmentary masterpieces have been found of ancient palatial furniture. Among these, of primary importance are two steatite plaques of headdresses, originally belonging to two royal figures, a male and a female; wooden carvings with mother-of-pearl inlays, primarily of animal figures, decorating a chair and a table; several fragments of composite panels of a series of figures of officials, carved in high relief in wood, covered with gold leaf, and completed with limestone, steatite, and lapis-lazuli detailing for the clothing and headdresses; and cylinder seals known from impressions on clay sealings with friezes of athletic contests typical of the late Early Dynastic tradition in Mesopotamia, but with several typically Syrian figures (e.g., the great goddess dominating wild animals and the cow woman, inspired by the figure of the bull man). The noteworthy Standard of Ebla that was discovered belongs to an early phase of Mardikh IIB1 (c. 2400 BCE). Several of its figural marble inlays are preserved, with scenes of triumph and divine figures representing the lion-headed eagle over

two human-headed bulls, a symbol of an early Syrian deity of war—of the Sumerian Ningirsu or Ninurta type. [*See* Sumerians.]

Sacred and royal architecture. The citadel also contained temple D, dedicated to the goddess Ishtar, with a longitudinally tripartite typology. The temple may be considered a very old antecedent of Solomon's Temple in Jerusalem, built in the tenth century BCE. [*See* Jerusalem.] In the lower town, a belt of sacred buildings surrounded a large part of the acropolis. In the northeast sector was the temple of the god Shamash. To the northwest were the northern palace and the sacred area of Ishtar, with the great temple P2 and monument P3, an imposing cult terrace with a court that hosted the sacred lions of the goddess. In the west and southwest sectors were the large western palace (more than 7,500 sq m); temple B of the god of the netherworld, Resheph; and sanctuary B2, dedicated to the cult of the royal deified ancestors.

The northern palace was a ceremonial building related to kingship, and the western palace was the residence of the crown prince.

Necropolis. It is meaningful that the area of the royal necropolis was situated among the western palace, temple B, and sanctuary B2. [*See* Necropolis.] Three important tombs, dating from between 1825 and 1650 BCE, were excavated: the Tomb of the Princess (c. 1800 BCE), the only intact one, from which a group of jewelry (including six bracelets, an earring decorated with granulation, a pin with a star-shaped head, and a necklace) and more than sixty clay pots were recovered; the Tomb of the Lord of the Goats, found with gold jewelry, bronze weapons, stone vases, ivory talismans, more than seventy clay pots, and an Egyptian ceremonial mace belonging to Pharaoh Hetepibre Harnejheryotef (r. 1770–1760 BCE); and the Tomb of the Cisterns, closed in about 1650 BCE, but sacked at the time of the conquest of the town in about 1600 BCE. [*See* Tombs; Jewelry; Weapons.]

Art and iconography. Several fragments of very important sculptures were found in the Old Syrian town of the end of Mardikh IIIA, and of the first and central phases of Mardikh IIIB: carved double basins with ritual and mythical reliefs from temples B, D, and N (c. 1850–1750 BCE) and large fragments of important royal statues, particularly from temple P2, of a seated king and of a standing queen (c. 1700 BCE). These were the first evidence of the great statuary of inner Syria, contemporary with the classical style of the Old Syrian culture. Although at Ebla remains of Old Syrian glyptics are rare, several impressions on jars from the western palace produced a dynastic seal belonging to a crown prince, king Indilimgur's son (reigned c. 1650 BCE), with the figures of Hadad, Khebat, and of the owner, who receives life from the two great gods. Another significant example of art produced in Mardikh IIIB is the ivory carvings, in an egyptianizing style, discovered in the northern palace: elegant figures, carved in the ajouré technique, represent the gods in the Egyptian pantheon, from Horus to Sobekh and Hathor to Montu; heads wearing Osiris's atef crown presumably are representations of deified Old Syrian kings. These ivories probably date to about 1700–1650 BCE; they likely decorated the back of a throne or of a ceremonial bed. Other ivory pieces, probably slightly older, include a miniature figure in the round of an offering bearer carrying a gazelle and an ajouré figure of a king wearing the typical ovoid tiara. These pieces are evidence of the activity at Ebla of workshops whose output was in the Old Syrian style.

Strata IV–VI. The remains of Mardikh IVA–B (c. 1600–1200 BCE) are scattered and limited to sectors on the acropolis. Traces of rural settlement mark the Mardikh VA phase (c. 1200–900 BCE); the settlement was enlarged in Mardikh VB–C (c. 900–535 BCE). In a central phase of Mardikh VIA–B (c. 535–60 BCE), a small rural palace was built on the northern part of the acropolis. During the second century BCE, or slightly afterward, the tell was totally abandoned. The last evidence of a human presence at Tell Mardikh is scant: traces of scattered houses belonging to a third-century CE agricultural settlement; some remains, as yet unexcavated, of a poor monastic settlement that may date to the fourth–fifth centuries; and, in a peripheral region, some reused stone blocks with short Arabic inscriptions in Kufic script that may date to the ninth century—the period in which the First Crusade passed through the region and in which the name *Mardikh* appears in written sources for the first time.

[*See also* Eblaites; Ebla Texts; Furniture and Furnishings, *article on* Furnishings of the Bronze and Iron Ages; *and* Syria, *article on* Syria in the Bronze Age.]

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EBLAITES. Scholars utilize the ethnonym *Eblaites* to refer to the people of Ebla, a major Bronze Age city-state in northern Syria. Discussions about the identity of peoples, especially in the Near East, typically rely on factors such as the identification of the language utilized and the gods worshiped. Thus, because the eblaite language is Semitic and many of the gods worshiped at Ebla occur elsewhere in the pantheons of other Semitic peoples, it is generally accepted that the Eblaites were a Semitic people. However, a host of problems specific to refining this statement continues to be debated.

The classification of the Eblaite language within the Semitic family of languages is the center of a sharp debate. Some scholars view Eblaite as a dialect of Old Akkadian, in which case it would be proper to speak of the Eblaites as a branch of the East Semites (Akkadians, Assyrians, and Babylonians). Other scholars view Eblaite as a branch of West Semitic, with an especially close relationship to other West Semitic languages utilized in Syria (in particular, the roughly contemporary Amorite and the later-attested Aramaic). The majority of the evidence favors the latter opinion. To cite one example, the Eblaite first-person independent pronoun *I* is *'ana,* exactly as in Amorite and Aramaic. It is thus preferable to speak of the Eblaites as West Semites. [*See* Semitic Languages.]

The deities attested at Ebla likewise share greater similarities with the West Semitic world than with the East Semitic world. Important gods are Dagan, Hadd/Baal, Rashap, Ashtar, Kamish, Malik, and Qura (as well as the sun and moon deities whose Eblaite names are unknown because Sumerograms always are used). To illustrate connections with the West Semitic world, the god Kamish may be highlighted. This deity appears in the city name Kar-Kamish (Carchemish) in northern Syria; is attested in the pantheon of Ugarit on the Syrian coast; and appears much later as the national god of the Moabites (written almost always as Kamosh [Chemosh], but in one biblical passage as Kamish).

Although the Eblaites can be seen to have been West Semites, it is important to note that they had intimate connections with Mesopotamia. Because the Eblaites were based in a major urban center (unlike other West Semites, who may have been more rural or pastoral), the links with the large cities of Mesopotamia were strong. This will explain the fact that about fifty different Ebla texts (especially lexical texts) are duplicates of texts known from sites such as Fara and Abu Salabikh. Especially close cultural contacts appear to have existed with Kish; for example, it is known from one text that a mathematics professor from Kish worked or taught at Ebla. The city of Mari presumably served as the conduit through which much of Mesopotamian culture reached Ebla. [*See* Fara; Abu Salabikh; Kish; Mari.]

In conclusion, the Eblaites were a West Semitic people, similar to other peoples of Syria (e.g., the Amorites). However, because their culture was urban based, there were strong influences from Mesopotamia.

[*See also* Ebla; Ebla Texts.]

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Stieglitz, Robert R. "Ebla and the Gods of Canaan." In *Eblaitica: Essays on the Ebla Archives and Eblaite Language*, edited by Cyrus H. Gordon and Gary A. Rendsburg, vol. 2, pp. 79–89. Winona Lake, Ind., 1990. Discusses the West Semitic identification of the major and minor deities in the Eblaite pantheon.

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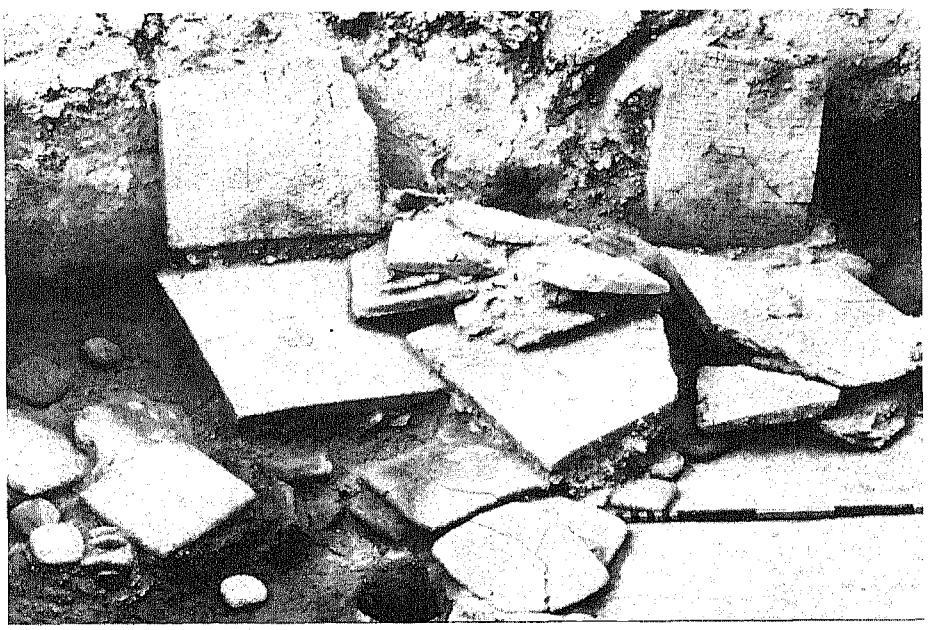
EBLA TEXTS. The tablets discovered in Royal Palace G at Ebla in Syria by Paolo Matthiae of the University of Rome are written in cuneiform script and dated to about the first half of the twenty-fourth century BCE. The texts were excavated between 1974 and 1976; since that time there have been only sporadic discoveries. The tablets recount activity during the reigns of three generations of sovereigns: Igriš-Ḥalab, Irkab-Damu, and Išar-Damu, for a period estimated to cover forty to fifty years. The only synchronism with other previously known dynasties is with Iblul-Il, king of Mari, who is mentioned in two documents that refer to the first contacts between the two Syrian cities. The lid of a vase with the cartouche of Pepi I, found in the same level as the tablets, constitutes a *terminus post quem* for the destruction of the palace.

All the texts come from Palace G. The central archive was preserved in one room (locus 2769), on the east side of the internal portico of the Audience Hall (see figure 1). The tablets (1,727 of them) that are either complete or preserved in large part come from there, along with 9,483 fragments and numerous chips. The original number can be estimated at 2,500 documents. Except for the large tablets, which were placed directly on the ground, the tablets were stored on wooden shelving, which was completely burned. From the adjacent vestibule (locus 2875) come, in addition to 276 texts, fragments of bone that could belong to styluses and a stone for smoothing the surface of a tablet, an indication that this was one of the places where the tablets were written. Records concerning foodstuffs consumed at the court (242 texts) were found in a small room in the northeast corner of the Audience Hall. An additional twenty-two texts were found on a wooden table about 10 m west of there. A small archive of predominately agricultural texts, consisting of seventeen lenticular tablets and more than one thousand fragments, was found in the vicinity of an internal courtyard. Another room contained a group of thirty-two lenticular tablets.

Most of the texts are administrative in character and relate to palace activity. Also preserved in the central archive were guides for the correct use of the cuneiform script, which, in addition to syllabic signs for the Eblaite language, made use of numerous Sumerian logograms. Some forty lists contain Sumerian words arranged by subject: names of professions, of cities, of animals, and of objects. These are of Mesopotamian origin and present a canonical arrangement already fixed in the examples known from the archives at Shuruppak



EBLA TEXTS. Figure 1. *Ebla tablets in situ.* (Courtesy A. Archi)

EBLA TEXTS. Figure 2. *The Sumerian-Eblaite vocabulary.* (Courtesy A. Archi)

and Abu Salabikh. Another eight lists, with words or expressions arranged according to acrophonic principles (the longest has 1,204 terms), were composed at Ebla. One of these served as the basis for bilingual Sumerian-Eblaite lists, which are the most ancient dictionaries known (see figure 2). Manuscripts A and C contain approximately 1,200 Sumerian words, the greater number of which are given an Eblaite translation. The list continues in A_2, which has about 350 additional words. Manuscript D, consisting of five smaller tablets, stops at number 880. A more recent recension is B, a large tablet that includes the entire list. Another eighteen smaller texts give various sections.

Literary texts are represented by one Sumerian hymn and two Semitic hymns (one of these and the Sumerian one are also known in versions from Abu Salabikh) as well as by eighteen incantations, the majority of which are in Sumerian. A long ritual for the enthronement of the royal couple, in two parallel versions written on the occasion of the marriage of the last two kings, describes cult rites for the gods and the deceased sovereigns. The chancery texts include political agreements (with Mari, Ibal, and Abarsal; this last one is made up of a long series of symmetrical clauses following a pattern that will reappear a millennium later in Syrian-Anatolian treaties), diplomatic reports, letters, and royal decrees. One letter from Enna-Dagan, king of Mari, in which he describes the conquests of his own ancestors, comes from the chancery of that city. [*See* Mari.] Compared to the economic documents, these texts show a less frequent use of Sumerograms.

The most consistent group of economic documents is made up of 543 monthly statements concerning the distribution of clothing to foreign kings and their officials and to dependents of the Eblaite administration; altogether it covers at least forty years. Twenty-seven annual registers (large tablets with up to thirty columns per side) concern consignments of gold and silver articles on the part of the administration. Sixty tablets are devoted to the palace revenues (mu-DU) remitted by the more important officials. Thirty of these date back to the most ancient phase (the reign of Igriš-Ḫalab); the others are dated to the vizier Ibrium and to his son and successor Ibbi-Zikir (seventeen and thirteen documents, respectively) and show an annual pattern. Other groups of texts are concerned with the assignment of fields, with accounts regarding agricultural production (primarily barley but also olive oil and wine) and the raising of animals, and with consignments of sheep for sacrifices to the gods and for meat consumption at the palace. In addition, there are hundreds of small- and medium-sized tablets with individual administrative records.

Eblaite is the oldest documented Semitic language and was spoken in all of northern Syria, although there may have been dialectic variants. It belongs to the archaic Semitic type, which continued in Mesopotamia with Akkadian, and of which some elements were preserved in the second millennium BCE in Ugaritic and surface later in the most ancient dialects of the southern Arabian Peninsula. However, Eblaite presents its own innovations (such as verbal nouns with the prefix t- and the infix -t-), and does not share some of those to be found in Akkadian (such as the declension of pronominal suffixes in the dual). [*See* Akkadian; Ugaritic.]

The archives reveal the history of central Syria in the third millennium. The entire area was organized into city-states that had their center in a palace, where the king and the queen, *mal(i)kum maliktum*, resided. [*See* Palace.] One offering list (*ARET* [=*Archivi Reali di Ebla. Testi*] 7.150) gives the names of ten kings of Ebla in chronological order: Abur-Lim, Agur-Lim, Ibbi-Damu, Baga-Damu, Enar-Damu, Išar-Malik, (I)kun-Damu, Adub-Damu, Igriš-Ḫalab, Irkab-Damu. This list appears again (*TM* [= *Tell Mardikh*] 74.G.120) giving twenty-six royal names, from Kulbanu, the most ancient, to Išar-Damu, the successor of Irkab-Damu and the last king of Ebla. The dynasty therefore goes back to about the twenty-seventh century BCE, proving that Semitic populations had settled in northern Syria by at least the beginning of the third millennium and that they are responsible for the process of "secondary urbanization" that took place in that epoch.

Ebla became a regional state under Irkab-Damu, when its territory included the plain of Antioch, Carchemish to the north, and Hama to the south. It finally succeeded in setting itself up in opposition to Mari, to which it had to pay a tribute for a period of fifteen years (from Iblul-Il to Enna-Dagan) that in its entirety amounted to 1,028 kg of silver

and 63 kg of gold. Under Irkab-Damu, Ibrium was placed at the head of the administration, a post he held for at least fifteen years, during which time there was an annual flow into the palace of 200–300 kg of silver, 200–500 kg of copper, 3–5 kg of gold, and about 2,000 pieces of clothing. With Ibbi-Zikir, Ibrium's son, who became vizier during the reign of Išar-Damu, there was a notable increase: 420–730 kg of silver, the same amount of copper, 2–20 kg of gold, and at least five thousand garments. The structure of the state was strongly centralized: about five thousand lower officials, artisans, and workers, and eight hundred women—practically the entire active population of the city—depended directly on the palace. The production of woolen cloth was well developed, as was metallurgy, which employed as many as five hundred workmen. It is not possible to deduce from the texts which enemy brought an end to this period of splendor.

The pantheon included Semitic divinities and local ones. Among the latter is Kura, the principal god of the city, along with his wife Barama, the goddess Išḫara (more important than Ishtar), and possibly Idabal. Semitic gods are the weather god Hadda of Ḫalab (Aleppo), the sun goddess (written with the Sumerogram *Utu*), Dagan, Rashap, and Kamish. *Il* is a frequent element in the theophorous personal names, but it does not appear in the lists of gods; it expresses the visible manifestation of the divine (originally of the divinity of the group), but found no place in Ebla's polytheistic system. Il/El, the lord and father of gods and men described in the Ugaritic myths, is the product of later theological speculation.

The series *Archivi Reali di Ebla. Testi* (Rome, 1981–) is dedicated to the publication of the texts; other documents have been published in the series *Materiali epigrafici di Ebla* (Naples, 1979–).

[*See also* Cuneiform; Ebla; Eblaites.]

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ALFONSO ARCHI

Translated from Italian by Susan I. Schiedel

ECBATANA (modern Hamadan, at 34°48′ N, 48°31′ E and 1,800 m above sea level), site located at the base of the eastern slope of the 3,571-meter-high Kuh-e Alvand range in the Zagros mountains of west-central Iran. The city is bisected from south to north by the Alusjerd River. The identification of the site with Hamadan is solidly based on both historical and archaeological evidence. The ancient name of the city appears in the Bisitun inscription of Darius II in Old Persian *ha ᵐgmatana*, Elamite *ag-ma-da-na*, and Akkadian *a-ga-ma-ta-nu* and is usually interpreted as **hangmata* "(place of) gathering." In classical, biblical, and other sources, the name variously occurs as Agbatana, Ecbatana(s), Ecbatanis Partiorum, Ekbatan, Achmetha, Ahmatan, Hamatan, and Ahmadan. Founded as the capital of the state of Media (Herodotus, Hist. 1.97), the city subsequently served as the satrapal seat of the province of Media from the Achaemenid to the Sasanian period. In addition, it served as a royal treasury and summer residence. It was in Ecbatana that Cyrus's order for the rebuilding of the Jerusalem Temple was found (*Ez.* 6:2). The city fell to Cyrus II in 550/49 BCE, to Alexander the Great in 330 BCE, to Seleucus I in 305 BCE, to Mithridates I in 147 BCE, to Ardashir I in 226 CE, and to the Muslims in 642 (AH 23), after which it became a provincial capital, which it has remained.

Ecbatana's location provides strategic control over the major east-west route, the so-called High Road, through the central Zagros mountains. An extensive fertile plain lies to the east and, in antiquity, the area was famed for its horse rearing and wheat production (Polybius, *History*, 544.1). The city's major topographical features are al-Musalla, an 80-meter-high natural rock outcrop in the southeastern quarter, topped by the ruins of a rectangular citadel, probably of the Parthian period (238 BCE–224 CE). The barren hill of Sang-i Shir lies on the city's southeastern perimeter and features a colossal stone lion, possibly from the Hellenistic period. Nearby is Tell Hagmataneh, a 30-meter-high mound in the city's northeastern quarter, which has been identified by chance finds and archaeological investigation as the site of the Median citadel and of subsequent Achaemenid royal construction. The so-called Tomb of Esther and Mordechai, associated by long tradition with Esther, the Jewish bride of Ahasuerus (Xerxes I or Artaxerxes I), and her uncle, Mordechai, is more likely the sepulcher of Shu-

shan-Dukht, the Jewish consort of Yazdigird I (399–420 CE). The most detailed and probably the most reliable ancient description of the city, renowned in antiquity for its vast wealth and splendid royal architecture, is provided by Polybius, *History,* (10.27.1–13), who describes the palace area as having a circumference of nearly seven stades (1.4 km), a measurement that corresponds closely to the circumference of Tell Hagmataneh. Various early travelers recorded observations of Persepolis-style column bases and other ancient masonry reutilized in later structures or lying in heaps in the river. They identify the city as a source of an extensive trade in antiquities and forgeries. French archaeologist Jacques de Morgan collected numerous antiquities in Hamadan in the late nineteenth century. Charles Fossey directed the earliest archaeological excavations in 1913, under the auspices of the French archaeological mission in Iran (see Chevalier, 1989). In 1920 and 1923, two large treasure troves, both probably from the reign of Artaxerxes II (404–359 BCE) or later, surfaced in the city, but their precise provenience is unknown. In 1956, road construction cut through the western slope of Tell Hagmataneh to a depth of 7 m and revealed a massive zigzagging outer defensive wall constructed in mud brick that is probably Median (seventh century BCE; see Dyson, 1957). In 1971, Stuart Swiny conducted an archaeological survey of the area around Hamadan for the British Institute of Persian Studies, and Massoud Azarnoush of the Iranian Archaeological Service partially excavated a Parthian cemetery from the first century BCE to the first century CE partially excavated in the city's southeast quadrant, near Sang-i Shir (see Swiny, 1975; Azarnoush, 1975). Two trilingual (Old Persian, Neo-Babylonian, and Elamite) rock-cut inscriptions are located at Ganj Nameh, 12 km (7 mi.) southwest of Hamadan, in a 2,000-meter-high pass over the Kuh-e Alvand. The texts praise Ahura Mazda and record the royal lineages and conquests of Darius I (521–485 BCE) and Xerxes I (485–465 BCE).

[*See also* Medes; Persia, *article on* Ancient Persia; *and* Sasanians.]

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STUART C. BROWN

ÉCOLE BIBLIQUE ET ARCHÉOLOGIQUE FRANÇAISE.

The oldest graduate school for biblical and archaeological studies in the Holy Land was opened in Jerusalem by Father Marie-Joseph Lagrange, O.P., on 15 November 1890, on the premises of the Dominican Monastery of St. Stephen, which had been established in 1882. He named it the École Pratique d'Études Bibliques (The Practical School of Biblical Studies) in order to underline its distinctive methodology—combining text and monument; the Bible would be studied in the physical and cultural context in which it had been written. The name was modified in 1920 when the Académie des Inscriptions et Belles-Lettres in Paris, rather than create a sister in Jerusalem to the celebrated École Française de Rome and the renowned École Française d'Athenes, decided to recognize the achievements of the École Biblique by designating it the École Archéologique Française. The honor, as will become apparent, was well merited. Alone of the national archaeological schools in Jerusalem, it has a developed teaching program and offers a doctorate (but no lower degrees) in biblical studies. Its extensive library holdings are made accessible by a uniquely detailed subject index.

None of the original staff, apart from Lagrange himself, had any professional qualifications. Very quickly, however, he selected and trained a faculty envied by all, drawing from among the Dominican novices forced to study in Jerusalem by anticlerical laws in France. Marius Antonin Jaussen (1871–1962) became a pioneering Arabic ethnographer. Louis-Hugues Vincent (1872–1960) developed into the preeminent Palestinian archaeologist of his generation. Antoine Raphael Savignac (1874–1951) made his mark as a semitic epigrapher, particularly for his work during three dangerous expeditions to northern Arabia with Jaussen in 1907, 1909, and 1910–1912. The acute critical judgment of Félix-Marie Abel (1878–1953) focused his vast erudition into unrivaled mastery of the Greek sources for the history and geography of Palestine. Edouard Paul Dhorme (1881–1966) became a noted Assyriologist and was the first to decipher Ugaritic and produce a continuous translation of the original tablets discovered in 1929.

In the fifty years of their intense interdisciplinary cooperation (1890–1940), the members of this small group produced 42 major books, 682 scientific articles, and more than 6,200 book reviews. The two latter categories appeared in the *Revue Biblique* (founded in 1892) and the former in the series *Études Bibliques* (begun in 1900).

They also trained their own successors, who began to appear in the 1930s. Bernard Couroyer (1900–) published extensively in Egyptology but also taught Coptic and Arabic. Roland de Vaux (1903–1971) was noted for both biblical scholarship and field archaeology. Raymond Tournay (1912–) is renowned for producing the best translation of the Psalms in any language. Pierre Benoît (1906–1987) and Marie-Emile Boismard (1916–) produced highly significant

work in New Testament. It was they who, with the survivors of the first generation, gave Lagrange's ideal its ultimate expression with the publication of *La Bible de Jérusalem* (1956). The quality of the introductions, translations, and notes reflected the best of contemporary ecumenical scholarship, and the layout both delighted the eye and facilitated comprehension—for example, by printing poetry as poetry. A radical break with traditional presentation, it set the standard for all subsequent modern bibles and has been translated into most major languages (*The Jerusalem Bible* 1966; 2d ed., 1985). This Bible highlights the central place of biblical studies at the École Biblique.

Digging the foundations for the monastic church in 1889 became an archaeological excavation when elements began to come to light of the fifth-century basilica erected by the empress Eudocia to receive the relics of St. Stephen. It was to be a long time before the École Biblique could afford another excavation. Instead, it focused on a critical reevaluation of all topographical references, combined with intense and systematic surface exploration that involved all its professors and students. Particular attention was paid to the recovery of inscriptions. A simple listing of the reports in the *Revue Biblique* must suffice to indicate the scope of these expeditions: Masada, Transjordan, and southern Lebanon (1894); the Jordan Valley (1895, 1910–1913, 1931–1932); Sinai (1896); Petra (1897); the Hauran (1898); Gezer (1899); Philistia (1900); Avdat (1904–1905); the Dead Sea (1909–1910); the coastal plain (1914); Palmyra (1920); Qadesh Barnea (1921, 1938); central Samaria (1922–1923); southern Transjordan (1935); and Ephraim (1946).

For the same financial reasons, the École Biblique was attracted to the study of monumental complexes that did not need excavation. The Church of the Nativity in Bethlehem (1914) and the Ḥaram el-Khalil in Hebron (1923) were studied in exhaustive detail by Vincent with the assistance of Abel for the former and of E. J. H. Mackey and Abel for the latter. From the first article in the first fascicle of the *Revue Biblique* (by Lagrange in 1892), which destroyed the then current consensus by correctly locating the biblical Mount Zion on the Ophel ridge, Jerusalem provided an inexhaustible subject. A systematic research program was established in 1912 under Vincent's direction. Over and above his listed collaborators, he mobilized the resources of the École for the publication of the massive volumes *Jérusalem Antique: Topographie* (Paris, 1912); *Jérusalem Nouvelle* (Paris, 1914, 1922, 1926), with Abel; and *Jérusalem de l'Ancien Testament* (1954–1955), with A.-M. Stève. A member of the École Biblique, Charles Coüasnon (1904–1976), served as architect for the Latin community in the restoration of the Holy Sepulcher from 1959 to his death. His 1972 Schweich Lectures of the British Academy on the architectural evolution of the monument were published as *The Church of the Holy Sepulchre, Jerusalem* (London, 1974).

Inevitably, the British mandatory authorities drew on the accumulated expertise of the École Biblique for salvage operations. In 1919 the École Biblique both cleared the synagogue at Naʿaran, near Jericho, and mapped the monumental tomb at Khirbet Askar in Nablus, to which it returned for a more in-depth study in August 1921. In December 1921 the École Biblique cleared the magnificent mosaic floor at Beth-Guvrin, and excavated the entire Roman villa there in 1924 to establish its context. In 1937 the discovery of a "cities" mosaic floor at Ma'an in Jordan led to the excavation of a Byzantine church.

The first full-scale dig undertaken by the École Biblique was in 1924–1925, when Vincent excavated the churches at Imwas. Abel contributed the textual evidence to the final report, *Emmaüs: Sa basilique et son histoire* (Paris, 1932). This quickly led to others. In 1926, A. G. Barrois began a two-season excavation at Nerab, near Aleppo in Syria; his conclusions were published in *Syria* and the *Revue Biblique.* Mobilized into the French consular service during World War II, de Vaux was directed, in 1944, to research the history of the French government property at Abu Ghosh. His conclusions appeared as *Fouilles à Qaryet el-Enab, Abu Gosh, Palestine* (Paris, 1950). In 1945–1946 he and Stève excavated and published the baptistery, monastery, and fortress at ʿAin el-Maʿamudiyeh, west of Hebron.

Such small excavations prepared the École Biblique to attempt a major site. With the financial support of the French government de Vaux, who had become director of the École in 1945, selected Tell el-Farʿah (North), 11 km (7 mi.) northeast of Nablus. Between 1946 and 1962 he excavated there for nine seasons, each year publishing preliminary reports in the *Revue Biblique.* Unfortunately, he died before writing a final report, largely because of his involvement in the purchase of the Dead Sea Scrolls and the excavation at Qumran and the nearby caves.

In 1951 the École Biblique participated in the excavation of Cave 1 at Qumran, together with the Palestine Archaeological Museum (now the Rochefeller Museum) in Jerusalem, over whose trustees de Vaux presided, and with the Jordanian Department of Antiquities, headed by Gerald Lankester Harding. The latter's preoccupations in Amman, however, meant that daily responsibility devolved on the École Biblique and, to a lesser extent, the museum, both represented by de Vaux. Thus, the École Biblique excavated at Qumran in four seasons (1953–1956), and spent one season each in the caves of Wadi Murabbaʿat (1952) and at ʿAin Feshkha (1958). In 1952, with the aid of the American Schools of Oriental Research in Jerusalem, it conducted a systematic search of 270 caves in the vicinity of Qumran. Preliminary reports appeared annually in the *Revue Biblique;* the closest to a final report is the English version of de Vaux's 1959 Schweich Lectures, *Archaeology and the Dead Sea Scrolls* (London, 1973).

Dominique Barthélemy, O.P. (b. 1921), was the only member of the École Biblique to belong to the original group

of three entrusted with publishing the scrolls in 1952; the other two were Josef Tadeuz Milik and Maurice Baillet. Recognizing that the material was too abundant and potentially too sensitive to be dealt with by this small group of Roman Catholic priests, de Vaux called on scientific organizations and eminent scholars for nominations to an interdenominational and interconfessional team of eight that would publish the scrolls. Once these had been selected and the documents divided among them (described in the *Revue Biblique* 63 [1956]: 49–67), neither de Vaux nor the École Biblique had any control over the fragments. Pierre Benoît, O.P. (1906–1987), also a professor at the École Biblique, was coopted to edit the few Greek and Latin fragments and, because he had published his assignment, he was named to succeed de Vaux as general editor of *Discoveries in the Judaean Desert* when the latter died in 1971. Émile Puech of the French National Center for Scientific Research, who resides and teaches at the École Biblique, is still working on unpublished texts from Qumran. [*See* Qumran; Dead Sea Scrolls.]

The cooperation of the École Biblique in Kathleen M. Kenyon's excavation on the Ophel ridge (1961–1963) was cut short by political objections to the proximity of the squares to the Ḥaram esh-Sharif. Just before his death in 1971, de Vaux selected Tell Keisan, between Haifa and Akko, as the next major excavation of the École Biblique. Between 1971 and 1980 a series of directors—Jean Prignaud, Jacques Briend, and Jean-Baptiste Humbert—conducted eight campaigns there. The first part of the final report appeared as *Tell Keisan (1971–1976), une cité phénicienne en Galilée* (Fribourg, 1980). In order to provide a context for the inscribed Syro-Palestinian tombstones discovered by Savignac in 1924, the École Biblique dug for six seasons at Khirbet es-Samra (1978–1986), some 50 km (36 mi.) north of Amman, under the direction of Humbert. The latter, however, was less interested in churches of the seven–eighth centuries than in the Aramean migrations in the Iron Age; in 1986 he moved his team to el-Fedein, close to the Jordanian border with Syria. There he had the misfortune to find extensive Umayyad ruins, which the Jordanian government decided to preserve. In exchange, the École Biblique was invited, in 1988, to excavate the third terrace of the lower city of the citadel in Amman, in cooperation with the Department of Antiquities. A preliminary report of the first three seasons (1988–1991) appeared in the centenary issue of the *Revue Biblique* (1992).

[*See also the biographies of Abel, Barrois, Lagrange, Vaux, and Vincent.*]

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JEROME MURPHY-O'CONNOR, O.P.

EDOM. The early history of Edom, a small Iron Age Kingdom southeast of Judah, is obscure. It flourished under the Assyrians (eighth–seventh centuries BCE) and was destroyed by the Babylonians in about 550 BCE. The Hebrew name *Edom* ("red") primarily referred to the mountains south of the Dead Sea and east of the Wadi ʿArabah, but Edomites also settled in the region west of the Wadi ʿArabah, their western boundary abutting Judah's between Qadesh and the southern end of the Dead Sea (cf. *Nm.* 34:3ff.; *Jos.* 15:1–4; *Dt.* 2:8). This western region was called Seir (cf. *Jos.* 11:17; 1 *Chr.* 4:42ff.), a name in some biblical texts virtually synonymous with Edom (cf. *Gn.* 32:3, 36:8ff.; *Jg.* 5:4).

Scholarly exploration of Edom began in the nineteenth century with Ulrich J. Seetzen (1806–1807); Jean Louis Burkhardt (1812), who rediscovered Petra; Charles Leonard Irby and James Mangles (1818); Léon de Laborde (1828); Edward Robinson (1838); and others. Louis Lartet and Edward Hull published geological studies (1876, 1883). Alois Musil (1896–1898, 1900–1902), and Rudolf Ernst Brunnow and Albert von Domaszewski (1897–1898) recorded visible ruins. In 1933–1935 Nelson Glueck explored Edom; in 1937–1938 he excavated the Nabatean site of Khirbet et-Tannur and in 1938–1940 the Iron Age Tell el-Kheleifeh. In the 1950s and 1960s Diana Kirkbride excavated at Beidha, Peter Parr at Petra, and Crystal-M. Bennett at Umm el-Biyara, Tawilan, and Buṣeirah. In the 1980s Stephen Hart excavated in south-central Edom, Manfred Lindner explored west-central hilltop sites, and Andreas Hauptmann and others studied mining sites in the ʿArabah. The 1970s and 1980s saw important surveys in the Wadi el-Hasa region (Burton MacDonald, Manfred Weippert), at Ras en-Naqb (Hart), in the Ḥisma region (William Jobling), and in the Ghor and northern Wadi ʿArabah (Walter Rast and Thomas R. Schaub, and MacDonald).

Edom's prehistoric sites have been researched by Donald Henry, Mary O. Rollefson, and others. Human activity is evidenced through the Lower, Middle, and Upper Paleolithic, Epipaleolithic, Neolithic, and Chalcolithic periods (c. 100,000–3,000 BCE), especially in more moist periods when

settlement could spread from the terraces of the scarp to the central plateau, where grazing animals might be hunted. A number of Epipaleolithic-Natufian sites are known from the eleventh–tenth millennia in the Wadi el-Hasa, near Petra, and in the Wadi Judaiyid. The Pre-Pottery Neolithic period is well evidenced at Beidha. There is little Pottery Neolithic, but Chalcolithic sites appear south of Ras en-Naqb and in the Wadi ʿArabah, where copper was mined and smelted.

Early Bronze Age sherd scatters on the plateau evidence temporary settlements and pastoral activity. Surveys show an absence of MB pottery, but a handful of sites with late Bronze pottery suggests the start of renewed population growth. In the Wadi ʿArabah, however, carbon-14 datings from charcoal suggest smelting activities at Khirbet en-Naḥas in MB II and at Feinan in LB II. Smelting took place at Timnaʿ under the Egyptian nineteenth and twentieth dynasties. The Egyptians knew Edom and Seir's inhabitants as *shosu* ("wanderers"), bellicose pastoralists who migrated to Egypt in times of hardship. LB Transjordan was subject to Egyptian control and lay on the very fringe of the wealthier Aegean world, whose trade reached the Jordan Valley.

In Iron Age I, the population and number of settlements increased. Terraces, houses, small farms, a cemetery, a possible village, and a possible fortress suggest an agricultural community, mainly in the west-central region. In Iron II the population grew significantly. Surveys reveal buildings, hamlets, unwalled villages, a significant number of fortresses on the plateau, and a number of mountaintop settlements in the west (cf. *Ob.*3). Defense seems to have been important, with the fortresses perhaps defending official interests in trade and agriculture and the minor clifftop settlements defending the local population against intruders. Crystal-M. Bennett excavated a short-lived seventh-century BCE domestic settlement on the top of Umm el-Biyara, an eighth–fifth century BCE unfortified agricultural town at Tawilan, and an eighth–fifth (?) century BCE major city at Buṣeirah (biblical Bozrah), with a casemate town wall, domestic buildings, and an enclosed acropolis with an Iron II palace or temple, succeeded by a smaller "winged" building possibly built for the Persian administration. Glueck excavated Tell el-Kheleifeh, assigning it five occupation levels from Solomon to the Persian period; however, recent study has demonstrated two levels, a casemate-walled fortress and a larger, solid-walled fortress, dated by the Iron II pottery to the eighth–fifth centuries BCE. The site is now identified with Uzziah's Eilat (*2 Kgs.* 14:22), rather than with Solomon's Ezion-Geber (*1 Kgs.* 9:26). Evidence of an Iron II copper industry, active from the eighth to the fifth centuries BCE, perhaps encouraged by the Assyrian administration, appears at Feinan and elsewhere in the ʿArabah (cf *Jb.* 28:1–4); it produced enough copper to leave 100,000 tons of slag.

Thus, early Edom was primarily a rural society of subsistence farmers and pastoralists, presumably tribal in structure. Central administration was probably first imposed by Judah (2 *Sm.* 8:14). The "Edomite king list" of *Genesis* 36:31–39, an Israelite compilation of monarchic date or later, offers uncertain evidence for the early period but may suggest some regionalism in Edom, Bozrah, and the land of the Temanites (the southern region?) being clearly well known. Political development could begin only when Judah's rule ended; monarchy was established in about 850 BCE (*2 Kgs.* 8:20). Population expansion, the appearance of villages, hilltop settlements, fortresses, towns, a major city, the copper industry, and evidence of foreign trade belong, together with vassaldom to the Assyrians, to the eighth–seventh centuries BCE; Edomite tribute is mentioned in the records of Adad-Nirari I, Tiglath-Pileser III, Sargon II, Sennacherib, Esarhaddon, and Ashurbanipal; the last two kings required military service also. Assyrian rule may help explain Edom's relative prosperity and security.

Edom's material culture was similar to that of its Transjordanian neighbors. Standard pottery shapes include platters, bowls, cups, cooking pots, jugs and juglets, storage jars, and lamps. Plain coarse ware is found everywhere, but fine painted ware, presumably for the wealthier classes, is found especially at Buṣeirah (and also at some Iron II sites in the Negev). Assyrian bowls and cups are also found. More decorative objects include cosmetic palettes, carved tridacna shells, seals, beads, and jewelry. Major inscriptions are lacking, but the seventh–sixth-century BCE seals, seal impressions, and ostraca, with some fifth–fourth-century BCE evidence from Tell el-Kheleifeh, suggest that the script was of Phoenician origin, increasingly influenced by the Aramaic script used by the Assyrian administration. The language was a variant of Northwest Semitic, close to Hebrew, Ammonite, and Moabite.

Archaeological evidence for religious practice is limited. Buṣeirah's building B, with its courtyard, cisterns, and steps flanked by pillar bases leading to an inner room, was probably a palace rather than a temple (cf. *Am.* 1:12). Censers witness a common cultic practice, female figurines perhaps indicate devotion to Astarte, and a scarab from Tawilan picturing a crescent on a pole may symbolize the moon god Sin of Harran in Syria. The evidence of seals, ostraca, and biblical Edomite names suggests that the deities Baal, Hadad, and El were known. The element *qws* in theophoric names from later seals, ostraca, and inscriptions suggests that Qos (personifying the bow?) was worshiped in Edom. Qos was a war or weather god of North Arabian origin, but when this cult was introduced into Edom is not clear. The Israelites knew Edom as the home of Yahweh (*Jgs.* 5:4) and recognized the Edomites as their brothers and fellow Yahweh-worshipers (*Dt.* 23:8; 1 *Sm.* 21:7).

[*See also* Beidha; Buṣeirah; Feinan; Kheleifeh, Tell el-; Tawilan; *and* Umm el-Biyara.]

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EGYPT. [*This entry provides a broad survey of the history of Egypt as known primarily from archaeological discoveries. It is chronologically divided into five articles:*

Prehistoric Egypt
Predynastic Egypt
Dynastic Egypt
Postdynastic Egypt
Islamic Egypt

In addition to the related articles on specific subregions and sites referred to in this entry, see also History of the Field, *article on* Archaeology in Egypt.]

Prehistoric Egypt

Although Egypt has been inhabited for at least 500,000 years, unfortunately, we know almost nothing about the way of life in Egypt for at least the first half of this period, largely because intensive erosion has destroyed most of the deposits in which settlements might have been preserved. Our information is a little more complete for the next 200,000 years (the Middle and Upper Paleolithic), but it is not until almost 20,000 BP, in the Late Paleolithic, that we really begin to be able to reconstruct the functioning of prehistoric Egyptian societies, the character of their food economies, and the distribution of their settlements across the landscape.

Lower Paleolithic. The earliest evidence of human presence consists of crude handaxes, classified as Middle Acheulean, found in older stream gravels at a few localities along the Nile and in the Sahara. None of these sites is dated or has associated fauna. Several more localities in Egypt have yielded the more evolved handaxes of the Late and Final Acheulean, probably dating between 250,000 and 400,000 BP, but again none seems to occur in a primary context, and only one locality (Bir Sahara East in the Western Desert) has any associated fauna. There is good sedimentary evidence, however, for Lower Paleolithic occupation of the Sahara during intervals of greatly increased rainfall, when large permanent lakes and at least ephemeral streams existed.

Middle Paleolithic. The data on the Middle Paleolithic in Egypt are considerably more numerous than those for the earlier period. Most Middle Paleolithic tools are made from large stone flakes, often produced by a prepared-core technique known as Levallois. Almost all of the assemblages include high frequencies of unretouched Levallois flakes (most of which are rejected tool blanks), sidescrapers, denticulates, and retouched pieces. Some assemblages also include high proportions of burins and endscrapers, and others have a few bifacial foliates and stemmed tools. Most of the assemblages are generally similar to the Mousterian of Southwest Asia and western Europe.

The best information on the Middle Paleolithic in Egypt comes from the two neighboring depressions of Bir Tarfawi and Bir Sahara East, some 350 km (about 220 mi.) west of Abu Simbel. Both basins have a sequence of five Middle Paleolithic wet intervals with permanent lakes, dating between about 175,000 and 70,000 BP. The numerous Middle Paleolithic sites associated with the lakes occur in a variety of settings, which seem to have been used for different purposes. Several sites were in fossil soils that developed in swamps adjacent to the lakes; others were in beaches formed with considerable wave action. Both of these settings were used as secondary workshops and for processing marshland plants. The paucity of bones suggests that meat was not an important food during the season when these sites were occupied.

Most of our information on the late Middle Paleolithic comes from a series of quarries on the west bank near Qena in Upper Egypt. Thermoluminescence dates for the Late Middle Paleolithic aggradation indicate that it occurred between 62,000 and 45,000 BP; the quarries probably date somewhere in that interval. Irregular trenches and pits testify to the ability of the people to quarry for stone, although their

efforts were neither as systematic or efficient as those seen at the Upper Paleolithic quarries in the same area.

Near the end of the Middle Paleolithic, the river began a cycle of downcutting, incising a deep channel to a level near that of the river today. There are no sites in Egypt that can be correlated with this period, although some are known north of the Second Cataract in Sudan.

Upper Paleolithic. Around 33,000 BP, the Upper Paleolithic appeared in Upper Egypt. It is characterized by a new technology based on the production of long, narrow blades, rather than the short, wide flakes of the Middle Paleolithic. Our only information comes from quarries north of Nag Hammadi, which consist of a systematic series of deep pits, galleries, and chambers excavated to extract flint cobbles. The oldest human skeleton from Egypt is associated with one of these quarries. It is a *Homo sapiens sapiens,* slightly more primitive than, but of the same type as, the skeletons found at several Late Paleolithic sites in this area.

The late Upper Paleolithic is known from three settlements dating to about 25,000–22,000 BP. The tools are made on large blades and include denticulates, retouched pieces, burins, and endscrapers; backed blades are rare. The associated fauna are mostly wild cattle, hartebeest, gazelle, and a few fish. At this time, the Nile was probably very similar to that of the late Middle Paleolithic, and once again the valley began to fill with silt.

Late Paleolithic. Around 21,000 BP, stone technology shifted from large to small blades or bladelets. This change marks the beginning of the Late Paleolithic, which lasted for more than ten millennia in the Nile Valley. A complex series of Late Paleolithic industries has been defined for both Lower Nubia and Upper Egypt, each with a distinctive tool kit. Similar modifications in artifacts occurred at about the same time throughout the Valley, with intervals of cultural turmoil and rapid change. A few of these changes are so numerous and abrupt that they must represent new populations. The beginning the Late Paleolithic saw more use of Nilotic resources: fish, shellfish, migratory water fowl, and marshland plants. Large animals were still hunted, but they were now a relatively minor part of a rich and highly diverse subsistence.

From Wadi Kubbaniya, north of Aswan, came the best data on subsistence. The onset of the Nile flood in summer was an important time for food collection. At this time catfish moved to the edge of the floodplain to spawn and were easily taken in great numbers. The Kubbaniya sites contain thousands of their bones. Some of the fish may have been dried or smoked for later consumption, as suggested by several suitable pits with burned areas on their floors. The inhabitants also began to collect seeds of marshland plants, such as chamomile and club rush. In winter, they harvested the tubers of nut grass and club rush, both of which contain complex carbohydrates and volatile toxins and excess fibers. They can be made edible by grinding and roasting, and the Kubbaniya sites contain heavily worn grinding stones and charred fragments of several varieties of the wetland plants. As with the catfish, surplus tubers may have been processed for later use. In the late winter and spring, when the river was at its lowest level, the inhabitants moved to the mouth of the wadi and other localities where bedrock outcrops and shoals facilitated the gathering of the Nile oyster and other shellfish.

Late Paleolithic human remains are all of the same physical type: the robust but fully modern Mechta el-Arbi type found throughout North Africa between 20,000 and 10,000 BP. They resemble the contemporaneous Cro-Magnons of southwestern Europe. Many of the Late Paleolithic skeletons show signs of violence. A skeleton of a male found at Kubbaniya, for example, had several healed wounds and two bladelets in the abdominal cavity that were presumably the cause of death. More dramatic is the Late Paleolithic graveyard at Jebel Sahaba, where 40 percent of the fifty-nine men, women, and children had artifacts embedded in their bones or showed other signs of trauma. This graveyard has a radiocarbon date of 13,740 BP, and may contain the earliest evidence of warfare. It certainly suggests that the Late Paleolithic was a period of intense competition in the Nile Valley.

Around 13,000 BP, temperatures increased in East Africa, and there was more rainfall in the headwaters of the Nile. The river became a massive stream more like that of today. After a series of large floods about 12,500 BP, the river began to cut a deep channel into the silts. From the onset of this downcutting until shortly before 8000 BP, the only site known in the valley is a small camp, occupied about 11,500 BP; it differs little from the sites occupied a thousand years earlier.

Several eighth-millennium sites have been excavated in the Faiyum, where they are associated with sediments that accumulated when Nile floodwaters entered the Faiyum depression and formed a large lake. Other sites include a group at el-Kab in Upper Egypt, and a small cave in Egyptian Nubia. All of these localities have yielded numerous fish bones, together with a few presumably wild cattle, hartebeest, and gazelle; fishing, hunting, and probably plant-gathering continued as major economic activities. There are no traces of pottery or domesticated species.

Neolithic on the Nile. As recently as 7000 BP, the Egyptian Nile was still occupied by small groups of people whose subsistence patterns were similar to those of the Late Paleolithic—fishing, collecting, and hunting. About 6000 BP (5200 BCE), there was a dramatic change in cultural developments. In Lower Egypt, in the Faiyum depression and farther north on the edge of the Delta, a complex Neolithic economy appeared suddenly and without local antecedents. It was based on domesticated species from southwestern Asia, used in combination with the already known wild foods.

The earliest attested of these Neolithic sites are in the Faiyum and date to 5230–4450 BCE. The sites are much larger than before and were probably occupied for several months after the summer floods, when fish could be easily harvested in the cut-off pools and swales and also when cereals were planted for harvest in winter. There are no traces of permanent houses, only a few post holes suggesting temporary huts made of poles covered with brush, reeds or mats. Deep accumulations of cultural debris, however, exist. The sites contain numerous bones of fish, domestic cattle, sheep or goat, pig, and a variety of wild fauna, including hartebeest, gazelle, hare, hippopotamus, crocodile, turtle, and waterfowl. Plants include emmer wheat and barley.

Pottery is abundant and very different from that in contemporaneous sites in the southern Western Desert. There are many large storage jars, which are fiber tempered, rough, and undecorated, and a few small, open bowls, which are sand tempered, frequently smudged, and either smoothed or burnished. None of the pottery is painted.

The Faiyum Early Neolithic villages may each have contained two hundred people. Because all of the known sites were inundated by the summer floods (except the granary pits, which were above the inundation level on an adjacent hill), they cannot have been occupied year round. We do not know where the Faiyum Neolithic people went during the rest of the year. There are several sites in the Sand Sea, near the Libyan border, with similar fiber-tempered pottery, a comparable range of lithic artifacts, including concave-based arrowheads, and of about the same age. Some of the Faiyum groups may have included the Sand Sea in their seasonal movements, or the similarities may indicate only that the two groups were closely related.

Although the sudden appearance of the Faiyum Neolithic just as the drying desert was becoming uninhabitable suggests a Saharan origin, there is little evidence to support such a hypothesis. Indeed, the origin of the Neolithic anywhere in the valley is obscure and controversial, and there is no firm evidence that Saharan groups played a significant role in these developments in Lower Egypt. The importance of Levantine domesticates, the distinctive fiber-tempered pottery, and the presence of several lithic elements not known in the desert (such as maceheads) may indicate that derivation or influence from southwest Asia. However, the apparent absence of similar complexes in the Sinai, southern Israel, and southern Jordan argues against migration.

Merimde Beni Salame, at the western edge of the Delta, was first occupied only slightly later than the Faiyum Neolithic and was partially contemporaneous with it. Merimde is one of the largest prehistoric sites in Egypt, and at its maximum, there may have been more than a thousand people living there. The houses in the lowest levels were oval huts with walls of upright poles covered with mats or brush, similar to those suggested for the Faiyum. They had firepits equipped with burned clay firedogs to support a cooking pot, and some had pots sunk into their floors. Near each house was a large storage pit. Burials were placed in simple oval pits within the village and without grave offerings.

In the upper levels of Merimde, dating to around 4,300 BCE, the houses were more substantial, partly dug into the ground with the above-surface walls made of mud bricks. The entries to the houses, all on the same side, had thresholds of hippopotamus tibiae. The interiors were sometimes partitioned into activity areas by posts set into the floor. The houses were separated by reed fences and arranged in irregular rows on either side of a street or alley. Large storage jars, baskets, and pits were placed near the houses. The size of the community, the alignment of the houses, and the abundance of the storage features suggest that around 4,300 BCE, Merimde witnessed a new level of village organization, which provides the basis for the early Predynastic period of Lower Egypt, which is documented at such sites as el-Omari and Maadi, near Cairo. [*See* Merimde.]

In Upper Egypt, the earliest-known Neolithic phase is the Badarian, recorded at forty habitation sites and a similar number of cemeteries, south of Asyut. These are clustered into three large communities, each consisting of several dispersed villages and homesteads. The Badarian represents a sharp break from the fishing, hunting, and gathering groups of less than a millennium earlier, and, like the early Neolithic period in Lower Egypt, appears suddenly and without local precedent. The possible role of the Desert Neolithic in this is difficult to evaluate. Cultural complexity is evident earlier in the desert, and there are similarities in the pottery and some of the stone tools, particularly with the Saharan Late Neolithic, which suggest that the desert people did contribute. Unfortunately, our lack of data from the Nile between 6,000 and 5,000 BCE prevents further evaluation.

The Badarian phase is not well dated. Several thermoluminescence dates on pottery range from 5,580 to 4,510 BCE, but all have large standard deviations, and the higher dates seem to be too old when compared to the dates for the fishing and hunting sites at el-Kab and the small cave in Egyptian Nubia. The best indication of the age of the Badarian phase is that it is older than the Amratian, a Predynastic complex that has several calibrated radiocarbon dates of around 4,200 BCE, and is thus of about the same age as the upper level at Merimde. The earliest Badarian phase was probably contemporaneous with the oldest Faiyum Neolithic.

Badarian villages have simple brush- or mat-covered huts, with large storage pits and pens for sheep or goats. Their economy was based on the cultivation of wheat, barley, and chickpeas. They also gathered nut-grass tubers, fished in the Nile, and did some hunting. Their economy and houses were thus not very different from those in the Faiyum, and they also had comparable concave-based projectile points. However, their other crafts were more developed. They had well-made pottery, almost all of it polished, red or black in

color, or red with a black rim. Some had comb-impressed designs on the exterior, often partially obliterated by polishing. A few pots were decorated with incised geometric designs. There were carefully shaped stone palettes and quantities of red and green pigments. Animal and human clay figurines, and carved ivory tools also indicate the Badarian emphasis upon ornamentation.

It is in burials, however, that the Badarians differ most from their contempories in Lower Egypt. Most burials were not in the villages, but in separate graveyards. Most of them also have offerings, including pottery, beads and other ornaments. Some graves were much richer than others, indicating that there were differences in wealth and status. These Badarian traits were further emphasized in the Predynastic cultures of Upper Egypt, and reached their apogee in pharaonic civilization.

[*See also* Delta; Faiyum; Lower Egypt; Nag Hammadi; Nile River; *and* Upper Egypt.]

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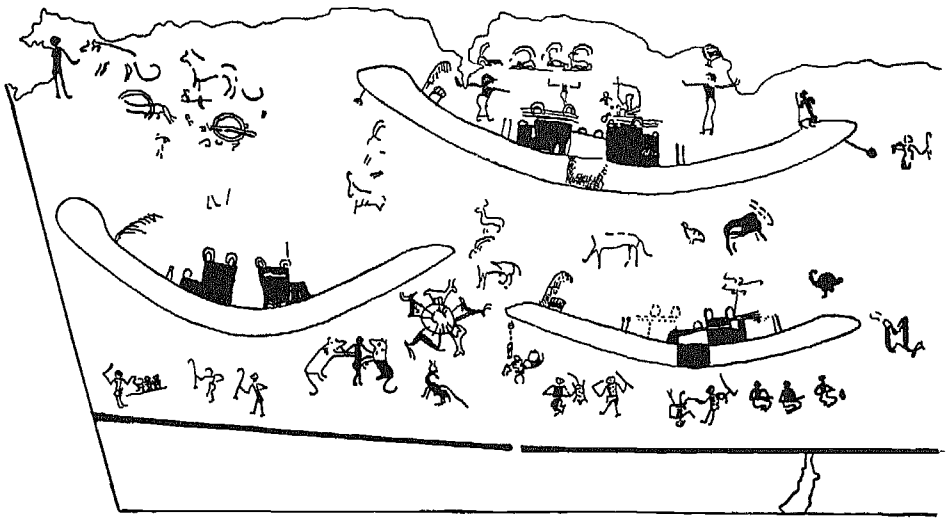
FRED WENDORF and ANGELA E. CLOSE

Predynastic Egypt

The later Neolithic in Egypt, known as the predynastic period, represents the transition to a single unified state in about 3100 BCE. Two separate ceramic and lithic traditions are evidenced during this era—one in northern, or Lower, Egypt and the other in Southern, or Upper, Egypt (which extended into Lower Nubia). Both the ceramics and lithics can be equated with finds from the Sudan and belong to a characteristically African technology. The type-site for the Upper Egyptian culture was excavated by William Matthew Flinders Petrie at Naqada; through his development of sequence dating, or seriation, he was able to order his material chronologically through stylistic development. [*See* Naqada.]

Petrie divided his finds into various phases. The first is known as the Amratian period, named for the site of el-Amra, near Abydos. This period, which dates to between 4200 and 3700 BCE, is characterized by red-fired Nile-silt ceramics and vessels that often have a black top and that occasionally are decorated with yellowish or white pigment. The second period, the Gerzean, shows a change in ceramic technology that is represented by the use of higher-fired, white-to-buff marl clays, sometimes ornamented with patterns in red ocher. This period dates from 3700 BCE to the beginning of the first dynasty, although it is sometimes subdivided into a later phase known as Late Gerzean. Petrie termed this last period the Semainean and equated it with a dynastic race that migrated into the Nile Valley and brought about a unified state (Petrie, 1921). Helene Kantor (1952) however, clearly disproved the theory of such a massive population influx and demonstrated that, aside from a few imports, the material culture of the Upper Egyptian predynastic sequence and that of dynastic Egypt belonged to the same tradition.

The sequence dates Petrie assigned to these periods began with the number 30, to leave room for earlier cultures, should they be discovered. This turned out to be the case with the Badarian culture of the prehistoric period. The evolutionary framework for this period, set by Petrie a century ago, now has largely proven correct. Further refinements were added by Werner Kaiser (1957), however. Kaiser sub-



EGYPT: Predynastic. Figure 1. *Painting from the "Decorated Tomb" at Hierakonpolis.* The painting depicts some Mesopotamian motifs, including the "divine hero" holding off two lions at the lower left. Dated to the Naqada II period, c. 3500 BCE. (Courtesy P. Lacovara)

divided the Amratian into Naqada I A, B, and C; the Gerzean into Naqada II A, B, C, D1, and D2; and the Late Gerzean into Naqada III A1, A2, and B.

The Lower Egyptian sequence is less well documented, but it appears to be related to ceramic and tool types found in Syria-Palestine. There is a greater amount of material from settlements rather than graves, which may exaggerate the difference between the north and south. The principal sites here are in the area of the Faiyum and at Maadi near Cairo. [*See* Faiyum.] Lower Egyptian ceramics appear far more utilitarian than Upper Egyptian examples. They are usually of simple, baggy shapes with thick walls and abundant chaff temper.

The only large settlement site to be extensively explored from this period in Upper Egypt is that of Hierakonpolis. Excavations there by Michael Hoffman revealed a temple and settlements dating to the Naqada I and II periods (Hoffman, 1982). In addition, a series of kilns found along the desert margins of the site may have been employed to produce ceramics for mortuary use. Often, the ceramics found in Upper Egyptian graves show no sign of use and may have been especially made for burial. [*See* Grave Goods.] Such pottery is characterized by fine wares with simple, elegant shapes and decoration in red or white pigment. Some examples have applied decoration in the form of animal figures or symbols. Other types imitate the appearance of stone vessels, which were made of a number of hard and soft stones such as basalt, granite, breccia, and alabaster (calcite or travertine).

Elizabeth Finkenstaedt (1980) has shown that several schools, or local styles, of painted pottery are to be found in predynastic ceramics that may point to the development of regional centers or small states. Eventually, the tradition of painted pottery died out, perhaps replaced by the growing production of stone vases to equip the tombs of the elites. [*See* Tombs.] For this era, the cemeteries excavated demonstrate an increasing social stratification, with more and more elaborate tombs provided for the wealthy. One particular tomb at Hierakonpolis had a painted mural decoration (see figure 1) that contained motifs related to the art of Mesopotamia. [*See* Wall Paintings.] Foreign influence, as evidenced by both imported materials and adaptations of stylistic motifs (animal phyle, "divine hero," composite monster), suggest that the exchange of ideas with the Near East at this juncture played a pivotal role in the development of art, writing, and the formation of the pharaonic state.

[*See also the biography of Petrie.*]

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PETER LACOVARA

Dynastic Egypt

In his *History of Egypt* (Gk., *Aegyptiaka*), the early third-century BCE Egyptian priest Manetho organized the kings of Egypt from Menes to Alexander of Macedon (c. 3100–332 BCE) into thirty consecutive "dynasties," or families. A thirty-first dynasty was later added to Manetho's treatise, which is preserved only in corrupted and fragmentary form in the epitomes of later authors. Some of his dynasties probably have no historical basis, while others were overlapping rather than successive.

The relative chronology of the dynastic period is based on a number of sources in addition to Manetho. These include king lists, genealogical data, historical and biographical texts, dated monuments and papyri, and archaeological remains. Conversion of Egypt's relative chronology into an absolute chronology has been achieved through the use of astronomical data; historical synchronisms between Egyptian kings and several Hittite, Babylonian, and Assyrian rulers; classical sources; and radiocarbon dating.

The archaeology of dynastic Egypt can be divided into two major categories of material remains: one relating to the elite, the other to ordinary people. Most books and articles focus on the kings and members of the royal family, the bureaucrats and provincial officials, the military, and the temple priesthood. These groups together constituted only a small percentage of the country's inhabitants, but their wealth and material achievements vastly exceeded those of the illiterate peasants, whose existence probably changed little over several thousand years of dynastic rule. Hence, the "archaeology of ancient Egypt" largely reflects the material culture of the country's political, religious, and military institutions.

Early Dynastic Period (First and Second Dynasties: c. 3100–2700 BCE). Egyptologists sometimes group the rulers of Upper Egypt just prior to the beginning of the early dynastic period (such as Ka and Scorpion) as dynasty 0. Later tradition records that a king Meni (Gk., Menes), from This in Upper Egypt, united the two halves of the country and founded a new capital at Memphis, situated just south of Cairo. Menes is probably to be equated with Narmer, a king whose large commemorative palette found at Hierakonpolis in Upper Egypt shows him wearing the White Crown of Upper Egypt on one side and the Red Crown of Lower Egypt on the other. The reign of Narmer (c. 3100 BCE) inaugurated the first dynasty and the beginning of the early dynastic period (see figure 1).

The early dynastic period was a formative era in the evo-

EGYPT: Dynastic. Figure 1. *Palette of King Narmer.* To the left, King Narmer is seen holding a captive by the hair, and he wears the crown of Upper Egypt. On the reverse side, to the right, King Narmer appears as the largest human figure in the upper scene, wearing the crown of Lower Egypt. Dated c. 3100 BCE. (Courtesy ASOR Archives)

lution of Egypt's political and religious institutions. An important element in the development of these institutions was writing, which first appeared (possibly as the result of cultural influence from Mesopotamia) at the end of the predynastic era. Other significant achievements of the early dynastic period included the development of major elements of the Egyptian artistic canon and the first use of stone in construction (though most buildings of the period were made entirely of mud brick).

In foreign affairs, the kings of the first dynasty campaigned against Nubian and Libyan tribes. Trade with Palestine, which had been extremely active in late predynastic times and dynasty 0, declined during the course of the first dynasty. Domestically, the country was politically stable during the first dynasty, but conflict between Upper and Lower Egypt appears to have broken out in the early second dynasty.

The history and material culture of this period are known principally from Abydos and Saqqara. Both sites have yielded rectangular mastaba tombs containing the names of early dynastic kings. The kings of the first dynasty and of the end of the second were probably buried at Abydos, whereas the rulers of the early second dynasty may have been interred in subterranean galleries at Saqqara. The rich contents of the Abydos and Saqqara tombs included inscribed sealings, labels, and stelae; copper and stone tools and weapons; stone vessels; ivory and stone statuary; wood and ivory furniture; and jewelry.

Old Kingdom (Third–Sixth Dynasties: c. 2700–2190 BCE). The Old Kingdom is frequently labeled the Pyramid Age. The country was administered by a strong, highly centralized government headed by a monarch whose absolute authority and divinity were reinforced during the fifth dynasty by his formal claim to be the son of the sun god Re. On a day-to-day basis, the government was run by a large bureaucracy managed by high officials who often were members of the royal family.

The Old Kingdom was a period of economic prosperity and political unity. Commercial and military expeditions traveled south to Nubia, which in pharaonic times provided Egypt with such items as ivory, ebony, gold, and animal skins. The turquoise mines of western Sinai were opened up for exploitation at least as early as the third dynasty. The coastal cities of the northern Levant, especially Byblos, were visited by Egyptian diplomatic and commercial missions, and several military campaigns were conducted in Palestine as well as against the Libyans. Large state building projects were undertaken, especially for pyramid complexes and, in the fifth dynasty, temples for the solar cult. Most of the laborers on these projects were peasants, whose work in the fields came to a halt during the Nile's annual inundation.

Memphis was the capital and royal residence throughout the period. Stretching many kilometers north and south of Memphis were the great royal and private cemeteries. The first pyramid was erected at Saqqara during the early third dynasty. Designed by Imhotep for King Netjerikhet (later called Djoser), this step pyramid is the oldest major building constructed entirely of stone. The first true pyramid was built at Dahshur at the beginning of the fourth dynasty. To that dynasty also belong the pyramids of Khufu, Khafre, and Menkaure (Gk., Cheops, Chephren, and Mycerinus) at Giza. Later Old Kingdom pyramids were smaller and not as well constructed. Around each Old Kingdom pyramid complex were large mastaba tombs for the king's relatives and other officials who wished to share in their ruler's eternal life. The mastabas of the fifth and sixth dynasties were larger than their predecessors, and the interior rooms of their superstructures were decorated with scenes of daily life.

The absolute power of the monarchy began to deteriorate during the fifth dynasty. The decline is attributable to the growing importance of the solar cult at Heliopolis (which increased the power of that cult's priesthood) and the increasing wealth of the nobility, who now often were provincial governors (nomarchs) rather than royal relatives and who could pass their offices on to their sons. Exemption from taxation for temples and the great royal mortuary cults also took its toll on the treasury. In about 2200 BCE, shortly after the extended reign of the sixth dynasty king Pepi II, the country's central government collapsed.

First Intermediate Period (Seventh–mid-Eleventh Dynasties: c. 2190–2033 BCE). For about half a century after the demise of the Old Kingdom, the kings of the seventh and eighth dynasties attempted to maintain order from the capital at Memphis. Eventually, the country broke up into several independent political units, famine and anarchy were rampant in the land, and Asiatic nomads wandered into the Delta. The literature of the period speaks of economic and social hardship. The closing of the royal ateliers in the old capital led to the development of crude provincial art styles.

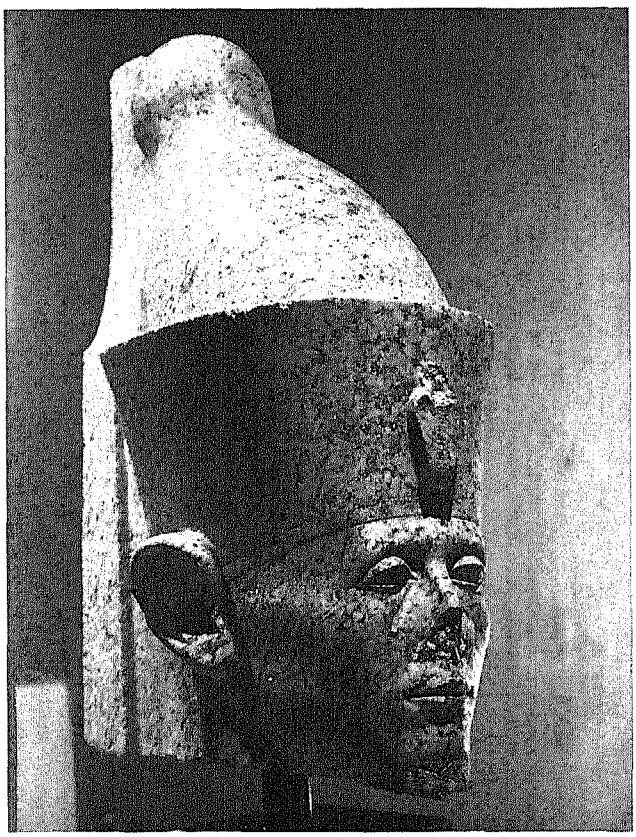
Contemporary with the eighth dynasty, a line of Herakleopolitan princes (Manetho's ninth and tenth dynasties) united the middle reaches of the Nile valley under their rule. Civil war later broke out between Herakleopolis and the newly emerging town of Thebes in Upper Egypt. Eventually, the eleventh-dynasty Theban ruler Nebhepetre Mentuhotep (2033–1982 BCE) defeated the Herakleopolitans, bringing about a new era of national unity and prosperity.

Middle Kingdom and Early Second Intermediate Period (Mid-Eleventh–Thirteenth Dynasties: 2033–1648 BCE). The late eleventh dynasty saw mining expeditions once again going to Sinai and trade missions setting out for the Levant. Nebhepetre Mentuhotep's principal building achievement was his funerary complex at Deir el-Bahari in western Thebes; the early eighteenth-dynasty pharaoh Hatshepsut used Mentuhotep's complex as a model for her own

magnificent funerary complex immediately to the north. Following a brief period of disorder at the end of the eleventh dynasty, the throne of Egypt was secured by Amenemhet I, whose reign begins the twelfth dynasty (1963–1786 BCE).

Amenemhet I moved the royal residence from Thebes to Itjtawy, located in the vicinity of Lisht in the Faiyum region. In the Faiyum itself, the kings of the twelfth dynasty undertook major irrigation projects to reclaim a large amount of land for farming. Throughout the twelfth dynasty, the kings were buried in pyramids. Following the reign of Amenemhet I, the pyramids were built of mud brick supported by interior stone crosswalls; later on, they were constructed of mud brick with a limestone casing. Around the pyramid complexes stood the mastabas of their officials.

The provincial authorities continued to wield substantial authority until Senwosret III (1862–1843 BCE) put an end to their power (see figure 2). The institution of coregency, whereby the king took his son as coruler to ensure a smooth transition of power, became a regular feature of the monarchy in the twelfth dynasty, and a middle class began to develop. Scarabs inscribed with royal names and the names and titles of officials first appear in the Middle Kingdom.



EGYPT: Dynastic. Figure 2. *Head of Senwosret III.* Red granite; nineteenth century BCE. (Courtesy ASOR Archives)

The foreign policy of the twelfth dynasty included several campaigns into Nubia, where a line of fortresses was erected in the second cataract region to protect Egypt's southern frontier. Egyptian armies also campaigned northeast of the Nile valley, possibly even reaching the northern Levant during the reign of Amenemhet II (1901–1866 BCE). Expeditions went out to the mines of Sinai on a regular basis, and trade and political contacts with Syria were on a larger scale than ever before. At Byblos, along the southern Syrian coast, the local rulers employed Egyptian hieroglyphs for writing their names and used Egyptian titles. Egyptian hieratic inscriptions on clay figurines and pottery bowls contain curses (the so-called Execration Texts) directed against rulers and places in Syria-Palestine, Libya, and Nubia; these documents reflect Egypt's extensive knowledge of foreign lands and, perhaps, the extent of her power and influence.

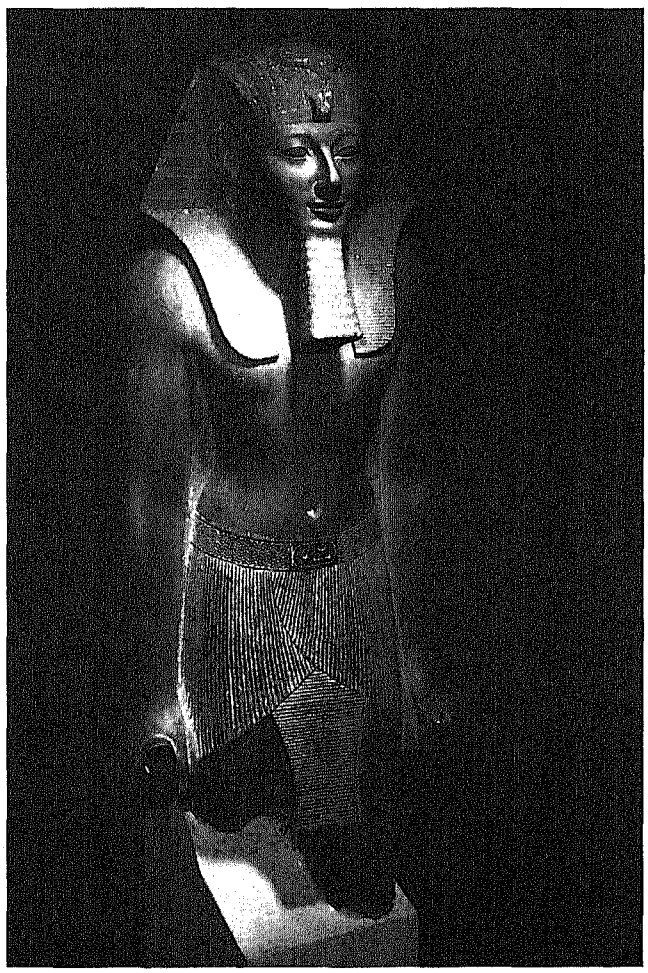
The Middle Kingdom was a golden age for Egyptian literature and art. This was the time of Middle Egyptian, the classical phase of the Egyptian language. Famous works of the era, such as the Story of Sinuhe and the Instruction of Amenemhet I, were copied as schoolboy exercises for hundreds of years thereafter. The art is notable for its royal portrait sculpture: the serious, often somber look on the faces of the kings is unique in the history of pharaonic art. The jewelry is exquisite, yet simple, and includes some extraordinary inlaid pieces.

The kings of the thirteenth dynasty (1786–1648 BCE) continued to reside at Itjtawy, and the art, pottery, and seals of the period reflect a continuation of Middle Kingdom traditions. Nonetheless, a rapid turnover in occupants of the throne, the end of pyramid construction, and, toward the end of the eighteenth century BCE, the decline or abandonment of a number of sites in the Faiyum region herald a weakening of the central government. At the same time, an influx of Asiatics into the eastern Delta led to a deterioration in royal control over that part of Lower Egypt. Eventually, in 1648 BCE, the ruler of Avaris (modern Tell ed-Dab'a), the center of Asiatic activity in the Delta, captured the old Egyptian capital at Memphis and took over northern Egypt.

Late Second Intermediate Period (Fifteenth–Seventeenth Dynasties: 1648–1540 BCE). A nineteenth-dynasty king list preserved in Turin reports that six "rulers of foreign countries" (i.e., Manetho's fifteenth, Hyksos Dynasty) controlled Egypt for 108 years. During the late seventeenth and the first half of the sixteenth centuries BCE, Asiatics came to dominate the Delta, Memphis, and part of the Nile Valley, while a line of Theban princes (the seventeenth dynasty) controlled southern Egypt. The Asiatics adopted many aspects of Egyptian culture, including the use of the hieroglyphic script for writing their documents and transcribing their personal names. Recent excavations at Tell ed-Dab'a have revealed extensive contact with the Levant, Cyprus, and the Aegean world. In the mid-sixteenth century BCE, the

Theban ruler Kamose recaptured Memphis and drove the Hyksos back to Avaris. His brother and successor, Ahmose, the first king of the New Kingdom, captured Avaris and drove the Hyksos out of Egypt.

New Kingdom (Eighteenth–Twentieth Dynasties: 1550–1069 BCE). Several kings of the early eighteenth dynasty—most notably Ahmose (1550–1525 BCE), Amenhotep I (1525–1504 BCE), and Thutmose I (1504–1492 BCE) and III (1479–1425 BCE; see figure 3)—campaigned widely in the Levant and Nubia, establishing an empire that, at its height, extended from Napata in the northern Sudan to the Euphrates River in western Syria. The inhabitants of this empire provided Egypt with a wide variety of tribute and trade goods. Commercial relations, which throughout pharaonic times were conducted under royal authority, were active with the Aegean world, Anatolia, Syria-Palestine, Mesopotamia, and Nubia. For the next several hundred years, Egypt was the wealthiest country in the ancient world, a phenomenon reflected in the enormous temples and magnificent royal and private tombs at Thebes.



EGYPT: Dynastic. Figure 3. *Statue of Thutmose III.* Fifteenth century BCE. (Courtesy ASOR Archives)

During most of the eighteenth dynasty (1550–1295 BCE) the royal residence was at Thebes, whereas in the nineteenth and twentieth dynasties (1295–1069 BCE) the kings lived at Per-Rameses in the eastern Delta. The pharaohs were buried in large rock-cut tombs in the Valley of the Kings in the Theban necropolis, while the nobility were buried in tombs cut in the nearby hills. Memphis continued to function as a major administrative center during the New Kingdom.

In the mid-fourteenth century BCE, Pharaoh Amenhotep IV abandoned the worship of the god Amun, changed his name to Akhenaten, and with his family and a small coterie of followers moved north from Thebes to Amarna, where he could worship the sun in its manifestation as the sun disk (the Aten). A hoard of several hundred cuneiform tablets found at Amarna and written mostly in Babylonian, the lingua franca of the Near East in the Late Bronze Age, contains letters addressed to the Egyptian royal court from the major rulers of western Asia and the vassal princes of Syria-Palestine, as well as archival copies of a smaller number of letters sent from Egypt in the opposite direction.

Following Akhenaten's death, his second successor, Tutankhamun, departed from Amarna. Not long after, a new dynasty arose in Egypt, under the leadership of a military officer named Rameses (who was the first of eleven kings to use that nomen). For more than two centuries, the Rameside kings ruled Egypt as Manetho's nineteenth and twentieth dynasties.

The greatest challenge to Egypt in the early nineteenth dynasty came from the Hittites in Anatolia. Rameses II (1279–1213 BCE) fought the Hittites to a standstill at Qadesh on the Orontes River in western Syria, but much of the Egyptian Empire in Syria was subsequently lost. Egypt continued to prosper during the nineteenth dynasty, despite internal political problems in the early twelfth century BCE. The art and jewelry of the period are gaudy and inferior to that of the eighteenth dynasty; the scenes in the tombs of the nobles focus more on the afterworld than daily life; and the temple architecture and royal sculpture are more notable for their monumental scale than their artistic quality (the temple of Rameses II at Abu Simbel being a fine example).

In the eighth year of Rameses III's reign (1184–1153 BCE), in the early twentieth dynasty, much of the eastern Mediterranean world was overwhelmed by tribal groups from the northern Mediterranean known collectively as the Sea Peoples. After devastating Asia Minor and the Levantine coast, they were defeated by the Egyptians and forced back into Palestine. Egypt managed to sustain its empire in parts of Palestine for another generation or two, but what was left of the empire collapsed in about the third quarter of the twelfth century BCE. From then on, Egypt began a long period of political, economic, and social decline. The Nubian portion

of the empire was lost in the early eleventh century BCE, and shortly thereafter the country once again split apart.

Third Intermediate Period (Twenty-first–Twenty-fifth Dynasties: 1069–664 BCE). The Third Intermediate period opened with the kings of the twenty-first dynasty residing at Tanis in the northeastern Delta and a line of high priests of Amun dominating Upper Egypt from Thebes. For the next four hundred years, the country lurched from one political and military crisis to another. During the twenty-first dynasty (1069–945 BCE) there were competing rulers at Tanis and Thebes. The twenty-second dynasty (945–715 BCE) saw a line of rulers of Libyan origin dominating Egypt from Bubastis in the eastern Delta. The first of these kings, Sheshonq I (945–924 BCE), campaigned in Palestine and pillaged the temple in Jerusalem. Later in the dynasty the country again fragmented, leading to competing kingdoms at Saïs in the western Delta, Thebes, and Herakleopolis (the period of the twenty-third dynasty). In the mid-eighth century BCE, a Sudanese king, Kashta, gained control of Thebes. Soon thereafter, another Napatan king, Piye (otherwise known as Piankhi), swept north into Egypt and established Kushite domination of the country as far downstream as Memphis; his successor, Shabako, finished the conquest of northern Egypt. The twenty-fifth (Napatan) dynasty (747–656 BCE) rebuilt and enlarged Egypt's temples, especially those favoring the god Amun, and reasserted the country's old traditions. In 664 BCE, however, the Assyrians marched into the Nile valley and captured Thebes.

Because most of the capitals of the Third Intermediate period are in the Delta, relatively little is known about the archaeology of this period. Many of the sites are buried beneath the alluvium or modern occupation, or have had their stone monuments completely robbed out. At Tanis, an enormous temple complex associated with the god Amun has been excavated. Within the temple enclosure was a royal necropolis for several kings of the twenty-first and twenty-second dynasties.

Late Period (Twenty-sixth–Thirty-first Dynasties: 664–332 BCE). Threats against their empire from the east soon forced the Assyrians to leave Egypt. They entrusted control of the country to a number of local princes, one of whom, Psammetichus, soon became king, founding the twenty-sixth dynasty (664–525 BCE) at Saïs. During the Saïte dynasty, the country regained its independence; rebuilt its military forces (which now included large numbers of foreign mercenaries, many of whom settled in Egypt); and expanded its commercial activities throughout the eastern Mediterranean. An attempt by Pharaoh Necho II (610–595 BCE) to reestablish Egyptian hegemony in the Levant led to a disastrous defeat at the hands of the Babylonians at Carchemish in 605 BCE. The strongly nationalistic views of the period are reflected in the archaizing features of the art, which hearken back to the Old Kingdom.

In 525 BCE, a Persian army under Cambyses defeated the last Saïte king, Psammetichus III, at Pelusium, bringing Egypt into the Achaemenid Empire. During the twenty-seventh (Persian) dynasty (525–404 BCE), the bureaucratic language was Aramaic rather than Egyptian. Egypt regained its independence during the twenty-eighth–thirtieth dynasties (404–343 BCE). The thirtieth dynasty is notable for the extensive temple-building activity undertaken by Nectanebo I and II. In 343 BCE, the Persians recaptured Egypt, but they held it for only a short time. In 332 BCE, Alexander of Macedon led his army into Egypt and made the country part of his burgeoning empire.

[*See also* Abydos; Dab'a, Tell ed-; Delta; Heliopolis; Hyksos; Lower Egypt; Memphis; Pyramids; Saqqara; *and* Upper Egypt.]

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JAMES M. WEINSTEIN

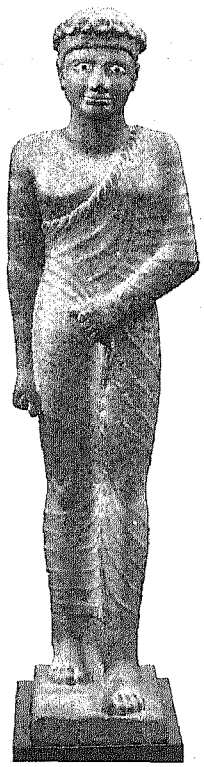
Postdynastic Egypt

Research into the history and culture of Egypt from the arrival of Alexander the Great in November of 332 BCE to the conquest by the Islamic forces of Amr ibn al-'Aṣ in 640 CE are currently in a state of flux because of an intensive interdisciplinary approach to this very complex era. Much of what has been written in the past is no longer valid, and some of what is to be stated herein is only provisional. The brunt of these assertions are immediately evident on examination of the brief stay of Alexander the Great in Egypt.

It is now generally acknowledged that Egyptian Alexandria was already inhabited at Alexander's arrival and that, far from founding a new city, the conqueror merely replanned the existing one. Growing evidence also suggests that there was a flourishing, contemporary cult of Osiris-Apis in the city, which Alexander (of Macedonian-Greek birth) embraced under the name of Serapis. The contours of the city, compared to that of a *chlamys* (Macedonian riding cape) emphasized its Greek, not Egyptian, sociopolitical orientation, which was reinforced by its name, Alexandria ad Aegyptum ("Alexandria by the side of [but not within] Egypt").

Ever the pragmatist, Alexander did little to interfere with the existing administrative bureaucracy of the land. In fact, many former officials who had served with distinction under the Persians, who had occupied Egypt before Alexander, were permitted to remain in their same offices. When Ptolemy I Soter declared himself pharaoh in 305/304 BCE, he did little to change this system. The administration of Ptolemaic Egypt is currently regarded as self-generated, addressing issues on an ad hoc basis as the need arose; it was not a consciously developed administration.

The ethnicity of Ptolemaic Egypt has been much discussed, in particular the relationship between the native Egyptians and the Macedonians and other Greeks who were encouraged to immigrate to Egypt early on to serve in the armies of the Ptolemies or in other capacities in exchange for prime arable lands. The consensus is that the culture of Ptolemaic Egypt can be characterized as one of two societies, the immigrant Greek and the native Egyptian; both were separate and mutually unequal in their spheres of activity. This opinion masks the existence of numerous other nationalities and languages in the cultural record of the Ptolemaic Period, from Aramaic to Carian and Phoenician. Despite the continuity of these diverse peoples and their native tongues, there is a certain uniformity in the material culture, at least on the pharaonic side, to suggest that the native Egyptians were themselves highly resistant to foreign influences. Indeed, the attraction of Egypt was so great that all immigrants were soon acculturated to Egyptian norms.



EGYPT: Postdynastic. *Statue of an official.* The figure is wearing a traditional Egyptian tripartite costume. Black granite; height 1.165 m. Provenance unknown (perhaps Dendera). Metropolitan Museum of Art. (Rogers Fund, 1965)

With the passing of time, the indigenous Egyptians became more assertive. There are at least ten documented revolts by the Egyptians during the Ptolemaic Period, the most famous of which saw the Thebaid (that region of Upper Egypt, extending roughly from Coptos in the north to Edfu in the south, that was under the administrative authority of Thebes) effectively gain a modicum of independence and local autonomy from the crown during the reigns of Ptolemy IV Philopator and Ptolemy V Epiphanes when two Egyp-

tians, Horwenenefer and Anhkwenenefer (perhaps father and son) established themselves as counter-kings in succession. The revolt of the Delta city of Lycopolis was particularly long-lived and bloodily quelled only in 186 BCE. Whereas some may ascribe the causes of these armed insurrections to economic or social inequities, the xenophobia of the Egyptians toward their Greek overlords cannot be overlooked as a prime contributing factor. The frequency with which asylum decrees are promulgated, granting Egyptian felons immunity from persecution, are indicative of just how far the Ptolemies would go in order to pacify a generally hostile population. It is within this broader cultural context that one can understand why, perhaps, Cleopatra VII was the only member of her dynasty to speak Egyptian.

The precipitous return to Egypt from Syria by Ptolemy III Euergetes I, which effectively enabled the Seleucids to regroup and eventually to invade Egypt, was probably due to his need to address such a rebellion at home. The overseas empire of Ptolemaic Egypt, which was won by Ptolemy II Philadelphus and his sister-consort, Arsinoe II, was now threatened by the Seleucids. The successful invasion of Egypt by the Seleucid monarch Antiochus III Epiphanes was reversed by Roman intervention in the form of the ultimatum that Popilius Laenas personally issued to Antiochus. Certain important details to this episode, recorded by Polybius and Livy, have now been recovered from an Egyptian archive unearthed at Saqqara, from which one learns the name (Nounenios) of the envoy dispatched by Ptolemy IV Philopator to thank the Roman Senate for Laenas's intervention. From that moment on, Egypt was to be drawn into the affairs of Rome. Those interactions accelerated during the course of the first century BCE, but here again a revisionist approach to many of the events is currently gaining favor.

So, for example, the alleged will of Ptolemy X Alexander I (r. 110–109; again 107–88 BCE) in which he is said to bequeath his kingdom to Rome is based on a misinterpretation of the evidence. A careful reading of the relevant passages in Cicero in conjunction with Egyptian sources reveal that Ptolemy X borrowed money from Rome, which was deposited at the city of Tyre. Upon his demise, the Romans attempted to recover the principal. The agreement, as it can now be reconstructed, merely grants the Romans the right to repayment; it does not name them heirs to his kingdom.

It was for similar financial considerations that Ptolemy XII Auletes (r. 80–58; again in 55–51 BCE) fled to Rome in 58 following his ouster by the Alexandrians. He was reinstated in 55, having returned with Roman legions commanded by Gabinius. The financial affairs of Ptolemy XII were managed by Gaius Rabirius Posthumus in an attempt to recover the debt of 10,000 talents of silver, which Auletes had borrowed earlier.

Before his death, Ptolemy XII Auletes elevated his daughter Cleopatra VII, aged seventeen, to the throne as coregent together with his son Ptolemy XIII, aged six. The queen, far from being illegitimate (as implied by Strabo) asserted her right to the throne and issued at least three documents in which she is named as Egypt's sole monarch. Julius Caesar, pursuing Pompey to Alexandria in the wake of Rome's civil wars, arrived in Alexandria to find a city divided by internecine strife. In short order, Caesar sided with Cleopatra, and the two embarked on a conscious campaign of political domination. Cleopatra aspired to restore Egypt to her former glory and thus decorated Egyptian temples, such as Dendera, where she is depicted as the legitimate successor of the pharaohs of old. The untimely assassination of Caesar in 44 BCE left the queen without an ally, but she soon associated herself with Marc Antony, the politically weaker of the two. Together Cleopatra and Antony challenged the might of Rome. In the waters off Actium, a promontory of southwestern Greece, the combined naval forces of Cleopatra and Antony confronted those of Octavian, thereafter called Augustus, Julius Caesar's heir and future first emperor of Rome. Contrary to popular opinion, Cleopatra herself planned the strategy for the battle and was in command of part of the fleet, which consisted of some of the largest men-of-war ever constructed in the ancient world. The battle lost, Cleopatra and Antony withdrew to Egypt and there elected suicide rather than capture and disgrace. The death of Cleopatra VII ended the Ptolemaic period, one of Egypt's most brilliant cultural epochs.

In general, native pharaonic art forms were continued during the Ptolemaic period. There is virtually no evidence whatsoever of foreign intrusions into the form or functions of such a major temple at Edfu, which was built and constructed entirely during the Ptolemaic period. There the Ptolemies are depicted in several scenes as the dutiful officiants, solemnly offering a variety of items to the various deities of the temple. Their appearance masks the fact that the most important theological aspect of this temple revolves around the falcon-deity Horus in his role as the universal monarch. As a result, the image of this aspect of Horus at Edfu enabled the native priesthood to conduct their rituals in the name of this falcon-pharaoh rather than in the name of one of the Ptolemies, with whom the priesthood was often at odds.

Likewise, the funerary stelae (commemorative tablets) and statues of officials eschew Hellenistic forms and remain loyal to pharaonic sculptural tenets. On occasion one sees what appears to be Hellenistic-looking hair on the heads of some of these officials, who may also be holding foreign attributes. In the final analysis, however, those coiffures and emblems are rendered in accordance with the mimetic principles of ancient Egyptian art and cannot be cited as examples of foreign influence on native traditions.

On the other hand, the Macedonian-Greek overlords of the land did attempt to incorporate into their art aspects of Egypt's long cultural heritage. This process could be accom-

plished in several ways. On a basic level, the Hellenistic artists could simply sculpt, for example, an image of the goddess Isis in classical style. Several such examples are known. On the other hand, Egyptian concepts were often clothed in Greek garb. So, for instance, the Macedonian appropriation of the native Alexandrian deity Osiris-Apis, who represented the deified and resurrected Apis bull, was given Hellenistic form as Serapis, represented in art as a full bearded, long haired male deity, resembling Zeus or Hades but bearing as his attribute a modius (corn measure) on his head. The completely Hellenistic idiom in which these images are sculpted belies the fact that these images can only be fully understood with reference to the cult of the Egyptian god Osiris. In other cases, the Macedonians felt compelled to inscribe an epitome, usually in Greek, on a pharaonic-styled object, which served as a gloss explaining the nature of the statue to an audience not familiar with Egyptian art. There is no corresponding example of a Hellenistic work of art inscribed in Egyptian for the benefit of the Egyptians.

These artistic differences are graphically understood by a comparison of the architecture and decoration of the three extant Hellenistic tombs at Mustafa Kamal in Alexandria with the temple of Horus at Edfu. In the former, Egyptian elements, such as the sphinx, are used decoratively to suggest an Egyptian ambience, whereas there are no analogous quotations from the Hellenistic record at Edfu.

Furthermore, borrowing of visual motifs and other art forms is not the only manifestation of Macedonian appropriations of pharaonic culture. Recent studies suggest that the idea behind the creation of the great library at Alexandria as a repository for books was a Macedonian response to the "Houses-of-Life," the scriptoria (writing centers) that were attached to the temples of ancient Egypt (Bianchi, 1989–1990, p. 3). Manetho, for example, writing during the reign of Ptolemy II (285–246), had access to such scriptoria when he wrote a history of pharaonic Egypt in Greek for the benefit of the Macedonians. No Greek penned a similar history in Egyptian. This appropriation of things Egyptian by the Greeks of Egypt is nowhere more graphically illustrated than in the so-called *Romance of Alexander the Great,* in which the Macedonian conqueror is depicted as the son of the Egyptian god Amun and the legitimate successor of Nectanebo II, the last native pharaoh of the thirtieth dynasty (360–342).

The defeat of Cleopatra and Antony at Actium, the last naval battle of antiquity, and their suicide the following year in 30, left Octavian master of the known Mediterranean world. Fearing that another Egyptian may again rise up to challenge his authority, Augustus, the former Octavian, decreed Egypt the private domain of the Roman imperial household and forbade Romans from visiting the land without first having obtained his authorized visa. As part of this conscious policy, Augustus named Gallus to be the first prefect (governor) of the land. Shortly thereafter, Gallus became inebriated with Egyptian culture and soon erected monuments in his own name near the great pyramids at Giza and at other sites throughout the land. Augustus recalled him, and Gallus, disgraced, committed suicide. When a revolt in southern Arabia forced Augustus to dispatch his Egyptian legions under the direction of his second prefect to the troubled area across the Red Sea, the southern frontier of Egypt revolted, led this time by another woman, the Candace (queen), of the Nubians. Her forces succeeded where Cleopatra's had failed by successfully defeating the Roman legions sent against her in combat. In time, the third prefect, Petronius, reached an accommodation with this Nubian Candace, whereby Roman taxes were remitted and a common border between the Kingdom of Meroë, the Candace's realm, and Roman Egypt was established. [*See* Meroë.] This frontier would be respected until the time of the Roman emperor Diocletian, when the marauding tribes of the Blemmyes brought instability to the region.

The cultures that developed during the course of the early Roman Empire in Egypt are difficult to define with any precision because ideology is not often made manifest in art. To be sure, classical art forms continued, as revealed by the marble images of Roman emperors Augustus, Hadrian, and others found in Egypt and now on view in the Greco-Roman Museum in Alexandria. The cults of the gods and goddesses of Greece and Rome as well as cult of Serapis in his Macedonian form were popular, but worship of these deities was not permitted within Egyptian temples proper.

In time the Romans attempted to discourage the pagan Egyptian practices in Egypt. The most graphic expression of this curtailment of religious rights is seen within the temple of Luxor. The central doorway, giving access to the inner sanctum or barque station, was intentionally blocked up and converted into a niche in which the image of the reigning emperor was duly erected. The entire room was then covered with plaster and adorned with frescoes depicting the emperor and his entourage. This remodeling of the Luxor temple effectively prevented the Egyptian priests from carrying the sacred barques of the gods in procession during the annual festivals, thereby depriving the Egyptians of the most popular means of worshiping their deities.

During the course of the first and second centuries CE Egypt prospered, and the city of Alexandria flourished, propelled doubtless by the pharaonic canal that the Roman emperor Trajan reopened to link the Nile and the Red Sea, along which many trading centers were established. As a result, the luxury goods of the Orient—spices and silk—began to appear in quantity in Mediterranean markets. It was doubtless such mercantile interests that caused the Palmyrenes, in the person of Queen Zenobia, to occupy Egypt in the late third century CE. The armed struggles between the forces of Zenobia and those of the Roman emperor Aurelian in the decade between 270 and 280 CE effectively reduced the city of Alexandria to rubble. It has been suggested that these disturbances were the major factors contributing to the

damage to the Great Library and the tomb of Alexander the Great in Alexandria herself (see P. M. Frazer, *Ptolemaic Alexandria* I, Text, Oxford, 1972, p. 16).

At the same time, Christianity, traditionally arriving in Egypt with St. Mark in the first century CE, began to make inroads. By the third century Christians formed thriving communities in Egypt as elsewhere in the Mediterranean world. Soon, for reasons that are too complex to outline here, Christians were subjected to persecutions by the pagans. The pogroms against the Christians in Egypt initiated under Emperor Decius (r. 249–251) were so destructive that the Copts, the present Egyptian Orthodox Christians, mark the beginning of their liturgical calendar with the age of the martyrs who fell during that time. The persecutions escalated in time and culminated during the reign of Diocletian (284–305), who vented his anger not only against the Christians in Egypt but also against the pagans in Alexandria, whose massacre he ordered in 295 CE. To commemorate this triumph, Diocletian erected a single column in Alexandria, which is known locally but erroneously as Pompey's Pillar.

The Edict of Milan, issued in 312 and reaffirmed in 323, granted all the freedom to practice the religion of one's choice. Christians were not favored by the Edict, they were simply no longer persecuted for their beliefs. In 324 Constantine the Great transferred the capital of the Roman Empire from Rome to Byzantium, changing the name of that city to Constantinople; the Byzantine period was thereby inaugurated, and Christianity was openly encouraged. Christian theologians soon began heated theological debates among themselves regarding such matters of doctrine as the nature of Christ. Alexandrian clergymen, doubtless because of the long intellectual tradition enjoyed by the city because of its Great Library and numerous institutions of higher learning, played major roles in these lively dialogues. In 325 the views of Arius, an Alexandrian prelate, on the less-than-divine nature of Christ were condemned by the Council of Nicaea. Between the years 379 and 395, the Roman emperor Theodosius formally declared Christianity the religion of the empire and systematically closed down all pagan institutions, a process that led to the physical destruction by zealous Christians of the great temple of Serapis in Alexandria.

Nevertheless, some pagans continued to practice their older religion. As late as 415, Hypatia, a fascinating woman who is traditionally regarded as the last pagan intellectual in Alexandria, was savagely stoned to death by Christian monks goaded on by the patriarch, Theophilos. Despite these attacks, pagan Egyptians remained loyal to their traditional beliefs. The very last pagan Egyptian inscription ever carved in Egypt is a demotic graffito on the island of Philae dated to 452, one year after the fateful meeting of the Council of Chalcedon in 451.

During the proceedings of this, the fourth ecumenical council, the assembled clerics debated the nature of Christ. The council condemned as heretical the position of the Egyptian Christians and their coreligionists wherein the nature of Christ was monophysite, meaning that Christ's divine and human nature were commingled simultaneously. Insulted by the decision, the Egyptian Christians returned home and steadfastly refused to abide by the decision of the Council, thereby causing an early schism within the Church. Their tenacious embrace of the monophysite ("one nature") doctrine led to an awkward situation among the Christian community in Egypt because the recognized clerical authority in Alexandria, the Christian patriarch, appointed by the council, was at theological odds with the majority of his fellow Christians throughout the land. The rift was never healed. To this day the Copts of Egypt, descended from those pagan Egyptians who converted to Christianity, remain monophysites. Their liturgical language, Coptic, is itself an alphabetic script based on hieroglyphs and employs letters based on the Greek alphabet to which have been added seven signs modified from demotic, the most cursive form of the ancient Egyptian language. [*See* Coptic.]

The struggles between the monophysitic Copts and their nominal rulers, the administrators and prelates dispatched to Egypt from Constantinople, created friction within the Christian community. The Sasanians, or Persians, led by Chosroes II, invaded Egypt in 619, having defeated the armies of the Byzantine emperor Heraclius. Three years later in 622, the Prophet Muhammad embarked on the Hijrah, his "flight" from Mecca to Medina, thereby firmly establishing Islam in the Arabian Peninsula. In 626 Heraclius expelled the Sasanians and regained Egypt for Byzantium. For the next fourteen years, Heraclius was engaged in a series of military confrontations with the leaders of Islam, whose defeat of the Persians in 637 at al-Qadisiya signaled the end of the Sasanian Empire. The Byzantines and Muslims now engaged in a struggle to control the lands of the Middle East. In 640, Amr ibn al-ʿAṣ, the general of the Islamic caliph ʿUmar, overran the Egyptian outpost at Pelusium and defeated the Byzantine garrison at Babylon, today Old Cairo. The Copts perhaps acquiesced to this takeover, preferring to pay taxes to the caliph in exchange for their religious freedom, rather than to be subjects of their adversarial coreligionists. Amr ibn al-ʿAṣ he proceeded to Alexandria, and captured it in 642. The city was freed by the Byzantine fleet in 645, only to be retaken by Amr ibn al-ʿAṣ the following year. Egypt had fallen, and the path to Spain across North Africa lay open to the Muslims.

During their formative period, Christians and their pagan counterparts were not clearly distinguished. In some instances, the blurring of distinctions among disparate sects existed in antiquity, as the gnostic archive from Nag Hammadi and the religious books recently uncovered at Ismant in the oasis of Dakhleh reveal, in which there appears to be an unmistakable mixture of Christian and decidedly pagan elements. [*See* Nag Hammadi.]

As difficult as it is to separate Christians from pagans, it is often more problematic to distinguish monophysitic Copts from Byzantine Christians on the basis of the monuments without recourse to textual information. That data enables identification of the clerics within the monastery of Abu Jeremiah at Saqqara as monophysitic Copts. Nevertheless, more progressive academics are beginning to regard Christian art produced in Egypt as a branch of Byzantine art. There is a growing tendency as well to dismiss as Christian many of the monuments, often sculpted in the soft, local limestones, the motifs of which are taken over directly from the repertoire of classical, not pharaonic, Egyptian mythology (Johnson, ed., 1992). Although these monuments are often called "Coptic," they are better regarded as examples of pagan art, created for those living in Egypt during the Roman Empire, whose roots and traditions can be traced back to the Macedonian-Greek immigrants.

[*See also* Alexandria; Alexandrian Empire; Byzantine Empire; Ptolemies; Roman Empire; Saqqara; *and* Seleucids.]

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ROBERT STEVEN BIANCHI

Islamic Egypt

Following the death of the prophet Muhammad in Medina in AH 10/632 CE his community of believers quickly consolidated their control of Muslims, particularly among those tribes people who believed that their submission to the prophet was personal, hence temporary. The way became clear for carrying the message of Islam to the northern and northeastern areas of the Arabian Peninsula, which were in thrall either to the Sasanian padishah or the Byzantine emperor. Within five years Jerusalem, Damascus, and Ctesiphon were in fealty to the caliph in Medina and very soon thereafter Muslim armies had entered Anatolia and crossed the Oxus River.

Amr ibn al-ʿAṣ convinced the caliph, ʿUmar, that with Greater Syria and Iraq under Muslim control, the logical step would be an invasion of Egypt. Commanding an army of about four thousand horsemen, Amr entered Egypt at al-Arish in AH 18/639 CE, took the port city of Pelusium, and arrived at the Byzantine fortress of Babylon early in 640. With reinforcements sent from the Hijaz, Amr proceeded to invest the fortress since it proved impossible to take by storm. Amr positioned his army slightly north of the fortress in a very large encampment surrounded by a ditch where the troops were assigned living areas on the basis of tribal affiliation. In April 641 Babylon fell. Amr continued his campaign toward Alexandria without fear of rear attack. Parts of the original army invaded the Faiyum and eventually conquered Middle and Upper Egypt up to the First Cataract at Aswan. By the end of the year Alexandria was in Muslim hands.

By ʿUmar's orders Amr returned to Fustat and made it his headquarters and capital (*ʿasimah)* from which to plan the further conquest of the contingent portions of the southern littoral of the Mediterranean and the assimilation of Egypt into the ever-expanding *dar al-Islam* (Muslim territory). Although this action triggered a certain eclipse of Alexandrian prominence, it laid the foundation for the modern city of Cairo.

It is difficult to understand fully the reasons that facilitated the seemingly easy conquest of so rich and vitally important a part of the Byzantine Empire. Egypt had been rent by the Sasanian invasion of 619 and the subsequent decade of occupation, a ravaged pawn in the larger unresolved power struggle of the Sasanian and Byzantine polities. The religious doctrinal strife that accompanied the advent of Christianity was fully echoed in Egypt where the Melkites (those loyal to the Orthodox church) proved unequal to the task of converting the very strongly monastic-oriented Coptic-speaking masses (the Monothelites). Whereas the Melkites might be seen as dominating the cities and fortresses along the Nile, the Copts won the allegiance of the peasantry. Their apparent neutrality during the Arab conquest facilitated Amr's progress and thus guaranteed sympathetic treatment at his hands. Culturally, the countryside had been but lightly hellenized, insuring the longer life of Coptic as compared with Greek in the slow arabization of Egypt.

Immediately following the conquest, three parallel and intermingling processes can be identified. First, Arabic replaced Greek as the linguistic medium of government, and the Umayyad caliph ʿAbd al-Malik ordered Hellenic and Sasanian effigies to be removed from the coinage. All the inscriptions were in Arabic. Bilingual documents were grad-

ually replaced by entirely Arabic texts written by a new scribal class, most of whom were recruited from among the large number of early converts to Islam or the swell of immigrants arriving from the Arabic-speaking provinces of the Arabian Peninsula. So great was the prominence of Arabic as the mode of contact with the authorities that even the religious teaching texts of the Coptic church became bilingual toward the end of the tenth century.

Second, as the scanty sources imply, there was very little pressure on the Egyptian population to convert. However, advancement and full admission to governing status entailed conversion to Islam. Early in the eight century local Coptic dignitaries were replaced by Arabic-speaking Muslims as tax collectors and adjudicators, and the scene for accelerated conversion was set. Exact figures are rare, but the greater part of the population seems to have been Muslim at the time of the Fatimid conquest in AH 358/969 CE.

Third, a process of acculturation began with soldiers from the conquering army who settled down in Egypt and immigrants in ever-increasing numbers from Greater Syria, the Arabian Peninsula, Iraq, and even Iran. The long history of the Nile Valley dictated an adaptation to the mores and regulations (particularly agricultural) so delicate that to impose others too harshly would disturb the rich ebb and flow of daily life. Very soon the settlers found themselves celebrating national feasts of pharaonic origin, utilizing the millennial norms of planting and harvesting to schedules that followed Ptolemaic and Coptic formulas and finding themselves accommodating rather than dictating.

Politically, Egypt mirrored the shifts of power within the *dar al-Islam* without substantial injury. The seizure of the caliphate by the ʿAbbasids in AH 132/750 CE signaled little to the population except at Fustat when a new government precinct called al-Askar appeared slightly to the north. When Ahmad ibn Tulun became governor in 254/868, the calm was somewhat broken as he assumed autonomous authority. He reduced the revenues paid to Baghdad and used this extra income to raise his own army with which he arrogated the role of protector of Syria. These new moneys also permitted an ambitious building program centered on Ibn Tulun's new ruling quarter of al-Qataʾi ("the fiefs," which were parceled to his most loyal officers) to the northeast of Fustat-Askar. Ibn Tulun's crowning works were his palace at the foot of the Muqattam Hills; his Friday mosque, one of the pearls of Islamic architecture, on Jabal Yashkur; and an aqueduct to carry water to al-Qataʾi. [*See* Mosque.]

Nevertheless, the Tulunids remained loyal to the ʿAbbasid caliphate. Egypt was prosperous and generally at peace. However, a new and powerful threat attended from the west where the heterodox Isma'ili Fatimid dynasty had established its own caliphate. Baghdad reacted quickly, sending in 292/905 an army under Muhammad ibn Tughj, who ruled under the title of al-Ikhshid. The ʿAbbasids repelled the early Fatimid attacks and concentrated their efforts on maintaining the prosperity of the country. A large number of Iraqi Arabs and Turks came to Egypt as soldiers and bureaucrats. Eventually, Baghdad was too strapped to send yet another army when the Fatimid forces under Gawhar appeared in 358/969. Egypt was taken and loyalty was sworn to a Shiʿi caliphate for the next two centuries.

The Fatimid dynasty (AH 358–567/969–1171 CE) represents a watershed in Egyptian Islamic history. Because the Fatimids could not destroy the Sunni ʿAbbasid caliphate and were unable to maintain their ascendancy in the Maghrib, they concentrated on Egypt. They gave to the country an independence that capped the autonomy achieved by the Tulunids. Egypt enjoyed an unparalleled prosperity based on improved agriculture; on control of the trade with China and southwestern Asia; and on discovery of large gold deposits in the Wadi Allaqi in Nubia. The Fatimids regularized trade between Egypt and inner Africa, which offered slaves and ivory, and welcomed European and Byzantine merchants with whom they expanded their commercial and industrial endeavours, particularly in textiles.

The Fatimids had a high sense of their mission to win the allegiance of the entire *dar al-Islam* and particularly to propagandize of their family descent from the Prophet's daughter. It would seem that they were imbued with an almost Byzantine sense of ritual and ceremonial. All of these aspirations were bodied forth in their splendid new walled capital of Cairo (Ar., al-Qahira, "the Victorious"), laid out as a formally divided rectangle with eight gates to the northeast of the amalgamated Fustat-Askar-Qataʾi. Within were two palaces divided by a plaza and al-Azhar Mosque, originally an institution for training Fatimid propagandists. Later the mosque of al-Hakim was built immediately adjacent to the two principal northern gates and dedicated in 400/1010.

Fatimid piety echoed the ancient Egyptian veneration of the dead and the importance of the tomb structure. Domed mausolea appeared in the Southern Cemetery honoring ancestors and immediate family. The purported head of the Prophet's grandson Husayn was interred in a splendid mausoleum-cum-mosque within the royal quarter. All of these shrines were visited and venerated by Sunni and Shiʿi alike.

This glamour and prosperity were threatened. The Seljuk Turks who took over the ʿAbbasid hegemony declared an aim of destroying the heretical Fatimid dynasty. Despite the conquest of Anatolia and the incursion of the Crusaders against the Seljuks, the Fatimids did not take advantage of their reprieve, except to rebuild the walls of Cairo in stone and to enclose the mosque of al-Hakim. They could not govern either their armies or their bureaucracy. Succession was attended by family friction, deceit, and the mishandling of policy by successive viziers, some of whom were Christians and Jews, who were proof of Fatimid tolerance. Low Nile floodings caused famine. The new Seljuk principates of Syria were pressing upon the Crusader states; both hungered for the riches of Fatimid Egypt and by 564/1169 both

were marching on it. The vizier Shawar set fire to the older parts of the city, particularly Fustat, and then invited the Syrian army to enter Cairo to protect it from the forays of the Crusader army. The commander, Shirkuh, had himself proclaimed vizier, and after his death his nephew, Salah ad-Din (Saladin) assumed command and deposed the Fatimid caliph in 567/1171.

The peaceful transition of religious allegiance to the ʿAbbasid Sunni caliphate was proof of just how little the Fatimid ideology had penetrated the Egyptian community. Salah ad-Din introduced strict Sunnism on Egypt inspired by the thrust of what can be termed the "Seljuk dispensation." With the introduction of the *madrasah* (theological school), he insured an orthodox legal system and a cadre of specifically trained bureaucrats. He imposed the *iqta* system whereby the productive land of Egypt was tied to the maintenance of the army with a consequent diminution of private property. When his nominal ruler, Nur ad-Din of Damascus, died, Salah ad-Din assumed the title of sultan and took charge of the counter-Crusade that eventually restored Jerusalem to the *dar al-Islam* and secured Greater Syria to the rule of his dynasty, the Ayyubids. The final portion of the dispensation, the *khanqah* (a convent for the training of Sufis to eliminate the possibility of any Shiʿi strain taking root), was firmly established in Egypt through the patronage of the sultan and his family.

In all other respects the Ayyubids built on the heritage of the Fatimids. They destroyed none of the mausolea, which through visitation and invocation had become part of Cairene life; indeed they went further by turning the idea toward Sunni ends with the erection of the large domed structure in the Southern Cemetery, which housed the remains of Imam Shafiʿi (d. 204/820), the founder of the *madhhab* (legal school) now professed by the majority of Egyptians.

Where taste was concerned, the earlier Fatimid tendencies toward revived classical and Maghribi models were replaced by those emanating from Greater Syria. This was particularly noticeable in the great Citadel (initiated by Salah ad-Din) built on the middle peaks of the Muqattam hills with walls spreading to take in al-Qahira to the north and much of Fustat to the south. By the end of the twelfth century CE Egypt was orthodox in belief, prosperous, well protected, and connected to the markets of the Mediterranean, the Far East, and southeast Asia. In the following century, this strong entity eliminated the Crusader states and protected itself from the Mongols.

[*See also* ʿAbbasid Caliphate; Ayyubid-Mamluk Dynasties; Cairo; Fatimid Dynasty; *and* Fustat.]

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GEORGE T. SCANLON

EGYPT EXPLORATION SOCIETY. Founded in 1882 by Amelia Edwards, an English writer who had visited Egypt in 1873 and had seen the need for organized excavation, the Egypt Exploration Society of London aims to undertake surveys and excavations at ancient sites in Egypt and to publish the results of this work. The earliest excavations concentrated on trying to establish links between archaeological remains in the Nile Delta and the stories of the Hebrew Bible, but activities soon expanded to cover all areas of the country and all periods of ancient Egyptian history. Many excavators have worked for the society including one of the most influential figures in Egyptian archaeology, Sir W. M. F. Petrie.

The society is currently working at a number of sites. The Survey of Memphis aims to illuminate the topography of the ancient capital. At Saqqara a joint expedition with the National Museum of Antiquities, Leiden, The Netherlands, concentrates on the New Kingdom cemetery in which the tombs of important officials are being recorded. At Amarna, the city of Akhenaten and Nefertiti, the society has resumed excavation and survey in a place of major importance. Qaṣr Ibrim, the last surviving site available for excavation in Egyptian Nubia, is a fortress-town and religious center that has yielded vast quantities of material remains and written documents.

In addition to reports of excavations and publications of texts, the society publishes an annual periodical, *The Journal of Egyptian Archaeology.* Since 1991 the *JEA* has been joined

by a color magazine, *Egyptian Archaeology,* which presents excavation reports and other articles in a more popular form.

The Egypt Exploration Society remains one of the major excavating bodies in Egypt and has an international membership now amounting to nearly three thousand individuals and libraries. Membership is open to all with an interest in the civilization of ancient Egypt.

[*See also* Amarna, Tell el-; Saqqara; *and the biography of Petrie.*]

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PATRICIA SPENCER

EGYPTIAN. The language of ancient Egypt represents an autonomous branch of one of the most widespread language families in the world, variously called Afroasiatic, Hamito-Semitic, or Semito-Hamitic and comprising, from antiquity to the present time, the entire area of the eastern Mediterranean, northern Africa, and western Asia. The six individual branches of the Afroasiatic family are Ancient Egyptian, Semitic, Berber, Cushitic, Chadic, Omotic. Ancient Egyptian shows the closest relations to Semitic and Berber, more distant ones to Cushitic (except Beja, a Northern Cushitic language possibly derived from the language of the people called *mḏʒw* in Egyptian texts) and Chadic. Afroasiatic languages are generally characterized by the following linguistic features not all of which are shared by Egyptian: the presence of bi- or triconsonantal lexical roots; a consonantal system displaying a series of ejective, emphatic, or glottalized phonemes (sound units) alongside the voiced and the voiceless series; a vocalic system originally limited to the three phonemes /a/ /i/ /u/; a nominal feminine suffix **-at;* a rather rudimentary and often lexicalized case system; a nominal prefix *m-*; an adjectival suffix *-ī,* called *nisba;* a basic opposition between prefix (dynamic) and suffix conjugation (stative) in the verbal system; a conjugation pattern 1st sg. **ʾa-*, 2d **t-*, 3d masc. **y-*, fem. **t-*, 1st pl. **n-*, with supplementary suffixes in the 2d and 3d fem. pl.

The history of the Egyptian language, which remained in use over more than four millennia (c. 3000 BCE–1300 CE), can be divided into two main stages, characterized by a major typological change from synthetic to analytic patterns in the nominal syntax and in the verbal system. Each of these two stages of the language can be further subdivided into three different phases, affecting primarily the sphere of graphemics.

Older Egyptian. The forms of Older Egyptian consisted of the language of all written texts from 3000 to 1300 BCE, surviving in formal religious texts until the second century CE. It has three main phases: Old Egyptian, Middle Egyptian, and Late Middle Egyptian.

Old Egyptian. The language of the Old Kingdom and the First Intermediate Period (3000–2000) is known as Old Egyptian. The main documents of this stage of the language are represented by the religious corpus of the Pyramid Texts and by a sizable number of so-called autobiographies on the external walls of the rock tombs of the administrative elite.

Middle Egyptian. Also termed *Classical Egyptian,* Middle Egyptian lasted from the Middle Kingdom to the end of the eighteenth dynasty (2000–1300). Middle Egyptian is the classical language of Egyptian literature, expressed in a variety of texts that can be classified according to two main genres. The first, the "Instructions," are wisdom texts normally addressed from a father to a son, which conveyed the educational and professional expectations of Egyptian society. The most renowned examples are the *Instructions of the Vizier Ptahhotep* and the *Instructions for Merikare.* Some of these moral texts, such as the *Admonitions of Ipu-Wer,* are in fact philosophical discussions *ex eventu* on the state of the country taking as a point of departure the political evolution from the Old to the Middle Kingdom, a period generally refered to as the First Intermediate Period. The second, the *Tales,* are narratives relating the adventures of a specific hero and representing the vehicle of individual, as opposed to societal, concerns. The most famous specimens of this genre are the *Tale of Sinuhe* and the *Shipwrecked Sailor.* Some texts, such as the *Eloquent Peasant,* combine features and contents of both main genres.

Late Middle Egyptian. In use from the late New Kingdom to the end of Egyptian civilization, Late Middle Egyptian is the language of mainly religious texts (rituals, mythological inscriptions, hymns). It maintains the linguistic structures of the classical language, but especially in the Greco-Roman period (Ptolemaic Egyptian: third century BCE–second century CE), it shows an enormous extension in its set of hieroglyphic signs.

Older Egyptian is characterized by its preference for synthetic grammatical structures. It displays a full set of morphological suffixes indicating gender and number; it exhibits no definite article: *rmṯ* "the man," "a man"; it maintains the verb-subject-object order in verbal formations (*sḏm=k n=f* "may you listen to him").

Later Egyptian. The forms of Later Egyptian are doc-

umented from the nineteenth dynasty to the Middle Ages (1300 BCE–1300 CE) and consisted of Late Egyptian, Coptic, and Demotic.

Late Egyptian. In use from 1300 to 700 BCE, Late Egyptian was the language of written records from the second part of the New Kingdom. It primarily conveys the rich entertainment literature of the nineteenth dynasty, consisting of both traditional forms, for example, the *Tale of the Two Brothers,* the *Tale of Wenamun,* or the *Instructions of Ani* and the *Instructions of Amenemope,* and of new literary genres, such as the mythological tale or love poetry. Late Egyptian was also the idiom of the Ramesside bureaucracy: for example, archival documents from the Theban necropolis or school texts such as the *Miscellanies.*

Demotic. In use from the seventh century BCE to the fifth century CE, Demotic was the language of administration and literature during the Late Period (seventh–fourth century BCE). Although grammatically it closely continues Late Egyptian, Demotic differs radically from it in its graphic system. Important texts in Demotic are the narrative cycles of Setne-Khaemwase and of Petubastis and the instructions of Papyrus Insinger and Onkhsheshonqi.

Coptic. In use from the fourth through fourteenth centuries CE, Coptic was the language of Christian Egypt, written in a variety of the Greek alphabet completed by six or seven Demotic signs to indicate Egyptian phonemes absent in Greek. As a spoken language Coptic was superseded by Arabic from the ninth century, but it survives to the present in the liturgy of the Coptic Orthodox Church of Egypt.

As opposed to Older Egyptian, Later Egyptian developed analytic features. Suffixal markers of morphological oppositions are dropped and functionally replaced by prefixal morphemes, the demonstrative "this" and the numeral "one" evolving into the definite and the indefinite article respectively. Periphrastic patterns in the order subject-verb-object supersede older verb-subject-object verbal formations.

Unless otherwise specified, the following grammatical sketch refers to Older Egyptian, more specifically to the language of classical Middle Egyptian literature.

Writing System. The language of Ancient Egypt was written in a monumental script and its cursive varieties. The monumental script is known as hieroglyphs. These are pictographic signs that represent living beings and objects, such as gods or people, animals, parts of the human or animal body, plants, stars, buildings, furniture, containers, and so forth. The number of hieroglyphic signs varied from approximately one thousand in the Old Kingdom down to about 750 in the classical language, but—following the decline of a centralized school system—increased dramatically to many thousands during the Ptolemaic and Roman rule in the country.

In this writing system, phonological and ideographic principles appear combined: a written word consists of a sequence of signs, called *phonograms,* which convey a substantial portion of its phonological structure: normally all the consonants, occasionally also the semivocalic phonemes. Each phonogram can express one, two, or three consonants of the language. The sequence of phonograms is usually followed by a "determinative," which indicates iconically the semantic sphere of the word: for example, a sitting god expresses the lexical sphere of "god, divine," a scribe's outfit indicates the semantic realm of "writing," a stylized desert landscape denotes the word as a foreign toponym. Although some words in common use may be written only with phonograms, many items of the basic vocabulary are expressed by hieroglyphic signs that represent, evoke, or symbolize their own meaning: these are called *logograms* or *ideograms:* for example, the hieroglyphic sign representing a human head is used to signify the lexeme "head." The use of a hieroglyphic sign as logogram or ideogram is made visually explicit through a vertical stroke following the sign.

As part of its inventory of phonograms, hieroglyphic writing displayed a set of twenty-four "alphabetic" signs that expressed one consonantal phoneme. Each of these signs corresponded to one consonantal or semiconsonantal phoneme of Egyptian; in this way, we can obtain an insight into the complete phonological system of the language, the only exception being the consonant /l/, for which a distinct grapheme appears only in Demotic. In spite of the presence of this exact correspondence between monoconsonantal signs and the phoneme inventory, hieroglyphs never developed a genuine alphabetic system. This was due to the culturally significant connection between the hieroglyphic sign and its pictographic content, a connection that in the later periods of the history of the hieroglyphic system, especially in Ptolemaic Egyptian, led to the emergence of hitherto unknown signs, of new phonological values for known signs, and of cryptographic solutions.

The hieroglyphic system was mostly used for monumental purposes, and only rarely in a cursive form adopted in religious texts of the Middle and the New Kingdom. During the three millennia of their productive use, hieroglyphs developed two manual forms: while Hieratic (2600 BCE–third century CE) represents a direct cursive rendering, with ligatures and diacritic signs, of individual hieroglyphs, Demotic (seventh century BCE–fifth century CE) modifies completely the writing conventions by introducing a simplification of hieratic sign-groups. In Coptic, the hieroglyphic-based system is replaced by an alphabet derived from the Greek one, with the addition of six or seven Demotic signs for the indication of phonemes absent from Greek.

The basic orientation of the Egyptian writing system, and the only one used in the cursive varieties, is from right to left; in epigraphic, that is, monumental texts, this order is

TABLE 1. *Consonants of Older Egyptian*

Consonants	Labial	Apical	Alveo-palatal	Palatal	Velar	Uvular	Pharyngeal	Glottal
Stops								
Voiceless	*p* /p/	*t* /t/		*ṯ* /c/	*k* /k/	*ḳ*, *q* /q/		*ỉ* /ʔ/
Voiced	*b* /b/	*d* /d/		*ḏ* /ɟ/	*g* /g/			
Fricatives								
Voiceless	*f* /f/	*s* /s/	*š* /š/	*ḥ* /ç/	*ḫ* /x/		*ḥ* /ħ/	*h* /h/
Voiced		*z* /z/					*ʿ* /ʕ/	
Nasals	*m* /m/	*n* /n/						
Lateral		*ꜣ*, *n*, *r* /l/						
Vibrant		*r* /R/				*ꜣ* /R/		
Glides	*w* /w/			*y*, *jj* /j/				

often inverted for reasons of symmetry or artistic composition.

Phonology. The exact phonological value of many Egyptian consonants is obscured by difficulties in establishing reliable Afroasiatic correspondences: Vocalism and prosody can only be reconstructed by combining the contemporary Akkadian transcriptions of the second millennium with the later Greek transcriptions of the Late Period (corresponding roughly to spoken Demotic) and the Coptic evidence of the first millennium CE.

For Older Egyptian, we can posit the phonological inventory shown in table 1 (the conventional Egyptological transcriptions are indicated in italics). The Egyptian phonological system does not display the "emphatic" phonemes common to many Afroasiatic languages. Voiced stops, however, were often articulated as "glottalized" consonants; thus, /d/ = [t'], /j/ = [c'], /g/ = [k']. The phoneme conventionally transcribed *ꜣ (aleph),* originally a uvular vibrant probably articulated like *r (grasseyé)* in French, corresponds to Afroasiatic **r* or **l*. The existence of a phoneme /l/ in Egyptian is well established on the basis of Afroasiatic correspondences and of its presence in Coptic; yet, unlike all other consonantal phonemes, /l/ shows no unequivocal graphic rendering, being expressed in different lexemes by ⟨ꜣ⟩, ⟨n⟩, ⟨r⟩ or ⟨nr⟩.

The opposition between voiced and voiceless consonants tends to be progressively neutralized into the voiceless variant. During the second millennium, the following sound changes took place: (a) the uvulat vibrant /R/ acquired the articulation /ʔ/ (glottal stop); (b) the point of articulation was progressively moved to the front—velar to palatal, palatal to apical; (c) oppositions between fricatives in the palatal region (/š/, /ç/, /x/) tended to be neutralized into /š/; and (d) final /r/ and /t/ tended to become /'/, then to disappear. During the first millennium, the opposition between *ʿayin* /ʕ/ and *ʾaleph* /ʔ/ was also neutralized.

The original set of vowels (see table 2) underwent a certain number of historical changes. Already during the second millennium, short stressed /i/ and /u/ merged into /e/, and long /u:/ turned into /e:/. Around 1000, long /a:/ became /o:/, a phonetic evolution similar to the contemporaneous "Canaanite shift" in Northwest Semitic. There was also a change in the short tonic from /a/ to /o/, but Coptic shows that this affected only a portion of the Egyptian linguistic domain. Egyptian unstressed vowels progressively lost phonological status and became realized as *schwa* (ə).

In the classical language, the stress could lie only on the ultimate or penultimate syllable. Although both closed and open syllables are found in pretonic position, the only possible structure in syllables following the stress is the closed syllable with short vowel. The stressed vowel of a penultimate open syllable is long; some scholars posit the existence of extralong syllables under oxytone stress. In addition to final /j/, /w/, /t/ and /r/, unstressed vowels were dropped between 2000 and 1600.

Morphology. The basic Egyptian morphological unit of nouns is a biliteral or triliteral root, which is modified by flectional suffixes (see table 3). Although some scholars detect remnants of the Afroasiatic case system in the Egyptian verbal paradigm, the syntactic structure of classical Egyptian was so rigid that cases could not have played a productive role in the language in historical times. Short unstressed vowels in final position are not posited for classical Egyptian.

Adjectives are morphologically and syntactically treated like substantives. Very common is the derivational pattern called *nisbation,* in which a morpheme *-j* is added to a noun to form its corresponding adjective: *nṯr*, "god," *nṯrj* "divine."

The three types of pronouns are listed in table 4. Inde-

TABLE 2. *Vowels of Older Egyptian*

Vowels	Short	Long
Front	/i/	/i:/
Middle	/a/	/a:/
Back	/u/	/u:/

TABLE 3. *Nominal Morphology in Older Egyptian*

	Masculine	Feminine
Singular	*.ϕ, .w*	*.t*
Dual	*.wj*	*.tj*
Plural	*.ϕ, .w, .ww*	*.t, .jjt, .wt*

pendent pronouns are used for the topicalized subject of sentences with nominal or adjectival predicate in the first person (*jnk jtj=k* "I am your father") and for the focalized subject of nominal or verbal cleft sentences: *ntf z3 Wsjr* "*he* is Osiris' son"; *jnk jnj=j sw* "it is I who shall bring it." Dependent pronouns are used as the object of a transitive verb (*sḏm=f wj* "he will hear me"), as the subject of a qualifying nominal sentence (*nfr tw ḥnʿ=j* "you are happy with me") and of an adverbial sentence in the first and second persons only after an initial particle (*mk wj m-b3ḥ=k* "Look, I am in front of you"). Suffix pronouns are used as the subject of verbal forms, as possessive pronoun, and as object of prepositions: *ḏj=k r=k n=j ḫ.t=j* "you shall truly (lit., to-you) give me (= to-me) my possessions."

Demonstratives are characterized by a deictic (specifying) element preceded by the indicator of gender and number (masc., *pn, pf, pw;* fem., *tn, tf, tw; rmṯ pf* "that man"; *ḥjm.t tn* "this woman"). They normally follow the noun to which they refer. The plurals *nn, nf, nn* are also used with following genitive as pronouns in partitive constructions: *nn nj srjw.w* "these officials." Later Egyptian developed a set of definite articles from the proclitic demonstrative series *p3, t3,* pl. n3; *p3-rm(t)* "the man"; *t3-ḥm(.t)* "the woman"; *n3-srj.w* "the officials," as well as an indefinite article from the numeral *wʿj* "one": *wʿ-rmt* "a man."

The relative pronoun is masc. *ntj;* fem. *nt.t;* pl. *ntj.w* "who/which/that." It only refers to specific (i.e., semantically determined) antecedents because in Egyptian indefinite antecedents are not resumed by a relative, but by a circumstantial, clause: *rmṯ ntj rḫ.n=j sw* "the man whom I know" (lit., "man that I know him," as opposed to *rmṯ rḫ.n=j sw* "a man that I know," lit., "man—I know him"). Peculiar to Egyptian is the presence of a relative pronoun, which semantically incorporates negation: masc. *jwtj,* fem. *jwt.t,* pl. *jwtj.w* "who/which/that not."

TABLE 4. *Personal Pronouns in Older Egyptian*

	Independent	Dependent	Suffix
Singular			
1 c.	*jnk*	*wj*	*=j*
2 m.	*ntk, ṯwt*[1]	*yṯ w*	*=k*
2 f.	*ntṯ, ṯmt*[1]	*ṯn*	*=ṯ*
3 m.	*ntf*, swt[1]	*sw*	*=f*
3 f.	*nts, stt*[1]	*sj, st*	*=s*
Dual			
1 c.		*nj*	*=nj*
2 c.	*ntṯnj*	*ṯnj*	*=ṯnj*
3 c.	*ntsnj*	*snj*	*=snj*
Plural			
1 c.	*jnn*	*n*	*=n*
2 c.	*ntṯn*	*ṯn*	*=ṯn*
3 c.	*ntsn*	*sn, st*	*=sn*

[1] *ṯwt, ṯmt, swt,* and *stt* are archaic forms found mainly in Old Kingdom religious texts.

Basic interrogative pronouns are *m* "who?", "what?", *jḫ* "what?", *jšst* "what?". They can be combined with prepositions or particles to form complex pronouns: *jn-m* "who?", literally, "FOCUS-who"; *ḥr-m* "why?", literally, "on-what?".

The most common numerals show etymological connections with other languages of the Afroasiatic family: *wʿj* "one," *sn.wj* "two," *ḫmt.w* "three," *jfd.w* "four," *dj.w* "five," *srs.w* "six," *sfḫ.w* "seven," *ḫmn.w* "eight," *psḏ.w* "nine," *mḏw* "ten," *ḏw.tj* "twenty," *mʿb3* "thirty," *ḥm* "forty," *ṯy.w* "fifty," *sjsy.w* "sixty," *sfḫy.w* "seventy," *ḫmny.w* "eighty," *psḏy.w* "ninety," *šn.t* "one hundred," *ḫ3* "one thousand," *ḏbʿ* "ten thousand," *ḥfn* "one hundred thousand," *ḥḥ* "one million." It is noteworthy that *five* is etymologically a *nisba* of Afroasiatic **yad* "hand," which is no longer a productive word in historical Egyptian, that "twenty" is an old dual of "ten," that "thirty" and "forty" are independent lexemes but cardinals from "fifty" to "ninety" represent the plural forms of the respective units "five" through "nine." Numbers are seldom written out; they are mostly rendered graphically, strokes indicating the units, and special hieroglyphs being used for the powers of "ten." Ordinals are derived from cardinals through the addition of a suffx *.nw* (from 2 to 9, e.g., *ḫmt.nw* "third"), or the prefixation of the participle *mḥ* "filling" to the cardinal number (from 10 onward, e.g., *mḥ-20* "twentieth").

Finite verbal forms are built by annexing a suffix pronoun to the root, either directly or after a morpheme indicating tense, aspect, or voice features. The most important verbal indicators are *.n* (past tense; *sḏm.n=j* "I heard"), *.t* (perfective, sometimes prospective aspect, *n sḏm.t=f* "he had not heard," *jw.t=f* "he shall come"), *.w* (prospective aspect and passive voice, *jrj.w=f* "it has been/shall be done), *.tw* (passive voice, *sḏm.tw=k* "you are heard"). Classes of so-called "weak" verbal roots, whose third radical is a semiconsonantal *j* or *w*, show the reduplication of the second radical and the presence of a stressed vowel between the two consonants in a form indicating in Semitic languages the imperfective aspect or the factitive stem, such as the imperfective in Akkadian and the D-stem throughout Semitic: In Egyptian this form, which is conventionally called *emphatic,* fulfills the function of pragmatic "theme" of the sentence in which it appears: *mrr=s wj* "(the-fact-that-)she loves me." In such sentences, the attentional stress normally lies on an adverbial modifier. The nonreduplicated verbal form is further subdivided into temporally unmarked or future func-

tions, depending on the temporal setting of the context. The imperative has no suffix element in the singular, but sometimes, especially with weak verbs, a suffix *.w* or *.y* in the plural.

Egyptian also exhibits a verbal form, variously called *old perfective, stative,* or *pseudoparticiple,* which indicates the wide semantic range of verbal "perfectivity," from perfective aspect with intransitive verbs to passive voice with transitive verbs. This form displays a set of suffix pronouns that are etymologically linked to the forms of the Semitic suffix conjugation. Examples are *prj.kw* "I have come forth," *ḫpr.tj* "you have become," and *rḏj.w* "it has been given."

Nonfinite forms of the Egyptian verb are (1) the participle *(nomen agentis),* which exhibits nominal morphology and is derived from the verbal stem (2) the infinitive *(nomen actionis),* which shows a suffix *.ø* in the regular verbs and a suffix *.t* in some classes of weak verbs (*mrj.t* "to love," "love"). A special type of infinitive characterized by a suffix *.w* is used after verbs of negative predication, such as *tm* "not to do." It is a matter of scholarly dispute whether the radical element in finite forms was originally a *nomen agentis* (*mrj=f* "*a-loving-one-is-he" > "he loves") or a *nomen actionis* (*mrj=f* "loving-of-him" > "he loves"). Verbal predications could also be expressed by prepositional constructions (*sw ḥr sḏm* "he is on hearing" > "he is hearing"; *jw=f r mrj.t* "he is toward loving" > "he is going to love," "he will love"); constructions such as these characterize the evolution of the verbal system in Later Egyptian.

The most frequent prepositions are *m* "in," "with"; *n* "to," "for"; *r* "toward"; *mj* "as," "like"; *ḥr* "on"; *ḫr* "under"; *ḥnꜥ* "with"; *ḫft* "according to"; and *ḫntj* "before." Prepositional phrases follow the noun or the verb they modify. Particularly noteworthy is the presence of the preposition *ḫr* "near", whose original semantic value (*A ḫr B* "A is near B") was applied to any situation in which the two participants A and B find themselves at different hierarchical levels, A being socioculturally higher than B (*sḏd=f ḫr msj.w* "he will speak to the children") or vice versa B higher than A (*jmɜḫy ḫr ntr ꜥɜ* "honored by the great god").

The basic negative particle is *n* (cf. Semitic **la'*): *n rḫ.n=f* "he does not know": A variant of this, conventionally transcribed *nn,* is used as predicative negation: *nn mɜꜥ.tjw* "there are no trustworthy people."

Syntax. Egyptian exhibits three sentence types, nominal, adverbial, and verbal, which are classified on the basis of the syntactic nature of their predicate—the subject being always a nominal phrase.

1. *Nominal sentences,* in which the predicate is either a substantive or an adjective. In categorical statements or qualifying adjectival sentences, the normal order of constituents is predicate-subject: *Rꜥw pw* "this is Ra"; *nfr mtn=j* "my path is good." This sequence is modified into subject-predicate in identifying sentences when both the subject and the predicate are semantically determined or specific (*sn.t=f spḏ.t* "his sister is Sirius"), or in cleft sentences, when the subject is focalized (*jn sn.t=f sꜥnḫ rn=f* "it is his sister who causes his name to live"). Topicalization is achieved by means of extraposition, the topicalized syntagm being resumed by a coreferential pronoun in the main clause.

2. *Adverbial sentences,* in which the predicate is an adverbial or prepositional phrase; the order is always subject-predicate: *jw NN jr p.t* "NN is towards heaven"; *ḫr.t=k m prw=k* "your rations are in your house."

3. *Verbal sentences,* with verbal phrase; in which the order is predicate-subject (-object): *ḫꜥ.y=k* "you shall appear"; *ḫꜥm.n=f wj* "he charged me."

In Egyptian sentences, verbal forms often appear embedded as theme or rheme of the utterance. In the Egyptological literature, this phenomenon is known as "transposition." The theme-rheme sequence is labeled "complex adverbial sentence": *wgg 3s.n=f wj* "(as for) weakness, it has seized me" > "weakness has seized me". Thus, Egyptian syntax displays a comparatively high degree of topicalization and focalization phenomena. The bare verbal sentence with the sequence predicate-subject appears less frequently than in related languages, being limited to modal (including prospective) functions.

[*See also* Hieroglyphs.]

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EGYPTIAN ARAMAIC TEXTS.

[*The tables referred to throughout this entry appear as an appendix in volume 5.*] Aramaic texts from the twenty-sixth dynasty through the Ptolemaic period were written (or found) in Egypt on papyrus, parchment, wood, ostraca, stone out croppings, sarcophagi, funerary stelae, altars, jars, bowls, coins, statuettes, seals, and bullae. Major centers of discovery were Memphis-Saqqara and Elephantine from the Persian period and Edfu from the Ptolemaic period, but graffiti have turned up all along the Nile from northern Giza to Nubian Tumas. The particulars of discovery and publication of papyri, ostraca, and jar inscriptions are listed chronologically in tabular form according to category of text (tables 1, 14–15). Other texts, including ostraca and jar inscriptions, are arranged typologically and listed alphabetically according to museum or library (tables 2–13).

Papyri and Parchments. These documents fall into six categories: (1) thirty-six letters on papyrus and fourteen on parchment, plus numerous fragments. Twenty-eight papyri belong to Elephantine (*TAD* [= Porten and Yardeni, 1986–1993] A3.1–10; 4.1–10; 5.2, 5; 6.1–2) or Syene (Aswan; *TAD* A2.1–4) and seven elsewhere—el-Hibeh (*TAD* A3.11), Luxor (*TAD* A2.5–7), Saqqara (*TAD* A1.1; 5.1), and an unknown locality (*TAD* A5.3, 4). A unique letter is from Adon, king of Ekron (c. 604–603 BCE), seeking aid from the pharaoh against the Babylonian onslaught. (2) forty-three contracts from Elephantine Island, mostly intact (495–400); one from el-Hibeh (515 [*TAD* B1.1]) and fragmentary court protocols from Saqqara (*TAD* B8.1–12). (3) two or three literary texts—*The Words of Ahiqar* (*TAD* C1.1) and one or two fragmentary reworked Egyptian tales (*TAD* C1.2). (4) one historical text—a fragmentary version of Darius' Bisitun inscription (*TAD* C2.1). (5) thirty accounts from Elephantine and Saqqara in the Persian period and Edfu in the Ptolemaic period (*TAD* C3.1–29). (6) nine lists, likewise from Elephantine and Saqqara (*TAD* C4.1–9).

There was a distinctive mode of writing for each type of document. Letters and contracts were written in a single column on a roll held vertically, perpendicular to the fibers and parallel to the joins. Although a letter frequently continued on the verso, contracts rarely did (exceptions are *TAD* B1.1; 2.3; 3.3; 4.4). All other texts were written in columns on a roll held horizontally, parallel to the fibers and perpendicular to the joins. At the end of the fifth century a few contracts were also written this way (*TAD* B4.6; 7.1–3).

Letters. Letters may be classified according to four categories—private, communal, official, and satrapal. At least eighteen letters may be assigned to the first category (*TAD* A2.1–7; 3.1–11). They are dispatched by peripatetic correspondents, Jewish and Aramean soldiers receiving government allotments (*prs* [*TAD* A2.3:8, 3.3:3; B4.2:6]). Their letters send and seek greetings, communicate matters of concern, issue instructions, enter requests, and occasionally contain such a significant piece of historical information as the succession to the throne of Nepherites in Epiph (= 27 September–26 October 399 BCE [*TAD* A 3.9]).

The ten papyri in the communal archive of leader and perhaps chief priest Jedaniah, son of Gemariah, are historically the most significant of the Elephantine texts (*TAD* A4.1–10). The fragmentary Passover letter sent to him in 419/18 by one Hananiah instructs the Jewish garrison in the proper observance of the two festivals (*TAD* A4.1). Three other letters attest to the tension between the devotees of YHW and of Khnum (*TAD* A4.2–4) that ultimately led to the destruction of the Jewish temple on the island by the Khnum priests in connivance with the Persian governor Vidranga (*TAD* A4.5–10). The most informative pieces are two drafts of a petition addressed to Bagohi, governor of Judah, on 25 November 407 BCE by Jedaniah and his colleagues, with a copy to the sons of Sanballat, governor of Samaria (*TAD* A7–8). In an oral memorandum, Bagohi and Delaiah, son of Sanballat, agreed to a limited reconstruction of the temple "on its site as it was formerly" but omitted permission to offer animal sacrifices (*TAD* A4.9). Blood on the altar was to be the exclusive prerogative of Jerusalem. The Jews at Elephantine accepted the limitation and in a further petition to "our lord," perhaps Arsames, offered him a rich reward if he would allow reconstruction of the temple (*TAD* A4.10). The last contract of the Anani(ah) archive (13 December 402 BCE) records the continued presence of the temple of YHW (*TAD* B3.12:18–19), indicating that if it had not yet been rebuilt, its place had not been taken by another structure.

Five fragmentary letters may be classified as official, two from Elephantine concerning an hereditary land lease (*TAD* A5.2, 5), one from Saqqara dated 436/35 BCE (*TAD* A5.1), and two of unknown provenance (*TAD* A5.3–4). The persons involved in these letters are either Persians or Egyptians. The letters associated with the satrapal house of Arsames (*TAD* A6) illustrate well the bureaucratic procedures pursued in handling complaints and issuing instructions and orders.

Legal Documents. The most intact of all the papyri are those acquired by purchase on the antiquities market. These constitute two family archives. The other legal documents

(loosely referred to as "contracts") may be divided into five categories—deeds of obligation (*TAD* B4.1–6), conveyances (*TAD* B5.1–5), documents of wifehood (*TAD* B6.1–4), judicial oaths (*TAD* B7.1–4), and court records (*TAD* B8.1–12). Representative documents from the first three categories appear also in the family archives. The parties regularly (except for Egyptians), and witnesses and neighbors occasionally, were identified by ethnicity (Aramean, Babylonian, Bactrian, Caspian, Jew, Khwarezmian), occupation ([member] of a [military] detachment, builder, boatman, [temple] servitor), and usually by residence (Elephantine, Syene) as well. The numerous witness signatures attest a high degree of literacy among the colonists.

The Mibtaḥiah archive contains eleven documents and spans three generations (471–410 BCE) of one of Elephantine's leading Jewish families. Mahseiah ("YH is refuge"), son of Jedaniah, may have named his daughter Mibtaḥiah ("YH is trust") with the biblical verses *Psalms* 91:2, 118:8–9 (*ḥsh* > *bṭḥ*) in mind, and she gave her two sons the patronyms Jedaniah and Mahseiah. Mibtaḥiah was twice married, the second time to an Egyptian, Eshor, later known as Nathan. She accumulated three houses and four slaves; the houses passed on to her eldest son and the slaves were divided between her two sons (*TAD* B2.1–11).

The Anani(ah) archive contains thirteen documents and spans two generations (456–402 BCE) of two interrelated families. The first family consists of the minor temple official Anani(ah), son of Azariah; his Egyptian slave-wife, Ta(pa)met; their two children, Pelatiah/Pilti and Jehoishma; and their son-in-law, Anani(ah), son of Haggai. The second family consists of the creditor and slave owner Meshullam, son of Zaccur, and his son, also named Zaccur. The elder Anani(ah) had but one house, acquired as a piece of abandoned property from a Caspian couple (*TAD* B3.4 [437 BCE]) and disposed of in parts and stages by bequest and sale, first to his wife (*TAD* B3.5), then to his daughter (*TAD* B3.7, 10, 11), and finally to his namesake son-in-law (*TAD* B3.12). When the elder Anani(ah) married the handmaiden Ta(pa)met, her master Meshullam barely provided her with a dowry (*TAD* B3.3), but Anani(ah)'s emancipated daughter was handsomely endowed by her adoptive brother, Zaccur (*TAD* B3.8).

Literary and Historical Text. Eleven sheets containing fourteen columns of the Aḥiqar text from Elephantine are preserved (*TAD* C1.1). The first five columns are narrative, relating the story of the "wise and skillful scribe . . . counselor of all Assyria and [be]arer of the seal" for King Sennacherib and his son, Esarhaddon. Decipherment of the erased customs account (*TAD* C3.7) underlying the Aḥiqar text corroborates the present order of the narrative, mandates a rearrangement of the plates with the proverbs, and suggests that the conclusion of the narrative followed the end of the proverbs. Being on the outside of the scroll, it was lost (introduction to *TAD* C1.1–2). The two fragments of *The Prophecy of Ḥor* and *The Demise of Righteousness* (*TAD* C1.2) are joined together by a thin strip in the middle (as proposed by Bezalel Porten and Ada Yardeni). The upper half of a fragmentary column is preserved on each side. On the recto the Egyptian magician Ḥor, known also from demotic texts, elusively tells the pharaoh "your bones shall not go down to Sheol." The verso details the breakdown of social order followed by a divinely proclaimed redeemer.

The one historical text is a fragmentary copy of the original Bisitun inscription dispatched by Darius I to centers throughout the empire recording his victory over nineteen rebels in one year (*TAD* C2.1). The original Aramaic text must have consisted of eleven columns of seventeen to eighteen lines each, yielding a total of approximately 190 lines, of which seventy-nine have been recovered. A date in the Record of Memoranda on the verso (year 7 = 417 BCE [*TAD* C3.13:34]) suggests that the present copy may have been written to commemorate the hundredth anniversary of the great victories of Darius I, which fell shortly after the accession of his later namesake.

Accounts and Lists. There are significant accounts from the three major sites, dealing with the disbursement or receipt of such commodities as silver (*TAD* C3.2, 4–5, 7, 11, 15, 25), grain (*TAD* C3.13–14, 16–18, 25–28), wine and oil (*TAD* C31, 7, 11–12, 18, 28–29). Only a few are intact. The most significant religiously and onomastically is the eight-column Collection Account from Elephantine, probably of 400 (*TAD* C3.15), listing 128 Jewish contributors of two shekels each, initially designated for YHW the God but at the end divided up between him and the deities Eshembethel and Anathbethel. Economically, the most significant text is the newly deciphered (Yardeni and Porten) Customs Account (*TAD* C3.7). Written on both sides of a fifty-sheet scroll in 475 BCE at one of Egypt's custom's stations, either Migdol (*Jer.* 44:1, 46:14; *Ez.* 29:10, 30:6; *TAD* A3.3:4), Daphne-Tahpanhes (*Jer.* 43:9), or Memphis (*TAD* C3.8IIIA:11, IIIB:16), it was subsequently erased to make way for the *Words of Aḥiqar*. It attests to forty-two sailings in ten months of four different kinds of ships (thirty-six Ionian and six "Phoenician") and the duty (*mndt'*) in kind paid on entry and the dues (*tšy* = *t3 šy.t*) paid on exported natron. The import duty on the Greek ships includes gold staters, silver, Ionian wine, oil, a wooden support(?), coated and uncoated jars.

The "Phoenician" ships bring a variety of items—Sidonian wine of year 10 and of year 11; two kinds of iron (*pkrn* and *sny*), bronze, and tin; wood by weight and by number, including four different cuts of cedar (*sy* ["beam"?], *mlwt* ["board"?], *pq* ["plank"?], and *p'my* [translation unknown]); two kinds of wool, designated by their village of origin; and clay. The turnaround time is one to three weeks, and a certain Glaphyros is known to have sailed twice (*TAD* C3.7Kv2:22f; Gr2:15f). Some Babylonian-Egyptian double dates allow the reconstruction of several sheets from the

Memphis Shipyard Journal for the years 473–471 (*TAD* C3.8). North Saqqara has yielded several very fragmentary land registries (*TAD* C3.20–24), using Persian words to describe the type of property (*rstkh, 'wpsth*) and measuring the area in arouras (*'šln*). Third-century BCE accounts, probably from Edfu, display Greek names (e.g., Apollonios, Bacchios, Herakleides, Hermias, and Jason) alongside a few northwest Semitic ones (e.g., Abdi, Abieti [*'byty*], Judah, Nathan, and Shabbethai).

Ethnically, the nine lists (*TAD* C4.1–9) display the cosmopolitan nature of society in the Persian period. A single onomastic group usually dominates each list. Lacking or missing title, they conceal their intent. Perhaps they constituted military units, collection lists (*TAD* C3.15), or ration lists (*TAD* C3.14, 27).

Ostraca and Jar Inscriptions. Ostraca are texts written on pot shards and limestone flakes, while jar inscriptions were written, incised, or inked on the jar, usually at the top, at the time of its manufacture, transport, or storage. Some 330 Aramaic ostraca have been discovered, almost all from excavations at Elephantine (table 2). Unlike the papyri, which appeared in major collections, the ostraca were never assembled into one publication and there is no standard method of citation. There are twenty-six jar inscriptions, mostly fragmentary, from Elephantine, Saqqara, and Edfu (table 3).

The ostraca may be divided into four groups—letters, lists, accounts, and two abecedaries. The largest category is letters. Almost all of the Elephantine ostraca were written by a single scribe in the first quarter of the fifth century BCE taking dictation at Syene from soldiers needing to communicate with their family and friends in Elephantine. The letters were written on randomly shaped ostraca that measured roughly 7 × 10 cm, beginning regularly on the concave side and continuing on the convex and averaging a dozen lines. A ferry service plied the waters of the Nile between Syene (Aswan) and Elephantine (Gazirat al-Aswan) in Persian times as today, and these notes were sent with the boatman of these ships. Communication was meant to be immediate, and often a sense of urgency pervades the letters. They are full of reports and requests for objects and information. One ostracon reports an unsettling experience—"Now, lo a dream I saw and from that time I am very hot. May Jḥamoliah see my wellbeing" (table 2.1). In the realm of religion, they are a valuable source of information on divine epithets, divine intervention in personal affairs, the Jewish temple, oaths, Sabbath, Passover, and purity. The divine name spelled *YHW* in the later papyri is written in the early papyri and in all these ostraca *YHH*. Orthographic evidence indicates that it was pronounced something like "Yaho" and not "Yahu." One of the strangest instructions, backed by an oath-supported threat, is contained in a letter to the woman Islaḥ, "Now, behold, legumes I shall send tomorrow. Meet the boat tomorrow on the Sabbath. Lest, if they get lost, by the life of YHH, if not (= surely) yo[ur] life I shall take. Do not rely on Meshullemeth and on Shemaiah" (table 2.63). Almost as cryptic is the query of Hoshaiah, "Send me (word) when you will do (observe/perform) the Passover" (table 2.40). Is it a matter of calendar or purity? One ostracon may be reconstructed to read, "Do not dispatch to me bread without it being sealed *(ḥtm)*. Lo, all the jars are impure (*ṭm'n*). Behold, the bread which [yo]u disp[atched] to me yesterday is im[pure]" (table 2.62)." The *marzeaḥ*, barely alluded to in the Bible (*Jer.* 16:5; *Am.* 6:7), appears prominently in one of the ostraca (table 2.46).

Fifteen ostraca may be classified as lists (table 2a), twelve as accounts (table 2b), and they bear the same features as their papyrus counterparts. Some are onomastically homogeneous (all Jewish [tables 2.8 = 2b.3] or all Egyptian [tables 2.6 = 2b.2]), and others are mixed (tables 2.79 = 2a.14). One exclusively Egyptian list, uniquely written on both sides, includes a couple names that are popular in demotic documents but otherwise absent from the Aramaic texts—Es(p)metsheps (*'smtšbs* ["He of the glorious staff"]) and Espetensene (*'spṭnsny* ["He of him who is in Bigeh"]) (tables 2.80 = 2a.15). The ostraca accounts are all Ptolemaic and probably all, with but one exception, from Edfu. The names are followed by monetary or other notations. The names in one account are distinctly mixed—Greek (Theodore [*twdrs*], Egyptian (Taba), Hebrew (Shabbethit and Abram), and Aramaic (Abieti) (tables 2.3 = 2b.1). Several of the Jewish names are characteristic of the Ptolemaic period and do not appear in Achaemenid Elephantine—Abieti ("[my] father will come"), Abram, Dallui, Jidleh, Jotakum ("YW, may you arise"), Judith, and Simeon. The abecedaries come from Elephantine (table 2.78) and North Saqqara (table 2.81).

Eight of the Elephantine jar inscriptions were written by the same scribe (table 3.3, 7–8, 10, 13–14, 16, 18). Two reconstructed Elephantine jars show three names each, one written in Aramaic by this scribe at the top of the jar near the handle and two in a different hand in Phoenician farther down, one below the other (table 3.13–14) A large percentage of the Phoenician theophorous names are compounded with Ptaḥ or Apis, the deities of Memphis, and so the jars must have subsequently passed into the hands of Phoenicians there and only later made their way down to Elephantine. Numerous sherds bear the Phoenician inscription *lmlk* followed by the *ṭet*-like sign (believed by some to mean "royal measure" [Orli Goldwasser and Joseph Naveh, "The Origin of the Ṭet Symbol," *Israel Exploration Journal* 26 (1976): 15–19]), and two sherds carry this formula in Aramaic (table 3.5). Two jars from Abu Sir contain an unexplained fragmentary text—*lslk 'm lbwš' ḥ /// /// ///* (table 3.1–2). One fragmentary inscription reads "To Psamshek . . . cohort commander (*rb ksr'*; table 3.15). The Saqqara jars contain an incised potter's mark (*bb* [table 3.19a]), an inked notation of contents (*mglt* or simply *mg* [table 3.22,

26], "scroll," that is, papyrus rolls), or a dedication "To Nabu" (table 3.23), known to have a temple at Syene (*TAD* A2.3:1; table 10.8).

Sundry Inscriptions with Names. The inscriptions on other small objects (stone plaques [table 4], wood [table 5], seals and bullae [table 6], statuettes [table 7], silver bowls [table 8], mummy labels [table 9], and coins), as well as on sarcophagi (table 10), and tombstones (table 11) are mostly names. The seals, bullae, and coins, some of the wooden inscriptions, a bowl, a statuette, two mummy labels, three sarcophagi, and a tomb inscription all have but a single name each. Once more, the outstanding feature about these fifteen names is their onomastic and presumably ethnic diversity—Aramean (Aḥinuri, Hadadezer, and Ezer [seals (tables 5.6, 6.1, 4)]; Ammishezib [wooden palette (table 5.3)]; Sharah [mummy label (table 9.7)], Assyrian (Belsarusur [statuette (table 7.1]), Egyptian (Ḥarkhebe [seal (table 6.6)], Ḥor [sarcophagus (table 10.2)]), and *Teehur* [mummy label (table 9.8)]), Hebrew (Shabbethai [sarcophagus (table 10.1)] and Uri [tombstone (table 11.6)]), and Persian (Bagamarazdiya [seal (table 6.2)] and Bukhsha [sarcophagus (table 10.15)]). As recently read by Naveh, one seal bears the Arabian name Ubaid son of Siniyad (table 6.5).

Most of the names recorded on mummy labels (table 9), sarcophagi (table 10), and tombstones (table 11) give both prenomen and patronym. As expected, Elephantine shows Jews (Shabah, son of Hosea [mummy label (table 9.1)]; see also table 4.2) and Syene, Arameans (Abutai, daughter of Shamashnuri [sarcophagus (table 10.3)]). The material from South Saqqara displays a mixed Aramean-Egyptian ambience with a touch of Persian. Burial proximity and prosopographical considerations on six sarcophagi permit the reconstruction of three family groups—(1) †Agri(ya), son of †Bethelzabad, son of Eshemram (tables 9.3, 6; 10.10); (2) Ḥeremnathan, son of Besa, son of Zabdi (table 9.5; 10.12); (3) Ḥeremnathan, son of Peṭ(e)esi, son of Sharah, son of Pasi (table, 10.7, 16–17, 20). At least three of the dead were temple officials, one far from home—the priest Ḥeremshezib, son of Ashah (table 10.5); "Sharah the servitor" (table 9.7), who may be the same as the above Sharah; and Sheil, a priest of Nabu at Syene (table 10.8). The names of two brothers appear on either side of a ceramic mummy label (table 9.4)—Paḥe, son of Bagadata, and Bagafarna, son of Bagadata. Perhaps they died young and belong to the twin heads from a fragmentary unpublished coffin lid (Egyptian Museum, Cairo, JE 55246). Four of the buried parties are women. The mummy labels were usually placed on the chest of the deceased. The coffin inscriptions were written twice or three times, either inscribed and painted or just painted above the head or on the chest of the lid and on the side, usually at the shoulders on the outside, but twice on the inside (table 10.9, 13), allowing the deceased to "look" at his name. Twelve Jewish tombstones of the Ptolemaic period have been uncovered—three at the necropolis at el-Ibrahimiya in Alexandria and nine in Edfu. Only one of the Alexandrian inscriptions is fully intelligible (table 11.2) and it bears the unique Hebrew names Akabiah, son of Elioenai ("to YW are my eyes [directed]"). Is he related to one of the last biblical Davidic descendants, Akkub, son of Elioenai (1 *Chr.* 3:24)? Like the Arameans of Saqqara, the Jews of Edfu were buried with their families. Obadiah, son of Simeon, written on a reused offering table (table 11.5), and Nathn(a)i, son of Simeon, (table 11.7) were probably brothers. A third Edfu stone (table 11.4) bears four names, apparently father and children—Azgad, son of *Mdy/Mry* and the three persons related to Azgad, namely the woman Shelomzi(o)n, Zebadiah, and Meshullam. Azgad appears as the name of a family head among the Judean repatriates (*Ezr.* 2:12, 8:12; *Neh.* 7:17, 10:16), and the name Shelomzion ("welfare of Zion") is well known in Second Temple times, as are Nathn(a)i, Obadiah, and Simeon.

A unique memorial inscription of uncertain provenience (table 11.14) reads "To Anan (*'nn*), son of Elish (*'lyš*), the priest of Baal, husband (*b'l*) of Anoth (*'nwt*)." Neither of the personal names is attested elsewhere, and the form of the divine name is strange. Some scholars doubt the inscription's authenticity. Other items inscribed on these small objects include accounts on both sides of a wooden palette (table 5.5), a duplicate date formula ("On the 24th of Ab, year 2 Artaxerx[es]") incised and inked on a triangular limestone plaque from the Apries palace in Memphis (table 4.1), and the words *'wy ly*, ("woe unto me"?) incised on a small figurine (table 7.3).

Funerary, Votive, and Dedicatory Inscriptions. The Aramaic-speaking peoples in Egypt were not only buried in Egyptian style but they also produced Egyptianizing funerary stelae and offering tables (table 12). The stelae depict familiar funerary scenes in two or three upper registers with a one- or four-line Aramaic inscription at the bottom (table 12.1–3) or between two registers (table 12.5–6). One stela (table 12.1) also has a hieroglyphic inscription. The embalmed deceased is lying on a (lion) couch above four canopic jars (table 12.2–3), flanked by the goddesses Nephthys and Isis (table 12.3) and anointed by the god Anubis (table 12.1, 3–4). A second register depicts mourners in Semitic garb and coiffure (table 12.1, 4–5). The third register, usually the upper one, shows offerings being made by the deceased to Osiris (table 12.1, 3), with Isis (and Nephthys) standing behind him. Most of the names and patronyms or matronyms of these defunct Arameans are Egyptian and they are to be blessed by Osiris—Taba, daughter of the woman Taḥapi (table 12.3); Ankhoḥapi, son of the woman Taḥabes (table 12.5); Tumma (*tm'* [Aramaic]), daughter of Bocchoris (*bkrnp*) (table 12.2); and Peṭeesi, son of *Yh'* . . . (table 12.4). The mixed onomastic situation is best illustrated by a dated stela (Meḥir, year 4 of Xerxes = 21 May–19 June 482 BCE [table 12.1]) prepared by the Aramean Absali for his Aramean father, Abah, son of Egyptian Ḥor and Aramean mother, Aḥatabu, daughter of the Jew Adaiah. A new reading (Yardeni) shows that the couple came from the

city *ḥstmḥ* = *Ḥ3s.t Tmḥy,* near Marea on the Lybian border (Herodotus, 2.30; Henri Gauthier, *Dictionnaire des noms géographiques contenus dans les textes hiéroglyphiques,* vol. 4, Cairo, 1927, p. 159). One stela with three Egyptian loanwords (table 12.3) is a quatrain of three four-beat bicola with an occasional hint of internal rhyme and a concluding three-beat bicolon—"Nothing of evil has she done/Nor slander of anyone has she spoken at all." The four-line inscription on the offering table (table 12.6) begins "the offering table (*ḥtpy*) for the offering (*lqrbt*) of Banit to Osiris-Ḥapi (= Serapis) made Abitab, son of Banit, for her" (*lh* [sic, according to Yardeni]).

The milieu of these stelae may be Egyptian, but the inscription genre background is West Semitic. Comparison may be made with the four inscribed libation bowls from Tell el-Maskhuta in the eastern Delta (table 8.1–4). These votive offerings are inscribed "to Han-Ilat" (*lhn'lt*); "which Seḥa, son of Abdamru (*'bd'mrw*), offered to Han-Ilat"; "which Qainu, son of Geshem, king of Qedar offered to Han-Ilat"; "Ḥarbek ["Horus (the) falcon"], son of Pasiri, offered to Han-Ilat the goddess." A generation after Geshem the Arabian opposed Nehemiah's fortification of Jerusalem (*Neh.* 2:19, 6:1–2, 6), his son and others bearing Egyptian names were worshiping at the shrine of an Arabian goddess in the Nile Delta. A similar bowl, also presumably from Egypt and dated a century later, is inscribed with a single Persian name Tirifarna (*tryprn* [table 8.5]).

The presence of Persians in Aramaic dedicatory inscriptions is evidenced from a sandstone building inscription from Aswan (table 12.7). An upper panel is possibly missing; what is visible reads "this shrine (*brzmdn'*), garrison commander of Syene, made in the month of Sivan, that is Mehir, year seven of Artaxerxes the king (= 6–14 June 458 BCE). . . ." The inscription follows a pattern known in early Phoenician dedicatory inscriptions (*KAI* 7) and continued into contemporary Aramaic inscriptions from Cilicia (*KAI* 258 = Gibson, no. 33). In both the Cilician and Elephantine inscriptions the object described is indicated by a Persian word—*patikara-* and **brazmādāna-* respectively. Another Old Persian loanword, *drwt* ("welfare"), must have introduced the concluding blessing to be bestowed upon the garrison commander (the reading Vidranga is excluded) who built the shrine and set up the inscription.

Graffiti. Almost fifty Aramaic graffiti have been located at eleven locations in Egypt from Giza, Ma'sarah, and Dahshur near Memphis, through Wadi Sheikh Sheikhun, Abydos, Wadi Hammamat, and Wadi Abu Qwei north of Thebes, Gebel Abu Gurob, Wadi el-Shatt er-Rigal, Aswan, and Wadi el-Hudi, and as far south as Tomas in Lower Nubia (table 13). Almost all of these sites have yielded numerous inscriptions, small and large, and the Aramean-writing travelers followed in the path of their predecessors and contemporaries. Most inscriptions remain in situ and require collation. One was a royal dedicatory inscription of unknown provenance with an incised prenomen (table 13.51). The Egyptian-Aramean ambience is again prominent here—for example, Abitab son of Shumtab, Zur son of Kamam, Belhabeh ("Bel, give him"), Ḥeremnathan, Ḥeremshezib, Jinamiom (*yn'mywm,* "may day be pleasant" [unlocated]), Nabunathan, and Shumieti (table 13.3–4, 9, 19, 22, 27, 33–34, 51) are Aramean, and Eshor, Ḥori, Patou, Peṭemun, Peṭeesi, and Peṭeneesi son of Peṭosiri are Egyptian (table 12.7–8, 13–14, 20, 23–24, 26–27). One name is Babylonian ([Mar]dukshumukin [table 13.1]), another possibly Arabian (Ḥaggag son of Ablat [table 13.12]), and a couple may be Anatolian (table 13.17–18). Not one is distinctly Jewish. At some sites the traveler simply wrote his name (Ma'sarah, Dahshur, Gebel Abu-Gurob, and Tomas). Often he incised a proskynema, that is, an obeisance—"blessed be PN (son of PN) to/before DN." At the temple of Seti I in Abydos (table 13.7–18), the visitor came, along with so many others, as a pilgrim to Osiris. Elsewhere other deities were invoked—Horus, Isis, and Khnum at Wadi el-Shatt er-Rigal (table 13.37–41); the god of the eastern desert, Min, at Wadi Abu Qwei and probably at Wadi Sheikh Sheikhun (table 13.6, 26–29); and Shamash (or Sun), "the great god," the god of the rock and the god of Egypt in Wadi el-Hudi above Aswan (table 13.43–45, 47). The Giza graffito records the arrival of a caravan (table 13.1); that in Wadi Hammamat is an abecedary (table 13.25); and A. H. Sayce imagined the word *by,* "house," written three times at the Aswan sandstone quarry (table 13.42). The longest graffito is dated, runs nine lines (table 13.47), and contains a blessing formula whose first part is unique and whose second half is reminiscent of an epistolary praescriptio—"blessed be he who wrote this inscription before the god of the mountain and the god of Egypt that they grant me welfare and favor . . . and blessed be he who will read this inscri[ption]" (cf. *TAD* A4.3:2–3, 4.7:1–2]).

A Romance? Last but not least and perhaps the most fascinating of all the Aramaic texts is an extremely fragmentary seventeen-panel inscription in a cave some 8 km (5 mi.) northeast of Sheikh Fadl. It was discovered by Flinders Petrie while excavating at Bahnasa (Oxyrynchus) and reported by Noel Aimé-Giron (*Ancient Egypt* 2 [1923]: 38–43). The text mentions King Taharqa, Pharaoh Necho, and a Psamtik/Psammetichus (but not the king of that name). A tantalizing line reads *l' 'kl 'šbqnh 'škb 'mh rḥm 'nh lhy* [according to Ada Yardeni, not *lḥy/sgy,* "I cannot leave her. I shall lie with her. I love her abundantly." A cryptic colophon mentions "year 5."

[*See also* Aramaic language and Literature; Elephantine; Giza; Oxyrhynchus; *and* Saqqara.]

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BEZALEL PORTEN

'EINAN (Ar., 'Ain Mallaḥa), an important Natufian site located 72 m above sea level near a freshwater spring in Israel's Hulah Valley. The site was excavated by Jean Perrot (1955–1971), who was joined in 1971 by François R. Valla, who later continued excavation in the uppermost layer. Excavation exposed four major building strata, all constructed within the slope of colluvial deposits. The lowest strata (IV–III) were assigned to the Early Natufian and strata II and I to the Middle and Late Natufian, respectively (c. 10,000–8,000 BCE).

The earliest building, which was found in stratum IV, is a large subterranean house, 9 m in diameter. Its rear walls were constructed as terraces and still stand to a height of one meter. Six well-preserved postholes indicate that wood supports probably held the structure's roof. Two fireplaces were found in the floor, as well as more than twenty multicolored pebbles and three whetstones. A large number of stone and bone tools were found, along with broken mortars and pestles. The round houses of strata III and II are 3–6 m in diameter, all with semisubterranean stone foundations. While little is known about their superstructure, the interiors of several of these houses reveal squarish fireplaces. The houses of stratum I are smaller in diameter but always have a central fireplace. In this layer, numerous bell-shaped subterranean pits were found, some one meter deep and with sides coated with a thick layer of clay. Other, shallower pits were covered with a thin lime plaster and may have been storage facilities, although they were often used secondarily for burials.

Both single and communal burials were found in strata III and IV, mostly in a semiflexed to flexed position. Several of the skeletal remains exhibit decorated headpieces of dentalium beads, as well as necklaces or bracelets made of these or other shells. The burials, even when found under floors, had originally been dug outside the structures. It has been suggested that some were dug in family burial grounds. One distinctive grave was of an older woman interred with a puppy, illustrating the special relationship between humans and domesticated animals. The stratum II burials often lack decoration and are less flexed than the earlier ones. The burials in stratum I were commonly pits in secondary use and generally contained more than one individual. One special grave is covered by a rock pile and contains the remains of four–eight individuals. Based on cranial morphologies from these burials, the population from 'Einan is believed to be descended from local Levantine Upper Paleolithic groups.

'Einan's lithic industry led Valla to propose the subdivision of the Natufian into four stages of lithic development. The dominant types are microliths, especially Helwan lunates in the lower part of the sequence, and increasingly dominant backed lunates. Burins from another important group, with fewer endscrapers, sickle blades, and a few elongated picks considered the forerunners of Neolithic axes. The ground-stone industry is rich in mortars and pestles, and a very large goblet-shaped basalt mortar should be noted in particular. Numerous whetstones and shaft straighteners were recovered. Artistic activity was expressed in a series of schematic figurines, mainly carved or incised in stone.

Although plant remains were not preserved, the presence of sickle blades probably indicates the harvesting of wild cereals. Animal bones are numerous and consist mainly of gazelle and deer, with a noticeable presence of wild boar. Other important food sources were tortoises, fish from Lake Hulah, and waterfowl, especially migratory species present in winter. Animal bones and marine shells provided raw material for jewelry; shells were brought mainly from the Mediterranean Sea, with a few specimens from the Red Sea and the Nile Valley.

The site of 'Einan was probably one of the major villages of the Natufian culture in the Levant. Although the site was abandoned several times, the presence of domesticated animals and the evidence for a seasonal distribution of food indicate that when the settlement was occupied, habitation was nearly year-round.

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OFER BAR-YOSEF

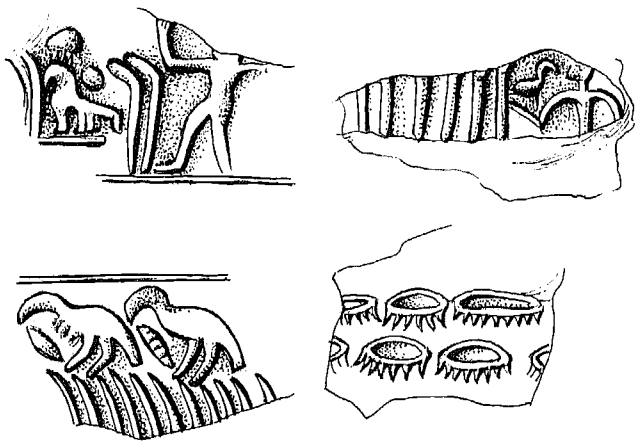
'EIN-BESOR (or 'En Besor), site located in Israel's northwest Negev desert, on a small loess hill of about one-half acre in area, approximately 350 m south of the Besor springs ('Ain Shellala; map reference 1013 × 0795). During excavations carried out from 1970 to 1983 by an expedition

on behalf of the Israel Department of Antiquities and the Institute of Archaeology of Tel Aviv University headed by Ram Gophna and Dan Gazit, about 400 sq m were exposed at the site. Three Early Bronze Age strata and one Hellenistic stratum were uncovered.

In stratum IV (EB IB) the slope of the eastern hill was sparsely settled. A round silo base was excavated as well as the solitary remains (partial floors) of structures. Also recovered were sherds of the period, flint tools, bones of sheep and goats, and a variety of carbonized agricultural products (wheat, barley, peas, grapes). This settlement was abandoned, but the material culture of the following new stratum (III) is also dated to EB IB. Part of a brick building, A (approximately 85 sq m), was excavated at the top of the tell that had been constructed directly above remains of stratum IV. The finds it and its surroundings produced, the dimensions of the mud bricks used (8 × 12 cm), and the bricklaying and bonding techniques indicate that the builders were Egyptian. To the east of the building's west wing, which was used as a residence, was an open courtyard. Several industrial installations (probably a bakery and a brewery) were uncovered in building A's south wing. Most of the finds from building A and its refuse pits were characteristically Egyptian in style or design: ceramics, flint knives and sickle blades, a copper pin and harpoon, a marble bull's-head pendant, the bottom half of a faience statuette of a baboon, a cylinder seal, a sherd incised with a *serekh* (a rectangular frame, with the name of an Egyptian king in hieroglyphs), and quantities of unfired clay bullae bearing impressions from Egyptian cylinder seals that had been used in Egypt to seal receptacles in which dry food products were stored. [*See* Seals.] Stratum III "Egyptian" sherds were subjected to petrographic and chemical analyses that showed most to be of pots of local origin. [*See* Petrography.]

Building A was first dated to the first dynasty—that is, to the EB II—based on A. R. Schulman's deciphering of the impressions on the unfired bullae (see figure 1) and the *serekh*. He identified the names of three first-dynasty kings, high-ranking Egyptian officials (Schulman, 1983). However, subsequent dating of these materials (first suggested by Siegfried Mittmann) to the beginning of the first dynasty, or even earlier—to the end of dynasty 0—shifts the date of stratum III back to the conclusion of EB IB, a date further comparative analysis of the Egyptian pottery corroborated. The petrographic tests demonstrating that the clay is local indicate that the seals on the storage receptacles (see above) were applied in Canaan. The building's construction was likely the work of a royal Egyptian expedition to establish a way station on the route from northern Sinai to Canaan. The route traversed the area midway between the wells in North Sinai and the springs on the central coastal plain. From 'Ein-Besor, the Egyptians exercised control over the largest perennial water sources between the desert and the sown land.

The stratum II remains (dated to the end of EB II/beginning of EB III) include part of a broadhouse (building B). It and the local pottery were uncovered on the mound's southeastern slope. The stratum's ceramics included fragments of storages jars, jugs, and ledge handles. Graves dug by bedouin on the summit of the hill destroyed almost all of the stratum I remains, which are from the Hellenistic period. Dated to the second–mid-first century BCE, sections of a wall and a floor, sherds, and a coin (surface find) represent the stratum I occupation.



'EIN-BESOR. Figure 1. *Egyptian cylinder seal impressions.* (Courtesy R. Gophna)

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RAM GOPHNA

'EIN-BOQEQ, oasis in Israel on the southwest shore of the Dead Sea (31°10′ N, 35°20′ E; map reference 1854 × 0676). Its ancient name is unknown. After a Late Roman *castellum* was constructed here, it may have been known as Tetrapyrgia (cf. Anastasius Sinait., Interrog, in J. P. Migne, *Patrologia Graeca*, Paris, 1857–1886, 89, col. 744).

The site's ideal growing conditions for pharmaceutical

plants, such as balsam, and choice fruits such as the Nicolaus date, caused the Hasmoneans (perhaps under Alexander Jannaeus) to extend their most lucrative plantations, maintained in neighboring 'Ein-Gedi, to 'Ein-Boqeq. A tower of typical Hasmonean chisel-smoothed whitish ashlar, pottery, and two coins connect the initial terracing and field enclosures with them. Because aqueducts—one 1.2 km long and the other 300 m long—and reservoirs (which served the oasis in later periods) were a precondition for settlement here, their construction must also be attributed to the Hasmoneans (in the site's phase I). At its greatest expanse, perhaps in the Byzantine period, the cultivated area covered 180,000 sq. m.

The Officina. Under King Herod the products of the plantations, supplemented by asphalt from the Dead Sea and ingredients provided by the Arabian caravans passing to the south of it, were used to operate a factory *(officina)* for producing pharmaceutical and cosmetic products. The *officina* was a nearly rectangular building (20 × 20 m). Its walls, preserved to a height of 1.5 m, are 80 cm thick, have two faces of roughly dressed stones set in mud mortar, and have a rubble core. The rooms are arranged around a central courtyard that runs from the northern to the southern (main) entrance.

The evidence suggests that the main entrance chamber gave access on the left into a storeroom for precious raw materials and on the right to a workroom furnished with two low, plastered basins. One basin has a posthole and may have been a bag press operated by a single worker. The relatively small site of these basins and most of the other installations at the site attests to how delicate the raw materials—petals, buds, and leaves—were, as well as to the small quantities of liquids, resins, and powders extracted.

The main production line was in the southeastern part of the courtyard. This industrial compound included, in its most elaborate phase (phase II), a stone chest for raw materials, a fireplace for preheating (esp. boiling); a grinding platter; a stone vat, or mortar; and an upper and lower beehive-shaped oven that created regulated temperature to heat vessels set upon the opening in their apex. These installations served processes such as crushing, pounding, mixing of ingredients, their maceration (dipping in hot fats and oils), decoction (boiling down to essence), evaporation, or sublimation (non-liquid condensation). (The same techniques of production existed already in Old Testament times, as proven by Egyptian wall paintings.) Two additional ovens, in work areas created by walls that jut into the courtyard, served or were served by the production line. Room 4 (10 × 3.75 m), west of the courtyard, was heavily plastered. The floor in its northern part, also plastered, sloped slightly toward a sunken pit (55 × 35 × 50 cm) that collected the substances squeezed out of plants by treading or crushing. In the opposite room (no. 6), a handmill or similar device seems to have been operated in phases I–II on a round table surrounded by a round flagstone floor. The Hasmonean tower, incorporated into the structure's southwest corner, provided security. The plantation's four phases of occupation of the factory are allocated to Herod, the first procurators, Agrippa I and the second procurators, and to a haphazard refurbishing by Bar Kokhba following the destruction that took place during Vespasian's war against the Jews.

The Castellum. The subsequent history of 'Ein-Boqeq is obscure until a courtyard-type *castellum,* or fortress, was built by Constantine or, more probably, his sons. The fort is a typical *quadriburgus* (16.5 × 16.5 m). Its walls, built with two roughly dressed faces and a rubble core, are 1.80–2 m thick and are 6 m high. The four corner towers (each is 6 × 6 m) provided complete protection for a garrison of forty-five to sixty-five men (based on a reconstruction of the barrack blocks), with either one or two stories. The barracks were leaning onto the curtains and used their inner face as a back wall. Considerable skill was exercised in setting this structure firmly into a mound of loose gravel and making it almost completely resistant to the shock of earthquakes or attempts at separate capture. Yet, such attempts have left their imprint: destruction layers separate the four phases during which it functioned as a stronghold at the Dead Sea of the *limes Palestinae* (the fortified borders of Roman Palestine).

Phase I extended to Valentianus, phase II to the mid-fifth century (?), phase III to the Persian invasion (614 CE), and phase IV to Heraklius (c. 624 to the Arab conquest, c. 634 CE). Although the plantations ceased to operate at about the time of the Arab conquest, life went on for two or three more generations in the *castellum.* It became a collection center for nitrates gathered from the Dead Sea, which were used for fertilizer and in the manufacture of glass.

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MORDECHAI GICHON

'EIN-GEDI, oasis located on the western shore of the Dead Sea and named for the perennial spring that flows from a height of 200 m above it (map reference 1870 × 0965).

Biblical and Historical References. 'Ein-Gedi was part of the wilderness territory assigned to Judah after the Israelite conquest of Canaan (*Jos.* 15:62). It was also where David took refuge from Saul (*1 Sm.* 23:29). The fruitful vineyards of 'Ein-Gedi are mentioned in the *Song of Songs* (1:14), and it is included in a prophetic image of prosperity related by Ezekiel (47:10).

According to Josephus, 'Ein-Gedi was a Roman headquarters in the first century CE (*War* 2.55), and Pliny mentions its destruction during the First Jewish Revolt against the Romans in 66–70 CE (*Nat. Hist.* 5.73). [*See* First Jewish Revolt.] During the Second Jewish Revolt, the town was one of Bar Kokhba's military and administrative centers. [*See* Bar Kokhba Revolt.] By the early second century it was the site of a Roman garrison. In his *Onomasticon* (fourth century CE), Eusebius refers to 'Ein-Gedi as a large Jewish village (86.18), which apparently was celebrated for its dates and for balsam, which was used in the manufacture of perfume. The Jewish settlement was destroyed by fire in the sixth century CE (see below).

Excavation History. The initial survey of the oasis was carried out in 1949 by Benjamin Mazar for the Hebrew University of Jerusalem. Two additional surveys, both on behalf of the Hebrew University, were conducted in 1956 and 1957, the first directed by Yohanan Aharoni, the second by Joseph Naveh. Yigael Yadin, Nahman Avigad (in the 1960s), and Gideon Hadas (1980s) surveyed Jewish tombs in the oasis. [*See the biographies of Mazar, Aharoni, Yadin, and Avigad.*] Mazar excavated at 'Ein-Gedi from 1961 to 1965 and Dan Barag and Yosef Porath from 1970 to 1972, both projects on behalf of the Hebrew University. The excavations were focused on Tel Goren, the most prominent area of the oasis; structures were also uncovered to the east and northeast of the mound. The earliest remains date to the Chalcolithic period, but most finds are much later, dating to the Late Iron Age and beyond.

Chalcolithic Period. The only Chalcolithic (fourth millennium BCE) structure uncovered was a sacred enclosure situated on a terrace, about 150 m north of the spring. Within the enclosure were two buildings linked by a stone wall. A circular structure about 3 m in diameter stood at the center of the enclosed courtyard. Excavators found no evidence of multiple construction stages or repairs, and they determined that the enclosure, which probably served as a cultic site, had not been destroyed but abandoned.

Iron Age. A Late Iron Age settlement (630–582 BCE) was uncovered at Tel Goren. Among the numerous finds from this stratum were large barrel-shaped pithoi and numerous pottery vessels characteristic of the period. Based on a group of similar buildings cleared on the mound's northern slope, excavators conjectured that 'Ein-Gedi had been a center of perfume production in this period, perhaps in the royal service. The settlement was destroyed by fire, perhaps in 582–581 BCE, during Nebuchadrezzar's conquest of Judah. [*See* Judah.]

Persian Period. The most impressive remains from the Persian period stratum (fifth–fourth centuries BCE) were those of a large building on the mound's northern slope. This structure (about 550 sq m in area) was probably a dwelling of one of the town's officials; it had twenty-three rooms, enclosed courtyards, and various storerooms. Most of the pottery was characteristic of the period and included Attic ware. Among the seal impressions was a jar handle stamped *Yhwd.* [*See* Seals.]

Hellenistic Period. A few coins and potsherds dating from the late fourth to the early second centuries BCE were found, but most of the relatively few Hellenistic remains dated to the Hasmonean period, especially between the reigns of Alexander Jannaeus and Herod the Great (103–37 BCE). A Late Hellenistic citadel built in two separate sections was uncovered on the top of the mound. This defensive system was destroyed in 40 BCE, during the Parthian invasion and in the last war of Hasmoneans against Herod (Josephus, *War* 3.55, 4.402).

Roman Period. An impressive citadel and a large, rectangular tower, both destroyed during the First Jewish Revolt, were uncovered on top of the mound. The pottery from the tower, which resembles the ceramic material from nearby Qumran and Masada, was used to date this stratum to the period of the Herodian dynasty (4 BCE–68 CE). However, the level may be earlier than 4 BCE. [*See* Qumran; Masada.]

Late Roman–Byzantine Period. Tel Goren was not a permanent settlement in the Late Roman–Byzantine period, but on the nearby plain, between Naḥal David and Naḥal 'Arugot, excavators uncovered several structures dating from the second to the sixth centuries CE. One of these structures was a Roman bathhouse (40 × 50 m) that dates to between 70 CE and 132 CE.

Several synagogues were excavated east of the summit. The earliest, which was probably built at the end of the second century or at the beginning of the third century CE, was a trapezoidal (13.5 m long on the east, 15.5 m long on the west, and 9–10.5 m wide). The orientation of its northern wall, which had two entrances, was toward Jerusalem. A mosaic pavement with a nonfigural design was executed in coarse white stones and black and colored tesserae. It is unclear whether the entire pattern was laid at the same time. [*See* Mosaics.] When this synagogue was renovated, the central entrance in the northern wall was turned into a niche where the Torah ark apparently was placed. A stepped seat was added to this wall, and three stepped benches were built along the southern wall. Pillars divided the interior—formerly one large hall—into a nave and two aisles, and three

entrances were added on the west. The mosaic pavement continued in use. A new synagogue was built in the late fifth century. It featured a rectangular wooden structure that housed the Torah ark and a new mosaic pavement executed with colored tesserae that contained numerous inscriptions in Hebrew and Aramaic, one of them biblical. This synagogue, along with the rest of the settlement, was destroyed in the sixth century.

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EPHRAIM STERN

'EIN-GEV (Ar., Khirbet el-'Asheq), site located at the estuary of the 'Ein-Gev River on the eastern coast of the Sea of Galilee (32°48′ N, 35°22′ E; map reference 210 × 243). The houses of Kibbutz 'Ein-Gev are built over most of the ancient site (250 m long × 120 m wide). The suggested identification with Aramean Aphek of *1 Kings* 20:26–30 and *2 Kings* 13:14–17 is supported by the results of the regional archaeological exploration conducted by the Land of Geshur Project (see below). The ancient place name is preserved at the site located by the springs of the 'Ein-Gev River, 6 km (4 mi.) uphill, known in Arabic as Fiq, and in the name of the Second Temple period village of 'Afiqa, modern Kibbutz Afiq. No Iron Age remains have been attested there. Iron Age Tel Soreg, at the foot of Kibbutz Afiq, proved, after excavation, to have been just a small hill fort, which does not comply with the biblical description of the war with the Arameans that took place on the plain and of Aphek being a major base for the Aramean army. 'Ein-Gev is, however, located on the plain and excavation has shown that it was an important fortified Aramean town in the ninth century BCE. [*See* Aphek.]

In 1961 Benjamin Mazar and others undertook rescue excavations at the southern and northern tips of the site on behalf of the Israel Department of Antiquities. In 1990–1992, in the framework of Tel Aviv University's Land of Geshur Project, three seasons of excavations were conducted by the Japanese Expedition to 'Ein-Gev headed by Hiroshi Kanaseki and Hideo Ogawa. As most of the lower tell is built up, the expedition concentrated its efforts on the northern tip of the tell, the acropolis. The rescue excavation discerned five Iron Age strata on the lower tell and four on the acropolis. The Japanese expedition distinguished three Iron Age strata, one from the Persian period and one from the Hellenistic period. Final correlations for the stratigraphy of the various excavated areas is not yet possible, but the conclusions reached by the recent excavation are presented here.

In stratum V two thick, parallel walls were found at the foot of the acropolis. The inner wall (1.7 m wide) was built of large basalt boulders and its foundations were sunk more than 4 m in the ground. This wall supported the fill for the acropolis and served as a defense wall as well. A more shallow counterpart of this wall ran parallel to it, and the space between the two was left open as a ditch. A 1.5-meter-thick layer of black decomposed organic material mixed with sherds was found in the ditch. The lowest layers of pottery dated to the tenth century BCE and the uppermost to the eighth. This fortification system resembles the one found by the rescue excavation's stratum IV on the lower tell.

In stratum IV fragmentary remains of a public building at least 18 m long were uncovered. It was probably a storehouse. The stratum III tripartite pillar buildings were built on top of it, following the same orientation. The pillars are square-section monoliths without holes in them or troughs between them. The function of these buildings was probably connected with the trade of goods that took place on the main road from the Bashan to Akko and to the Via Maris. In the Iron Age II, well-fortified and with important public buildings, 'Ein-Gev assumed the economically central role previously played by Iron I Tel Hadar, 7 km (4 mi.) to the north. [*See* Hadar, Tel.]

The rescue excavation exposed a room rich in finds at the southern end of the site. There, a complete storage jar with the word LŠQY (Aram. *le-shaqya*, "belonging to the cup bearer") inscribed on its shoulder was found. "Cup bearer" was a title carried by very high officials in the courts of kings in the ancient Near East. The importance of 'Ein-Gev in the Aramean Kingdom of Damascus is thus attested by these finds. [*See* Arameans.]

In stratum II pits from the Persian period were cut into the debris of the last Iron Age town, which was probably destroyed during Tiglath-Pileser III's onslaught on Damascus and northern Israel in 732 BCE. The site was resettled in the Hellenistic period (stratum I, third–second centuries BCE). Private houses, but no fortifications, were found on the acropolis. Hellenistic 'Ein-Gev was the harbor town of the newly established city of Hippos/Susita, 2 km to the east.

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MOSHE KOCHAVI

'EIN-SHADUD, site located about 200 m east of Tel Shadud (map reference 1724 × 2294), on the northwest edge of Israel's Jezreel (Esdraelon) plain. The site, unknown to archaeologists until 1979, was almost completely destroyed by modern construction. Its ancient name is obscure; its present identification is derived from the name of an adjacent spring.

Salvage excavations were carried out under the direction of Eliot Braun and Shimon Gibson of the Israel Department of Antiquities and Museums in two areas, A and B. Separated by an unexcavated strip 20 m wide, the areas yielded evidence of two successive occupational strata.

Stratum II, the earlier stratum, was established on virgin soil and was represented by a number of disjointed, fragmentary stone wall foundations and one partially sunken rectangular broadroom. Its pebble-paved floor, bench-lined interior, and large flat stone pillar bases are in keeping with Early Bronze I architectural traditions. One corner was occupied by a basalt-paved grinding installation on which several basalt querns were found.

The stratum I houses, constructed directly on top of the remains of the earlier buildings, were similarly oriented. Although somewhat better preserved, the structures in this level suffered from changes in elevations that produced a warping effect: originally horizontal layers were pushed up in places and were undulating rather than level.

A sausage-shaped house with parallel walls ending in two opposing, curvilinear apses—otherwise typically a broadroom with internal benches and stone pillar bases—was associated with this stratum. Its affinities with early northern EB I curvilinear constructions, such as those found at Yiftaḥel II (Braun, 1985–1986), Tel Teo V–IV (Eisenberg, 1989), and Palmahim Quarry 3, are somewhat modified by its broadroom. Similar contemporary structures have been uncovered at Qiryat Ata II (Eliot Braun and A. Golani, "Kiryat Ata," *Hadashot Archeologiot,* in press [Hebrew]), Tel Kabri (Scheftelowitz, 1992), and Megiddo, stage IV (Engberg and Shipton, 1934, fig. 2).

Completely rectilinear buildings, some with deliberately rounded corners, are also associated with the stratum I occupation at 'Ein-Shadud. They exhibit two building phases, in the latter of which there is a marked tendency toward thickening walls.

Additional structures—including a double broadroom with a flagstone floor, several curvilinear walls, and fragmentary pebbled surfaces—were also encountered in the excavations. However, because of the site's poor state of preservation, they could not be attributed to either stratum.

In agreement with the architectural evidence for continuity is a collection of well-stratified diagnostic pottery types that show strata II and I to be roughly contemporary and of relatively brief duration.

A quantity of late-style bowls of Gray-Burnished (Esdraelon) Ware emphasizes a somewhat early date on the EB I horizon for the overall occupation. Ceramics typical of this assemblage, indicating a somewhat advanced (post-Yiftaḥel II) and northern facies of the EB I, include red-slipped and burnished vessels, rail-rim and bow-rim pithoi, hemispherical bowls with conical projections, and grain-wash decoration.

The flint tool kit (Rosen, 1985), based on analysis of all artifacts, including cores and debitage, is significant for its sizable collection of locally produced "ad hoc" tools and an imported Canaanean blade component, including sickles.

Evidence that grains were harvested and flour produced is found in sickle blades with gloss and numerous grinding stones. An osteological study (Horwitz, 1985) suggests that animal husbandry must also have played a significant part in the economy of the 'Ein-Shadud villages. Sheep, goat, cattle, pig, and ass appear in quantities sufficient to suggest their utilization for primary and secondary products, as well as possibly being employed as beasts of burden.

Trade and outside contacts seem to have been limited and probably extended only over short distances. Shared architectural and ceramic styles; lithic imports, including flint and some ground stone objects; and occasional instances of the use of cylinder seals, probably by itinerant potters, brought this village into contact with contemporary settlements, especially within the Jezreel plain. Presumably, small surpluses would have been used to barter for imported goods.

[*See also* Yiftaḥel.]

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ELIOT BRAUN

'EIN-YA'EL (map reference 16687 × 12777), terraced farm at a hand-dug spring in the Rephaim Valley, 3 km (5 mi.) southwest of Jerusalem. The ancient name of the site is unknown, but in Arabic it is called 'Ain Yalu. Based on archaeological survey, the site has been inhabited from the Canaanite period (2000–1600 BCE) until modern times, although not continuously. Excavation has revealed structural remains from the First Temple (800–700 BCE), Roman (100–300 CE), Byzantine (400–640 CE), Early Arab (700–800 CE), and Ottoman (1516–1917) periods.

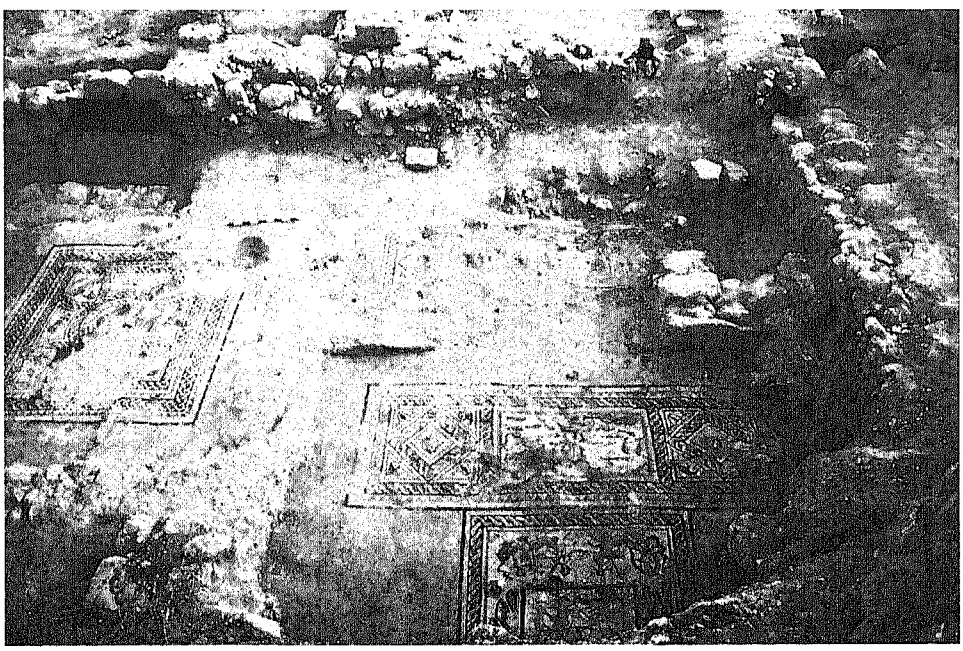
The remains of agricultural terraces surrounded by stone fences can still be seen in aerial photographs and topographical maps of the Judean hills. As far as is known, such terraces were first built in this region at the beginning of the Iron Age (twelfth–eleventh centuries BCE) and continued to be used until modern times.

The farm at 'Ein-Ya'el was built near the foot of the hill and consisted of eight terraces constructed along its contours. The terraces were surrounded by a stone fence with access on both its west and east sides. In all periods of settlement at 'Ein-Ya'el, the buildings were constructed at the uppermost part of the farm.

The terraces were irrigated by a water system consisting of a tunnel hewn horizontally into the hill. At one end of the tunnel, rainwater filtering through the rock was collected in a cave. The tunnel opens into a series of plastered channels leading to several pools that regulated the amount of water used for irrigation. Two levels of channels beneath the modern channels attest to the similarity of the modern and ancient water systems. The imprints of metal tools are still visible on the rock walls of the tunnel and the cave.

The terrace walls were laid on bedrock and the empty space created between the wall and the slope was filled with soil and stone. The earliest structure excavated is a corner of a building dated to the First Temple period. Pottery and stone tools were found scattered on its floor. Among the inscriptional finds are two seal impressions, the first with an undeciphered personal name in the Hebrew script common to the period and the second with a *lmlk (lamelekh)* seal imprint on a jar handle.

On the three highest terraces, the remains of a Roman villa (approximate area, 4,500 sq m) were discovered and partially excavated. On the uppermost terrace, the frescoed, stone walls of a corridor, a room, and a triclinium (formal dining room) were uncovered, all with mosaic floors (see figure 1). Scattered on the floor of the triclinium were hundreds of fragments of fresco decorated with flowers and human faces and chunks of plaster with a painted diamond pattern that had probably fallen from the ceiling. A stuccoed frieze decorated with stylized flowers, geometric patterns, and human faces adorned the room's edges. One panel of the mosaic floor features the sea goddess Tethys surrounded by fish and sea creatures; depictions of Medusa flank the scene. The second panel of this mosaic bears scantily clad



'EIN-YA'EL. Figure 1. *Overall view of the villa's mosaic flooring.* (Courtesy Lucille Roussin)

'EIN-YA'EL. Figure 2. *Part of the mosaic floor.* From the triclinium, showing nereids and icthyocentaurs offering platters with gifts. (Courtesy Israel Antiquities Authority)

nereids seated on the tails of ichthyocentaurs (creatures with the head, arms, and bust of a man; the forelegs of a horse; and the tail of a fish) (see figure 2); this scene is bordered by depictions of fish and ducks flanking two cupids riding on dolphins. In the center of this second panel, a marble slab forming part of a fountain was found together with a bronze nozzle; lead pipes through which the water circulated were found under the mosaic.

The mosaic in the corridor consists of four panels, each containing a personification of one of the four seasons, with birds in each corner. An additional rectangular panel contains a scene of a satyr weaving garlands, while a figure carrying a basket approaches from behind. Only the last word, *kalē* ("good"), of the Greek inscription below the satyr has been read.

The triclinium opened onto a small room with a mosaic floor displaying a medallion with a badly preserved face. A bird is depicted in each corner of the floor and an animal is depicted on each edge. Two theatrical masks on this floor allude to the cult of the wine god Bacchus.

On the second terrace of the villa, the remains of a Roman bathhouse were uncovered. Sections of two of its rooms still stand from floor to ceiling, one with a domed roof. The roof of the second room was barrel vaulted, and beneath the floor brick arches were found that supported the hypocaust. Pottery pipes—part of the heating system—were found attached to the walls of both rooms. A cross painted on one wall of the domed room confirms the ceramic evidence of occupation during the Byzantine period, whereas an oven was dated to the Early Arab period.

On the villa's third terrace, the remains of a pool were found; its position indicates that it formed part of the Roman irrigation system. Well-preserved rooms from a second Roman bath were excavated on this terrace. In the two rectangular rooms, the mosaic floor above the hypocaust was supported by columns. The floor had mostly collapsed in these rooms, but a mosaic depiction in a third (circular) room resembles a *magen David* (Heb., "shield of David"). The wall of the circular room had frescoes painted with geometric lines and swirls and representations of fruit. A layer of plaster painted with colored lines was applied on top of this fresco; this layer is not clearly dated. The mosaic floors and the ceramic as well as the numismatic finds in the villa date to the Late Roman period (late second to third century CE); additional pottery sherds were dated to the Early Arab period. On top of this material lay roof tiles, some bearing seals of the Roman Tenth Legion, and boulders that had slid from the hill.

The Roman villa at 'Ein-Ya'el was built after the Bar Kokhba Revolt (132–135 CE) and the expulsion of the Jews from all of Judea [*see* Judah]. The villa forms part of the romanization of Judea, which included the construction of Aelia Capitolina on the ruins of the city of Jerusalem. The earlier farms surrounding Jerusalem were probably replaced by Roman-style farms and villas similar to those at 'Ein-Ya'el. Some of the villa's buildings were in use more than four hundred years later, until the earthquake that shook Jerusalem in 732.

All the remains of the villa were deliberately covered with soil, probably during the Ottoman period, and the site was

used as a farm. Today the site houses the 'Ein-Ya'el Living Museum.

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GERSHON EDELSTEIN

'EIN-ZIPPORI, TEL, site located in Israel in the Lower Galilee, along the Naḥal Zippori, 5 km (3 mi.) from the modern city of Nazareth (32°45′ N, 35°15′ E; map reference 1761 × 2374). It is adjacent to one of the only currently active springs and spring-fed streams in the Galilee. The site is well positioned to take advantage of neighboring arable land and a perennial water supply. 'Ein-Zippori was initially surveyed by Zvi Gal (*Lower Galilee during the Iron Age,* Winona Lake, Ind., 1992), and two seasons of excavation were carried out (1993, 1994) by the Sepphoris Regional Project, sponsored by Duke University, Wake Forest University, and the University of Connecticut at Storrs, under the direction of Eric Meyers, Carol Meyers, Ken Hoglund, and J. P. Dessel.

Tel 'Ein-Zippori is approximately 1.5 ha (4 acres) in size. Its northern and western sides were cut, probably during the last two hundred years, to increase the area of the valley under cultivation. Other recent modifications of the tell include the construction of a well on the eastern slope. Based on its construction style and on ethnohistorical data, the well was also built within the last two hundred years. Closer to the center of the tell there are indications of another well.

The depth of the archaeological deposits reaches at least 4 m. Excavation exposed a sequence of occupation from the Late Bronze Age I (1550 BCE) through the Iron Age II (ninth century BCE). The highest and most pronounced part of the tell has two terraces: an upper terrace (field I) and a lower terrace (field II). A 2-meter vertical face separates them. Field III is located along the western edge of the tell.

Stratum I (ninth century BCE) is most clearly seen in field III. The remains of a stratum I pillared building were found along the western slope of the tell. Excavation on these slopes also clearly demonstrated that the site was unfortified in Iron II. Stratum II (tenth century BCE) contained a large, well-constructed, multiroomed building in field I that has been partially excavated (see figure 1). The complex (at least 11 × 15 m) is oriented northeast–southwest, with two primary interior dividing walls perpendicular to each other. One interior wall carries a stone bench along its northern face. Both walls have well-hewn stones as door jambs. The complex has two building phases. The destruction debris found within the complex included a great deal of burned mud brick.

In field II a series of terraced, well-integrated domestic buildings and alleys was uncovered. The southernmost terrace wall is more than 11 m long and more than 1 m wide, suggesting a large, well-planned residential area. Rectangular rooms with domestic ceramic assemblages, including three cup-and-saucer vessels, were found along both sides of this east-west wall. Another large rectangular building was found in field II that was partially cobbled and contained several large column bases. A drainage system on the upper terrace channeled runoff away from the structure's southwestern corner.

The strata III–IV remains of a large building complex in field II are dated to the thirteenth–twelfth centuries BCE. The complex is oriented east–west and opened onto a large unroofed courtyard area to the north. Several large storejars were set in the courtyard and used as small *tabuns* or jar stands. Along with local pottery, imported Cypriot wares

'EIN-ZIPPORI, TEL. Figure 1. *Eastern portion of a large tenth-century BCE building complex in field I.* (Courtesy Sepphoris Regional Project)

were found, including Base Ring II and White Slip II. The building was constructed in LB II and reused, with some modification, in Iron I.

Stratum V is represented by a narrow exposure that revealed a rich assemblage of LB I pottery smashed on a surface. The remains of at least thirteen restorable vessels included several large pithoi; the Bichrome Ware and imported Cypriot White Slip I pottery suggest an LB IA date.

In summary, Tel 'Ein-Zippori has five main occupational strata. Little is known about the LB I village, but it appears to end abruptly. In LB II the site was rebuilt along a different orientation, and there is complete continuity from LB I into Iron I. In the tenth century BCE the site was rebuilt for the third time, again with a different architectural plan. There is good evidence for large monumental buildings. This occupation ends in a partial destruction. The orientation of a ninth-century BCE pillared building differs significantly from the tenth-century architecture. It appears that the site was temporarily abandoned sometime in the late tenth century BCE. Although Tel 'Ein-Zippori was undoubtedly a village, the size and construction of the buildings suggest a degree of rural complexity for the tenth century BCE.

J. P. DESSEL

EKRON. *See* Miqne, Tel.

ELAMITES. From the early third through mid-first millennia BCE, Elam was one of the major powers in the ancient Near East. Its territory encompassed parts of southern and western Iran, and comprised both lowland (modern Khuzistan) and highland Zagros Mountain components (Fars, and parts of Kerman, Luristan, and Kurdistan). Susa, in central Khuzistan, and nearby sites in the Khuzistan lowlands have been the primary focus of research. [*See* Susa.] Anshan (modern Tall-i Malyan) was the major highland site, 500 km (310 mi.) to the southeast, in western Fars. [*See* Malyan.] Carter and Stolper (1984) provide the essential synthesis of Elamite history and material culture, and the following discussion draws on the framework that they have established and the evidence that they present. The modern name *Elam* derives from the biblical Hebrew *'elām,* Akkadian *elamtu,* Sumerian *elam(a),* and ultimately native Elamite *hatami* and *haltamti.* Elamite was not closely related to any known ancient language, and no direct derivative survives.

Throughout Elamite history, the balance between the highland and lowland regions shifted back and forth. While the geographic distributions of archaeological assemblages (material culture) can be defined through fieldwork, linking the ancient political and cultural geographies referred to in texts to the topography and assemblage distributions remains difficult. Historical sources document political ties of varied strengths among the regions as changing with time, as did the material culture. Because of its ease of access, lowland Elam was periodically involved in Mesopotamian political developments and even incorporated into Mesopotamian states. Elamite polities in the Zagros highlands from the north to the southeast, however, were better able to sustain some autonomy, protected by the rugged topography. At times, the highland polities developed sufficient cohesion to be able to dominate the lowlands.

Native Elamite textual sources are sparse and episodic, leaving long periods of history obscure. Most of the texts come from Susa, where Mesopotamian influence often was strong. Almost no highland sites have yielded texts. Much of Elamite history must thus be extracted from tendentious, often hostile Mesopotamian texts. Their links between Elamite and Mesopotamian history provide the basic chronology for Elam.

Archaeological data are the major indigenous source for Elamite cultural history. Although excavation and survey had concentrated on Khuzistan, especially the area around Susa, the research ended by political events in 1978–1979 had begun to illuminate basic highland developments. Throughout Elamite history material culture, such as ceramics, was strongly regional. Thus, the absence of a single distinctive "Elamite" style exacerbates the problem of defining even the geographic scope of Elam. Elam's historical geography remains problematic, especially in the highlands, as a result of a dearth of native textual sources and the essential Mesopotamian ignorance of the highlands. The location of toponyms, cities, regions, and even important polities often remains uncertain. Texts and rock reliefs document an Elamite presence throughout lowland Khuzistan, southward along the Persian Gulf to at least Bushire (ancient Liyan), and eastward in the highlands into Fars (ancient Anshan in the Marv Dasht). The Elamite sphere in the highlands to the north of Khuzistan remains ill defined.

Physical Geography. Differences in gross topography, climate, ecology, and natural resources yielded a regionally diverse mosaic of subsistence and economic potentials that were ultimately reflected in cultural regions. Khuzistan is an extension of the Mesopotamian lowlands east of the Tigris River. [*See* Tigris.] Although dry farming is possible, irrigation provides a more dependable agricultural base. [*See* Irrigation; Agriculture.] Resource poor, Khuzistan depended on the surrounding highlands for many basic materials, such as metals, hard and semiprecious stones, and wood. [*See* Wood.] River valleys, particularly those of the main rivers, provide the primary routes into the highlands through the rugged parallel ridges of the Zagros Mountains.

East of Khuzistan, in Fars, almost half of the Kur River basin (2,200 sq km, or about 1,350 sq. mi.), at an elevation of 1,600 m in the Zagros Mountains, is arable. There lay

Anshan, the ancient name of both the regional polity and the largest known Elamite site (mod. Tall-i Malyan) in the highlands. North of Khuzistan, the intermontane valleys of Luristan and southern Kurdistan tend to be relatively small, with a mixed agricultural-pastoral economy. Limited routes lead northward to the Great Khorasan Road, the primary east–west route linking the Iranian plateau and areas farther east to central Mesopotamia, where it entered the lowlands along the Diyala River. [*See* Diyala.] Sociopolitical organization has tended to be tribal throughout history, with marked cultural and ethnic regionalism. Farther to the east, the Kerman range provides a link between the eastern valleys of the central Zagros and the great salt deserts (Dasht-i Kavir and Dasht-i Lut) of the central Iran.

Research on Elam. Susa, always an important center, underpins the archaeology and history of Elam. The early excavations there, directed by Jacques de Morgan (1897–1908) and Roland de Mecquenem (1908–1946), who had both trained as mining engineers, were massive in scale. Mud-brick architecture, characteristic of southwest Asia, was not recognized, so that the excavations essentially yielded artifacts, monuments, graves, and occasional baked-brick structures without contexts. Roman Ghirshman (director from 1946 to 1967) concentrated on the second millennium BCE, excavating a residential area of almost 10,000 sq m on the Ville Royale mound at Susa, as well as temples and the city wall at the nearby monumental site of Chogha Zanbil. [*See* Chogha Zanbil.] Under Jean Perrot (director from 1967 to 1990), stratigraphic excavations at Susa and at smaller sites on the surrounding plain yielded a detailed sequence for the region.

Between the late 1950s and the revolution in 1978–1979, the scope of excavation and survey expanded greatly. In Khuzistan, Pinhas Delougaz and Helene Kantor excavated at Chogha Mish, concentrating on the prehistoric phases, and Etat O. Neghaban worked at Haft Tepe. [*See* Haft Tepe.] Numerous surveys and smaller-scale excavations throughout Khuzistan and the Zagros piedmont clarified the history of Elamite settlement. In Fars, Louis Vanden Berghe and later William M. Sumner constructed the Kur River basin sequence. Sumner's excavations at Tall-i Malyan/Anshan dramatically increased the geographic scale of Elam and highlighted the role of the highlands. Excavations at sites in the Kerman range, such at Tepe Yahya, Tall-i Iblis, Tepe Sialk, and Shahdad, yielded evidence of the exploitation of natural resources and contacts with the Elamite west. [*See* Tepe Yahya.] Growing numbers of surveys and excavations began to clarify developments in highland Luristan and southern Kurdistan and their relationships to lowland Khuzistan. T. C. Young's excavations at Godin Tepe provided a dependable archaeological sequence for the late fourth through late second millennia BCE. [*See* Godin Tepe.]

Although changes in archaeological assemblages do not often proceed in lockstep with political events, the following historical periodization corresponds workably (dates are approximate).

Proto-Elamite Era (c. 3400–2600 BCE). Elamites are first identified historically in the Proto-Elamite era; ethnic affinities in prehistory are problematic.

Early stages of writing. The Acropole I excavation by Alain Le Brun at Susa have distinguished several stages in the development of writing, although it is not certain that the innovation itself first took place there (Le Brun and Vallat, 1978). [*See* Writing and Writing Systems.] Small, variously shaped clay tokens were used as counters or, as Denise Schmandt-Besserat suggests represent set amounts of specific commodities. By level 18 (3200 BCE), tokens were placed inside a hollow clay ball (bulla) whose surface was impressed with one or more seals to provide a sealed record. [*See* Seals.] Sometimes, signs corresponding to the shape and number of the enclosed tokens were impressed on the exterior. In level 17 (3200–3100 BCE) numerical tablets replaced bullae, counters, and tallies. [*See* Tablet.] A more complex system of numerical signs, in which various shapes and sizes of marks had specific values, was impressed on pillow-shaped lumps of clay. The limited information recorded suggests short-term administrative records for local use. In levels 16–14B (and Ville Royale I, levels 18–13), pictographic signs were added to identify the item counted. This developed into the Proto-Elamite A script, consisting of perhaps four hundred to eight hundred distinct characters, one hundred of them common, and suggesting a predominantly logographic writing system. The Proto-Elamite B script dates to the late third millennium BCE and is found on statues, vessels, and large clay tablets at Susa and Shahdad; fewer than one hundred characters are known.

The basic script on Proto-Elamite tablets is similar to scripts of southern Mesopotamia, but it is distinct in all details, suggesting a different language and perhaps parallel but independent development. Proto-Elamite script was probably used to write an early form of Elamite and may thus define the minimal geographic extent of early Elam. In the later third millennium BCE, the Mesopotamian cuneiform writing system displaced Proto-Elamite script for writing Elamite. [*See* Cuneiform.]

Material culture

Khuzistan. During the later Susa II period (3500–3100 BCE), which corresponds to the Late Uruk in Mesopotamia, the population of Susiana had declined and was concentrated into two enclaves focused on the towns of Susa and Chogha Mish, separated by an empty zone 14 km (9 mi.) wide. Scenes of organized warfare in seals and sealings illustrate conflict. Numerical tablets, found at Susa in Le-Brun's Acropole I excavation levels 18–17 (see above), provide evidence for deep penetration into the highlands at Godin (V), Sialk (IV1), and Tall-i Ghazir.

In about 3000 BCE, Susiana separated culturally from the Mesopotamian world, and a polity began to emerge at Ma-

lyan 500 km (310 mi.) to the southeast, in Fars. During the Susa III period (3100–2700 BCE), Susa expanded, while the overall settlement density in Susiana remained low. The ceramic assemblage was basic: common types include coarseware goblets and trays, beveled-rim bowls, red-slipped basins, and jars. A new glyptic style emerged, using deep linear engraving to depict animals in human stances. Glazed steatite seals (the surface vitrified by heating) have geometric or sometimes plant or animal motifs; this "piedmont" style extended into the highlands. Proto-Elamite A tablets and associated pottery and glyptic, found at Malyan (Banesh period, 3400–2600 BCE), Sialk (IV2), Yahya (IVC), and even Shahr-i Sokhta/Sistan provide evidence for an even more extensive outreach into the highlands. On the Deh Luran plain, 60 km (37 mi.) to the northwest, the population peaked. [*See* Deh Luran.] The ceramic assemblage was much more Mesopotamian in character, with parallels to the Jemdet Nasr–Early Dynastic I Diyala region; red- and black-painted ware was related to Early Dynastic I–II Scarlet ware.

Fars. The Banesh period (see above) corresponds to late Susa II–III. Malyan reached 50 ha (124 acres) in size in the early third millennium BCE. In area ABC, large public buildings had painted wall decoration, while area TUV yielded a more "industrial area," with Proto-Elamite A tablets and Susa III ceramics. [*See* Wall Paintings.] By the late Middle Banesh period (c. 3000 BCE), a massive city wall was built.

Kerman. Proto-Elamite A tablets, Susa III pottery, and glazed steatite seals in a single large building on top of the mound at Tepe Yahya mark an extended reach to the east into Kerman. Numerical tablets and Susa III pottery also are found at Tepe Sialk (IV1), near the crossing of north–south routes with the Great Khorasan Road. Tall-i Iblis, a copper metallurgical site, yielded Susa III pottery.

Luristan. At another junction of north–south routes and the Great Khorasan Road, an oval enclosure on top of Godin Tepe (period V) yielded Susa III ceramics and numerical tablets. The surrounding settlement, however, continued to use the local traditional pottery. Other sites along important routes through Luristan have also yielded late fourth–early third millennia lowland types of pottery, suggesting a network of lowland-connected sites in the highlands.

Proto-Elamite phenomenon. The distribution of numerical and Proto-Elamite A tablets deep into the highlands suggests an outreach toward resource areas and routes. At sites like Godin V and Yahya IVC, late Susa II or Susa III pottery and tablets were essentially confined to a single building complex within a settlement where the preexisting local material culture continued with only slight changes. The presence of blank tablets at highland sites (Godin and Yahya) implies local use. Impacts on the highlands were highly variable. In many regions the lowland emplacements were short-lived. Banesh Malyan, however, developed into a sizable city. During Susa III, Elamite culture was becoming less Mesopotamian. It was then, at the very beginning of Elamite history proper, that the pattern of highland-lowland interrelationship, which was to characterize Elam throughout its history, first appeared.

Late Third Millennium (c. 2600–2100 BCE). References to Elam appear in Sumerian historical and literary texts of the mid-third millennium BCE from southern Mesopotamia. [*See* Sumerians.] For example, the Enmerkar and the Lord of Aratta epic recounts an expedition to Anshan and beyond for metals, lapis lazuli, and craftsmen; inscriptions from Early Dynastic Lagash already record conflicts with Elam, especially Susa (c. 2450–2375 BCE). The Sumerian King List includes a dynasty of Awan, an Elamite center.

In the Old Akkadian period (c. 2350–2200 BCE), Mesopotamian texts record Akkadian kings waging war and diplomacy against both lowland and highland Elam, although the historical geography, and thus the scope, remains problematic. [*See* Akkadians.] Susa and the Khuzistan plains were vassals or may have been incorporated into the Akkadian state; Susa has yielded Old Akkadian texts, school tablets, and other evidence of typical Mesopotamian administrative activity. Highland regions experienced both military and diplomatic pressure (Akkadian royal inscriptions record campaigns to Anshan). Texts document commercial ties among Umma in southern Mesopotamia, Susa, and areas farther east.

Material culture

Khuzistan. At Susiana, the population gradually returned to levels reached in the fourth millennium. Susa itself grew from 10 to 46 ha (25 to 106 acres) in area. Small settlements were scattered across the plain, with two weak clusters, one of them centered on Susa. In Deh Luran, Tepe Mussian remained a large town (14 ha, or 35 acres). Eastern Khuzistan, however, seems to have lacked permanent settlement. [*See* Tepe Mussian.]

Evidence for the later third millennium at Susa is fragmentary. Banded plain-ware pottery typical of Susa III disappeared. Susa IV monochrome painted buff ware had decoration arranged in registers on the upper body; focal motifs included naturalistic, geometric, and abstract designs. This ceramic tradition is closely related to the early phases of the Godin III tradition in Luristan. Painted wares decreased in frequency through Susa IV, as Mesopotamian types of Akkadian date, such as jars with ribbed shoulders, became more common. Increasing Mesopotamian cultural impact is evident in the styles of cylinder seals, wall plaques, and votive sculpture. The Proto-Elamite A script went out of use, and the increasing use of Akkadian-style glyptic and ceramics reflected Akkadian domination of Khuzistan.

Fars and Kerman. In Fars, a gap separated the Proto-Elamite Banesh (3200–2600 BCE) and Kaftari (2200–1600 BCE) periods (see below). Kerman was culturally distinct from the Elamite regions but long-distance trade contacts

continued. "Intercultural style" chlorite bowls link Tepe Yahya IVB (2800–2300 BCE), lowland Elam, and Early Dynastic II–III (2700–2400 BCE) Mesopotamia. Made at Yahya and other (still unknown) sites, such vessels had their surface covered with incised decoration; characteristic motifs include intertwined snakes, humpback bulls, date palms, eagles with lion heads, and architectural facades whose geometric patterns seem to portray reed-mat, bundled-reed, and brick construction. All other aspects of material culture, such as glyptic and ceramics, show that Yahya's ties were to the Indo-Iranian traditions to the south and east. North of Yahya, Shahdad lies between the Kerman range and the Dasht-i Lut desert, astride major trade routes. Its material culture seems to have derived from the Proto-Elamite tradition, but it developed as part of the northeastern Iranian and south-central Asian world.

Luristan. In Luristan, the Godin Tepe III monochrome-painted buff-ware ceramic tradition, related to and perhaps derived from that of Susa IV, spread northward through the eastern valleys. Godin Tepe itself overlooks the junction of north–south routes from Khuzistan and the Great Khorasan Road. The expansion of the monochrome-pottery distribution may reflect an early Elamite attempt to tap, or perhaps even control, the flow of materials from the Iranian plateau to the Mesopotamian lowlands. In the western valleys (the Pusht-i Kuh), the economy seems to have been predominantly pastoral. Megalithic stone-built communal tombs (*lihaqs,* 6–13 m long) yielded bronze artifacts and monochrome-painted buff ware associated with the early Godin III tradition. [*See* Tombs.]

Dynasty of Shimashki and the Sukkalmah (c. 2100–1600 BCE). A century after the collapse of the Old Akkadian state, Ur under the Ur III dynasty reunified southern Mesopotamia and again moved against Elam (2100–2000 BCE). [*See* Ur.] Susa and the Khuzistan lowlands were incorporated into the Ur III provincial system. Although the polities in the highland Zagros maintained their basic autonomy, they experienced military and diplomatic activity. This intensive Ur III pressure on highland polities stimulated defensive alliances. From this emerged the Shimashki dynasty (c. 2100–1900 BCE), which regained the lowlands and led the destruction of the Ur III state. Shimashki probably lay to the north of Khuzistan in the highlands. The decentralized government structure characteristic of the following *sukkalmah* period may have emerged at this time. Conflict with Mesopotamia continued after the fall of the Ur III dynasty.

The Sukkalmah era (c. 1900–1600 BCE) is the best-documented period of Elamite history, based on building and cylinder-seal inscriptions and royal texts. The transition from the dynasty of Shimashki to the Sukkalmah remains unclear. As seen in texts from Susa, power was held by the *sukkalmah* ("grand regent"), the *sukkal* of Elam and Shimashki ("senior co-regent"), and the *sukkal* of Susa ("junior co-regent"), all drawn from a dynastic family. If more were known from other regions, such as Anshan, the picture might well become more complex. Although Elam was a major independent power, private legal documents from Susa, and the names of many individuals in them, were written in Akkadian or Sumerian rather than Elamite, although some legal terms and usages were non-Mesopotamian.

By the early eighteenth century BCE, Elam was one of the largest states in the area. It extended southward along the Persian Gulf and eastward into Fars (Anshan), although its ultimate eastern and northern limits remain uncertain. Elam exerted influence, if not actual control, over the city-states along the eastern edge of Mesopotamia, north to the Diyala River and beyond to the Lower Zab River; its diplomatic and economic contacts stretched across Mesopotamia and northern Syria to the Mediterranean coast. Susa's role in the tin trade is clear in texts from Mari on the Middle Euphrates River. [*See* Mari; Euphrates.] In the mid-eighteenth century BCE, Elam and Mesopotamian allies campaigned into northern Mesopotamia and Syria, before finally being pushed back by Hammurabi of Babylon. [*See* Babylon.] Elam then seems to have spent several centuries in decline.

Material culture

Khuzistan. In Khuzistan during the Shimashki period, Susa was the only city (85 ha, or 210 acres); most of the population lived in towns (4–10 ha, or 10–25 acres) rather than villages. [*See* Villages.] Under the *sukkalmah,* three additional settlements grew to cities (of greater than 10 ha, or 25 acres) and the number of villages increased. Susa and its hinterland grew. (Political disarray in southern Mesopotamia and Elamite independence would have encouraged such growth.) The population in Deh Luran declined, and the plains in eastern Khuzistan seem not to have had permanent occupations.

At Susa, elaborate administrative and religious buildings stood on the Acropole, and perhaps the Apadana mound, but they were badly damaged by later building activity. A temple with terra-cotta lions may have stood on the Ville Royale. A dense urban residential neighborhood on the Ville Royale had streets that intersected obliquely and alleys between houses. The typical house plan consisted of mud-brick rooms around a courtyard. Burials were placed below house floors or courtyards. [*See* Burial Techniques.] Shimashki-era burials tended to be placed in an inverted, tub-like terra-cotta sarcophagus. [*See* Sarcophagus.] During the Sukkalmah period, vaulted tombs built of baked brick were used for repeated (family?) burials, a practice that continued into the first millennium BCE.

Pottery from the early second millennium BCE bears a close resemblance to that from contemporary Mesopotamia, despite political independence. During the Sukkalmah period, new forms related to the Kaftari assemblage at Fars appeared. Shimashki glyptic was very similar to Ur III Mesopotamian types; with presentation scenes the typical motif. Sukkalmah glyptic includes both Mesopotamian types,

such as Old Babylonian-style worship scenes, and local types made of bitumen or soft stones with scenes of banquets, files of animals, or dancing. Vessels made of bitumen have handles, feet, and spouts in animal forms, for which there are parallels from Larsa-period Mesopotamia (2000–1800 BCE). Chlorite bowls, flasks, and compartmented containers are associated with Persian Gulf seals and suggest trade among southern Mesopotamia, Susa, the Gulf, and southern Iran. Popular art includes molded naked female figurines with headdresses, jewelry, and belts. [*See* Jewelry.]

Fars. Following an apparent occupational hiatus after the Banesh period, population grew during the Kaftari period in Fars (2200–1600 BCE). Malyan was a large regional center (150 ha, or 371 acres) dominating a four-level hierarchy of site sizes. The regional distribution of sites suggests a complex irrigation network. Excavations at Malyan uncovered substantial buildings and portions of the city wall. Ceramic parallels between the *sukkalmah* phase and the Kaftari assemblage reflect the close lowland-highland political connections. The black-painted buff ware of the Kaftari ceramic assemblage tended to have overall decoration. Plain and painted red wares provide parallels to Susa. Kaftari glyptic has both Susian-style scenes (a worshiper facing a table with food) and Mesopotamian types. Cuneiform texts from Malyan reflect Mesopotamian scribal traditions but are not written in Elamite, despite Elamite autonomy. [*See* Scribes and Scribal Techniques.]

Along routes from Susiana to Malyan (Kurangun) and from Malyan to the Iranian plateau (Naqsh-i Rustam), are rock carvings that may have been shrines. [*See* Naqsh-i Rustam.] In each, the central scene shows worshipers approaching a divine couple seated on serpent thrones beneath flowing streams.

Luristan. The later phase of the Godin III monochrome painted tradition is found throughout the region. The ceramic assemblage is quite standardized, although red-slip or bichrome-painted decoration marks regional variants. Settlement density reached a peak, and valleys had central towns surrounded by villages. The western, outer Zagros valleys seem to have been essentially deserted, except by pastoralists, as a buffer against lowland Mesopotamian states. [*See* Pastoral Nomadism.] By the middle of the second millennium, BCE the density of settlement and complexity of the economy seem to have declined markedly.

Transitional and Middle Elamite Periods (1600–1100 BCE). Elam regained strength throughout the fourteenth century BCE, and the titulary of the king at Susa claimed control of Anshan. By the thirteenth century BCE, Elam had reemerged as a major power, with a geographic scope comparable to that under the *sukkalmah.* Kings undertook extensive building programs. Untash-Napirisha carried out large construction projects at a number of centers in Khuzistan—the largest was the building of a new center, Al Untash Napirisha (modern Chogha Zanbil), 40 km (25 mi.) southeast of Susa. [*See* Chogha Zanbil.] In the twelfth century BCE, Elam had major military and political impacts on Mesopotamia, ousting the Kassite dynasty in Babylonia and effecting dynastic changes in other cities as well. [*See* Kassites.] At the zenith, under Shilhak-Inshushinak, Elamite forces again pushed deep into Mesopotamia, as far north as the Lower Zab and as far west as the Euphrates.

Material culture

Khuzistan. The Middle Elamite state reached its zenith in the thirteenth–twelfth centuries BCE and represents something of a break with the past. The much broader use of Elamite for inscriptions and the development of a distinctive style of art and architecture all served to illustrate and emphasize Elamite power and independence.

Although the area west of Susa seems to have been abandoned as a buffer zone against southern Mesopotamian states, settlement across Khuzistan grew. Susa itself seems to have declined in size and importance, while a series of large new settlements, which may have been funerary cult centers, were founded outside central Khuzistan. [*See* Cult.] Susa's role as a religious center must have suffered. At first, the number and size of villages and small towns remained unchanged; later, however, population seems to have concentrated in large towns along major routes. The depopulation of Deh Luran continued.

Stamped baked bricks attest to repeated royal renovations of the Temple of Inshushinak at Susa, for which molded glazed frit bricks may have been used as a facing. The techniques used to make the molded-brick facade of another temple to Inshushinak were similar to those used by the Kassites in Mesopotamia. Large houses on the Ville Royale had a standard plan, distinct from the ones in contemporary Mesopotamia, with courtyard(s) surrounded by rooms; a large rectangular room with pilasters probably served as a reception room.

Haft Tepe (ancient Kabnak[?]) 20 km (12 mi.) south of Susa was built by Tepti-ahar (c. 1375 BCE). No houses have been excavated there. A funerary temple complex consisted of a walled compound with a baked-brick pavement. Two halls opened off of a portico; beneath each was a large vaulted tomb chamber. Some bodies had been carefully laid out and covered with ocher; others had been interred much more haphazardly. Two mud-brick terraces were found nearby, one of which was 14 m high and surrounded by halls with polychrome painted decoration. Crafts at the site included elephant-bone working, tablet firing, potting (ceramic kiln), and metalworking.

Untash-Napirisha (1260–1235 BCE) founded Chogha Zanbil (ancient Al Untash-Napirisha) on a ridge overlooking the Diz River after Haft Tepe was abandoned. Within an area of 100 ha (247 acres) enclosed by a city wall were a ziggurat complex and several monumental buildings. [*See* Ziggurat.] Courts, shrines, and temples to various gods inside a double wall surrounded the ziggurat with its temple to Inshushinak and Naparisha (the complex had undergone several major changes of plan). Decorated pegs attached

glazed tiles to doorjambs, wooden doors had glass-bead decoration, and glazed frit griffins and bulls guarded the zigurrat's staircases. [*See* Glass.] In the eastern corner of the city, three monumental complexes consisted of large courtyards surrounded with rooms and storerooms; one contained five underground vaulted tomb chambers.

Through the second millennium BCE, the Elamite pottery assemblage became more uniform and simpler, which suggests more centralized production. The Middle Elamite assemblage included wide varieties of jars and goblets. Pottery at Deh Luran had more Mesopotamian Kassite parallels, while eastern Khuzistan had parallels to the Qaleh pottery tradition of Fars.

Royal Elamite seals from the seventeen to fourteenth centuries BCE display a deity seated on a serpent throne. Middle Elamite glyptic includes scenes of banqueting and hunting, mythical beasts, and geometric patterns; other seals have Old Babylonian or Kassite Mesopotamian parallels. Middle Elamite craftsmen were skilled in metalwork, glass, faience, and glazing. A fragmentary monumental stone stele shows Untash-Napirisha and his family in a religious procession. A massive solid bronze statue of Napirisha (although incomplete it weighs 1,750 kg), a serpent offering table, and a religious-offering tableau demonstrate bronze-casting skill.

Fars. In Fars, the regional population declined. On a high point at Malyan, a building whose plan consisted of a rectangular courtyard surrounded by corridors off of which rooms opened, yielded Middle Elamite pottery and accounting tablets dealing with precious metals, food, and animal products. Only Malyan itself has pottery with clear lowland connections. Distinct local ceramic assemblages seem to be at least contemporary with one another, suggesting a fragmentation of local (material) culture. The Qaleh assemblage is related to the earlier Kaftari in forms and decoration. The handmade Shogha assemblage has black-painted decoration on an orange ground, with animal, plant, and geometric motifs. Teimurran pottery is wheelmade, with extremely regular decoration that was probably painted on a turntable.

Luristan. Ceramic distributions suggest a complex cultural situation in Luristan. Elamite goblets and some related forms are found throughout the southern and western valleys. Eastern Luristan was either abandoned or had perhaps shifted to a heavily pastoral economy. Elements of the Iron I–II western gray-ware assemblage characteristic of northwestern Iran (e.g., Hasanlu V–IV), such as button-base goblets, appear in graves in the northern and eastern valleys of Luristan. [*See* Hasanlu; Grave Goods.] Local traditions, if any, are difficult to identify. The beginnings of the elaborate "Luristan bronze" tradition also appear, probably drawing on the lowland Elamite bronzeworking tradition.

Neo-Elamite Period (1100–500 BCE). Nebuchadrezzar I (1125–1104 BCE) defeated Elam but seems not to have gained long-term control. After a period of historical obscurity, Elam again reemerged as a political refuge for Babylonian opponents of Assyria; at the same time, the Assyrians were moving into the central western highlands and establishing control along the valleys along the Great Khorasan Road. [*See* Babylonians; Assyrians.] By the second quarter of the first millennium BCE, Elam was under ever-increasing pressure from all sides: the Assyrians and Babylonians from the west, the Medes and Assyrians in the northern highlands, and the Persians in the southeast. [*See* Medes; Persians.] From about 750 to 650 BCE, Elam experienced a slow decline during nearly constant political and military conflict with Mesopotamian powers. Finally, in 646 BCE, the Assyrian king Ashurbanipal conquered Khuzistan and sacked Susa. Assyrian palace reliefs provide detailed information on dress, architectural facades, and other aspects of Elamite material culture.

Fragments of Elam, mostly in the highlands, maintained a political identity, but by the mid-sixth century BCE, former Elamite areas had fallen under Achaemenid control. Elam ceased to exist as a power. Under the Achaemenids, the Elamite language continued in use for display inscriptions, such as at Bisitun, and in administrative documents. [*See* Bisitun.] Although references to Elamites persist into the Hellenistic era, Elam's importance and independent identity had come to an end.

Lowland Elam had been in decline by the beginning of the first millennium BCE. The number of villages decreased, and many Middle Elamite towns were abandoned by about 1000 BCE (cultural developments in the highlands may have played a major role in this). During the second half of the second millennium BCE, many indigenous traditions disappeared as new groups appeared. The changes in the highlands accelerated through the first millennium BCE, sweeping away the past. Susa revived as a regional center by the end of the eighth century BCE. Neo-Elamite architecture shows a strong continuity with the past in location and ornamentation: a small temple on the Acropole had green-glazed bricks, and the pegs attaching glazed frit tiles to the walls bear knobs in the form of animal forequarters, humans, or bull men. Burial practices continued second-millennium BCE practices, including the use of painted clay funerary heads.

Neo-Elamite I pottery (1000–700 BCE) is little known; Neo-Elamite II pottery (700–500 BCE) is simple and demonstrates continuity. This is noteworthy because the Assyrian conquest of Elam and the sack of Susa in 646 BCE had little effect on the ceramic assemblage and other types of artifacts. The second half of the first millennium BCE is poorly known archaeologically.

[*See also* Mesopotamia, *article on* Ancient Mesopotamia; *and* Persia, *article on* Ancient Persia.]

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ELEMENTAL ANALYSIS. *See* Neutron Activation Analysis.

ELEPHANTINE (Egyp., 3bw; Aram., Jeb [or Yeb]; Gk., Elephantine; Ar., Geziret-Aswan), the southern frontier town of pharaonic Egypt, situated on an island in the Nile River opposite modern Aswan, whose ancient predecessor it is (24°6′ N, 32°54′ E). The modern remains consist of a tell up to 15 m high about 350 m in diameter.

The first excavations, by missions of the Berlin Museums and the Paris Académie des Inscriptions et Belles Lettres, took place at the beginning of the twentieth century and were primarily aimed at recovering papyri. A comprehensive examination of the city by the German Institute of Archaeology together with the Swiss Institute for Architectural Research, has been underway since 1969; it is allowing the most important features of its history to be determined with increasing accuracy.

The earliest traces of settlement so far determined date to the Middle Naqada period (c. 3500 BCE) and are concentrated on the eastern part of the island, which was at that time still divided into two flood-free granite ridges. The sacred precinct of the antelope goddess Satet, the historical "mistress of the city," which at first consisted of nothing more than a modest brick hut between three towering granite rocks, can be traced at least as far back as the Late Naqada period (c. 3200 BCE). It is, however, unclear whether the inhabitants of the early settlement consisted largely of egyptianized Nubians, whose settlement area then extended to the north, beyond the first cataract, or whether the oldest Elephantine was already an extended outpost of Egypt proper. Its function, at the northern end of the hard-to-navigate cataract region, must have been related primarily to trade with the south.

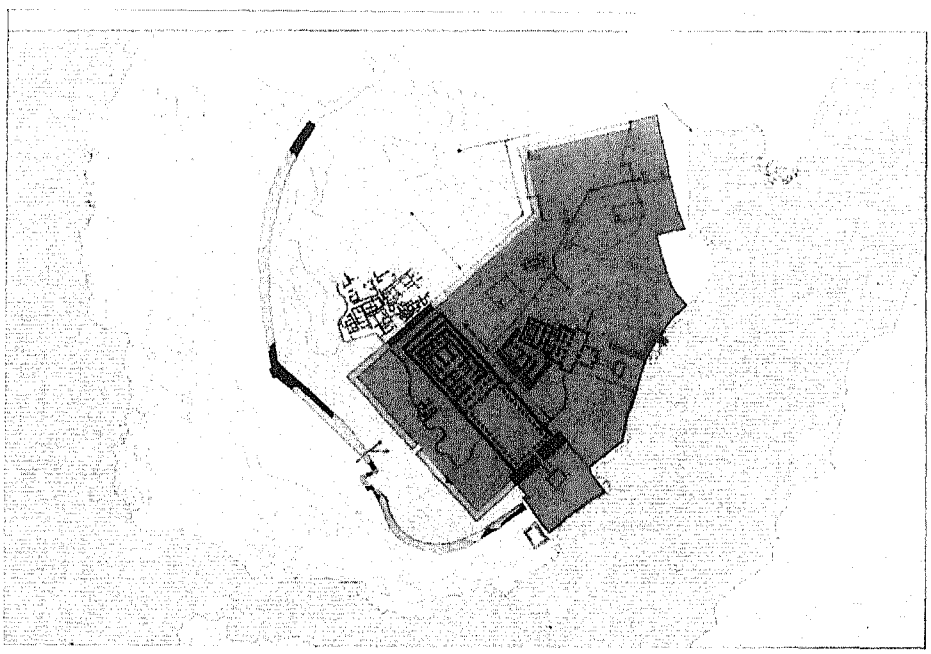
With the final development of the Egyptian state, the function of state border post was added to that of exchange place; during the course of the first dynasty (c. 3000/2950–2800 BCE), a fortress protected by towers was erected on the highest point of the east island, close to the bank; it was, so far as can be determined, staffed with nonlocal—but certainly Egyptian—forces. A little later, the entire settlement area was also surrounded with a strong brick fortification. From the third/fourth dynasty onward (c. 2600 BCE), the city gained in significance because of increased quarrying of its valuable hard stone, of which the so-called Aswan granite, in particular, remained one of Egypt's most beloved materials for monumental buildings, statues, and stelae throughout the pharaonic period.

With the conquest of Lower Nubia by Sesostris I (c. 1950 BCE) in the early twelfth dynasty, Elephantine, for the first time, lost its function as a frontier town; however, as compensation, it became an even more important administrative and trading center for traffic to the south, beyond the first cataract. The western island, which had served primarily as a cemetery, was increasingly included in the settlement area of the city. Sesostris I had the first stone temple erected to the city goddess Satet; next to it he built a festival court for the celebration of the Nile flood, which, according to Egyptian belief, had its point of origin in Elephantine. At about this time, the ram-headed god of the cataracts, Khnum, also received his own temple in the city. A third sacred precinct that had already developed in the course of the eleventh Dynasty (c. 2050 BCE) was refurbished for the worship of a former governor of Elephantine by the name of Heqaib. In the difficult period during which the Old Kingdom declined, Heqaib apparently distinguished himself, so that he was made the protective saint of the city after his death. Even his successors in the twelfth and thirteenth dynasties (c. 2000–1650 BCE) all erected their own commemorative chapels in his precinct, in addition to their rock-cut tombs on the east side of the Nile; other officials, even from outside Elephantine, dedicated statues and stelae there.

The disintegration of the Egyptian state in the second interregnum (c. 1650–1550 BCE) returned the southern boundary of Egypt to Elephantine for a while. When the kings of the early eighteenth dynasty (c. 1550–1300 BCE) renewed their conquest of Nubia, this time extending beyond the fourth cataract, a new period of prosperity began for the city. Its boundaries expanded once more (they can no longer be precisely determined under the modern village toward the north). Hatshepsut and Thutmosis III (c. 1490–1440 BCE) had new and larger temples erected to Satet and Khnum; especially the one to Khnum was considerably enlarged during the later eighteenth and the nineteenth/twentieth dynasties (c. 1300–1020 BCE). The two temples, together with their administrative and commercial buildings, occupied almost a third of the city's preserved surface area. It is, therefore, probably no coincidence that at this same time Syene (modern Aswan) made its first appearance in Egyptian texts.

With the beginning of the third interregnum (1080–710 BCE), Nubia's independence, and Egypt's continually erupting internal conflicts, Elephantine's significance must have again been predominantly military. During the Persian occupation of Egypt (525–404 BCE), Elephantine's renewed character as a fortress was most probably not directed solely against possible threats from outside Egypt. The garrison stationed by the Persians, which consisted at least in part of members of the Aramaic/Jewish colony (which had its own temple to Yahweh in Elephantine before the Persian period) points in this direction. Nothing of the Yahweh temple remains, probably as a result of the enlargement of the Khnum temple during the thirtieth dynasty (380–342 BCE); there are, however, probably remains of a number of houses of a non-Egyptian type, from which important papyrus finds relating to early Judaism have been recovered. [*See* Papyrus.]

With the last native kings of the thirtieth dynasty, another extended period of prosperity began for Elephantine, even though it was soon under Greek and then (from 30 BCE onward) Roman rule. Nectanebo II (360–342 BCE) began a



ELEPHANTINE. *Plan of the Greco-Roman city.* (Courtesy W. Kaiser)

large restoration of the Khnum temple. The Ptolemies (305–330 BCE), especially Ptolemy VI and VIII, continued the work, which was finally completed under Augustus with a large riverside terrace. The restoration of the considerably smaller Temple of Satet was begun by Ptolemy VI and was also outfitted with a riverside terrace and a Nilometer. During the Roman period there was additional construction along the bank between the two temple terraces; to the north, at some distance to the Nilometer of the Satet temple, a monumental staircase with a sacred precinct to the Nile was erected at the city's port. Two more temple buildings, whose exact location has not yet been determined, were built inside the sacred area; with its administrative and commercial buildings, this area ultimately occupied almost half of the old area of the city. At the same time, the everyday life of trade and probably also administration shifted more and more to Syene; this helps to explain why, with the triumph of Christianity in the early fourth century CE, Elephantine fell decisively behind modern Aswan. Arabic sources from the early Middle Ages still report a cloister and two churches in Elephantine. Remains of a small church from the early sixth century and the scattered remains of a somewhat later large basilica are preserved. [*See* Churches; Basilica.] However, with the increasing islamization of Egypt, even this last Christian phase in the history of the city did not last long. In the absence of the tell's upper layer, the definitive end of the settlement cannot be determined precisely. It can, however, hardly be later than the tenth or twelfth century.

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Translated from German by Susan I. Schiedel

EMAR (mod. Meskene), site located on the right bank of the Euphrates River in Syria. Today it is submerged under the Tabqa dam, el-Assad lake. Emar/Meskene is situated at the juncture of the region's land and water routes (east–west) and its two main topological features—the steppe, on which the site leans, and a fluvial plain, rich and fertile as a result of irrigation. Farther southeast on the Euphrates are the cities of Tuttul and Mari; to the north is Carchemish and Anatolia; to the west, where transportation to Cyprus and the Mediterranean Sea would have been available, are the cities of Aleppo (Yamḫad), Qatna, and, on the coast, Ugarit; Damascus is to the south; and to reach Canaan it was necessary to go through Hazor. In short, Emar was a vital crossroads for trade, east–west relations, and travel by water to Babylon, Mari, and the lands of the Hittites.

Until 1972, Emar was known only through the archives of Mari, Nuzi, and Ugarit, as their political or commercial partner. The construction of the Tabqa dam where the Euphrates, after leaving the mountains of Anatolia, turns toward Mesopotamia and the Persian Gulf, led to the exploration of Emar/Meskene, directed by Jean-Claude Margueron, under the auspices of the French Commission of Excavations of the Ministry of Foreign Affairs. In six campaigns (1972–1978), archaeological and epigraphic documentation was recovered that opened a new chapter in the history of Late Bronze Age Syria. The city uncovered was not, however, the one mentioned in the Middle Bronze Ebla or Mari texts but a city erected entirely in the Late Bronze Age on a site prepared especially for that purpose. None of the soundings showed any trace of a city earlier than the LB city, which existed only until the beginning of the fourteenth century BCE, when it was violently destroyed—a little after 1187 BCE (Arnaud, 1975).

The contradiction between the texts and the archaeological reality has led investigators to believe that the city of the third and second millennia BCE was actually located several hundred meters away from the excavated city, at the foot of the mound, in the valley itself. Doubtless eroded away by a meander of the Euphrates and close to disappearing in the Late Bronze Age, it would have been reconstructed on the edge of the plateau in order to avoid erosion by the river. The work would have been sponsored by the Hittite king Šuppiluliuma I (1380–1340 BCE), who dominated North Syria at the time, or by his son Muršili II (1339–1306 BCE), to safeguard a vital commercial link. Abandoned after its

destruction in 1187, in the first millennium BCE, the site was partly reoccupied in the Roman period by a modest city named Barbalissos. Within the walls of the Byzantine period lay the medieval city of Balis that continued to exist until the end of the Ayyubid period.

The Ebla archives provide evidence that Emar existed in the mid-third millennium—a dynastic alliance facilitated commercial relations between the two cities. At the beginning of the eighteenth century BCE, the archives of Mari show Emar to be a true economic hub, connecting the great Syrian centers (see above). [*See* Ebla Texts; Mari Texts.] The discovery of several hundred texts (a priest's library of private and royal archives) that cover the period of nearly a century and a half from the end of the fourteenth century to 1187 BCE, has permitted the history of the LB city to be written. Emar, then the capital of a Hittite province named Astata, was accountable directly to the kingdom of Carchemish, itself dependent upon Ḫattuša (Boğazköy), the center of the Hittite Empire; a ranking general called the Head of the Chariots represented the central power. The texts are concerned, for the most part, with judicial, legal, and economic matters—the society and its system of relationships based on economics and trade.

It is always risky to link LB tablets to the Bible, even though they shared a cultural domain. The most obvious parallels among LB texts and some of the biblical narratives involve the institution of the family and societal customs—for example, the customs of inheritance and the sale of family property owned by the eldest in the texts from Emar are reminiscent of customs in other patriarchal societies, such as Nuzi and Ugarit. The importance of soothsayers from Babylon and prophets are documented in the Emar texts as is the ordination of priests and priestesses and other rituals that took place during important celebrations.

The LB builders chose an arm of the rocky, rectangular plateau that borders the valley on its southern edge—a mountainous location, not one in the plain or valley, as was the Syrian tradition. They completely altered the topography by creating staggered terraces and cutting an artificial channel or ravine (about 500 m long, 50 m wide, and more than 20 m deep), to create a site whose commanding view of the surrounding area made it easy to defend and convenient for commerce. The residential quarters were built upon that infrastructure. Two were excavated extensively (trenches A and D). The buildings were constructed gradually, as a need evolved. Elsewhere, the plan of the city and its natural and hewn topography suggest that the main gates were located in the middle of the sides of the quadrilateral, about a kilometer to a side. One portion of its rampart was located on the western side of the site, along the artificial ravine. The ruins of a fortress responsible for the defense of Emar, at Tell Faq'us, a site about 10 km (6 mi.) downstream, was excavated by the French team in its last campaign in 1978.

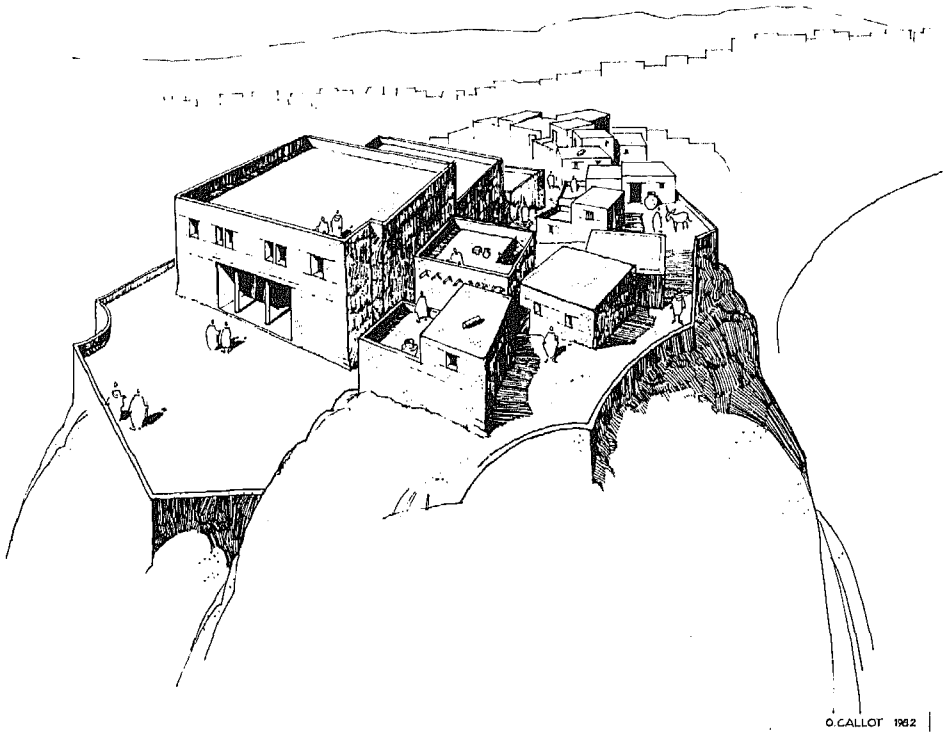
The plans of the thirty or so private houses that were excavated are quite uniform: at ground level a large, rectangular room opens directly onto the street; opposite the entrance are two small rooms of equal size, with separate entrances. The method of construction, the frequent appearance of interior steps, and the traces of charred wood in the debris suggest that this group of rooms was roofed and that another story extended over some, if not all, of them, while a terrace provided an open-air space. This particular architectural plan seems to have been popular on this bank of the Euphrates, in North Syria in general, and sometimes in neighboring regions in the second millennium BCE. Terra-cotta models of houses or temples were found among the ceramic remains during excavation.

The palace belonging to the governor or local "king" who deferred to the overlordship of the Hittite king was uncovered. Installed on the northwest promontory, it dominated both the valley and the port. It takes the form of a *ḫilani,* the distinctive residence of Iron Age North Syria. The *ḫilani* is characterized by a facade (see figure 1) with a columned portico leading to a pair of oblong rooms, the second of which here certainly served as a throne room, and upper floor. This is the earliest known example of a *ḫilani* in Syria. It was provided with additional rooms installed at various levels more than a meter apart on the southern slope of the promontory, which make its plan difficult to understand because of the differences of level of each part of the dependancies of the building (see figure 2). A Hittite origin for this architectural formula seems probable.

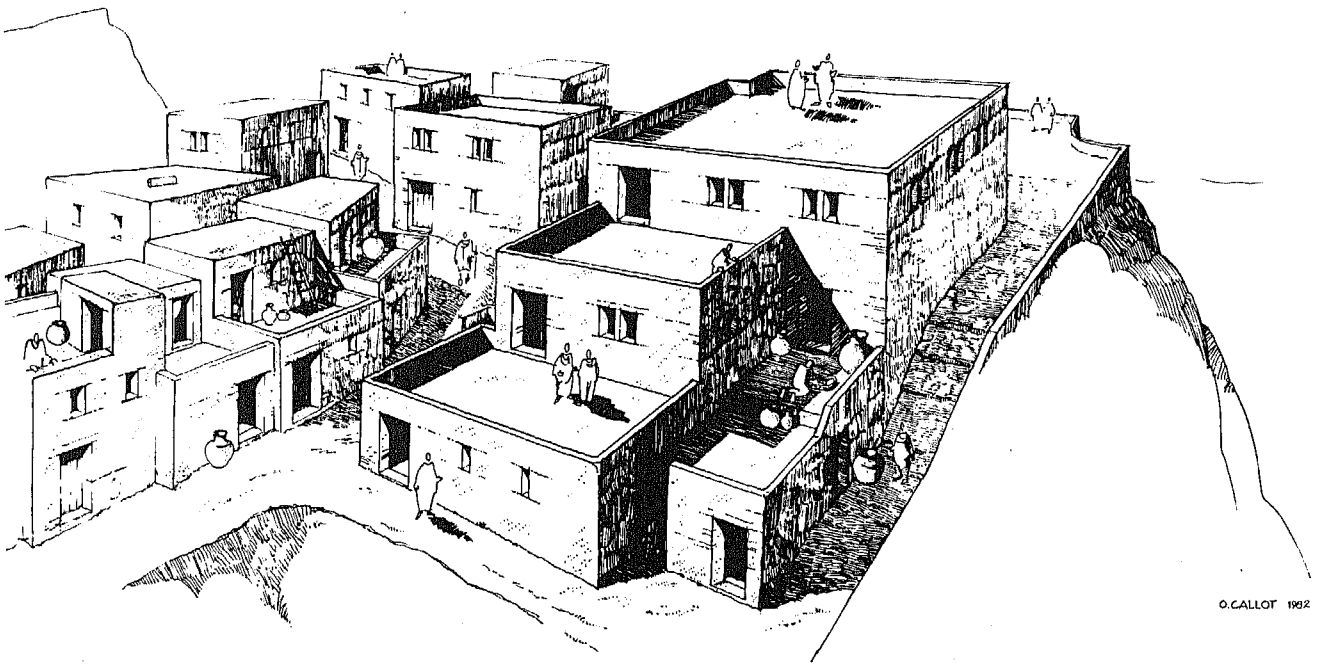
Four temples have been excavated. They all belong to the northern long style of temple formed by an elongated room that served as a holy space, with an offering table, a podium for the god, and some furnishings used in carrying out rituals; this room was fronted by a vestibule that opened to the exterior via a porch with columns. Associated with the temple, a large esplanade or raised terrace was equipped with an altar where sacrifices and possibly other rites were practiced.

The principal sanctuary was formed by two temples dedicated to Baal and to Astarte, both situated at the highest point of the site on both sides of a street that led to the sacrificial terrace. A third temple, dedicated to all the gods, was attended by a priest whose reputation had reached the court of the Hittite king; his library and archives constitute one of the most important discoveries at Emar because they explain the progress of divination by observation of animal livers from Mesopotamia toward Anatolia and the classical Mediterranean world. A fourth temple, whose dedicant remains unknown, preserved especially rich furnishings.

The city of Emar never played a particularly important political role, but from the third millennium, as a point of exchange in the relations between Syria and Mesopotamia, it was one of the principal elements in the system that dominated the economic life of the Near East during the Bronze



EMAR. Figure 1. *Facade of the ḫilani.* (Courtesy J.-C. Margueron)



EMAR. Figure 2. *Tiered structures at the rear of the ḫilani.* (Courtesy J.-C. Margueron)

Age. Emar provides a clear idea of the life of a Hittite province at the time of the greatest expansion of the empire, of the organization of the territory, and of the role that this crossroads played in international life.

[*See also* Babylon; Boğazköy; Carchemish; Ebla; Emar Texts; Hittites; Mari; Nuzi; *and* Ugarit.]

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Translated from French by Nancy Leinwand and Monique Fecteau

EMAR TEXTS. Excavations in the mid-1970s at the Syrian site of Meskene (ancient Emar), located at the great bend of the Euphrates River, yielded some eight hundred cuneiform tablets and fragments. Internal evidence shows that the texts date from the end of the fourteenth to the beginning of the twelfth century BCE.

Four languages are represented in the cuneiform script at Meskene. A few texts are Hittite, including a royal letter (there are also seals with hieroglyphic Luwian legends). Several Hurrian texts were also found. Neither the Hittite nor the Hurrian texts have as yet received full publication. Most of the texts are Akkadian and Sumerian and have been published in copy, transliteration, and translation in four large volumes (Arnaud, 1985–1987).

A wide range of genres is represented in the Sumero-Akkadian tablets. There are roughly 150 economic texts (records of deliveries, inventories, lists of sacrifices, lists of personnel, memoranda); 200 contracts (adoptions; antichretic contracts; debt payments; guarantees; inheritance divisions; lawsuits; loans; property exchanges; purchases of fields, houses, orchards, and slaves; ransoms; sales of children, houses, orchards, and slaves; verdicts; wills); and about twenty letters (between nonroyal persons). These texts reveal many details about everyday life in Late Bronze Emar. Texts recording purchases and sales of real estate are normally provided with specific references to the location of the property in question, including mention of the property on all sides; tabulation of this information might well yield a detailed layout of at least some parts of the town.

Many Mesopotamian canonical texts were also discovered at Emar. There are, for example, more than sixty lexical texts and more than one hundred omen texts, in both cases reflecting many of the canonical series; also represented are incantations and rituals. Literary texts are few in number, but include fragments of Gilgamesh (tablets 4 and 6) and of The Tamarisk and the Date Palm. A significant discovery was a wisdom text also known from Ugarit and from Ḫattuša but not yet found in Mesopotamia.

Certainly the most unexpected texts unearthed at Meskene are the roughly two hundred tablets and fragments that describe otherwise unknown festivals and rituals, shedding much new light on Late Bronze Syrian religious practices. The festival texts include lengthy descriptions of the installation ceremonies of the priestess of the storm god and a priestess called a *maš'artu,* and of festivals called *kissu* ("throne"?) and *zukru* ("commemoration"?); the level of detail presented in these documents is quite unprecedented. Other types of local religious texts are annual and monthly liturgies, offering lists, and rituals for Anatolian deities (Fleming, 1992).

Besides the texts edited in Arnaud (1985–1987), several hundred tablets from the immediate vicinity of Emar have also been published in the last decade (see, e.g., Arnaud, 1987, 1991; Beckman, 1988; Dalley and Teissier, 1992; Huehnergard, 1983; Tsukimoto, 1988, 1990, 1991, 1992). The majority of these are economic and legal texts.

The Akkadian texts that were not copied from Mesopotamian originals betray in their grammar the fact that they were written by scribes whose native language was not Akkadian. Like contemporary Akkadian texts from Ugarit, Alalakh, and el-Amarna, these texts frequently betray elements of the scribes' own tongues. The most obvious of these elements are the large number of unusual words found in the Emar texts, some of which, at least, appear to derive from a Northwest Semitic language. In the legal and economic texts and in the letters, too, most of the names of the local Emarites are Northwest Semitic.

[*See also* Akkadian; *and* Emar.]

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JOHN HUEHNERGARD

EMMAUS, important market town and spa in the Judean piedmont, halfway between Jaffa and Jerusalem (31°50′ N, 34°57′ E; map reference 1494 × 1388). Its Greek name derives from Hamath or Hamta ("hot springs"; *Ecclesiastes Rabbah* 106b). Granted a town charter by Elagabalus in about 230 CE, it took the name *Nicopolis-Antoninopolis.*

Emmaus's strategic location made it the site of many battles, from Joshua's Ayalon valley campaign to the British general Allenby's campaign in 1917 CE and beyond. The site is first mentioned in *1 Maccabees* 3:40 as the site of Judas's great victory in 166 BCE over the Seleucids, and it was subsequently the capital of a Herodian toparchy. As an outpost opposite the mainly pagan plains, during the Second Temple period it acquired its character as a center of religious fervor and, at times, of armed militancy. Gaius Cassius sold Emmaus's inhabitants into slavery. Following Herod's death, Athronges led his rebellion against Rome from Emmaus and was crushed there by Varus, then governor of Syria. During the Jewish War of Vespasian and Titus, the Fifth Legion was based at Emmaus, and in Bar Kokhba's time, the Twelfth Legion may have been annihilated nearby (*Ekhah Rabbah* 2.4.22a). The literary and archaeological evidence points to Judean-Samaritan and later also to Christian coexistence in Emmaus. The site's epigraphic material consists of tombstones of soldiers of the Fifth Macedonian Legion (first–second centuries CE) and inscriptions on lintels from a Samaritan synagogue and from the mosaic floors in a fifth-century church (see below).

Emmaus has been identified, but not later than by Eusebius (*Onomasticon* 90.16), with the locality of Christ's revelation to his disciples in the aftermath of the crucifixion (*Lk.* 24). One of the major Byzantine basilicas in the Holy Land was erected there and refurbished by the Crusaders in the twelfth century. The identification with the Emmaus in *Luke* rests on the preference of the fourth-century Codex Sinaiticus, Palestinian Syriac (based on sundry Greek translations and the Peshitta), and other fifth–sixth-century texts, which quote 160 stadia as its distance from Jerusalem, against the 60 stadia given by various Latin, Greek, and other sources commencing with the fourth-century Codex Vaticanus. These encouraged rival identifications, up until the Crusader period: al-Qubaibah (map reference 1631 × 1386), Qaloniye (map reference 1656 × 1338), or Abu Ghosh (map reference 1604 × 1349).

Villa and Churches. The oldest remains recovered beneath the site's two Byzantine churches were of a fourth–fifth-century CE building, possibly a *villa rustica.* The older (?), fifth-century church was an elongated basilica (18 × 10 m), divided by two rows of six columns each into a nave and two aisles, with a triple entrance. Its mosaic floors were decorated with guilloches and floral, bird, and animal designs. It was probably joined with the large sixth-century basilica to its right (but cf. Avi-Yonah, 1976). The basilica (46.4 × 24.4 m) was constructed of very large, smooth ashlar blocks. Two rows of thirteen columns formed its broad nave and narrow aisles. On its exterior, the central apse was trapezoidal. The side apses are preserved up to and including their exquisite hemispherical ashlar vaulting. A smaller Romanesque Crusader church incorporated the nave and central apse of the destroyed Byzantine basilica, adding to the size of its hall (23 × 10.25 m) with a vault carried on four pointed arches that rested on a solid buttressed wall.

Bathhouse. The third-century thermae belong to monoaxial bathhouses, all of whose installations are arranged adjacent to each other on a straight line. Parts of the building

collapsed during one of the earthquakes recorded for the fourth–fifth centuries. The surviving structure was partly buried to its roof by a subsequent landslide, which explains its state of preservation. The thermae were built of smooth and well-fitting ashlars. The walls measured between 1 and 1.5 m. The extent of the refurbished part is 14 × 7.5 m. After the refurbishing, the entrance was through the former tepidarium, which had been converted into a frigidarium. Passage was then available into a former caldarium, then the tepidarium; the second adjoining caldarium retained its function. The sweat chamber was built over the boiler room on the west. Another room preserved an entire original stone cupola, constructed of four hemispherical segments that leaned against each other, leaving an air-regulation aperture in its apex (cf. Vitruvius 5.10.5).

Two other rooms contained two apses each in opposing walls. Each has a barrel-vaulted roof constructed of tiles and rubble cement, respectively. The former is of Byzantine and the latter of Ottoman date. The original ashlar vaults caved in at the same time the rest of the building collapsed. Some of the pottery pipes are preserved that heated the wall of the *suspensura*. The latter was composed of an upper floor constructed of marble slabs on cement that, in turn, had been spread on large tiles resting on rows of brick arches (cf. Vitruvius 5.10.2). These combined resilience, so important in this earthquake-prone region, with good air circulation. Three interconnected tanks provided, one each, cold, tepid, and hot water (cf. Vitruvius 5.10.1).

Yizhar Hirschfeld (1989) traced two parallel aqueducts for 1.5 km from ʿEin Eqed to the town. Their method of construction changed from subterranean tunnels to rock-cut or stone-built channels. The tunnel has an inspection chamber with a pointed Byzantine-period (?) arch.

[*See also* Aqueducts.]

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MORDECHAI GICHON

EN _____. *For toponyms beginning with this element, see under* ʿEin-.

ENKOMI, site in Cyprus (35°10′ N, 33°53′ E), named after the village located 1 km (.6 mi.) to the east. It extends some 46 km (29 mi.) east of Nicosia, 8 km (5 mi.) northwest of Famagusta, and 3 km (2 mi.) southwest of Salamis on ground that slopes gently from east to west, from the foot of a low cliff down to the bed of the river Pediaios. In antiquity, the estuary of the river probably reached inland as far as Enkomi and sheltered its harbor.

Official excavations started in 1896 with the British Museum Expedition, which was led by A. S. Murray. Numerous campaigns followed: Sir John Myres and Menelaos Markides in 1913, on behalf of the Cyprus Museum Committee; Rupert Gunnis in 1927; the Swedish Cyprus Expedition (SCE) under Einar Gjerstad and Erik Sjöqvist in 1930; Claude F.-A. Schaeffer in 1934; and a French expedition, led by Schaeffer from 1946 to 1970, later by

Olivier Pelon from 1971 to 1973. From 1948 to 1958, a Cypriot team directed by Porphyrios Dikaios joined the French expedition. The Cypriots worked on their own and in separate areas. The 1974 war put an end to field research. [*See the biographies of Myres, Gjerstad, Schaeffer, and Dikaios.*]

The first excavators considered Enkomi as a Bronze Age necropolis of an unknown settlement. They dug through the upper archaeological layers, taking no notice of them or regarding them as medieval. The British Museum pioneer excavations yielded some of the most impressive objects ever found in Enkomi, such as an ivory game box with relief decoration, a bronze cultic stand, ivory mirror handles, and a large Egyptian necklace of gold with paste inlay. The publication (Murray, 1900) made Enkomi a major site for the Cypriot Late Bronze Age. The Swedish expedition published twenty-two tombs (Sjöqvist, 1934, 1940). Careful study of the stratification in each tomb provided new firm ground for the relative and absolute chronology of the Late Bronze Age. In 1934, Schaeffer soon realized that the walls he had encountered while digging for tombs belonged to the Bronze Age. He laid bare a building made of ashlar (dressed) masonry with a hoard of bronze objects (the so-called Maison des Bronzes).

The way was open for the exploration of the ancient town of Enkomi. Its equation with Alashiya, the capital of the kingdom of Alashiya, was proposed by Dussaud and by Schaeffer. It is generally rejected, but final decision must await new textual evidence. Some significant points in the chronology of Enkomi have not yet been settled. Schaeffer's and Dikaios's stratigraphies cannot be precisely correlated. For simplicity's sake, a division into three phases is used here, corresponding roughly to the traditional partition of the Late Cypriot Bronze Age: I (c. 1600–1450/1400 BCE), II (1450/1400–c. 1200), III (c. 1200–1050).

Phase I (c. 1600–1450/1400) has been studied extensively only by Dikaios. In his Area III (and grid area 1W, see below), at the northern limit of the town, Dikaios uncovered a long rectangular building that he understood to be a fortress, in which he identified a metallurgical workshop. In Area I (4W), near the center of the settlement, were small houses. The destruction of this phase is ascribed to an earthquake. Two exceptional built tombs, irregular *tholoi* (beehive-shaped tombs), can be dated to phase I (SCE tomb 21, probably in 6W) and to early phase II (French tomb at point 1336, in 5E).

Phase II (1450/1400–c. 1200) eventually saw a radical development in the urban organization of Enkomi from an open, loosely occupied town to a fortified, dense, and strictly planned city, and a boom in metallurgical activity. According to Dikaios, this boom was caused by Mycenaean settlers during phase II, but the geometrical town plan, the final construction of the rampart, and the introduction of ashlar masonry all belong to the beginning of phase III, after a destruction and the arrival of newcomers related to the so-called Sea Peoples, with a strong Mycenaean element among them. For Schaeffer, the changes date back to a time well before the end of the thirteenth century and belong to phase II. Recent discoveries (ashlar masonry of the thirteenth century at Kition and Kalavasos, for example) have in the main confirmed Schaffer's reconstruction. [*See* Kition; Kalavasos.]

The city wall encloses a roughly semicircular area, some 406 m (1,332 ft.) north–south and 350 m (1,148 ft.) east–west. Basically, it consists of an inner wall with an upper part of mud bricks and of an outer strengthening of very large, minimally hewn rocks. It is in places protected by small bastions. A northern and a western gate have been found.

The town is divided by one north–south street and ten east–west streets into large rectangular blocks, which measure approximately 33 × 170 m (108 × 558 ft.) numbered 1W to 12W and 1E to 12E, starting from the north. This geometrical grid was in use until the final destruction. A paved square (from the beginning of phase III in its present state) marks the center of the city.

In grid area 6E is a rectangular tripartite construction of large ashlar masonry, probably a temple. A square base supports a pillar with a stepped capital, a type also known from Kition, Palaipaphos, and other Cypriot sites. Along street 5, in grid area 5W, extends Building 18, named after Swedish Tomb 18 discovered by the Swedish Cyprus Expedition (see figure 1). It was erected around the middle of the thirteenth century BCE, apparently as a residence for a wealthy leader, the earliest indication of a political authority in the city. The facade, nearly 40 m (131 ft.) long with four wide doors, is partly made of blocks of ashlar masonry, one of them no less than 3 m (10 ft.) long. This technique, although reminiscent of Ugarit, is used here in a way peculiar to Cyprus. The central part of the building recalls Building X at Kalavasos, near Limassol. Four chamber tombs of ashlar masonry of the fourteenth and thirteenth centuries in areas 3E and 4E may indicate that some aristocratic families from Ugarit had settled in Enkomi.

During phase II there is a great increase in industrial production, exchanges, and prosperity. The funerary furniture becomes very rich with a wealth of imported Mycenaean pottery. Many copper smelting and working places are attested, especially in area 1W. At the beginning of phase III (c. 1200–1050) although Building 18 had lost its aristocratic character, a large residence of ashlar masonry was built in area 4W. It comprised a series of three communicating spaces, one of them with a central hearth, a feature equated by Dikaios (1969–1971, p. 187) with the Mycenaean "megaron." The whole settlement was destroyed by a violent fire, ascribed to the Sea Peoples around 1190 BCE.

Activity and wealth, again based on metallurgy, were rapidly restored. Nevertheless the dwellings are usually smaller than in phase II. Profound cultural changes are noticeable

in the funerary customs. Shaft graves supersede rock-cut chamber tombs. Judging by the small number of *intra muros* inhumations, most of the dead were buried outside the settlement. The bulk of the local painted pottery now reflects Mycenaean tradition.

The sanctuaries of the "horned god" and the "ingot god" are of particular interest. The rituals for both deities show great similarities—libations and offerings of bucrania (oxen skulls)—that reflect Aegean, Near Eastern, and local tradition.

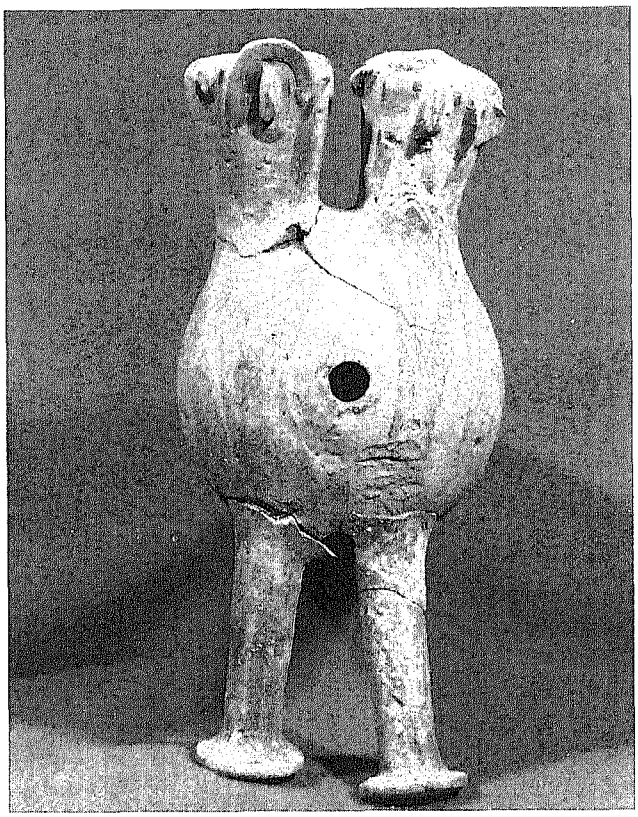
The sanctuary of the horned god occupied the profoundly remodeled residence in area 4W. Oxen skulls and other offerings lay on the floors. The cult statue was set in the southernmost part of the former megaron where 276 one-handled libation bowls have been found. The bronze figure, 55 cm high, shows a young athletic god wearing a short kilt and a curly cap from which two ox horns emerge. The attitude is static, the right hand extended with its palm facing downwards. The god has been tentatively described as an archaic Apollo, a protector of the cattle. A space was also dedicated to a female deity, represented by a tiny bronze figurine with a headdress resembling that of the Egyptian goddess Hathor.

The sanctuary of the ingot god, in area 5E, is quite different in its layout. Its main feature is a large rectangular, partly covered hall. West of it, nearly 250 fragments of clay figurines have been collected. They were originally standing in circles on disk-shaped bases, clearly an Aegean tradition. In the hall are a hearth and a sacrificial altar. Benches run along the walls; on or near them have been found most of the offerings, such as oxen and fallow-deer skulls, possibly used as ceremonial masks, notched animal shoulder-blades, libation bowls, and two large painted clay figurines of double-headed sphinxes (see figure 2). The 35-centimeter-high bronze cult statue found in a small room arranged in the northeast corner of the hall is that of an oriental smiting god standing on an ingot in the shape of an oxhide. It is a base added to characterize the deity as a protector of metallurgy. A figurine of a goddess standing on an ingot, probably from Enkomi, is now in the Ashmolean Museum, Oxford.

At the end of the twelfth century, Enkomi suffered new destruction, possibly by an earthquake. A vivid revival ended with a final destruction before 1050. Part of the population probably moved to Salamis. [*See* Salamis.]

This description of the excavation can convey but a faint idea of Enkomi's contribution to the study of Cyprus in the Late Bronze Age, on matters such as the presence and role of the Aegeans, the transition to the Iron Age, the problem of the Sea Peoples, and the religion. The material (pottery, jewelry, ivories, faience, stone vases, and cylinder and stamp seals) illustrates how Cyprus, in close contact with Egypt, the Aegean, and the Asiatic Near East, took part in the elaboration of the aristocratic international culture of the Eastern Mediterranean Late Bronze Age. Worthy of mention are the funerary gold "mouthpieces" with stamped decoration, the silver bowl with gold and niello bull heads, faience goblets

ENKOMI. Figure 1. *The southern facade of building* 18, *along east-west street no.* 5. Looking east-northeast, during 1950 excavation. (Archives CFA Schaeffer, Paris)



ENKOMI. Figure 2. *Front view of a painted terra-cotta double-headed "sphinx" or "centaur."* Found in the sanctuary of the ingot god. Height, 31 cm. (Archives CFA Schaeffer, Paris)

in the shape of a woman's or an animal's head. Metallurgy is illustrated by a great variety of bronze tools, weapons (swords of the Nenzingen type), armor (bronze greaves of SCE Tomb 18), figurines (seated drinking deities, cult-chariot), molds, and copper oxhide ingots (the main export of Cyprus, a symbol of richness and power). Iron appears in phase III. Cuneiform archives are missing as yet, but a wealth of information may be hidden in the undeciphered Cypro-Minoan texts.

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ENTERTAINMENT. *See* Games; Stadiums; Theaters.

ENVIRONMENTAL ARCHAEOLOGY. Interest in what is now called environmental archaeology was probably stimulated by the long-discredited views of Ellsworth Huntington, who, in the first decade of the century, proposed that climatic change had played a major role in the rise and fall of civilizations in the Near East. For example, he claimed that purported desiccation in early postglacial times had forced people to congregate in river valleys, where they began to domesticate plants and animals. Similarly, he believed that the abandonment and desertification of Palestine in the Late Byzantine period were a result of desiccation, just as he claimed periodic nomadic eruptions from Central Asia could be explained by climate. Climate became the engine of history and with it, "environmental determinism" took root.

The Huntington legacy was insidious. Despite repeated and effective refutation, some scholars continue to explain archaeological displacements or sociopolitical discontinuities by "climatic change." Recently, climatic change was linked to the Aegean dark age and the "Peoples of the Sea" (after 1225 BCE), as well as to the fall of the Akkadian Empire and synchronous political collapse in adjacent regions (c. 2200 BCE). On the other hand, there has also been to exploring flexible environmental constraints on particular economic activities and the possible complementary role of adverse environmental trends in more complex, systemic crises.

In 1925, the British archaeologist Gertrude Caton-Thompson invited a geologist, Elinor Gardner, to assist her with prehistoric projects in the Faiyum and Khargah oases in Egypt. [*See* Faiyum; *and the biography of Caton-Thompson.*] Gardner helped to tie various archaeological sites into specific landscapes, both temporal and spatial, by establishing a succession of environmental changes. Thus, a site was contemporary with a particular lakeshore or spring deposit,

which provided a relative date as well as a unique environmental setting (Caton-Thompson and Gardner, 1934). This was achieved by interpreting the conditions of geological formation, relating them to other features in stratigraphic terms, and using associated molluscan collections to amplify or confirm ecological inferences. This prototype of multidisciplinary fieldwork was also pioneered elsewhere. It did not become an instant success in the Near East but received significant impetus in the 1950s through the efforts of Robert J. Braidwood. Frustrated by the difficulty of analyzing agricultural origins, Braidwood collaborated with a geologist and brought in a zoologist to study animal bones (to determine whether potential livestock were domesticated), a paleobotanist to study seed grains, and eventually a palynologist to identify the pollens in cores drilled into nearby lake or marsh beds (to provide a detailed and often continuous record of vegetation change). He also worked with a ceramicist (to examine pottery-making techniques and identify clay sources) and an ethnographer (to observe village life in remote areas and provide analog information on a broader range of material culture and its social replication) (Braidwood and Howe, 1960).

The numbers and specializations of collaborating environmental scientists and their opportunities to influence excavation strategies and publications continues to vary. Increasingly, environmental archaeologists seek independent funding: much of the information now available for the Near East, mainly for the Paleolithic and Neolithic periods, was generated independently. Environmental archaeology is still all too rarely applied to historical time periods, such as at Bronze and Iron Age settlements.

Environmental archaeology can be categorized at different operational and conceptual levels. Paleoenvironmental studies are the most common, and have direct and indirect applications to archaeology—primarily as background information for local or regional settlement histories (Brice, 1978; Bintliff and van Zeist, 1982). Such macroscale research is complemented by site-specific studies that document local geographies and settings (with reference to patterns of topography, soils, and vegetation) or directly address site-formation processes (geoarchaeology) or site economies (zooarchaeology and archaeobotany) (Butzer, 1982, 1960, 1959). Finally, a number of regional or local studies also explicitly address such broad issues as subsistence and settlement patterns and resource opportunities, utilization, and management (Butzer, 1981, 1976; Larsen, 1983). At whatever scale, the work emphasizes the complex interdependence of multiple variables, the role of feedback—positive (change enhancing) or negative (change buffering)—shifting equilibrium levels, and the impact of human land use on environment.

Agricultural Origins in Western Asia (c. 10,000 BP). One old and tenacious explanation of agricultural origins is known as the oasis-propinquity theory. It holds that the initial domestication of plants and animals was the result of climatic stress. It is based on the incorrect assumption that glacial-age climate in the Near East was wetter than today and became markedly drier at the beginning of the Holocene or Recent period, in about 10,000 BP. Hunter-gatherers would have been faced with declining game resources and plant foods, as forests were reduced to dry scrub and grasslands to sparse steppe. Confronted with ever-scarcer surface water, people and game would have gravitated to reliable sources of water along more richly vegetated riverine lowlands or scattered oases. There, the enforced proximity of hunter-gatherers with game and residual plant foods should have favored a symbiosis that brought the domestication of plants and animals.

Numerous pollen and geological studies provide a very different picture: glacial-age climates were harsh in the Near East and Mediterranean basin; forests were very rare (widely spaced trees were found mainly at intermediate elevations), with steppic grasslands in what are now subhumid environments, particularly on south-facing slopes in hill country; rivers were more seasonal; and oases were few. Archaeological investigations in northeast Africa show human settlement limited to the Nile Valley (c. 20,000–10,000 BP), with no traces of habitation in the Saharan oases. At the beginning of the Holocene, Saharan climate became moister for several millennia; however, in the highland belt, from Greece and Anatolia to Syria-Palestine and the Zagros ranges, forest recolonization was slow, taking up to fifteen hundred years in the west and more than four thousand years in the east (Bintliff and van Zeist, 1982; van Zeist and Bottema, 1991).

Thus, the hill country of Southwest Asia, where the critical steps to early domestication were taken between perhaps 12,000 and 8000 BP, was overwhelmingly open and grassy. This matches the habitat preferences of the earliest plant domesticates—barley and wheat—which cannot compete in closed woodlands, as well as the first animals to be domesticated—goat and sheep—both adapted to open environments. [*See* Cereals; Sheep and Goats.] If anything, initial domestication of these key plants and animals was facilitated by their wider distribution and greater abundance. This allowed intensive collecting or hunting of the wild forms, and presumably also initial manipulation and experimentation, over a vast area of open, hilly environments (Butzer, 1990, 1982).

Agricultural expansion into the riverine floodplains of western Asia was in fact delayed by several millennia, until agricultural communities first settled the woodlands of the western Mediterranean and central Europe. While forests gradually recolonized the hill country of western Asia, marginalizing that environment, it is more probable that demographic expansion led to agricultural colonization farther afield. After all, woodlands along the Mediterranean coastlines and deep inside Europe were being occupied, implying that people had acquired skills for clearing forests by fire or by stripping leaves from tree branches to reduce the canopy.

Settlement of riverine floodplains demanded similar skills because the areas were partly wooded and required accommodation to periodic flooding.

Between 7900 and 7300 BP (end of the Pre-Pottery Neolithic B) a crisis occurred in the agricultural development of much of the Fertile Crescent. For a time there is very little archaeological visibility, suggesting settlement retraction. When sites reappeared in quantity, there seems to have been an adaptive change between a previously flexible mix of hunting-gathering and herding-farming to a more standardized form of primarily agricultural settlement. Mobility also seems to have been reduced. A climatic crisis is commonly assumed during the intervening centuries, but a fundamental social transformation can be posited: increasing population may have led to greater competition for and pressures on limited resources. On the desert margins of Transjordan, for example, excessive exploitation of trees had previously destroyed the open oak woodlands.

The question of agricultural origins in Southwest Asia illustrates the importance of investigating the changing environment as a context for socioeconomic transformation. Synthesis of a wide range of paloenvironmental information provides insights in systemic terms. The global perspective of independent agricultural origins in other parts of the world, in a broadly similar time range but with distinctive domesticates and in radically different environments, suggests that the evolutionary trajectory of that larger system was related to the dynamism of human culture, not to environmental change.

Desert Adaptations in the Eastern Sahara (c. 9000–4500 BP). In about 9000 BP there is evidence of increasing rainfall, rising water tables, and the formation of numerous ephemeral or semipermanent lakes in the lowlands of the Sahara. There also is higher archaeological visibility after more than twenty millennia. The greater moisture persisted, with fluctuations, and, during the next forty-five hundred years or so, several peoples left a discontinuous settlement record across much of that great desert.

There is a good possibility that the southern margins of the Sahara were an independent center of agricultural innovation; pottery making is verified there by 9000 BP, some fifteen hundred years earlier than in Syria-Palestine. African sorghum and millet were grown in a small, south Egyptian oasis in 8000 BP, with a clear morphological indication that the sorghum was in the process of domestication (Wasylikowa et al., 1993). By then, cattle bones are sufficiently common to suggest domestication, a millennium or more before the appearance of domesticated sheep/goat of western Asian origin: sheep or goats suitable for domestication were not found in Africa, but the wild progenitors of cattle were long indigenous to the Egyptian Nile Valley. [*See* Cattle and Oxen.] Yet, throughout this period, until 6500 BP in Egypt and 4700 BP in central Sudan, archaeology shows that occupation was limited to hunters, fishers, and gatherers. [*See* Hunting; Fishing.]

Climatic amelioration in the Sahara toward 9000 BP created new but modest opportunities for a mobile and precarious subsistence by hunters and fishers, following a number of different trails between waterholes, marshes, and small lakes. The geoarchaeology at several such oases indicates that there was little lag between improving ecological conditions and initial colonization efforts; furthermore, maximum archaeological visibility matches optimal water availability. Final abandonment of a deteriorating location appears to have been delayed, perhaps as people tried to find solutions to growing resource scarcity.

Groups occupying the rich riverine environments along the Nile remained "conservative" in their subsistence pursuits, despite their adoption of pottery and their inevitable awareness of alternative subsistence strategies, such as herding and cultivation (Butzer, 1982). Presumably, fishing, hunting, and plant gathering provided an ample and reliable food supply, with less labor investment. Nonetheless, when agriculturalists did finally appear on the Nile floodplain, their subsistence activities were able to support much larger populations, in greatly expanded and more clearly nested settlements.

By contrast, those groups that moved from one desert oasis to another appear to have been unusually innovative. Their mainstays were hunting, trapping, or fishing, but they also carried seed grains from the Nile margins or the Sahel to new marginal or ephemeral habitats, deliberately or inadvertently propagating such plants. They also somehow controlled and drove cattle from the thickets of the Egyptian Nile into the Sahara to sparse seasonal pastures (transhumance). Ecologically, this is the only way cattle can have survived in the Sahara, given their fodder and water requirements. Such a process will have selected for small and lean stock, quite possibly used for blood-letting rather than milk, in analogy to the practice of Nilo-Saharan-speaking cattle pastoralists in East Africa (verified archaeologically since 4000 BP). Eventually goat/sheep were acquired from southwestern Asia, while leaving no imprint along the Nile; such small stock were much less difficult to adapt to desert transhumance. These pioneers in desert colonization were not the victims of increasing aridity, but, rather, adventurous and innovative groups developing a versatile, adaptive repertoire that has persisted (or was reinvented), in various forms, in Arabia and other arid environments under the guise of nomadic pastoralism. [*See* Pastoral Nomadism.]

There are also some commonalities in lithic technology between the Nilotic hunter-fishers of Egypt and the desert pastoralists and between the pottery traditions of the latter and of hunter-fishers in the central Sudan. More significant is that the lithic assemblage found with the Faiyum Neolithic (the earliest known agricultural group in Egypt—6500–5500 BP) is close to that of hunter-gatherers near the Khargah oasis (7200 BP or earlier) and near the Dakhla oasis (6200–5100 BP). Yet, the Faiyum Neolithic combined fishing (a Nilotic adaptation), wheat and barley planting (Near East-

ern domesticates), and stock raising (a desert adaptation of African and Near Eastern origins). In about 5800 BP at Merimde, next to the Nile Delta, and after 5500 BP at Khargah, similar lithic assemblages incorporated sickle blades, a Near Eastern tradition of long standing. [*See* Merimde.]

To what extent the agricultural traditions in Lower and Upper Egypt that subsequently evolved autochthonously into the predynastic cultures of the Nile floodplain and Delta initially involved information exchange or small-scale population movements is obscure, but Egypt at that time should be seen as an open system with diverging adaptations and increasing interchange. When most of the desert populations (always very small) disappeared from the record (c. 4500 BP), some of those small groups may have trickled into the Nile Valley.

Environmental Crisis (c. 2200 BCE?). Between about 2300 and 2100 BCE, the Aegean world and much of the Near East was engulfed in turmoil commonly attributed to invaders from the Balkans, the Zagros Mountains, the Syrian desert, and elsewhere. From the Balkans to Mesopotamia and Palestine, most urban sites were abandoned, destroyed, or reduced in size. Even where settlement was not abandoned, the archaeological components or the dynasties changed—the end of the Akkadian Empire in Mesopotamia and the Old Kingdom in Egypt (both perhaps c. 2230 BCE). Equated with the end of the Early Bronze II in Anatolia or the Early Bronze III in Palestine, this sociopolitical discontinuity could have transpired within less than a century or been more complex and prolonged. Subsequently, reduced archaeological visibility (e.g., the EB IV in Palestine) may have spanned some three centuries, to about 1900 BCE.

Such apparently synchronous events have led some scholars to invoke a super-regional causal mechanism such as climatic change. Weiss and others (1993), base their suggestion on studies of northeastern Syria (Khabur plains), where wind-borne deposits, arid conditions of soil alteration, and long-distance volcanic ash mark the onset of perhaps three centuries of drier climate—fixed at 2200 BCE, the date of the abrupt abandonment of Tell Leilan. [*See* Leilan, Tell.] It is even speculated that a cataclysmic eruption by an unknown volcano may have caused a "volcanic winter," destabilizing global climate (Courty, 1994).

The evidence for a period of drier climate comes from widely separated locations, but is by no means universal:

1. *Lake Van.* Enrichment of the isotope ^{18}O was experienced by Lake Van near the Anatolian headwaters of the Tigris and Euphrates Rivers (c. 2300–2100 BCE), based on varve correlation and dating from the lake bed (Degens and Kurtmann, 1978). The implication is reduced precipitation in the catchment, and if the dating can be trusted, would argue for a diminution of river discharge in Mesopotamia (Kay and Johnson, 1981), and might help explain increasing salinization and declining crop productivity (2350–1850 BCE), although land-use problems appear to have played a key part in this (Adams, 1981).

2. *Lake Zeribar.* A single pollen profile, from Lake Zeribar in the Zagros Mountains (van Zeist and Bottema, 1991), shows an abrupt decline of oak pollen (by 40 percent), disappearance of maple and willow, and a corresponding increase of grass and composite pollen (c. 2200 BCE). Recovery of the high-elevation woodlands was delayed by perhaps six hundred years. However, Holocene forest recolonization of the mountain ranges around Lake Van (see above) was only briefly interrupted at this time, judging by a core from that lake.

3. *Lake Beysehir.* The pollen profile from Lake Beysehir in southcentral Anatolia offers dubious support for greater aridity in about 2200 BCE (300-cm level, interpolated from carbon-14 dates)—namely, a strong decline of pine and cedar and an increase of grasses; however, oak and ash began to increase steadily at the same time. Equally problematic is the oxidation of pollen in a core from Lake Koycegiz in southwestern Anatolia, perhaps by a temporary drying out of the lake at roughly this time.

Examination of some two dozen other pollen profiles from Lake Urmia (northeastern Iran), Syria, northwestern Anatolia, southern and northern Greece, Dalmatia, and North Africa fails to reveal evidence of a woodland decline or drier ground conditions from about 2300 to 1800 BCE; in general, the period from about 2700 to 1500 BCE was climatically uneventful in these areas, except for scattered episodes of anthropogenic disturbance (Bottema et al., 1990). In Palestine, Lake Kinneret (Sea of Galilee) shows a submaximum of deciduous oak pollen (c. 1900 BCE), as does Lake Hulah (c. 2250 BCE), while ^{18}O readings on dated land snails in the Negev suggest a wetter climate phase (2450–2050 BCE) prior to a rapid shift to essentially modern conditions. Stream behavior in western Asia is ambiguous. The Khabur River indicates a shift to a semiarid, periodic flow regime (braiding, then channel incision) in about 4000–2000 BCE, before resuming a more equitable, meandering flow, by perhaps 1800 BCE (Courty, 1994). In Palestine, Nahal Lachish, near the tell of that name, had a broad, "wet" floodplain from the EB into the MB II period, when slope soils were eroded; only thereafter did the stream cut down its channel and strip away its agriculturally attractive floodplain (Goldberg, 1986; Rosen, 1986).

The only other environmental "event" in about 2200 BCE was in the Nile Valley, where the Old Kingdom state dissolved amid dynastic anarchy and disastrous famines (e.g., c. 2200, c. 2100, and 2002 BCE). Various textual elaborations of failing Nile floods, famine, abandoned farmland, dislocated people roaming the countryside, and even cannibalism illustrate the scope of this disaster (Butzer, 1984). The texts are complemented by information from the Upper Nile region, where Lake Rudolf abruptly switched to a shallower and more alkaline lake (c. 2300 BCE), while the discharge of the Omo River, draining western Ethiopia, reached a minimum shortly after 2200 BCE, before recovering somewhat in about 2150–1950 BCE. That rapid recovery was evident in

the Faiyum Depression in Egypt, where a flood surge filled most of the basin with water in about 2000 BCE. The data, however, support only one interval of Nile failure, during the rule of the Upper Egyptian governor Ankhtifi (c. 2210–2185 BCE).

The available evidence, although scant, suggests that Nile failures did not unleash decentralizing forces and chaos that took almost two centuries to tame. Central authority declined markedly during the sixth dynasty (c. 2380–2230 BCE); during its second half there was progressive economic decline and impoverishment in the capital and some of the provinces, while the aristocracy began to create local power bases (Butzer, 1984). In an even broader perspective, two centuries of political fragmentation preceded any Nile-related disasters, although these may have triggered the social unrest that ultimately led to a reassessment of traditional values.

Because periodic Nile failures could have begun as much as a century earlier, and the destruction of Byblos by invaders had already taken place within the reign of Pepi II of Egypt (died c. 2250 BCE), it is helpful to look at another agricultural crisis (c. 1170–1000 BCE) that may have brought down the New Kingdom (Butzer, 1984). [*See* Byblos.] Spiraling and wildly fluctuating food prices are documented, peaking in 1130 BCE. There were food riots; the temple granaries were empty, in part through embezzlement; and the countryside was increasingly abandoned because of overtaxation and banditry. However, corruption had already been rampant before the subsistence crisis began; two foreign invasions (1207 and 1177–1171 BCE) took place prior to the rise in food prices; and two bouts of civil war were not reflected in food-price fluctuations. This suggests that although environmental stress and the resulting economic crisis were implicated in the disempowerment of the last New Kingdom pharaohs, the sociopolitical processes of devolution were far more complex. Indeed, this crisis period with its foreign invaders and widespread political discontinuity in the Near East (the fall of the Hittite Empire) had been underway some thirty years before Egypt plunged into ecological crisis.

A synoptic overview of the environmental evidence for the crisis of 2000 BCE suggests a trend to aridity only within the area between the Euphrates River and the Zagros Mountains. [*See* Euphrates.] Syria-Palestine, Greece, and northwestern Anatolia, as well as northwest Africa, did not experience greater aridity; any anomalies favored a moister climate and forest expansion or recovery. Even within the region possibly affected by drought, the Khabur River had documented an increasingly semiarid stream regime since 4000 BCE, and in the Zagros forests expanded steadily until about 2200 BCE. Climatic trends were not in phase, and whatever environmental crisis there may have been, or however severe it may have been locally, was limited to a circumscribed area.

As the relevant archaeological record becomes more tangible, it suggests great circumspection in interpretating episodes of urban decline and political simplification. Thus, in Palestine (Miroschedji, 1989), EB III urban sites were largely destroyed or abandoned between 2250 and 2200 BCE. However, ruralization rather than depopulation followed, and during the next three or four centuries, the Negev and Sinai were the focus of countless small settlements. Only at the end of EB IV (c. 1850 BCE) were these desert areas abandoned—until the Roman-Nabatean period. [*See* Nabateans.] Even on the Syrian Euphrates renewed urbanism appears as Tell Leilan declines. The inherent complexity of crisis periods may, thus, stem from the systemic interdependence of larger political entities; the latent, sociopolitical instability of some; and the advantages of technological, military, or adaptive innovations within the larger region (which also applies to hypotheses invoking climate to explain the end of Mycenaean and Minoan civilization after 1200 BCE and the political devolution of Mesopotamia in the eleventh century BCE.

Cultural Transformation of the Landscape. More productive than climate and migration as explanatory models is the human use of and impact on environmental resources. While Near Eastern hunters and gatherers (20,000–10,000 BP) utilized natural resources in increasingly complex ways, their environmental impact probably was both localized and ephemeral. Agricultural land use is another matter, involving vegetation clearance, soil manipulation, irrigation works, and potentially heavy grazing. [*See* Irrigation.] With the emergence of the high civilizations, tied to dense rural populations and growing urban centers, resource pressures and ecological impacts take on yet another dimension, including an insatiable demand for timber and fuel wood. This is fundamental to understanding the geographic stage on which socioeconomic and political history was played out in the Near East.

The single most important tools currently available to identify and gage human impact on the environment are palynology and the identification of botanical and animal remains from archaeological sites. Pollen cores can provide a continuous trace of composite ecological change, commonly from lakes or swamps at some distance from settlement centers—primarily a macroscale approach. Paleobotanical remains from sites provide more discontinuous records, from close proximity to settled areas. They emphasize plants and animals of economic importance and tend to offer a more finely textured picture, complementing that of the pollen profiles that document change through time (Van Zeist and Bottema, 1991). Equally important is evidence for human impact on the soil mantle. Erosion leaves thinned soil profiles or exposed rock; eroded soil material accumulates downslope as hill wash or is swept away by stream floods, to be deposited on floodplains farther downstream.

Dry-Farming and Pastoralism. The impact of Neolithic agricultural or pastoral land use was localized and mainly ephemeral, exerted primarily through the use of fire

to clear woodland for cultivation and perhaps also as pasture. Subsistence was still heavily dependent on hunting, and even on wild plant foods. This does not preclude almost complete clearance of woodland in proximity of occupation sites—whether for cultivation, construction timbers, or fuel. Neolithic dispersal was also directed toward more arid environments and rudimentary irrigation was practiced in some places. Noteworthy is the first settlement of the deltaic wetlands of southern Mesopotamia a little after 7000 BP, where people probably practiced simple floodwater farming.

There is no correlation between cultural designations such as Neolithic and permanent or prominent settlements. Some of the latter, with rectangular houses with stone foundations, predate the Neolithic, while in parts of the Mediterranean basin some agricultural peoples moved between caves and clusters of seasonal huts as late as 2000 BCE. It also is not self-evident that mobile hunter-pastoralists with supplementary seasonal farming had less ecological impact than clusters of farming villages. Sedentary farmers could not persist indefinitely in a particular area without developing conservationist strategies based on cumulative experience. Long-term success is predicated on minimizing both long-term environmental damage and short-term subsistence risk (Butzer, 1996). That may be easy enough on level land with productive soils, but when expanding populations required the cultivation of fragile soils on steeper hill country (e.g., olive groves or vinyards on terraced hillsides), long-term productivity could only be assured with considerable and sustained labor input. [*See* Viticulture.]

The archaeological record appears to approximate such a model. Agricultural landscapes with prominent villages are found scattered across stretches of fertile, level land from Mesopotamia to central Europe by 5000 BCE. Permanent hillside cultivation seems to have been associated with the expansion of olive and grape orchards beginning as early as 3500 BCE in Syria-Palestine and a millennium or so later in Greece. This Mediterranean-style pattern of land use, emphasizing arboriculture, emerged in a subhumid environment with mild winters and sustained large populations during later parts of the Bronze Age and again in Hellenistic-Roman times. It did not lend itself well to irrigated desert in arid settings—despite their best efforts, the Egyptian elite had to import considerable olive oil and wine from Syria. A similar form of land use did not develop in the hill country east of the Euphrates, at least not until Hellenistic times and on a local scale. There, agriculture tended to remain on the valley floors, except in eastern Anatolia and the Caucasus, where orchards of fruit trees substituted for olive groves and vinyards.

Pollen records suggest that deforestation or other vegetation disturbance became increasingly common in the hill country of the Near East and Greece after about 5000 BCE, before the establishment of Mediterranean-style farming (Butzer, 1996). This can best be attributed to early pastoral activity, which subsequently became more directly linked to agricultural pursuits—the same villages farmed, planted orchards, and moved herds of livestock up into the hills and back in a seasonal round. This promoted a more judicious form of pastoral land use, favoring greater ecological stability. Slowly, the initially small patches of planted fields, pastures, and secondary woodland expanded until, by the Late Bronze Age, about 1500 BCE (Bottema et al., 1990), the warm-temperate hill country west of the Euphrates exhibited large tracts of well-tended agricultural landscape.

The ecological record is by no means one of harmony between land use and the environment. Episodes of destructive impact were commonly limited to land abandonment, either in the course of political devolution, or in the wake of intrusive populations with a greater emphasis on pastoral herding (Butzer, 1996). New pastoral colonists from humid, northerly woodlands probably lacked experience with the more fragile ecology of an unfamiliar Mediterranean environment. One such period was the Early Iron dark age, but impact on vegetation was not synchronous: 1500–400 BCE in Epirus; 1100–1000 BCE in Macedonia; and 1000–900 BCE in southwestern Anatolia. Much the same happened in medieval times: in about 400–1100 CE in Palestine; 1200–1350 CE in southwestern Anatolia; and 1000–1500 CE in Epirus and North Africa—involving Vlach and Slavic pastoralists or Arab bedouin. Local land-use histories have varied, and broad generalizations are prone to be simplistic. Overall, the marginal agricultural lands of Syria-Palestine were abandoned at different times, in part as a result of Byzantine-era insecurity, in part because of economic decline, following the shift of power from Umayyad Damascus to ʿAbbasid Baghdad after 750 CE. [*See* Umayyad Caliphate; ʿAbbasid Caliphate.] It was this abandonment, which persisted into the 1920s, that gave Huntington the impression of climatic deterioration.

The location of major pollen cores at some distance from major urban sites limits information on whether large and expanding towns may have so depleted their environmental resources as to contribute to local population decline or even abandonment. A record of discontinuous but repeated soil erosion from Hellenistic to late Byzantine times in the Aegean region suggests that this is at least a possible scenario. The irrigated floodplains of the arid Near East present a distinctive land-use trajectory, with different environmental repercussions.

Nile Valley Irrigation. Agricultural settlements began to proliferate in the Nile Valley in about 4000 BCE. Preferred site locations gradually shifted from the desert edge to the naturally raised levees running along the margins of the Nile and its secondary channels. The Nile floodplain was subdivided into shallow basins, as a result of the intersection of various active and older levees (Butzer, 1976). These basins flooded naturally at the time of annual inundation (August or September), the excess water draining back out into the channel six to ten weeks later, as the flood waned. The clayey soils retained sufficient moisture to bring a crop

seeded in October or November to harvest in February or March. This natural pulse of irrigation was adequate to cultivate extensive floodplain tracts without artificial irrigation. Technological intervention was incremental, first by means of controlled breaches in the levees that regulated the influx as well as outflow of water from the basins. Short canals were eventually built to distribute water within basins that were subdivided into more manageable units by transverse earthen dikes. The bucket-and-lever device, known in Arabic as a *shaduf,* was introduced about 1500 BCE to allow the small-scale, mechanical lifting of water for vegetable and pleasure gardens. [*See* Gardens, *article on* Gardens in Preclassical Times.] Large-scale water lifting was only possible with the animal-drawn waterwheel, or *saqiya,* however, first verified in Ptolemaic times.

Human modification of the Nile Valley, thus, took place gradually, beginning in predynastic times. During the Old Kingdom, fruit orchards were widely planted on new estates in the southern delta, with vineyards placed along the delta margins (Butzer, 1976). Middle Kingdom development apparently focused on controlling the quantity of water entering the Faiyum Depression, where settlement was probably expanded. The New Kingdom and late periods saw land reclamation in the delta marsh fringe and greater irrigation control in the less manageable, larger basins of Middle Egypt. There never was a tall, dense riparian forest, and from the earliest times, acacia represented the key local timber; productive groves of date palms probably soon dominated the riparian fringe. Finally, salinization was not a problem in flood basins flushed on a regular basis. Thus, the Nile Valley and Delta were not degraded, but progressively converted into a carefully tended, cultural landscape that was indefinitely sustainable.

Mesopotamian Irrigation. The alluvial and deltaic plains of Lower Mesopotamia were different from those of Egypt (Adams, 1981). The narrow Tigris floodplain is entrenched well below the alluvial land created by the Euphrates, and the Tigris was therefore quite difficult to harness for more extensive irrigation. Whereas the Nile floods were modulated, to allow winter cultivation (as elsewhere along the Mediterranean coastlands), the Euphrates was erratic and often violent. Its floods reflected the snow cover in eastern Anatolia, and when and how quickly it melted. Sweeping down a much shorter trajectory, floods arrived between late April and early June, breaking out from the shifting channels to drain into a vast marshland, instead of filling shallow basins before emptying back into the main river. Simple floodwater farming had only limited scope, and the floods were hazardous to settlements. Accumulating across broad, marshy zones in the lower delta, dissolved salts were retained and built up in the soil and groundwater. In addition, the Euphrates silts included less fertile clay than did the Nile muds.

Mesopotamia, therefore, required substantial modification and costly maintenance to achieve productive, irrigated landscapes. The main channels had to be tapped by long feeder canals that fanned out across the plain and replaced former flood breaches and temporary overflow channels. These required massive reconstruction and cleaning out after most flood seasons, before labor would be available for planting crops downstream; by then, however, water volume had sharply diminished. This may explain why traditional irrigation farming could not take advantage of a possible postflood crop season, delaying planting until river discharge slowly increased again in October or November. One advantage of an almost flat plain was that canals could tap river water even at an intermediate stage of flow. The disadvantage was that regular incremental tapping of canal water implied evaporation of slightly saline water in the fields, creating salinization over time.

Effective water control in Mesopotamia consequently meant a quantum change in potential agricultural productivity; it also required an elaborate canal network and costly labor input (Adams, 1981). Such a system was probably inaugurated by Early Uruk times (c. 4000–3500 BCE), and the transformation of natural Euphrates tributaries into a great network of artificial canals completed by 2000 BCE. Maintenance could not be guaranteed during periods of political devolution, however, resulting in periodic abandonment of much of the arable land. Overirrigation further led to salinization of the lower ends of the irrigation system, possibly favoring an upstream shift of the prime agricultural lands and, with them, the clusters of population. Equally so, this upstream shift may have enabled protection of towns from destructive floods by the new technology of massive rings of dikes.

The conversion of Lower Mesopotamia into an agricultural landscape was a less harmonious affair than in Egypt. The system was more fragile, its operation discontinuous, and its ecological impact negative. Unlike Egypt, which remained a breadbasket without interruption, most of Lower Mesopotamia lay waste from about 1000 CE until after World War I. Furthermore, the creation and management of this system required either centralized control or unusual levels of cooperation among the various polities embedded within it. That assigned a major role to mediating "bureaucracies" and enhanced the dependency of individual cultivators—unlike in Egypt, where irrigation was managed locally, well into the last century.

Tells. The potential to produce a detailed site history exists at excavations where archaeologists and environmental archaeologists collaborate on-site. In the Near East, a tell, or artificial hill, typically formed by the residues of mud (adobe) bricks used across successive occupations to build houses, public buildings, and fortifications, is an anthropogenic landform that can be in excess of 50 m deep (Rosen, 1986). It usually incorporates between 1 million and 10 million cu m of sediment. Many of the larger abandoned tells

on the plains of northern Syria are sufficiently prominent to be visible on conventional satellite imagery. Similar town sites on the Nile floodplain are equally large, but their forms are low and less conspicuous, as a result of protracted alluviation of the surrounding floodplain.

Such mounds record millennia of settlement history, documented not only by architectural structures and archaeological inventories, but also by a detailed sedimentary record that reflects the use and disposal of a perishable building material (Butzer, 1982). Individual houses are built, eventually collapse, and must be rebuilt with new mud bricks, as older debris is reworked into a prepared "floor." New quarters of a town grow, while old ones decay. Middens of highly organic, ashy or sandy refuse accumulate in disused rooms, abandoned houses, or decaying quarters. A whole town is destroyed or abandoned and a new one is raised on its ruins. As sediment continues to accumulate, with little net loss of material, the mound progressively increases in elevation. Each occupation phase included multiple levels of house floors, each structure partially filled by several thin strata. These levels not only record the progression of local construction and collapse, or site growth and decay, but also provide details about each room's original function, as well as the physical processes of microaccumulation.

Until very recently, archaeologists limited their attention to the three-dimensional architectural matrix of mounds and the artifacts therein. As a result, no tell has yet been comprehensively studied by a geoarchaeologist, despite a number of exploratory efforts, to identify the changing nature of domestic occupation, microenvironmental dynamics, and demographic trends. [*See* Demography.] The processes of chemical alternation or enrichment within a site, or the agencies of contemporary or subsequent deposition of erosion, might highlight a climatic signal.

A particularly useful link between the tell and its environmental context is provided by mud bricks (Rosen, 1986). Their texture, color, and calcium-carbonate content are diagnostic markers that vary remarkably from site to site. Even within a single site, mud bricks can identify the different materials used for monumental structures and simple houses, or clay sources quarried at different times—including some sources exposed, buried, or exhausted during specific periods. Tell-derived hill wash from different ages also tends to be distinctive and traceable to specific microstratigraphic units exposed in an adjacent alluvial profile. That, in turn, may allow correlation between settlement and landscape histories, in regard to changing human use of, and impact on, the environment.

The point of this example is that Bronze Age and historical settlement sites remain the most neglected arena of potential research in Near Eastern environmental archaeology. The tons and tons of sediment excavated from such sites every year could be used to richly complement standard archaeological interpretation. But in the past it has simply been thrown out, without the excavators drawing in the requisite geo-archaeological expertise.

Perspectives. Ideally, the scope of environmental archaeology goes well beyond data gathering to explore fresh vistas for major issues. In terms of the rise and fall of empires, for example, the most tangible variables are political centralization/decentralization, economic expansion/dissipation, and demographic growth/decline. Two of the questions to be answered are which was dependent and which independent and whether change was externally or internally stimulated. A systemic analog, instead of a causality model, allows for external inputs and breaking away from biological systems centered on energy flows (e.g., economic and geopolitical priorities). Systemic thinking is primarily heuristic, designed to enhance sophistication in analyzing change, rather than to predict or retrodict outcomes (Butzer, 1990). If indeed a climatic anomaly is demonstrated, the questions should be who was affected, where, and how; what risk-minimizing strategies were in place; what experience was available to cope with subsistence shortfalls or to adapt to a recurrence of such a crisis; and which institutions could be mobilized to mitigate social stress? Questions might next shift to the resilience of the economic and political structures of a particular state under external or internal "siege." Answers are usually difficult to provide, but the questions ideally upgrade the sophistication of research designs and the categories of empirical investigation.

Human populations have always interacted with their environment in multiple ways, using it, shaping it, and devising alternative ways to bend its constraints—but also abusing and sometimes degrading it. At the core of human history is a long tradition of persistence in the face of adversity and resilience in the throes of crisis. Especially in an era with increasing interest in the impact of long-term land use on sustainability or ecological equilibrium, environmental archaeology has a unique capability to examine such issues empirically (Butzer, 1996). Five millennia of intensive agriculture and town life in the Near East provide an unusual opportunity to monitor human impact on the environment.

[*See also* Computer Mapping; Ethnoarchaeology; Ethnobotany; Geology; Historical Geography; New Archaeology; Paleobotany; Paleoenvironmental Reconstruction; *and* Paleozoology.]

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KARL W. BUTZER

EPHESUS, major ancient Greek city now in western Turkey, situated on the western coast of Asia Minor (37°50′ N, 27°15′ E). There has never been any question about the site's identification. In the Late Bronze Age the name of the site was perhaps Apasa, the capital of the empire of Arzawa. Under the first Hellenistic king, Lysimachos, the town was called Arsinoeia, but after his death the traditional name was maintained. During the Byzantine period, after the main town was abandoned, the site around the hill, east of the Artemision (temple sacred to the goddess Artemis), was called Ayasoluk, which nowadays is the Turkish town of Selçuk.

Ephesus and the surrounding area have been settled since the Bronze Age. During Mycenaean times the hill of Ayasoluk and the Artemision showed remains of occupation. Until now little was known about the earlier Ionian migration period, but since the eighth century BCE, Ephesus has played an important role within the Ionian civilization. Remains below the lower agora of the Roman town and a peripteros in the central base of the Artemision underline the specific significance of the site (see figure 1). Other than the Artemision, little is known about the remains of the site in the sixth and fifth centuries BCE. In the fourth century the temple of Artemis remained the center of activities, but after a new town was founded by the *diadoch* (follower of Alexander the Great) Lysimachos, Ephesus began to flourish. The new urbanization was the basis for the development of Ephesus into a metropolis in the Roman empire.

Although Ephesus has been visited by many people since the time of Cyriacus of Ancona, one of the first scholarly travelers (1446 CE), archaeological investigations did not begin until the second half of the nineteenth century. John Turtle Wood began excavating there in 1864 and continued his archaeological work until he discovered the Artemision in January, 1870. Some of the marbles that he excavated can now be seen in the British Museum. In 1904 and 1905 the British Museum undertook another excavation in the Artemision and David G. Hogarth discovered the earlier strata of the sanctuary. The Austrians started their work at Ephesus in 1895, an ongoing undertaking that has been interrupted only by the two world wars. The emphasis of the Austrian research was on the Roman town; however, since 1965 the Artemision has also been included in the activities.

The Artemision. The temple of Artemis is situated outside the Roman town in the plain, east of the hill of Ayasoluk, and its remains lie partly in the groundwater. In the center of the temple a *peripteros* (colonnaded rectangle) 9.5 m (31 ft.) wide and 13.3 m (43.5 ft.) long with columns arranged four by eight, was excavated (see figure 2). Within the cella (inner part) is a rectangular base surrounded by six column bases of green schist. Beneath it a hoard of jewelry was found, perhaps the necklace for the *xoanon* (statue in wood of the goddess). The whole construction is to be dated in the eighth century. The eastern part of the cella was reused in the middle of the sixth century as a foundation for a shrine in marble, perhaps the shelter for a new cult statue. Therefore the coins of electrum (alloy of gold and silver) found below its floor give a terminus ante quem of around 560, the year in which Croesus gained political power.

Two other large constructions, Temple C, as designated by Hogarth, in the center of the temple, and orthogonal to

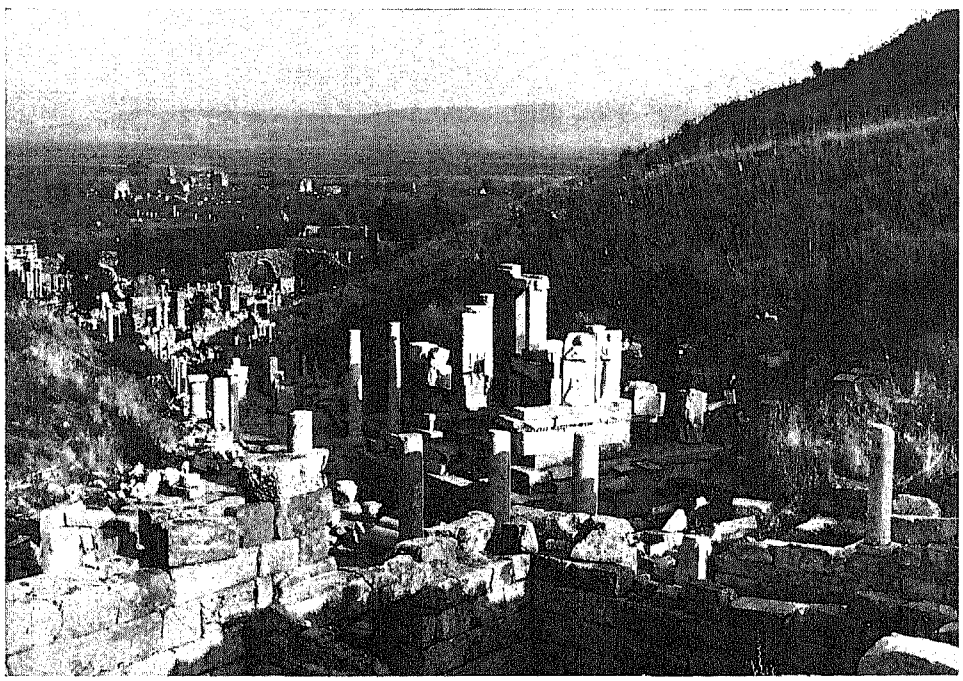
it the so-called *hekatompedos* in the west, existed before the first big marble temple was erected. Designated after an early temple to Athena on the Acropolis in Athens, the *hekatompedos* (meaning "one hundred feet long" in Greek) was the first construction at the site made with marble and measured 100 Ionian feet long. Temple C had *antae* (pilasters) on the west side. This arrangement implies that around 600 BCE two main cults existed at the site. Numerous votive offerings in gold and ivory, some of them female figurines, as well as the animal bones of the sacrifices, emphasize the special character of the early cults at the site. Pigs were especially common as a sacrifice, more in the central base than at the other locations; however, donkeys, dogs, bears, and lions were also used as a sacrifice to the goddess. Even human sacrifices, called *pharmakos* by the Lydian poet Hipponax, are archaeologically evident.

The great marble temple, also called the temple of Croesus, was 59.9 m (194.5 ft.) wide including the *krepidoma* (solid base of the building); however, its length is not yet known. Eight of the thirty-six Ionian sculptured columns, which stood at the entrance, and the *sima* (gutter) in marble, which was covered by a sculptural frieze, were some of the remainders from the temple, which was burnt down in 356 BCE. This temple was rebuilt with the same dimensions but on a higher level. Once again some of the column pedestals and drums were sculptured. Pliny tells us that 127 columns existed and of them thirty-six were sculptured. Some of the remains of both these columns and the archaic columns are now in the British Museum. With the erection of the marble temple of Croesus all earlier cults were suppressed, and the worship of Artemis alone was established. An archaic sacrificial area, consisting of a ramp and two bases with a water pipe made of lead, was surrounded by a courtyard, axial to the temple of Croesus. Their foundations were reused in the fourth century, and a new altar with a screen wall was built on them. This screen wall was composed of a frieze on a socle and was topped with an Ionian colonnade. The cella of the temple was reused as a church in early Byzantine times.

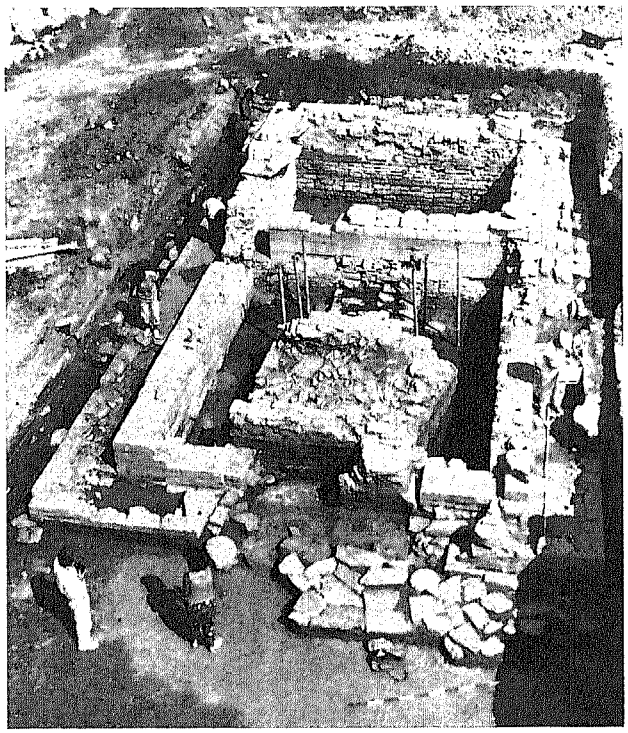
Hellenistic and Roman Town. Lysimachos of Thrace (322–281) founded a new city between the two hills Panayirdağ and Bülbüldağ. It was designed in a rectangular grid system that was oriented to the axis of the Artemision. The Embolos (Gk., "wedge," in general also late antique streets) was not adapted to this hippodamic (rectilinear) system, but instead, it used the archaic processional road in the valley between the two hills. The new urbanization included an archaic settlement, which was probably the ancient town Smyrna, at the valley's entrance. The town walls enclosed a big area that went along the ridges of the two hills.

During the Roman times the Hellenistic urbanization was completed. Some of the main constructions included a sheltered harbor north of the Bülbüldağ and the water supply from the surrounding mountains to the town. A procession road partly covered by the sophist and philosopher Damianos led around the Panayirdağ to the Artemision.

Temples. Many shrines for the cult of the emperors existed in the Roman towns, such as a twin shrine perhaps one



EPHESUS. Figure 1. *The Roman town.* View from above the embolos with the monument of Memmius in front. The harbor gymnasium can be seen toward the rear. (Courtesy A. Bammer)



EPHESUS. Figure 2. *Peripteros in the Artemesion.* Eighth century BCE. (Courtesy A. Bammer)

for the Divus Iulius and the other for Dea Roma (Dio Cassius, 5120.6) near the Prytaneion at the upper agora, a temple for Domitian and Titus (*Die Inschriften von Ephesos* [*IvE*], nos. 232–242, 1498, 2048) south of the courtyard of Domitian, a small temple for Hadrian at the Embolos, built by C. Quintilius (*IvE,* no. 429), and a huge temple in Hadrianic times, maybe the Olympieion (Pausanias, *Periegesis* 7.2.6) at the harbor. Sanctuaries for non-Greek gods are still more difficult to identify, but at the upper agora stood a temple, possibly for Isis (or Dionysos?) and a sanctuary, perhaps for Serapis, was discovered west of the lower agora.

Gymnasia and Baths. Because gymnasia needed much space, two of them were built near the northern and eastern city wall, two in the plain between the theater and the harbor, one east of the upper agora and only one, the baths of Varius, later restored by Scholastikia, at the Embolos in the center of the town (*IvE,* nos. 431, 453, 500, 1313–1315, 3008). Most of the gymnasia were constructed in the second and third century CE, and all of them were restored up to the fourth and fifth century.

Fountains. Most of the fountains stood in the upper part of the town, near the upper agora, the courtyard of Domitian, and the Embolos. A fountain with a big niche was constructed by the proconsul Calvisius Ruso in honor of the emperor Domitian (92 CE), and then another one was built west of the Monument of Memmius. Along the Embolos stood the *hydrekdocheion* ("water castle") of Trajan (*IvE,* nos. 415–416, 419, 424, 435–436, 4249), and near the street to the Magnesian gate another fountain for the same emperor was erected. South of the upper agora a semicircular water container was built, and at the southwest corner of the upper agora stood the *hydrekdocheion* of Laecanius Bassus (*IvE,* nos. 232–421).

Public Squares and Administrative Buildings. The upper agora had a political connotation. Its northern front was covered by the basilica with three naves, sponsored by C. Sextilius Pollio and his wife, Ofilia Bassa (*IvE,* no. 404). It was decorated with bull-head capitals on the inner colonnade. Behind it stood the *prytaneion* (headquarters of the city administrative body) with the sanctuary for Hestia, which in late antiquity was decorated with heart-leaf columns.

The lower agora seems to have served more for commerce, but a Doric stoa on a higher level at its eastern edge had perhaps also an administrative purpose. The agoras and main streets were divided by arches and gates. In late antiquity the public squares, like the agoras, were built over by private buildings. Their function was taken over by larger streets with colonnades like the Arkadiane from the theater to the harbor or the stoa of Servilius to the stadium.

Private Buildings. Private buildings were on the slopes of the Panayirdağ and the Bülbüldağ, but only two *insulae* (squares surrounded by streets) south of the Embolos have been completely excavated. They are composed of flats lying on several terraces. The dwellings themselves were mostly composed around a courtyard, often a peristyle. The walls of the rooms were decorated with paintings and marble revetments. Among the paintings scenes of dramas and comedies of Euripides and Menander should be mentioned. The floors were worked in mosaics. Remains of the furniture in bronze and ivory have also been found. The decorations as a whole belong to the most outstanding in Asia Minor.

Heroa and Tombs. Among the tombs outside the city wall, only one along the street to Magnesia, which today is beside the street to Aydin, has been excavated, and it has the form of a *tholos* (beehive-shaped structure). Within the city wall the monument of Pollio, the sponsor of the aqueduct over the River Marnas and the basilica is known. At the courtyard of Domitian, the monument for C. Memmius, a grandson of Sulla (*IvE,* no. 403) in the form of a tetrapylon with niches at the same place, was erected around 51 BCE. The octagon, a grave for a maiden, perhaps Arsinoe IV, killed by Cleopatra VII, stands at the Embolos. Next to it another *heroon* (shrine for a deified deceased person) is situated, which may have been built by Androklos. At the end of the Embolos the library of Celsus Polemaeanus (*IvE,* no. 5101) erected around 117 CE was built over the sarcophagus of its sponsor.

Churches in Late Antiquity. Smaller churches and chapels were built all over the town, one in the northern wall at the stadium, another one into the gymnasium close to the eastern city wall. The biggest church was the church of Holy Mary in the harbor area perhaps used for the council of Ephesus 431 CE. The basilica of St. John at the hill of Ayasoluk was first built in the fifth century, then rebuilt under Theodosius in the sixth century. Two churches were built into the Cemetery of the Seven Sleepers at the east side of the Panayirdağ. Finally, the church in the courtyard of the Artemision must be mentioned, also one of the largest and earliest churches.

Sculpture. Although Ephesus did not have a sculptural school like the one at Aphrodisias, sculptures played a great role in decorating buildings. The richly decorated Artemision has certainly been a model. Also of great importance are the Statues of Amazons dedicated in the fifth century to the Artemesion but only conserved as copies from Roman times. Androklos, the mythical founder of Ephesus, is often represented. For instance, he is represented in a frieze at the *heroon* near the octagon, in the frieze of the temple of Hadrian, and in the sculptures of the fountain for Trajan. At the end of the Roman republic the monument of Memmius was highly decorated with caryatids at the pillars and officials and soldiers on the surrounding frieze on top of the arches. The facade of the substructure of the temple of Domitian was decorated in the second floor with male and female barbarians. In the *prytaneion* three statues of Artemis Ephesia have been found. The library of Celsus was decorated with the allegories of the virtues of Celsus. However, the most important frieze is that of the so-called monument of the Parthians with battle scenes and the adoption of Lucius Verus. The foundation of this important altar still has to be identified.

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ANTON BAMMER

EPHRAIM, SURVEY OF. *See* Southern Samaria, Survey of.

EPIGRAPHY. *See* Inscriptions.

EQUIDS. The horse, ass, and onager, all members of the genus *Equus,* family *Equidae,* order *Perissodactyla* (odd-toed ungulates), are found in the ancient Near East both as wild and domestic stock. The equids were secondary domesticates—chronologically later additions to husbanded sheep, goat, cattle, and pig—apparently more valued for their labor than for meat, milk, fiber, or hides. The wild ass, *Equus africanus,* is known from Nubia and the eastern desert of Egypt; it recently was identified in southwest Asia. Previously thought to have been domesticated only in Egypt, it now appears that this could have occurred in the Syro-Arabian region as well. Remains of the domestic ass, *E. asinus,* appear in fourth-millennium deposits in both areas. Among the earliest remains from Israel are those in Early Bronze I–II levels at Arad. In all periods after the beginning of the second millennium BCE, the ass was the most common equid, used for plowing and as the primary beast of burden.

Remains of caballine wild horse, *E. ferus,* are known from Pleistocene sites in the Levant. Once thought to have disappeared from there at the end of the Ice Age, recently identified remains from a Chalcolithic deposit in the northern Negev have provisionally been identified as *E. ferus.* This would mean that the species persisted later into the Holocene and farther south than previously thought. Current opinion on the domestication of the horse, *E. caballus,* places it on the Eurasian steppe in the late Neolithic. From there it spread to various regions, reaching the ancient Near East in the first half of the third millennium. The earliest archaeological evidence places the domestic horse in Mesopotamia in about 2300 BCE. The domestic horse in Israel is noted from a slightly earlier context, again from Early Bronze I–II levels at Arad. [*See* Arad, *article on* Bronze Age Period.]

In greater Mesopotamia the onager, or half ass, *E. hemionus,* ranged from the Mediterranean to the Caspian Seas.

During the Neolithic, according to evidence from such sites as Umm Dabaghiyeh in Iraq, the animal was hunted for its meat and skin. It was once thought that the onager had been domesticated in Mesopotamia, but recent summaries of the philological, osteological, and behavioral evidence make clear that onagers were and are intractable. Onagers were used as studs to produce hybrids with donkeys during the early dynastic period in Mesopotamia. However, this practice seems to have died out with the arrival of the horse. Mules (hybrids produced by crossing a horse with an ass) have been attested on the basis of bone finds; the earliest are from Iran at the end of the third millennium BCE.

Equids figured in ritual activity. In Mesopotamia, equids were interred with humans and even wheeled vehicles, beginning in the late fourth and continuing until the first half of the second millennium BCE. Among the western Semites, as documented at Mari, asses were sacrificed to conclude a covenant. During the Middle Bronze Age both asses and horses were buried by western Asiatics in southern Canaan and the Egyptian Delta in ritual contexts. At Tell el-'Ajjul, near ancient Gaza, horses and asses were interred with human remains. At the Hyksos capital of Avaris in the Delta, asses accompanied some human burials. This was repeated at other sites in the southern tier of Canaan and the Delta as well. The Canaanite material also may have been sacrificial meals, for many of the equid skeletons are missing limbs or pelvic parts. At Tell el-'Ajjul and nearby Tell Jemmeh in southern Canaan, equids were also used as foundation deposits. In Egypt, outside the time and sphere of Asiatic influence, equids were occasionally interred with humans as part of the great Egyptian preoccupation with providing familiar and necessary items for the deceased's afterlife. [*See* 'Ajjul, Tell el-; Jemmeh, Tell.]

Throughout the ancient Near East, horses were always associated with elite classes, most often in their capacity to draw light chariots and, later, in the development of mounted cavalry. The equipment used to handle equids seems to have derived from that used for cattle. The earliest true bits appear in the sixteenth century BCE, but earlier evidence of mouth gear is known from marks left on teeth. Because they conferred considerable prestige on their owners, horses were highly prized. The horse is one of the few animals for which there is a demonstrated ancient interest in selective breeding. Horse texts from second-millennium Nuzi record genealogies, a parallel component of modern breed maintenance. [*See* Nuzi.] Mid-second-millennium Ugaritic texts include a discussion of veterinary issues in horse husbandry.

[*See also* Animal Husbandry; Cult; Ethnozoology; Leather; *and* Paleozoology.]

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PAULA WAPNISH and BRIAN HESSE

'ERANI, TEL (also 'Areini; Tel Gath), site located on Israel's southeastern coastal plain, on Naḥal Lachish (Wadi Qubeiba), at the twenty-fourth kilometer of the historical Ashkelon-Hebron road, north of the modern town of Qiryat Gat. The tel contains an acropolis and a high and low terrace. It is 60–90 acres in size and 120–152 m above sea level. Although the site has been identified as Libnah by Claude R. Conder and H. H. Kitchener, as Gath of the Philistines by Hermann Guthe, as *mmšt* of the *lmlk* impressions and as Eglon by Shmuel (1958, p. 276; Yeivin 1961 p. 10), and as Makedah (Kallai, 1986, p. 381) it still lacks a solid identification. Its Hebrew name derives from the tomb (Ar. *weli*) of Sheikh Aḥmed el-'Areini that stood on the acropolis (area E).

Victor Guérin visited the site in 1863, Conder in 1875, and William Foxwell Albright in the 1920s. Yeivin and Shalom Levy carried out six seasons of excavations from 1956 to 1961, on behalf of the Israel Department of Antiquities and Museums, with the participation of Antonia Ciasca and Gherardo Gnoli of the Istituto Italiano per il Medio ed Estremo Oriente in Rome in the last three seasons. In 1985, 1987, and 1988 Aharon Kempinski and Isaac Gilead excavated in area D-II on behalf of Tel Aviv and Ben-Gurion Universities (Kempinski and Gilead, 1991; Kempinski, 1992; 1993). Smaller excavations and inspection work at the southern part of the site were undertaken in 1960 by Ephrat Yeivin (area Y), in 1966 by David Ussishkin (area U), in 1983 by Arieh Rochman-Halperin (area R), and in 1994–1995 by Eliot Brown and Edwin C. M. van den Brink (area O), on behalf of the Israel Antiquities Authority (reports are in the Antiquities Authority archive).

The excavation results are mainly Yeivin's. More than thirty-two strata were observed, but only preliminary reports have been published. Yeivin's independent sequences (areas A/G, D) are reported here out of necessity; Yeivin's and Kempinski's interpretations differ on several points. The analysis of the Early Bronze and Iron Age finds is not yet complete, so that the following stratigraphic and chronological picture is provisional, especially regarding Iron II.

Chalcolithic Period. No architectural remains were exposed for the earliest settlement (stratum pre-XII [Brandl, 1989, p. 365, n. 4], areas D and D-II). Its finds were recov-

ered in later contexts and include basalt fenestrated bowls and pottery cornets.

Early Bronze Age I. Strata XII–IV in area D and strata D to early B in area D-II reflect the most important period at the site, when it was the center of the Egyptian colonization of the coastal plain and lowlands of Canaan and reached its greatest size (Brandl, 1992). [*See* Canaan.] According to the Canaanite pottery, the lower four strata belong to the earlier part of the period and the upper five to its later part. The exposed area of the former is limited, but it is clear that the strata, except for stratum XII, which included only pits, reflect the same Egyptian architectural tradition as the later EB I strata: no stone foundations, brick bonding techniques, and matting on the floors. Parts of several buildings were uncovered. More than two thousand of the finds are Egyptian in character—most are locally made, as is indicated by their clay and the flint and other stones.

Early Bronze Age II. The site may have been smaller in EB II than in EB I but was larger than in EB III, as the city wall of the latter was built on EB II wall stumps. It is not clear if the Egyptians stayed on during this period (strata III–II, area D; late stratum B, area D-II). The pottery finds include Abydos jars and other forms that are parallelled at Arad. [*See* Arad, *article on* Early Bronze Age Period.] The seven skeletons found in a room destruction are among the few human remains of EB II date uncovered in Palestine.

Early Bronze Age III. The settlement (stratum I, areas D, F, K–O; stratum A, area D-II), with its massive city wall, glacis, and possible indirect-entry gate in area N (attributed by Yeivin to stratum VI; Brandl, 1989, pp. 379–383), seems to extend across the high terrace. The material culture was purely Canaanite, its pottery including Metallic ware and some Khirbet Kerak vessels. [*See* Canaanites.] The nature of the architecture may be similar to area G at Tel Yarmut. [*See* Yarmut, Tel.]

Late Bronze Age II B. During the thirteenth century BCE, after a long gap, a new settlement (areas A, B, F, G; stratum A, area D-II [Kempinski and Gilead 1991]) covered the entire acropolis and perhaps a little beyond. Traces of a massive structure (palace?), originally identified as a gate, were found in area G under the Iron II fortifications. Two tombs were discovered in area D-II. The pottery reflects the international contacts of the period as well as the Egyptian colonization under Rameses II: Cypriot Base Ring II, White-Slipped and White-Shaved Wares, and locally made Egyptian vessels.

Iron Age I. The settlement (areas B, F, G), in Iron I was most probably Philistine and covered the same area as the previous one. It contained Philistine Bichrome pottery, including mourners and Ashdoda figurines. [*See* Philistines, *article on* Early Philistines.]

Iron Age II. The site (strata XIII–IV, areas A, E–H, K, R, U) seems to have been a border town of Judah in Iron II. [*See* Judah.] The settlement was concentrated on the fortified acropolis, while potters' kilns and other polluting manufacturing were located on the high terrace. The proximity to Philistia may account for the few Ashdod Ware vessels recovered. The excavators had assigned thirteen Iron II strata to the Hellenistic period in areas A and G. The lowermost four were identified only in the fortifications in a trench west of area G. Their relationship to stratum IX is still an open question, and they may have to be "moved" upward.

Of stratum IX, only a large plastered surface (a piazza inside a now eroded gate?) was exposed. In stratum VIII two ninth-century BCE buildings with inner courtyards were constructed over the piazza, possibly reflecting population growth. Stratum VII was originally dated to the late eighth–early seventh centuries BCE, but should be redated to the mid-eighth century, following the redating of stratum VI. Remains of two buildings with inner courtyards and a street, which continued the previous outline of this area, were uncovered, together with smashed pottery vessels, one with the Hebrew inscription *lyhz'*.

Stratum VI is dated to the late eighth century BCE, on the basis of a complete stamped *lmlk* jar found in situ. Altogether twenty *lmlk* impressions and one official impression *(ltnḥm mgn),* most from later or mixed contexts, can be attributed to this stratum. Two four-room houses were also uncovered. [*See* Four-room House.] This stratum was destroyed by the Assyrians in 701 BCE, as is attested by numerous slingstones, mainly from Area A.

Stratum V represents the Judean, post-Assyrian rebuilding of the seventh century BCE. The acropolis was refortified: an upper wall and its glacis were found in area G and its lower supporting wall in area F. A structure that Yeivin believed to be a great square inner tower seems to be another Israelite house. Among the finds are a jar handle with a rosette impression, East Greek pottery (including wine jars from Chios and Lesbos), oenochoes, and Ionic cups. Another find attributable to this stratum is a fragment of a bearded human terra-cotta head (Yeivin, 1961, pl. III:3), probably from an anthropomorphic vessel similar to finds from Ḥorvat Qitmit and Ḥaṣeva. [*See* Qitmit, Ḥorvat.] Stratum IV (beginning of the sixth century BCE) was heavily disturbed by Persian-period silos. It seems that this last Judean stratum was destroyed by the Babylonians.

Persian Period and Later. In strata III and II (fifth–fourth centuries BCE), as at many sites in Palestine, the acropolis was partially abandoned and its summit pitted by numerous silos. Only one undisturbed room was found in stratum III, while the main settlement moved to the high terrace. The excavators identified almost no architecture; the settlement is deduced from the wide distribution of Persian-period pottery, such as high-footed mortaria and Attic Ware from areas A, B, D–G, and K–M. A *favissa* in area D contained fragments of stone statuettes and terra-cotta figurines, pointing to the existence of a temple on the high terrace.

Stratum I (Hellenistic period) was a smaller settlement. It

yielded much-disturbed remains in area A and pottery in areas B, C, and F. During the Byzantine and Mamluk periods, graves were dug into several areas. The settlement, a village, moved to the south (this may have already occurred in the Roman period), where the later village of 'Iraq el-Manshiyyeh was located. A Mamluk inscription of AH 717 (1317 CE) mentioning the construction of a khan, presumably nearby, was found in secondary use in the *weli*.

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BARUCH BRANDL

ERIDU, Sumerian city and cult center located on the southwestern periphery of the southern Mesopotamian floodplain (30°52′ N, 46°3′ E). It is the site of é-abzu, temple of Enki (Akkadian Ea), god of the subterranean freshwater ocean, and consists of seven mounds, whose occupations range in date from the Ubaid to the Persian period. The main mound (mound no. 1) is called Abu Shahrain or Abu Shuhur but is also reported to have been called Nowawis in the late nineteenth century. Either French Assyriologists Charles François Lenormant or Joachim Ménant first iden-

tified Abu Shahrain as ancient Eridu (Zehnpfund, 1909, pp. 291–298), apparently on the basis of inscribed bricks from the site.

The first archaeological work at Abu Shahrain was carried out in 1854, when J. E. Taylor undertook excavations there on behalf of the British Museum. In a paper read before the Royal Asiatic Society on 5 May 1855, Taylor described his work at the site as "unproductive of any very important results" (Taylor, 1855, p. 404). In 1918, R. Campbell Thompson carried out a season of excavation at the site, also on behalf of the British Museum. In the following year, Harry R. Hall continued the museum's work with a single season of work. From 1946 to 1949, Fuad Safar, Mohammad Ali Mustafa, and Seton Lloyd undertook extensive excavations at Eridu on behalf of the Iraqi Directorate General of Antiquities. [*See the biographies of Safar and Lloyd.*]

Eridu is best known for its sequence of temples excavated by the directorate general. Eighteen building levels above a 30-centimeter-thick layer of occupational debris (level XIX), spanning a period from the Early Ubaid period into the Late Uruk period, were uncovered. The earliest temple identified in this sequence belongs to level XVI. It consisted of a small rectangular mud-brick building with a deep recess in its northwest wall. The building had a podium, perhaps an offering table, in the center of its main room and a second one—in all likelihood the pedestal on which the cult statue would have stood—in a niche in the northwestern wall. A circular oven was found outside the temple's south wall. As the level XVI temple was rebuilt time and again, the building grew larger and more elaborate. The later temples, whose ground plans consisted of a long rectangular central room flanked by rows of rooms on its northwestern and southeastern sides, were set elevated on platforms and had elaborate niched and buttressed facades. Inside the central room was a high podium or offering table; against the southwestern wall was a second podium or pedestal on which the cult statue would have stood. Large quantities of fish bones were found on the floors of the level VII temple and mixed with ashes on and around the podium in the central room of the level VI temple. The bones are likely the remains of offerings to Enki. Of the Uruk-period temple levels (V–I), only portions of the temple platforms remained. [*See* Ubaid; Uruk-Warka.]

Joan Oates (1960) used the Eridu sequence of temples and painted pottery recovered from them to divide the Ubaid period into four phases: Ubaid 1, or Eridu (levels XIX–XV); Ubaid 2, or Hajji Muhammad (levels XIV–XII); Ubaid 3, or Ubaid (levels XII–VIII); and Ubaid 4, or Late Ubaid (levels VII–VI). A phase (Ubaid 0, or 'Oueili) that antedates the Ubaid 1, or Eridu, phase was subsequently recovered at Tell el-'Oueili (Huot, 1987, pp. 11–120). [*See* 'Oueili, Tell el-.] The Eridu temple sequence provides archaeological support for a lengthy, in-place cultural development in southern Mesopotamia from the earliest-known prehistoric period to the point when the written language can be identified as Sumerian; it has been used to argue that the Sumerians were the original inhabitants of the southern floodplain (Oates, 1960, pp. 44–50). [*See* Sumerian; Sumerians; Ur.]

The topography of the main mound at Eridu is dominated by a large ziggurat dated to the Ur III period. This ziggurat, constructed of a mud-brick core and an outer facing of baked bricks set in bitumen, is 61.8 m long × 46.5 m wide. Its eroded ruins stand 9.5 m high. Construction of the ziggurat was initiated by Ur-Nammu (2112–2095 BCE) and completed by his grandson Amar-Suen (2046–2038 BCE). Stamped bricks also provide evidence that a king of Larsa, Nur-Adad (1865–1850 BCE), carried out work on the ziggurat. [*See* Larsa.] A single inscribed brick bearing the name of Nebuchadrezzer II (604–562 BCE) was found lying to the west of the ziggurat, probably in a secondary context. Although there is a gap in the temple sequence between the Uruk levels and the Ur III ziggurat, the ziggurat can be viewed as the culmination of a long developmental sequence of Mesopotamian temple architecture stretching back to the Ubaid period.

One of the largest Ubaid cemeteries known was excavated at Eridu by the Iraqi Directorate General of Antiquities. The burials date to the end of the Ubaid period. Of an estimated 800 to 1,000 burials in the cemetery, 193 were excavated. The burials, cut through a layer of rubbish containing Ubaid 2 or Hajji Muhammad pottery, consisted of a square shaft lined with mud-brick walls. One or more individuals were placed in this shaft along with burial goods; the chamber was then filled with earth and sealed with mud brick.

Other areas excavated at Eridu include the Hut Sounding, a small excavated unit located 80 m southeast of the ziggurat. The Hut Sounding included fourteen levels of Ubaid-period occupation and the Early Dynastic palaces excavated on the North Mound (mound no. 2). Considered to be among the oldest cities in Mesopotamia, antedating the Flood, and the first city to hold kingship, Eridu figures prominently in Sumerian literature (Green, 1975, 1978).

[*See also* Ziggurat.]

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MICHAEL D. DANTI and RICHARD L. ZETTLER

ERMAN, ADOLF (1854–1937), eminent German Egyptologist. Born in Berlin of Swiss descent, Jean Pierre Adolphe (Johann Peter Adolf) Erman became one of the best-known and most influential Egyptologists in the world. He was trained in Leipzig and Berlin by Georg Ebers and Richard Lepsius. By 1884, he was the director of the Egyptian and Assyrian Department of the Egyptian Museum in Berlin and professor of Egyptology.

Erman was one of the "founding fathers" of modern Egyptology, for it was he who first organized ancient Egyptian into three separate phases: Old, Middle, and Late. He followed this groundbreaking theoretical division with the publication of grammars of the stages. Erman also wrote about the relationship between ancient Egyptian and Semitic languages. His talents, however, were not limited to philological theory, for he was a gifted translator and an avid scholar of all aspects of Egyptology. His many volumes of translated texts were invaluable to scholars and represented the means by which the public could understand and appreciate the wealth of Egyptian literature.

Erman wrote a monograph on the hieroglyphic inscriptions accompanying the figures decorating the walls of Old Kingdom tombs. He recognized that these texts represented the figures' actual conversations. They are, therefore, much like the speech balloons that appear near the characters in our modern cartoons. Erman's extensive knowledge of every aspect of ancient Egypt civilization was the source for his book *Life in Ancient Egypt* (1894), which is still in use today. His works on art, archaeology, history, and religion are equally valuable sources of information.

Erman's most ambitious project, for which he is best known, was his dictionary of the ancient Egyptian language. The *Wörterbuch der ägyptischen Sprache,* produced jointly with Grapow, was in progress when Erman died in Berlin. It stands today as a fitting monument to this enormously talented individual whose innumerable contributions were instrumental in unraveling the many mysteries of ancient Egypt.

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ESDAR, TEL, a 2-ha (5 acre) loess hill located 3 km (2 mi.) north of Tel 'Aro'er in the Negev desert (31°09′ N, 34°59′ E; map reference 1475 × 0645). The site was discovered by Nelson Glueck in 1956 (his site 308; Glueck, 1957) and excavated by Moshe Kochavi on behalf of the Israel Department of Antiquities in 1963–1964. Five periods of occupation were discerned in three areas of excavations. Avraham Biran proposed identifying Tel Esdar with 'Aro'er in the Davidic cycles (*1 Sm.* 30:28) because no Iron Age I remains were found in his excavation at nearby Tel 'Aro'er (Biran, 1993). [*See* 'Aro'er.]

Stratum IVB, found in all the excavated areas, belongs to the Beersheba culture (Chalcolithic period). It consisted of several beaten-earth living surfaces with fireplaces and ash-pits. The small finds were typical of the culture: churns, decorated bowls, flint axes, and an agate pendant. Stratum IVA, also found in all the excavated areas, belongs to the Early Bronze Age II. Several living floors constructed of pebbles and some stone-lined silos were among its remains. Besides the pottery, known from Arad and EB II Sinai and Negev sites, a cache of giant fan scrapers was found on one of the floors. The scrapers were made of tabular flint and incised with different patterns on their backs; some of the motifs resemble those from Megiddo stratum XIX.

Tel Esdar was the first of the Iron I sites excavated in the Negev. In stratum III several buildings were found arranged in a defensive circle on the spur of the tell (area C). A test pit was dug in the area they surrounded but no remains were found, indicating that the area had been used as an open space. Of the eight buildings excavated, the plan of only one was preserved in its entirety; however, sufficient evidence was left to show that all had followed approximately the same plan. These were three-room houses, with dividing walls formed by rows of pillars and a main entrance in the long wall, facing an interior open space. Dozens of smashed vessels were found on the floors, indicating a violent destruction. The crude, undecorated pottery dates the destruction to the late eleventh century BCE. Many comparisons could be found between it and the pottery of Tel Masos III–II. [*See* Masos, Tel.] Of special importance are the thirty-six complete storage jars, all of the same distinctive transitional type, and the use of chalices as stands for oil lamps.

In stratum II, three structures, dated to the tenth century BCE, had been constructed close to one another on the slope of the tell. They were situated beyond the stratum III enclosure and built on a different plan and consisted of a farmhouse and its related buildings. They suffered no sudden

destruction and only a few red-slipped sherds and many stone agricultural implements were found on their floors.

Stratum I consisted of agricultural terrace walls. Pottery sherds of the Roman-Byzantine period define the stratum.

In summary, the earliest levels of occupation at Tel Esdar fit well with the pattern of settlement in the Chalcolithic Beersheba culture and EB II in the Negev. These two periods of occupation are well represented in the Beersheba–Arad valley and the long gap of occupation between them and the Iron Age finds a good comparison at Tel Arad. [*See* Arad, *article on* Early Bronze Age Period.] Tel Esdar stratum III is to be interpreted either as a satellite of Tel Masos or as its small rival, destroyed by the inhabitants of the larger, much stronger community. Stratum II was part of the revival of the valley in the tenth century BCE, when Tel Malḥata was resettled and strongly fortified.

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MOSHE KOCHAVI

ESHMUNAZAR INSCRIPTION. The discovery in 1855 of an anthropoid sarcophagus near the Phoenician port city of Sidon brought to light an important Phoenician text. The stone coffin belonged to a Sidonian king, Eshmunazar II, who most likely reigned in the first half of the fifth century BCE; on the lid of the sarcophagus was inscribed the twenty-two-line text now known as the Eshmunazar Inscription.

On 19 January 1855, workmen hired to hunt for treasure on behalf of the chancellor of the French consulate general in Beirut discovered the basalt sarcophagus within an ancient necropolis, a rocky knoll and grotto known as Mugharat Ablun, about a kilometer southeast of Sidon's port. The large sarcophagus (110 × 225 cm) had been buried 2 m deep in an open rock-cut grave and, in antiquity, apparently had a small stone-built entrance chamber to protect it. Disinterred, the sarcophagus was shipped to France, where it resides in the Louvre Museum.

The style of the features carved on the lid of the stone coffin—an almond-eyed face, chest-length striated wig, chin beard, and falcon-headed *usech,* or broad collar—is typically Egyptian. Most likely fashioned in Egypt, the coffin may have been brought to Sidon as booty or as a purchased order, where it was inscribed following Eshmunazar's death.

The text is inscribed below the funerary mask. In the first four lines we read that King Eshmunazar, son of King Tabnit, reigned for fourteen years and lived a short life. Eshmunazar describes himself as an "orphan, the son of a widow"; Tabnit apparently died before or shortly after his son's birth, making Eshmunazar a child-king and his mother, the regent. After imprecations directed toward would-be grave plunderers (ll. 4–13), the text recounts the cultic shrines Eshmunazar and the queen-mother (re)built (ll. 13–18), a notable one being the Temple of Eshmun. It further declares that the "lord of kings," most probably the king of Persia, ceded Levantine territory, particularly the cities of Dor and Jaffa, to Sidon in return for services rendered (ll. 18–20). The nature and date of these rendered services remain unknown: perhaps Persia ceded the territory to Sidon for assisting Cambyses' invasion of Egypt in 525 BCE or for naval support during the battle of Salamis in 480 BCE or because of changes in Persian satrapy boundaries in the generation after 480 BCE. Additional imprecations complete the inscription (ll. 20–22).

The first thirteen and a half lines also appear in seven lines on the head end of the base. The reason for the duplication may be that the inscriber could not fit the full text there or wanted to start anew after committing several writing errors.

The text, because of its length and degree of preservation, provides significant insight into the characteristics of the Phoenician language in general and the Tyro-Sidonian dialect in particular. The inscription also reveals meaningful affinities with other Semitic languages, seen, for example, in its idioms, word pairs, and use of repetition.

[*See also* Phoenician-Punic; *and* Sidon.]

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GARY ALAN LONG

ESHNUNNA (modern Tell Asmar), site located in the Diyala River basin, about 81 km (50 mi.) northeast of Bagh-

dad, Iraq, in a very arid region in which the productivity of the land was exhausted through overirrigation in antiquity (33°32′ N, 44°58′ E). Eshnunna was also the name for the entire region of which Tell Asmar/Eshnunna was the main town and often the administrative center. Excavations conducted at Tell Asmar by the Iraq Expedition of the Oriental Institute of the University of Chicago in the 1930s uncovered important and monumental remains from the early third through the early second millennia BCE. The results of the excavations there provide the basis for the Mesopotamian chronology used today.

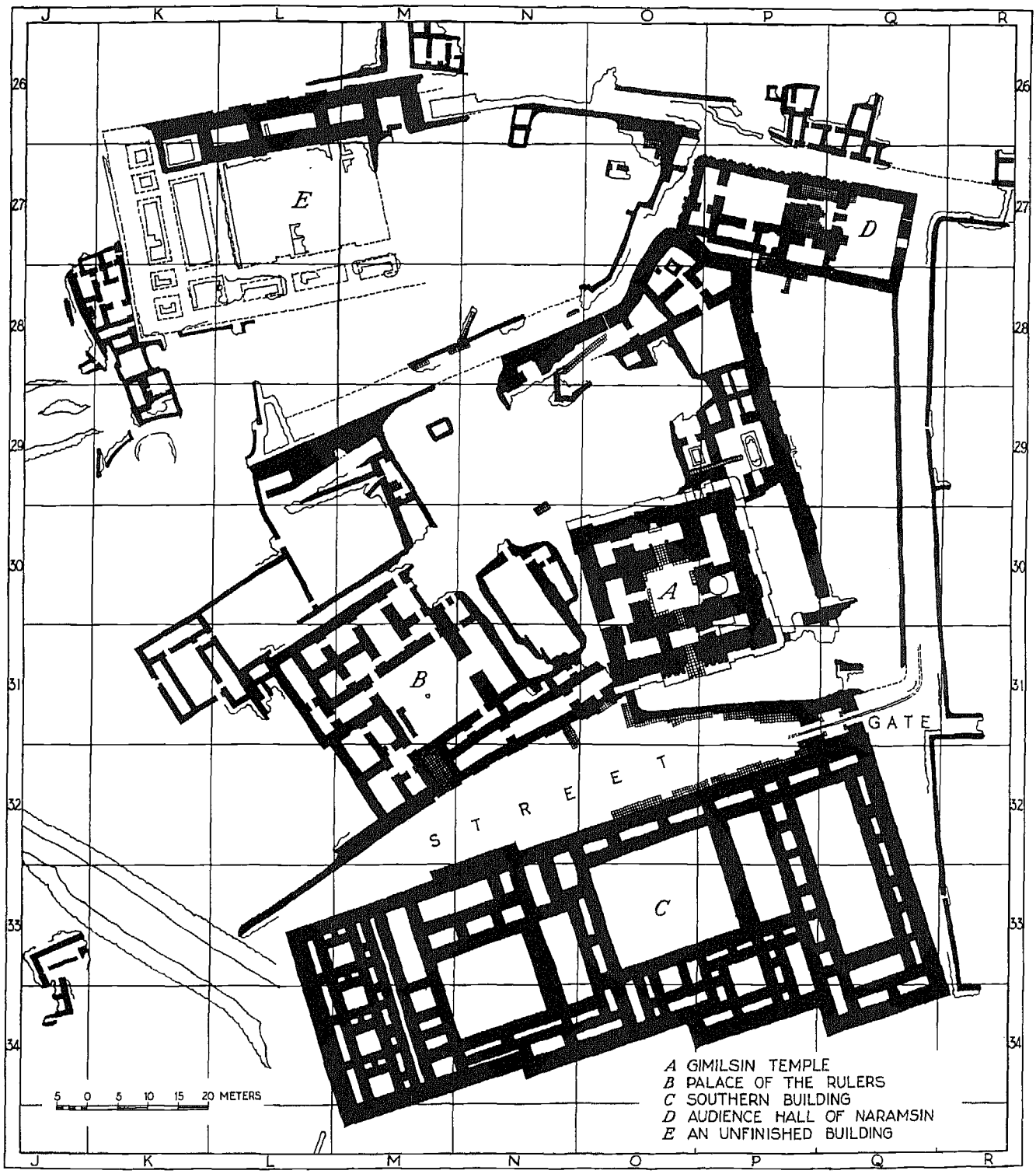
The name of the town may have been pronounced "Eshnun" in the Akkadian through Ur III periods; the long form, Eshnunna, appeared first in the Ur III period. Although the name *Eshnunna* was known from historical texts to the first scholars of the ancient Near East, the site was not located until 1930. Bricks inscribed with the name *Eshnunna* were already turning up on the antiquities market in the late nineteenth century. Some of those inscriptions were published in 1892 by French antiquarian and Assyriologist Henri Pognon, who, for obscure reasons, refused to divulge the location of the site from which the inscriptions came. Edward Chiera of the Oriental Institute had collected some bricks inscribed with the names of rulers of Eshnunna from Tell Asmar; the site was chosen for archaeological exploration partially on the basis of his observations. In addition to the Oriental Institute's excavations under the direction of Henri Frankfort, the Diyala Basin Archaeological Project was carried out between 1957 and 1958 under the direction of Thorkild Jacobsen. The project was conceived as both a textual and field investigation of settlement and irrigation in the whole Diyala region. [*See* Diyala; *and the biographies of Frankfort and Jacobsen.*]

Although regional surveys have indicated that the earliest settlements in the Diyala River basin date to the Ubaid period (fifth–early fourth millennia), at Tell Asmar, virgin soil underlay remains of the late fourth millennium. Ubaid sherds were found at Tell Asmar, but they were in secondary association with later materials; there was no primary Ubaid deposit. The Early Dynastic period was a period of substantial growth in the Diyala, in which Tell Asmar was at the high end of a hierarchy of towns and villages. During the Ur III and Isin-Larsa periods, although there was continuity of settlement in the Diyala, there was a trend toward more dispersed rural settlement with a decline in the total amount of built-up areas occupied by towns as opposed to villages. The northwest area of the mound of Tell Asmar seemed to have been the site of the Early Dynastic–early Ur III period town. The town greatly expanded during the later Ur III and Isin-Larsa periods. The main loci of habitation shifted, so that the previously sparsely occupied southern two-thirds of the mound became the site of the most important monumental public buildings of the city of the Late Ur III through the Isin-Larsa periods. Tell Asmar was abandoned in the Old Babylonian period, presumably at or about the time of the conquest of Eshnunna by Hammurabi of Babylon in 1763 BCE or of the final Babylonian conquest of Eshnunna by Samsuiluna. [*See* Ur; Ubaid; Isin; Larsa.]

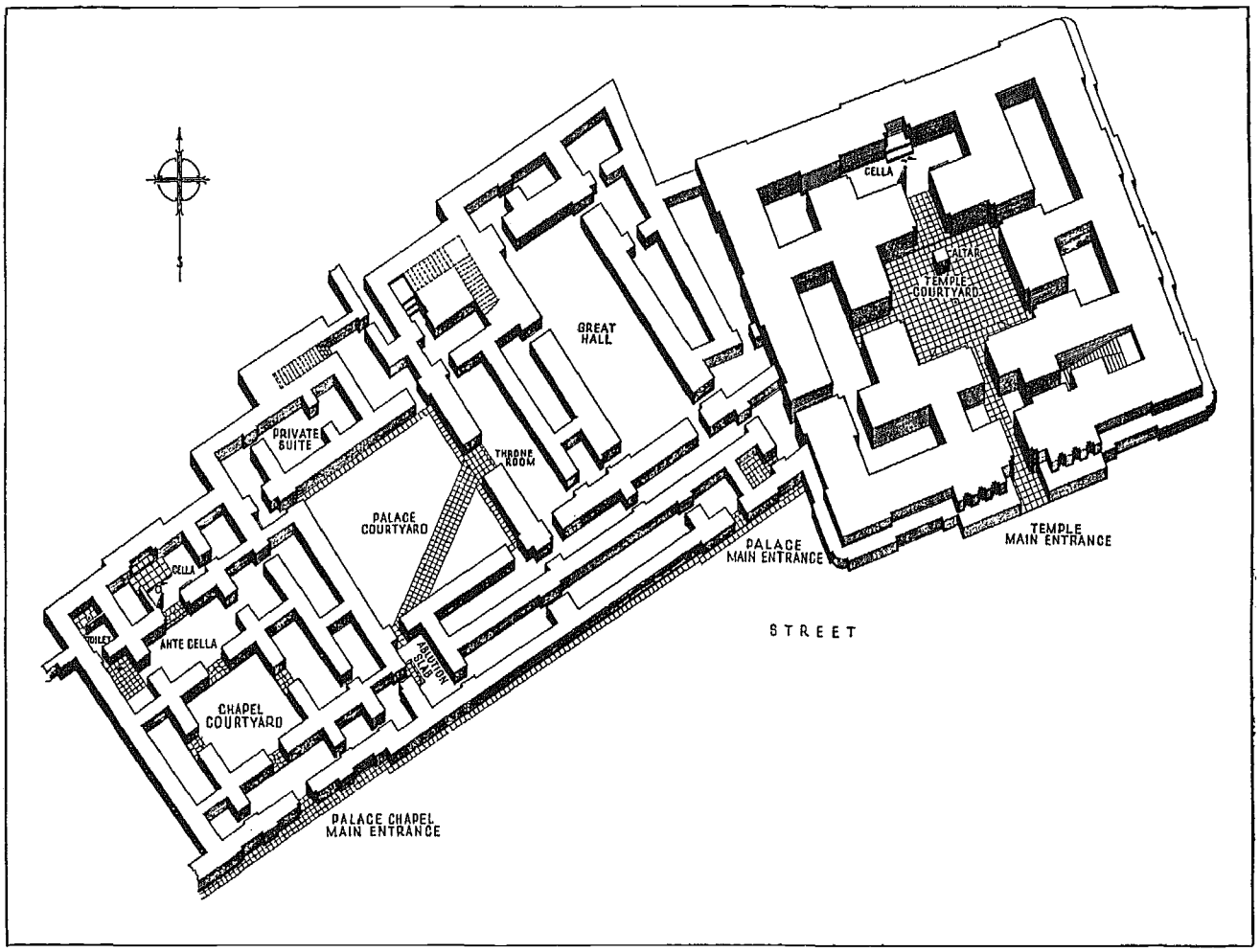
The most important early remains from Tell Asmar are a long series of temples built one on top of another, perhaps indicating continuity in religious tradition. The latest of the temples was apparently dedicated to the local god, Abu (the earlier ones may also have been devoted to the cult of this deity). The stratigraphy of the temples and the associated objects provided the basis for determining the chronology of the Early Dynastic period. The excavators divided it into three distinct phases based on the identification of three main phases in the Abu Temple above an early Protoliterate period (late fourth millennium) shrine: the Archaic Shrine dating to Early Dynastic I, the Square Temple dating to Early Dynastic II, and the Single Shrine dating to Early Dynastic III and the so-called Protoimperial periods. This schema has since been modified.

The Square Temple (Early Dynastic II period) consisted of three separate shrines around a square central room. Each shrine had a rectangular altar at one end. In one of the shrines, the excavators found a hoard of sculpted figures, both males and females, buried beneath the floor in a recess north of the altar. The findspot of the hoard may actually predate the temple. It is not possible to determine whether the statues were made as a group and dedicated at the same time or were accumulated by the temple over a period of time. They are characterized by rather naive, abstract geometric forms the excavators thought were typical of the ED II style throughout Mesopotamia. However, it is now believed that because Eshnunna was a provincial town, the unsophisticated style of the statues cannot be considered typical of Mesopotamian art in general. In addition, the so-called Early Dynastic II pottery from the Square Temple consists of types that continue from ED I to ED III or that can be found either in ED I or ED III. According to the current trend of thought, ED II as a distinct period may only have validity in the Diyala, where it was contemporary with the late ED I period in southern Mesopotamia.

The most important structure of the Akkadian period was the so-called Northern Palace. Abutting that building to the south was a house adjacent to the Abu Temple. The earliest version of the Northern Palace, dating to the very Early Akkadian period seemed to have served as a residential compound, perhaps somehow associated with the nearby Abu Temple. There is also evidence that some industrial activity may have taken place within the complex. This evidence consists of a rather elaborate system of drains, several rooms identified as toilets or bathrooms by the excavators, and a large cistern. Whatever the function of this early version of the Northern Palace, the succeeding phase, called the main level, was not a palace at all but rather a large building devoted to manufacturing. It consisted of a central block of



ESHNUNNA. *Composite plan showing relative positions of buildings of various periods.* (Courtesy Oriental Institute of the University of Chicago)



ESHNUNNA. *Projected plan of the Gimilsin Temple and the Palace of the Rulers in the reign of Ilushuila.* (Courtesy Oriental Institute of the University of Chicago)

rooms with a large courtyard, a northern group separated from the main suite by a long vestibule, and a southern wing identified by the excavators as a women's residential quarters. This level also contained an elaborate drainage system with many drains, some with large vats at their heads, and floors paved with bitumen. Several of the rooms containing water installations had drains that emptied into a sewer in the street.

Although the excavators speculated that the large number of water installations in the building suggested a leather workshop, it now seems more likely that textiles dyeing took place there and that the establishment was devoted to textile production, probably employing numbers of female workers. Weaving and dyeing were not the only industries there. [*See* Textiles, *article on* Textiles of the Neolithic through Iron Ages.] There were also workshops for stone and shell inlay and ornamental stoneworking, as well as a food-processing and storage area, probably to feed the workers in the various operations, and perhaps a potter's workshop. Above the palace were some fragmentary remains of what appears to have been flimsy rebuildings of the Northern Palace of the Ur III and perhaps the very early Isin-Larsa period. Some Akkadian tablets found in robber holes cut into the palace walls refer to a "women's house" in which women worked in a textile industry.

Excavations in the northwest section of the mound revealed a large residential area that was occupied continuously from the late ED III through the Early Isin-Larsa periods. Some of the houses of the Akkadian period included what could have been shops fronting the street; some others appeared to have altars, perhaps for private or family devotions. The Late Akkadian period occupation in this area may have been the most extensive; by the Late Ur III period, the main focus of occupation had already shifted south.

Late in the Ur III period, the *išakku,* or city ruler, of Eshnunna, Ituriya, had a temple built to his overlord, the deified

king of Ur Shu-Sin, in the southern area of the site, where there had been no monumental buildings before. This building is unique among Mesopotamian temples in that the deity worshipped in it was a ruler actually living at the time it was built and dedicated. The temple was very regular in plan, with exceptionally wide walls. It was square, with a square, central courtyard with regular rooms arranged around it. The state temple was a testimony to the suzerainty of Ur over Eshnunna, an important administrative center near the border of the limits of the area controlled directly by the central government at Ur.

Somewhat later, at the time Eshnunna was breaking away or had just broken away from the authority of Ur, the Palace of the Rulers was built abutting the Shu-Sin Temple. As the palace underwent alterations, the temple, which had ceased being used for divine service, was eventually fully incorporated into the palace. The palace, an administrative building rather than a residence for the ruler, was altered many times by rulers throughout the twentieth century BCE, or the Early Isin-Larsa period. In that period Eshnunna was often independent but was sometimes subordinate to the rule or influence of Elam to the east. [*See* Elamites.] Many administrative texts dating to the twentieth–nineteenth centuries BCE were found in this building.

The mound of Tell Asmar was seriously eroded so that, although there is historical evidence that Eshnunna was very powerful until Hammurabi conquered it in 1763 BCE, the expedition was able to find only the foundations of massive buildings of the late nineteenth and early eighteenth centuries BCE but no stratified deposits. The remains of those monumental public buildings in the southern sector of the mound only hint at the power and prestige of Eshnunna in the late nineteenth and early eighteenth centuries BCE, when it was one of the important players on the international political scene.

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ELISE AUERBACH

ESKI MOSUL DAM SALVAGE PROJECT.

A long-planned dam on the Tigris River, just upstream from Eski Mosul (Balad) in Iraq was built between 1981 and 1985. As with the Hamrin and Haditha Dam Salvage Projects, Iraqi and foreign expeditions cooperated in investigating the sites to be flooded in the Eski Mosul Dam Salvage Project (later called the Saddam Dam Basin Salvage Project).

The major crossings of the Tigris River are outside the area of the project at Nineveh, Balad (Eski Mosul), and Cizre, but the Tigris can be readily crossed when it is not in flood and routes cross the region at Abu Dhahir and at Zummar. In general, however, the main routes avoid the broken terrain beside the river and follow courses outside the area. The main road north from Nineveh skirted the southeastern part of the area of the project, however.

The geomorphology of the region has not been adequately investigated, but excavations at sites such as Tell Kutan and Kharabeh Shattani showed that there has been considerable erosion and deposition. After rainstorms, the wadis were very active. It would be unwise to infer that the present topography closely resembles the ancient, but it is likely that in general the environment has not changed greatly since prehistoric times. Beside the river was a narrow floodpain bordered by rolling hills, often with the bedrock emerging: indeed, the area had been used as a quarry. The region is cut by a series of wadis draining into the Tigris. Most of these are dry for most of the year, but the Baqaq stream is perennial. The annual rainfall is about 450 mm and, where the soils were suitable, it was possible to practice dry farming. There is evidence for small canals, particularly along the Baqaq stream, that seem to be associated with a series of water mills of fairly recent date rather than with irrigation.

The top of the dam is 317.5 m above mean sea level and about 435 sq km (270 sq. mi.) is to be flooded. The lake extends about 70 km (43 mi.) upstream, as far as the Syrian border, and covers a ribbon of land which at its widest point

is fewer than 8 km (5 mi.) from the old river course. In the original survey of the area by the Iraqi State Organization for Antiquities and Heritage, 149 sites were identified. There were only a few large sites: the most impressive (550 × 300 m) was Tell Jikan (Jigan), where Victor Place had excavated briefly in the nineteenth century; also impressive were Tell Selal and Tell Abu Dhahir, which also covered several hectares. These major sites were situated where wadis and relatively easy routes reached the Tigris and where the immediate terrain was quite flat and suitable for agriculture. Most of the sites in the region were small and occupied for limited periods. Some sixty-three sites were excavated in the course of the project, including twenty-one not located in the original survey. Most of the excavated sites were situated in the southeastern part of the area and along the south side of the river. For security reasons, only a few sites were investigated farther upstream on the north side of the river.

The Iraqi State Organization for Antiquities and Heritage excavated some twenty-three sites. The University of Mosul excavated four important sites on the south side of the river, Abu Dhahir, Mseifneh, Tell Dhuwaij, and Tell Selal. British teams from the British School of Archaeology in Iraq, the British Museum, the University of Edinburgh, and the University of Manchester worked on some fifteen sites, mostly in the southeastern part of the area and in the region near Abu Dhahir. Japanese archaeologists from Kokushikan University worked on seven sites near Jikan and near Zummar. A Polish team excavated sites near Rifan Ulya and at the Aceramic Neolithic site of Nemrik. In addition, Austrian, French, German, German/Italian, Italian, and Russian teams worked on a smaller number of sites.

A Polish survey in the region of Rifan identified some twenty-two locations where Lower Paleolithic tools were found; sixty Middle Paleolithic and twenty-three Upper Paleolithic tools also were recovered. Hand axes were occasionally found elsewhere in the project area. Two Pre-Pottery Neolithic sites were excavated. At Nemrik, which lies just above the area to be flooded, semisunken round houses with tauf (Ar., similar to *terre pisé*) and mud-brick walls were found. At Der Hall, an aceramic level was found, but the artifacts were not in situ.

Five Hassuna sites were excavated. The Hassuna remains at Tell Abu Dhahir could be traced over an area of about 2 ha (5 acres). At Kharabeh Shattani, the Hassuna level was covered by a compacted silty layer 1.2 m thick, on which a Halaf settlement was built. Only one site was excavated for which Samarra pottery has been published, but as many as nine sites were excavated with Halaf pottery. At Kharabeh Shattani several round houses (tholoi) were uncovered. At Khirbet Derak a series of bullae with stamp-seal impressions on them were found. At Derak and at Khirbeh Hatareh there was evidence for a gradual transition from the Halaf to the Ubaid pottery style, with intermediate types being recognized. Some eight sites with Ubaid pottery were excavated. No substantial architecture of the period has been published.

Early Uruk or Gawra period occupations were identified on four sites. At Tell Mishrifeh houses with possibly tripartite plans and at Tell Karraneh 1 and 2 megaron-type buildings like those from Tepe Gawra levels IX–XI were found. The impression given by the results of the investigations in the Eski Mosul Dam Salvage Project strongly supports the view that the Gawra period precedes the Late Uruk period. It has been suggested that two rival cultures coexisted in northern Mesopotamia; a local one typified by Gawra and a second heavily influenced by the southern Uruk civilization represented by level IV at Nineveh. This southern-influenced culture was thought to have formed an elite dominating the local culture. The idea, however, receives no support from the excavations in the Eski Mosul region.

Local Late Uruk occupations characterized by beveled-rim bowls, incised jars, and spouted vessels, for example, were found on some eight sites. Excavations at a number of sites, particularly at Tell Mohammed Arab, have elucidated the sequence from the Late Uruk to the Ninevite 5 period and have resolved some of the long-standing problems of ceramic development in this period. A gradual transformation from the painted Uruk pottery to the painted Ninevite 5 and from the fineware Uruk vessels to the Ninevite 5 could be shown. The gradual introduction and development of incised gray ware and excised gray ware were demonstrated by the stratigraphic excavation at Tell Mohammed Arab and by a comparison with assemblages from shorter-lived sites. Also for the first time, an exposure of architecture revealed that small two-room rectangular dwellings were the norm in the Ninevite 5 period. Some nineteen sites with Ninevite 5 levels were excavated. Most of these occupations were small and were not long-lived. Thus, although the number of sites was large, the population in any one period could have been quite small. It should be noted that Painted Ninevite 5 pottery was found in widely separated soundings on Tell Jikan, suggesting that an extensive area, perhaps as much as 15 ha (37 acres), was occupied in this period.

The fine decorated gray ware of the Ninevite 5 period appears to have been the forerunner of the distinctive hard fineware of the Taya period. The transition from one to the other has not been found in excavations to date, and there seem to be important changes that occurred with the introduction of this new style. In particular, at Tell Jikan the construction of the city wall was associated with this new style. Similar indications of urbanization have been found elsewhere in northern Iraq and in the Khabur region in this period. At Tell Karraneh 1 an interesting group of six terracotta objects was recovered, five shaped like phalli and the sixth with a molded stylized human head. In the Eski Mosul Dam Salvage Project, nine sites of this period were excavated, which corresponds roughly to the Akkadian and Ur III periods in the south.

The largest number of sites excavated (twenty-two) belonged to the Khabur period. On many of these, areas of housing consisting of large buildings with many rectangular rooms were excavated. Nuzi ware was recovered at about a dozen sites, but for the most part these were occasional sherds and did not form a large proportion of the pottery assemblage.

A similar number of sites belonging to the Middle Assyrian period was excavated. Tell Mohammed Arab provided a good sequence of pottery and associated buildings. At this site a characteristic plan of a rectangular building with one large rectangular room and three or four smaller squarish rooms was identified.

Expectations that important Late Assyrian remains would be found were high, as inscribed bricks of Sargon II had been published as coming from Jikan; it was also speculated that Jikan might have been ancient Kurbail. Further research showed that the bricks in question came from Khorsabad, and excavations at Jikan failed to reveal substantial buildings of the Late Assyrian period. At Tell Baqaq 2, beside the main road leading north, however, the remains of a small palace were found. It included several courtyards, a throne room with stone tramlines, (parallel lines of stone paving, commonly found in the throne rooms of Assyrian palaces, perhaps used for a brazier on wheels), a bathroom, and a few cuneiform tablets dated to about 800 BCE. At Khatuniyeh, the vivid remains of the site's destruction, presumably at or near the time of the destruction of Nineveh, were revealed. About a dozen other sites with less substantial remains of the period were excavated, but it does not seem to have been a time of particular prosperity in the region. It seems probable that in the Late Assyrian period arable farming was concentrated on the more fertile plains of northern Mesopotamia, and that areas such as that of the Eski Mosul region were used for animal husbandry, perhaps including horse rearing.

Following the destruction of Nineveh it is uncertain whether northern Iraq was under the control of the Medes, the Babylonians, or neither. In the second half of the sixth century BCE it became part of the extensive empire of the Persian king Cyrus, but details of the history of northern Iraq under the Achaemenids are not known. It was, therefore, surprising to find an extensive (but shallow) site at Khirbet Qasrij of the sixth or fifth centuries BCE with evidence for industrial activities, though Xenophon *(Anabasis)* mentioned extensive settlements when the ten thousand (the Greek mercenaries) retreated through this area at the end of the fifth century BCE.

In the Hellenistic period, perhaps with the revival of political stability, there were numerous relatively rich agricultural villages in the area. Apart from the pottery, which included fish plates with stamped palmettes, the most characteristic feature of these settlements was the number of deep bell-shaped grain silos dug into the ground. A small building (18 × 5.5 m) at Tell Deir Situn has been interpreted as a police post or waystation close to the main route from Nineveh leading north.

Parthian remains were identified at a few sites, but it was not clear how Parthian sites were distinguished from Hellenistic—and indeed the reports on many sites combined the two periods. In the early centuries of the first millennium CE, this region at times lay on the borders between the empires of Rome and Iran. The site of Seh Qubba may have been an outpost of Roman rule on the west bank of the Tigris, and traces of a mosaic floor were found. The site stayed in use in the Sasanian period; the walls of the city, which encircle an area of more than 100 hectares (247 acres), may have been built then.

The Sasanian period was recognized at about ten sites. The only site with substantial architectural remains was at Mseifneh, where a monastery with a fine basilican church constructed from worked stone was uncovered. This building may have been constructed in the fifth century CE; it remained in use (though perhaps not as a Christian religious building) until the Il-Khanid period. A cemetery at Tell Mohammed Arab provided evidence for the burial customs of the period. Most of the inhumations lacked funeral offerings, but a few were plentifully supplied with jewelry (e.g., beads, seals, earrings, rings, bracelets) and with glass bottles that may have held perfume.

As might be expected, almost half the sites excavated had remains from the Islamic period. Sometimes these were a few burials, but some sites had substantial buildings. At Tell Khirbet Saleh a stone and mortar structure with columns was interpreted as a heathen temple built in the ʿAbbasid period. At Deir Situn a church was dated to the thirteenth century, but fragmentary architectural remains may belong to an earlier church, perhaps originally constructed in the Sasanian period. At Mishrifeh village, a khan built in the ʿAbbasid period remained in use until the Il-Khanid period. At Tell Baqaq 3, another khan in use in the Il-Khanid period was found. At Kharabok a large courtyard building constructed in the ʿAbbasid period was rebuilt in the Il-Khanid period, when an elaborate water system was installed. Tell Selal had substantial fortifications from the Middle Islamic period.

The project area has no natural boundaries and is divided by the Tigris River and the wadis flowing into it. The majority of sites in the project were small and occupied for short periods. One consequence of this is that only very few cuneiform tablets were recovered: two Middle Assyrian tablets from Tell Madhhur, two Late Assyrian tablets from Tell Baqaq 2, and a curious hemerological tablet (tablets that list activities to be done on different days of the month) from a Hellenistic pit at Tell Fisna. These do not contribute greatly to a deeper understanding of the history of the region. The archaeological results, however, were extremely interesting: in particular, the elucidation of the chronology of the Late

Uruk and Ninevite 5 periods is of importance for the whole of northern Mesopotamia.

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MICHAEL ROAF

ESSENES. Known primarily in the late Second Temple period, especially from about 146 BCE to about 70 CE, the Essenes were a movement within Judaism, a communal association, entered by initiation. They considered themselves to be the predestined remnant of those who truly observed God's will and pursued their own interpretation of Torah and prophecy. Although Essenes influenced the development of rabbinic Judaism and of Christianity, neither of those groups affirmed the Essene's self-description, and the history of the Essenes has often been considered enigmatic.

The Name *Essenes*. The name *Essene* has two forms in Greek, *Essaioi* and *Essēnoi;* the English pronunciation comes from the latter form, but the *Essaioi* spelling appears to be the earlier and more Semitic form. Because the solution is crucial, more than fifty different etymologies have been proposed, but no scholarly consensus has yet been achieved. Some have proposed another Greek word to explain the origin of the name, for example—a similar, though not identical, name for certain priests of Artemis in Ephesus, *Essēnas.* Most scholars have concluded, however, that the Greek forms of the name *Essene* derive from a Semitic (Hebrew or Aramaic) root. The two most often-repeated guesses involve two Aramaic words, *ḥasayyâ* ("pious") and *'āsayyâ* ("healers"), but neither appears in any known ancient text in a reference to the Essenes. A Hebrew proposal is the root *ʿaśah* in the participle form *ʿôśin* and the construct form *ʿôśê hatorah* ("doers of torah"); this appears as a self-description in several Dead Sea Scrolls. It parallels some other relevant group self-understandings (e.g., Samaritans as "keepers" of torah), and it corresponds with Philo's etymological guess of *hosios,* Josephus's transliteration of the Hebrew *ḥôšen* as *essēn,* and Epiphanius's spelling of this Jewish sect as *Ossaioi* and *Ossēnoi.* This Hebrew solution was proposed long before the Qumran discoveries (see, e.g., Jost, 1839); while it accords well with the evidence, no consensus yet exists.

Sources on Essenes. Several ancient descriptions of the Essenes have survived in Greek and Latin texts. Among the most important are those by the three earliest authors, Philo, Josephus, and Pliny. Later accounts by Hippolytus and Epiphanius, among others, also preserve important additional observations (see Adam and Burchard, 1972; Stern, 1976–1984; and Vermès and Goodman, 1989). Most of these ancient accounts were addressed to non-Jewish audiences, which influenced the selection of Essene characteristics and the manner in which they were described. These texts show philosophical (especially Stoic) and ethnographic interests typically found in Hellenistic history and geography texts. Several of these descriptions relied on earlier, now-lost texts, including at least one Greek source earlier than Philo, whose account is the earliest extant. Posidonius, Strabo, and Marcus Vipsanius Agrippa are among the likely authors of now-lost descriptions of Essenes (see Goranson, 1994).

The Qumran Evidence. Pliny located an Essene settlement near the Dead Sea. In the analysis of most scholars, the ruins at Qumran and the scrolls from surrounding caves belonged to a group of Essenes. While a few argue that Khirbet Qumran might have been a fort or a winter villa, the majority of historians and archaeologists regard Qumran as one of the Essene settlements. Other settlements or community centers were located in Jerusalem and in the "land of Damascus" (beyond the Jordan River) and elsewhere. According to Philo, the Therapentae, who lived in Egypt, were related to the Essenes.

Several of the Qumran manuscripts include parallels to the teaching, practices, and self-description of the Essenes (see, e.g., Beall, 1988). Surely some of the texts found at Qumran are Essene, including the *Serek ha-Yaḥad* (Rule of the Community or Manual of Discipline), several Bible commentaries *(pesharim),* and the text designated 4QMMT, *Miqṣat Maʿasê ha-Torah* (Certain Enactments of the Torah). Such texts as *Jubilees* and portions of *Enoch* and *Testaments of the Twelve Patriarchs* likely are pre-Qumran texts written within the Essene (or pre-Essene) movement. Many new publications concerning the texts and the archaeology of Qumran will continue to appear whose conclusions may modify some currently held views.

Beliefs and Practices. Essene teachings shared much with those accepted by other Jews, such as the Torah and the writings of the Prophets, but they claimed a special, sometimes esoteric interpretation of Scripture. Essenes regarded the Jerusalem Temple high priests (sometimes associated with Sadducees) as misled, following wrongful practices and the wrong calender. Although Essenes were

careful in their legal deliberations, they never referred to this exercise as "*halakhah,* instead alluding to that term only in a repeated and negative pun against Pharisees as the "seekers of smooth things" *(dōrĕšē ha-ḥălāqôt).* Essenes observed Torah strictly but according to their own interpretation and described themselves as doers of torah. Essene beliefs included predestination, important roles for angels, and resurrection, but not necessarily including bodily resurrection (Josephus and Hippolytus differ on this; see Puech, 1993). They expected a messiah, or, in some descriptions, priestly and royal messiahs. The Essene apocalyptic and dualistic worldview is more similar to the *Book of Daniel* than to *1* and *2 Maccabees.* (The latter are not found among the eight hundred or so texts from Qumran; God and the angels—not men—will destroy the community's enemies.)

The Essene communal organization had rules for initiation and punishments, including expulsion. Some Essenes were celibate and some observed periods of celibacy limited to certain times or places. Essenes kept no slaves, and at least the full members held property in common. Agriculture was their main occupation; they made no weapons. They avoided the courts of outsiders. Their rules for ritual purity were strict. The extent to which they participated in the Jerusalem temple cult is an issue still debated.

History of the Essenes. Josephus wrote that Essenes existed in 146 BCE (*Antiquities* 13.171), probably because his source, Strabo, began his *History* then. No year of origin can be pinpointed with the evidence available, perhaps because the Essene movement developed gradually or because the movement preceded the Greek form of its eventual name. Three of the four Essene individuals mentioned in Josephus are known for prophecy and were present in Jerusalem. Josephus also located an Essene gate in southwest Jerusalem (*War* 5.145). The fourth, John the Essene, who joined the Zealots, is less typical; John—a common name—was given the additional descriptive, Essene, because it was not usual to find an Essene relying on human weapons.

Qumran texts describe certain individuals, especially an Essene Teacher of Righteousness and his opponent, the Wicked Priest—some scholars suggest there was more than one of each. Jonathan (161–143/2 BCE) is considered by many to be the best candidate for the Wicked Priest, but Alexander Jannaeus (103–76 BCE) is another possible contender. Although most scholars believe that the Teacher of Righteousness cannot be identified with any known historical personality, a potential candidate is Judah the Essene. Josephus (*War* 1.78–80; *Antiquities* 13.311) places him teaching in about 104 BCE, soon before Alexander's rule. He may be the same Judah recorded in the Babylonian Talmud (*Qid.* 66a), in which he asks Alexander to give up the priesthood, and perhaps also in the Habbakuk Commentary from Qumran (1QpHab 12.4). The Essenes' negative view of the latter Hasmoneans was shared by Strabo, who wrote (*Geography* 16.2.35–40) that Alexander was among the tyrannical and superstitious leaders who departed from the honorable teachings of Moses.

The Essenes disappeared from history sometime after the First Jewish War against Rome (66–70). While considerable debate continues concerning the many aspects of the movement's history, research has succeeded in revealing much diversity within late Second Temple Period Judaism.

[*See also* Dead Sea Scrolls; *and* Qumran.]

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STEPHEN GORANSON

ETHICS AND ARCHAEOLOGY.

Ethics are standards of moral judgment and conduct to which individuals or groups subscribe. Ethics flow from the ongoing life of a community as it questions whether its practices are appropriate or valid. Each community discusses these questions in order to define standards for its members. Smaller groups or individuals then translate the standards to fit their particular situations. In effect, ethics represent values and ideals that are continually negotiated by those who subscribe to them, based on factors within and outside the group. Ethics constantly evolve, but they are fundamentally conservative

in that they are meant to protect the group and its members from internal discord and from external attack by those who might have an interest in the community's activities.

Archaeological ethics exemplify these principles. The community primarily defines itself as having an interest in exploring and understanding the past. Subgroups form around these interests, and each then defines its ethics. For example, formal or informal groups may form around the study of archaeology from a certain region, such as the Near East or North America. Others may form around study of a particular time period, such as the Upper Paleolithic or the Ottoman Empire. Still others may form around specialities, such as museum studies or heritage management. An overlapping of interests and standards is common among subgroups, but to assume that there is or ever can be a single set of ethics would be erroneous. At the same time, groups do deal with similar issues as they define their ethics.

Among the first and most important questions addressed by each group is: Who is or is not an archaeologist? As cultural resources management specialist Leslie Wildesen has pointed out (in Greene, ed., 1984), this usually means who is or is not a "real" archaeologist. The distinction is drawn between archaeologists as members of a peer group and outsiders who lay claim to membership but are not accepted by the group. These outsiders may range from amateurs to journalists to dealers in antiquities. The integrity of the group is assessed on the basis of the integrity of its members. Groups therefore may demand that its members have well-defined credentials—formal education, often at least a graduate degree, and other sorts of training, such as internships or attendance at field schools, where proper excavation techniques are learned and practiced.

Membership standards have changed dramatically since archaeology began. People such as Heinrich Schliemann and Jean-Baptiste Belzoni, who in their own time were accepted as archaeologists, might now be labeled as little more than looters, grave robbers, or publicity seekers—at best, "historical figures" or sophisticated amateurs. These standards are obviously subject to changes in the group's intellectual climate. To some degree, members may reflect the views of outsiders, who may, for example, be concerned with matters of cultural patrimony. As segments of the archaeological community professionalized and established formal organizations, these associations took it upon themselves to establish minimal standards for membership. Some, as in the cultural resources management community in the United States, lobbied outside entities to codify these standards into government regulation. The membership standards have sometimes been hotly debated, but the issue has been relatively simple because the group involved is relatively small and controllable. Vastly more complex is the question of the accountability of group members.

To whom should archaeologists be accountable? From the early days of archaeology into the present, some archaeologists have believed they should be held accountable only to their profession (i.e., subgroup). Their primary responsibility, some believe, is to their "science" or to "the past" or to another abstract entity. Most archaeologists recognize, however, that from the outset, archaeology has almost always been conducted for a client—whether a patron, a museum, or a government agency. Clients have vested interests, and thus a say in how every aspect of archaeology is done, from excavation to the interpretation and use of information. At the same time, archaeologists have recognized that they are themselves members of other groups, whose views influence archaeological practice. In other words, archaeology is done within a framework of the larger society. Questions of accountability result in a profoundly more difficult matter: Who sets the agenda for archaeology?

Another way of phrasing this might be: For whom do archaeologists do archaeology? Certainly one answer is that they do it for themselves. Archaeology can both provide a livelihood and satisfy curiosity about the past. Some would maintain that this is enough. Professional archaeologists, at the very least, question their role in relation to the sciences and humanities. They understand that their theoretical approaches and excavation techniques have an impact on the sites and materials they study. Most also recognize that their discipline plays a role in the larger society. Therefore, most realize that they are accountable to outsiders as well as to their profession.

Awareness of these other constituencies to archaeology has only come in recent decades. Initially, as archaeology became professionalized, the group's definition took precedence, as did clarifying appropriate methods and techniques of archaeology. As archaeology began to look outward, it noted the concerns of outside groups and the issues became both complex and intertwined.

Among the most important of these issues is the preservation of archaeological sites from destruction by forces such as those accompanying economic development. Archaeologists have been extremely vocal in demanding that outside groups pay attention to the loss of sites that many maintain are part of the world's heritage. They have called for site protection on national and international levels and have succeeded to some degree. For example, the League of Nations Mandate for Palestine, ratified in 1923, outlined the excavation and preservation of archaeological remains. All league nations were given equal rights to excavation, overseen by a Department of Antiquities whose director could requisition land for excavations, deny permits to unqualified archaeologists, and punish looters of antiquities. In the United States, antiquities received some protection under the Antiquities Act of 1906, but vastly more under the Historic Preservation Acts of 1966 and 1974 and the Archaeological Resources Protection Act of 1979. Under these laws and their accompanying regulations, any federal government action involved in disturbing the landscape must

provide for the location, protection, or mitigation of the loss of sites (usually by excavation) that are potentially eligible for inclusion on the National Register of Historic Places. While, however, preservation of sites may seem a noble goal, it raises difficult problems.

By working toward implementing preservation policy and law, archaeologists recognize their dependency on governments, thereby legitimizing nonarchaeological interests and giving them a voice in archaeological practice. Among the most knotty problems is preservation for what and for whom? The dilemma is a simple one: How is potential economic benefit from a development project to be weighed against potential scientific and humanistic benefit from an archaeological site? The interests behind economic development are vast and often very powerful. A government, for example, may promote an open-pit mine that will allow it to compete more powerfully in the import-export market. Increased revenues may bring jobs and a higher quality of life to citizens. At the same time, construction of the mine may destroy important sites from which everyone can learn important lessons about their heritage (which also may be said to improve quality of life).

While some archaeologists would urge protection of the pit-mine site, others would urge excavation if it could not be preserved. Excavation benefits archaeologists scientifically; it can also benefit financially, if a developer pays for the excavation and analysis of the artifacts. Archaeologists can find themselves in an ethical dilemma: wanting to preserve sites, while wanting access to the information and funds for excavation. In fact, developers, the public, and government agencies have accused archaeologists of stopping progress or of seeking personal gain through laws the archaeologists sought to implement. Additional questions relate to how a site's significance is determined: Who is most capable of making such a determination? Archaeologists maintain that they are. Again, the question of self-interest can be raised.

Once the economics of excavating is settled, other issues come into play. If a site is preserved as a part of peoples' heritage, how it is to be treated raises additional internal ethical problems: Should the site even be excavated? Excavation is, after all, a destructive process. Some archaeologists urge no excavation, preferring preservation. As David Lowenthal (1985) cautions, however, preservation reveals that permanence is an illusion. Even untouched, a site and its significance are continually altered and reinterpreted. Other archaeologists suggest conservation, by which, subsequently, one part of a site might be excavated while the rest is left undisturbed, in expectation of renewed study at some point in the future when advanced theories and techniques may be available.

Whether the decision is preservation or conservation, nonarchaeologists still have a say. If sites are in fact a public heritage, they should be accessible. What then is archaeology's responsibility in interpreting sites for the public? At a minimum, archaeologists recognize that they must complete the analysis of their work and publish their findings. How sensitive, then, do archaeologists need to be to the accusation that they often use jargon incomprehensible to nonspecialists. Many archaeologists believe that they have an obligation beyond publication to educate the public about what they do. In many countries they have developed public education programs: ninety-seven countries are linked in the Associated Schools Project (ASP) affiliated with UNESCO. One ASP project, the Fifth Lyceum School on Cyprus, decided to explore four rescue archaeology operations: Nubia and Philae, Borobudur, the Acropolis, and Paphos on Cyprus. Such projects raise a question already asked: Whose agenda is paramount in educational projects, those of teachers, archaeologists, government entities, or other interested parties?

Closely tied to projects like these are entities linked to the protection and presentation of the past of which museums are the most visible. Although archaeologists are frequently associated with museums, the objectives of the two are not always compatible. Museums have their own ethical concerns, which sometimes involve purchasing or trading antiquities. Many archaeologists believe that assigning a monetary value to antiquities promotes the looting of sites. As a result, some professionals have recently debated whether, ethically, the discipline of archaeology can include the study objects in a museum that were purchased or otherwise obtained under ethically questionable circumstances. Governmental entities have sometimes determined that the past can be used for financial gain through tourism. This may involve support for museums, but it may also encompass developing certain important monuments or archaeological sites as tourist attractions.

During the mid-1960s, concerns about how such sites should be treated led to the development of a set of principles to guide the conservation and restoration of sites and monuments. The International Council on Monuments and Sites and associated committees were formed to promote these principles. Crucial ethical concerns about the protection and development of archaeological sites involve the expenditure of funds and who decides what will be developed. Developing sites whose significance is questionable depletes funds available for locating, exploring, and interpreting sites of equal or greater potential scientific merit.

A case in point is the (High Dam) Nubian rescue campaign in Egypt in the 1960s. Might the $63 million spent on moving and restoring Abu Simbel (whose inscriptions had long been recorded and that some argue is aesthetically mediocre) been better applied to locating and excavating unrecorded sites that would have given a more complete picture of Nubian archaeology before the dam also covered them with water? Might a fraction of that money have been usefully dedicated to upgrading the Cairo Museum, which

houses Egypt's most significant national treasures? Some Egyptologists argued the case, contending that the overall scientific goals at Abu Simbel were more important. In the end, the decision to save Abu Simbel was made by Egyptian politicians acting on behalf of the Egyptian public. Archaeologists who questioned whether the scholarly community was capable of judging Abu Simbel's worth supported the politicians. Was the decision vindicated by the more than a thousand tourists per day who paid to visit the site, more than the number who formerly saw it in a month?

Archaeologists face other challenging problems relating to site protection: What should be the role of archaeologists in instances of international, regional, or civil conflict, when important archaeological sites are endangered? During the Gulf War, Allied bombing jeopardized numerous sites in Iraq (ancient Mesopotamia). Nine of the seventy-seven nations ratifying the 1954 UNESCO Convention for the Protection of Cultural Property in the Event of Armed Conflict were directly involved in the conflict (the United States never ratified the agreement). The Department of Defense of the United States, a major participant in the war, reportedly did not give these matters much thought, for which it was strongly criticized. Civil conflict produces similar situations. During Lebanon's civil war in the 1970s and 1980s, the National Museum was looted, vandalized, and hit by shelling. Museum staff attempted to protect its well-known Roman and Phoenician sarcophagi by encasing them in concrete. Roman and Iron Age Phoenician cemetery sites in Tyre were looted and their gold, jewelry, and pottery sold to antiquities dealers. A 1988 decree passed by the Lebanese Ministry of Tourism, which oversees the Department of Antiquities, makes dealing in antiquities illegal. The Lebanese army has stopped most site looting, and transportation authorities have been on the lookout for antiquities smuggling. Archaeologists who involved themselves directly in saving sites and seeking solutions to the postwar return of antiquities did so at some personal risk. Even when political situations stabilize, matters of funding are primary. How is limited money best spent: in repairing sites, monuments, and museums or in returning and caring for Lebanese antiquities?

Governments recognize that the past is a very powerful tool and they have used it as such, sometimes with the complicity of archaeologists. The history of archaeology is intimately linked with colonialism. Some of the field's first knowledge of the past was directly related to conquest. Neil A. Silberman (1982) recounts the international struggle for control of the archaeological resources of the Holy Land, where Western (largely Christian) nations, Jews, and Muslims have contested control of the region's antiquities for generations. Governments have also used the results of archaeological investigation for nation building. During the Gulf War, Iraqi leader Saddam Hussein, hoping to build internal support for his regime's activities, compared his empire with that of ancient Mesopotamia. Modern Israel is a powerful example of archaeology effectively used to provide direct historical links to a land. Its archaeological and political agendas have often been fundamentally the same, as in the excavation in the 1960s of Masada, whose historical reconstruction has only recently undergone critical reexamination. The siege of Masada became a national symbol for a besieged Israel and a connection to a heroic past. For a time national defense forces used Masada as a place for swearing in new tank corps recruits who vowed that "Masada shall not fall again." New analyses suggest that archaeological evidence may not support the first interpretations of events at the site. At the same time, Israeli archaeologists and the government remain at odds about antiquities traffic. The government allows some traffic in Holy Land relics as a means of promoting the centrality of the nation: it enables Jews and Christians in other countries to possess something of ancient Palestine in the hope that they will support Israel politically. Some of that country's most important archaeological finds were looted and turned up in dealers' shops, the best-known example being the Dead Sea Scrolls. Archaeologists' own perception of their role varies. Most recognize the ethical dilemmas posed by the traffic in antiquities.

Archaeology in a postcolonial world poses other ethical quandaries. Among the most delicate are matters of cultural patrimony, indigenous rights, and representations of the past; the three are usually integrally linked. Some nations, recognizing the power of the past as a nation-building tool, have demanded the return of antiquities taken from their territory. These demands have especially been aimed at museums in North America and Europe and pose major problems. Notable examples include the so-called Elgin Marbles, which reside in the British Museum but were taken between 1803 and 1812 by Lord Elgin (Thomas Bruce) from the Parthenon in Athens. The legal complexities of Priam's Treasure, now in Russia at the Pushkin Museum, supposedly taken from Hissarlik/Troy by Schliemann in 1873, are tangled. No fewer than five nations have some claim to it. These claims range from rights of possession and war claims (United States and Russia), to rights of the excavator (Germany), to rights of location (Turkey), to rights of cultural patrimony (Greece). Indigenous peoples or religious groups in some regions have demanded the return of sacred objects and the skeletal remains of their ancestors. Groups now protest the excavation of any archaeological sites by outsiders, or at least place limits on their work. In Israel, archaeologists and rabbis often struggle over excavations, especially those involving burials. Sarcophagi recently recovered in rescue excavations in Jerusalem's French Hill neighborhood and just outside the Old City walls near the Jaffa Gate were turned over by the director of the Antiquities Authority to a burial society for immediate reinterrment under Jewish religious law. Archaeologists have filed legal action so that they

can study the caskets. Across the Middle East, Muslim laborers have had to be assured that they were not excavating the remains of Muslims. In part out of cultural patrimony and in part of Muslim sensibilities, the Egyptian government requested return of mummies and their display in museums has been curtailed.

Many peoples have also claimed that because the archaeology done in the past on their lands was done by outsiders, the past created was a colonial tool used to dominate them. They protest that their oral histories are neglected in impersonal archaeological models and chronologies. As a consequence, some groups employ only archaeologists sympathetic to their concerns, train their own citizens to do archaeology, or in some cases outlaw archaeology altogether, stirring international debate among archaeologists.

There is concern among some archaeologists that returning artifacts and remains destroys the archaeological data base. They ask whether artifacts will be properly cared for if repatriated or, as has been documented, they will end up on the antiquities market. Those who believe that archaeological sites and artifacts are a universal heritage have been outraged when objects fall under the control of a nation or an ethnic group that keeps them forever out of reach of others to see or study. There is also concern about the limits set on academic freedom by religious and political groups by dictating research agendas.

Archaeologists who recognize the colonial nature of their enterprise have attempted to reach compromises. In the United States, for example, the Native American Graves Protection and Repatriation Act of 1990, passed over the objection of many archaeologists, was supported by others, who helped to write it and lobbied for its passage. It requires the U.S. government to fund museums and laboratories to inventory sacred objects and skeletons and make a good-faith effort to return them. The law also demands consultation with tribal groups over how archaeological research is carried out on tribal lands.

Some organizations have come to recognize that archaeology is fundamentally a political exercise that places archaeologists in tenuous ethical positions. For example, the explicit goals of the World Archaeological Congress (WAC), formed in 1986, are to incorporate archaeologists from underdeveloped countries and indigenous peoples and to examine the political and ethical ramifications of archaeology. These issues are central themes at their meetings and in the numerous WAC publications in the One World Archaeology series. At the 1990 WAC 2 meeting in Venezuela, the WAC Executive passed a code of ethics for dealing with the primacy of indigenous peoples to control any archaeology that studies their pasts. Significantly, the code was generated by indigenous peoples.

At no time in the history of archaeology have archaeological ethics been under greater scrutiny than since the early 1980s. At no time in the past was there greater disagreement about what is or is not ethical practice. The issues are complicated and there are few easy solutions. For each subgroup formed and for each ethical question posed, a continuum of opinion exists about how to behave ethically. What is undeniable is that by continually reassessing ethics in archaeology, the discipline undergoes continual change.

[*See also* Nationalism and Archaeology; Tourism and Archaeology.]

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LARRY J. ZIMMERMAN

ETHIOPIA. The name Ethiopia was adopted into the Ge'ez dialect in early Christian times by the Axumites in the northern part of the land from the Septuagint equivalent of

Hebrew Kush. The name *Eritrea/Ertera,* or more commonly *Bahra Ertera* in Ge'ez, referred to the Red Sea until modern times when it came to designate the northern plateau of the Horn of Africa after it was colonized by the Italians at the end of the nineteenth century. There are many ancient names that refer to one or another part of Ethiopia. The Egyptian Punt or biblical Put referred to one or another part of the Horn of Africa. Three identifiable biblical names also designate Ethiopia and those parts of modern Sudan and Yemen that were once controlled by the Axumite Empire. Kush is known from about fifty references to individuals, peoples, and lands, their merchandise, and political influence. It is also associated with the Garden of Eden river Gihon, the name Ethiopians give the Blue Nile, Sheba recalls the famous queen, who was visitor of King Solomon. Hawilah, like Kush, was one of the lands of the Garden of Eden; its river, Pishon, was once identified with the rivers of Ethiopia, those tributaries of the Nile called Gihon in Ge'ez literature.

Habashat, from which the modern name *Abyssinia* is derived, is one of the toponyms found in the Proto-Ethiopic/Sabean inscriptions. It was once thought to be the name of a major tribe that entered Ethiopia from Yemen. The epigraphist A. J. Drewes first noted in 1962 that the name appears in Yemeni inscriptions but not until about 350 CE in Ethiopian inscriptions. Others have subsequently argued that the name is topographical and the territory most reasonably covers the Ethiopian regions.

Origin. The origin of ancient Ethiopia as a political state goes back to the first millennium BCE, a centralized kingdom with Axum as its capital came into being in the north. There exist extensive archaeological and epigraphic evidence about this kingdom gathered from the surroundings of Axum and from such sites as Maṭara, Qasqase, Taconda, Qohaito, and others in the neighboring state now known as Eritrea. According to these archaeological sources, ancient Ethiopia, from about the fifth century BCE until the early Christian period, was an area comprising the wedge-shaped, northernmost Ethiopian plateau, including the Eritrean seacoast where the ancient international port of Adulis was located. With the conquest of many of the surrounding peoples and states, the original kingdom expanded far into the interior highlands and eventually gave rise to a large kingdom, which came to call itself Ethiopia in early Christian times.

Archaeological evidence, internal inscriptions, and external information show that the large kingdom grew into an empire at the dawn of the period we call the Middle Ages in Europe. Comprising a territory almost the size of western Europe, Ethiopia's borders extended from beyond the island of Meroë to Marib in the heart of the Arabian Peninsula. Only Rome and Persia could compare to it in size and power until the about the eighth century CE.

Prehistoric Archaeology. Some of the earliest human remains have been found in the Awash River valley, the Omo River valley, Malka Qunture, and other regions throughout the Ethiopian Rift valley. These regions link the Paleolithic Rift valley with historic Nile civilizations. Among the most recent discoveries is one of the most complete (nearly 60 percent) skeleton of a hominid named *Australopithecus afarensis,* popularly known as Lucy, and believed to be over three million years old. Discovered in 1974 by a joint Ethiopian-American expedition, it is now thought to be an important link between humans and apes. This skeleton and other recent discoveries, which are coming to light even now, point to the Ethiopian Rift valley as an important area of early human evolution, if not indeed the place of our origin (Johanson and Edey, 1981). [See Hadar.]

Evidence from the Neolithic period (c. 10,000) also points to the existence of African peoples who developed in Ethiopia various agricultural techniques such as terrace farming and crops such as millet, sorghum, and cotton. Cotton is thought have developed in southwestern Ethiopia from a primitive herbaceous plant. According to some botanists, all prehistoric survey evidences point to Ethiopia as a major center of ancient agricultural evolution and the birthplace of most African crop plants.

Connection with Ancient Egyptian Archaeology. About 2200 a group of people described as the C-group by Egyptologists, entered the Meroitic region and eventually western Eritrea. This group left its impression through its rippled pottery found at Agordat.

Not much earlier, in the time of the Egyptian pharaoh Sahure (c. 2458–2446), the earliest expedition to the land of Punt (which had the epithet "god's land" in Egyptian) took place. The identity of Punt is still a matter of debate, but the goods brought from there—resins, frankincense, ointment, myrrh, electrum (gold with silver alloy), and ebony—point to the Horn. Although myrrh grown in the Horn of Africa was already known in the time of the first and second dynasties (c. 2920–2649), and a slave from Punt was present in Cheop's court (fourth dynasty, c. 2575–2465), this is the first time specific mention of an expedition to the land of Punt is mentioned. Likewise, the Egyptian reference to an island prince who claims to be a serpent and controls spice and animal trade, may also point to the same region.

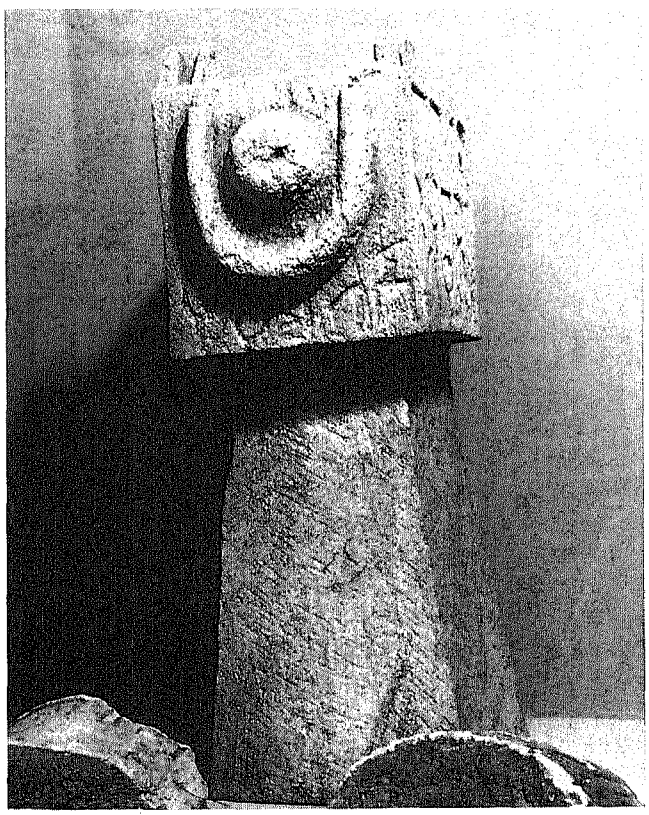
Other pharaohs, up to at least the time of Rameses III (c. 1198–1167), sent expeditions to Punt. It was in the time of Queen Hatshepsut (c. 1473–1458) of the eighteenth dynasty, however, that the most extended expedition took place to the land of Punt. It took beads, daggers, bracelets, to Punt and brought back fragrant woods, ebony, fresh myrrh trees, myrrh resin, incense, gold, ivory, panther skins, and live animals (panthers, monkeys, baboon, and cattle) and people. Carlo Conti Rossini as early as 1928 argued that Ethiopia is best identified with this combination of merchandise in antiquity (for a more recent confirmation of this view, see Kitchen, 1993). This expedition was truly a glorious one, recorded on the impressive temple reliefs of Hat-

shepsut's mortuary temple at Deir el-Bahari on the western bank of Thebes at modern Luxor.

Although no doubt contact between Ethiopia and Egypt persisted throughout history, we do not find enough archaeological evidence about it on Ethiopian soil until the time of the Ptolemies. Ptolemy II Philadelphus (c. 285–246) fought against the Seleucids with elephants possibly brought from Ethiopia. One of his successors, Ptolemy III Euergetes (c. 246–221) left an inscribed tablet at the ancient port of Adulis.

Axumite Archaeology. Excavations at Axum and the surrounding regions have uncovered many objects, including altars, incense burners, decorated pottery, buildings, dams, stelae, coins, and many more objects, which throw light on the artistic trends current in Axum at the time. The art of stonecutting and engineering was perfected at Axum as evidenced by the still-standing stelae, the ruins of the palace of Enda Mika'el, the 66.8-meter-long dam at Qohaito, and the temple at Yeha, among other works.

The later Christian kings continued this skill to build churches, such as the church at Abba Garima by Emperor Gabra Masqal (c. 550–575), the monastery of Dabra Damo, or even the famous church of gold and marble at San'a in Yemen built by the Ethiopian viceroy Abraha. The foundations of the famous church of Axum, where Ethiopians believe the original Tablets of the Law given to Moses or the Ark of the Covenant are found, go back to this period.



ETHIOPIA. *Early Ethiopian altar dedicated to the moon god Almaqah.* From Malazo, near Axum; dated to the fifth century BCE. Archaeological Museum, Addis Ababa, Ethiopia. (Werner Forman/Art Resource, NY)

Both the type of earth and the artistic style of Axumite architecture and pottery have been influential in Marib and pre-Christian Yemen (Van Beek, 1967). The northern sluice of the great dam at Marib constructed between the fourth and sixth centuries with headers protruding beyond the face of the wall was an Axumite technique with no real construction antecedent in South Arabian architecture or evidenced in the Marib region (Van Beek, 1967).

One of the most important archaeological sites in Ethiopia is the commercial port of Adulis, not far away from the modern port of Asab in Eritrea. Probably going back to the late Hellenistic times or the early period of the Roman Empire, Adulis came to international prominence. In later times, especially the reign of Emperor Kaleb (513–547), it was a base of an important military fleet. It controlled international maritime trade moving through the Red Sea and the Indian Ocean, connecting Asia with the Near East and the Mediterranean world. Adulis traded in ivory, tortoise shell, apes, hippopotamus hides, and obsidian (used for jewelry and mirrors). Trade enhanced the ancient Ethiopian Empire to establish cultural interchange not only with Asia but also with Rome. Archaeological remains point to Adulis as the area where the early Christian missionaries, who were Red Sea traders and travelers, began their evangelizing activities. Adulis was sacked in 640 CE by an Arab force.

In the nineteenth century, the first almost simultaneous discovery of Sabaean or Proto-Ethiopic inscriptions in Yemen and Ethiopia by David Heinrich Müller (1894) and Theodore Bent (1893) respectively, and by J. Halevy subsequently in both countries opened a new era of archaeological and epigraphic research in the region. Eduard Glaser (1891, 1895) in Yemen and Enno Littmann in Ethiopia (1913) advanced the research for these inscriptions which continue to be discovered up to today but which still require a more extensive survey. Many of the inscriptions found in and around Axum help us outline and understand not only the history of Ethiopian wars and expeditions and political state but also the character of ancient Ethiopian society and religion. Even in pre-Christian times, the author of the *Periplus of the Erythraean Sea,* who visited Axum around the second century BCE and wrote of its important commercial relations with the Greco-Roman world, observed that the Ethiopian king "Zoskales" was well acquainted with Greek literature. Numerous Greek inscriptions, including the important trilingual inscription of Ezana, have also been found in northern Ethiopia.

Among the numerous stone stelae with detailed inscriptions are three inscriptions of Emperor Ezana (c. 320–360). The first of these is a trilingual inscription about the war

ETHIOPIA. *Altar with Sabaean inscription in the service of the moon god Almaqah.* From Melazo, near Axum, dated to the fifth century BCE. Archaeological Museum, Addis Ababa, Ethiopia. (Werner Forman/Art Resource, NY)

with Tsarane in nonvocalized Geʿez, Sabaean (Proto-Geʿez), and Greek. The second written in Geʿez and Greek deals with the conquest of the Beja, a nomadic and warlike tribe. The third, perhaps the most important, deals with the conquest of the Noba, who occupied much of Nubia. The first two inscriptions call Ezana the son of the god Mahrem, son of Ares, whereas the third is dedicated in the name of the Lord of Heaven. From this evidence, historians have deduced that Ezana was the first Ethiopian king to be converted to Christianity. Others, however, hold that inscriptions of the later centuries including those of Emperor Kaleb (c. 514–546) that call upon the Trinity are evidence not only of Ethiopia's conversion to Christianity but of Christianity's triumph in Africa.

After about the middle of the seventh century Ethiopia lost control over the Red Sea trade, which had been a major source of economic and international strength, and entered a period of isolation. The decline of its maritime trade became one of the main reasons for an interest in Ethiopia's hinterland for other areas of economic wealth and stability. Probably in the tenth century the capital was moved to Agaw in the middle highlands, where Christianity was translated into indigenous African cultural terms. The north remained the spiritual center of the nation and Axum the national holy city.

The techniques of stonecutting and building continued. There have been discovered all over northern and central Ethiopia more than two hundred churches hewn out of rock. Beginning in the tenth century there was a cultural reawakening. A city of rock-hewn churches was built at new site called Lalibela, supposedly named for the king who founded the city. Although general and artistic descriptions of these churches abound in modern writings on Ethiopia, and Lalibela itself is a major tourist attraction, very little archaeological work has been done in and around its churches.

One of the most important archaeological finds in Ethiopia is a diverse and large amount of ancient coins dating from the third to the seventh century CE. In many of the ruins of the great structures of Axum and the surrounding regions, large finds of coins have been made. These coins not only reflect upon the wealth of ancient Ethiopia, but they also bear an important record of history and help us directly with reconstructing Axumite chronology and ancient Ethiopian history. Ethiopia was the only ancient kingdom in all of Africa to issue its own coinage.

The use of foreign money by international merchants in Adulis, which is reported first in the *Periplus of the Erythraean Sea* about two thousand years ago, has been confirmed by the discovery of foreign coins in recent excavations, which have also brought to light diverse indigenous Ethiopian Axumite coinage. Originating from at least early Christian times, it was struck of gold, silver, bronze, and other metals overlaid with gold. The coinage exhibits the royal head, the crown, and, in later times, the cross. Other coin finds feature half-length profile busts of kings wearing fringed robes and necklaces, bracelets, and armlets or holding a sword, a spear, or a hand cross and framed by two stalks of wheat. Some coins have a double representation of the royal image thought to be unique in ancient coinage.

The most common reverse motif on silver and bronze coins after the conversion of Ezana in 330 CE is the cross (Latin and Greek, diamond-shaped, and other variants). According to Bent Juel-Jensen (1991) and Stuart Munro-Hay (1984), the Axumite kings were the first Christian rulers to display the cross on their coins. Less common motifs depict an architectural reverse. One type shows an arch supported on double columns. The second (of Armah) depicts the columns supporting a central gold-inlaid cross flanked by two others with a key-shaped object under the arch. According to the numismatist Munro-Hay (1989a, 1993), these pieces may refer to both the conquest of Jerusalem by the Persians in 614 and either to Calvary or to the Holy Sepulcher.

Greek was used primarily on gold coins, but Geʿez came to predominate later on coins of other metals. King Wazeba used Geʿez on his gold and silver coins. On earlier coins the inscriptions call the kings "Son of Mahrem." Some of the

earliest Christian coins depict the cross framed by the words "May this please the people." Other phrases and statements "by the grace of God," "MHDYS, by this cross he will conquer," "joy and peace to the people," "Christ is with us," or "mercy and peace."

The inscriptions also reveal the names of a dozen well-known and about two dozen lesser-known kings of Axum. They span approximately the late third and the seventh centuries, representing the period of the rise and decline of the Axumite Empire. Among the finds are thin gold coins of kings Allamidas, Ella Gabaz, Ioel, Hataz/Iathlia, Israel, and Gersem. Emperor Kaleb, whose famous campaign against Dhu-Nawwas in Yemen took place about 525, is one of the last Axumite kings who issued a large number of gold coins.

Axumite coinage fluctuated in weight. According to Munro-Hay (1984, 1993), the fluctuations parallel those of Roman coinage. The heaviest gold coins equal the Roman half-aureus standardized at about 1.6g, like the Roman *tremissis* of the monetary reforms of Constantine the Great. The gold content also varies, the earlier coins being up to 90 percent. In the mid-fourth century King Ezana's issues were 80 percent. Fifth- and sixth-century coinage was 60–70 percent; Kaleb's coins had 64.2 percent; and Ella Gabaz' and Yoel's coins possessed only 50 percent. Numismatists think that the decline in the gold content of the coinage must have caused the collapse of the monetary system in the seventh century.

The oldest extant coins date to the fourth quarter of the third century and depict King Endubis, king of Axum, and his divine symbol. The king wears a helmet, depicted on both the obverse and reverse of his gold coins. Aphilas, Endubis's successor, issued coins made of gold, silver, and bronze with different sizes and designs. These exhibit variously the disk and the crescent, which were religious symbols, above an elaborate high tiara situated on a colonnade or a tiered bust. Although the reverse was inscribed, the obverse had no text.

The Axumite Empire is distinguished among many ancient states not only for its production of coinage but also for the minting of gold coins, as in Rome and Persia. The coins witness the great economic and political influence of the empire and its international trade connections with the Roman and Persian empires and the Indian continent. Unfortunately, with the decline and disintegration of the Red Sea trade in the seventh century, the Ethiopian capital moved further inland, and the international monetary system was no longer of use. With the demise of Axum, the production of coins dwindled and thereafter ceased probably around 630.

Archaeological Potential of Ethiopia. Ethiopia is still a largely unexplored archaeological paradise. Even many structures that stand above ground have not been fully recorded and studied.

According to Ethiopian Church tradition, the Ethiopian eunuch of the *Book of Acts* (8:27–39), was the first Christian missionary to Ethiopia. Christian missionary activities must have indeed begun all along the Red Sea regions beginning in the first century. Scholars believe that Ethiopia did not adopt Christianity as the state religion until the fourth century, when Ethiopia was at the height of its political, military, and economic power. The claim that Christianity did not gain eminence until the sixth century that occasionally is aired is speculation based on the tradition that the first Ethiopian Christian kings were Abraha and Aṣbaha, who ruled in that later period. In a highly africanized form, Christianity gave rise to the dominant culture of Ethiopia—its literature, art, music, law, and architecture. During the fourth and fifth centuries the entire Ethiopian plateau in the north was so thoroughly christianized that Cosmas, the famous Egyptian monk who visited Ethiopia about 525, returned impressed that there were "everywhere churches of the Christians, bishops, martyrs, monks, and hermits, by whom the gospel . . . is proclaimed." The sites of many ancient churches still remain unexcavated.

During the fifth through fifteenth centuries, there arose in the east several Muslim states such as Ifat, Dawaro, Hadya, Saho, Bali, and Afar that were assimilated into the Ethiopian empire. Little archaeological work has taken place in these regions. Likewise, many Christian sites of the twelfth through the fifteenth centuries await excavation. This era, which was a period of ecclesiastical revival, consists of the Zagwe dynasty (1137–1270) and the so-called Solomonid dynasty (1270–1527).

[*See also* Adulis; Axum; Hadar; Maṭara; *and* Meroë.]

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EPHRAIM ISAAC

ETHIOPIC. A language belonging to the Ethiopic Semitic subcategory of the southern group of Semitic, Ethiopic is more specifically known as classical Ethiopic or Geʿez (Eth., *gəʿəz,* perhaps derived from a root *gʿz* "become free"; less probably, "depart," "change camp"). Ethiopic Semitic, a highly differentiated family of some fifteen languages, probably developed out of a lingua franca based on one or more varieties of South Semitic imported into the Horn of Africa from Southern Arabia (modern Yemen), perhaps in connection with Southern Arabian migration or trading activity at some time during the first millennium BCE. Geʿez belongs to the Northern group of Ethiopic Semitic languages, as does its close relative Tigrinya, the language of modern Eritrea). It is attested in its full classical form by the fourth century CE but probably had disappeared as a spoken language by the tenth century. Geʿez has survived as an ecclesiastical and liturgical language. Until the nineteenth century, it was, for all practical purposes, the sole written language of Ethiopia. The official language of modern Ethiopia is Amharic, one of a dozen or more languages making up the Southern group of Ethiopic Semitic languages.

TABLE 1. *Ethiopic writing systems.* Columns 1-8 show the Ethiopic syllabary (each sign represents the row/column consonant-vowel combination); columns 9-10 show the Old South Arabian alphabet (OSA signs for s^3, theta, delta, z, and gamma not used in Ethiopic).

1	2 Ca	3 Cu	4 Ci	5 Cā	6 Ce	7 Cə	8 Co	9 OSA	10
h	ሀ	ሁ	ሂ	ሃ	ሄ	ህ	ሆ	𐩱	h
l	ለ	ሉ	ሊ	ላ	ሌ	ል	ሎ	𐩵	l
ḥ	ሐ	ሑ	ሒ	ሓ	ሔ	ሕ	ሖ	𐩨	ḥ
m	መ	ሙ	ሚ	ማ	ሜ	ም	ሞ	𐩣	m
š	ሠ	ሡ	ሢ	ሣ	ሤ	ሥ	ሦ	𐩦	s^2
r	ረ	ሩ	ሪ	ራ	ሬ	ር	ሮ	𐩺	r
s	ሰ	ሱ	ሲ	ሳ	ሴ	ስ	ሶ	𐩧	s^1
q	ቀ	ቁ	ቂ	ቃ	ቄ	ቅ	ቆ	𐩲	q
b	በ	ቡ	ቢ	ባ	ቤ	ብ	ቦ	𐩠	b
t	ተ	ቱ	ቲ	ታ	ቴ	ት	ቶ	𐩬	t
ṯ	ጠ	ጡ	ጢ	ጣ	ጤ	ጥ	ጦ	𐩮	ṯ
n	ነ	ኑ	ኒ	ና	ኔ	ን	ኖ	𐩡	n
ʾ	አ	ኡ	ኢ	ኣ	ኤ	እ	ኦ	𐩢	ʾ
k	ከ	ኩ	ኪ	ካ	ኬ	ክ	ኮ	𐩫	k
w	ወ	ዉ	ዊ	ዋ	ዌ	ው	ዎ	𐩥	w
ʿ	ዐ	ዑ	ዒ	ዓ	ዔ	ዕ	ዖ	𐩯	ʿ
z	ዘ	ዙ	ዚ	ዛ	ዜ	ዝ	ዞ	𐩤	z
y	የ	ዩ	ዪ	ያ	ዬ	ይ	ዮ	𐩩	y
d	ደ	ዱ	ዲ	ዳ	ዴ	ድ	ዶ	𐩭	d
g	ገ	ጉ	ጊ	ጋ	ጌ	ግ	ጎ	𐩪	g
ṭ	ጠ	ጡ	ጢ	ጣ	ጤ	ጥ	ጦ	𐩰	ṭ
ṗ	ጰ	ጱ	ጲ	ጳ	ጴ	ጵ	ጶ	–	
ṣ	ጸ	ጹ	ጺ	ጻ	ጼ	ጽ	ጾ	𐩶	ṣ
ḍ	ፀ	ፁ	ፂ	ፃ	ፄ	ፅ	ፆ	𐩸	ḍ
f	ፈ	ፉ	ፊ	ፋ	ፌ	ፍ	ፎ	𐩷	f
p	ፐ	ፑ	ፒ	ፓ	ፔ	ፕ	ፖ	–	
q^w	ቈ		ቊ	ቋ	ቌ	ቍ			
$ṯ^w$	ጐ		ጒ	ጓ	ጔ	ጕ			
k^w	ኰ		ኲ	ኳ	ኴ	ኵ			
g^w	ጐ		ጒ	ጓ	ጔ	ጕ			

The writing system used for all Ethiopic Semitic languages (see table 1) clearly developed from a South Semitic consonantal script of the type attested in Epigraphic South Arabic. A unique feature distinguishing this from all other West Semitic scripts is its evolution in the direction of a syllabary by the introduction of a distinct modification of the basic consonantal character for each of the seven vowels (/i e a ā ə o u/) of the language. There is, however, no special sign for a consonant not followed by a vowel (the *Cə* sign is used), or for consonant gemination (doubling), an important feature of Geʿez morphology. The consonantal inventory of Geʿez contains most of the "emphatic" and laryngeal consonants expected in a Semitic language. It is important to note, however, that the set of consonants is unique in having both an "emphatic" (glottalized) /p'/ and a class of "labio-velar" consonants (velars with a *w*-offglide) /k^w g^w q^w h^w/.

In verbal morphology Geʿez shares with other Western Semitic languages (Arabic, Hebrew, and Aramaic) the development of a perfective (past) tense based on suffixed subject elements; its imperfective (present-future), however, preserves an archaic construction found elsewhere only in Akkadian. In the paradigm of the base form of the perfective and imperfective of the verb *qtl* ("kill") shown in table 2, note also the /k/ in the first person singular and second person perfective subject suffixes, instead of the /t/ found in the other languages.

Of the three Common Semitic nominal case suffixes, nominative /-u/, genitive /-i/, accusative /-a/, only the accusative survives in Geʿez. Like Arabic and South Arabian, Geʿez forms the plural of a large portion of its nouns by replacing the vowel pattern of the singular: *kalb/aklāb* "dog/dogs," *wald/wəlud* "son/sons," *kanfar/kanāfər* "lip/lips." Syntactically, Geʿez tends to follow the verb-subject-object clause word-order pattern favored in West Semitic languages but less rigorously than some of the other languages.

The written attestation of Geʿez starts with a limited number of monumental inscriptions in an archaic nonvocalized form of the script. By the time of the fourth-century CE king Ezana, we find a number of long, vocalized, and monumental texts on stelae (essentially campaign narratives) from the capital, Axum, monotheistic (presumably Christian) in content, which show both the language and script in their essentially classic form. There are earlier polytheistic texts in nonvocalized Ethiopic script from the same ruler. Some of these texts are accompanied by Greek translations and transcriptions into South Arabian script. Properly speaking, the earliest period of Geʿez literature seems to date from the evangelization of Ethiopia, perhaps from the sixth century. (Few, if any, of the preserved Geʿez manuscripts can be dated confidently before the twelfth century.) This literature consists largely of translations and adaptations from Greek and possibly Syriac: the Bible and Apocrypha, liturgical texts, rules of Pachomius, collections of extracts from the Church Fathers, and hagiographical accounts. After a "dark period," which began in the eighth century and lasted for several hundred years, the literary tradition picks up again in connection with new monastic foundations and reestablishment of a link with the Alexandria patriarchate in the eleventh century. There is still a strong translation component, now largely from Arabic (itself in turn frequently a translation from Greek, Coptic, or Syriac), but there are also

TABLE 2. *Perfective and Imperfective of the Verb* Qtl *("Kill")*

	PERFECTIVE		IMPERFECTIVE	
	Sg.	Pl.	Sg.	Pl.
1	qatal-ku	qatal-na	ə-qattəl	nə-qattəl
2 m	qatal-ka	qatal-kəmmu	tə-qattəl	tə-qattəl-u
2 f	qatal-ki	qatal-kən	tə-qattəl-i	tə-qattəl-ā
3 m	qatal-a	qatal-u	yə-qattəl	yə-qattəl-u
3 f	qatal-at	qatal-ā	tə-qattəl	yə-qattəl-ā

new, original, and indigenous works in an ecclesiastical vein. These works include hagiography, local chronicles, and liturgical, devotional, and apocalyptic literature. Furthermore, court literature includes royal chronicles, a "national epic" (*Kəbra Nagast*—"The Glory of Kings"—recounting the origins of the ruling dynasty from a union of Solomon and Sheba, here, an Ethiopian queen), and legal documents. A tradition of magical texts continues into the twentieth century, its most visible manifestation being the ubiquitous "magic scrolls" composed in Geʿez for individual clients by learned clerics and worn as an amulet, rolled up in a leather case.

[*See also* Semitic Languages.]

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GENE GRAGG

ETHNOARCHAEOLOGY. The wide variety of approaches, methodologies, and questions designed to enhance archaeological interpretation through the application of ethnographic data to material remains recovered through excavation is collectively known as ethnoarchaeology. More technically, ethnoarchaeology refers to ethnographic study conducted for the purpose of applying it to a particular archaeological problem, such as tool construction and use, population density, use of domestic space, or pottery production. Archaeologists observe a living culture that is similar in both environmental setting and cultural character to the ancient culture they are attempting to reconstruct. The data from the living culture are then applied to the ancient setting in order to allow a more informed interpretation of the material culture. Some scholars therefore restrict the term *ethnoarchaeology* to describe and define problem-oriented fieldwork. Others prefer a broader definition and refer to problem-oriented field archaeology as either action archaeology (Kleindienst and Watson, 1956) or living archaeology (Gould, 1977).

Archaeologists and anthropologists have used ethnographic data to aid in interpretation and reconstruction since at least the mid-eighteenth century. Initially those data were used to study hunting-and-gathering societies. They were usually collected to study modern examples of those societies and were only secondarily applied to archaeological interpretation. In 1900, J. W. Fewkes used the term *ethnoarchaeology* to describe this type of research, but for much of the twentieth century the term has been only loosely defined (Gould and Watson, 1982). In the last forty years, advances in methodology have allowed ethnoarchaeology to emerge as a distinct discipline within the fields of anthropology and archaeology. Two important changes have taken place: there has been a linkage between archaeological and ethnographic fieldwork, so that the primary purpose of collecting ethnographic data is to assist in reconstructions; and scholars have consciously expanded the boundaries of ethnoarchaeology to include virtually all preindustrial societies—horticultural, agrarian, herding, nomadic, and maritime.

Methodology. Ethnoarchaeologists generally agree that the primary purpose of ethnoarchaeology is to aid archaeologists and anthropologists in the difficult task of interpretation. This occurs primarily in two ways: hypotheses concerning the use and origin of particular artifacts or architectural remains in ancient cultures are generated, and theories explaining the relationship between material remains and the human culture that produced them are developed and tested (Gould and Watson, 1982, pp. 356–357). However, debate continues over the role of "analogy" or "analogical reasoning" in the interpretative process. Specifically, questions remain about the appropriate limits and controls for the use of analogy. Some suggest loose controls (Robert Ascher, "Analogy in Archaeological Study," *Southwestern Journal of Anthropology* 17 [1961]: 317–325; Yellin, 1977); others propose that the scientific method be imposed rigidly on the interpretive process (Binford, 1967, 1982). While most recognize the need for caution in applying analogy, a minority of scholars suggest that analogical reasoning should be abandoned altogether on the grounds that it is circular and overly subjective (Freeman, 1968; Gould, in Gould and Watson, 1982).

In analogical reasoning, archaeologists seek analogs, or points of comparison, between a source society (contemporary, but premodern) and a subject society (ancient, often prehistoric). Those who favor the use of analogy generally agree that for analogical reasoning to be valid, several levels of similarity must exist—in cultural organization, environ-

mental setting, subsistence strategy, and technology—between the ethnographically documented culture and the archaeologically documented culture (Kramer, 1979).

In his programmatic article, Ascher (1961) drew attention to the need for a more sophisticated methodology to govern analogical reasoning. He points out that anthropologists frequently applied data directly from one cultural context to another (in what he called the direct-historical approach) with little sensitivity to the levels of continuity or discontinuity between the analog and the culture to which it was applied. He suggests that ethnoarchaeologists adopt a more nuanced approach to the data to include the use of multiple analogs in interpretation; ranking the usefulness of those analogs; incorporating more ethnographic data in interpretation; and showing greater sensitivity to the differences between living and dead cultures under study. Lewis Binford (1967) argues that Ascher's suggestions are inadequate and that if analogy is to be used in archaeological reconstructions it must be governed by scientific method. He called for archaeologists to state clearly the assumptions underlying their research and to frame and test hypotheses concerning the cultures being studied.

Patty Jo Watson (Gould and Watson, 1982) and Alison Wylie (1985) claim that analogical reasoning is indispensable to the interpretative process. Wylie maintains that a major reason for the resistance to analogical reasoning is its early naiveté, its evolutionary determinism, and its lack of adequate controls. She further argues that because ethnoarchaeologists have advanced more sophisticated methodologies, the distrust of analogy is no longer valid—that, at its core, all archaeological interpretation is analogical. According to Watson, the purpose of ethnoarchaeology is twofold: to collect analogs from as many contexts as possible and to develop theories and methodologies to govern the application of these analogs to the archaeological record. She readily admits the tentative nature of analogical inference but seeks to offset any subjectivity through evaluating each proposed analog for its degree of similarity between source and subject culture. In addition, Watson emphasizes the need of further scientific testing that would demonstrate both similarities and differences among the cultures under question.

According to Richard Gould, analogy is fundamentally flawed. He objects to its use on three points: analogical reasoning tends to be circular, it assumes a high degree of continuity (when it observes real or apparent parallels it claims to prove the uniformity that it has assumed); and apparent similarity among cultures does not prove that specific relationships actually exist between present and past practices or cultural patterns. Gould insists that analogical reasoning, and the apparent continuity it claims to prove, cannot adequately explain the variables inherent in human culture. Thus, he suggests that ethnoarchaeologists should concentrate on levels of cultural dissonance and anomaly rather than seek to demonstrate cultural similarities through analogy. Gould and others who oppose analogical inference frequently cite "cautionary tales" to demonstrate the weaknesses of analogy and to call either for better methodology or for the abandonment of analogical reasoning. These tales generally demonstrate that the proposed relationship between an ancient artifact and its contemporary analog does not exist, based either on problem-oriented research or newly gathered ethnographic information.

The concerns regarding the use of analogy are particularly important when prehistoric, hunter-gatherer societies are the focus of the study. In such cases, the time gap between the society from which the ethnographic data are gathered and the culture to which they are applied often approaches thirty thousand–forty thousand years. In the case of the earliest hominid remains, in which tool production or even subsistence patterns may be studied, the gap may increase substantially into the hundreds of thousands or even millions of years. Generally, the greater the time gap between the two cultures being studied, the more difficult it is to show that analogies truly exist and the more speculative the conclusions. As noted, most early ethnoarchaeological research focused on prehistoric cultures. However, recent ethnographic studies have been applied to historical societies for which scholars may possess both written and archaeological remains; in these cases, levels of continuity or discontinuity may be more easily discerned and analogy applied with greater accuracy.

Despite the concerns expressed by Gould and other scholars, analogy will probably continue to play an important role in ethnoarchaeological studies. Gould's criticisms have prompted scholars to be more sensitive to similarity and dissonance (or anomaly) between source and subject cultures; ethnoarchaeologists continue to be self-critical and more objective in the ways in which they apply analogical reasoning to the archaeological record.

Ethnoarchaeology and the Biblical World. As ethnoarchaeology has emerged as a separate discipline, it has increasingly been applied to the archaeology of the ancient Near East. Several important studies have been conducted throughout the region, from Cyprus to the Zagros Mountains, and have contributed to a greater understanding of numerous cultural patterns, including use of domestic space, pottery manufacture, population, pastoral nomadism, architecture, technology, and production. Among these issues three stand out as most significant in dealing with ancient Israel: pastoral nomadism, population, and production.

Pastoral nomadism. One of the major theories about the origins and emergence of Israel claims that the earliest Israelites were pastoral nomads who, for various socioeconomic reasons, chose a sedentary lifestyle over nomadism. This theory initially applied analogical parallels from late nineteenth- and early twentieth-century models of bedouin

culture and camel nomadism to the biblical texts (see, for example, Johannes Pederson, *Israel: Its Life and Culture,* London, 1926; W. Robertson Smith, *Lectures on the Religions of the Semites: The Fundamental Institutions,* Edinburgh, 1889). Albrecht Alt (1925) and Martin Noth (*The History of Israel,* New York, 1958) then used this model in their "peaceful infiltration" theory to explain Israel's emergence in Canaan. George Mendenhall (1962) subsequently showed the weaknesses of this theory, particularly because it relied on relatively late and highly idealized pictures of nomadism, and proposed an alternative model for Israel's origins. [*See* Israelites; *and the biographies of Alt and Noth.*] Recent scholarship has refined the model of pastoral nomadism through ethnoarchaeological and anthropological studies of various types of nomadic societies; rather than use one rigid model of nomadism, scholars are now able to differentiate among transhumant pastoralism, camel nomadism, and traditional pastoral nomadism (see, in particular, *Biblical Archaeologist* 56.4 [1993]).

One of the difficulties in reconstructing nomadic societies and testing their applicability to earliest Israel has been the paucity of material remains such societies leave. However, new techniques of investigation (some developed from intensive studies of living nomadic societies) allow archaeologists to retrieve data even from scant archaeological remains of ancient nomadic groups (Rosen and Avni, and Banning, in *Biblical Archaeologist,* 1993). Other studies concentrate on the complex social forces involved in the process of sedentarization, the origins of the four-room or broad-room house, the way in which traditional and nomadic societies maintain ethnicity, subsistence strategies, and settlement design. While these studies cannot prove or disprove the peaceful infiltration theory proposed by Alt, they have allowed for its refinement and for a more nuanced understanding of a societal type that was present in Syria-Palestine in antiquity.

Population. Perhaps the least controversial use of ethnoarchaeology is its application to population density in antiquity. Ethnoarchaeologists have examined various aspects of population density in rural villages in Iran and Syria-Palestine (including areal density and spatial patterning). Archaeologists most commonly use areal analysis to estimate the population of ancient Syria-Palestine. The density of population in a contemporary village is studied, and a population-to-area coefficient is applied to ancient settlements. Early studies suggested that as many as 450 to 500 persons lived on one hectare (2.5 acres) of settled space, which led to somewhat inflated estimates of population of cities and villages in antiquity.

As a result of several recent and more accurate studies of population density, the most widely accepted population-to-area coefficient is now 250 persons per hectare (25 persons per metric dunam [0.25 acre]). To compute population, archaeologists estimate a site's total settled area and then multiply the figure by the population coefficient. For example, a series of articles on the population of Syria-Palestine for the Early Bronze, Middle Bronze, Iron II, and Roman-Byzantine periods indicates that there were three population peaks for Syria-Palestine: the Middle Bronze Age II, Iron Age II, and Roman-Byzantine periods (Broshi and others: 1979, 1984, 1986, 1992). Such studies allow for a better understanding of the settlement and population patterns in particular periods and throughout the history of an entire region and thus for more accurate reconstructions of the larger socioeconomic and cultural patterns in antiquity. (Broshi, one of the pioneers in population studies, initially used the higher 450 persons per hectare coefficient; some of his early results should be recalculated using 250 persons, which will reduce estimates by about 45 percent.) [*See* Demography.]

Production. Cultural reconstruction also involves the mode and types of production. Scholars examine such features as crop types and yields, the relative importance of particular crops in production; technological innovations that affect crop types or yields, economic interrelationship among villages, and the degree to which villages were exploited by larger cities and their social elites.

With the assistance of the allied fields of ethnobotany and paleobotany, it is relatively easy to assess the types of crops that were most significant in the overall agrarian regimen. [*See* Ethnobotany, Paleobotany.] Similarly, technological shifts tend to be well represented in the archaeological record. However, additional sources of information are needed to answer questions about agricultural production and socioeconomic interrelationships. Israel Finkelstein (*The Archaeology of the Israelite Settlement,* Jerusalem, 1988) and Baruch Rosen ("Subsistence Economy of Stratum II," in *Izbet Sarta. An Early Iron Age Site near Rosh Haʿayin, Israel.* Oxford, 1986), for example, have turned to two sources to supplement the archaeological data: sixteenth-century CE taxation and census documents from the Early Ottoman period in Syria-Palestine and documents and statistics from the early British Mandate of Palestine (1917–1948). Although these materials were not compiled to assist archaeological interpretation, their use would be allowed under a definition of ethnoarchaeology that views archival data as legitimate for analogical inference.

Using the data from these two sources, Finkelstein and Rosen attempt to reconstruct the levels of crop yields possible for a particular region of Syria-Palestine. These reconstructions form the basis of their detailed analysis of village and regional economies, which shows how patterns of surplus or deficit affect the production of certain crops and how patterns of trade among villages offset environmentally influenced patterns. However, the data from the sixteenth- and early twentieth-century studies have been applied di-

rectly to the past without enough sensitivity to the sources of data or to the possible differences between the source and subject cultures (Carter, 1992). Although the approach may hold promise for future economic reconstructions of ancient Syria-Palestine, testable hypotheses need to be devised to determine whether the apparent continuity between these traditional cultures and those of antiquity is genuine. Only when adequate similarity between source culture and subject culture is demonstrated can the data be applied to ancient Israel.

Ethnoarchaeology shows significant potential for helping archaeologists interpret and understand the remains they excavate. It sheds light on the problematic archaeological issues of cultural patterns, socioeconomic setting, means of production, population, ethnicity of ancient societies, and the relationship between ideological and material aspects of culture.

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Biblical Archaeologist 56.4 (1993): "Nomadic Pastoralism: Past and Present." Includes five articles on ethnoarchaeology as it relates to pastoral nomadism and as recorded in archaeological remains and Near Eastern texts (see the articles by Augustin F. C. Holl and Thomas E. Levy, Ilse Köhler-Rollefson, Stephen Rosen and Gideon Avni, David C. Hopkins, and E. B. Banning).

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Broshi, Magen. "The Population of Western Palestine in the Roman-Byzantine Period." *Bulletin of the American Schools of Oriental Research,* no. 236 (Fall 1979): 1–10. This and the following articles by Broshi, Gophna, and Finkelstein represent studies of population and demography based on ethnoarchaeological assessments of population density. They show the methodological advances in such studies, demonstrating the use of population studies in the reconstruction of wider social and economic patterns.

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CHARLES E. CARTER

ETHNOBOTANY. By examining modern plant use and the interrelationship between humans and their environment, archaeologists and paleoethnobotanists can gain insight into ancient uses of plants and the processes responsible for the deposition of the variety of botanical remains found at archaeological sites. Among the many uses of plants, that of food is perhaps the most critical. Past subsistence practices, diet, and nutrition can be reconstructed by observing traditional methods and tools used in food preparation and processing. To understand how plants have been used for food, how they were deposited, and how they were collected, it is helpful to turn to the practices of comparable modern societies.

Studies have been carried out in Turkey and Greece to identify the by-products of crop processing activities, with a view to determining which plants and plant parts are likely to be preserved in various contexts at a Neolithic or Bronze Age site. One such study (Hillman, 1984) identified nearly thirty different steps necessary to process emmer wheat. From threshing, winnowing, and sieving, to final sorting before grinding, each step in the process produced various weed seeds, chaff fragments, or other plant parts that were ultimately deposited elsewhere on the site as fodder, mudbrick temper, or refuse. The disposal of certain by-products in hearths or middens that are subsequently burned, or the accidental destruction of a storage or processing facility by fire, will result in at least some of the specific by-products being carbonized and thus potentially preserved. It may then be possible to correlate similar types of deposits on archaeological sites with the processing step(s) used.

The ethnobotanist observes seasonal plant use, often for several years within a given community or region, in order to observe how some plants are stored while others are eaten immediately upon collection or harvest. In the course of several years it may also be possible to examine plant reactions to stresses such as crop failure from drought or other climatic disasters, depletion of wild resources as a result of the expansion of agricultural lands, or loss of wood for fuel as a result of deforestation. Most or all of these stresses were probably also felt by societies and communities in the ancient Near East at one time or another. It is, thus, possible to formulate hypotheses about the reactions of ancient populations based on a modern society's methods of coping with the stress on flora.

There is some uncertainty attendant in this type of ethnographic analogy: the by-products of different processing steps may not have been mixed in the same deposit, particular tool types found on sites may not always have been used for the same purposes, and people may not, in fact, always react in the same ways to similar stresses. Still, ethnobotany provides a framework for speculation. It also allows an examination of the archaeological data from a different perspective, in order to reach the most reasonable explanation of the ancient record.

[*See also* Agriculture; Cereals; Ethnozoology; Paleobotany; *and* Paleoenvironmental Reconstruction.]

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JULIE HANSEN

ETHNOZOOLOGY. The study of the way people and animals interact in a particular zoocultural system, ethnozoology seeks appropriate cultural definitions for animals as economic, symbolic, and ritual markers in a society. To study communities and their animals in the past, ethnozoology follows ethnoarchaeology in observing how modern societies use animals to discern patterns of behavior. From this, appropriate models are constructed against which the archaeological record can be tested. Because much ethnozoology has been directed to revealing how in the past people produced animals and animal products, it has focused its research on modern pastoral societies. The limitations of ethnoarchaeology in general have applied here: extinct cultural processes cannot be found through ethnographic analogy. Its potential to inform, however, is great, if appropriate examples are chosen. In the ancient Near East, the range of animals (sheep, goat, cattle, pig, donkey, camel) exploited for food and labor was small and has not changed appreciably for much of the region—with the possible exception of the increased use of domestic chicken and the decrease, since late antiquity, in the use of pig. The great difference between ancient and modern stock is the introduction of improved breeds since World War II. However, because

such animals are found only in the most sophisticated centers, sophisticated breeding techniques do not confer a substantial increase in product potential.

To study animal production systems, ethnoarchaeologists have lived with modern pastoral societies and learned much about how their management choices are influenced by environmental, social, political, and economic factors. These field studies have contributed enormously to models of the domestication process. Ethnozoological research also concerns the mechanisms for the distribution of animal products. Both ethnographic and ethnohistoric records have been evaluated to produce models of the kinds of animals—by age, sex, and class—that are manipulated by central political authorities and markets. Together these studies have produced a sophisticated understanding of the relationship between the "desert and the sown" and the significance of pastoral resources in the construction of political and economic power. They have been significant in the evaluation of the extensive cuneiform record of centralized animal management. Another aspect is the study of cuisine, an ethnographic understanding of cooking and meal presentation in different social settings. This has proved beneficial in interpreting archaeological data at the household level. A final ethnoarchaeological aspect is actualistic studies of taphonomy (the study of processes that affect remains between their deposition and recovery). Bones are subject to numerous biases—that is, to processes associated with burial that differentially destroy them. Experimental research has provided techniques for minimizing the distortion these biases might bring to the historical interpretation of archaeological materials.

Ethnozoology also refers to the way people conceptualize animals. The study of folk taxonomy, a subdiscipline of cognitive anthropology, has revealed universal patterns in the way folk categorize and group animals. Because the basic level in studying animal production systems is predicated on animals as scientific categories that may have little or no intersection with the folk category, any complete understanding of how such a system functioned must comprehend both. The underlying psychology of folk taxa and their arrangements explicates the similarities and differences between folk and scientific systems. In studying the past, folk taxonomic principles can usefully be applied to ancient texts to facilitate a more accurate identification of animal terms. For example, philologists translating ancient animal terms would try to use contextual clues about morphology and behavior to match with a modern animal identified as a Linnaean category in a scientific classification. While this is a proper route to identification on one level, few philologists have understood modern zoological classification well enough to use it effectively: many times a term is equated with a modern species when there is insufficient evidence to make such a judgment, or when the folk category is, in fact, closer to a higher-level scientific grouping. In most instances, there has been little recognition that the ancients had no concept of Linnaean categories, and so only one side of the equation was revealed. The starting point of all "ethno-" study is to discover culturally conditioned units for investigation. Textual evidence can provide important ethnozoological data when critically evaluated.

[*See also* Animal Husbandry; Camels; Cattle and Oxen; Equids; Ethnoarchaeology; Ethnobotany; Paleobotany; Paleozoology; Pigs; *and* Sheep and Goats.]

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PAULA WAPNISH

EUGENICS MOVEMENT. The term *eugenics,* defining a theory of human evolutionary genetics and "racial improvement" that exerted a profound influence on archaeological interpretation in the Mediterranean basin and Near East, was coined in 1883 by Francis Galton. A widely respected Victorian statistician and social critic, Galton sought to apply the principles of Darwinian "natural selection" to the improvement of the human race. According to the genetic theory first detailed in Galton's most famous work, *Hereditary Genius: An Inquiry into its Laws and Consequences* (New York, 1870), human races possess varying levels of intelligence and physical capabilities. Indeed, the ability of each race—so the theory went—could be measured, to provide a clear hierarchy of racial groups.

The movement of history, Galton contended, was propelled by the effects of this hereditary inequality, with "superior" races naturally conquering and subsequently dominating "inferior" ones. Galton and his followers further

believed that uncontrolled interbreeding between superior and inferior races led inevitably to the degeneration of the former, and to their inevitable conquest by yet purer and superior racial groups. The early supporters of the eugenics movement in England were primarily concerned with modern racial issues: the social effects of massive immigration into the country in the late nineteenth and early twentieth centuries and the often problematic relationship between British imperial administrators and the millions of Asians, Africans, and Middle Easterners they presumed to rule. Yet, one of the most important intellectual tasks undertaken by the supporters of eugenics was to demonstrate that racial inequality had been an operative factor throughout history—and that uncontrolled "race mixing" had uniformly disastrous results in all societies in which it occurred.

William M. Flinders Petrie was among the first archaeologists to be deeply affected by Galtonian eugenics in the reconstruction of past societies. In 1885, Petrie accepted employment by Galton to travel up the Nile River and photograph ancient Egyptian reliefs. The expectation was that the standard complement of human races, identifiable by their standard facial and bodily characteristics, could be traced back to pharaonic times. The result of this expedition was Petrie's book *Racial Photographs from the Egyptian Monuments* (1887), which was among the first archaeological works to describe the various ethnic groups of the ancient Near East with modern racial terminology. Petrie further elaborated the idea of racial hierarchy in the ancient Near East in his later excavations both in Egypt and Palestine. His recognition of successive strata of occupation at every site was linked to a sequence of historical conquests. Indeed, Petrie and the generation of Near Eastern archaeologists he trained and influenced grew accustomed to associating the appearance of new classes of artifacts at stratified sites such as Gurob in Egypt and Tell el-Ḥesi in Palestine with the arrival (and conquest) of aggressive and technologically superior ethnic groups.

The legacy of Petrie's eugenical thinking continued to exert an effect on the implicit racial thinking of Near Eastern archaeology until long after his death in 1940. The statistical assumptions underlying the seriation techniques used to construct a chronological typology of ceramic types (pioneered by Petrie at Naqada, Hu, and Abadiya in Egypt) were based on the acceptance of the inevitability of a rise-floruit-fall cycle in every aspect of human cultural production—implicitly paralleling the supposed genetic rise-floruit-fall of every interbreeding racial or ethnic group. Moreover, the identification of external invasion as the primary motivation for the major cultural breaks in every major archaeological period, from the Chalcolithic to the end of the Crusader period, served to transform modern archaeological research, at least partially, into an ideological justification for the aggressive expansion into the Near East of the professedly superior European imperial powers. The assumptions of Petrie and his followers about the cultural superiority of the supposedly northern Hyksos or Aegean-based Philistines are two cases that illustrate his eugenical belief about the effect exerted by superior, or more innovative, races on the basically uncreative culture of Palestine.

Racial terminology and eugenical thinking remained prominent in archaeological thinking through the 1930s. Considerable attention was paid by scholars to the racial origins of excavated skeletal remains and the racial connections of cultural forms and artifact types. Through the continuing use of Petrie's basic methodology of distinguishing discrete strata often uncritically linked to invasions of historically mentioned ethnic groups, race remained a prominent (though scientifically unverified) element in reconstructions of ancient Near Eastern history. In the continuing, uncritical acceptance of rise-floruit-fall cycles in pottery types, and in the undefined attribution of social or cultural change to outside "influence" or internal "disintegration," some scholars may still implicitly promulgate the basic concepts of eugenical history. When, or if, they do, those concepts are promulgated as inherited ideology rather than empirically verified fact.

In the wake of World War II, however, the scientific bases for eugenical theories were largely undermined. Revulsion at the Nazis' final solution to the problem of "racial degeneration" ultimately paved the way for the final fall of eugenics, both as a modern social program and a scientific theory. In the 1950s and the 1960s, with the discovery of DNA and the beginning of research into population biology and the complexity of genetic inheritance, it became clear that the concept of "races" as distinct or even measurable entities was a dangerous oversimplification. New approaches—economic adaptation, innovation, cultural borrowing and exchange—in addition to invasion, came to be examined as the cause for changes in patterns of material culture.

[*See also the biography of Petrie.*]

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EUPHRATES. In Sumerian the name of the Euphrates River is *BURANUN;* in Akkadian, *ID.KIB.NUN.KI* (lit., "Sippar River"); in Assyro-Babylonian, *Purattu;* in Old Persian, *Ufratu;* and in Greek, *Eufrates.* The river originates in eastern Turkey and flows into the Arab-Persian Gulf, a distance of almost 2,700 km (1,674 mi.), making it the longest river in western Asia. It currently traverses three modern Near Eastern states and a tiny part of a fourth. The total area of the Euphrates basin is 444,000 sq km (275,280 sq. mi.), of which 27 percent (125,000) is found in Turkey, 18 percent (76,000 sq km) in Syria, 40 percent (177,000 sq km) in Iraq, and 15 percent (66,000 sq km) in Saudi Arabia (Wakil, 1993, p. 67); 84 percent of its waters originates in Turkey, 13 percent in Syria, and 3 percent in Iraq. South of the Balikh and Khabur Rivers, rainfall ceases to be an important contributing factor to the Euphrates flow. The annual rate of flow fluctuates, depending on the climatic conditions affecting runoff and recharge. During the flood stage (March–June), when meltwater from eastern Anatolia Taurus ranges and spring rains are at their peak, 70 percent of the annual flow is generated. The summer low (July–October) generates only 10 percent of the annual flow, and the rainy season (November–February) creates the remainder: 20 percent of annual flow. The rate of flow fluctuates correspondingly. Within the Middle Euphrates area, reports of rate flow vary from 840 to more than 1,000 cu m per second) (Hardan, 1993, pp. 75–78; Tomanbay, 1993, p. 60; Akkermans, 1990a, p. 123; Sanlaville, 1985, p. 24). The annual rate also varies from year to year, with a typical average for several years reported at 2,600 million cu m per year (Sanlaville, 1985, p. 24).

The river can be divided into a number of distinct geographic units, depending on geomorphological conditions. First, the Upper Euphrates is found in eastern Anatolia, Turkey (from the Turkish perspective, the Lower Euphrates). There, two separate branches can be considered the source of the river. The western branch, the Kara Su, begins in a small lake north of Erzurum and flows west. The eastern branch, the Murat Su, also begins as a small lake east of Erzurum and flows west, paralleling the Kara Su. The two branches join north of Malatya to form the Euphrates (Tk., Firat) proper. Crossing the Taurus and the front range, the river then flows several hundred kilometers in a southerly direction, until it enters the Syrian plain at ancient Carchemish. There, the Middle Euphrates (sometimes called the Upper Jezireh) receives its Syrian tributaries; first, the Sadjur (100 million cu m per year), then the Balikh (190 million cu m per year), just below ar-Raqqa, draining a large area to the north, and finally the Khabur at Bouqras (1,575 cu m per year). The river crosses into Iraq at Abu Kemal, near the site of ancient Mari. [*See* Carchemish; Raqqa, ar-; Bouqras; Mari.]

From the Khabur south, until Ramadi, the Middle Euphrates area is often called the Lower Jezireh (steppe), and the river is entrenched between this landform to the east and the Arabian plateau to the west. It does not enter the Mesopotamian floodplain until well south of Hit, 160 km (99 mi.) from the Iraqi-Syrian border (Sanlaville, 1985, p. 19). The current 250-millimeter isohyet in this region of the Jezireh determines the difference between dry farming, irrigation, and the development of pastoral nomadism (Zarins, 1990, fig. 3; Sanlaville, 1985, p. 20). [*See* Agriculture; Irrigation; Pastoral Nomadism.] The Lower Euphrates consists of a series of subgeomorphological units:

Alluvial plain. A typical alluvial plain of braiding streams creates natural levees, or river embankments, characterized by seasonal inundation and alluvial flats. Siltation and salt become problems as transported silts in the water (from repeated evaporation in alluvial basins or irrigated flats) cause channel closing and salinization. The river reaches its closest point to the Tigris River near ancient Sippar and modern Baghdad. [*See* Sippar; Baghdad.] There, it enters the delta plain and divides into two branches.

Delta plain. The main branch in the delta plain, the Hindiyah, flows to Samawa; the minor branch, the Hilla, continues past ancient Babylon and Kish to Diwaniya, joining the Hindiyah past Samawa. [*See* Babylon; Kish.]

Marsh/lake. The river creates a marsh/lake environment as it flows past Nasiriyyah, skirting north of Lake Hammar, then joining the Tigris at Qurmat Ali. The combined streams form the Shatt al-Arab in the estuarine zone.

Estuarine zone. The single stream of the Shatt al-Arab flows past Basra, where it is joined by the Karun and Karkheh Rivers from Iran. All four flow past Abadan and create a delta near Fao as they empty into the Arab-Persian Gulf. In this area, the pinching Batin and Karun and Karkheh River deltas constrict the modern Shatt al-Arab (Buringh, 1957; Sanlaville, 1989).

Ten existing dams are currently operating on the river system. The Hindiyah barrage is the oldest, having been built in 1911–1914. (The others are the Keban, Karakaya, Atatürk, Tabqa, Haditha, Baghdadi, Ramadi, Falluja, and Hilla.) The latest dams, such as the Ataturk in Turkey, were completed in 1990. On-line (i.e., functioning) dams such as the Keban in Turkey, the Tabqa in Syria, and Haditha in Iraq have created unique archaeological opportunities in areas otherwise poorly known (see below). Additional dams are in various stages of construction or planning on the river or its tributaries—particularly in Turkey and Syria (Khata, Bireçik, Carchemish, Saab, Shouher, Taaf). As a result of

modernization plans, annual usage will be increased dramatically both for agricultural and industrial use. Because the river flows through three countries, future regulation of the Euphrates's waters is essential—a situation exacerbated by increasing competition for its waters and an incomplete understanding of the amount of water available annually.

Geological examination of the river's history has been spotty. Little is known from the source areas and the upper region; the Lower Euphrates has been more intensively examined. Initial work in the Middle Euphrates area suggests that the entire system originated in the Miocene graben, or depression, with subsequent Pliocene-Pleistocene depressions leading to the creation of a modern Euphrates. Tectonic movement during those two periods largely determined the course of fossil and present-day streams (Akkermans, 1990a, p. 122; 1990b, pp. 15–17). In Syria, terrace remains are attributed to multiple periods, from the Lower through the Upper Pleistocene. At Mari, Paul Sanlaville suggests that a four-terrace system (T4–T1) can be recognized, with the highest at +40 m. The middle terrace (+20–30 m) belongs to the Lower Paleolithic (c. 250,000 BP), and the +5–8-meter terrace has been identified as belonging to the Würm (Sanlaville, 1985, p. 22, fig. 4).

In Iraq, researchers have suggested that three or more terrace systems may belong to the Middle Pleistocene (Paepe, 1971). Perhaps as far back as 500,000 years ago, and as recently as 10,000 years ago, the Euphrates on the central Iraqi alluvial plain was part of a single river system emanating from Wadi Tharthar. Alluviation and tectonic activity not only created terraces but the current Euphrates River valley. (Paepe, 1971). Bifaces found on several of the highest terraces suggest a clear-cut Lower–Middle Paleolithic affiliation.

The Wadi Rimah/Wadi al-Batin complex, draining some 70,000 sq km (43,400 sq. mi.) in Kuwait and Saudi Arabia, also follows a graben system and was a tributary system to an ancient Euphrates basin in the Late Pliocene and Pleistocene. [*See* Kuwait.] While ephemeral flow has been noted only for the last five thousand years, the latest water data suggest that 32 million cu m per year flow past stations in the Wadi Rimah basin (Sowayan and Allayla, 1989, p. 482). At least two or three terraces of fluvial/eolian origin are noted of Quaternary date (Sanlaville, 1989, fig. 3, p. 10). Aquifer water studies confirm the Pleistocene nature of the stream flow.

By Early Holocene times, the Middle Euphrates river was in its present form. Western tributaries in Iraq and Syria traversing the desert are almost always associated with Early Holocene industries, suggesting active river systems. These flowed into either the current Euphrates or playa lakes west of the modern river (Khor Habbaniya, Abu Dibbis/Baḥr al-Milḥ; Zarins, 1990, p. 50). One of the main Early Holocene channels then passed Ramadi to Kerbala-Najaf. According to J. Boerma, the Upper Euphrates channelization has been entrenched since 8000 BCE (Boerma, 1983, p. 362). Archaeologists have also suggested that the Tigris-Euphrates emanated south of Baghdad as one stream, out of which numerous branches emerged (Crawford, 1991, p. 8; Adams, 1972, maps 2–3; Adams 1981, figs. 9, 27). By the sixth millennium, only the main channel remained in the middle of the alluvium. Even as late as the third and second millennia BCE, branches of the Euphrates continued to dominate the Sippar area (Gasche, 1985, p. 581). Subsequently, in the late first millennium BCE, the river began its migration westward, to its present position. In the marsh/lake region, prior to 5000 BCE, the Euphrates ran across what is today the southern Khor al-Hammar to Zubair and then to Umm Qaṣr, forming two channels past Bubiyan Island (Zarins, 1992, fig. 1). The Wadi Batin river and delta near Zubair may have been reactivated in this period as well. The effects of the Flandrian Transgression affected the Euphrates Delta, and the marine shoreline was considerably inland in historical times (c. 5000–2500 BCE). By 2000 BCE, the more modern conditions were reached (Sanlaville, 1989; Zarins, 1992, fig. 1).

Archaeological associations with the river are numerous (for a recent summary, see Wright, 1992). The most recent detailed work has taken place in the Upper Euphrates region. Sites threatened by flooding brought archaeologists to examine the Altinova plain associated with the Keban dam—and more recently sites associated with the Atatürk dam. A rich association of tell sites stretching from the Pre-Pottery Neolithic (Çafer Höyük, Hayaz Höyük) through the Ceramic Neolithic/Chalcolithic (Tepeçik, Norsuntepe, Koruçutepe) to the late third millennium BCE (Hassek Höyük, Kurban Höyük, Lidar Höyük) suggests that the archaeology of the region has close ties to the Middle Syrian Euphrates region to the south (Mellink, 1992, pp. 208–214). These and other sites (e.g., Samosata, Zeugma-Apamea, Tille) also cast light on later historical groups—Hittites and Neo-Hittites, Assyrians/Urartians, Arameans, and Partho-Romans—and on the Islamic period (Ward, 1990). [*See* Hittites; Assyrians; Urartu; Arameans.]

In the Middle Euphrates region, archaeological sites are to be found associated directly with the river, with the Balikh tributary, the Khabur triangle, and areas to the west, such as Jebel Bishri and the el-Kowm region. Archaeological work in the region has increased considerably as a result of now-completed or ongoing dam construction. Sites in the Taqba dam reservoir have, in particular, changed the perception of the region. Especially important are the sequences from Mureybet and Abu Hureyra, which shed light on the agricultural revolution from the tenth to sixth millennia (Sanlaville, 1985, p. 18). [*See* Mureybet.] From the Late Uruk period, sites such as Habuba Kabira, Jebel ʿAruda, and other have shown direct connections with the Late Uruk of south-

ern Mesopotamia, suggesting the establishment of Late Uruk "colonies" from the south. [*See* Habuba Kabira; Colonization.] In addition to well-known tributary sites such as Tell Ḥalaf and Chaghar Bazar, recent work has considerably advanced what is known of the prehistoric to historical periods. Tell Leilan, identified with Shubat-Enlil, in the Khabur triangle, may be the most important recent discovery. [*See* Ḥalaf, Tell; Leilan, Tell.] The site of Mari, known from the French excavations begun in the 1930s, has yielded not only tremendous second-millennium BCE textual and artifactual data, but recently data stretching back to the Early Dynastic I period (Schwartz and Weiss, 1992, pp. 221–243). North of Mari, ongoing work at Dura-Europos will also elucidate the problems of the classical period both within the Euphrates valley and in such desert centers as Palmyra. [*See* Dura-Europos; Palmyra.]

From the Middle Euphrates Haditha dam reservoir in Iraq the sites of the Early Dynastic–Ur III periods are particularly important, painting a picture of Sumerian civilization on the Middle Euphrates hitherto only vaguely known (Roaf and Postgate, 1981, pp. 192–198; Killick and Roaf, 1983; Abdul-Amir, 1988; Porada et al., 1992). [*See* Sumerians.] The Euphrates entered the Mesopotamian alluvial plain south of Ramadi; survey work in the region, principally by Adams (1972), has shown that few sites are to be found there. Rather, civilization got its start on the delta plain beginning at ancient Sippar. This area is divided archaeologically and historically into two parts: Akkad, covering the northern portion, and Sumer, to the south. The main channel(s) of the Euphrates in Akkad in the fifth–third millennia lay well to the east of the present Euphrates course and, upon reaching Sumer, it (they) became extremely diffuse, or braided (Adams, 1981, fig. 9). Hans J. Nissen has suggested that with the lowering sea level in the fourth millennium, Sumer required less natural irrigation, population became consolidated in towns, and social stratification became more extreme (Nissen, 1988, pp. 65–71, 74, 129–132). City states were created, which led to buffer zones and more constant warfare. Lack of raw materials heightened long-distance trade and the subsequent empire building became characteristic (Wright, 1992, p. 723). Akkad relied less on such changes and became a distinct entity, based in part on the Euphrates channelization and the active tributaries to the western plateau (Steinkeller, 1992; Zarins, 1990). The Euphrates's principal channels and offtake canals had been creating silt and salt for the region at least since the third millennium (Jacobsen and Adams, 1958). These factors, plus the shifting of the Euphrates westward, eventually brought about the dissolution of Mesopotamian civilization.

The Euphrates as the dominant source of water for Akkad and Sumer, and later for Babylonia, played an integral role in agriculture, communications, and the creation of political structures in the region. The occupation of Eridu and later of the other Sumerian towns of the delta alluvium as the primary centers of Sumerian political and religious focus left its imprint on biblical studies as well (especially *Gn.* 1–11)—in the Flood stories, Creation accounts, and the explanation for the origin of cities (Kramer, 1963, pp. 269–299).

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EUPHRATES DAMS, SURVEY OF. During the second half of the twentieth century CE, nine dams were built or were under construction on the Euphrates River. The enormous number of antiquities lost from those projects was offset in part by intensive archaeological salvage efforts. The largest dam in Syria, the al-Thawra (Ar., "revolution"), whose reservoir (625 sq km, or 387 sq. mi.) is called Lake Assad, was constructed at the village of Tabqa in the late 1960s and early 1970s. Just above it construction of a second, the Tishreen (Ar., "October") dam, begun in the late 1980s, will be completed by the twenty-first century; its reservoir (70 sq km, or 43 sq. mi.) will extend about 60 km (37 mi.) north, almost to Jerablus (Carchemish) and the Turkish border. During the 1970s in the Lake Assad flood zone, excavations were conducted at more than twenty-five sites; in the early 1990s fifteen sites were excavated in the Tishreen innundation area. The results of those excavations enable the charting of the early trend to sedentarism, the emergence of agriculture, the formation of states, and the incorporation of the Middle Euphrates into empires and world systems.

In the Epipaleolithic (Mesolithic; 12000–8000 BCE) period the cultural sequence is Kebaran, Natufian, and Late Natufian, although there is some question whether the term *Natufian* can properly be used for Euphrates sites so distant from its core area. The site of Nahr al-Homr, which produced a Kebaran lithics assemblage, is succeeded in the Natufian period at the sites of Tell Abu Hureyra (excavated by A. M. T. Moore) and Tell Mureybet. During period I at Abu Hureyra, in which deposits span 11500–10000 BCE, there were semisubterranean round houses 2 m in diameter. Subsistence was based on hunting, predominantly gazelle, and collecting plants, of which 150 species have been identified. Phases I and II at Mureybet are assigned to the late Natufian and transitional Khiamian, respectively. Subsistence there was diversified: hunting (mainly gazelle) fishing, and gathering.

In the early aceramic Neolithic, the Mureybetian period (8000–7600 BCE)—represented at Mureybet (phase III), Tell Sheikh Hassan (excavated by Jacques Cauvin), and Tell Jerf al-Ahmar (excavated by Thomas McClellan and M. Mottra)—is part of the Pre-Pottery Neolithic A (PPNA) culture that is better known in the southern Levant. Although round houses continue to be used, internal divisions made with straight walls begin to be found in some. Rectilinear buildings appear for the first time in history at Jerf el-Ahmar, in phase III at Mureybet, and at Sheikh Hassan. Female figurines are found in stone and clay from Mureybet, and at Jerf el-Ahmar geometrically decorated shaft straighteners and a limestone human head with carefully modeled hair reveal a complex symbolic repertoire.

The degree to which cereals were gathered or cultivated is debatable, depending on how modern specialists define this important transition. Another problematic issue is the extent of sedentarism. In fact, this was the time for the transition to full village life, a process some call neolithicization. Jacques Cauvin, the excavator of Mureybet and Sheikh Hassan, stresses the mental transformation of the society reflected in the new cult of the female deity (represented by the figurines at Mureybet), the new cult of the bull (first observed in Mureybet phase II), and new burial practices. The emergence of agriculture is yet another result of changes in societal organization, according to Cauvin, rather than its underlying economic or technological cause, as postulated by some cultural evolutionists such as Marvin Harris, Elman Service, and Julian Steward.

The Pre-Pottery Neolithic B (PPNB) period is known at Mureybet (phase IV), Abu Hureyra II, Tell Halula (excavated by Miguel Molist), and Tell Dja'de el-Mughara (excavated by Eve Coqueugniot). Byblos points and large "naviform" blades distinguish the lithics, and rectangular houses become common. At Halula a PPNB "city gate" and portions of a "city wall" have been discovered. Cereal cultivation and animal husbandry combined to form the full agricultural system that became common to the Near East.

In the Chalcolithic period (5500–3400 BCE), the Halaf and Ubaid cultures, both of which are thought to have had their origins farther east, successively extended across northern Syria. The Halafian is best known from the site of Tell Shams ed-Din Tannira (excavated by Selina al-Radi and Helga Seeden) and is well represented at Halula, whereas Tell ʿAbr (excavated by Hamidu Hammade and Yayoi Koike) provides important evidence for the western Ubaid tradition.

The Uruk period (3400–3100 BCE) in the Thawra and Tishreen dam areas marked what historians refer to as the beginning of civilization and anthropologists call the emergence of complex society and the process of state formation. It was not an indigeneous development in northern Syria but was introduced from southern Mesopotamia. Excavations at the sites of Habuba Kabira South and Jebel ʿAruda

in the Lake Assad region revealed the expansion of Uruk culture far from its core region. These sites have not merely borrowed southern Mesopotamian cultural traits, they are in fact Uruk colonies. Habuba Kabira South was a large fortified city in which residential dwellings are grouped into city blocks. Within Habuba Kabira South, a complex called Tell Qannas (excavated by André Finet) was found to contain back-to-back temples with decorative mud-brick buttressing, one of which has a tripartite layout—both are features of Uruk temples in southern Mesopotamia.

Several kilometers away and 60 m above the river plain, on a spur of the mountain Jebel Aruda (excavated by G. van Driel), was a second, smaller Uruk settlement. It was dominated by two Uruk-style temples (although some scholars question their having been temples), with a tripartite layout, mud-brick construction, and decorative buttressing. Associated with the temples are a number of large domestic structures, tripartite in plan, that are similar to those at Habuba Kabira South. Both sites exhibit typical Uruk, southern Mesopotamian traits, including beveled-rim bowls, jars with nose lugs and drooping spouts, Protoliterate seals and sealings, tokens, counters, and tablets for numeration. Uruk assemblages have also been encountered at Tell Sheikh Hassan, Tell Jerablus Tahtani, Tell ʿAbr, and Tell Banat.

The discovery of two major and numerous minor Uruk settlements on the Middle Euphrates in northern Syria raised several issues regarding the transmission of cultural ideas and traits to the less developed area (periphery) of northern Syria. Using the core-periphery model popularized by Immanuel Wallerstein, Guillermo Algaze has seen these sites as colonies that were part of a large trading network in which the resource-poor Uruk homeland of lower Mesopotamia exploited peripheral zones for such raw materials as timber and metals. The relationship to local populations is unclear, but a hierarchy of Uruk settlements is thought to have included colonies (Habuba Kabira South and Jebel ʿAruda), stations, and outposts. Both Habuba Kabira South and Jebel ʿAruda were occupied for short time spans of no more than 150 years; they were built on virgin sites and after their destruction were never reoccupied. Uruk occupation at Sheikh Hassan lasted for a considerably longer period.

Northern Syria, including the region of the two dams, is thought by some to have undergone a gap in occupation after the destruction of the Uruk colonies and the collapse of Uruk cultures in southern Mesopotamia. Consequently, the introduction of complex societies into Syria in about 3300–3100 BCE was abortive and had no lasting effect on the cultures of the region. Following this scenario, the first indigeneous Syrian states may not have emerged until later, in about 2600 BCE—not along river courses but in dry-farming areas—with the emergence of Ebla and large settlements in the Khabur Triangle, such as Tell Chuera and Tell Leilan. An alternative reconstruction of the period sees a reduced, but unbroken, cultural continuity at sites along the Euphrates in the first half of the third millennium (Early Bronze Age). Tell Hadidi has produced "EB I" and "EB II" material (see below), and some of the strata at Tell Halawa date to the first half of the third millennium. There are indications that a continuous sequence exists at a cluster of four EB sites centered at Banat.

No consensus exists for the terminology of the Early Bronze Age (c. 3100–2000 BCE); the first half (3100–2500 BCE) is often called EB I and II, or sometimes Mesopotamian terms are applied: Jemdet Nasr, Early Dynastic I–III. The second half of the period (2500–2000 BCE) is generally referred to as EB IV; none of these terms are fully satisfactory. The third millennium is well represented by sites in the Thawra and Tishreen dam regions: Tell Hadidi, Tell Habuba Kabira North, Tell Halawa, Tell Tawi, Tell Sweyhat, Tell Selenkahiyeh, Tell Munbaqa, Tell Ahmar, and Tell Banat, including Tell Kabir and Tell Banat North, and Tell Qara Qusaq. At Halawa (excavated by Winfried Orthmann) there was an EB occupation on tells A and B. On tell B, dating to the first half of the third millennium, three phases of a temple, entered from the structure's broad south side, were constructed on a large platform. The orientation changed in a final phase to the structure's broad east side. Three strata of tell A date to the second half of the third millennium; in the earliest, stratum 3, portions of the settlement excavated contained a defensive wall, city gate, domestic dwellings, and a stone, long-room temple *in antis* (with columns set between two piers) that opened toward the east. A similar structure was found at Tell Kabir (excavated by Anne Porter) in the Tishreen dam flood zone. At Tell Banat (excavated by Thomas McClellan) there are fragments of a public building, possibly a palace, with large limestone column bases. Cemeteries of the period were recovered at Tawi and Halawa; the Hypogeum Tomb at Ahmar (excavated in the 1930s by François Thureau-Dangin and Maurice Dunand) was an elite burial that contained more than a thousand vessels and a rich collection of bronzes. Another high-ranking burial at Banat dates to about 2600 BCE and contained Plain Simple Ware, Euphrates Banded Ware, Metallic Ware, and Red-Black Burnished Ware.

In the Middle Bronze Age (2000–1600 BCE), Old Babylonian texts indicate that Carchemish (which lies at the northern end of the Tishreen flood zone) and Emar (old Meskene) were important centers, but occupation from this period has never been located archaeologically at Emar. Excavations at Tell Qara Qusaq (excavated by Emilio Olávarri and Gregorio del Olmo Lete for the University of Barcelona) show that it was a storage depot in which circular stone-lined silos were found to contain barley, perhaps for shipment to Mari. At el-Qitar part of a structure with orthostat dados was excavated, and there are also occupation layers at Kabir, Halawa, Habuba Kabira North, and Hadidi, with ceramic repertoires produced at the latter.

Large portions of settlement plans for the Late Bronze Age (1600–1200 BCE) have been recovered at Munbaqa/Ekalte (excavated by Dittmar Machule) and el-Qitar/Til-Abnu and a major archive at old Meskene/Emar. Some of these sites may have been destroyed in the Euphrates campaign of Thutmosis III. There were three long-room temples at Munbaqa and three at Emar. Regarding fortifications, at Munbaqa an offset-inset mud-brick city wall was found encased in massive ramparts of river pebbles. Several city gates were excavated, including the northwest gate, in which a mud-brick arch across the passageway was preserved. At el-Qitar two city gates had limestone orthostat piers. Cuneiform tablets have also been found at Hadidi, Munbaqa, Tell Fray, and el-Qitar.

The Iron Age is best represented by occupations at Carchemish and Tell Ahmar (Til Barsip), as well as Tell Jurn Kabir (excavated by Jesper Eidem and Karin Pütt). At Tell Ahmar Aramean stelae were noted by travelers in the late nineteenth century, and in the early 1930s, a major Neo-Assyrian palace with extensive wall paintings was found. Recently, Guy Bunnens has found more Neo-Assyrian buildings, one with a black-and-white checkerboard pebble mosaic, along with a constructed burial vault, cuneiform texts, ivory objects, and Assyrian Palace Ware.

The mountain Jebel Khalid (excavated by Graeme Clarke and Peter Connor) was the site of a major Hellenistic fortress in the third century BCE. During the Roman period, the Middle Euphrates sometimes became the frontier in a long-running conflict between the Roman/Byzantine empires in the west and the Persians (Parthians/Sasanians) who, on occasion, reached Balis (Meskene). Small tumuli from this period may reflect the burial customs of European troops stationed in the region during the Roman Empire. Occupation on this part of the Euphrates was not dense in the Islamic period, although there are surface indications of small villages and farmsteads; the main settlement was Balis, the site adjacent to LB Emar and on the outskirts of the modern town of Meskene. The fortress at Qal'at Nejim guarded a crossing point in late medieval times.

[*See also* Carchemish; Chuera, Tell; Colonization; Ebla; Emar; Euphrates River; Habuba Kabira; Hadidi, Tell; Leilan, Tell; Mureybet; Qitar, El-; Ubaid; *and* Uruk-Warka.]

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THOMAS L. MCCLELLAN

EVANS, ARTHUR (1851–1941), principal excavator of Knossos, Crete, and preeminent scholar of the Cretan Bronze Age. The son of antiquarian-industrialist Sir John Evans, Arthur was educated at Harrow and Brasenose College, Oxford, where he read history and graduated in 1874. He became involved in Balkan politics as a correspondent for the *Manchester Guardian*. As a champion of the Slavic independence movement, Evans carried out archaeological researches, later published in his "Antiquarian Researches in Illyricum" in 1885–1886. He became keeper of the Ashmolean Museum, Oxford, in 1884.

Evans's involvement with Crete began in 1894 when he traveled the island in search of seal stones bearing "pre-Phoenician" script, which he published in the *Journal of Hellenic Studies* (1894, 1897); the journeys are recorded in letters to *The Academy*. During this time he identified remains of the "Minoan" civilization suspected to be earlier than the Mycenaeans of Greece and bought the tell called Tou Tseleve he Kephala (the headland or bluff of the local Turkish landowner) near the classical Greek and Roman remains of Knossos, where others had found traces of pre-Hellenic antiquities. He excavated at a number of sites in the Knossos

valley during large-scale intensive campaigns from 1900 to 1905. Evans concentrated his efforts, however, on the tell that had covered the successive phases of the complex architectural remains called the "Palace of Minos" after the legendary ruler of Crete. Detailed preliminary reports on the palace appeared in the *Annual of the British School at Athens* (7–11 [1901–1905]), and final reports on late cemetery sites in the region were published in *Archaeologia* in 1905.

The stratigraphy at Knossos formed the basis for Evans's proposed tripartite relative chronological sequence for the Cretan Bronze Age, which he called Early, Middle, and Late Minoan with further tripartite subdivisions. His Minoan scheme was adapted for the neighboring Cycladic islands and Greek mainland and remains the most useful relative chronology for the Aegean Bronze in the absence of absolute dates.

Evans's re-creation of the Bronze Age Cretans, whom he called "Minoans," is set out in the rambling chapters of *The Palace of Minos,* published in four volumes between 1921 and 1935. Initially conceived as the final report on his work at Knossos, it became a widely ranging synthesis of archaeological research in the Aegean and the leading role Evans felt the Minoans to have played. There can be little doubt that Evans was very intuitive, but his preoccupation with associating the early Cretans with the later Greeks and thus modern Europeans led to the frequent use of Greek myths as possible explanations for the early Cretan iconography without full consideration of Near Eastern and Anatolian possibilities. Nonetheless, *The Palace of Minos* remains the most influential and basic source for students of the Aegean Bronze Age.

The first biography of Evans, *Time and Chance: The Story of Arthur Evans and his Forebears,* was published by his half-sister, Joan Evans, in 1943; a second, *The Find of a Lifetime: Sir Arthur Evans and the Discovery of Knossos,* by Sylvia Horwitz appeared in 1981. Neither was critical of Evans's work.

[*See also* Aegean Islands; Minoans.]

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J. ALEXANDER MACGILLIVRAY

EXCAVATION STRATEGY. There is no one universal excavation strategy because developing one depends in part on the type of site being excavated and the purpose of an excavation. Therefore, an important characteristic of any strategy is flexibility in meeting the new problems, questions, and goals that will emerge during excavation.

With the advent of processual archaeology (also referred as the New Archaeology) in the 1960s, archaeologists began to ask questions of intention prior to going into the field. This process of developing a hypothesis and then testing it has reshaped the way archaeological excavation is undertaken today. Prior to processual archaeology, much of Near Eastern archaeology was more site oriented, with archaeologists interested primarily in cultural history. That approach stressed the excavation of large, multiperiod sites, especially prominent tells, to discover unusual art objects or "museum pieces," to uncover monumental remains, and to establish the political history of a site. [*See* New Archaeology.]

Since the early 1960s the theoretical component of archaeology has become a driving force in determining how, why, and where excavation will be initiated. Most archaeologists now begin with a problem orientation and from it derive a theoretical model they will test with empirical data. Problem orientation is more formally developed as a research design, which articulates how specific archaeological methodologies employed at a specific site or in a specific region will address theoretical goals. Thus, a site must be selected that best meets the needs of the research design. Although there is no guarantee that the questions archaeologists ask will ultimately be answered by the material they excavate, there is almost always an attempt to link a problem orientation to an excavation strategy.

A good excavation strategy is the means by which to connect theory to data and must be predicated on the purpose or function of the proposed excavation. A strategy employed in salvage archaeology, where time is a critical factor, will greatly differ from the strategy used in a research excavation. The type of site will also directly affect the excavation strategy employed. Single-period sites are excavated much differently than multiperiod, or tell, sites. Prehistoric sites, classical sites, and underwater sites all have distinct archaeological configurations and attendant methodological approaches. However, almost all archaeologists are interested in the interpretation of archaeological data, rather than mere collection and/or description. To that end, most archaeological investigations in the Near East now include a multidisciplinary orientation and some degree of interest in environmental data. Archaeologists are increasingly turning to computers to assist in statistical analyses, data storage, artifact and architectural reconstruction, and systems modeling. [*See* Statistical Applications.]

The first step in almost any archaeological excavation is preexcavation research. Any previous excavation or survey of the site is studied, along with relevant maps, historical documents, drawings, and photographs. Geological and other types of areal research or survey are reviewed. This phase of research should also include historical and ethnographic assessments of the area under investigation, including visits to local museums and conversations with local pro-

fessional and amateur archaeologists and any local residents familiar with the site or its environs. [*See* Site Survey.]

Following this phase of research, the site itself is surveyed and mapped. Artifacts from the site are collected systematically and then analyzed. The site is mapped and examined for signs of human or natural modifications. Areal photographs are also useful in discerning anomalies or other noteworthy characteristics. The site's environment is also surveyed in order to understand its ecological context.

A thorough preexcavation investigation is crucial because it will help refine the problem orientation and define specific research goals. However, as the excavation progresses, new hypotheses will be generated and new problems and questions will arise that should be systematically integrated into the research design and then field tested. Specific research problems lead to the collection of specific types of data. The method of collection, analysis, and publication is shaped by the research design. The research design should also help the archaeologist better define and determine appropriate methodological approaches.

The preexcavation phase can be the most important part of an archaeological project. In this formative period sites, regions, research hypotheses, and excavation methodologies are linked. In effect, the actual excavation should be putting a well-conceived and detailed research design into operation: the actual process of gathering empirical data with which to assess a theoretical model. The better crafted the research design, and the more thorough the preexcavation research, the more likely the research goals are to be met.

Once the formulation of the problem orientation and preinvestigation research is complete, the excavation, or acquisition of data, can begin by utilizing one of two standard approaches. A research design involving diachronic issues—such as culture change and continuity over time—will usually utilize a penetration methodology, probing subsurface deposits with deep trenches. This method stresses stratigraphic relationships (the vertical layering of artifacts and architecture). For synchronic issues a horizontal, or clearing, methodology stressing the spatial arrangements of artifacts and architecture at one point in time is more useful. Most excavation strategies employ both approaches in order to achieve the best possible context for all the archaeological data. With either method, the types of data collected and how they are collected should be systematically articulated in the research design.

Once the data are collected, they must be analyzed. Data analysis is as important as fieldwork. This phase of an excavation project generates the inferences on which archaeological interpretations and reconstructions are based. The analysis phase is often mediated by specialists who should be familiar with the field methodology in order to avoid inherent biases, which could affect interpretation.

The final stage of an excavation project is publication. Deciding which data will be published and how they will be presented are part of the excavation strategy. How the publication is organized is predetermined by the research design, excavation methodologies, and types of analyses.

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EXCAVATION TOOLS. A fundamental development took place in the range of tools used in Near Eastern archaeology once field operations were resumed following World War II. During the first century or so of archaeological fieldwork, the two primary tools of exploration had been borrowed from road construction: a large pickax for breaking up soil and a broad-bladed hoe for scooping loosened soil into baskets to be carried away. As long as the basic strategy of digging was to locate buried wall segments and expose them down to their founding surfaces, those tools were adequate.

Beginning in the 1950s, an important development in digging strategy led to a dramatic increase in the use of small hand tools, nearly rendering the large pick and hoe obsolete. The initial primary interest in architecture moved to a concomitant concern for the careful separation of soil layers to gain better stratigraphic control, more complete retrieval of data, and a clearer interpretation of the evidence. In Palestine, Kathleen M. Kenyon's excavations at Tell es-Sultan (Jericho) in 1952–1957 and her use of the so-called Wheeler-Kenyon grid technique demonstrated the need for small tools to provide closer control of the digging process. [*See* Excavation Strategy.]

Most of the newer small tools have also been borrowed

from other endeavors—from geology and mountain climbing (hand pick) to dentistry (dental pick). Three tools have come to dominate: the handpick, the trowel, and the soft-bristled hand brush. Light vertical downstrokes using the handpick's flat chisel-headed blade can dislodge small clumps of soil, thus exposing potsherds and small artifacts in situ. Used in this way, the handpick also allows the excavator to notice changes in the color and consistency of soil that can signal the transition to a different layer. A mason's trowel is commonly used in conjunction with the handpick. Alternating vertical strokes of the pick with horizontal scraping motions of the trowel brings newly loosened soil toward the kneeling digger. This process turns over the loosened earth to reveal still-hidden objects and clears it away to allow the digger to see soil changes more clearly. A soft-bristled hand brush is then used to clear away the smaller particles of loosened soil, further revealing the character of the newly exposed earth below. The brush is later used to prepare the area for photography.

A variety of even smaller implements has been employed to clear soil from delicate objects (such as skeletal remains, mosaic tiles [tesserae], or necklace beads) or multielement complexes. Some of the tools found useful in such delicate work are teaspoons, dental picks, and soft-bristled artists' brushes.

The process of removing dirt from the excavation area has also undergone refinement. Reed baskets gave way by midcentury to buckets, known as *gufas* (or *goufas*, from Arabic), made from discarded automobile or truck tire tube casings. Those are now increasingly being replaced with plastic pails. The long-handled hoe, used to scoop up soil, has given way at most excavations to the trowel, hand brush, and dustpan. Between the digging area and the dump, a fine-mesh sieve is frequently used to sift excavated soil in order to reveal small objects (such as beads, coins, bone fragments, and stone-tool flakes) that might otherwise have eluded workers. Where there is a concern for retrieving ancient seed and pollen data, fine sieves or flotation devices are also used to recover material from the soil being discarded.

An increasing array of utensils and supplies now finds its way into the archaeologist's field kit. Laying out an area for excavation requires stakes and string, a measuring tape, and a line level to set balk lines; taking elevations of excavated features requires a transit and range rod; collecting and transporting potsherds, bones, flints, and other artifacts require buckets, paper bags and boxes, and cotton padding; and the all-important recording and registering of finds utilize a variety of tags, gummed labels, and waterproof marking pens. [*See* Recording Techniques.]

In the excavation camp, a complementary assortment of tools completes the recording and conservation process: toothbrushes and cotton swabs for cleaning finds and rulers, calipers, and circumference gauges for measuring potsherds and other objects that are to be drawn. [*See* Conservation Archaeology.]

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EXPERIMENTAL ARCHAEOLOGY. Archaeologists design experiments to re-create or reproduce ancient artifacts, technologies, and behaviors to help interpret ancient material culture and events. The experiments reconstruct the human and natural causes of the manipulation, damage, wear, breakage, deposition, and disintegration of artifacts prior to, during, and subsequent to their deposition. Researchers ask questions about the relationship between the person and the product; how manufacture influences the appearance of artifacts; and the sources of diversity and variation in the artifacts.

Experimental archaeology began in Europe in the eighteenth century when bronze horns were found in Scandinavian and British peat bags. A certain Dr. Robert Ball from Dublin died as a result of blowing an Irish horn too hard. In recent decades there has been a resurgence in such studies with an emphasis on the rigorous control of well-documented, recorded, and repeatable experiments. Experimental settings vary, depending on the questions under investigation. For example, pottery firing techniques can be studied by using a gas kiln in a laboratory or by firing wood in a pit dug in the ground. The purpose of each test would be to create and control the causes of firing time and temperatures. What would be learned would be the effect of each variable on the finished product.

Archaeologists begin by explicitly stating an experiment's theoretical basis, its variables, selected materials, and methods; finally, they state its results. Controlled experiments involve the use of pertinent materials, ideally those that would have been available to a society in antiquity, such as local clays or stones. Experiments should include as many variables as possible. To learn the impact of dung added to clay as a tempering material ideally means varying the clays, the size of the dung fragments, the proportions of clay to dung, and the firing temperatures. As the clay is worked its pliability, workability, elasticity, and the ease with which pots can be made from it are assessed. The effects are observed, recorded, and interpreted as inferences for archaeology.

Experimental archaeology involves the reproduction of human behaviors associated with the use of artifacts: butchering studies reveal the physical appearance and deposition of bones after the flesh has been removed with a stone implement. Observing the collapse of walls leads to the ability to identify the archaeological remains of such an event and so to understand the difference between a deposit that is the direct result of the collapse and one that is evidence of scavenging, reuse, or other disturbances.

In addition to studies replicating or imitating ancient artifacts and behaviors, experimental archaeology includes testing the usefulness of methodological assumptions. For example, one can test the validity of population estimates based on animal bone counts by studying what happens to bones when animals are killed. Retrieval techniques can be assessed to learn if plant remains collected by dry sieving provide valid samples of ancient flora and/or diet. Finally, some consider ethnoarchaeology to be a type of experimental archaeology.

[*See also* Ethnoarchaeology.]

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GLORIA ANNE LONDON

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FAILAKA, an island (approximately 14 × 5 km, or 9 × 3 mi.) in the State of Kuwait, located at the mouth of Kuwait Bay, at the northern end of the Arab-Iranian Gulf (29°26′ N, 48°20′ E). Excavations by Danish teams (1958–1962) revealed what continue to be the earliest (c. 2000 BCE) traces of habitation on Failaka Island. That Bronze Age settlement, at the island's southwest corner, consists of clusters of small domestic structures executed in a casual stone-mortar construction. The principal feature of the tallest tell (designated F-3, 6 m above sea level) is an open-air platform temple. Associated with the three architectural levels of the temple and surrounding buildings are hundreds of fragments of decorated soft-stone vessels. A number of the fragments with representational designs have parallels with complete dated bowls excavated at sites in Mesopotamia; other comparable, but not securely stratified, material is found at Tarut (eastern Arabia), Susa, and Tepe Yahya (Iran). [*See* Susa; Tepe Yahya.] The Failaka fragments, some dated as early as 2500 BCE, must have been retrieved from temple destructions in southern Mesopotamia and brought as votives by sailors coming from Sumer—their first sheltered port would have been the harbor at Failaka. One of the most historically interesting of the vessel fragments carries the inscription "Temple of Inzak." According to Mesopotamian texts, Inzak is the titular deity associated with the land of Dilmun," one of several reasons for the suggestion that Kuwait together with Bahrain, and the eastern coast of Arabia were regarded as Dilmun by the Mesopotamians in the late third and early second millennia BCE. [*See* Dilmun.]

Equally significant among the Bronze Age finds are hundreds of circular stamp seals, also of soft stone. The iconography and style of Gulf seals (including those from Bahrain) constitute a unique group featuring elements of Gulf culture (e.g. date palm, gazelle, reed stool, water bird, bullman). Yet, the evidence for foreign contacts is far ranging, extending north to Babylonia, Assyria, Syria, and Turkey; south to Oman and Egypt; and east to Margiana, Bampur, Dasht-i-Lut, and the Indus Valley.

A substantial amount of the excavated material relates to the bronzeworking industry: metal slag, copper ingots, metal objects, and tools. This indicates that ingots were imported from Iran even in the early settlements, and a reasonable number of objects were manufactured for export or exchange. Many of the bronze tools identified would have been used in seal cutting, shellworking, and woodworking.

Some 200 m north of the harbor settlement mound, on a lower, sprawling tell, the Danes located the Ruler's Villa, a modest building containing reception and administrative rooms in the front, a central court marked with four square corner pillars (presumably to support a loggia), and residential quarters to the rear. Other finds throughout the site included imported pottery, square stamp seals, cylinder seals, and metal materials, attesting to foreign contacts with Mesopotamia, Abu Dhabi, and Oman and, in the second millennium BCE, the Indus Valley. [*See* Oman.]

Major architecture from the Hellenistic period consisted of a square enclosure with quadrangular corner bastions. Two entrance doors permitted access to this "fortified" area, which contained the site's earliest Greek settlement (300–250 BCE); the central portion consisted of a religious precinct that may have included two sanctuaries. One was a small Greek cella constructed in well-dressed stone masonry with two columns *in antis*. The capitals betray an Ionic influence, and the bases are inspired by Achaemenian prototypes. In the latest Hellenistic phase the entire enclosure was surrounded by a dry moat.

A large inscribed stela that had fallen from its original position was found in front of the temple. This public letter to the people of Ikaros (the Greek name for Failaka Island) gives instructions for moving the Artemis Temple and establishing a gymnasium. The inscription is dated to a Greek satrap at Susa in the late third century BCE. Another stone inscription from Tell Khazneh, a kilometer to the north, also mentions Artemis, together with Zeus Savior and Poseidon Savior. It has been suggested that the Greek goddess Artemis may have been assimilated with Ninsikilla, the original goddess of Bronze Age Dilmun, noted in Sumerian mythology as the place where all animals live in peace.

Another rectangular building with many rooms located on the seashore and referred to as the Terracotta Workshop contained a number of figurines, as well as ancient molds for terra cottas of types familiar in the Hellenistic world.

Other figurines found throughout the sites illuminate the variety of cults and diverse artistic influences: Mesopotamian, orientalizing Greek, and Hellenistic Tanagra styles.

American excavations by Theresa Howard-Carter for the Johns Hopkins University under auspices of the Kuwait Ministry of Information (1973, 1974) exposed an industrial and crafts area adjacent to the Ruler's Villa, identified by at least six large circular kilns. Raw materials were stored in vats constructed of stone slabs. The contents of the vats were used in the manufacture of a gypsum organic building material, hunks of which appeared in the fill. The kilns were commonly used for firing pottery and baking bread. A trench along the outer wall of the Villa revealed a sophisticated stone-built sewage system with a covered drain running under the wall to a large, covered cesspool outside.

Finds in the crafts workshops next to the Villa included fragments of soft-stone bowls with figural decoration; stamp seals in steatite, ivory, mother-of-pearl, and jasper; imported cylinder seals and inscribed Indus seals; jewelry of bronze, silver, gold, agate, carnelian, and lapis; and bronze tools and implements, shields, greaves, and other armor.

The French excavations under the direction of Yves Calvet, Jean-François Salles, and Jacqueline Gachet of La Maison de l'Orient of the Université de Lyon (1983–1989) in the same area revealed a large, important, and badly denuded stone building whose internal features (water basins and drains) suggest a religious use. The thick walls and prominent staircase indicate some sort of temple tower, which would have been visible to passing ships. The building's meager contents—tripods, seals, decorated soft-stone vessel fragments, bronze tools, and ceramics comparable to those found at Bahrain—indicate that it was constructed at the turn of the second millennium BCE. [*See* Bahrain.]

It is not possible to identify distinct architectural remains on Failaka between the Late Kassite and Hellenistic periods. A number of Neo-Assyrian inscriptions from Mesopotamia mention Dilmun as located on the mainland, but it is not ascertainable whether the border was in the southern Iraqi marshes or Kuwait, or on the eastern Arabian shore. Some small finds, including a cylinder seal, attest to limited Assyrian contact.

The Neo-Babylonian period is more tangibly represented by a stone architectural member bearing an inscription of Nebuchadrezzar. Other Neo-Babylonian epigraphic materials refer to a temple now presumed to have been situated on Failaka; a scarcely definable building at the inland sanctuary site of Tell Khazneh is a possible candidate. Terracotta figurines from this period date to the Neo-Babylonian and Seleucid periods. The Achaemenid period is further represented in pottery types and characteristic bronze arrowheads.

The French added two new Hellenistic sanctuaries to the architectural corpus, one of them on the beach to the east of the fortress. Dedicated to Artemis, it dates to the first half of the second century BCE. The other sanctuary, at Tell Khazneh, is constructed over the earlier Neo-Babylonian/Achaemenid building.

Much additional work has been done to clarify the architecture and stratification of buildings within the Hellenistic fortress. Two hoards of coins found in the complex date to Antiochus III; others imitate the "Alexander style." Numismatic evidence from the Artemis sanctuary on the beach point to the mint at Gerrha; the numerous Seleucid coins were minted either at Susa or Seleucia on the Tigris.

A location called al-Qusur ("the castles") in the center of the island has traditionally been identified as an archaeological site because it is marked by stone walls and ceramic debris. Initial exploration by the French team led to the discovery of three steps of a staircase and fragments of a stucco frieze bearing an unmistakable Christian cross. Excavation revealed a church (36 × 19 m) constructed basically of mud brick/*terre pisé* with some courses of small-stone facing; a thick white plaster overlaid all its walls and floors. The building's bipartite structure consisted of the "public" nave (narthex and aisles) and the "restricted" area (two aisles with chapels, the choir, and dependencies utilized for priestly functions. The stucco crosses presumably date to the fifth–sixth centuries CE; however, the pottery associated with the church's establishment is Sasanian/Early Islamic (first half of seventh century). The building was abandoned in the second half of the eighth century and reused for domestic quarters in the late eighth/ early ninth centuries.

[*See also* Kuwait.]

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THERESA HOWARD-CARTER

FAIYUM. To the ancient Egyptians, the lake at the center of the Faiyum Depression was a holy place, sacred to Sobek, the crocodile god, whose material manifestations swarmed the lake's beaches. The high religious significance of the lake was paralleled in several periods with considerable economic importance, based on the fecundity of the Faiyum's well-watered farmlands and fish, fowl, and other resources from the lake itself. In modern Arabic, the lake is known as Birket Qarun. In ancient Egyptian it was originally She-resy ("southern lake") and later divided into She-resy and Mer-wer ("The Great Lake").

In early antiquity the Faiyum lake was fed by a branch of the Nile; therefore the lake rose and fell annually with the river, and in the flood season it covered a large area. Beginning probably in the twelfth dynasty (c. 1991–1783 BCE) the water flow into the lake was artificially restricted, probably in order to reclaim land for farming. Land reclamation over the centuries eventually reduced the lake to less than 20 percent of its original extent. In the early 1990s water runoff from agricultural fields has increased the size of the lake slightly and made it so saline that most aquatic animal species disappeared.

Traces of human activity in the areas around the Faiyum Depression region go back hundreds of thousands of years, but the earliest substantial and well-preserved occupations date to about ten thousand years ago when hunters and gatherers began intensive exploitation of the rich terrestrial and lake resources along the shore. Remains of these early occupations are marked by many small chert blades and other tools (known as the Qarunian Industry) and include numerous remains of fish, gazelle, hartebeest, hippo, and other animals. These early Faiyum groups appear not to have been in the process of domesticating plants or animals, or using these domesticates in any form of agriculture.

About 7,500 years ago, the Faiyum hunter-fisher-foragers were replaced, displaced, or "converted" (the evidence is still uncertain) to "Neolithic" cultures, which were based in part on domesticated wheat, barley, sheep, goats, and cattle. Artifacts and sites of this period are found in heavy concentrations on most of the perimeter of the lake. There is no question that these people cultivated wheat and barley. In the 1920s archaeologist Gertrude Caton-Thompson (Caton-Thompson and Gardner, 1934) found silos full of well-preserved wheat and barley that also contained sickles and other tools of these early cultivators. Except for a few possible traces of poles for huts, no dwellings of the Faiyum Neolithic have been found, and it seems likely that these people lived in reed huts.

The Faiyum seems to have been nearly abandoned soon after 4,000 BCE, but only a few sites that date to 4000–3000 have been found, perhaps because the main Nile Valley offered better conditions for agriculture than the Faiyum.

Only a few sites dating to 3000–1550 have been found in the Faiyum. Stone quarries on the northern side of the lake were worked during this period, and a small temple (known as Qaṣr el-Sagha) was built there in the Middle Kingdom (2040–1640).

King Amenemhet I of the twelfth dynasty (c. 1991–1962) moved the administrative capital of Egypt and his royal residence from Thebes to Itjtawy—now known as Lisht—which was located on the west bank of the Nile between the Faiyum and Memphis. Little remains of the town except two small pyramids and some tombs and cemeteries, but the emergence of Lisht as an important settlement probably resulted in attempts to develop the Faiyum. Amenemhet III (c. 1844–1797) built a temple in the southern Faiyum at Medinet Madi, as well as a pyramid at Hawara, at the eastern entrance to the Faiyum. Underground burial chambers near the Hawara pyramid were probably the "Labyrinth" described by the Greek historian Strabo. Amenemhet III is also associated with two large stone constructions at Biahmu, which apparently were the bases of two colossal statues of him. Once on the shore or actually in the lake, they were described by Herodotus and perhaps were still partially preserved in the seventeenth century CE, according to travelers' reports, but no longer exist.

Between about 300 BCE and 300 CE, the Greco-Roman era, the Faiyum became one of the richest and most important provinces of Egypt. During this time the agricultural produce of the Faiyum was exported to many towns and cities, some of them outside of Egypt, and several Faiyum towns grew into major metropolises. Some of these cities, such as Dimai on the northern shore of the lake and Karanis at the eastern entrance to the Faiyum, are remarkably well preserved even today. We know much of this period because thousands of documents have been found, almost all of them written on papyrus in demotic Egyptian or Greek and documenting the social and economic life of these communities. The Faiyum prospered during the medieval and modern periods as well, and today it is one of the most densely settled and agriculturally productive regions in Egypt.

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FAKHARIYAH, TELL, site, whose modern Arabic name means "mound of sherds," located immediately south of the modern town of Ras al-'Ain ("fountainhead") in Syria (40°01′ N, 36°09′ E), 65 km (38 mi.) northwest of the modern city al-Hasakah (Hasseke) and about 100 km (62 mi.) west of the modern town of Qamishli (Nisibin). Hundreds of springs in the environs form the headwaters of the Khabur River. This part of Syria is called Jezireh ("island") and is equivalent to Upper Mesopotamia.

Tell Fakhariyah was first observed by Baron Max von Oppenheim in 1899, during his visit to the source of the Khabur. Von Oppenheim worked at Tell Ḥalaf from 1911 to 1913, in 1927, and in 1929, searching for the Mitanni capital, Waššukanni. However, his work indicated that Ḥalaf was the ancient city of Guzana (Aram., *gwzn*). He moved to Tell Fakhariyah in 1929, to supervise a survey of the tell, which produced a contour map but no excavation.

Later, in 1940, the Oriental Institute of Chicago decided to change the focus of its research from the 'Amuq region in Syria to Mesopotamia. Its goal was to clarify the cultural relationship between the 'Amuq basin and Upper Mesopotamia in the second millennium BCE, in the belief that Waššukanni, the capital of Mitanni, was located at Tell Fakhariyah.

In 1940, the institute received permission to excavate from the French High Commission of Syria. The expedition consisted of Calvin W. McEwan and his wife, the former as director; Harold D. Hill as architect; and Abdullah Said Osman al-Sudain as superintendent. The American expedition came to an unexpected halt when von Oppenheim protested to the Vichy French government about its presence. Although the Americans withdrew from the field, the baron did not excavate the site himself. In 1955, Anton Moortgat received a license to excavate Tell Fakhariyah in the name of the Oppenheim Foundation. [*See the biography of Moortgat.*]

In the short time they were in the field, the Americans were able to make nine separate soundings, distinguishing eight levels: the upper four yielded Arab/Islamic, Byzantine, Roman, and Hellenistic remains. The fifth level belongs to the Aramaic period (or Iron Age, 900–600 BCE), the sixth to the Middle Assyrian period (thirteenth century BCE); and the seventh to the Mitannian period (fifteenth–fourteenth centuries BCE). So-called Khabur ware was found in level eight (first half of the second millennium BCE). Moortgat made similar observations. The results from both excavations are described here.

The tell was settled in the Umayyad period. In the preceding Byzantine and Roman levels, the settlement was fortified. Sections of a double city wall were unearthed: two limestone walls running roughly parallel to each other. The inner wall was clearly the more important, as it contained a series of curtains with projecting towers and buttresses.

In level five, in sounding IX, the American expedition partially exposed a palace dated to the Aramaic period (Iron Age II, sixth–seventh centuries BCE). It is essentially a *ḫilani* (or pillared) type of structure. In 1979, at the southwestern edge of the tell, a tractor turned up a basalt statue (1.65 m high) of the Aramean king Hdys'y, King of *gwzn, skn,* and *'zrn.* It was consecrated to the god Hadad of Sikani (Aram., *Hadd zy skn*).

The most important level at Tell Fakhariyah is level six, the Middle Assyrian period. Many small objects, among them ivory pieces and seal impressions, were found in this level. The ivories were recovered in sounding IX, from floor 6, below the Iron Age palace. They are very fragmentary and appear to have been ornamental inlays for furniture or boxes. Only five pieces are undecorated; the majority are decorated with geometric designs, flower patterns, animal and human figures, Hathor heads, winged sun disks, and a griffon/demon. In a building dated to the thirteenth century BCE, twelve cuneiform tablets, ten with 116 seal impressions on them, were found. The style of most of the seal designs is exactly that of the Middle Assyrian seal impressions on tablets from Aššur dated to the thirteenth century. The repertoire of designs is relatively small: recurring elements are ritual scenes, heroes and animals, monsters and animals in conflict, and animals in tranquil settings. In addition to these seal impressions, there were an old Babylonian cylinder seal, thirteenth-century BCE stamp seals, and typical Late Assyrian (Iron Age) scaraboids and bulla bearing the impression of a scarab. Of the twelve tablets and tablet fragments found at Fakhariyah in sounding VI, four are letters and eight are legal/economic documents. Four of the legal documents bear names of Limmu: of these four eponyms, one belongs to the reign of Shalmaneser I (1272–1243 BCE) and one to the reign of his son, Tukulti-Ninurta (1242–1206 BCE).

In level seven, there were traces of the Mitanni at Tell Fakhariyah, as well as of earlier periods. These remains, represented mainly by pottery sherds, were not as well attested as the quantity of Assyrian remains from the following period.

The American and German expeditions expected to find Waššukanni at Tell Fakhariyah. Instead, they found Sikani, an identification confirmed by the inscription of King Hadys'y, who placed his statue in the Temple of Hadad at Sikani, the statue found at Tell Fakhariyah.

[*See also* Mitanni.]

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ALI ABOU ASSAF

FAKHARIYAH ARAMAIC INSCRIPTION.

The inscribed statue of a bearded male, Hadad-Yis'i, with hands crossed on the stomach, was discovered accidently in 1979 at Tell Fakhariyah in northeast Syria. The statue stands 1.65 m high. The subject is clothed in a shawl and a long tunic with a fringed border and his feet are clad in sandals.

The statue's bilingual inscriptions, in Akkadian and Aramaic, are divided into two parts. The Akkadian text, thirty-eight lines long, is engraved on the front of the tunic; the Aramaic, twenty-three lines long, is on the back. In the Aramaic text words are separated by two dots, occasionally three, vertically oriented. This text contains new paleographic elements, and the iconography of the statue has proven useful for dating.

The inscriptions are similar in structure: they are dedications to the storm god Hadad; the identity of the dedicator is Hadad-yis'i, son of Shamash-nuri king of Gozan; they wish for a long, prosperous life; and they offer threats to anyone who would try to erase his name. A second inscription follows in both languages: the dedicator has increased his territory; restored or reengraved his dedications; and threatens whomever would erase his name from the property of the Temple of Hadad (the threatened punishment would be accomplished by Hadad and his consort, Shala/Sawl, supported by Nergal). Many of the phrases in the Aramaic version are more adaptation than translation, but it does contain elements that are not common to both versions.

In the version intended for their Assyrian masters, Hadad-yis'i and his father Shamash-nuri are called governor of Guzana *(šakin),* but in the Aramaic version, intended for their underlings, they are called king of Gozan (*mlk*). In the Akkadian, the god resides at Guzana, in the Aramaic at Sikan. Perhaps at first two statues were erected, one at Guzana and one at Sikan, each inscribed with the Akkadian (ll. 1–18) and the Aramaic (ll. 1–12) texts. The second text (Akkadian, ll. 19–38; Aramaic, ll. 12b–23) may have been written later, after the annexation of Sikan and 'Azran, no doubt with Assyrian help.

The threats, brief in the first part, are more detailed in the second. Were these copied from a vassal treaty linking the dynasty of Guzana to the king of Assyria? Some Aramaic words are borrowed from the Akkadian, and sometimes the word order copies the Akkadian with the verb at the end of the sentence. The inflection of nouns in the nominative plural (*nšwn,* "women") and in the oblique case (*l'lhyn,* "for the gods") recall the case system of classical Arabic. The last part of the Aramaic texts contains images present in the Bible: l. 22, Aramaic, l. 35ff., Assyrian (cf. *Lv.* 26:26).

The Aramaic writing does not preclude a date of about 1100 BCE (Naveh, 1987, pp. 214ff., 221), but the statue and the costume suggest a date within the ninth century BCE (Spycket, 1985, p. 67f.; Sader, 1987, pp. 26ff.). The latter date is supported by the following historical data: the Assyrian eponym for the year 866 BCE is Shamash-nuri, and in the eighth century BCE the succession of eponymous governors in Tushan and Guzana is frequent, as in 794–793, for example. If this custom existed in the ninth century, the eponym of 867 being governor of Tushan, that of 866 called Shamash-nuri could have been the governor of Guzana. Furthermore, some details of the Assyrian are characteristic of the period of Ashurbanipal (c. 850 BCE).

Some of the Aramaic letters are archaic (e.g., /D/ and /*'ayin*/); others are known in the tenth century BCE, or even in the ninth (e.g., /B/, /Z/, and /Ḥ/), while others anticipate the writing of the eighth century BCE. The /W/ with a foot, the /L/ in the form of a question mark, the upright /M/, the /N/ with a right angle, and the /Ṣ/ are all unusual forms.

A new argument may be adduced dating the inscription to about 800 BCE: word dividers are identical to those of more ancient Greek inscriptions from about 750 BCE (Jeffery, 1982, fig. 104, pp. 820ff., 823). That fact also reinforces the traditional idea that the Greeks borrowed the Phoenician alphabet in the eighth century, probably by still-undiscovered northern channels. The Aramaic inscription from Tell Fakhariyah remains for the time being a unique example of this northern graphic tradition.

[*See also* Fakhariyah, Tell.]

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PIERRE BORDREUIL

Translated from French by Melissa Kaprelian

FARA, city mound in Iraq, located about halfway between Baghdad and the Persian Gulf, on the dry bed of the ancient Euphrates River (31°42′ N, 45°32′ E). The mound is large (220 ha, or 524 acres) and low (10 m at its maximum

height). It was visited by three Europeans before serious excavation was begun: by William Kennett Loftus in 1850, William Hayes Ward in 1885, and Hermann V. Hilprecht in 1900.

A pottery cone with an inscription of Halada, *ensi* (governor) of Shuruppak, son of Dada, *ensi* of Shuruppak, found by the Deutsche Orient-Gesellschaft expedition on the surface of the mound, identified Fara as Shuruppak in 1902. In Near Eastern literature, Shuruppak is the home of Utnapishtim, the hero of the Babylonian Flood story. It appears as one of the five antediluvian cities on the Sumerian king list. [*See* Sumerians.]

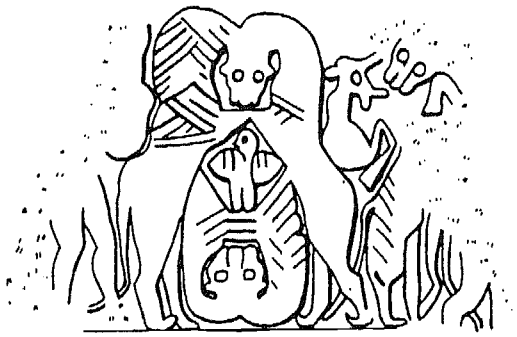
Excavations and surveys indicate that the first settlement at Fara took place shortly before 3000 BCE. There is a Jemdet Nasr, or Late Uruk, level about 2 m thick at the base of the mound. [*See* Jemdet Nasr.] The site was then continuously occupied until shortly after 2000 BCE. Although a large city in Early Dynastic (ED) I, it does not appear among the ED III dynasties on the Sumerian king list. Shuruppak was one of eighteen *ensi*ships under the control of Ur in the Ur III period (2112–2004 BCE). [*See* Ur.] There are few traces of later habitation; presumably, the site was abandoned as the Euphrates changed course. [*See* Euphrates.] Archaeologically, Fara is remarkable for having ED IIIA and II remains at surface level in most areas, later deposits having eroded away.

The Deutsche Orient-Gesellschaft (DOG) excavated at Fara for nine months beginning in June 1902 (Heinrich, 1931). [*See* Deutsche Orient-Gesellschaft.] In that time, approximately two hundred men under two supervisors excavated twenty-one trenches consisting of about 855 3- ×-8-meter "squares." In the last few months of the excavation, the archaeologists began recognizing and tracing mud-brick architecture, and a few house plans were recovered.

From this massive earth-moving effort, about twenty-five hundred objects were recovered and registered. Of these, about eight hundred were early cuneiform tablets, about thirteen hundred were seal impressions, and 171 were complete pots or decorated sherds. [*See* Cuneiform; Tablet; Seals.] The tablets, found at twenty-four sites across the mound, were ED IIIA in date. They attest the organization of large numbers of workers by a number of large administrative units within the city.

Most of the seal impressions were found either in a large dump area (trench Id–e, ED I–II) or in houses with ED IIIA tablets. These huge collections of seal designs have been vital to the study of Early Dynastic glyptic (see figure 1), although the exact dating of the mixed I–II group is still debated.

In 1931 Erich Schmidt excavated at the site for three months for the University of Pennsylvania (Schmidt, 1931). His deep sounding in DE 38/39 established the presence of a thick Jemdet Nasr stratum followed by a "Flood stratum"



FARA. Figure 1. *Seal impression.* Early Dynastic IIIa period. (Courtesy H. P. Martin)

and then more than 6 m of ED I–II deposits. ED IIIA tablets were found in drainpipes penetrating the debris from later, now eroded, levels. Schmidt excavated Early Dynastic II house remains in FG 42/43 and ED IIIA remains in HI 47/48/58. In addition, he cleared two of the massive Early Dynastic "silos" that dot the site. [*See* Granaries and Silos.] These had filled with rubbish, dating from the ED III through Old Babylonian periods.

Between 1968 and 1982, Harriet P. Martin, while doing doctoral research at the University of Chicago, reexamined all of the finds and records from both excavations and conducted a surface survey of the site (Martin, 1983, 1988). This enabled her to establish findspots for many of the objects from the DOG excavations and to put them in context by fully publishing Schmidt's excavations.

Using Schmidt's records, Martin defined a corpus of ED II pottery for central and southern Babylonia (Martin, 1982). She also suggested a stylistic and chronological classification of the ED I–II seal impressions; it has been widely debated, however, largely because the total cultural assemblages of these periods have not been defined through published excavation: Schmidt's excavations were too small in scale to do this and the DOG's were too crudely executed. The DOG trenches can still be discerned on Fara's surface, broken in places by more recent illegal excavations.

[*See also* Mesopotamia, *article on* Ancient Mesopotamia; *and the biography of Hilprecht.*]

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HARRIET P. MARTIN

FAR'AH, TELL EL- (North), site located in the Samaria hills, 10 km (6 mi.) northeast of Nablus (map reference 1823 × 1882). Situated on a high bluff at the western end of Wadi Far'ah, a major east–west avenue from the hill country to the Jordan Valley, the site overlooks the valley and perennial springs of 'Ain el-Far'ah and 'Ain el-Duleib. The mound's area is approximately 10 ha (25 acres). The site is called Tell el-Far'ah (North), to distinguish it from Tell el-Far'ah (South) in Naḥal Besor.

Tell el-Far'ah (North) is identified with biblical Tirzah, briefly the royal residence and capital of the northern kingdom of Israel until Omri's founding of Samaria (*1 Kgs.* 16:23–24). The identification was made by William Foxwell Albright (1931). Gustaf Dalman and Albrecht Alt suggested that the site was Ophrah, home of Gideon; and Félix-Marie Abel suggested that it was Beth-Barah. The name *Tell el-Far'ah* (Ar., "mound of the elevated ridge") offers no clue as to the site's ancient identity. The site's excavator, Roland de Vaux, agreed with the identification of Tell el-Far'ah with Tirzah (see Vaux, 1956). However, while the identification remains persuasive, the archaeological evidence is ambiguous. [*See the biographies of Albright, Dalman, Alt, Abel, and Vaux.*]

De Vaux excavated at Tell el-Far'ah for the École Biblique et Archéologique Française in Jerusalem for nine seasons, from 1946 to 1960. De Vaux died before writing final reports. To date, reports have been produced for the Middle Bronze IIA and IIB–C by Joel Mallet (1973, 1988) and the Iron Age by Alain Chambon (1984). De Vaux's field methods emphasized large architectural exposures, giving little attention to stratigraphy. The architectural stratigraphy and poor recording do not allow a detailed picture of the site's internal development. Nevertheless, Tell el-Far'ah stands with Megiddo and Hazor as foundations for understanding the hill country and northern Canaan. [*See* Megiddo; Hazor.]

The site's first significant material comes from the Chalcolithic period. An important Chalcolithic tomb, "grotto U," was excavated in a cave on the southern edge of the tell and was the first discovery of the Beersheba-Ghassul horizon in the north. The material de Vaux called Late Chalcolithic is now understood as early Early Bronze I, represented by pottery and circular pit dwellings. The primary evidence from EB I comes from the extensive cemeteries to the south, north, and recently along Wadi Far'ah northeast of the tell. The majority of the tomb material is EB I, with only 10 percent belonging to EB II, and none to EB III. There are at least five EB phases on the tell, which are comprised of rectilinear buildings with common walls around streets or lanes. Remains of the earliest known updraft kilns and pottery workshops were found there.

The site was partially surrounded by a fortification wall of mud-brick on stone. The wall defended it on its open flank to the west. Steep slopes to the east and south made walls unnecessary. Other features included rectangular towers and a gateway. The gate was a narrow passageway set between projecting mud-brick towers. The gate was rebuilt in a later phase, then blocked, and then rebuilt entirely. In a later, EB II phase, part of the wall was reconstructed in stone on the remains of the earlier wall; at the same time, another section of mud-brick wall was strengthened with a stone wall and rampart. Still later a glacis was added to the rampart.

There is disagreement about the dating of Tell el-Far'ah in the Early Bronze Age, with de Vaux arguing that the first two phases date to the EB IB and the rest to EB II. Refinements in ceramic chronology suggest that all the phases could be placed in EB II. There is no material from the tell or tombs from EB III or IV.

The site was resettled in the MB IIA. A large village was built above the ruins of the EB II town. Excavated remains are limited, consisting of fragmentary walls and sherd material. A dozen tombs were found containing MB IIA or IIB burials. The MB IIC remains are more substantial and include a mud-brick-on-stone fortification wall and a layered stone and earth glacis built on top of the ruins of the EB wall. A large two-entryway gate with offset entry was incorporated into the wall. Two cult installations are attributed to MB IIC. One, temple 1–2, may have been a dome-shaped granary. The gate shrine near the city gate may have been a cultic installation. Continuity is suggested by an overlying sanctuary and Iron Age *maṣṣēbâ* and olive oil press. Domestic remains of the MB IIC show continuity and accumulation from the previous phase. Houses, courtyards, and installations were found, as well as infant jar burials beneath floors.

The Late Bronze Age strata are poorly preserved and reported. The only significant structure, the sanctuary, was erected above the gate shrine. It is a long room with a two rows of pillars, in which a small bronze statue of Hathor covered in silver was found. This structure has been reassigned to the Iron Age and reinterpreted as a four-room pillared house. [*See* Four-room House.] Few stratified remains can be assigned to the Late Bronze Age. The cemeteries continued to be used, and there were infant jar burials beneath floors. The date and circumstances of the site's abandonment remain unclear.

The Iron Age strata are better preserved than those of the Late Bronze Age. Chambon's final report provides a fuller picture of the site in that period (Chambon, 1984). Four basic strata are evident. The site was reoccupied in the twelfth century BCE. The first Iron Age stratum, VIIa (de Vaux's 4), is fragmentary and contains partial remains of four-room houses. The next stratum, VIIb (de Vaux's 3), is more substantial, with four-room houses oriented on a rectangular plan. This stratum is dated to the tenth century.

A problem arises with stratum VIIC (de Vaux's Intermediate). De Vaux deemed one structure, building 411, an "incomplete building," regarding it as an unfinished palace abandoned by Omri's shift of the Israelite capital from Tirzah to Samaria. This is not, however, supported by the evidence. Virtually no material or other structures can be assigned to this stratum, and Thomas L. McClellan's reanalysis of the stratigraphy (1987) indicates that the incomplete building should be reassigned to stratum VIId (de Vaux's 2). Similar problems appear with stratum VIId (de Vaux's 2), in which de Vaux saw a socioeconomic gap between rich and poor during the eighth century BCE. McClellan shows that "poorer" buildings should be reassigned to the earlier stratum VIIb (de Vaux's 3). The four-room houses and courtyards remaining in stratum VIId (de Vaux's 2) are highly standardized, with little evidence of socioeconomic differentiation.

Tell el-Far'ah was destroyed by the Assyrians in 723 BCE. Its final Iron Age stratum, VIIe (de Vaux's 1), shows evidence of a rebuilding of the administrative building of the previous stratum and of Assyrian pottery. At the end of the seventh century BCE, Tell el-Far'ah was abandoned and was never reoccupied.

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ALEXANDER H. JOFFE

FAR'AH, TELL EL- (South), site located on the west bank of the Wadi Gaza, about 29 km (18 mi.) southeast of Gaza, at 31°17′ N and 34°29′ E (map reference 100 × 076). The tell, covering approximately 15 acres and protected on three sides by natural slopes, is one of the largest in the northwestern Negev. The site sits along a route linking the

coast to Beersheba in the north-central Negev. The site is designated "south" to distinguish it from the northern Palestinian site of the same name.

Tell el-Far'ah (South) was excavated in 1928–1929 by W. M. Flinders Petrie, who misidentified the site as biblical Beth-Pelet. William Foxwell Albright subsequently connected the site with Sharuhen, an Asiatic stronghold captured by the Egyptian king Ahmose at the beginning of the eighteenth dynasty (c. 1540 BCE). Albright's view was widely accepted until the mid-1970s, when Aharon Kempinski suggested that Sharuhen should be placed at Tell el-'Ajjul in the Gaza district. Kempinski's proposal has gained support from an increasing number of archaeologists (although recently Anson Rainey has proposed that Tell Abu Hureirah [Tel Haror] should be identified with Sharuhen); it leaves Tell el-Far'ah (South) without a known ancient name.

Occupation on the mound is attested starting in the Middle Bronze II–III period. At that time the town had a defense wall, glacis, and fosse and counterscarp on the west and a triple-entryway gate with a pair of flanking towers on the south. A cemetery (designated cemetery 500 by Petrie) was in use northwest of the tell; a scarab from tomb 550 contained the name of the Hyksos (i.e., fifteenth dynasty) ruler Maaibre. The site was abandoned in the second half of the sixteenth century BCE, possibly as the consequence of an early eighteenth-dynasty Egyptian military campaign; it was not reoccupied until the fourteenth century BCE.

In the thirteenth century BCE, a large brick building was constructed on top of the MB II rampart at the north end of the mound. Fronted by a paved courtyard and containing an entrance and external stairway at one corner and a central courtyard with rooms on all four sides, this Egyptian-style structure (designated the Residency by its excavator) was probably erected in connection with Egyptian administrative and military control of Palestine during the Ramessid period. A jar fragment found in the building's central courtyard contains the cartouches of the nineteenth-dynasty Egyptian king Seti II (1200–1194 BCE). A smaller building on the west side of the Residency probably was used for offices. Cemetery 900, which belongs to the thirteenth–early twelfth century BCE, contained numerous Egyptian objects.

There was an important Philistine component at the site in the mid-twelfth and eleventh centuries BCE. To this period belong several large rock-cut chamber tombs in cemetery 500 that contained pottery and other goods associated with the Philistines; tombs in several other cemeteries around the mound yielded similar remains. Two of the cemetery 500 tombs (nos. 552 and 562) contained anthropoid coffins, a burial custom adopted by the Philistines from the Egyptians. The Philistines apparently settled at Tell el-Far'ah while the town was still under Egyptian control and remained there after the Egyptians withdrew from southern Palestine in about the third quarter of the twelfth century BCE.

The evidence for human activity at the site during the first millennium BCE is scattered. There appears to have been limited occupation during the tenth–early ninth centuries BCE (most of the tombs in cemetery 200 belong to this period) and then again during the seventh–sixth centuries BCE. Occupation in the Persian period is attested by burials in several cemeteries. A rich tomb of that period, number 650, contained a silver dipper and fluted bowl. Another decline in activity followed that lasted until the Early Roman period, when a small fort was constructed at the north end of the mound. Several coin hoards helped to date the structure to the first century CE.

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JAMES M. WEINSTEIN

FARIS, KHIRBET, ruined agricultural village, located 3 km (2 mi.) northeast of al-Qaṣr in Jordan (31°24′ N, 35°44′ E). From the eighteenth to early twentieth centuries, Khirbet Faris was known as Khirbat Tadun; it derives its present name from Faris al-Majali, its owner, who was buried there in about 1930. There is evidence of occupation at the site since the Bronze/Iron Age.

Khirbet Faris was visited by several nineteenth-century European travelers including Ulrich J. Seetzen, Félicien de Saulcy, and Alois Musil, and surveyed by J. Maxwell Miller (1991) and Udo Worschech (1985). It was excavated between 1988 and 1993 by the British Institute at Amman for Archaeology and History and the University of Oxford, under the direction of Jeremy Johns and Alison McQuitty. The excavation set out to investigate a specific set of problems. Regional surveys in Jordan had indicated dramatic fluctuations in the pattern of Islamic settlement, generally attributed to the varying ability of the state to keep the bedouin from invading the settled region. The excavations at Khirbet Faris sought to test this model by studying a rural community from the seventh century to the present, reconstructing its material culture and socioeconomic structure through a combination of excavation and postexcavation analysis of finds, architectural survey, paleoenvironmentology, field survey, historical studies, and ethnoarchaeology.

Preliminary results suggest that human occupation at Khirbet Faris is best understood not in terms of settlement or abandonment, but rather as a continuum of differing intensities of occupation, ranging from permanent, year-round settlement in structures built de novo, to seasonal occupation involving the reuse and slight modification of existing structures. Khirbet Faris was always occupied at some level on this scale, and there was extensive de novo building or major architectural modification of domestic and agricultural structures in the first–second centuries CE, fifth–mid-eighth centuries CE, twelfth–sixteenth centuries CE, and late nineteenth–early twentieth centuries. The postexcavation analysis of finds, especially of the organic remains, is providing evidence for the socioeconomic trends behind the variations in the scale of occupation.

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JEREMY JOHNS

FARMSTEADS. Research into the rural zone has burgeoned in the past two decades. Archaeologists of the Greek and Italian countryside offer studies ranging from luxurious wine-producing villas like Settefinestre to small-holdings of Roman colonists (Potter, 1987). In the Near East, surveys have produced a great body of data identifying and documenting the hinterland's farmstead—the buildings, fields, and activity loci of a farm—as a conspicuous feature of the ancient landscape and a telling indicator of the ebb and flow of settlement. Surface dating has demonstrated the association of farmsteads with periods of high-intensity land use, a barometer of the growth of the urban sphere and its sway over the surrounding territory. Thus, the appearance of farmsteads is related to heightened security conditions and the burgeoning demand for specialized economic goods—that is, marketable commodities. Nevertheless, there remains precious little published archaeological data regarding the hinterland's farmstead.

A host of difficulties hinder the detailed investigation of the farmstead: chief among these is the normally limited accumulation and eroded condition of artifact-bearing sediments that hamper the dating of the structures. Nevertheless, probes alongside the walls of rural buildings in the vicinity of Tell el-'Umeiri (Jordan), for example, often have been successful in pinpointing the buildings' period of construction. [*See* 'Umeiri, Tell el-.] Architectural typologies—building size and materials—help to date those farmstead structures that themselves lack significant stratified remains. Still, the installations and features that surround a rural building almost always lack a stratigraphic context. However, certain features regularly appear in association with farmstead buildings. Rock-cut wine presses, cupholes, reservoirs, cisterns, and caves, along with terrace and perimeter walls, comprise a constellation of activity loci that was probably constructed contemporaneously with the farmstead building.

The advantages of farmstead residence include a decrease in time lost to commuting back and forth to the fields from town and a greater ability to devote constant attention and surveillance to the farm and its holdings. Both of these advantages permit a farming family to make more use of its labor force or a commercial enterprise to supervise its hired or enslaved labor force. The farmstead also offers greater efficiency in developing a holding of contiguous land units (as opposed to the fragmented holdings that characteristically surround villages). The disadvantages of rural residence include social isolation and vulnerability—greater risk

through the inability to call upon neighbors for defense and reciprocal labor exchanges.

Khirbet er-Ras, just south of Jerusalem is a well-published farmstead (Edelstein et al., 1983). A fieldstone perimeter wall surrounded the site, enclosing an area of about 1.8 ha (4.5 acres) located on a slope just above a wadi floor. Terraces ran laterally across the farmstead, which also included two buildings, cisterns, a cave, a beam-type wine press, and other walled enclosures. The central house (about 12.8 × 9.7 m) is a courtyard ("four-room") house with remnants of paved flooring. Among the Late Iron II pottery (mostly holemouth jars and bowls), its excavators recovered two jar handles with *lmlk* ("the king's") seal impressions. These finds link the farmstead and its winery directly to the royal Judean economic program and suggest that the occupants of the farmstead were related socially and politically to the elite leadership. Though the term *farmstead* connotes the rural residence of a hardscrabble farming family, Iron Age farmsteads may well represent the penetration of the countryside by the managerial arm of the city-based administration.

[*See also* Agriculture.]

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FATIMID DYNASTY. Shi'i in origin, the Fatimid dynasty takes as its eponym Fatimah, the daughter of the prophet Muhammad and the wife of 'Ali, the fourth of the earliest "rightly guided" caliphs. But for its real individuality, one must look to the schism within the Shi'i movement, which divided on politically strategical lines when Isma'il, the oldest son of the sixth Imam (in direct line from the sons of 'Ali and Fatimah), was superseded by his younger brother. Part of the Shi'i community remained loyal to the senior line and espoused a policy of political intervention and subterfuge toward achieving legitimacy. This group was known as the Isma'ili branch, and those who followed the younger Imam down to the twelfth and last Imam are termed Ithna 'Ashari, or "Twelver," a group regnant in Iran and espoused by a significant percentage of the present population in Iraq and Lebanon.

It has been difficult to forge direct lineage between the family of the Imam Isma'il and the founder of the Fatimid branch, Ubaydallah. Believers hold that the Imamate was vouchsafed to the father of Ubaydallah, Maymun al-Qaddah, by one of the heirs of Isma'il. This claim was so difficult to prove that the 'Abbasid caliphate refused to consider Fatimid legitimacy, denouncing them as impostors both to the Prophetic family and to the religious legitimacy, which it unwillingly acknowledged of the sons of 'Ali and Fatimah and their heirs. (Such acknowledgement motivated the 'Abbasid caliph al-Ma'mun to surrender his power temporarily to the Twelver Imam, 'Ali ibn Musa al-Kadhim, in AH 201/817 CE.) Nevertheless, Ubaydallah operated out of Salamiyah in Syria, setting up a network of undercover agents whose objective was to secure him a base of power from which to begin his vaunted quest to unseat the 'Abbasid caliphate. By shrewd and secret propaganda, these agents secured such a base among the Kutama Berbers, long disgruntled with the 'Abbasid/Aghlabid hold on the eastern half of the Maghrib. By 297/909, Ubaydallah was in the Maghrib and declared himself the rightful imam and caliph, taking the almost prophetic regnal title of al-Mahdi. He constructed a new capital, al-Mahdiyah south of the old seat of power in Ifriqiyah, Qayrawan. (Soon after the Umayyad ruler of Spain, 'Abd al-Rahman III, also assumed caliphal rank; thus by the mid-tenth century there were three caliphs in the *dar al-Islam* [Islamic world].)

Ubaydallah's success brought large sections of the Berber population to his side with whom he and his son, al-Qa'im, were able to subdue all of the Maghrib and, for a time, Sicily. Inevitably forays were made against Egypt, most signally in 913–915, 919–921, and 925. Eventually, the Fatimid general Jawhar (a slave of Sicilian origin) entered Fustat in Cairo in July 358/969 and welcomed his master, the caliph al-Mu'izz in 362/973. Very soon thereafter, the regents left in charge of the Fatimid dominions in the west returned to the Sunni allegiance, recognizing the suzerainty of the 'Abbasid caliph in Baghdad. (In the next century, the Fatimids of Egypt wrought their revenge by allowing free passage of the marauding tribes of Sulaym and Hilal through Egypt and into the Maghrib, which they proceeded to devastate.)

Until 567/1171 Egypt was the center, indeed the linchpin of Fatimid power. The Fatimids paid lip service to the quest toward the east and Baghdad, a quest that necessitated the conquest of most (but never all) of Greater Syria. (Yet for one year, 451/1059, the Fatimid caliph replaced the 'Abbasid

caliph in the *khutbah* in Baghdad.) In time the Fatimids were thwarted by two successive phenomena, the rise of the Seljuk (Saljuq) dynasty, which was adamantly Sunni, and the appearance of the Crusaders toward the end of the eleventh century CE. Indeed, it was to the crusaders that the Fatimids lost their last holding in Syria, Ashkelon, in 548/1153. [*See* Crusader Period.]

With a few hard years following low Nile floods and subsequent dysynchronous famine (i.e., intermittent but related to the flooding pattern), the Fatimid period represents the apogee of wealth of medieval Egypt. On the economic side, one may cite three strokes of fortune: a superb, even reformed, agricultural system, which permitted three harvests in one year and found rich return in exporting the surplus of cereals, sugar, and linen; the presence of a supply of gold in the Wadi Allaqi in Nubia, so bounteous that there was very little silver coinage in the eleventh century and so well controlled that Egypt essentially set the prices for its imports, thereby freeing itself from the medieval vagaries of the barter system; and control of the Indian and Far Eastern trade, which shifted to the Red Sea sometime after the beginning of the eleventh century as a measure of how tremulous the Persian Gulf route had become. Although it is true that the effects of the famines in 446/1054–55 and 457–464/1065–1072 were almost catastrophic (all sources agree on the suffering), so much so that the caliph al-Mustansir was forced to disgorge the treasures of his palace to allay the disaster, it is equally true that the recovery was quick and the prosperity renewed. This process held true to the very end of the dynasty. In pursuit of wealth, a protean economic endeavor, the Crusader states at the behest of Venetian and Genoese merchants attacked Egypt in 563/1168 without cause. To counter such trespass Egypt was forced to call on its sworn Sunni enemy, Nur ad-Din of Damascus, to assist the dynasty already in the throes of its political dessication.

From the beginning, the Fatimid dynasty sought to call attention to its legitimacy and its ambitions. A whole new "city" was laid out to house the caliph and his entourage, the military and the governmental bureaus to the northeast of the conglomerate capital of Fustat/al-Askar/al-Qata'i. This royal quarter was dubbed *al-Qahira* (Mars, "the conquering star," was in the ascendant when the urban lines were laid out), which was transliterated *Cairo* by Italian merchants. Al-Azhar was founded a year after the conquest as a training school for the propagandists (sg., *al-da'i*) of the creed. Eventually, the caliph al-Hakim (386–411/996–1021) built a Friday mosque directly adjacent to the earlier brick north wall, which had a beautiful facade with an imposing monumental entrance (a copy of the one at the mosque of al-Mahdiyah) and superb stone minarets at either end. Toward the end of the long reign of al-Mustansir (427–487/1036–1094) and under the stress of Seljuk incursions into Greater Syria, a second set of stone walls was erected, which enclosed the mosque of al-Hakim on the north side. Through its three superb gates, Bab al-Nasir and Bab al-Futuh on the north and Bab al-Zuwaylah on the south, passed not only the population of the expanded capital (for the old one had simply crept up and glued itself unto al-Qahira), but men from all over the Mediterranean and the *dar al-Islam*, particularly those of the Isma'ili persuasion.

One other quite surprising aspect of the Fatimid rulers of Egypt, which contributed to their phenomenal success within Egypt, was the constant display of tolerance. It is true that some unusual forms of practice were introduced, particularly in the *adhan* (the call to prayer) and the Qur'anic verses used in inscriptions and recited during public ceremonies; nevertheless, Sunni allegiance was hardly touched during their two centuries of dynastic rule. Craftsmen and scholars were welcomed and lavishly patronized. Men of all religious persuasions assumed the wazirate (vizierate) or headed the various governmental *diwans* (administrative offices), and, in some cases, held military command. Though some converted, there was no policy of enforced conversion. Perhaps only the leadership of the *duwwat*, the system of training and directing the Fatimid propagandists, was allocated specifically to a Fatimid Isma'ili Shi'ite. The Shi'ite worship of the 'Alid and Imamate families, which accorded with Egyptian traditions concerning the dead and their monuments, in taking the form of rather splendid mausolea and their visitation, struck a sympathetic chord throughout Egypt. (It is interesting to note that not a single Fatimid public inscription was destroyed or defaced by Salah ad-Din and his successors.) In their public rituals, public ceremonies, and court etiquette the Fatimids raised the tone of society to a level that had only been touched during the Ptolemaic period.

Quite another aspect of the Fatimids' effect upon Egypt was in the realm of art and architecture. They freed artists from their implicit dependence on 'Abbasid models, as is quite obvious from the two sets of stucco decoration at al-Azhar. On the one hand, the pre-Islamic classical style, which is preserved in Coptic monasteries, reemerged particularly in the variations on the vine and *rinceau* (circle or spiral) themes; on the other hand, a whole cycle of courtly motifs came to dominate the arts. These decorations were available to the bourgeois as well as the royal patrons. Insinuating all was the apogee of floriated Kufic calligraphy, which is easily traced on the buildings of the period. In architecture the patrons of the Fatimid period respected innovation above all; there was no low point, no tapering off of form or decoration, from al-Azhar to the mosque of as-Salih Tala'i built in 555/1160. Unlike the Mamluks style, the Fatimids had an aesthetic of decorous verve subsuming the undercurrents of millennial Egyptian motifs and influences from countries as diverse as Tunisia, China, Byzantium. In the Fatimid epoch, marriage contracts were woven in silk; chess was played with rock crystal figures; family tombs were replete with mosque and bath; luster ware and imported porcelain were readily available; and the textiles of the world could be had for a bride's trousseau.

Yet for all the public prestige and prosperity, the continuity was internally challenged from the beginning. Legitimacy may have been the constricting problem. Although European merchants and Byzantine diplomats beat a path to Cairo, Sunni Islam was as determined to destroy the Fatimid dynasty as to retrieve the lands usurped by the Crusaders. The overwhelming majority of Egyptians did not convert to Isma'ilism; hence the need for external military personnel. The Berbers were undependable and melted back to the Maghrib; the black troops (Nubians and Ethiopians) were obstreperous and a civil menace; Daylami Persians never came in sufficient numbers; and itinerant Turks made manifest their quixotic loyalties. A strong caliph such as al-Hakim went to extremes in ordering a decent 'Alid society, including burning the Church of the Holy Sepulcher in Jerusalem in 400/1009–10. Others came to depend on military strong men, such as Badr al-Jamali, a converted Armenian, who restored order in Cairo and built the second set of walls. He was succeeded by his son al-Afdal who interfered in the succession process following the death of al-Mustansir in 487/1094 and had a more pliable second son, al-Musta'li (487–495/1094–1101) put on the throne rather than al-Nidhar the eldest, thus repeating the pattern of the imam Isma'il's rejection. Once broken, it was almost impossible to resurrect caliphal influence and direction; one caliph, al-Hafidh (525–544/1130–1149) was only a cousin of his predecessor. The weak and the young succeeded one another; they were pawns of unstable wazirs and/or powerful generals, who had to be eliminated at great cost to the dynasty's prestige. All such fissiparous tendencies did not impinge on the public prosperity of Fatimid Egypt, but they weakened whatever direction the dynasty signaled to the populace. When the Crusaders attacked, help had to be sought from the Sunni constituencies, making the return to orthodoxy inevitable.

In September 567/1171 Salah ad-Din al-Ayyubi (Saladin) had the *khutbah* (the Friday sermon) read in the name of the 'Abbasid caliph in Baghdad. As sultan of Egypt, he used its resources to commence his conquest of Greater Syria and his counter-Crusade, which culminated in the retaking of Jerusalem in 583/1187. He treated the Fatimid family with great kindness, simply making sure there was very little procreation.

The dynasty was remembered outside Egypt through two movements: the Druze in Greater Syria, who maintained a sacral reverence for the caliph al-Hakim; and the Nizari Isma'ilis known more familiarly as the Assassins, from which today the Iranian, Indian, and African branches give allegiance to the family of the Aga Khan. Within Egypt, the memory faltered after the advent of the Ayyubids and the dominance of the Mamluks who moved the center of government from al-Qahira to the new Citadel. The two paradisiacal palaces of the Fatimids along the great north–south artery were reduced and then removed to make way for imposing religious structures. Only in the very beginning of the fourteenth century does a glimmer of interest reappear in the quest of the historian al-Maqrizi to understand the Fatimid effect in Egypt's history. The people of Cairo have continued to visit and venerate the Fatimid tombs to the present time. Perhaps in the pomp and prestige they evinced, however, the historian senses the move from the puissant autonomy of the Tulunids to an achieved independence of Egypt within the fuller medieval Islamic polity. This Fatimid legacy has proven more important than their chimerical origins.

[*See also* Ayyubid–Mamluk Dynasties; Cairo; Egypt, *article on* Islamic Egypt; *and* Fustat.]

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A number of new editions of older sources have appeared which throw considerably more penetrating light on the history of the Fatimids. See, for example, al-Musabbihi, *Al-juz' al-arba'in min akhbar misr,* edited by Thierry Bianquis and Ayman Fu'ad Sayyid (Cairo, 1978); Ibn al-Ma'mun al-Bata'ihi, *Nusus min akhbar misr,* edited by Ayman Fu'ad Sayyid (Cairo, 1983); and, though later, Claude Cahen's various studies on the known fragments of the bureaucrat al-Makhzumi, which can be extrapolated to take in the final part of the Fatimid dynasty, collected in *Makhzumiyat* (Leiden, 1977). For the death and veneration of al-Hakim, see Joseph van Ess, *Chiliastische Erwartungen und die Versuchung der Göttlichkeit der Kalif al-Hakim (386–411 H.)* (Heidelberg, 1977).

All the new subgroup Fatimists are hugely in debt to the extraordinary work of S. D. Goitein based on the examination and rescension of the Geniza documents. Canard surveyed all the printed preparations toward Goitein's five-volume study, *A Mediterranean Society* (Berkeley, 1967–1988), but would have been very slightly dismayed to find that the materials were more pertinent to the twelfth than the eleventh century. A sixth volume of referential indices has been published jointly by Goitein and Paula Sanders (Berkeley, 1993). For the analysis of the Fatimid financial/commercial system, in a sense the first "spin-off" of Goitein's survey, see Abraham Udovitch, *Partnership and Profit in Medieval Islam* (Princeton, 1970).

Two very important monographs have recently appeared which flesh out Canard's rather acute analysis of the subjects: Paula Sanders, *Ritual, Politics, and the City in Fatimid Cairo* (Sarasota Springs, N.Y., 1994), and Leila Al-Imad, *The Fatimid Vizierate, 969–1172* (Berlin, 1990). Yaacov Lev's *State and Society in Fatimid Egypt* (Leiden, 1991) is much less convincing as a commentary on Canard's precis. For the most insightful analysis of the propaganda bureau *(duwwat),* see Paul Walker, "The Ismaili Da'wa in the Reign of the Fatimid Caliph al-Ḥākim," *Journal of the American Research Center in Egypt* 30 (1993): 161–182.

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86, and Wladyslaw B. Kubiak and George T. Scanlon, *Fustat Expedition: Final Report,* vol. 2, *Fustat-C* (Winona Lake, Ind., 1986). The recent work of Roland Gayraud on the Fatimid Funerary Complex at Stabl Antar in Fustat has not been fully published, but see his reports in *Annales Islamologiques* 23 (1987): 55–72; 25 (1991): 57–88; and 27 (1993): 225–232. Nothing specifically Fatimid has been published from the Polish excavations at Kom el-Dikka in Alexandria; however these results should form a governor to the excavations at Fustat and elsewhere in Egypt. A newer light on the question of Chinese imports and their influence can be found in George T. Scanlon, "Egypt and China: Trade and Imitation," in *Islam and the Trade of Asia,* edited by D. S. Richards, pp. 265–274 (Oxford, 1970); and B. Gyllensvard, "Recent Finds of Chinese Ceramics at Fustat," *Bulletin of Far Eastern Antiquities* (Stockholm), no. 45 (1973): 99–119, and no. 47 (1975): 99–119.

For a more searching survey of the post-Canardian bibliography, the reader should consult the *Index Islamicus* for the work of scholars such as Ayman Fu'ad Sayyid, Thierry Bianquis, Abbas Hamdani, Oleg Grabar, Y. Ragib, and George T. Scanlon, as well as the article "Fustat," *infra.*

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FEINAN, site located at the eastern margin of the Wadi ʿArabah, halfway between the Dead Sea and the Red Sea (30°37′36″ N, 35°29′ E). The Byzantine ruins of Feinan (Fenan, Phinon, Punon) are but one prominent archaeological site in a copper ore district that covers about 500 sq km (310 sq. mi.). It is part of the original sedimentary copper deposit of Timnaʿ-Feinan-Eilat-Abu Kusheiba, which is divided by the tectonic activities of the Wadi ʿArabah rift valley. [*See* Timnaʿ (Negev)]. In the Feinan area, more than 250 ancient mines and 150,000–200,000 tons of slag were discovered. The history and development of metallurgy in the area has been studied by archaeologists and scientists from the Deutsches Bergbau-Museum, Bochum, Germany, and the Jordanian Department of Antiquities since 1984. The area has been intensively surveyed and settlements from different periods and mines have been excavated (Wadi Ghwair 1, Tell Wadi Feinan, Wadi Fidan 4, Khirbet Hamra Ifdan, Barqa el-Hetiye, Wadi Khalid, Qalb Ratiye). Analytical work for provenience studies and reconstructions of smelting processes is done in the laboratory on ore, slag, and metal.

Archaeological excavation and the radiocarbon dating of fifty-two samples have made it possible to trace the exploitation of the ore deposit over a period of nine thousand years. The earliest settlements belonged to the Pre-Pottery Neolithic period, when copper ores ("greenstones") were utilized for making beads and for cosmetic purposes. The ores were traded as far as ʿAin Ghazal in Transjordan and Jericho in ancient Palestine. Samples of pure copper ores have also been found at Tell Wadi Feinan (sixth/fifth millennium), some 2 km (1 mi.) west of the ruins of Feinan. Pyrometallurgy developed in the middle of the fourth millennium. Metal was smelted on a small scale inside of settlements ("household metallurgy"). High-grade secondary ores were used that left only very small amounts of slag. Copper ore was also traded to Abu Matar, Shiqmim, Wadi Ghazzeh, and Tell Maqass/ʿAqaba, where it was smelted inside the Chalcolithic settlements. [*See* Shiqmim.]

At Feinan, mining and smelting peaked in the Early Bronze Age II–III (first half of the third millennium). New technologies, such as the use of manganese oxide for fluxing, increased the exploitation of ores considerably. Twelve slag heaps in the area of Feinan point to a large-scale copper production that was the basis for the export of metal to cities in the Levant. The survey produced only sparse evidence for metal production there in the Middle Bronze Age. As at Timnaʿ, production increased again in the Late Bronze Age. Excavations at Barqa el-Hetiye/Feinan revealed Midianite pottery from the thirteenth/twelfth centuries BCE.

Innovations in mining and smelting developed during the Iron Age IIB and IIC, and copper was produced on an industrial scale. The industry was organized by the Edomite towns on the Jordanian plateau, such as Buṣeirah and Umm el-Biyara. [*See* Buṣeirah and Umm el-Biyara.] Remote parts of the ore deposit were made accessible by sinking shafts as deep as 70 m. Smelting was concentrated at two major centers—at Khirbet en-Naḥas ("ruins of copper") and at Feinan—and led to the formation of the largest slag heaps in the southern Levant. This copper boom, which is paralleled in other copper districts in the Old World, arose in a period when the popularity of iron and steel increased.

Major mining activity resumed centuries later, in the Roman period (first century BCE—fifth century CE). By then the richest minerals appear to have been so completely exhausted that the Romans had to resort to low-grade copper ore. The church fathers Eusebius and Hieronymus (see Geerlings, 1985) describe the cruelty of the work in the mines of Feinan ("*damnatio ad metallam*"). One of the most impressive technological monuments is the mine at Umm el-Amad (6,600 sq m), some 15 km (9 mi.) south of Feinan. It is the only complete mine known from the Roman period. The Romans transported the ore over a distance of 12 km (7 mi.) to a central site located very close to the ruins of Byzantine Feinan. The large amount of metal produced here is demonstrated by the 50,000–70,000 tons of slag left behind.

After 500 CE, Feinan's role as a major copper supplier in the southern Levant ended; however, textual evidence and the remains of churches and a monastery indicate that the town maintained a certain importance as the bishop's see in the Early Byzantine period. In the Mamluk period, some minor mining and smelting activities took place there.

The copper produced at Feinan throughout history is characterized by a low trace-element content—except for lead, which sometimes ranges up to the percent level. This indicates that high-purity copper must not necessarily derive from native copper, clearly distinguishing Feinan copper from the copper-arsenic-antimony alloys found at Chalcolithic sites such as Naḥal Mishmar, Shiqmim, and Tell Abu

Matar. The lead isotope ratios are clearly different from ore deposits in Cyprus, Anatolia, and the Aegean Sea, but it is difficult to distinguish between Timnaʿ and Feinan.

[*See also* Mines and Mining.]

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ANDREAS HAUPTMANN

FIELD, HENRY (1902–1986), physical anthropologist, active in Iraq, Iran, Jordan, Saudi Arabia, India, Pakistan, Europe, and Northeast Africa and prolific writer and editor. Field was born in Chicago and received his B.A. (1925) and D.Sc. (1937) from Oxford University. His appointments in anthropology include the Field Museum, Chicago (1926–1941); United States Navy, Washington, D.C. (1941–1945); Peabody Museum, Cambridge, Massachusetts (1950–1986); and the University of Miami, Florida (1966–1986). He directed the Field Research Projects, Coconut Grove, Florida (1963–1986), issuing an eclectic series of reports begun in 1953 at the University of Miami Press. The series focused on the anthropology, archaeology, and natural history of Southwest Asia.

Under his curatorship at the Field Museum, the influential Halls of Prehistoric Mankind and of the Races of Mankind were created in 1933. The cooperative efforts involved were described in Field's *The Track of Man: Adventures of an Anthropologist* (New York, 1953). The great range of modern humans throughout the world was represented in the exhibition by bronze figures sculpted from life by Malvina Hoffman.

Expeditions to Iraq and Iran provided material for Field's memoir on the Arabs of central Iraq (Field, 1935), volumes on these peoples (Field, 1939; 1952), and many short articles. An expedition to Northeast Africa yielded anthropological contributions on the Sudan and Egypt (Field, 1949; 1952). Field reviewed and interpreted anthropological research reported from eleven countries in Southwest Asia (Field, 1956; 1961). His 1925–1950 survey work in Jordan, Arabia, and Iraq was published in 1960 (Field, 1960). Expeditions to India and Pakistan widened his views on this link in human history (Field, 1970). Field is altogether credited with more than six hundred publications.

As a naval officer and anthropological adviser to U.S. presidents Roosevelt and Truman (1941–1945), Field and his coworkers reviewed world literature on patterns of migration and settlement (Field, 1969). His bibliographies of Southwest Asia (Field, 1953–1961) remain central for students and advanced researchers studying the region.

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WILLIAM C. OVERSTREET

FIELD CONSERVATION. Each archaeological discovery, from the merest fragment of an object to a very complex structure, should be maintained with care, ensuring that it can be admired and studied by future generations. This is a generally accepted premise, but of the considerable amount of material buried in antiquity, only a fraction survives. What does survive can be said to have achieved an equilibrium between itself and its environment: when excavated material is exposed to atmospheric conditions different from those to which it was accustomed, its equilibrium is upset and, if no care is taken, the material will eventually disintegrate. Some archaeological discoveries are portable and can be lifted and transferred to a safer location for conservation and study. Others (i.e., remains of built structures) cannot be moved and must be treated and protected in situ.

Portable Artifacts. Classified into organic and inorganic, recovered portable objects are crafted or otherwise produced in a variety of materials.

Organic material. Leather, bone, ivory, wood, and textiles are among the organic materials that rarely survive. When they do, their condition is usually fragmentary and very fragile. Organic material buried under favorable conditions—in permanently dry, wet (as a bog), or freezing circumstances—has the best chance of survival. For example, if an ivory object excavated from damp soil dries quickly, it will crack or warp. [*See* Bone, Ivory, and Shell; Textiles.]

Inorganic material. Objects out of stone, terra cotta, metal, and glass are more resistant to decay than those out of organic materials, but, for example, if a stable, dry bronze object gets wet, it will begin to corrode. [*See* Metals; Vitreous Materials.]

When an object of any kind is found in the field, it must first be protected so that the equilibrium that existed between it and the environment will not be radically disturbed. Before it is removed from the ground, however, photographs must be taken of it in situ, so that its exact position, condition, and relationship to its surroundings are recorded. This information will be useful to the laboratory conservator and restorer. How carefully an object is removed from the ground increases or diminishes the success of the available preservation techniques that can be used on it in the laboratory. [*See* Recording Techniques; Restoration and Conservation.]

An artifact, whether it is recovered from an archaeological excavation, survey, or rescue operation, or it is a chance find (see below), must be lifted and transferred for treatment and protection. When it is not possible to lift an object in one piece—as with a very fragile artifact or one that is not flat (e.g., a skeleton or a rhyton)—the block-lifting method is recommended: the object is lifted together with the soil that surrounds it (in a "block") and is then transferred to the laboratory for treatment. If an object needs consolidation before it is lifted, it must be cleaned well, in situ, using the least possible quantity of consolidant, which subsequently often will have to be removed in the laboratory. An emulsion will be needed, for example, when the object is damp and needs consolidation. In any case, when used, the consolidant must be allowed to dry before the object can be lifted.

The packaging, transfer, and storage of objects found in the field are also components of field conservation. Their objective is to keep the artifact in a stable condition until it undergoes conservation treatment in a conservation laboratory.

Structural Remains. Built structures, usually out of stone, brick, mud brick, wood, or some combination of these materials, are stationary artifacts. Because wood is an organic material that survives only under very favorable conditions, "building material" usually refers to stone, brick, and mud brick. Secondary materials used in construction are mortar, fresco, and mosaic. [*See* Wall Paintings; Mosaics.] All of these materials must be protected immediately upon discovery, and on a long-term basis must be protected against weathering (Price, 1984).

Systematic Excavation. Conservation complications begin in the field, when important late remains are built on top of earlier ones that also need excavating (Sease, 1992). Ideally, the latest structure can be transferred as intact as possible to a nearby location. However, an excavation's budget and intentions toward protecting the site, structures, and artifacts may be incompatible. Thus, moving a structure is rarely practical because of lack of funds, space, or personnel or because its building material is in reuse (belongs to an earlier period) or the existing structures were used in more than one period. When, however, a built structure is to be dismantled or transferred, photographs, drawings, measurements, and other documentation must be made before it is disassembled, and its individual stones must be numbered for re-placement.

When the last layer to be excavated is exposed, it must be protected immediately, as must its portable discoveries (see above). It is best to build a shelter for it. Some opposition to this method exists, based on the argument that a shelter will disturb the environment. If, however, the shelter or roofing is compatible in material, shape, and color, it has a better chance of being accepted (Getty Conservation Institute, 1991).

Features associated with structures, such as mosaics or frescoes, should be sheltered within the structure. If there is no danger of theft, all should remain in situ. Otherwise, they

must be lifted and transferred to an otherwise protected location.

When a site is of archaeological, historical, ethnic, religious, or touristic interest and will likely draw many visitors, paths should be built to protect both the visitors and the site. When a site is discovered accidentally and excavation is either postponed or initiated but then halted, or if a site is isolated and protection against theft or weathering may not be possible, full recording procedures should be followed, including photographs and drawings. The site should then be backfilled, including using geotextiles, a patented synthetic substance, separating the finds from the fill. In a rescue excavation the only option is usually to remove structures, after documenting them as completely as possible. Only rarely will it be possible to transfer them to another location.

[*See also* Artifact Conservation; *and* Photography, *article on* Photography of Fieldwork and Artifacts.]

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ANDREAS GEORGIADES

FIRST JEWISH REVOLT. The main source for the First Jewish Revolt, also called the Great War, is Josephus' *Jewish War* (books 2–7) as well as his autobiography, the *Vita*. The events of the first century leading up to the war can be found in his *Antiquities* (books 18–20, with parallels in his *War* books 1–2). Except for Tacitus's *Histories* 5, very little is known about the revolt from gentile Greek and Latin sources. The revolt, which started in 66 CE had several causes. It ended with the total defeat of the Jews and the destruction of their Temple in Jerusalem. Scholars have pointed to socioeconomic causes—that is, to the growing rift between the rich and the poor in Palestine. They have emphasized the polarity between Jews and non-Jews there, religious conflicts with the Romans, and Rome's alienation from the ruling class (see below). The circumstances that brought about the war were primarily the cruel and foolish behavior of some of the later Roman procurators and the hostile activity of the extreme Jewish groups usually identified with the Zealots and the Sicarii. In the years that led to the outbreak of the revolt the latter two became factions in the so-called Fourth Philosophy group, which claimed that no ruler except God could rule the Jews, and therefore the Jews must free themselves from the yoke of Roman rule in Palestine.

The first Jewish Revolt was preceeded by intensive fighting between the gentiles and the Jews in the mixed cities of Palestine. In April/May 66 CE, both the emperor and the Roman governor of Palestine, Florus, sided with the non-Jews of Caesarea in a conflict there. Florus irritated the Jews even more by his confiscation of seventeen talents from the Temple's treasury. As a result there was a disturbance in Jerusalem that led to the seizure of the Temple by the crowds and to clashes between the Jews and the two Roman cohorts brought up to Jerusalem from Caesarea. When Agrippa II, king of the former tetrarchy of Philip, heard of these stormy events, he hurried to Jerusalem and attempted to stop the insurrection. His speech is given at length by Josephus (*War* 2.345–401).

Agrippa's attempts turned out to be futile, and the situation in Jerusalem worsened when Eleazar, the son of Ananias the high priest, who was a clerk in the Temple, persuaded his colleagues to stop the daily sacrifice offered on behalf of the emperor. Most of the more moderate circles in Jerusalem were against this decision, but they could not oppose the militant majority. This led to civil strife within Jerusalem in summer 66 CE. The Jewish leaders of Jerusalem and the high priests called in an army, provided by both Florus and Agrippa II, and fought the rebels who were holding the lower city and the Temple Mount. Within a short time the rebels, together with the Sicarii, managed to gain the upper hand against Agrippa's soldiers, the Romans, and the moderates, who were concentrated in the upper city. While doing so the rebels caused a great deal of damage: they set fire to the public archives in order to gain sympathy from the debtors in the city. In addition, the high priest Ananias was murdered; Agrippa's troops were driven out; and the Roman soldiers were killed, in spite of an agreement they had reached beforehand with the rebels. The Sicarii left Jerusalem after one of their leaders, who had gone to sacrifice in the Temple arrayed in royal robes, was murdered. They retreated to Masada and did not thereafter participate in the war in Jerusalem. [*See* Masada.]

While these events were taking place in Jerusalem, a terrible war broke out all over the country between non-Jews and Jews, in places such as Caesarea, Philadelphia (Amman), Gerasa (Jerash), Scythopolis (Beth-Shean), and Ashkelon. As a result of these events, Cestius Gallus, the governor of Syria, attempted to quell the fighting. He advanced with the Twelfth Legion and forces he had collected from various towns and then made his way toward Jerusalem (September/October 66 CE). The Jews managed to crush the

Twelfth Legion, an event that, tragically, encouraged them to read the military and political map falsely. They began to prepare for their own political independence as early as 66 CE, as can be seen clearly from the first series of coins they struck at the time (Meshorer, 1982). The nature of the Jewish central government created at this juncture, as well as of the generals chosen to command the different regions of Palestine is revealing. All were selected from among the moderate section of the aristocracy and from the priestly order; no Zealots were included. At this point many still thought that God had led them into the war, and that they would succeed.

The central government in Jerusalem was active during the winter of 66 and in the first months of 67 CE, but it had difficulty imposing its influence on the different regions in the country. Some local leaders, such as Shim'on bar Giora acted independently. He, with a private army, terrorized and robbed the rich in the region of Akraba in Samaria and later terrorized the Jews in the region of Idumea. There was also tension between the central government and Josephus (Yoseph ben Mattithias), who was the general in the Galilee. The support the central government gave to Josephus's fierce opponent, John of Gischala (Gush Ḥalav), at the beginning of 67 CE shows that it did not control the country very decisively (Josephus, *War* 2.583–594; *Life*).

By the time the Roman general Vespasian landed in Palestine in spring 67 CE, there was no united Jewish front against Rome. It does seem, however, that the majority did support the first stages of the war, which had been presented as a defensive war against Rome and the gentiles living in the land of Israel. Opposition to the war was symbolized by cities such as Sepphoris, which minted coins in 68 CE with the inscription "the city of peace" (Meshorer, 1982). [*See* Sepphoris.] The Galilee fell quickly to the Romans after the immediate collapse of Josephus's army. He himself was besieged by the Romans in Jotapata (Yodefat). The fortress there fell to the Romans in June or July 67 CE. [*See* Jotapata.] Josephus surrendered to the Romans, and when he appeared before Vespasian prophesied to him that the general would become the future emperor of Rome. By the end of 67 the Romans had managed to regain control of the whole of the Galilee and part of the Golan (*War* 4.1–83). Thousands of Jews were killed or deported to be sold as slaves. During this time the Roman forces also demolished Jaffa and killed 11,600 Samaritans (*War* 3.414–431; 3.307–315). The campaign of 67 CE ended with the conquest of Jamnia and Ashdod. After a winter break, Vespasian resumed operations, and by the end of spring 68, the whole of Transjordan, Judea (Judah), and Idumea were subdued. Only Jerusalem and Masada were left unconquered. Thus started the last stage of the war.

Meanwhile, civil strife had begun in Jerusalem, caused in part by the defeat of the Jews of Palestine. Vespasian's operations in Palestine in late spring 68 resulted in a terrible refugee problem in the capital. Many Jews had escaped from the Romans to Jerusalem, which was still firmly in Jewish hands. One group that reached there safely in autumn 67 was led by John of Gischala. In June 68, Nero committed suicide, and a great turmoil ensued in the empire. In summer 69, the legions declared Vespasian emperor. Titus, his son, was left to continue the war in Judea, but he did not manage to continue the operation against Jerusalem until spring of 70. Thus, for about two years the citizens inside the city, instead of preparing for an imminent war, carried out dreadful attrocities against each other. The Zealots fought both each other and the moderate groups and, among many others, murdered two of the most distinguished moderate leaders, Hanan the high priest and Joseph ben Gurion. It was because of, and during, these fights that the moderate Rabban Johanan ben Zakkai left Jerusalem for Javneh. According to a rabbinic tradition, it was ben Zakkai who allegedly greeted the emperor with the words "Vive domine imperator" when he met him (B.T., *Giṭ.* 50 a–b).

In spring of 70 Titus besieged Jerusalem. John of Gischala managed to penetrate the courts of the Temple compound and brought the Zealots under his control. Simeon bar Giora became the high commander of most of the city, while John of Gischala was responsible for the Antonia fortress and the Temple Mount. Nevertheless, a great deal of fighting continued within the city during the siege, described by Josephus, who was with the Roman forces outside the city (*War* 5–6). Josephus made continuous attempts to encourage the besieged Jews to surrender, but his attempts were in vain. The city fell to the Romans on the tenth of Tammuz (summer 70 CE), and the Temple was destroyed. The so-called Burnt House and other archaeological remains excavated in the upper city of Jerusalem are mute evidence of the city's last hours (Avigad, 1983). Masada fell in spring of 73, after a three-year siege. The Jewish Revolt was over, and the whole of Palestine was again subdued. Reactions to the destruction of Jerusalem and the Temple can be found in certain of the Gospels, *Luke–Acts*, in *2 Baruch*, *4 Ezra*, as well as in rabbinic sources.

[*See also* Biblical Temple; Jerusalem.]

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DORON MENDELS

FISHER, CLARENCE STANLEY (1876–1941), American archaeologist and architect; innovator in the techniques of stratigraphic analysis at excavations in Egypt and Palestine. Born in Philadelphia, Fisher was trained as an architect at the University of Pennsylvania. In 1898, after a brief period of professional employment in St. Louis, he joined the university's expedition to Nippur. He spent the next few years as a research fellow in Babylonian architecture at the University Museum. In 1909, Fisher was recruited for the Harvard University Expedition to Samaria and began a close partnership with Egyptologist George Andrew Reisner. At Samaria, the two men paid close attention to patterns of debris deposits and fills. Indeed, Fisher's carefully drawn stratigraphic sections from Samaria became prototypes for subsequent generations of archaeological architects.

Fisher remained in the Near East throughout World War I, working as a volunteer on various humanitarian relief missions; later in life he would devote considerable time, energy, and personal funds for charitable works in Jerusalem. During his extended wartime stay in Egypt, Fisher expanded his research interests and was named chief archaeologist and Egyptologist in Cairo for the University of Pennsylvania Museum. In the early 1920s, Fisher alternated his time between Egypt and Palestine. From 1921 to 1925, he served as director of the University of Pennsylvania excavations at Tell Beth-Shean, where he and his team uncovered a sequence of New Kingdom temples and directed limited soundings down to Neolithic levels. He also devoted part of every year to his work with Reisner, serving as chief architect at Reisner's important excavations at Girga, Giza, Memphis, and Luxor. Fisher was also later called on to direct the University of Chicago Oriental Institute's excavations at Megiddo (1925–1927) and Haverford College's expedition to Beth-Shemesh (1928–1929).

Fisher was named professor of archaeology at the American School of Oriental Research (ASOR) in Jerusalem in 1925 and participated in many of the school's field projects. The last major project of his career, an ambitious "Corpus of Palestinian Pottery," remained unfinished at the time of his death.

[*See also* American Schools of Oriental Research; Beth-Shean; Beth-Shemesh; Giza; Megiddo; Memphis; Samaria; *and the biography of Reisner.*]

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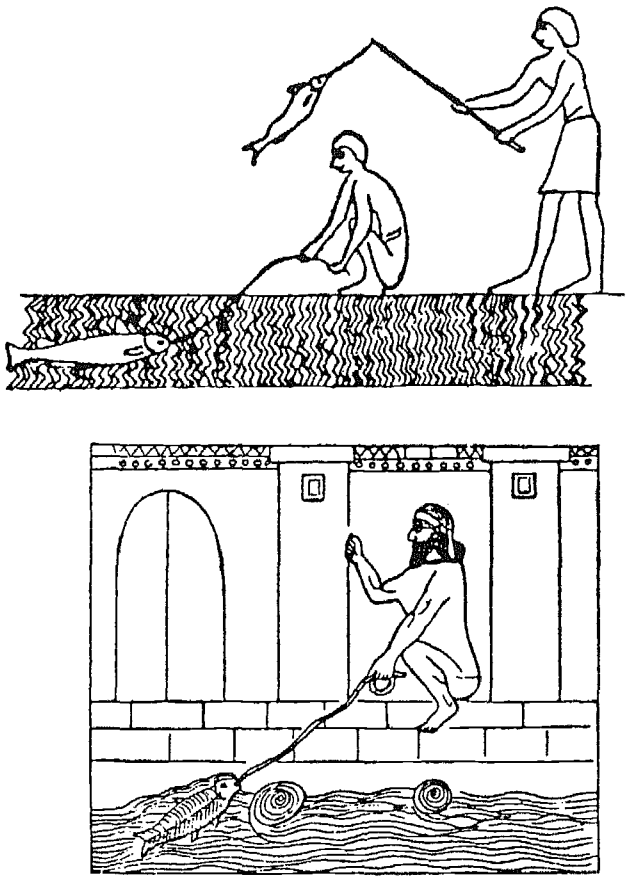
NEIL ASHER SILBERMAN

FISHING. Long considered a humble occupation, fishing has been part of human activity in the Near East since the beginnings of settled habitation, either temporary or permanent, near bodies of water. Although fishing and hunting may have evolved at about the same time and may share origins, the mythology of hunting involves the braver "royal huntsman," whereas fishing involves those of more humble social standing.

In an Egyptian papyrus from 2000 BCE, the Satire of the Artisans, a pupil is warned by his teacher, a scribe, about the hardships and dangers of fishing—that is, about the attendant high taxes on the fish caught and about the crocodiles in the Nile River. In the Hellenistic period, taxes on a catch came to 25 percent of its value. Herodotus (2.164) classifies those who fish at the lowest of all social levels—the seventh—together with sailors.

Those for whom fishing was an occupation sometimes also held political office, however. The mayor of Tiberias at the time of the first Jewish Revolt against Rome in Galilee was the head of the "marine union," which undoubtedly included both fishermen and sailors (Josephus, *Vita,* 12). Together with the fishermen of Magdala, they represented the uncompromising forces of Jewish nationalism, as against the Peace party of the rich (Josephus, *War,* 2.21.3). Two hundred years later, the Talmud describes the powerful fishermen's unions of Tiberias and Akko as differing in their readiness to work during the intermediate days of Passover and the Feast of Tabernacles (J.T., *Mo'ed Q.* 2.5; B.T., *Mo'ed Q.* 13.2).

Ancient fishing techniques and technologies can be reconstructed based on existing documentation: Egyptian reliefs and tomb paintings beginning in the third millennium, texts from Mesopotamia, references in the Bible and the Talmud, and excavated fishing implements. The similar climate found throughout the Levant and the cultural exchanges made among ancient societies resulted in a uniformity of fishing techniques. Many Near Eastern sources



FISHING. *Ancient fishermen catching barbels with hook and line.* Top: Egyptian; bottom: Assyrian. (After Nun, 1989)

record catching and preserving fish as a well-developed and important industry. Fish were transported, alive or preserved (by drying, salting, or pickling), across considerable distances and constituted both an article of trade and of tax payment. Competition regarding fishing waters and concession rights created conflicts as early as the third millennium in Sumer and, in the biblical period, in the Sea of Galilee.

For large industrial catches, however, fishermen in Egypt, as elsewhere, used nets. All industrial fishing in the world today is based on methods that originated in the ancient Near East. The oldest and most important type of net is the dragnet, or seine (Gk., *sagēnē;* Ar., *jarf;* Heb., *ḥērem*). Mentioned nine times in the Hebrew Bible (more than any other method) and once in the Parable of the Seine in the Gospels, the dragnet is a kind of wall of netting spread from a boat parallel to the shore and then dragged to land with the catch. It is 250–300 meters long, 2 meters high at its "wings," and 4–5 meters high at its center. A foot rope, weighted with stone or lead sinkers, is used with the dragnet, as are papyrus or wood floats to keep the wall upright. The first ancient nets were made of plant fibers; later examples are of linen or cotton. As a result of the region's dry climate, nets from the second millennium BCE have been found in Egyptian tombs as at Gebelin, and a piece of a net from the second century CE was discovered in the Cave of the Letters near the Dead Sea.

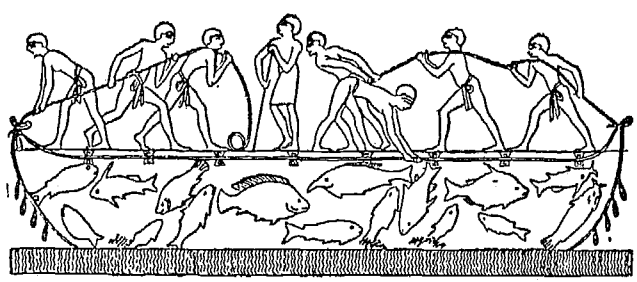
The cast net (Gk., *amphiblēstron;* Ar., *shabakeh;* Heb., *qela'*) was popular in antiquity and is still used. It is circular, 6–8 meters in diameter, with stone or lead sinkers attached to its edge. It is tossed by a lone individual who stands on the shore, in shallow water, or in a boat; the net lands like a parachute and sinks into the water. Complete cast nets from the second millennium BCE have been found in Egyptian tombs as at Deir el-Baḥari. The Talmud (B.T., *B.Q.* 81b) and the Gospels (*Mk.* 1:16; *Mt.* 4:18) contain references to them.

Netting needles, the tool used to weave and repair nets, have been found in Egyptian tombs and at sites on the Mediterranean coast of Israel near Gaza and Jaffa. On the Sea of Galilee, these needles have been found at Beth-Yerah, and at Magdala, in first-century contexts. Made of bone, bronze, iron, or wood (and today, plastic), the netting needle is from 10 to 30 centimeters long. It differs from the sewing needle in that the thread used is wound right on the needle.

In Sumer, fishing rights belonged to temples and local rulers, who leased them to fishermen. The right to fish in canals belonged to owners of the adjacent lands, who received these rights as compensation for maintaining the canals. As elsewhere, line and cast-net fishermen worked alone; those using larger nets worked in groups.

At Khafajeh, near Baghdad (2700 BCE), fifty ring-shaped ceramic sinkers (5–6 cm in diameter) were discovered, a few of which still had small pieces of netting attached. Bronze fishhooks have been recovered at Ur (third dynasty), in Egyptian tombs, at Capernaum, and elsewhere. Stone and lead net sinkers, stone net anchors, and stone boat anchors are the most commonly found of all fishing accessories.

Sumerian and Akkadian mythologies contain many references to fishing in parables and analogies, a tradition also found in the Hebrew Bible and New Testament. Gilgamesh, the hero of a Mesopotamian flood myth, is depicted carrying a catch of fish, and the major Sumerian deity, Ea, the all-wise earth and water god, is described as owning a fishnet.



FISHING. *Egyptian fishermen with a dragging net.* Sixteenth century BCE. (After Nun, 1989)

His son Adapa is the hero of a remarkable adventure involving providing fish for the gods.

The first maritime empire was ruled by the Minoan civilization on Crete. At its height (c. 1600 BCE) it controlled the islands in the Mediterranean and Aegean Seas. Depictions of fish and fishing are prominent in Minoan wall paintings and on their ceramics, and the figure of a fish was typically placed on the prow of a ship. The Philistine "Sea Peoples," who probably originated in the Aegean, brought their knowledge of techniques for catching and preserving fish to ancient Palestine. [*See* Minoans; Philistines.]

None of the several references to fishing in the Hebrew Bible includes a single personality occupied with fishing or the name of a single fish. Only the prophets, notably Ezekiel (26:5, 14) and Isaiah (19:5), mention fishing in their parables. The coastal tribes of Zebulon and Asher, along with the Phoenicians, probably fished on the shore of the Mediterranean (*Gn.* 49:13). According to a tradition preserved in the Talmud (Tosefta, *B.Q.* 8), the tribe of Naphtali was given exclusive fishing rights by Joshua, entitling them to "set seines and spread cast nets" around the entire shoreline of the Sea of Galilee.

The New Testament Gospels include fishing vignettes on the Sea of Galilee, the scene of most of Jesus' ministry and where his earliest disciples fished. However, the descriptions of the Miraculous Drought (*Lk.* 5:1–7; *Jn.* 21:1–9) are not technically accurate, perhaps because the authors were already distant in time and place from the experience of fishing in the Galilee. Problems of translation (especially of "dragnet" and "cast net") add to the lack of accuracy. Nevertheless, it is safe to say that fishing methods on the lake have not changed greatly since Second Temple times.

In February 1986, a sensational discovery was made on the muddy beach near Migdal (Magdala), on the Sea of Galilee: an ancient wooden boat, dating to the first century CE, miraculously preserved by the mud into which it had sunk. The boat is 8.8 meters long, 2.5 meters wide, and 1.25 meters deep, almost exactly the measurements of the boats used by seine net fishermen in the Sea of Galilee until the mid-twentieth century. The planks were made of cedars of Lebanon and the ribs of unworked oak branches. The boat was likely used for both transportation and fishing. [*See* Galilee Boat.]

Other important finds were made at the same location between 1989 and 1991, when drought drastically reduced the water level in the Sea of Galilee. Hundreds of stone net sinkers, net anchors, and boat anchors of varying sizes and shapes were recovered, objects that will contribute greatly to what is known about early fishing technology.

[*See also* Anchors; Hunting; Ships and Boats.]

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MENDEL NUN

FOOD STORAGE. The need to store food arose early in human history. Food had to be saved in times of plenty for times of need, especially when human resourcefulness created a surplus either by hunting and gathering or by production through domestication. With the evolution of social structures, surplus could be traded, a notion that made storage attractive. To carry out food storage successfully, two issues needed to be addressed: food processing and containers.

In some environments food tends to spoil, hence, it has to be processed so that it can be stored for long periods. Processed foods were not only consumed locally, but also sold or bartered. Food processing took the form of drying, salting, smoking, or producing by-products, such as wine. Because most vegetables were not processed, they were used as seasonal foods. Certain fruits, such as grapes, figs, dates, and apricots, could be hung on string for drying and storage, pressed into cakes, or kept in containers. In addition, grapes, and other fruit were crushed and their juice processed into wine, syrup, and vinegar and stored in containers. Olives were crushed and pressed, producing an oil that was also stored in containers. Treating raw olives with salt or other additives for consumption was introduced in the Hellenistic or Roman period (Borowski, 1987, p. 123). [*See* Olives; Viticulture.]

Other raw foods could also be processed for long storage and transport. Both meat and fish were preserved by being dried, salted, or smoked in thin strips. Fish bones discovered at sites distant from any body of water suggests that they had been transported there after being processed. Milk was churned, turned into cheese, and dried in blocks that could be reconstituted with water, a practice still prevalent among nomadic bedouin.

Grain for consumption could be preserved for a long period by heating to kill the germ, after setting aside seed for future seasons. This practice was not a common one, however. Grain was stored in bulk or in containers. To protect the seed from spoilage and rodents, it was fumigated (Borowski, 1987, p. 156). Because it was not processed before it was used, it was ground daily for baking and cooking. Storing flour was neither customary nor efficient, although

a case is known of wheat flour stored in a Roman amphora (Renfrew and Bahn, 1991, p. 241).

In most instances, pottery vessels were used for food storage. Prior to the invention of pottery, in its absence, or for special purposes, however, containers were made out of animal skins, tree bark, wood, rush mats and baskets, and stone. Some of the earliest stone vessels found in villages in Mesopotamia, as at Maghzaliyeh, date to 6500–6000 BCE and were made of gypsum, in the tradition of Zagros Mountain societies (Huot, 1992, p. 189).

Whether storage was in private or public hands, special areas and facilities were set aside in the community, with an eye toward ease of use and efficient collection and distribution (Borowski, 1987, p. 82). Studies of space utilization at archaeological sites demonstrate that the majority of private dwellings contained areas designated for food preparation and storage (Daviau, 1990). This is corroborated by ethnoarchaeological studies that show well-defined space for food storage in dwellings (Kramer, 1979, pp. 144–145). In the Chalcolithic period, food-storage installations were built in the courtyard, which was surrounded by rooms (Porath, 1992, p. 45). In the Early Bronze Age, food was stored in large pithoi, and the jars were placed on the floors of rooms and courtyards or sometimes sunk into the floor (Ben-Tor, 1992, p. 67). In the Middle Bronze Age, with the development of the courtyard house, space for food storage was set aside in the courtyard and in some of the rooms, a practice continued into the Late Bronze Age (Ben-Dov 1992, pp. 100–104). With the development of the two-story residence, foodstuffs were mostly stored on the ground floor, in small rooms surrounding a central space, possibly a courtyard. Whether the ground-floor space was covered is still being debated. Iron Age houses in ancient Palestine are often found with storage rooms (Borowski, 1987, p. 82). Although cellars were not as common as storage rooms in dwellings or in public buildings, examples have been uncovered at Tell Beit Mirsim, Beersheba, and Tell Jemmeh (Borowski, 1987, pp. 75–76).

In dwellings, foodstuffs were stored mostly in jars, whose shape and size changed based on new influences in a period and needs. While storage jars in EB Palestine had a characteristic flat bottom, MB storage jars featured a pointed bottom that allowed the sediments in such liquids as oil and wine to settle. Such jars were also used to store grain; when used in large numbers, they were placed close to each other for support and cushioned with chaff and straw against breakage, as at Gezer (Borowski, 1987, p. 69). Individual jars were placed in corners, along walls, inside depressions in the floor, and in round clay stands.

The soft limestone bedrock of the Shephelah was hewn to create underground work and storage spaces, as at Mareshah (Marisa) as early as the Hellenistic period. During the Roman period, in part for reasons of security, the soft rock was hewn to create underground storage facilities for agricultural produce. Of interest are four rooms found at the Ahuzat Hazan hiding complex, where the floors were hewn with rows of depressions for storage jars, each connected to the other by a narrow channel in which spilled oil could be directed into a collection basin (Kloner and Teper, 1987, pp. 115–127). The size of this installation and the quantity of oil that could have been stored (10,500 liters) suggest that it did not belong to an individual, but may have played a role in the community's preparation for the impending turmoil that culminated in the Bar Kokhba Revolt (132–135).

Certain food-processing activities, such as wine making, required particular storage facilities, such as those evident in the winery at Gibeon. [*See* Gibeon.] The excavator found a series of caves, used as fermentation cellars, in which the wine was kept undisturbed at a constant temperature until it was drinkable (Pritchard, 1964, pp. 1–27).

Public storehouses, under the control of the civic or religious authorities, were placed in a city's administrative section, near the main gate, near the governor's or the king's palace, or inside the cult compound. Most public storage installations were repositories for grain, oil, and wine—commodities that could be distributed to functionaries. For their daily needs, palaces and temples stored foodstuffs in facilities similar to those in private dwellings. These practices were common throughout the Near East: at the palaces at Ebla and Mari, in Syria, documents related to food supplies and agricultural production were found in the former, and related to food storage and disbursement in the latter. At Amarna, in Egypt, granaries and storage areas were uncovered, and at Kuntillet ʿAjrud, a way station and cult center in the Sinai Desert, large pithoi found in long, narrow rooms demonstrate how foodstuffs were stored. Long and narrow rooms were popular for storage of foodstuffs, as evident from the tripartite buildings in Beersheba, Tel Hadar, and other sites.

Although their function is still being debated, the Samaria ostraca deal with the collection of oil and wine in ancient Israel, either as taxes in kind, provisions for the palace, or produce from royal estates shipped for certain functionaries (Smelik, 1991, pp. 56–57). [*See* Samaria Ostraca.] Distribution of food by the central government in ancient Israel is illustrated by the Arad ostraca, which contain instructions for rationing certain measures of bread or flour, wine, and oil to functionaries, possibly Greek mercenaries. From the ostraca it appears that the ration was one loaf of bread per person per day, and the bread remained edible for four days. [*See* Arad Inscriptions.] Beyond this period, flour was given in the amount of one liter per loaf. Wine was rationed at a quarter to a third of a liter per person per day (Smelik, 1991, p. 106). Additional information about the collection and distribution of foodstuffs by the central government in ancient Israel are the *lmlk* stamped jar handles, dated to the time of Hezekiah's revolt against Sennacherib in 701 BCE. The present consensus among scholars is that these stamped jar han-

dles designated containers used for supplying Judean cities with provisions to withstand the Assyrian siege.

Foodstuffs were transported from one location to another on land by wagons and pack animals, mostly donkeys, and on sea by boats. On land, liquids were transported in jars as well as in skins. Other foodstuffs were probably transported in jars or sacks. Transport by boat involved the use of amphoras, tall jars designed to fit in the hold and stabilized by tying their large handles to beams in the body of the boat.

There are very few references to food storage in the Hebrew Bible. From *1 Kings* 17:12, 14, and 16 it appears that household flour was kept in a jar (*kad*) and oil was stored in a flat jar (*ṣappaḥat*), possibly the Iron Age type known as a pilgrim's flask. Two terms are clearly associated with public food storage facilities: *'ôṣārôt* (*Jl.* 1:17; *Neh.* 12:44; 13:12; *1 Chr.* 27:25, 27–28; *2 Chr.* 11:11) and *miskĕnôt* (*2 Chr.* 32:28). However, their literary context implies that these facilities were not used exclusively for foodstuffs.

What is known about food storage in antiquity will increase as the technology of archaeology advances. That is, chemical analyses of storage jars and other vessels will give more accurate assessments of the commodities they held. More sophisticated studies of space utilization will help to identify the configurations of storage space and the nature and quantities of the goods stored in them.

[*See also* Granaries and Silos.]

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ODED BOROWSKI

FORTIFICATIONS.

[*To survey the historical development, forms, and functions of fortifications, this entry comprises five articles:*

An Overview
Fortifications of the Bronze and Iron Ages
Fortifications of the Persian Period
Fortifications of the Hellenistic, Roman, and Byzantine Periods
Fortifications of the Islamic Period

The first provides a general typology and morphology of fortifications, particularly in Syria-Palestine; the remainder treat remains of specific periods.]

An Overview

Fortifications are an important component of the ancient urban settlement, aimed at preventing access of hostile elements as well as demarcating the limits of the city. Their construction necessitated the mobilization of many members of the community. As part of the urban matrix, fortifications share both military and civic functions; their structure usually reflects a compromise between those conflicting roles. Attempts to associate the shape of fortification systems directly with the invention of new weapons (Yadin, 1963) are not supported by the accumulating factual data. [*See* Weapons and Warfare.] Rather, the nature of the fortifications appears to have been dictated by a variety of combinations of military, political, economic, demographic, and ideological factors. The history of alterations in shape, structure, and building materials of fortification systems demonstrates the shifting priorities made by the community within the scope of the military-civic continuum.

Fortification systems consist of several different elements: the circumferencial unit that provides the physical barrier or the demarcation line of the settlement; a gate or gates; posterns; towers and bastions; and glacis and water systems.

Circumferencial Defense Systems. The use of the term *circumferencial defense systems* instead of the popular designation *city walls* denotes the wide range of functions that should be attributed to the structure of the settlements' boundaries, beyond an exclusive military role. The following typology reviews the various ways in which communities

shaped the edges of their cities and towns in order to meet their military and socio-economic needs.

Solid city walls. A solid wall appears to be the earliest type of fortification, the concept stemming, perhaps, from the fences built around animal pens in sedentary farming communities. Solid walls were the simplest structure that could provide a physical barrier against intruders or attackers. In the Early Bronze Age the walls were made of fieldstones, sometimes constructed in segments, with narrow intervals to diminish damage from earthquake, such as at Megiddo XVIII. At many sites additional lines of solid walls were added outside the first one (totaling more than 15 m in width) to gain better protection (e.g., Ai, Tel Yarmut). The walls of Middle Bronze Age cities were commonly constructed of clay bricks and were of modest width (2–3 m) but reinforced by a well-constructed glacis.

In Iron Age II, ashlar blocks were used sparsely in the outer faces of solid walls. At Megiddo and Tell en-Naṣbeh a type of offset-inset wall was in place. [*See* Megiddo; Naṣbeh, Tell en-.] The wall was made of sections about 6-meter-long that alternately projected and receded and was constructed of fieldstones faced with ashlars. This method provided more stability to the wall with minimal cost for material and labor. Balconies used to protect the "dead area" at the foot of the wall could be constructed over the insets on their outer side. At Beersheba and Arad, such solid walls were built in a sawtooth fashion, in which sections deviate at intervals in the same direction (some 0.3–0.5 m)—like teeth on the blade of a saw. [*See* Beersheba; Arad, *article on* Iron Age Period.] This technique may have been meant to create vertical shadow, which would have made the wall appear higher and more formidable.

Casemate wall. A unique type of fortification, common in Iron Age II, was composed of two parallel walls with a space between them: the casemate wall. This method was evidently applied as a way to economize on construction costs by decreasing the amount of material and labor; it was also a means to gain additional storage space within the city. Casemate walls were often integrated into dwellings inside the city, as at Beersheba and Tell Beit Mirsim. [*See* Beit Mirsim, Tell.] The casemate rooms served in these cases as the rear broadroom of a house. At Hazor, the casemate wall was built as an independent structure: a street separated the wall from neighboring houses. [*See* Hazor.] In a few instances, such as at Samaria, the casemates were filled with soil and served as structural foundations. [*See* Samaria.] In Anatolia and Northern Syria, underground "boxes" completely filled with soil and debris, termed *Kastenmauer,* were used as structural foundations from the Middle Bronze Age (Naumann, 1971, pp. 249–256). At Hazor and in the fortress of Arad, casemate walls were converted into stronger solid walls by the intentional filling of the casemates with soil and stones.

Earthen rampart. Several MB cities were surrounded by magnificent earthen ramparts. The most prominent example is the Lower City of Hazor, where the rampart rises to 90 m. These structures were considered by many scholars (Albright, 1960; Yadin, 1963; Mazar, 1968) to be a new type of defense introduced by the Hyksos. [*See* Hyksos.] Investigations by Peter J. Parr (1968) and Jacob Kaplan (1975), as well as new data from the sites of Dan, Akko, and Tel Yavneh-Yam, indicate that earthen ramparts already existed in the MB IIA period. [*See* Dan; Akko; Yavneh-Yam.] Furthermore, it has been clarified that nowhere was a city wall incorporated into an earthen rampart; thus, their function must be considered to have been a means for demarcating the city's limits (Herzog, 1992) or providing a psychological deterrent (Finkelstein, 1992).

Belt of houses. Communities that could not afford the cost of constructing an elaborate fortification system chose to protect their settlement by arranging an outer belt of houses. The rear wall of these structures provided the necessary barrier, at least against thieves or robbers. This concept is commonly found at Late Bronze Age and Iron I settlements.

Glacis. Consolidated layers of soil, bricks, or stone to protect the slopes of a mound are known as a glacis. To assure drainage, layers of different types of soil were alternated. The foot of the glacis was retained by brick or stone walls. Occasionally, the outer face of the glacis was covered with stone paving. Earthen or stone-built glacis were also considered a Hyksos invention. However, Parr (1968) convincingly demonstrates that the phenomenon has a wider chronological range and already existed at EB cities. For practical reasons, every fortification system had to include some kind of glacis to prevent damage to the wall's foundations by erosion. A glacis also provided smooth slopes around the walls that obstructed attackers from climbing them. Indeed, glacis were applied in every period in which cities were fortified by walls. The common use of mud bricks for MB city walls may have necessitated the development of more elaborate glacis in that period.

Moat. A deep ditch was cut at the foot of some mounds in order to increase their height. This method was especially important in places were the natural hill was not sufficiently prominent to invest and attack. In many cases, the moat can be considered to be a by-product of removing much needed soil and stone for earthen fills and construction. Digging the soil in the area around the mound created a ditch that impeded the enemy's attack. A moat was exposed on the western side of the MB II Lower City at Hazor and around the newly exposed fortified Iron II city at Tel Jezreel. [*See* Jezreel, Tel.] In addition, because these moats were cut deep into the bedrock, they probably served as a quarry for construction stone. Moats were also observed at the Hittite capital of Ḫattuša (Boğazköy) in central Anatolia, in northern

Syria at Carchemish, and at Tell Ḥalaf in northern Mesopotamia (Naumann, 1971, pp. 305–308). [*See* Boğazköy; Carchemish; Ḥalaf, Tell.]

Gates. City gates dramatically represent the architectural dilemma created by a settlement's military and civil needs. As an entrance to the city, the gate needed a wide opening and a location at the easiest approachable point, however, defensive considerations demanded a narrow and hard-to-enter location. The planners of city gates throughout the ages had to find an adequate compromise between these two conflicting demands. The following typology of city gates portrays different solutions developed to cope with the dilemma.

Gates with projecting towers. The simplest way to protect a gate was to flank the approachway between two towers. The top of the city wall above the gate and the roof of the projecting towers provided the defenders with strategic firing platforms that controlled the area in front of the gate from three sides. This arrangement also minimized the size of the dead area next to the foot of the wall. Wooden doors were reinforced with strips of metal to prevent their burning. A well-preserved example of this type are the EB II gates at Tell el-Farʿah (North). [*See* Farʿah, Tell el- (North).] When the main gate was erected inside the fortification line, the protection of the area was achieved by constructing an outer gate. Such installations were popular at such Iron Age cities as Tel Beersheba, Dan, and Megiddo.

Fort gates. A unique type of gate was developed in the MB II period, apparently initiated at cities demarcated by earthen ramparts. In these unfortified cities, the ruling class needed strongholds to protect them both from outside enemies and inside rebels. Such double protection was accomplished by erecting city gates as separate forts. These forts consisted of two huge towers with internal rooms and a gateway narrowed by three pairs of pilasters. The location of door sockets indicates that the gates were shut off by two pairs of doors, facing the outer and inner sides of the city. When the doors of these gates were closed, the structures were transformed into independent strongholds in which members of the ruling class could find shelter in an emergency.

Gates with two, four, or six rooms. During the Iron Age, city gates often consisted of two large towers flanking the gateway. However, unlike the shallow recesses between the piers of MB II gates, the long rooms of the towers opened fully into the gateway. Another essential difference is the location of the doors. Instead of two sets of doors, as in MB II, the Iron Age gates were closed only by a single pair of doors located behind the first set of piers. This arrangement indicates that the function of the gate rooms at the floor level was civil and not military.

Iron Age gates differ in the number of their rooms. The most common are gates with four or six rooms; a few were equipped with only two rooms. Yigael Yadin (1963) assumed that the number of rooms changed during the period and affected the protective strength of the gates. Detailed analysis (Herzog, 1986) indicates that these gate types were used simultaneously throughout the period, with the number of rooms reflecting the intensity and diversity of a gate's uses. In addition, the gate rooms could be used by guards, as well as by political, judicial, religious, and commercial institutions. The military role of some gates was reinforced by adding an outer gate in front of the main gate.

Ceremonial gates. At least one gate, in stratum XV at Megiddo, seems to reflect a ceremonial function. The gate was furnished with two wide, straight, parallel gateways with stairs that led up to the cultic compound.

Secondary gates and posterns. Multiple narrow, secondary gates were used as civilian passageways through the city walls, mainly during the EB II–III period. These gateways were 0.80–1 m wide and allowed the farmers a shortcut to their fields. In the Iron Age, narrow posterns were utilized for escaping from a besieged city or for a surprise attack on the enemy.

Bastions and Fortresses. The rise of a military establishment demanded appropriate structures for its use. These needs were best met by bastions or forts, erected in connection with a fortification system. A large bastion was built next to the water system at Arad in EB II, and several huge bastions were erected at Tel Yarmut in EB III. [*See* Arad, *article on* Bronze Age Period; Yarmut, Tel.] The gate forts of the MB IIA, described above, are another type of independent stronghold. Isolated Iron I forts have also been observed in the hill country of Judah. [*See* Judah.]

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ZE'EV HERZOG

Fortifications of the Bronze and Iron Ages

Fortifications were a fundamental aspect of urbanization in antiquity. While the need to protect a settlement arose with the development of social institutions, the very existence of fortifications generated the evolution of the military establishment. The size and the nature of fortifications were determined by the community's level of social complexity, which was affected by the role of the site within larger geopolitical units.

Neolithic and Chalcolithic Periods. The appearance of what seemed to be a fortified city in Pre-Pottery Neolithic Jericho has puzzled scholars since its discovery. [*See* Jericho.] A satisfying solution suggests interpreting the structures not as fortifications but as a retaining wall against floods and a tower for ceremonial purposes (Bar-Yosef, 1986). Enclosure walls of temenoi at Chalcolithic sites such as 'Ein-Gedi and Teleilat el-Ghassul in Israel may have been the conceptual inspiration for the first defensive walls. [*See* 'Ein-Gedi; Teleilat el-Ghassul.]

Early Bronze Age. The earliest fortifications so far uncovered in modern Israel belong to the Early Bronze Age IA (Kempinski, 1992a). At Tel 'Erani/Tel Gath, on the southern coastal plain, excavation exposed a 3-meter-wide city wall, an outer glacis, and two towers in a limited area, contemporary with a public building inside the settlement. [*See* 'Erani, Tel.] From about the same time (late fourth millennium), an elaborate fortification system was found at Habuba Kabira in Syria. [*See* Habuba Kabira.] It consisted of a 3.40-meter-wide city wall constructed on the western side of the city in a straight line, for about 600 m. Rectangular towers were spaced at regular intervals of 14 m and in front of them a thin (.70 m) outer wall was added. There were two identical city gates in the main wall, each with two towers and two doorways, and an additional outer gate through the outer wall (Strommenger, 1980).

Evidently, toward the end of EB I, more sites were fortified: Jericho, with a city wall 1.10 m wide and semicircular towers; Tell Shalem, protected by two parallel walls (inner wall, 4.5 m wide; outer wall, 2.80 m wide); and Aphek, with a city wall 2.90 m wide. [*See* Aphek.] The first phase of the fortification systems at Tell el-Far'ah (North) and Ai is attributed by some scholars to late EB I and by others to EB II. [*See* Far'ah, Tell el- (North); Ai.] At Tell el-Far'ah (North), a city wall 2.20 m wide is joined to a remarkable city gate. The gate consists of two huge towers that project 7 m outward from the wall; each tower is about 8 m wide. The towers commanded a 4-meter-wide approach that narrowed to a 2-meter-wide entrance. The gate was closed by double doors, as is evident from the two door sockets found in situ. At Ai, the first city wall (C), 5–5.50 m thick, was built of large stones and strengthened by semicircular towers. Two narrow (only 1 m wide) passages were uncovered, but no main gate has so far been found.

In EB II, fortified cities became common all over the Levant (Richard, 1987). In addition to the above-mentioned sites, fortified cities have been found at Beth-Yerah, Megiddo, Ta'anach, Khirbet Makhruk, Dothan, Tel 'Erani, Tel Yarmut, Arad, and Bab edh-Dhra'. [*See* Beth-Yerah; Megiddo; Ta'anach; Dothan; 'Erani; Tel; Yarmut, Tel; Arad, *article on* Bronze Age Period; Bab edh Dhra'.] A typical feature at most of these sites was the attempt to increase the strength of the city walls by making them very thick and by erecting additional parallel walls with fills between them. These accumulative fortification systems of walls and fills reached unusual widths (and apparently considerable heights)—up to 15 m wide at Tell el-Far'ah (North) and more than 10 m wide at Ai (walls C and B). The wall at Arad is only 2–2.50 m thick, indicating the site's lessened role as a fortified urban center. In some cases, such as at Megiddo and Jericho, the city wall was constructed in sections approximately 20 m long, with narrow gaps of about 0.20 m between them—presumably to prevent the collapse of the wall in the event of an earthquake.

The EB II cities are also characterized by the existence of more then one gate (Herzog, 1986a, pp. 12–23). Each city had at least one large gate (more than 2 m wide), such as the main gates at Tell el-Far'ah (North) and Arad, through which fully laden beasts of burden could pass. In addition, many cities had several narrow passages (only .80–1 m wide), often called posterns. This duality reflects attempts to counterbalance the conflicting military and civilian requirements of very large cities inhabited mostly by agriculturalists: multiple passages saved the farmers from traveling a distance of several kilometers in order to reach their fields. Vulnerability was minimized by making the secondary gates as narrow as feasible. Such gates could be blocked quickly in case of an emergency or effectively defended from the top of the ramparts.

An additional defensive aspect of the system was provided by towers projecting outward from the wall, thus enabling flanking fire. Most common are semicircular towers attached to the wall and incorporating a narrow doorway, like the ones at Arad, where the towers were built at intervals of 25–40 m. In some cases the towers were rectangular; such towers are depicted on Egyptian pallets (Yadin, 1963, pp. 122–125). An interesting innovation is the massive (25 m long and 13 m wide) bastion attached to the city wall at Tel Yarmut. A similar structure (18 × 8 m) at Arad dominated the reservoir inside the city.

At several sites, such as at Tell el- Far'ah (North), Khirbet Makhruk, and Jericho, the slopes around the city walls were reinforced by a glacis—a structure consisting of alternating layers of different kinds of soils and/or stones. The glacis served to prevent erosion, to force an attacking enemy to climb a slippery ascent, and to make any attempt to undermine the city wall more difficult. The bastion at Tel Yarmut is surrounded by an imposing stone glacis at least 6 m wide.

EB III settlers exploited the fortifications of the preceding period with few alterations. Basically, the technique was to increase the width of the earlier city walls. The addition of wall A at Ai created a complex of fortifications 17 m wide, and wall 4045A at Megiddo doubled the width to 8.50 m. At Tel Yarmut, the fortifications in EB III reached a total width of 36 m. Rectangular towers were a typical feature in this phase.

The bastions incorporated into the circumference of the city wall became more popular in EB III. They were constructed of heavy walls with inner divisions into rooms, some of which were narrow stairwells that led to upper stories. Such bastions are found at Jericho (16 × 7 m), Tell el-Ḥesi (18 × 9 m), and Taʿanach (10 × 10 m). [*See* Ḥesi, Tell el-.] In the absence of fortified palaces or acropola, these bastions served as a power base for the city's military elite.

The city gate in stratum XV at Megiddo had a ceremonial rather than a military function. Two wide parallel gateways with stairs led up to the temple area, between three rectangular units. At Beth-Yeraḥ, stairs between two solid towers led down into the city.

Middle Bronze Age. During the Middle Bronze Age I, there was no urban settlements in Israel—the population being rural or nomadic. However, there are fortifications attributable to this period in Transjordan, specifically at Khirbet Iskander, where a 2.50-meter-wide perimeter wall with reinforced corners and a two-chambered gate was excavated. [*See* Iskander, Khirbet.] Fortified cities reappeared in Israel in MB IIA, at first along the coastal plain and the interior valleys (Kochavi et al., 1979). Fortification systems included city walls, mighty city gates, towers, glacis, and earthen ramparts. The walls were made of sun-dried bricks above stone foundations with a moderate width of about 2 m. In some cases, such as at Megiddo and Aphek, the wall was reinforced by pilasters on the exterior. [*See* Megiddo; Aphek.]

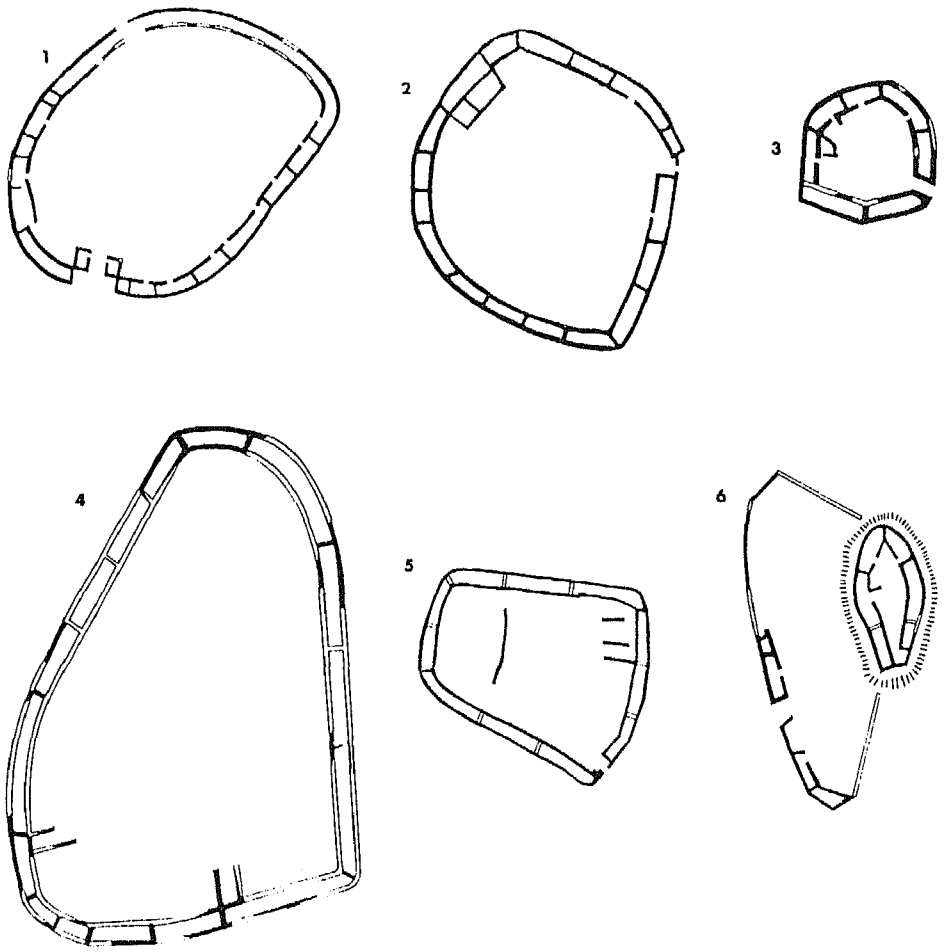
The common use of bricks as the main constructional material stimulated the wide introduction of the glacis, which protected the bottom of the city wall on its outer side and the slope immediately below it. The elaborate MB IIA glacis at Tel Gerisa is composed of several courses of bricks (up to thirteen in one spot) laid on the slope of the mound and covered by a layer of crushed sandstone. [*See* Gerisa, Tel.] This was a great improvement over the earthen glacis of the Early Bronze Age. [*See* Building Materials and Techniques, *article on* Materials and Techniques of the Bronze and Iron Ages.]

In addition to fortified cities built on hills or tells, large settlements surrounded by earthen ramparts were erected outside the tells in the lowlands. These ramparts were built by a variety of techniques: with or without a stone core; with internal, boxlike brick constructions; or, most commonly, with sloping layers of alternating soil types. There is not a single case where a city wall was found to be incorporated within the rampart. This absence of a defensive wall means that these earthen ramparts cannot be interpreted as fortifications against military attack: they were neither designed to prevent the access of chariots nor could they provide a response to the battering ram, allegedly introduced at that time (Yadin, 1955). It is more likely that the earthen ramparts were a quick and easy means to demarcate the city limits of unusually large communities during peaceful times (Herzog, 1986b, 1992a; Bunimovitz, 1992; Finkelstein, 1992). These communities could erect an earthen rampart within a few months, with their own hands, without investing in professional builders and expensive materials. Such enclosures are known at the huge sites of Qatna and Tell Mardikh/Ebla in Syria and at Hazor, Yavneh-Yam, Tel Kabri, Tel Dan, and Akko, in Israel. [*See* Ebla; Hazor; Yavneh-Yam; Dan; Akko.] They were erected over areas of 20–100 ha (49–247 acres) during MB IIA–B. The incorporation of city gates within earthen ramparts does not contradict the demarcation function but rather supports it. The gates were not attached to any city wall; they were merely anchored to the rampart by short walls (as for their function, see below).

City gates in MB IIA present several competing conceptional approaches (Herzog, 1986a). A gate with an approach constructed at right angles to the gateway has been found at Megiddo, stratum XIII, forming a bent entrance, which was easier to defend then a straight entrance. The stepped approach to the gate indicates that only pedestrians or pack animals, but not wheeled vehicles, could enter the city. A second gate type was found at Tel Akko. It consisted of a gate chamber (8.25 × 7 m) with a 10-meter-long corridor, almost on the same axis. However, there also the narrow (1.75 m) entrance and two steps in front of the corridor prevented use by wagons or chariots.

The long stepped approach leading to the gate at Tel Dan points to similar constraints, but the plan of the gatehouse is different. It is a roughly square building (15.45 × 13.50 m) divided into four large rooms, two on each side of the gateway. The gate, including the front arches and half-barrel roof (all made of mud brick), is exceptionally well preserved because it was intentionally and totally buried by the builders of the slightly later earthen rampart. The MB IIA gate at Dan bears a strong resemblance to the Iron Age II four-room gate type.

The fourth type of gate, which developed in Syria at Tell Mardikh/Ebla and was introduced into Israel at Yavneh-Yam in MB IIA, has six piers. The type became dominant in MB IIB. City gates in this group are composed of formidable pairs of towers flanking straight gateways that are narrowed by three piers on each side. The towers' thick walls (2 m and more) point to their considerable height, with rooms on several floors. Some of these rooms served as stairwells; others were probably used as barracks for the city guards as well as to store their equipment and food. The gates of this type had wide, straight entrances (2.80–4.00 m)



FORTIFICATIONS: Bronze and Iron Ages. *Examples of Iron Age Fortifications.* (1) ʿEin-Qadesh; (2) Atar ha-Roʿa; (3) Ḥorvat Haluqim; (4) Ḥorvat Rahba; (5) Ḥorvat Ketef Shivta; (6) Ramat Matred. (After A. Mazar, *Archaeology of the Land of the Bible*)

and no stairs in either the approach or in the gateway. This clearly indicates daily use by wheeled vehicles.

The interpretation of the function of the six-pier gate type is based on the location of the door sockets at both the front and rear ends of the gatehouse (Herzog, 1986a, pp. 62–66). This proves that the gate passage was closed off by two sets of doors, one set toward the exterior of the passage and the other on the city side. The dual closure system converted the gate into an independent defensive unit, a kind of fort; it was vital in cities enclosed by earthen ramparts and lacking proper city walls. This fort controlled the wheeled transportation in and out of the city and could serve as the only defensible structure for the local elite. In fortified cities, a gate with a dual closure system may indicate internal social tension and an attempt by the ruling class to protect itself against attack from within the city, as well as from without.

Six-pier city gates are known in Syria at Tell Mardikh/Ebla (14.70 × 22 m), Qatna (36 × 29 m), Carchemish (25 × 18 m), and Alalakh (23 × 17 m); all of these cities were enclosed by earthen ramparts. [*See* Carchemish; Alalakh.] In Israel such gates have been found attached to the earthen enclosures at Yavneh-Yam (25 × 18 m) and Hazor (20.60 × 16.20 m). They were also adapted for use in walled cities at Megiddo (18 × 10 m), Shechem (17 × 19 m), Gezer (22 × 14 m), Beth-Shemesh (16.50 × 12.40 m), and Tell el-Farʿah (South; 21.60 × 18 m). [*See* Shechem; Gezer; Beth-Shemesh; Farʿah, Tell el- (South).]

Bastions incorporated into city walls, which, like the glacis, seem to revive an EB III tradition, are another typical component of MB II fortifications. Moderately sized bastions (10 × 5 m) have been found at Tel Zeror, Tel Poleg, and Megiddo, while large bastions were uncovered at Gezer (26 × 16 m) and Tell Mardikh/Ebla (65 × 30 m). [*See* Zeror, Tel.]

Late Bronze Age. The people of the Late Bronze Age for the most part reused the fortification systems of the previous period and seldom erected new elements. One of the exceptions was in the newly built city at Tell Abu Hawam,

which had a city wall 2 m wide. [*See* Abu Hawam, Tell.] Usually, when the earlier walls were destroyed, cities (e.g., Megiddo) were surrounded solely by a belt of houses and not by an independent city wall. Egyptian accounts and reliefs referring to captured LB cities in Canaan relate in many cases to the king's palace rather than to a fortified city (Herzog, 1986a, p. 73).

On Israel's southern coastal plain, a series of forts or "governors' palaces" evidently served the Egyptian administration in Canaan (Oren, 1984). These solid square structures (about 20 × 20 m) are found from Tel Mor to Deir el-Balaḥ, in addition to the one at the Egyptian center at Beth-Shean. [*See* Mor, Tel; Deir el-Balaḥ; Beth-Shean.] These forts or palaces are usually isolated structures and are not incorporated into a fortification system. This indicates that not only the Canaanites, but also their Egyptian overlords, refrained from constructing fortified cities, perhaps to prevent their potential use as bases for revolt against Egypt.

Iron Age. Real fortification systems are also absent in Iron Age I. The new settlements of the twelfth–eleventh centuries BCE adapted the principle of a peripheral belt of houses, creating either an enclosed settlement (with an empty central courtyard) like the one at 'Izbet Ṣarṭah, stratum II, and Beersheba, stratum VII, or as a settlement village (with dwellings filling the inner space), as at Ai and Beth-Shemesh. [*See* 'Izbet Ṣarṭah; Beersheba.]

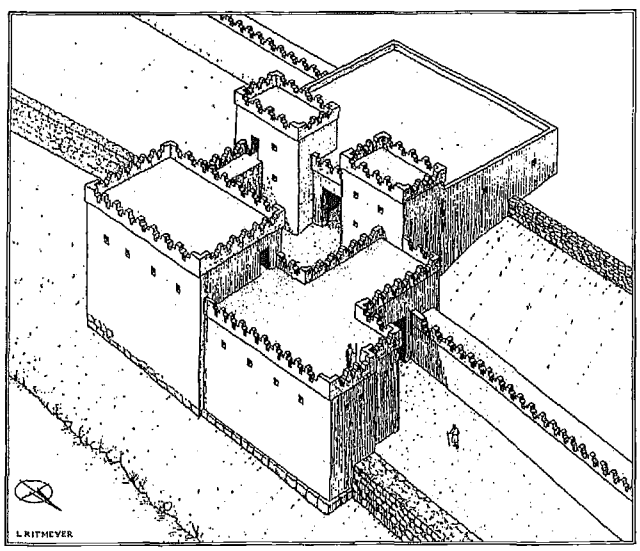
The earliest Iron Age city wall seems to be at Ashdod, stratum 10, belonging to a Philistine city of the late eleventh century. [*See* Ashdod; Philistines, *article on* Early Philistines.] The city has a brick wall 4.50 m wide adjoining a four-room gate protected by two solid towers. At Megiddo, stratum VIA, a simple two-room gate was incorporated in the belt of dwellings that encircled the city then. Yigael Yadin developed a theory of chronological-typological attribution regarding Iron II fortifications: he assumed that only casemate walls and six-room gates were used in the tenth century BCE, during the reign of Solomon, and that they were without exception replaced by solid walls and four-room gates in the ninth century BCE, during the reign of Ahab (Yadin, 1963, pp. 322–325). However, the wide variety of fortification systems now observed in every century of Iron II disproves Yadin's schematic approach (Herzog, 1992b).

Tenth century BCE. All three types of city gates were used in the tenth century BCE. A peripheral belt of houses was still in use at Megiddo, stratum VA; Gezer, stratum 6; and Lachish, level V. [*See* Lachish.] A casemate city wall unconnected to dwellings has been found at Hazor, stratum X, and apparently at 'Ein-Gev, stratum IV. [*See* 'Ein-Gev.] Casemates integrated with dwellings are attributed to this phase at Tell Beit Mirsim, stratum B3. [*See* Beit Mirsim, Tell.] Simple solid walls encircled the cities at Ashdod, stratum 9; Beersheba, stratum V; and, eventually, at Tel Dan. An offset-inset city wall was built at Megiddo, stratum IVB, while a solid wall with towers protected Lachish, level IV, and Gezer. Six-room gates were used at Ashdod, stratum 9; Hazor, stratum X; Gezer, stratum 6; Megiddo, stratum IVB; and Lachish, level IV. Four-room gates were used at Beersheba, stratum V; Megiddo, stratum IVA; and, eventually, at Dan. Two-room gates were found at Megiddo, stratum VA, and at Tell Beit Mirsim, stratum B3. Four-room gates were also popular in North Syria from the tenth century onward at sites such as Carchemish and Tell Ḥalaf. [*See* Ḥalaf, Tell.]

Ninth century BCE. A casemate city wall integrated with dwellings was built at Beersheba, stratum III, and casemates filled with earth were built at Samaria, stratum II, and at Hazor, stratum VII. A solid wall with towers has been found at Tell en-Naṣbeh attached to a four-room city gate at an early stage and to a two-room gate in the final stage. [*See* Naṣbeh, Tell en-.] A four-room gate was also erected at Beersheba, stratum III.

Eighth–seventh centuries BCE. During the eighth–seventh centuries BCE only solid city walls were constructed. Simple solid walls have been found in Jerusalem; at Tel Batash, stratum III; and at Lachish, level II; a solid wall with towers was built at Hazor, stratum VA. [*See* Jerusalem.] The six-room city gate reappeared in the eighth century BCE at Tel 'Ira; a two-room gate was erected at Tell Beit Mirsim, stratum A2, and in the Assyrian city of Megiddo, stratum III. [*See* 'Ira, Tel.] A gate complex in the form of an elaborate fort is represented at Lachish, stratum II.

Fortresses and Their Functions. Iron II military units were mainly fortresses erected along borders and trade routes. Whereas architects in Judah preferred rectilinear forms at the southern end of their kingdom, the round type of fort seems to have been chosen at the eastern front of the



FORTIFICATIONS: Bronze and Iron Ages. *The Iron Age Gate at Timna'*. (Drawing by L. Ritmeyer; copyright G. Kelm)

kingdom of Israel. [*See* Judah.] A sequence of six square forts (about 50 × 50 m) dating from the tenth through the sixth centuries BCE has been uncovered at Arad. [*See* Arad, *article on* Iron Age Period.] Periods of shorter use (eighth–sixth centuries BCE) are ascribed to the rectangular fortresses at Qadesh-Barnea (60 × 40 m) and Ḥorvat ʿUza (51 × 42 m). [*See* Qadesh-Barnea.] All these units had elaborate fortified walls with towers and gates, systems for water supply and storage, and at Arad even a royal temple. Unlike their southern counterparts, the circular forts of the northern kingdom (late tenth or ninth century BCE), like the one at Khirbet Makhruk, were small—only 19.50 m in diameter (about 300 sq m). The small space was filled by three concentric walls, leaving room for only a few soldiers and their equipment.

The diversity of Iron II fortifications as described above establishes that no single factor was responsible for all of them. Rather, it seems plausible that the decision as to which type of defensive system was suitable for a certain city was dictated by the state's general economic conditions, by the role of the city within the hierarchy of the royal administration, and by the location of the city in terms of the state's overall defense lines. These considerations affected the choices: economical enclosure by a belt of houses, a casemate wall with its savings in space and construction costs, or the more costly—but much stronger—solid city wall. Similarly those considerations influenced the decision between two-, four-, or six-room gates and whether to use inexpensive mud bricks, fieldstones, or ashlar masonry as the construction material.

The complexity of the roles city gates played is very clear in their construction when they served daily as civilian entrances into the city. Along with the variety of forms, Iron II city gates also display uniformity in one basic feature: deep rooms open to their full width to the passageway. This characteristic is particularly striking when compared to MB II gates, whose rooms were enclosed in the towers and where only short piers projected into the passageway. Another important difference in the Iron Age was the presence of a single pair of doors closing off the entrance into the city from the outside only; they allowed free access into the gatehouse from the city side. These characteristics indicate that, in contrast to MB II gates, Iron Age gates had civilian functions above and beyond their purely military/defensive role. This conclusion is further supported by several installations in or next to the gates. Large plazas adjoining the gate inside the city, which could accommodate large audiences or serve as a marketplace, were found at every site. Reservoirs outside the gate (such as at Megiddo and Beersheba) mainly served caravans and bypassers. [*See* Reservoirs.] Ceremonial installations (e.g., at Megiddo and Dan) testify to cultic activities conducted near the gate. [*See* Cult.] Benches found built into some of the side rooms (e.g., at Dan, Gezer, and Beersheba) were outfitted for use by merchants, judges, and prophets.

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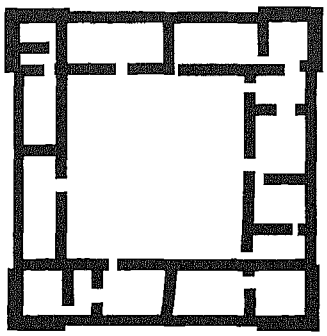
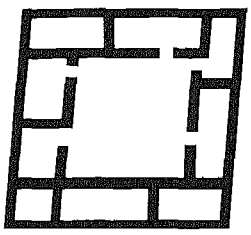
ZE'EV HERZOG

Fortifications of the Persian Period

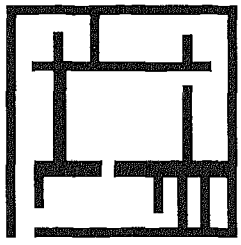
A primary means of defense in the Near East was the wall systems surrounding cities. In the case of the Persian Empire, a distinction must be made between urban fortification systems within the traditional Persian heartland and the fortifications in those areas acquired by conquest and consequently under imperial control. The varying Persian approach to urban fortifications is best seen by comparing the



North of Ashdod



Ḥorvat Mesora



Tell es-Sa'idiyeh

FORTIFICATIONS: Persian Period. *Plans of excavated mid-fifth century fortresses.* (Courtesy K. G. Hoglund)

fortifications of the traditional capitals of the empire with urban areas outside the Iranian plateau.

Cyrus the Great (560–530 BCE), founder of the Persian Empire, established the imposing site of Pasargadae as his capital. No remains of major fortifications have been found relating to Cyrus's rule, although under his successors a significant complex of mud-brick and stone structures was built at the site. Within the complex was a structure the excavators identified as a citadel. It consisted of a large, nearly square courtyard (31 × 32 m) with rooms along its eastern and western sides. Its overall form was rectangular. The citadel and its surrounding structures were enclosed by a mud-brick double wall 8 m thick. There is evidence that large towers projected from the walls at regular intervals. [*See* Pasargadae.]

Darius I at his accession in 522 BCE selected another city, Susa, to be the capital of the Persian Empire. Although Susa had been largely ruined, the king had it completely rebuilt. A large citadel was built on the acropolis, and the combined palace and residential district was contained within a rectangular enclosure wall of unbaked mud brick more than 20 m thick at its base and tapering upward. Entering the palace of Darius, the Apadana, required passing through a second mud-brick enclosure some 17 m wide at its base. [*See* Susa.]

Persepolis, a Persian capital also established by Darius, was built on an expansive terrace. There is scattered evidence of a massive mud-brick wall surrounding the whole terrace, and certain areas were protected behind bulky mud-brick defenses. A wall 10 m thick and an estimated 11 m high, sheltered an important administrative building the excavators identified as the Treasury. [*See* Persepolis.]

In general, these imposing defensive works seem to have functioned less as effective protection from external enemies than as intimidating symbols. Ancient Persia's fortification systems were part of a larger design based on the spatial impact of the royal cities. They could not fail to impress on visitors the awesome power of the empire.

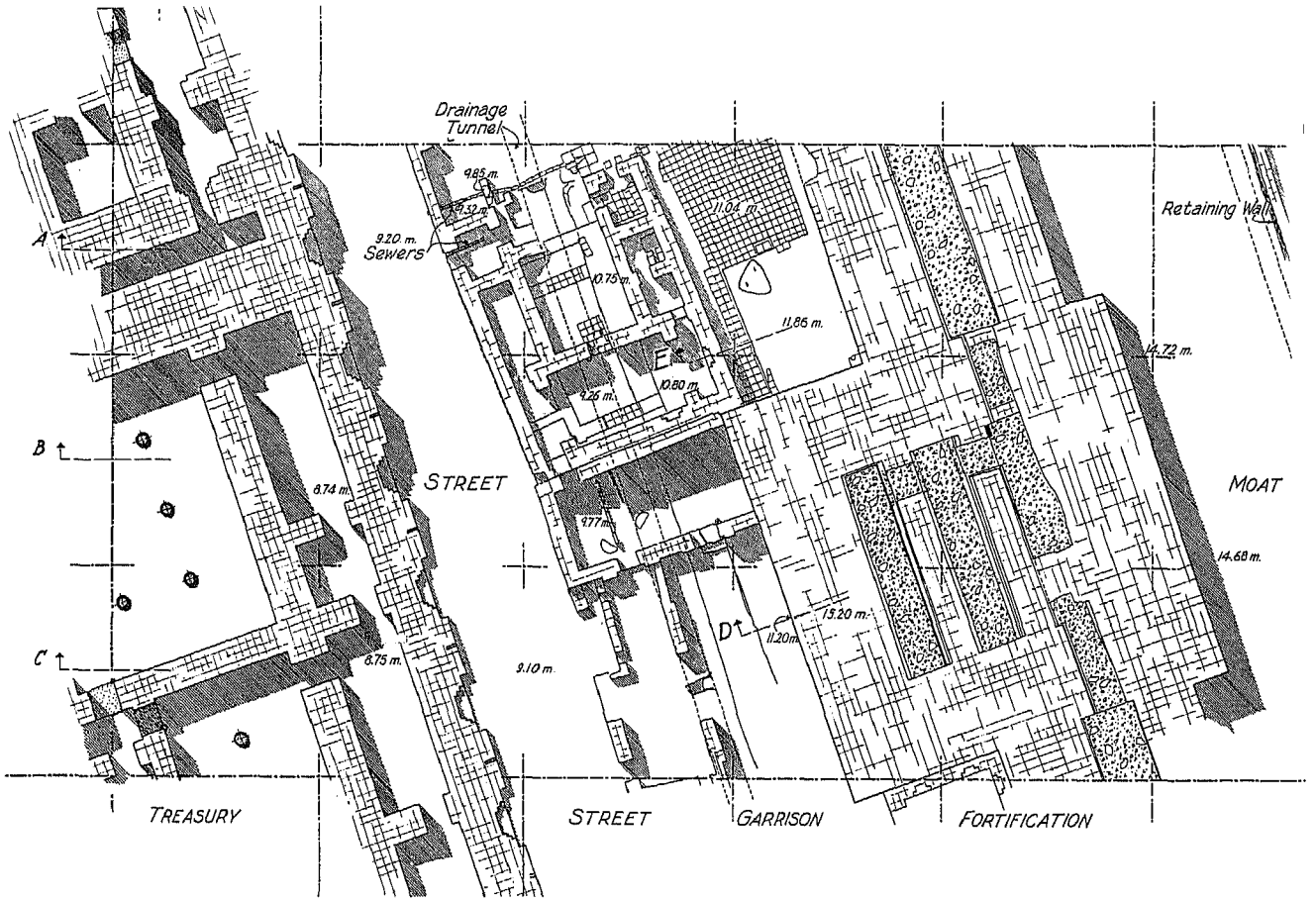
In contrast to those territories securely within the heartland of the Persian Empire, urban centers lying in conquered territories could present a threat if fortified. There was no priority for fortifying cities outside of the Iranian plateau.

Babylon under Persian domain is a clear example of the threat a fortified urban center could pose. Though apparently receptive to Cyrus's conquest of the city in 539 BCE, Babylon attempted to revolt when Darius I came on the throne. Once the city was pacified, Darius ordered the inner walls of its citadel to be destroyed. Babylon attempted to revolt again in 484, when Xerxes came to the throne; following the reassertion of Persian control, Xerxes had the outer city walls destroyed. Deprived of its defenses, in the future Babylon would have faced the unchecked military force of the empire should it have sought independence. [*See* Babylon.]

A similar concern over the danger presented by urban fortifications can be seen in the biblical narratives surrounding the rebuilding of the walls of Jerusalem during the Persian period. Apparently, imperial officials rapidly stopped an early attempt to erect city walls without authorization, ostensibly because of Jerusalem's history of revolt against imperial rulers (*Ezr.* 4:7–23). When the Persian monarch Artaxerxes formally authorized a refortification effort to launch the career of Nehemiah, neighboring rulers raised the specter of revolt against the empire in an effort to derail the work (*Neh.* 6:5–9). The archaeological remains of a city wall around Jerusalem that best correlate with these biblical notices suggest that the wall was quite rough but was some 2.75 m thick (Kathleen M. Kenyon, *Jerusalem: Excavating 3000 Years of History,* London, 1967, pp. 110–112). It would appear that this rapidly constructed fieldstone wall enclosed only the eastern hill of the city, the area known as the City of David. [*See* Jerusalem.]

Without fortified urban centers, the Persian Empire directed its strategic planning toward establishing an intricate network of small and medium-sized forts. Staffed by imperial troops, these forts were positioned along the essential routes that tied the vast areas of the empire together. The importance of these forts is evidenced both in written sources and in the archaeological record.

Several ancient Greek writers make specific reference to the essential function of forts in the context of Persian im-



FORTIFICATIONS: Persian Period. *Plan detail of a fortification wall outside of Persepolis.* (After Schmidt, 1953)

perial administration. Xenophon, in his *Cyropaedia* and *Oeconomicus,* emphasizes the necessity both of garrisoned forces for maintaining Persian imperial security and of taxing local populations to support those installations. Xenophon's comments have led some scholars to suggest that these garrisons served the empire as the primary collecting stations for imperial taxes, even though the evidence is ambiguous on this point (see C. Tuplin, "Persian Garrisons on Xenophon and Other Sources," *Achaemenid History* 3 [1988]:67–70).

An analysis of inscriptions, historical references, and a few contemporary documents yields a total of approximately 139 forts constructed throughout the empire. This number is undoubtedly only a fraction of the number of forts actually established, however, because many in addition to those named in literary sources have been uncovered in archaeological excavations.

In Palestine, a number of forts have been recovered. As a result of increased imperial concern over this region following a serious revolt in Egypt, many forts were constructed in the mid-fifth century BCE. In general, they are located on elevated sites overlooking trade routes, often removed from settled areas. They are square, with a central courtyard and rooms arranged along all four sides. The exterior wall is usually about one meter thick and made of fieldstones. These forts range from 20 to 40 m on a side, their overall size being determined by that of the garrison to be stationed there. The following examples demonstrate the typical forms of these forts.

In 1969, a Persian fort was excavated north of the ancient site of Ashdod along Israel's Mediterranean coast. The fort occupied a hilltop, although there was no sign of a Persian settlement nearby. The structure was nearly 30 m square with an exterior fieldstone wall approximately 1.5 m thick. The central courtyard was 16 m square and surrounded by sixteen rooms. Imported Greek pottery found within the structure placed the use of the fort in the mid-fifth century BCE. [*See* Ashdod.]

In Jordan, the excavations at Tell es-Sa'idiyeh encountered a building exactly 22 m square on the upper part of the site. Its exterior fieldstone wall was 1.25 m thick, and the central courtyard, surrounded by ten rooms; was 9.5 × 8 m.

The few excavated remains in the structure suggest that its first phase dates to the mid-fifth century BCE, although there was no evidence of any occupation of the tell in the Persian period as a whole. [*See* Sa'idiyeh, Tell es-.]

At Tel Michal, on Israel's Sharon plain, excavators encountered a series of small forts. In the first Persian phase at the site a fort, 15 m square was constructed, with rooms on at least one side (the preservation of this phase was poor) and walls approximately 1.2 m wide. A number of grain silos were associated with this structure. The presence of imported pottery dated the phase to the late sixth century BCE. By the end of the fifth century BCE, a new fort was constructed, with fieldstone walls 1 m thick and a central courtyard some 11 m square. It is not preserved well enough to recover the entire plan, but there is evidence for rooms arrayed around the courtyard on some sides. An impressive stairway led up to the fort. This same fort saw use with little alteration until the end of the Persian period. [*See* Michal, Tel.]

Although it is not certain how widely distributed these Persian forts were, it appears that, in some areas of Palestine small forts were placed at 5–8 km (3–5 mi.) intervals overseeing major routes. This pattern suggests that one of the most pervasive archaeological indications of a Persian imperial presence would be the remains of such forts. It also suggests that the local populations under imperial control were faced with a constant reminder of the military power the Persian monarchs could direct.

[*See also* Cities, *article on* Cities of the Persian Period; *and* Building Materials and Techniques, *article on* Materials and Techniques of the Persian through Roman Periods.]

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KENNETH G. HOGLUND

Fortifications of the Hellenistic, Roman, and Byzantine Periods

The historical development, forms, and functions of fortifications from Alexander the Great (336–323 BCE) to the rise of Islam in the seventh century present a complex picture. Primary sources are mostly archaeological, although literary sources provide useful details and especially aid in understanding the function of various fortifications. Also helpful are depictions of fortifications in mosaics and other contemporary art. [*See* Mosaics.] The following survey will proceed chronologically, from the beginning of the Hellenistic period to the Muslim conquest.

Hellenistic Period. Fortifications in the Hellenistic period witnessed some assimilation between intrusive Greco-Macedonian and indigenous Near Eastern cultures. Near Eastern peoples had a long tradition of sophisticated fortifications, prompted by the efficiency in siege warfare among many Near Eastern peoples, such as the Assyrians. In the Greek Aegean, in contrast, relative backwardness in siege warfare meant that fortifications were rarely taken by assault before the fourth century BCE. Fortified Greek cities normally fell only to starvation or through internal treachery. Improvements in siege warfare and artillery in the fourth century BCE changed the balance in favor of the besiegers: assault causeways, mounds, wheeled towers, battering rams, mines, and catapults were employed effectively by Alexander during his conquest of the Near East. Even seemingly impregnable fortress cities, such as the island of Tyre, fell victim to Macedonian siege warfare. [*See* Tyre.]

The challenge improved siegecraft posed was met by designers of fortifications in the Hellenistic period. Stone was the preferred building material, although mud brick remained common in regions lacking suitable stone, such as Mesopotamia. Ditches or other obstacles in front of curtain walls were designed to obstruct the approach of siege engines. Curtain walls, often of ashlar construction, became thicker and stronger, both to resist siege engines and to support artillery. In some cases crenellated parapets, which would have been vulnerable to artillery bombardment, were replaced by solid screen walls pierced by windows. Interval towers were erected closer to each other and at higher elevations. These towers projected from the curtain in order to direct enfilading fire at attackers. Towers above all functioned as platforms for defensive artillery, and thus required stronger foundations and internal walls. Gates, which were naturally the weakest point of the defensive perimeter, were flanked by projecting towers and further strengthened by gate courts with both inner and outer entrances. Attackers who penetrated the outer entrance merely broke into a gate

court, a small area open to missile fire from all sides. Posterns or sally ports, sometimes hidden behind towers, gave the defenders the opportunity to launch surprise assaults to disrupt attackers and destroy siege equipment. Finally, a heavily fortified citadel was often built within the curtain wall to enable the defenders to continue resistance even after the curtain had been breached.

Virtually all these elements, with the exception of artillery, were well known in the Near East long before Alexander, however. Hellenistic military architects seem merely to have made marginal improvements in Near Eastern fortifications. On the other hand, there is some evidence for a Near Eastern influence on Greek fortifications in this period. The use of mortar as binding material, for example, long known in the Near East, was introduced into the Greek Aegean in the Hellenistic era (Winter, 1971, pp. 93, 95).

Hellenistic city fortifications in the Near East may be best appreciated by examining the new foundations laid by Alexander and his successors. [*See* Cities, *article on* Cities of the Hellenistic and Roman Periods.] Unfortunately, little is known about some of the most important, such as Alexandria in Egypt or Seleucia on the Tigris. [*See* Alexandria; Seleucia on the Tigris.] Better-preserved examples of Hellenistic urban fortifications include the Seleucid foundations of Antioch on the Orontes and Dura-Europos. The defended area of Antioch, founded in 300 BCE, eventually measured 3.2 × 1.2–1.5 km. This huge expanse was apparently deemed necessary by the inherent tactical weakness of the site on the east bank of the Orontes River, which was dominated by Mt. Silpius. The city walls were thus extended far up the mountain slopes, even though this resulted in extensive uninhabited areas within the fortifications; the walls terminated in a citadel on top of the mountain to prevent its use by attackers. In stark contrast, Dura-Europos, also founded in about 300 BCE, exploited a tactically strong position on the Middle Euphrates River. Its curtain wall on three of its four sides zigzagged to exploit defensible ground. The east wall directly overlooked the Euphrates; the north and south walls were erected on top of the banks of steep ravines, leaving the western wall to bar the only approach over relatively flat ground. Rectangular interval towers projected from the curtain and flanked the main gateway in the west wall. Within the fortifications a citadel was built against the east wall, overlooking the river plain. [*See* Antioch on Orontes; Dura-Europos.]

Even towns of more modest size were protected by substantial fortifications in the Hellenistic period. The city of Dor on the Palestinian coast has yielded important evidence suggesting change in fortifications that may reflect cultural distinctions. A rebuild of the city's walls in the fourth century BCE remained in the Phoenician tradition of ashlar pillars surrounding a rubble fill. In the third century BCE, however, the walls were rebuilt "in the entirely different Greek style" of header-stretcher masonry with projecting rectangular towers (Stern, 1993, p. 366). [*See* Dor.] Tel Beth-Yeraḥ (Khirbet Kerak), on the southwest shore of the Sea of Galilee, was defended by a brick wall erected on top of a massive basalt rubble foundation 4.8–7 m wide and 3.5 m high. The wall was defended by alternating rectangular and circular interval towers (Hestrin, 1993, pp. 255, 258). [*See* Beth-Yeraḥ.] Round towers were in fact common in the Hellenistic period, attested at such sites as Caesarea, Ptolemais (Akko), and Sebaste (Samaria). [*See* Caesarea; Akko; Samaria.]

The Hellenistic cities and their hinterlands were often defended by outlying fortifications. A relatively well-preserved and closely dated example is the fort on top of Jebel Ṣarṭaba, 2 km (1 mi.) southeast of Pella in the Jordan Valley and surmounting the highest elevation in the region, with views up to 25 km (16 mi.) away. The fort measures about 55–70 m on each side. It was defended by a curtain wall approximately 2 m thick and by eight towers projecting from the curtain, all of local cherty limestone. The towers were located at each corner and in the middle of each side of the curtain wall. Access was provided by four posterns one on each side and each directly adjacent to a projecting tower. Within the fort, two rock-cut cisterns sealed with cement held the water supply (McNicoll et al., 1982, pp. 64–67).

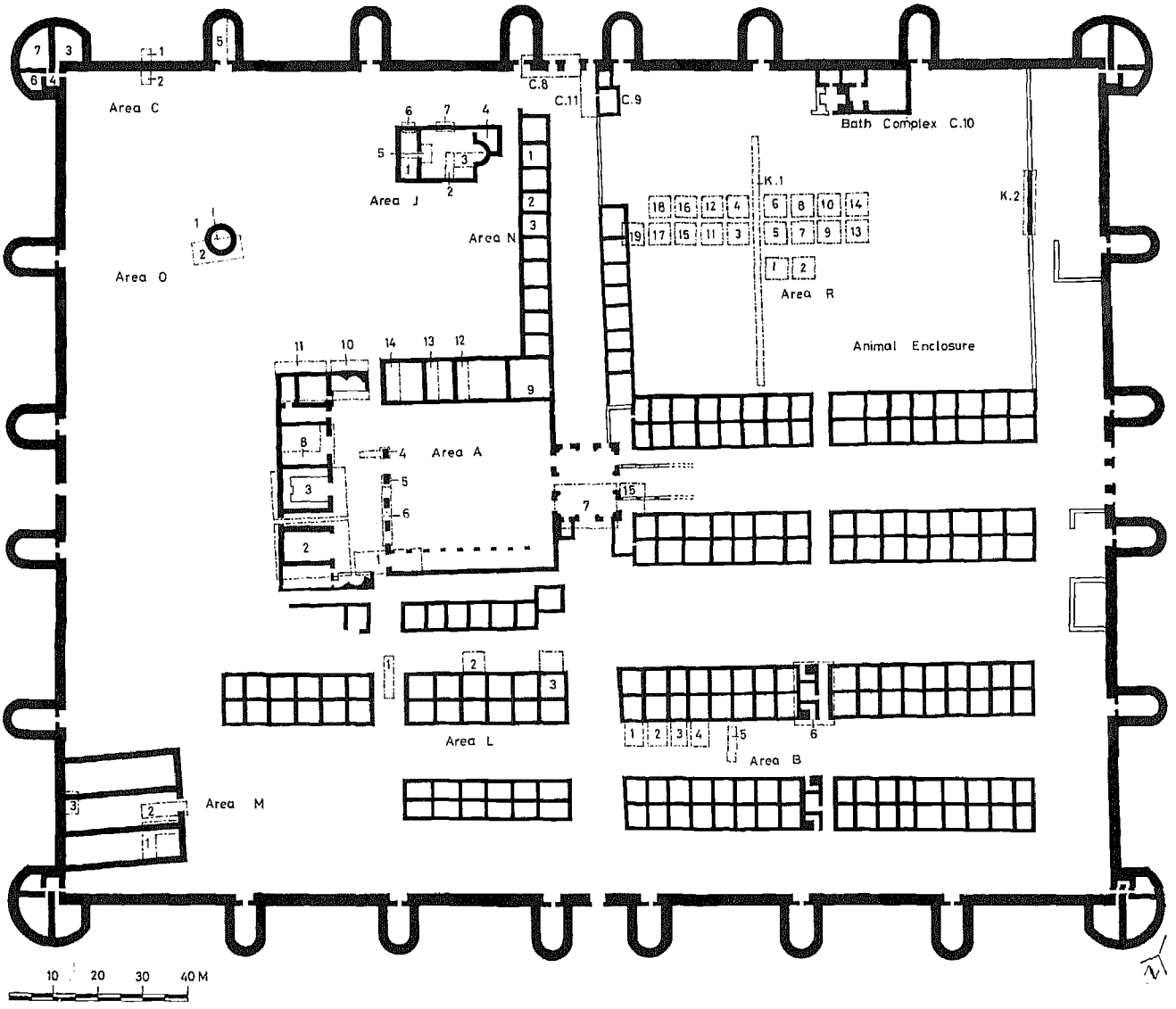
In addition to fortified cities and forts, fortified palaces constitute an important strand in the Hellenistic tradition in the Near East. Especially notable are the Herodian fortified palaces of the late first century BCE, such as Masada, Herodium, and Machaerus. The palace on top of Masada, for example, occupied a flat-topped mountain rising 100–400 m above the surrounding terrain. The curtain wall was of casemate construction with thirty rectangular towers spaced at irregular intervals of 35–90 m, as dictated by tactical considerations. The four original gates were all of the courtyard type, with inner and outer entrances. Machaerus similarly occupied a mountaintop. Herodium was built on top of a hill about 60 m above the surrounding terrain but formed a double circular enclosure about 62 m in diameter. A corridor about 3.5 m wide ran between the two walls and provided access to four semicircular towers spaced equidistant from one other at the cardinal points. Both the towers and outer wall were founded on a series of vaults. [*See* Masada; Herodium; Machaerus.]

Roman Period. The advent of Roman rule in the first century BCE did not significantly affect city fortifications in the Near East: Rome's many client rulers in the region continued Hellenistic traditions. When Rome annexed most of its clients, by the late first century CE, Roman forces were deployed along a military frontier stretching from the Black Sea to the Red Sea. There was a sporadic threat in the north from Parthia, and low-intensity raids by Arab nomads recurred in the south, but neither possessed significant siege capability. [*See* Limes Arabicus.]

The Romans introduced their own distinctive military ar-

chitectural tradition into the Near East. Roman armies on campaign usually constructed a temporary camp at the end of each day's march. These so-called "marching camps" were simply constructed of earth and timber. The soldiers dug a ditch enclosing a rectangular area sufficient for the entire army. They piled the excavated earth from the trench into a rampart, often topped by wooden stakes carried by each soldier. The army then camped that night within the defended enclosure. These rectangular marching camps typically had rounded corners, giving rise to the term "playing-card forts" by modern scholars. Such forts are attested in the Near East in the early Roman period. These include both temporary siege camps, such as those in the circumvallation at Masada, and permanent forts, such as the late first-century CE playing-card fort on the summit of Tell el-Hajj on the Syrian Euphrates. The fort (about 120 × 160 m) shared key characteristics with contemporary forts in the Western empire: rounded corners, nonprojecting internal towers, and a relatively thin (about 1.2 m wide) curtain wall fronted by a ditch (Bridel, 1972). Aerial photography suggests that other early Roman playing-card forts probably await excavation in the region (Kennedy and Riley, 1990, pp. 95–110).

Otherwise, the Romans were content to base a significant portion of their Near Eastern units in towns and cities, which were usually fortified. It is likely that the situation at Dura-



FORTIFICATIONS: Hellenistic, Roman, and Byzantine Periods. Figure 1. *Plan of el-Lejjun (ancient Betthorus).* A later Roman legionary fortress east of the Dead Sea. Built around 300 CE for *legio IV Martia.* (Courtesy S. T. Parker)

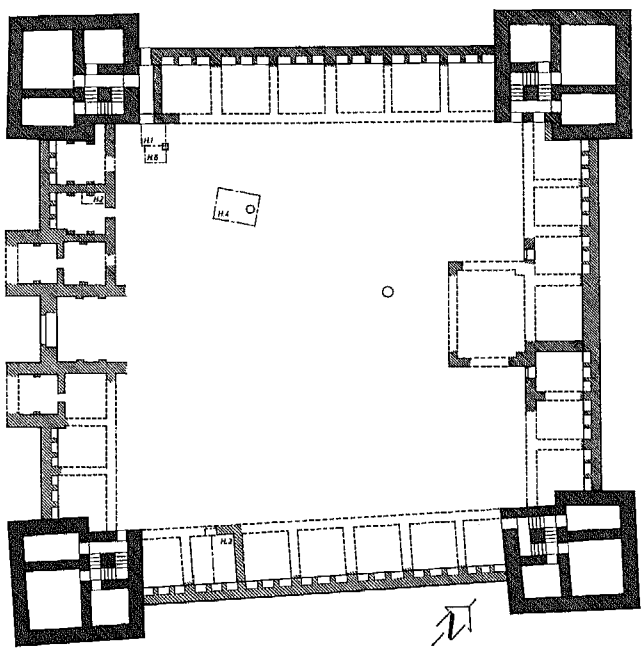
Europos, garrisoned by the Romans beginning in about 165 CE, was typical. There the garrison simply walled off a quarter of the city for its exclusive use. At Bosra, capital of provincial Arabia, the legionary base was attached as an annex to the city's northern curtain wall. [*See* Bosra.] At Satala in Cappadocia, the late first-century CE legionary fortress compares closely in size and plan with contemporary examples from the Western empire. [*See* Cappadocia.] Forts with projecting rectangular towers appear no later than the late second century, as revealed by new evidence from Ḥumeima (ancient Avara) in southern Jordan. [*See* Ḥumeima.]

Noticeable changes occur in fortifications in the late third century. These are no doubt connected with the increased threats posed by the Sasanians, with their sophisticated siege capability, and the nomadic Arabs, with their fine light cavalry (but still lacking siege technology). Warfare between Rome and Persia from the third century onward usually centered on sieges of well-fortified strongpoints. Many fortified cities fell to determined assaults, such as Dura-Europos to the Sasanians and Palmyra to the Romans. The late third-century defenses of Palmyra in Syria graphically illustrate hurried attempts at refortification by many cities in this period. The so-called Zenobia's wall at Palmyra incorporates much *spolia* (reused architectural fragments) and several preexisting monuments along its line. The curtain is defended by projecting towers of varied sizes and plans (Gawlikowski, 1974). [*See* Palmyra.] In contrast, the fortifications at Gerasa (Jerash) in Transjordan present a fairly regular program. The curtain wall (3.5 m wide) was defended by a series of 101 rectangular towers spaced at intervals of 16–22 m and projecting from the curtain. Although the fortifications at Gerasa were long dated to the end of the first century CE, recent excavations around the south gate suggest that at least this portion of the fortifications, and perhaps the entire circuit, actually date to the turn of the fourth century (Seigne, 1992). [*See* Jerash.]

Late Roman military architecture reflects a marked change from the previous period. The playing-card plan was completely abandoned in favor of rectangular forts defended by projecting towers. There was also a marked reduction in areal size, presumably corresponding to the reduced strength of individual garrison units. The tetrarchic legionary fortress at el-Lejjun, for example, was only 20 percent the size of legionary fortresses of the principate (see figure 1). Similar reductions are observable in Late Roman auxiliary forts, which usually ranged from about 35 to 60 sq m (0.12–0.36 ha). Although smaller in size, the Late Roman forts were more heavily fortified, with thicker walls, larger and higher projecting towers, and strongly defended gates. One notable change was the shift in the construction of curtain walls from solid ashlar masonry to a rubble core surrounded by two faces of coursed mortared masonry.

The towers were intended partly as platforms for defensive artillery. In smaller forts most interior rooms were built as casemates against the curtain wall, surrounding a central courtyard. An especially well-preserved example of a Late Roman fort is Qaṣr Bshir *(castra praetorii Mobeni),* erected in 293–305 CE of roughly cut, dry-laid masonry (see figure 2). Four large angle towers, each of three stories with a central staircase, dominate the plan and two smaller interval towers flank the main gate. A sally port in one wall and slit windows in the tower walls illustrate key elements of the defenses. The internal rooms against the curtain wall were built in two stories: the lower story apparently served as stables, the upper story as a barrack.

Diverse types of towers were employed in the Late Roman period, at times even in the same structure. U-shaped towers, which may have been imported from the lower Danubian frontier by Roman military architects in the late third century, project from both Near Eastern city walls, such as Singara in northern Mesopotamia, and legionary fortresses (el-Lejjun and Udruḥ in Transjordan). These two latter fortresses also were protected by large (about 20 m in diameter) semicircular towers at each corner. These corner towers contained several internal rooms on each floor, connected by an interior staircase that wound around a central pier. Rectangular towers, usually projecting from the curtain wall, are attested at numerous sites. Rectangular towers were presumably easier to construct than U-shaped or semicircular towers, but the right-angled corners of rectangular towers were more vulnerable to battering rams and other siege en-



FORTIFICATIONS: Hellenistic, Roman, and Byzantine Periods. Figure 2. *Plan of Qaṣr Bshir (castra praetorii Mobeni).* A late Roman *castellum* erected in Moab between 293 and 305 CE, probably designed for a cavalry unit. (Courtesy S. T. Parker)

gines. Towers also stood as independent structures, often on high elevations with extensive views. Epigraphic evidence reveals that these were constructed both by the Roman soldiers and by civilians, presumably for a multiplicity of purposes.

Byzantine Period. The basic type of fortifications with rectangular towers projecting from the curtain wall continued through the Byzantine period in the Near East, as evidenced by such examples as Sergiopolis (Rusafa) in northern Syria and Zenobia (Halabiyya) on the Syrian Euphrates. [*See* Rusafa.] The preeminent example, of course, dating to the mid-fifth century, is the Theodosian wall of Constantinople (Foss and Winfield, 1986; pp. 41–77). [*See* Constantinople.] Interestingly, however, some Byzantine *castella,* such as the early fifth-century forts at Qaṣr el-Ba'iq and the contemporary barracks at Umm el-Jimal, lack projecting towers (Parker, 1986; pp. 24–29). [*See* Umm el-Jimal.] All this suggests considerable variation in the types of fortifications in the Byzantine period.

An interesting feature of Byzantine fortifications is the revival of a fortified citadel within the walled enclosure, an element found in Hellenistic and earlier Greek fortifications but generally lacking in the Roman tradition. Zenobia on the Euphrates provides a good example, where the surviving remains can be compared to a detailed description by Procopius (*De Aedificiis* 2.8–25). The walls form a triangle whose base rests on the right bank of the Euphrates. The two remaining sides of the curtain extend up the slope to meet at a citadel on top of a hill that dominates the site. The citadel itself was further strengthened by a glacis at the base of its walls. The curtain walls were punctuated by closely spaced rectangular towers that projected quite far beyond the line of the wall (Lauffray, 1983).

Representations of various urban fortifications depicted in Byzantine mosaics, such as the Madaba map and the city vignettes from the Church of St. Stephen at Umm er-Rasas/Kastron Mefaa in Transjordan offer important evidence for the superstructure of curtain walls and towers. [*See* Umm er-Rasas.] The mid-sixth-century Madaba map, for example, depicts Jerusalem as defended by interval towers that rise above the curtain wall; windows are visible in the upper story of some of the towers. Each gate is flanked by twin interval towers. Further details of Jerusalem's defenses are depicted in the mosaic of the Church of St. Stephen. That vignette also shows interval towers of three stories rising above the curtain wall. The towers have flat roofs, presumably to facilitate their use as fighting platforms. Windows are visible in both the towers and curtain wall and the entire circuit of walls and towers is topped by a crenellated parapet. [*See* Jerusalem.] The vignettes of other cities in Palestine, Egypt, and Transjordan depicted in the mosaic, including that of Kastron Mefaa itself, display similar features (Piccirillo, 1993). It is useful to compare these elements with the detailed descriptions of fortifications in Procopius. These basic principles of Byzantine fortifications continued well into the medieval period, as seen for example in the Byzantine fortifications of Armenian Cilicia (Edwards, 1987).

[*See also* Alexandrian Empire; Byzantine Empire; *and* Roman Empire.]

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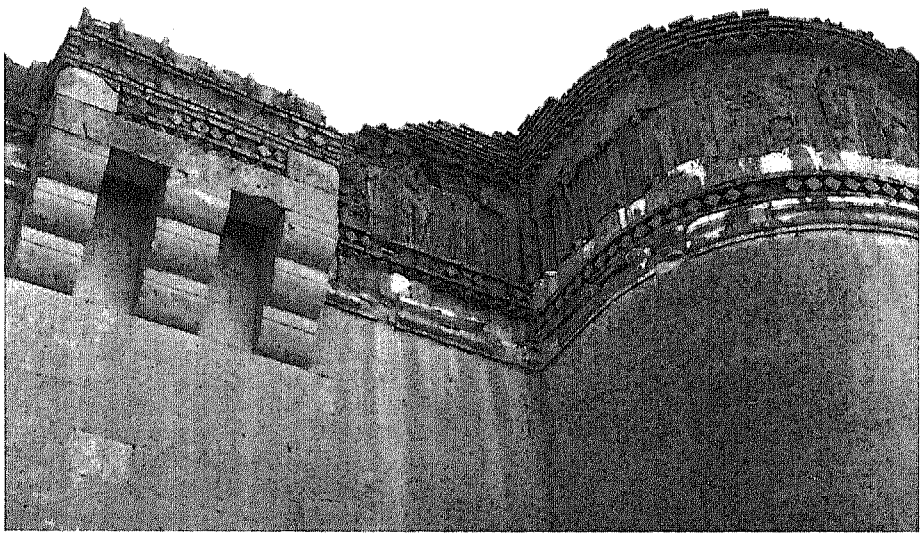
S. THOMAS PARKER

Fortifications of the Islamic Period

A fortified castle or urban citadel served both for defense and to forestall an attack by its mere presence. Fortresses protected against incursions of a nearby foe; they were even more necessary when the vulnerable area was sparsely populated, as was often the case in Islam's frontier zones. Fortifications also served for the surveillance and control of the domestic landscape, particularly in areas where a minority of Muslims ruled over a larger non-Muslim majority. However, there was always the danger of a fortress becoming the seat of internal revolt, as in the case of Ibn Hafsun, who held out against the Umayyad emirs of Cordoba at Bobastro in the mountains above Malaga. Situated at important points in the landscape, such as mountaintops, seaports, fords and bridges, fortresses regulate the passage of traffic from one critical point to another and prevent an enemy from gaining access. A fortress is often part of a large network, such as the littoral *ribat*s stretching along the coast of Tunisia in the Aghlabid period. The Tunisian *ribat*s, furthermore, were linked by the ability to communicate via signals emitted from their lighthouse towers. Such communication was hardly unusual: Islamic Spain had a similar system of towers, which could relay a smoke signal from Soria to Cordoba in half a day.

Islam's earliest fortifications were the late classical, Byzantine, Sasanian, and Soghdian fortresses taken over by Islamic armies and the newly founded garrison cities *(amsar),* such as Kufah, Basra, Wasit, Fustat, and Kairouan (Qayrawan), which secured the territory held by Islam and provided stations from which to launch campaigns farther afield. There is very little information on the early state of these centers; utilitarian at first, the construction of a congregational mosque and governor's residence *(dar al-imarah)* soon followed.

In addition to wholly defensive fortresses guarding critical points in the landscape, there was a variety of other fortified buildings where defense was secondary. One was the isolated agricultural estates, such those built by the Umayyads in Syria and Transjordan in the late seventh and early eighth centuries. In the course of conquering the Levant, Islam had encountered Roman fortifications from the Gulf of 'Aqaba to Damascus and from Damascus to Palmyra. Moreover a great many of these fortresses, such as Qaṣr al-Ḥallabat (213–217, 529 CE) in Transjordan, served as temporary residences to Umayyad princes. Thus, when the Umayyad patrons began to build large residences in their so-called desert estates—Jabal Says and Khirbet al-Minyeh (705–715), Qaṣr al-Ḥayr West (c. 727), Qaṣr al-Ḥayr East (729), Khirbat al-Mafjar (c. 725–750), and Qaṣr al-Meshatta and Qaṣr al-Tuba (c. 744)—they adopted the *appearance* of the defensive architecture inherited from the Romans, although their mil-



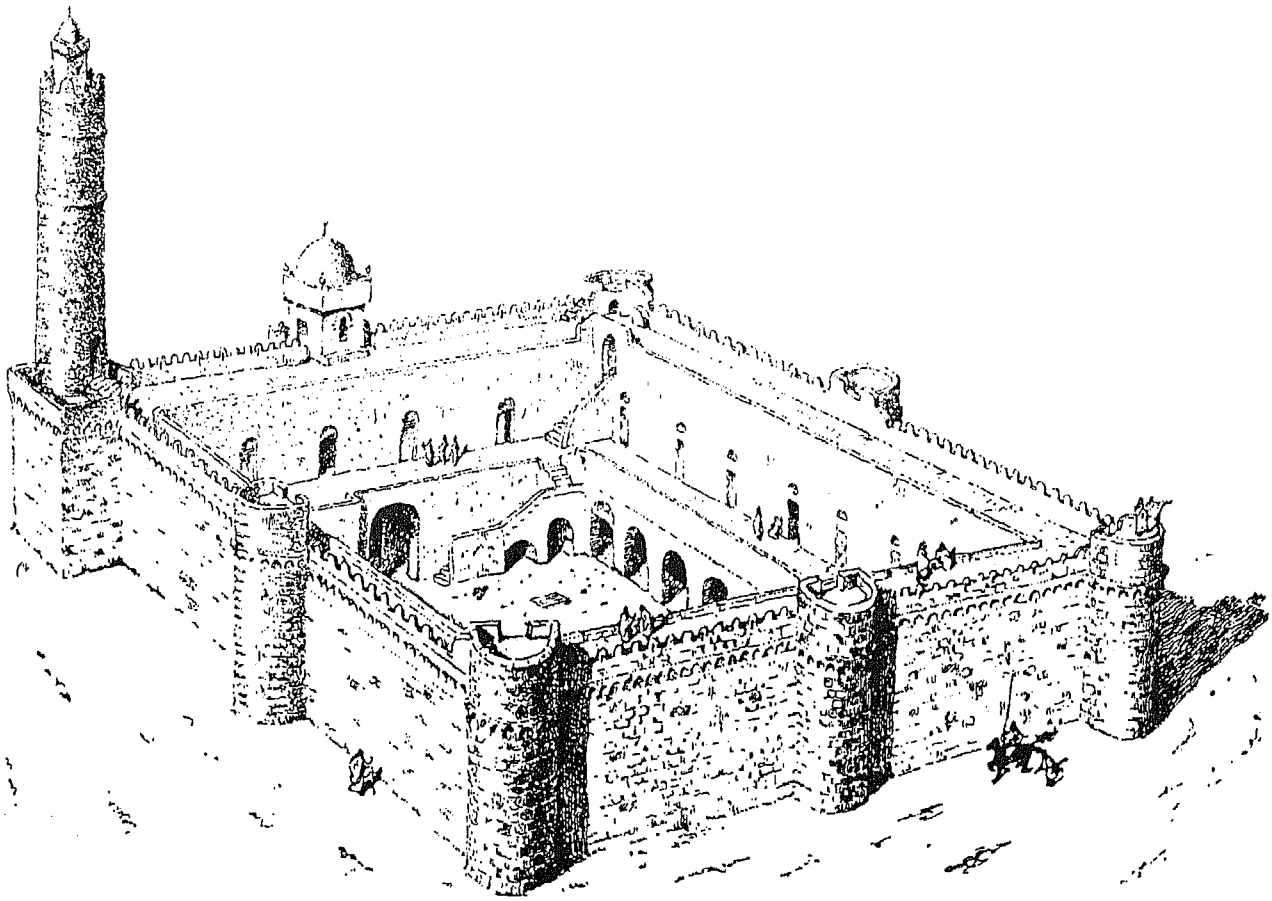
FORTIFICATIONS: Islamic Period. Figure 1. *Qaṣr al-Ḥayr East.* Small enclosure with facade entrance gate with machicolation. (Courtesy D. F. Ruggles)

itary service was minimal. Buildings such as the large and small enclosures at Qaṣr al-Ḥayr East had tall, windowless stone walls with corner towers from which the surrounding area could be watched. Access was limited to a few closely guarded portals flanked by half-round towers and overlooked by a machicolation on three brackets with two openings. [*See* Qaṣr al-Ḥallabat; Qaṣr al-Ḥayr ash-Sharqi; Qaṣr al-Ḥayr al-Gharbi; Mafjar, Khirbat al-; *and* Qaṣr al-Meshatta.]

Machicolation consists of a high balcony projecting on brackets with gaps in the floor for dropping heavy objects or hot liquids. Although western Europe did not learn the device until the late twelfth century, K. A. C. Creswell (1952) states that it was known in pre-Islamic Syria. The first construction of machicolation in Islamic architecture occurred at Qaṣr al-Ḥayr East (see figure 1). An older and more rudimentary machicolation with only one opening may be found at Qaṣr al-Ḥayr West; it was part of an existing monastery tower incorporated into one side of the Qaṣr's enclosure walls.

A second semifortified type was the caravanserai, which offered overnight lodgings to merchants traveling along key commercial arteries. Inns, such as the Ribat-i Malik (c. 1068–1080), which proliferated in the eleventh and twelfth centuries in Iran and Central Asia, were built not to withstand the direct attack of armies but rather to offer safe haven against bandits. Thus caravanserai portals are more decorative than formidable, yet their outer walls are tall, windowless, marked by corner towers, and pierced usually by a single well-guarded entrance. [*See* Caravanserais.]

A third type was the well-fortified *ribat,* a frontier outpost inhabited by warrior monks (*murabiṭin* and *ghazi*). The Sousse Ribat (771–788, tower 821) consisted of an impenetrable square enclosure with stone walls that now rise 8.5 m (28 ft.) above ground level and are supported by eight towers (see figure 2). The walls were topped by a crenelated battlement consisting of raised merlons (the solid parts of the wall between the openings) alternating with open crenels; Sousse's crenelations are somewhat unusual in that the merlons were pierced by narrow windows for shooting arrows. Inside are two stories of small unadorned living cells intended for individuals rather than families. One of the towers soars above the rest: 15.38 m (50.45 ft.) high, it offers a magnificent view of the coast and could communicate with



FORTIFICATIONS: Islamic Period. Figure 2. *The ribat at Sousse, Tunisia.* (After Georges Marçais, *L'Architecture Musulmane d'occident,* Paris, 1954)

the Monastir Ribat (796) to the south as well as other *ribats,* if pirate ships were sighted off the Tunisian coast.

Fortifications exploit natural topographic features such as height, sheerness of rock face, or the isolation of a peninsula as at Mahdiyah (912). Additional measures for security were implemented by architectural design. The Merida Alcazaba (835), for example, had an ample interior for the storage of food and an internal cistern with which to withstand long sieges. More direct implements and methods of attack such as ladders for scaling the walls, catapults (*manjaniq* and *'arrada*), battering rams *(kabsh)* for breaching the walls, siege towers on wheels *(burj),* or digging under the foundations could be withstood by a portcullis, the doubling of thick stone walls, and steeply sloping glacis foundations *(zallaqa)* that exposed would-be scalers and made undermining impossible. Calatrava la Vieja in Spain and Raqqa in Iraq (both ninth century) had moats. The portcullis, an iron grate that could be raised or lowered along grooves to block an entrance, was an ancient Near Eastern device that was employed at Ukhaidir (764–778). Rather than preventing ingress, the portcullis was used to trap enemy soldiers between the outer and inner walls of the portal where they could be assailed by archers above. Additionally, running all the way around Ukhaidir's outer walls at a height of five m (16.5 ft.) was a gallery with openings in its floors through which arrows and projectiles could be fired at attackers.

Fortification had a psychological as well as military purpose, giving the impression of invincibility and formidable strength to allies and enemies alike. In situations in which full-scale military attack was not expected, architecture could be embellished with a fortified exterior that was unnecessary or even nonfunctional but served a symbolic role. The city of Baghdad (begun 762) was located at the center of the 'Abbasid realm where attack was unlikely, yet the round city was surrounded by double walls, 35–40 m (114.8–131.2 ft.) apart. The walls were tall (outer 14 m [46 ft.], inner 17 m [55.8 ft.]) and thick (outer 4 m [13.1 ft.], inner 5 m [16.4 ft.]), and the inner wall was crenelated. The walls were flanked by 112 towers and pierced by four gates, one of which was described by a medieval historian as having a bent entrance. According to Creswell (1952), the bent entrance was known to neither the Romans (who employed only oblique entrances) nor the early Byzantines. Its origins are to be found in Central Asia, and the appearance of the device in Islamic architecture at this time is the result of the 'Abbasids' orientation toward Iran rather than the Hellenistic Mediterranean. A bent entrance prevented direct access into an enclosure and instead forced the intruder through a short maze of two turns. The strategic advantage was that the enemy encountered his opponent at a right angle, with his right side exposed (the left hand holding the shield, the right clenching the sword). Bent entrances existed in a variety of configurations and were used both for defense and visual privacy. [*See* Baghdad.]

The improved fortification of Cairo's city walls in 1087 by Badr al-Jamali included many defensive features, including slippery stone glacis foundations. Today a portion of the original walls and three stone gates survive: the Bab al-Nasir, Bab al-Futuh, and Bab Zawayla. The Bab al-Nasir's portal had a rampart walk with a crenelated parapet. Its square towers were three storied and solid in their lower two stories. They flanked a vaulted passageway (20.89 m high × 24.22 m wide × 20.47 m long [68.5 × 79.5 × 67.2 ft.]). Above was another passage in the floor out of which were five openings, similar to those at Ukhaidir, for throwing projectiles at the enemy beneath. Halfway up the first story there were stone columns laid horizontally as a bond between the inner rubble core and the outer ashlar (dressed masonry) facing. More importantly, the columns also supported the walls in the event that a battering ram was applied to the base, a tunnel was dug under the walls and set on fire, or the stones were pried loose by miners. Such elaborate and expensive precautions were deemed strategically necessary at the time they were built. Almost impossible to destroy by fire, undermining, and battering, Cairo's monumental gates have withstood the ravages of time equally well. [*See* Cairo.]

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D. FAIRCHILD RUGGLES

FOUNDATION TRENCH. In order to support the base of a wall or other construction element, ancient builders dug foundation trenches. A trench for a wall generally ran

for the length of the wall. The depth and width of the trench depended on both the stability of the matrix on which the wall was founded and the weight of the structure being supported. If bedrock, an earlier wall, or firm soil formed a stable foundation for supporting a wall, the foundation trench did not need to be wider than the wall laid in it. Builders frequently bedded walls in an unstable tell matrix, which necessitated a wider trench to spread the weight of the wall and its foundation over a greater surface and thus prevent the wall from sinking. Occasionally, sand was spread in the bottom of the trench to facilitate drainage away from the base of the wall.

Two methods were commonly employed in constructing the foundation. In the first, a foundation trench with vertical sides was prepared. Then stones were laid against the sides and the core was filled with stones and perhaps mortar. In many cases, the stones of the superstructure or wall formed a smoother vertical edge than those of the foundation trench, so even at sites where floor surfaces have not been preserved, it is possible to tell, when excavating, when the bottom of the foundation trench is reached. In the second type, the foundation trench was cut wider than the foundation wall, usually in a V-shaped configuration, to minimize soil cave-ins and to simplify digging. After the wall was constructed in the center of the trench, the space between it and the trench's sloping sides was filled with small stones and earth. This second type is more easily detected in excavation.

On sites that are tells—that is, at sites where there is a buildup of material from earlier occupation and construction—builders often simplified their work by reusing stones from earlier walls. Thus, all that may remain of a wall and its foundation is a "robber's trench," an empty trench that follows the course of the original foundation trench.

[*See also* Stratigraphy.]

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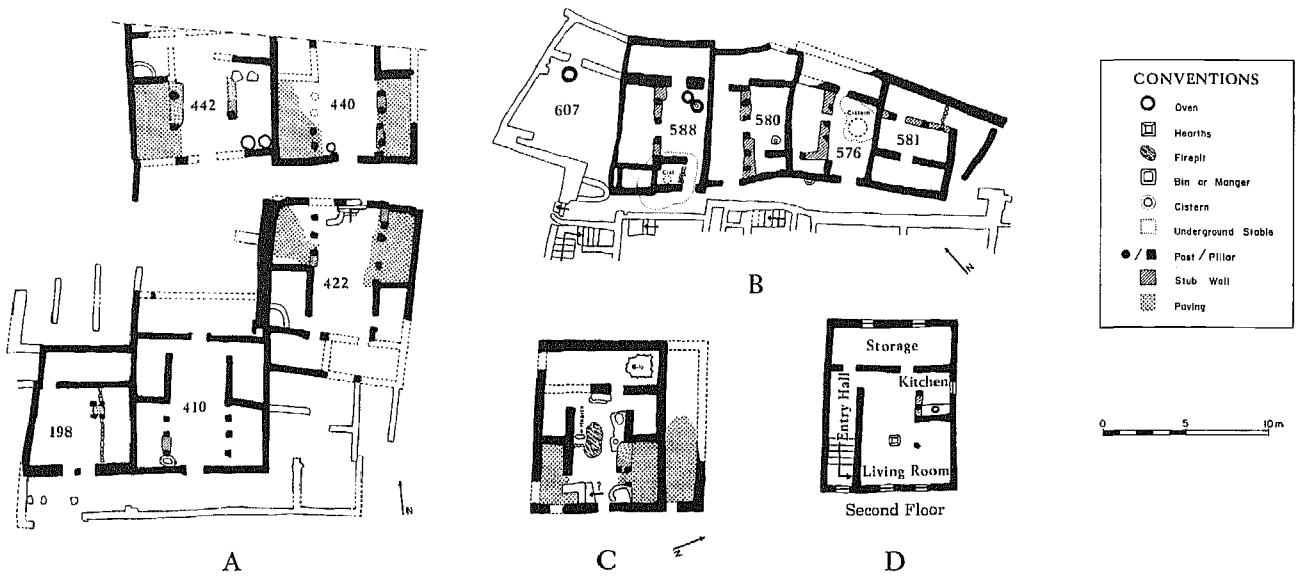
ELIZABETH M. BLOCH-SMITH

FOUR-ROOM HOUSE. Together with the three-roomed variation, the four-room house was the dominant house form in ancient Israel (see figures 1a and 1b respectively). A shed was sometimes added along one side (see figure 1c). An uncommon two-roomed variant lacked the characteristic transverse rear room. For functional and structural reasons the form was highly standardized. As a result, unusual or extensively elaborated plans should be closely examined to ensure that they do not represent architectural reconstructions of more than one building or stratigraphic phase. This distinctive house is found throughout Israel and Judah, from the earliest hill settlements (Marquet-Krause, 1949; Callaway, 1983; Stager, 1985) to the latest Iron II towns. [*See* Judah.] While not the only house form seen in Israelite cities, it is found nearly universally in lightly fortified desert farms (Cohen, 1979), farming hamlets and villages, towns, and military outposts.

Door placement and other details apart, the form was highly stylized almost from the start (e.g., at Khirbet Radannah and Ai), although it could be fitted into an existing space by tapering its overall shape (or by repositioning the rear room or even eliminating it) if alternative storage space were available nearby. [*See* Radannah; Ai.] Ethnographic parallels and architectural analysis support the conclusion that this house was highly adapted to normative Israelite family structure, modes of production (mixed peasant dry-farming and/or horticulture and animal husbandry: Hopkins, 1985) and socioeconomic organization (Holladay, 1995, pp. 391–393). The sporadic earlier appearance of similar houses in Late Bronze Age Syria is of interest and may have something to say about the emergence of early Israel.

Palestinian House Forms and Ethnicity. In Palestine, with the exception of a few examples at tenth-century BCE Philistine sites (e.g., see Maisler [Mazar], 1951), all occurrences of the four-room house known to date seem to be limited to Israelite or Judean sites. Typical Philistine houses were quite different (Dothan, 1971; Gitin, 1989). [*See* Philistines.] The form also appears in Transjordan, with other styles of pillared house construction, but not enough is known of its dating or archaeological contexts there to allow for a clear interpretation. In general, however, even when the form appears at a non-Israelite site, it does so during such periods of overwhelming Israelite hegemony as the United Monarchy. In those cases, the buildings may well have housed ethnic Israelites. Though data are sparse, the form does not seem to have survived the Babylonian Exile. For all these reasons, it seems legitimate to call this the Israelite house.

Architectural Reconstruction and Functional Interpretation. Extremely few four-room houses are preserved to the second story, most being known only from their stone foundations and floor surfaces. Thus, details of the upper story or stories, roof, and so forth must either be extrapolated from a few known details or inferred from constructional features (see below). Similarly, functional interpretations must proceed on the basis of inference from architectural details in the light of ancient and ethnographic parallels, along with a smattering of meaningful artifact distributions. As a negative case in point, rows of storejars in the stabling areas of houses destroyed by enemy action may reasonably be construed as exceptional, reflecting preparations for siege and not normal storage patterns (cf. Holladay, 1986, p. 160). As is often the case in archaeology, even the name *four-room house* is misleading, describing only the main structural divisions of the ground floor—one or two side aisles, a misnamed "courtyard," and a rear room in the



FOUR-ROOM HOUSE: Figure 1. *House plans.* (a) Four typical four-room houses, and one slightly atypical three-room house, from Tell el-Farʿah (North) (Chambon, 1984); (b) three typical and one "squeezed in" three-room house from Tell en-Naṣbeh (McCown, 1947, survey map); (c) four-room house with added side-hall or shed from Shechem (Wright, 1965, fig. 76); (d) a proposed second-floor plan of the house figured in (c) above. (Courtesy J. S. Holladay)

usual terminology—and ignoring both the characteristic second story (the structural reason for the massively pillared construction) and the frequent divisions in the side and back "rooms." In fact, apart from their very unitary character (each household clearly is an independent social unit), the pillars and cobbled side aisles are the chief distinguishing characteristics of these houses. The pillars are of a variety of locally available materials—from well-shaped caprock (Ar., *nari*) monoliths to stacked, roughly dressed stone drums or slabs to heavy wooden or mud-brick pillars. Occasionally, the beams borne by the pillars were also stone monoliths or were complexly built up of cantilevered stone slabs. Only high loading factors would ensure the integrity of the stacked stone-boulder or stone-slab construction; the massiveness of all the other forms similarly attests to the tremendous load-carrying capacity of the line or lines of pillars.

Floor surfaces range from hardened surfaces composed of cobbles or flagstones bedded in ashy soil for the pillared side aisle/s to relatively clean packed earth, often multilaminated, with a few flat-lying sherds and occasional slivers of bone, for the rear room, small side rooms, and the center room or courtyard. Rarely, the center room was whitewashed or surfaced with a thin white marly "plaster." Some small side rooms lack clear surfaces and may be interpreted as mirey, uncleaned stalls for the penned-up "fatted calf" (*1Sm.* 28:24; *Am.* 6:4; see below). Ethnographically, the first five floor surfaces noted here are associated with such different functions such as stabling (Holladay, 1986), storerooms and kitchens (the latter having an ashy floor), living rooms, and nonhardened (lacking cobbles or flagstones) domestic stables (Kramer, 1979, pp. 147–149; Watson, 1979, p. 121). That the so-called center room or "courtyard" is an interior surface is easily tested by an objective (e.g., granulometric) comparison of its surfaces with other surfaces known to be exterior (e.g., streets and other open areas: Kramer, 1979, pp. 148–149; Watson, 1979, pp. 157–159, pls. 5.3–5), as well as by the fact that, although the "courtyard" surfaces are often lower than exterior street levels, with high thresholds to keep water out, no provision was made for the internal drainage required if they were open to the sky.

Stairways are commonly noted and can be reconstructed in other instances. From everything presently known, the first story was low, averaging under 2 m, with considerably less clearance under the beams. It was, thus, unsuited to human habitation.

Interior Features. Most houses had stub walls between the supporting pillars with, where preserved, mud-and-stone mangers on top. The mangers are similar to those found in stables at Hazor and Beersheba and would have been used for donkeys and, probably, cattle (the standings are too short for horses). [*See* Hazor, Beersheba, Stables; Cattle and Oxen.] Semicircular ground-level mangers ("bins") are common and may have been used for sheep and goats, but possibly also for cattle. [*See* Sheep and Goats.] Fire pits or hearths in the courtyard are characteristic at Radannah and at Tel Masos, but in general they are rarely found. [*See* Masos, Tel.] Other types of hearths are

found occasionally, mostly in the central space, or "courtyard" (e.g., the "pi"-shaped hearths in the Drainpipe House at Ta'anach and in house 1727 at Shechem, and in the hearths contained in the overturned upper portions of storejars sunk into the ground in buildings at Shechem, Hazor, and Meṣad Ḥashavyahu). A large industrial hearth, which replaces an earlier wine press at Shechem in house 1727 seems to be unique. [*See* Ta'anach; Shechem; Meṣad Ḥashavyahu.]

Hearths are by no means commonly found. However, it is clear that every household must not only have had cooking facilities (cooking pots are one of the most common vessel types), but, in most parts of the land, also hearths for heat in winter. (Ovens served for bread making, not cooking.) Ethnographically, hearths are one of the chief markers of living rooms (Watson, 1979, p. 122, fig. 5.2; Kramer, 1979, pp. 147–148). These are rooms within which the entire nuclear family cooks, entertains, eats, sleeps, and performs daily indoor activities. Families having two living rooms use the second one for entertaining or rent it. At Patty Jo Watson's "Hasanabad" and "Ain Ali" bread ovens were not used: one hearth served for winter warmth, cooking, and—through the use of the *saj,* the modern descendent of the baking tray—baking (Watson, 1979, pp. 205, 283). During the summer, cooking fires were relocated into exterior courtyard spaces. Carol Kramer (1979, pp. 147–148, emphasis added) presents illuminating data: "Hearths are peculiar to living rooms. . . . In contrast to ovens, such hearths, found throughout the Zagros . . . and elsewhere in Southwest Asia, *are often situated in second-story rooms,* and as such have been found at an archaeological site near Shāhābād." Ovens, on the other hand, are generally placed out of the wind at points of easy access from outside (e.g., Tell el-Far'ah [North]; Chambon, 1984); they are not normally found in or adjacent to every house. This implies communal use, as in present-day traditional villages. [*See* Far'ah, Tell el- (North).]

Silos or grain pits have been found in the rear room and elsewhere (Watson, 1979, pp. 125–126, fig. 5.4). Multiple exterior grain pits were common before and during the United Monarchy but are not characteristic of later periods (Holladay, 1995, pp. 377–379, table 3). Vermin-resistant above-grade grain and flour bins or chests constructed of mud and chaff are common in ethnographically witnessed villages in Iran (Kramer, 1979, pp. 144, 147; Watson, 1979, pp. 67, 162, figs. 5.42–43), suggesting that they might have been used for domestic storage in Israel; none have yet been identified, however. Where cisterns were used, they would have been located either beneath the house or outside. [*See* Cisterns.] In some cases, houses may have been built over preexisting cisterns.

Functional Aspects of the Ground-Floor Plan. The ground floor in the four-room house falls entirely within the family's economic domain. Stalls for donkeys and large cattle are readily identified by their similarity to standings in chariotry stables (cobbled or flagstoned surfaces, bench-style mangers, pillared construction). Floor-level mangers may attest to the feeding of sheep and goats. By analogy with modern European modes of veal production, small rooms with blocked doorways and miry surfaces may have housed the "fatted calf." Small storerooms with packed-earth or mud-plaster surfaces probably served for specialized storage, while the back room seems to have been the main locus for heavy storage: ethnographically, the items stored in such rooms change with the season. In ancient Israel they would have included young animals, bulk quantities of wine and oil, fodder, grains and legumes, reserved seed grain, straw, dung, twigs and dung cakes (the primary fuel source), pottery vessels not in use, timbers, raw materials for craft production, and a plow, yoke, and other farm implements (DeBoer and Lathrup, 1979, pp. 110–121; Hall, McBride, and Riddell, 1973; Jacobs, 1979, p. 179; Kramer, 1979, pp. 144, 147, 154; Watson, 1979, pp. 160, 294–296). Light items—dried fruits and dairy products, spices, textiles, and other domestic goods—would have been stored on the second floor (Kramer, 1982, p. 105). The large central space seems to have functioned by day as a work area and is where large limestone mortars (used with long wooden pounders for pearling barley?) were typically located. At night and during winter storms this area would have served as a secure folding area for the family's small sheep and goat herd (Hopkins, 1985, pp. 245–250).

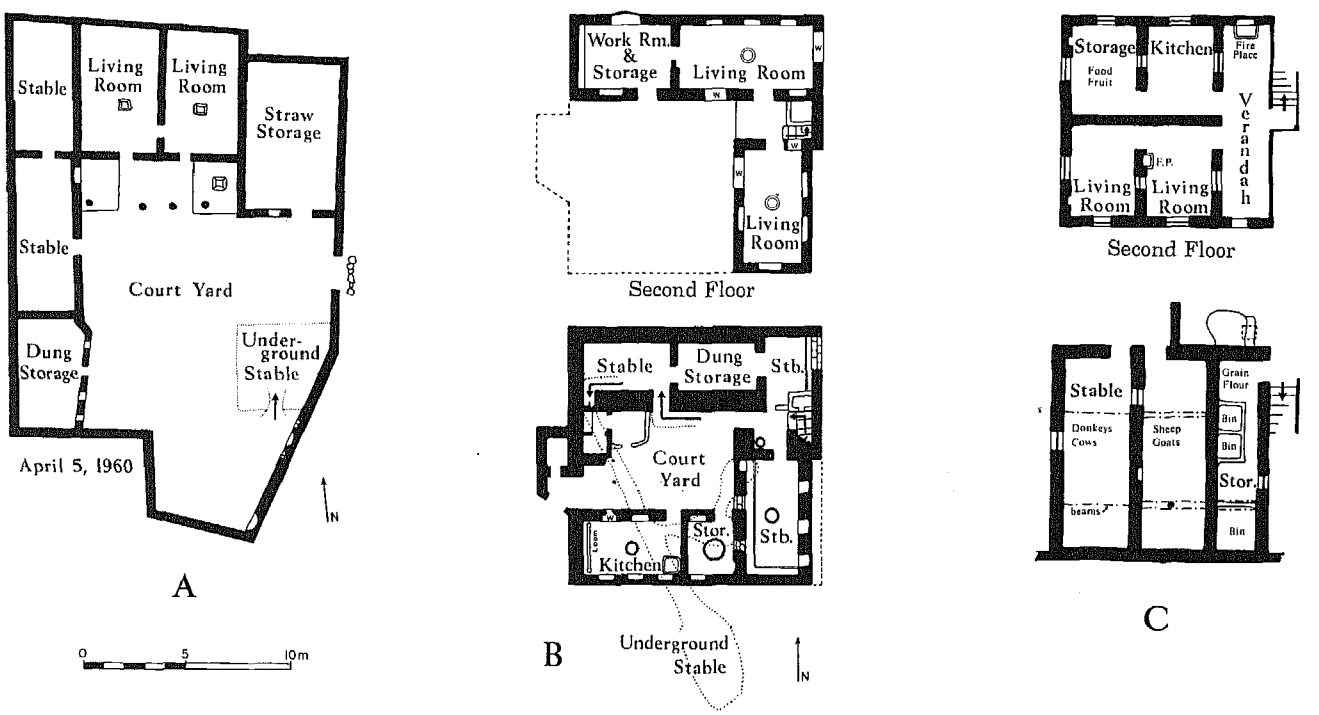
It has often been suggested that the rear room served as the family's living room, and that the Israelite house evolved from this original nucleus, perhaps originally imitating a nomad's tent (Fritz and Kempinski, 1983, pp. 31–34; Herzog, 1984, pp. 75–77). However, there is absolutely no evidence for this type's existence in the second millennium BCE. Against this, the mean width of ninety-five identifiable rear rooms in Frank Braemer's catalog (1982, pp. 160–269) is 1.98 m, while the mean widths of ethnographically described living rooms range from 2.78 m at "Hasanabad" to 2.9 m at Aşvan to 3.02 m at "Aliabad" (Watson, 1979; Hall, McBride, and Riddell, 1973; Kramer, 1982)—their width being determined by the length of the available roofing timbers. In short, a family of four to five persons cannot live, work, cook, eat, entertain, and sleep in a 2-meter-wide hallway with 1.52 m of head room.

Second Story. A second story must be inferred for the four-room house on the basis of its constructional characteristics: its massive load-bearing pillars in a roofed-over courtyard and lack of provision on the ground floor for living quarters or, in most cases, for cooking or heating facilities. Given the lack of these facilities on the ground floor, the second floor should constitute the family's "living domain": the living rooms should have widths and overall floor areas similar to those in the ethnographic literature—or an average living room size of between 15 and 20 sq m (Kramer, 1979; Watson, 1979), although larger and smaller ones do occur. Living rooms should have other dimensions (e.g., headroom), facilities (e.g., hearths), and functionality not avail-

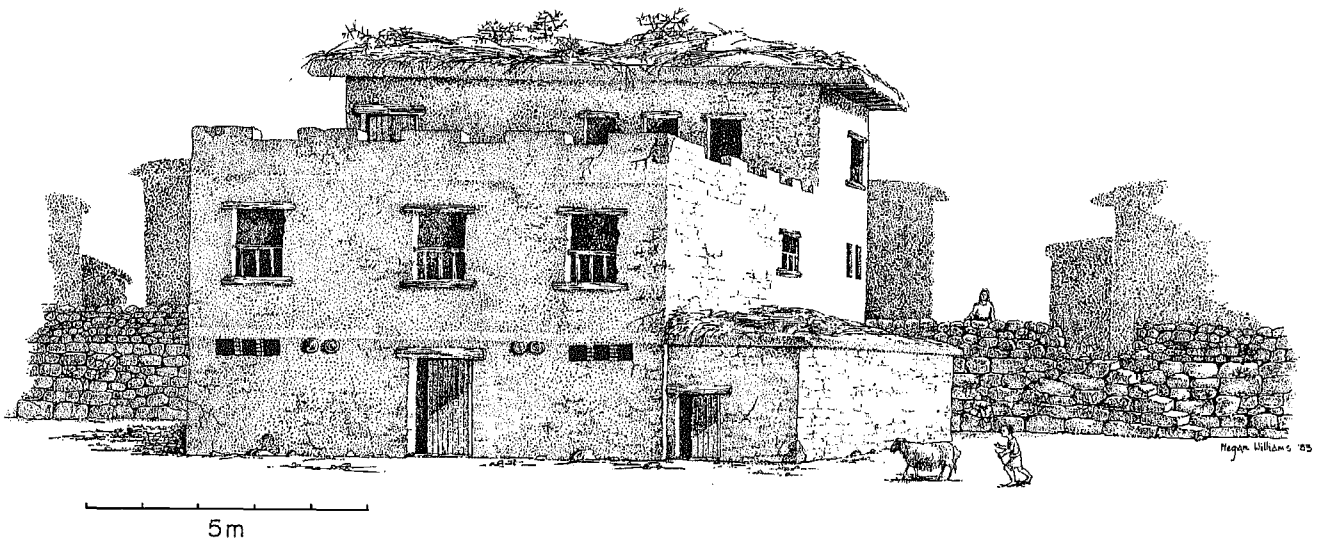
able on the ground floor (cf. Hopkins, 1985, pp. 144–148). An entry hall at the head of the stairs, used to store outer clothes and men's portable tools, is suggested by the ethnographic data. Kitchen facilities and one or two light storage rooms would round out the second floor plan (see figures 2b, 3). The second story's walls may have been thinner because of their reduced load-carrying requirement. This would have increased its area slightly. A third-floor *ʿălîyyâ*, "upper room, or roof chamber," preferably accessed by an external staircase, might also be present, whether for rent or use as a guest room (see figure 3). Balustraded windows, unsuitable for ground-floor use, would be perfectly in place in the higher stories, providing good light and ventilation. Domestic versions would have been more rustic than the palatial one featured in the "woman at the window" ivories from Nimrud. [*See* Nimrud.]

Roofs were flat, of packed mud and chaff ("straw"), with new layers applied annually. Following a rainstorm they were rolled with limestone rollers or carefully compacted by foot (Wright, 1965, p. 161, fig. 80; Watson, 1979, pp. 119–120). Sprouted grain on the rooftops was a proverbial sign of spring (*Ps.* 129:6; *Is.* 37:27). Parapets, stipulated by Deuteronomic legislation (*Dt.* 22:8), were necessary to enable the use of the roof as an outdoor workspace (i.e., it would have functioned analogously to enclosed courtyard space) and as a safe place for women and their small children to socialize. With no roof overhang, rainwater runoff would have eroded the mud-brick (adobe) fabric of the house. Thus, jutting wooden (or ceramic) "gargoyles" (Watson, 1979, p. 159) or internal drainpipes leading to an in-house cistern (Lapp, 1967, pp. 2–39, fig. 14), would have been needed to drain the roof. The gargoyles' individual splash areas or runoff channels (Watson, 1979, p. 159) would have been visible on exterior, street, or lane surfaces. Ethnographic parallels show that brush shelters (biblical *sûkkôt*, *Neh.* 8:16) are set up to soften the summer sun and that during the hottest months, families often sleep on the roof. Ethnographically, this is the woman's domain—house tops being the common pathways between closely packed neighboring households in some modern walled villages (Jacobs, 1979, p. 179). There, and by parallel in ancient Near Eastern cities and villages, cultic ceremonies are conducted on rooftops (*Jer.* 19:13; *Zep.* 1:5), as were corporate mourning and rejoicing (*Is.* 15:3, 22:1), sleeping (*1 Sm.* 9:25), bathing (*2 Sm.* 11:2), washing, and clothes drying, basket making, baking, and drying food and fodder for storage, dung and brush for fuel, and flax and other agricultural products for processing (*Jos.* 2:6). They probably were also used for storing beams and large household and farming implements during the rainless months (Jacobs, 1979; Kramer, 1982, p. 111; cf. Hall, McBride, and Riddell, 1973, p. 248).

Economic Significance. Except for the large numbers of grain silos (averaging a storage capacity of about a ton each) occasionally found near certain houses prior to and



FOUR-ROOM HOUSE: Figure 2. *Selected ethnographically documented peasant housing.* (a) One-story house from Hasanabad, Iran (Watson, 1979); (b) two-story house from Aliabad, Iran (Kramer, 1982, fig. 4.7); (c) two-story house from Aşvan, Turkey (Hall et al., 1973, fig. 4). (Courtesy J. S. Holladay)



FOUR-ROOM HOUSE: Figure 3. *Reconstruction of the house in figure 1: c-d, featuring a hypothetical ʿălîyya, or upper room.* (Drawing by Megan Williams; courtesy J. S. Holladay)

during the Solomonic era (Greenberg, 1987; Finkelstein, 1986, pp. 1–20, fig. 4), but not met with later, large-scale facilities for accumulated agricultural surpluses are not known from the period of the Israelite monarchy. This stands in marked contrast to the military and economic policies of the Persian period, as witnessed by the large number of great store pits at such sites as Tell el-Ḥesi (Bennet and Blakely, 1989, p. 67) and Beersheba (Naveh, 1973). [*See* Ḥesi, Tell el-.] Nor are redistributive mechanisms, such as the large-scale bakeries found in conjunction with granaries in Saite through Ptolemaic Egypt (at Tell el-Maskhuta) known from either Israel or Judah. Even the three hundred-odd jars filled with oil, wine, and grain in the Phoenician "fort" excavated by Zvi Gal (1992) at Ḥorvat Rosh Zayit fall into different focus when it is realized that it would have taken at least ninety-one jars to store the subsistence and seed-grain requirements of one typical Israelite household and its flocks and herd, to say nothing of their olive oil and wine. In terms of scale, the storage capacity of the back rooms of only thirty-one typical Israelite houses more than equaled the capacity of silo 1414 at Megiddo, the largest storage facility presently known for either Israel or Judah (Holladay, 1995, p. 393).

Except for chariotry, frontier forts such as Tell Arad, palaces, and—perhaps—the cultus, neither ancient Israel nor Judah seems to have operated on a redistributive basis: there could have been no widespread issuing of grain and other rations to large numbers of the civilian population. Simply put, Israelite peasant farmers operated with a house (and agricultural regime) specifically designed to accumulate surpluses. The specific mechanisms by which those surpluses entered either domestic or international commerce are matters for future research, although it should be noted that a whole series of small ports, conveniently spaced about a half-day's journey apart, existed along the Palestinian coast during the Iron II period, providing a cost-effective mechanism for the long-range movement of such low-value, high-bulk goods.

[*See also* Building Materials and Techniques, *article on* Materials and Techniques of the Bronze and Iron Ages; Ethnoarchaeology; *and* House, *article on* Syro-Palestinian Houses.]

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JOHN S. HOLLADAY, JR.

FRANCISCAN CUSTODY OF THE HOLY LAND.

The order of the Franciscan Friars, founded by Francis of Assisi (Italy), became a presence in the Near East in 1221, the same year it was officially approved by the Pope. The founder himself visited the region in order to preach the Gospel to the Muslims, whom he saw as brothers. The mission resulted in a meeting with the sultan of Egypt. The Franciscan Province of the East extended to Cyprus, Syria, Lebanon, and the Holy Land (ancient Palestine). Before the Muslims took Akko in 1291, there were Franciscan friaries there and in Sidon, Antioch, Tripoli, Jaffa, and Jerusalem.

At the end of the Latin Kingdom, the Franciscans took refuge on Cyprus, where they began planning their return to Jerusalem, given the goodwill between Christian governments and the Mamluk sultans in Egypt. In about 1333, a friar, Ruggero Garini, succeeded in buying the Cenacle on Mount Zion and some nearby land on which to build a monastery for the friars, using funds provided by the king and queen of Naples. In 1342, Pope Clement IV, in two papal bulls (Gratias Agimus and Nuper Carissimae) approved and created the new entity, which became known as the Franciscan Custody of the Holy Land (Custodia Terrae Sanctae). The friars came from the order's provinces and were placed under the jurisdiction of the father-guardian (superior) of the monastery on Mt. Zion. They were instated in the Cenacle and in the Church of the Holy Sepulcher in Jerusalem and in the Basilica of the Nativity in Bethlehem. Their principal activity was to ensure liturgical life in those Christian sanctuaries, to give spiritual assistance to pilgrims and merchants coming from the West, and to have a direct and authorized relationship with the Christian oriental communities.

In 1551 the Turkish Authority expelled the friars from the Cenacle and the adjoining monastery. However, they were granted permission to purchase a Georgian monastery for nuns in the city's northwest quarter, which became the new center of the Custody in Jerusalem, and they developed the Latin Convent of St. Savior (Ar., Dayr al-Latin). In 1620 the Franciscans received Mt. Tabor in Galilee and the venerated Grotto of the Annunciation in Nazareth from Fakhr ed-Din, the Druze amir of Sidon. In the following year they were permitted to rebuild part of the church of St. John the Baptist at 'Ein-Kerem near Jerusalem, and open a new friary. In the nineteenth century, new churches and monasteries were built at other, already venerated sites, above the ruins of older churches: the Chapel of the Flagellation along the Via Dolorosa in Jerusalem (1838); a chapel at Emmaus/Qubeibeh (1872); the church at Cana (Ar., Kafr Kana; 1880); and a chapel each in the village of Naim (1885), at Bethpage (1883), and at Dominus Flevit (1891)—the latter two on the Mt. of Olives. New basilicas were built at Emmaus/Qubeibeh (1901); at Nazareth (the so-called Church of Nutrition; 1911–1914); at Gethsemane (Basilica of the Agony; 1919–1924); and on Mt. Tabor (Basilica of the Transfiguration; 1921–1924). New chapels followed:

the Chapel of the Good Shepherd in Jericho (1924); the chapel on the west bank of the Jordan River (1934); and the Chapel of Primacy at Tabgha, on the shore of the Sea of Galilee. Church buildings and additions included the Church of the Visitation at 'Ein-Kerem (1938–1940); a church in Bethany (1952–1954); a chapel at Shepherds' Field, outside the village of Beit Sahur/Bethlehem; and a new chapel at Dominus Flevit (1955). The new great Basilica of the Annunciation in Nazareth, begun in 1955, was consecrated in 1969, and the Memorial of St. Peter at Capernaum was completed in 1990.

The Franciscan presence in the Holy Land has provided continuity in the recording of local tradition since the Crusader period. Since 1342 they have functioned as custodians of the Christian shrines on behalf of the Catholic church, as guides for Christian pilgrims to the Holy Land, and as authors of many publications intended to increase the knowledge of the Holy Land among the Christians of Europe.

The restoration and rebuilding during the nineteenth century of sanctuaries owned by the Custody of the Holy Land resulted in the archaeological exploration of those sites. Such projects are entrusted to the archaeologists of the Studium Biblicum Franciscanum (SBF), an institute founded in 1923 to continue the work done by the Franciscan fathers in previous centuries. As a scientific institution, the SBF is closely related to the Franciscan presence in the Holy Land. A Roman Catholic faculty teaches biblical and archaeological studies, sponsored by the Franciscan Custody of Terra Sancta. The SBF is located in the Old City of Jerusalem, in the Monastery of the Flagellation, at the Second Station of the cross, on the Via Dolorosa. As a research center, the SBF fosters work on New Testament sites, as well as the study of the early Christian church in the Holy Land, by means of literary sources and excavations. It publishes reports on excavations annually in the review *Liber Annuus,* begun in 1950, and in the series *Collectio Maior* and *Collectio Minor.* Exegetical studies are published in the series *Analecta,* and the archaeological collections of the SBF are illustrated in the series *Museum.* As a learning center, the SBF is presently authorized to confer pontifical academic degrees of baccalaureate, licentiate, and doctorate in biblical theology.

The SBF opened an archaeological museum in 1902 in the Monastery of St. Savior, whose collection was transferred to the Monastery of the Flagellation in 1931. Findings from SBF excavations, along with liturgical Latin codices from the fourteenth and fifteenth centuries, a treasure of liturgical medieval objects from the Basilica of the Nativity in Bethlehem, and eighteenth-century pots from the pharmacy in the Monastery of St. Savior, are displayed there. The collection also includes a numismatic section specializing in the city coins of Palestine, the Decapolis, and the Provincia Arabia.

SBF-sponsored archaeological fieldwork includes the following sites. The excavations in Nazareth were begun by Prosper Viaud at the beginning of the twentieth century and were resumed by Bellarmino Bagatti in 1954. Along with the discovery of the ancient village, he found the first signs of a Christian presence there in graffiti scratched on plaster found under the Crusader and Byzantine Basilica of the Annunciation. [*See* Nazareth; *and the biography of Bagatti.*] At Capernaum, the excavations in the synagogue initiated by Gaudenzio Orfali in 1921 were resumed in 1968 by Virgilio Corbo and Stanislao Loffreda and are still underway. The excavators have discovered the *insula sacra* (the area of sacred buildings) among the ruins of the houses in the ancient village, with the *domus ecclesia* (house-church) of St. Peter under the Byzantine octagonal basilica. They have also unearthed structures under the synagogue that date to the Late Roman period. [*See* Capernaum.] The excavation of the palace at Herodium, near Bethlehem, was carried out by Corbo, between 1962 and 1967. He also directed the excavations of the Herodian fortress of Machaerus in Jordan, in which, according to Josephus Flavius, John the Baptist was jailed and murdered. [*See* Machaerus.] One of the institute's main excavation and restoration projects is on Mt. Nebo in Jordan. The project was begun in 1933, under the direction of Sylvester Saller. The work was focused mainly on the Memorial Church of Moses Prophet and Man of God. This memorial was built by Christians in the region in the fourth century, on the western peak of Siyagha. A monastery developed around it in the Byzantine period. Excavations were expanded to the nearby ruins of Khirbet el-Mukhayyat on the southern peak of Mt. Nebo, where an Iron Age fortress and Roman-Byzantine village identified with Nebo are located. [*See* Nebo, Mount.] Since 1984, the SBF has been excavating two Byzantine churches in the valley of 'Ain Musa and a monastery in the valley of 'Ayn al-Kanisah, simultaneously cooperating with the Jordanian Department of Antiquities in excavating several monuments in the city of Madaba, such as the Church of the Virgin, the Hippolythus Hall, the Cathedral, and the Burnt Palace. [*See* Madaba.]

In summer 1986, work started at Umm er-Rasas, in the steppe 30 km (19 mi.) southeast of Madaba, where the ancient name of the ruins, Kastron Mefaa, was rediscovered in the inscriptions in the rich mosaic floor of the church of St. Stephen, built in the Umayyad period. [*See* Umm er-Rasas.] Moreover, a city plan of Kastron Mefaa was found along with the inscriptions. In summer 1989, a second plan of the city of Kastron Mefaa, depicted in the mosaic floor of the Church of the Lions, was unearthed. It is now possible to accept the identification of Umm er-Rasas/Kastron Mefaa with biblical Mepha'at proposed by Eusebius (*Onomasticon* 128.21; *Jos.* 13:21, 21:27; *Jer.* 48:21).

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MICHELE PICCIRILLO

FRANKFORT, HENRI (1897–1952), eminent scholar of the ancient Near East. Born in the Netherlands, Frankfort began his studies in history at the University of Amsterdam but subsequently transferred to London to work with Flinders Petrie at University College. He obtained his M.A. there in 1924 and his Ph.D. at the University of Leiden in 1927.

From 1925 to 1929 Frankfort served as director of excavations for the Egypt Exploration Society, chiefly at Tell el-Amarna, Abydos, and Armant. In 1929, he was invited to take charge of the University of Chicago's recently organized Oriental Institute Iraq Expedition and served as its field director until 1937. In 1932, Frankfort was appointed Research Professor of Oriental Archaeology at the Oriental Institute of the University of Chicago and concurrently held the position of Extraordinary Professor in the History and Archaeology of the Ancient Near East at the University of Amsterdam. When World War II ended the field activities of the Iraq Expedition, Frankfort took up residence in Chicago to concentrate on research, publication, and teaching. During the war years, he served as acting chairman of the Department of Oriental Languages and Literatures. In 1949 he accepted the directorship of the Warburg Institute and a professorship of the history of preclassical antiquity at the University of London.

The various archaeological expeditions that Henri Frankfort directed rank among the most carefully conducted, most fruitful, and best published of any of his time. Frankfort's numerous seminal published works range over many fields of ancient Near Eastern studies. They include excavation reports of work in both Egypt and Iraq, major synthetic monographs that sought to organize large quantities of data into meaningful frameworks for the relatively new field of ancient Near Eastern studies, and sensitive and penetrating essays. Frankfort traveled to the Near East for the last time in the fall of 1952 as a Guggenheim fellow to research and write *The Art and Architecture of the Ancient Orient,* which was published in 1954.

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KAREN L. WILSON

FRENCH ARCHAEOLOGICAL MISSIONS.

In France, the archaeology of the Near East has long been a concern of the state. Since the nineteenth century, French political authorities have concerned themselves with archaeological exploration, often on the heels of military expeditions. The best example of this kind occurred at the beginning of the nineteenth century in the company of the expedition of Napoleon Bonaparte in Egypt. The artistic, archaeological, and scientific observations (from botany to zoology and ethnography) of the enterprise produced the monumental work *Description de l'Égypte.* France, like other European countries, were later attracted to other parts of the Near East, such as Mesopotamia, the Levant, and Iran. French teams sought to discover the history of civilizations in which the common past of humanity could be seen (and in which the Bible played an important role). The quest for inscriptions was a prime motivation. Furthermore, archaeological research aimed to enrich museums. The formation of the great Near Eastern collections of the Louvre in Paris dates from this period, as also the British Museum in Lon-

don, and the Vorderasiatische Museum in Berlin, as well as in numerous other museums of Europe and America, not to mention private collections.

A first phase, begun in the 1840s, could be considered the "period of the diplomats." First, in Mesopotamia, the French consul Paul-Émile Botta discovered the palace of Sargon at Khorsabad in 1843–1844. Interest in the Bible also explains the innumerable expeditions undertaken under diverse sponsorship (public and private) in Syria and Palestine (then under Ottoman rule), notably by Félicien de Saulcy in Jerusalem in 1850. In 1860, accompanying the French army of the Levant, the Mission de Phénicie (Phoenician Expedition) was officially sent by the government of Napoleon III under the direction of Ernest Renan, in the name of the Académie des Inscriptions et Belles-Lettres. The campaign led by Melchior de Vogüé to Cyprus complemented the work in Phoenicia.

A coherent policy of archaeological research developed in France and England at the end of the nineteenth century. This was the "period of the engineers." France wished to undertake large, long-term excavations in the Near East at prestigious sites, as had been done earlier by French expeditions in Delphi in Greece. In 1884 Marcel Dieulafoy initiated archaeological study of Iran with the exploration of Susa, which entailed the creation of a permanent organization in 1897, the French Delegation in Persia, under the direction of Jacques de Morgan. In Mesopotamia, Ernest de Sarzec opened the way to the discovery of the Sumerians with the excavation of Tello beginning in 1877.

In the twentieth century, the "scientific phase" of Near Eastern archaeology with the creation of archaeological services, museums, and the foundation of archaeological institutes and schools. France participated actively in these places of research in foreign countries.

Beginning in 1912, Roland de Mecquenem resumed excavations at Susa. After World War I, Abbé Henri du Verdier de Genouillac continued the excavations in southern Mesopotamia at Tello. He was replaced by André Parrot, who subsequently excavated at the neighboring site of Larsa.

In the Levant, after the fall of the Ottoman Empire, the creation of a French Antiquities Service of the Mandate in Lebanon and Syria made the excavations of large sites possible: Byblos on the Mediterranean coast, previously dug by Pierre Montet in 1921–1924 and then by Maurice Dunand beginning in 1926; Ras Shamra/Ugarit beginning in 1929 by Claude Schaeffer; and Mari on the Euphrates, excavated by André Parrot beginning in 1933.

Currently official archaeological activity outside French territory is state-run under the Ministry of Foreign Affairs. Modern French archaeological policy began with the creation of a special commission of this ministry in 1947, the "Commission Consultative des Fouilles," since 1970 "Commission Consultative des Recherches Archéologiques á l'Étranger" (Consulting Commission for Foreign Archaeological Research), under the authority of the General Directorate of Cultural, Scientific, and Technical Relations. This commission, which meets annually, submits proposals to the Foreign Ministry about the allocation of subventions to the French archaeological missions in different countries.

A great diversity exists among the "missions." Some large projects include multidisciplinary programs extending over many years. The oldest in progress is the excavation at Ras Shamra/Ugarit in Syria. Other projects, however, involve surveys that are limited in time and area, such as emergency exploration required in some countries (for example, building projects such as dams that will permanently inundate archaeological sites).

The state provides financing of the projects through the recommendation of the Ministry of Foreign Affairs, but also through other public institutions which occasionally provide their own contributions. In fact, government's scientific programs that support the missions in the Near East also rely on various research institutes, such as those at the universities of Paris, Lyon, and Strasbourg, the teams of researchers of the CNRS (Centre National de la Recherche Scientifique), the Département des Antiquités Orientales au Musée du Louvre (Department of Eastern Antiquities, Louvre Museum), which in turn come under the jurisdiction of various ministries: the Ministry of National Education, the Ministry of Research, the Ministry of Culture, and of course, the Académie des Inscriptions et Belles Lettres.

The French archaeological missions around the world are divided into five subcommittees of the Committee of Excavations of the Ministry of Foreign Affairs. The Near East currently represents about a third of the activities. Thus, for 1994, of 205 applications for 46 countries, 68 requesting subventions were designed to conduct research in the countries of the Near East subcommission: Syria (22), Jordan (10), Lebanon (3), Israel (8), Turkey (13), Cyprus (5), Greece (4), and intercountry programs (3). In other Near Eastern countries political turmoil has interrupted several missions of long duration (e.g., Susa in Iran or Larsa in southern Mesopotamia/Iraq).

The Ministry of Foreign Affairs also maintains several institutions that represent French archaeology of the Near East within the host countries. Financed by public money, these institutes support a large number of archaeological projects carried out under the auspices of the French government. The Institut Français d'Archéologie de Beyrouth (IFAB), founded after World War II with Henri Seyrig as its first director to accommodate fellows and a specialized library, has become today the Institut Français d'Archéologie du Proche-Orient (IFAPO), with offices in Beirut, Damascus, and Amman. Other institutions ensure the official presence of French archaeology in the Near East: the Institut Français d'Études Anatoliennes (IFEA) in Istanbul (Turkey), the Institut Français de Recherches en Iran (IFRI) in Teheran, the Délégation Archéologique Française en Iraq

(DAFIQ) in Baghdad, the Institut Français d'Archéologie Orientale (IFAO) in Cairo, as well as a section of the Institut Français d'Études Arabes de Damas (IFEAD) in Syria for the medieval period.

Among private scientific undertakings, the Jesuit-run Université Saint-Joseph (USJ) in Beirut has received subventions from the French government for archaeological and museographical projects. The École Biblique et Archéologique Française (EBAF) in Jerusalem, a Dominican monastery, has also received subsidies from the Ministry of Foreign Affairs for excavation projects as well as stipends contributed by the Académie des Inscriptions et Belles Lettres.

[*See also* École Biblique et Archéologique Française; Institut Français d'Archéologie du Proche Orient; Institut Français d'Archéologie Orientale; Institut Français d'Études Anatoliennes d'Istanbul; Institut Français d'Études Arabes; *and the biographies of Botta, Dunand, Montet, Parrot, Renan, Saulcy, Schaeffer, Seyrig, and Vogüé. In addition, many of the sites mentioned are the subject of independent entries.*]

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MARGUERITE YON

Translated from French by Nancy Leinwand

FRENCH SCHOOL (Jerusalem). *See* École Biblique et Archéologique Française.

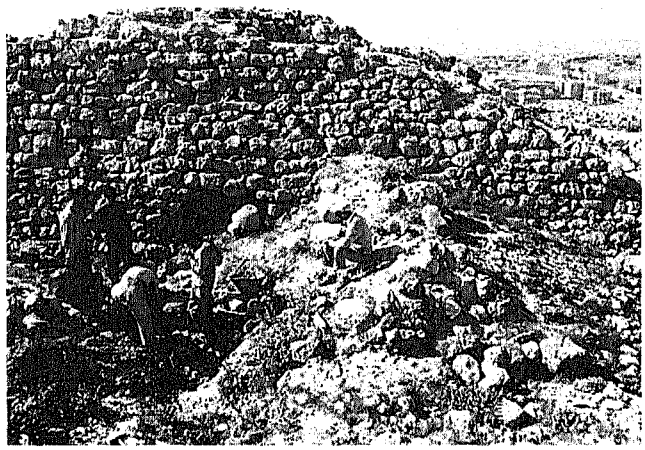
FRESCOES. *See* Wall Paintings.

FUL, TELL EL- (Ar., "mound of beans") site situated on the crest of the watershed about 5 km (3 mi.) north of the Old City of Jerusalem, rising 862 m above sea level (map reference 172 × 137). Tell el-Ful is not strictly a tell; it rises about 30 m above the surrounding plain with occupational debris usually less than 2 m deep in an area approximately 150 × 90 m, north–south and east-west, respectively.

Tell el-Ful's identification with Gibeah of Saul (*1 Sm.* 10:26, 14:2, 15:34) was confirmed by William Foxwell Albright's excavations for the American Schools of Oriental Research (ASOR) in 1922, after a lively debate of more than eighty years. Albright's identification was widely accepted until the 1960s when the debate resurfaced. Although Paul Lapp's excavations under the auspices of ASOR and the Pittsburgh Theological Seminary (1964) largely confirmed Albright's conclusions, the site's identification with Gibeah is still not accepted by all scholars. However, no other excavated site in the area indicates occupation in the periods necessary to correlate with the biblical traditions.

The American explorer Edward Robinson describes Tell el-Ful in his *Biblical Researches in Palestine* (vol. 1, 1874, p. 577), and Charles Warren carried out the first excavations there, of two weeks' duration, in 1868. Warren for the Palestine Excavation Fund published a brief description of his work (*PEF Quarterly*, 1869–1870, p. 66), and his plans were published by Claude R. Conder and H. H. Kitchener in 1883 (*The Survey of Western Palestine*, vol. 3). Albright (1924) excavated the site for seventeen months (1922–1923) and promptly published his results. He returned to the site for about a month in 1933 (Sinclair, 1960). The most recent excavations were Lapp's 1964 six-week salvage operation prior to modern building operations there. The expedition's final report (Lapp, 1981) reexamines the evidence from the earlier excavations and the new (1964) data, distinguishing five periods of occupation. The first, Iron IA (c. 1200–1150 BCE), is brief and without extensive finds. It is usually associated with the Benjaminites as recorded in *Judges* 19–20. The second period, Iron IC (c. 1025–950 BCE), is the period of Saul's fortress, which was the principle standing ruin at the site. It was largely excavated by Albright, but Lapp generally confirmed his conclusions in 1964 and refined his plans. It is the assignment of the date of construction of this fortress to the time of Saul that is the principle reason for Tell el-Ful's identification with Gibeah.

By the time of Lapp's excavations, pottery dating had been sufficiently refined to date period III to Late Iron II and the period of the Exile (c. 700–538 BCE). The fortress was probably rebuilt during Josiah's reign (640–609 BCE) with a casemate wall. That fortress was most likely destroyed in Nebuchadrezzar's campaign (588–587 BCE), but some occupation continued at the site until 538 BCE. During the pe-



FUL, TELL EL-. *Revetment against the southwest tower.* (Courtesy N. L. Lapp)

riod-IV Hellenistic occupation (175–63 BCE), which flourished toward the end of the second century BCE, the tower was rebuilt, elaborate bath installations were added, and the casemate rooms were reused. In addition to the pottery, coins, and stamped jar handles (*yršlm* and *yrd* + symbol), as well as an ostracon (Aramaic, c. 100 BCE), provide chronological pegs. Period V was a brief Roman occupation in about 70 CE.

[*See also the biographies of Albright, Conder, Kitchener, Lapp, Robinson, and Warren.*]

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NANCY L. LAPP

FUNERARY MONUMENTS.

[*To provide a morphology and typology of funerary monuments and a survey of their development, forms, and functions in the ancient Near East, this entry is chronologically divided into two articles:* Monuments of the Hellenistic and Roman Periods *and* Monuments of the Late Roman through Islamic Periods.]

Monuments of the Hellenistic and Roman Periods

The funerary architecture of the Near East is eclectic and resists easy categorization, having offered scope for the public display of status, wealth, and, to a much lesser extent, personal beliefs. In Anatolia, monumental funerary architecture is attested as early as the Archaic period, where the rich variety of tomb types is represented by such monuments as the prominent tumuli and rock-cut tombs of Phrygia in central Anatolia, tombs on podia with pyramidal roofs found in the western coastlands, and the elevated sarcophagi and pillar tombs of Lycia in southwest Asia Minor. By the fourth century BCE, a fusion of Greek religious architecture and indigenous, elevated tomb types had taken place, the first example of such a structure being the Nereid monument at Xanthos in Lycia. The construction of tombs that resembled religious monuments (with, for example, peripteral columns) was to have a profound impact on the development of funerary architecture in the Near East. An outstanding Anatolian tomb of the Hellenistic period is the Mausoleum at Halikarnassos, no longer extant but tentatively restored on the basis of ancient testimonia and surviving fragments. The Mausoleum, one of the Seven Wonders of the ancient world, was the tomb of Mausolos, a satrap of Caria, and was completed in about 350 BCE. The tomb was the location for lavish sculptural displays depicting mythological battles. Above a tall podium was a peripteral cella of Ionic columns, surmounted by a pyramidal roof; its form influenced tomb design not only in Anatolia, but throughout the eastern Mediterranean. At Belevi, near Ephesus, a tomb of uncertain patronage mimics the Mausoleum in form, with its tall lower story, central cella of freestanding columns, and probable pyramidal roof. [*See* Mausoleum.]

Throughout the Hellenistic period the notion of the hero cult played a role in the funerary architecture of Anatolia. Such burial locations, known as *heroa* (sg., *heroon*), are found at Termessos in Pisidia and Gölbaşi-Trysa in Lycia, both dating to the Early Hellenistic period. These *heroa* suggest the apotheosis or divinization of the deceased with some provision for ritual or cultic activity—for example, a tomb in the form of a temple or the presence of an altar or a sacred temenos enclosure in which the tomb structure itself is not necessarily the dominant feature. Farther east in Anatolia, the influence of Syrian (and North African) tombs becomes apparent in such monuments as the early first-century BCE tower tomb at Olba-Diocaesarea in Cilicia (see figure 1). In addition to these freestanding tombs, rock-cut facade tombs were common in mountainous regions in Anatolia, for example in Lycia and Caria in the southwest and in Phrygia.

The tomb monuments of Roman Anatolia continued the Hellenistic traditions of visibility in the landscape and reliance on cut-stone construction, combined with the new possibilities provided by the western Roman podium temple. Monumental temple tombs, often enclosed within a temenos and elevated on a tall podium approached by a frontal staircase, are preserved throughout Anatolia (e.g., at Pergamon, Iasos, and Side). Such tombs preserve the idea of the Hellenistic *heroon,* yet their ostentation and lavish use of marble reflect the new economic conditions of the Roman Empire.

As in Anatolia, in Syria-Palestine evidence for monumental tomb architecture predates the Hellenistic period; mausolea of considerable size, dating to the fifth century BCE, are also preserved in the Arabian Peninsula. It is to the Hellenistic period, however, that many outstanding tombs of Syria-Palestine belong. In the Kidron Valley north and east of Jerusalem, a number of monumental tomb complexes are extant, all unique in form but often combining familiar architectural elements; the so-called Tomb of Zachariah (late first century BCE; see figure 2), with its half-columns engaged to a cubic central story surmounted by a pyramidal roof, and the nearby Tomb of Absalom, another freestanding

FUNERARY MONUMENTS: Hellenistic and Roman Periods. Figure 1. *Temple-tombs.* Located near the ancient site of Olba-Diocaesarea, near the modern Turkish village of Demicirli, in southeastern Asia Minor. Second century CE. (Courtesy S. H. Cormack)

tomb with engaged Ionic columns, Doric entablature, and concave conical roof, exemplify the eclecticism and imposing scale of the Late Hellenistic Kidron Valley tombs. Other tombs near Jerusalem are rock-cut, with substantial exterior courtyards and Doric architectural facades screening an interior burial chamber(s) (e.g., the Cave of Umm el-Ammed, the Deir ed-Derb tomb, and the Sanhedrin tombs north of Jerusalem). Outside Jerusalem there is little evidence for monumental tomb architecture, although ancient authors such as Josephus do refer to the existence of such monuments (*Antiquities* 13.211–213, 20.95).

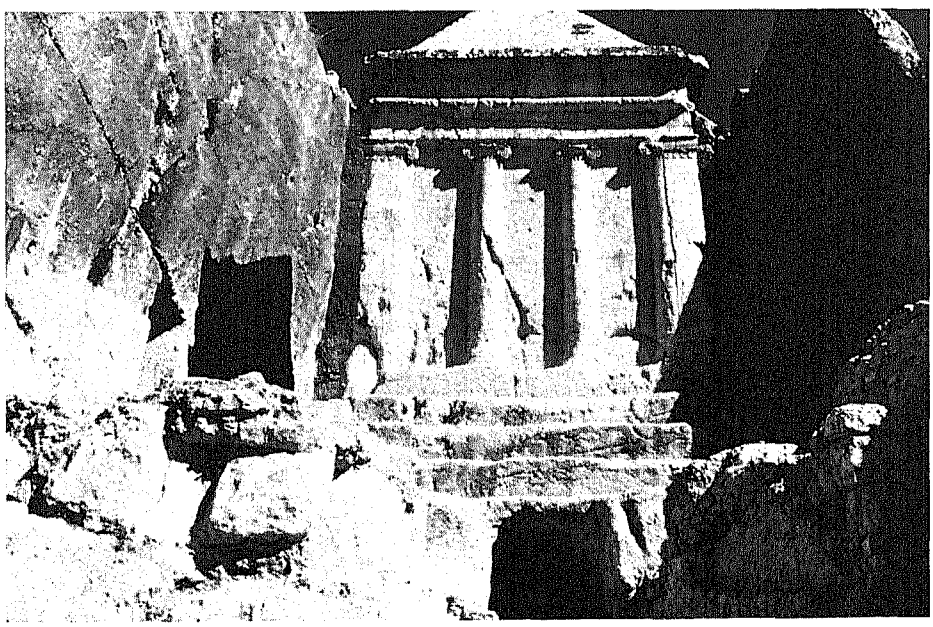
In Syria and Lebanon, freestanding monuments such as the Tomb of Hamrath at Suweida and the tomb at Hermel are further representatives of the Hellenistic monumental stone tomb with one or more cubic stories, engaged columns, and an imposing pyramidal roof. In the former tomb the burial took place below ground level, with the architectural superstructure serving as a symbolic marker. The imposing tomb at Kalat Fakra (central Lebanon), more than 37 m in height, with a staircase, central cubic element, and pyramidal roof, dates to the Claudian period (41–54 CE) and reveals the lingering influence of monumental Hellenistic tombs into the Roman period.

The rock-cut temple tomb tradition is well represented at Petra (Jordan), where more than five hundred tombs are preserved. Although the most common tomb type at Petra is the pylon tomb, a simple rock-cut facade tomb with a central doorway and, in the attic zone, crenellated relief carving of non-Greek inspiration, there are a number of ostentatious, two-storied rock-cut tombs, among them the el-Khazneh ("treasury"), the Deir ("convent"), and the Palace Tombs. In the first two, a central doorway in the lower story is flanked by engaged columns and recessed niches; the central feature of the upper story is a partially freestanding tholos, or circular structure, flanked by broken pediments. These tombs are without local precedent in Nabatean architecture, and the intrusion of the Hellenistic Greek architectural vocabulary, perhaps via Alexandria, is clear. The elaborate Petra tombs are controversial in date and patronage, with suggested dates ranging from the early first century BCE to the second century CE; it is likely that they were commissioned by local rulers. [*See* Petra.]

The city of Palmyra (Syria) preserves a vast necropolis with more than 150 tombs of the Hellenistic and Roman periods. The tombs belong to three basic types: hypogea (underground tombs with loculi for cremation burials), funerary towers of up to five stories, and funerary temples. The hypogea are the earliest burials at Palmyra and continue a tradition of Syrian hypogeum burials; they are categorized typologically according to the interior layout of their rooms. Funerary towers, the latest example of which dates to 128 CE, were originally provided with loculi at their lowest level; gradually, the entire interior of the tower was exploited and was often lavishly decorated with busts of the deceased. Funerary temples first appear at Palmyra in the second century CE; their interior arrangement allowed for either cremation burial in loculi or inhumation burial in sarcophagi. [*See* Palmyra; Sarcophagus.]

In North Africa, there are well-preserved tombs of the Hellenistic period at Cyrene and Alexandria in the east, and tower tombs of the Greco-Punic type farther west, at Sabratha (Libya), Dougga (Tunisia), and El-Khroub (Algeria). At Cyrene, elevated sarcophagi, mausolea, stone-revetted tumuli, and courtyard tombs are found. At the many necropoli in Alexandria, the courtyard tomb, with sunken peristyle, vestibule, and burial chamber(s), predominates. In many of the Alexandrian tombs (e.g., the Mustafa Pasha cemetery), the decorative details (painted scenes of garlands, horsemen, and the like) betray a Macedonian influence. In Libya, Tunisia, Algeria, and Morocco, the Hellenistic tower tombs combine elements of the multistoried tombs of Anatolia, with indigenous Punic features such as relief sculpture in native designs, Phoenicio-Cypriot capitals, and concave-sided pyramids as crowning elements. Mausoleum B at Sabratha (also known as the tomb of Bes, or Bisu) is a unique creation in the realm of funerary architecture, having a triangular base with concave sides, a middle story with a false door of Egyptian design, an upper story decorated with colossal statues above seated lions, and a crowning pyramid. The monument, which attained a total height of about 24 m, dates to the early third century BCE. Similar monuments with varying degrees of architectural elaboration were constructed at Dougga, El-Khroub, and Siga (Algeria). The North African tower tomb with a pyramidal or an obelisk-shaped roof had a long history, as a number of tombs in Algeria dating to the first–third centuries CE indicate.

In addition to these North African tower tombs, there are circular North African tombs with applied architectural elements; these represent the transformation of an earlier, indigenous circular tomb type with rings of stones (known as a *bazina*) into an architecturally developed monument. The Medracen and the tomb at Kbour er-Roumia (also known as the Tomb of the Christian Woman), both in Algeria, are two examples of monumental tumulus burials, with a cylinder of engaged columns surmounted by a conical stepped pyramid. The Medracen is an early example of Numidian tumulus architecture, perhaps dating to the early third century BCE (although a second century BCE date has also been proposed), whereas the Kbour er-Roumia tomb is later, perhaps suggesting links with tumulus burials from Republican Italy in the first century BCE. That the cylindrical type sur-



FUNERARY MONUMENTS: Hellenistic and Roman Periods. Figure 2. *Tomb of Zechariah near Jerusalem.* (Courtesy Pictorial Archive)

vived well into the Roman period is attested by the tomb of Q. Lollius Urbicus, prefect of the City of Rome, built in the second century CE in Algeria.

[*See also* Burial Sites. *In addition, many of the sites mentioned are the subject of independent entries.*]

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SARAH H. CORMACK

Monuments of the Late Roman through Islamic Periods

Funerary monuments of the Near East in late antiquity varied in their morphology, based upon local environmental situations, the economic or social status of the deceased, and religious convictions. As a result, no unilinear typological evolution encompasses the variety of monuments in the Near East from the fourth through the eleventh centuries CE. The morphology of funerary monuments from late antiquity, when separated from associated epigraphic and material evidence, can thus provide only a meager indication of a burial's chronological and socioreligious context. Funerary monument and sepulchral typology falters because of the continuous and contemporaneous use of types by divergent religious groups.

Pagan Funerary Monuments. From the Late Roman period onward, pagan funerary monuments preserved the variety of forms, such as inscribed stelae and supraterranean structures, of the Greco-Roman period because pagans were generally free from religious restrictions. These monuments are identified by inscriptions indicating devotion to the gods of the pagan pantheon, the presence of pagan grave goods, and the absence of formulaic expressions and symbols of monotheistic piety. In pagan monuments, inscriptions typically identify the owner of a tomb and the owner's greatest accomplishments, such as service in the imperial armies. These monuments attempted to preserve an eternal memory among the living. The ostentatious style of the pagan funerary monuments of the Greco-Roman periods, such as the mausoleum at Quweismeh in Jordan, continued to be followed, but new constructions declined in the fourth century and disappeared in the fifth, as a result of economic constraints, philosophical changes, and eventually the pressure of the antipagan legislation of the Christian emperors.

Jewish Funerary Monuments. In late antiquity the Jewish community of the Near East built upon ancient Hebrew traditions in erecting funerary monuments and grave markers. Hebrew traditions and teachers such as Rabban Simeon ben Gamaliel minimized the utilization of portraiture and the construction of ostentatious monuments. The most common Jewish funerary monument was a simple, uninscribed, annually whitewashed stela that served to protect passersby from ritual defilement or to warn against the pur-

suit of activities prohibited in cemeteries, such as grazing animals. Because these grave markers were of ritual significance, they were highly regarded and were maintained by family members. The practice of adorning funerary monuments with Jewish religious symbols such as the shofar and *mĕnôrôt* ("lamps") increased over time; they often adorned the lintel of the entrance to polyandria or multiperson burial grounds, as well as the interior walls of hypogea, or catacombs.

Jewish religious convictions regarding ritual defilement through contact with the dead made funerary monuments necessary; at the same time, such monuments were not ostentatious because there was no belief that spiritual benefits might be obtained or that one's afterlife depended on the retention of one's memory. Thus, while Talmudic literature mentions the use of graves, family sepulchers, and mausolea, they were not places of worship, and graves were not located in synagogues.

Christian Funerary Monuments. The Byzantines utilized a variety of funerary monuments because Christian scriptures have no specific restrictions about them. Christian attitudes toward worldliness did provide some restraint, but some tombs, such as those at el-Kahf, near Amman, Jordan, were quite elaborate. Most Christians were buried in cemeteries in single graves or in hypogea, where the bedrock permitted the excavation of polyandria. These polyandria served as family tombs that were enlarged at times, over generations, and could also be developed into catacombs, which, used as communal burial places, were of more extended public usage. Beyond these subterranean burial places, for which there was access, supraterranean sepulchral monuments included mausolea, ciboria, and martyria.

Headstones stood over Byzantine graves, displaying the name of the deceased and religious symbols, such as the cross. The decoration and quality of these monuments varied with the deceased's status. Examples of such gravestones can be seen at the village of Nebo in Jordan. Christians who retained Jewish traditions combined crosses and Jewish symbols. Undergound, the walls of hypogea provided space for funerary monuments. Arcosolia provided a tympanum, or recessed space, beneath the arch for paintings incorporating Christian symbolism. Christians buried in loculi within polyandria also had their tombs decorated with painted plaster. Epitaphs in these areas were typically brief, with the name of the deceased, such expressions of piety as crosses or doctrinal statements, and the date of death. Many Byzantine burials utilized polyandria from earlier periods and even closed shaft graves with *pellaicon* (especially shaped stones with notches on the sides or holes in them that allowed a tool to be inserted or provided a handhold), which facilitated the removal of sealing stones and the grave's reuse. The Christians who reused graves generally left no independent funerary monument.

Funerary monuments intended for public display in churches and martyria were typically those of wealthy patrons of the church or of pious persons the community venerated. Such sepulchral monuments proliferated with the evolution of the belief that spiritual benefits could be acquired through venerated Christians.

Islamic Funerary Monuments. Religious restrictions played a key role in the minimization of Islamic funerary monuments among the faithful in the early centuries. Muhammad considered elaborate funerals and monuments to be a retention of paganism and subsequently prohibited the plastering of the surface above graves and the construction of memorial structures on graves. Islamic burials of the faithful thus were typically very simple shaft graves surmounted by a vertical stela at the head and foot. These gravestones were occasionally inscribed with an epitaph, but iconography was not utilized. Less rigorous and proud individuals, such as the ʿAbbasid caliph Harun al-Rashid, ordered mausolea to be built for themselves, however.

In spite of Muhammad's proscriptions against funerary monuments and his condemnation of those who made graves of prophets and venerated places of worship and prayer, mosques and canopy tombs appeared over burials in the Umayyad and ʿAbbasid periods, such as at the Cave of the Seven Sleepers near Amman. The proliferation of complex funerary monuments greatly increased after the eleventh century, with the belief that benefit might be gained from prayers in such places.

[*See also* Burial Sites; Burial Techniques; Catacombs; Cave Tombs; Martyrion; *and* Mausoleum.]

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ROBERT WAYNE SMITH

FURNITURE AND FURNISHINGS.

[*This entry surveys the history of domestic furniture and furnishings as preserved in the archaeological record. It comprises five articles:*

An Overview

Furnishings of the Bronze and Iron Ages

Furnishings of the Persian Period

Furnishings of the Hellenistic, Roman, and Byzantine Periods

Furnishings of the Islamic Period

Following the overview, which provides a general introduction to the subject, the remaining articles treat the artifacts of specific periods and regions.]

An Overview

Permanent settlement was a precondition for the emergence of furniture: nomads would have had little use for it. This discussion of furniture consists of primarily utilitarian, movable household pieces such as low- and high-back chairs, stools, tables, stands, beds, and couches. Ancillary furnishings consist of secondary movable pieces such as boxes and chests, pottery and metal vessels, gameboards, rush mats, and built-in items such as shelves and benches. The existing data suggest that several millennia passed between permanent settlement and the introduction of furniture. There is no evidence for the existence of furniture in Egypt or Mesopotamia before the beginning of the third millennium. Nevertheless, since the earliest Egyptian furniture already displays a remarkable virtuosity there was, in all likelihood, a period of gestation of unknown duration.

The introduction of furniture for general use represented a significant degree of sophistication and refinement originally reserved for royalty and those in the highest ranks of society. No longer content with sleeping on reed mats, or sitting on the floor to eat food spread on platters on the ground, or leaving clothing in a bundle up against a wall, ordinary people of Egypt and elsewhere in the Near East began to fashion beds, chairs, stools, tables both for eating and to support gaming boards, chests, and boxes to contain jewelry, cosmetics, and other sundries. Nevertheless, as can readily be observed in scanning the evidence from Egypt, the furniture recovered from the royal tombs is far more elegant and sophisticated than the furniture found even in the tombs of the nobles. Yet, ancient dwellings were sparsely furnished. The Shunemite couple's construction of bed, table, chair, and lampstand for the prophet Elisha (*2 Kgs.* 4:10) would have represented a fully furnished room and a considerable investment. However, in addition to the utilitarian function of furniture, such archaeological and pictorial evidence as exists suggests designs intended to create not only functional, but also beautiful objects to decorate the home.

Sources. Because almost all ancient furniture was made from wood, which for the most part deteriorated in the wet climate zones, any reconstruction of furniture in the ancient Near East remains incomplete. The examples of ancient furniture preserved in the dry climate of Egypt and the desert of western Palestine, as well as artistic representations and models of furniture, do provide invaluable information. The Egyptian repertoire is based on furniture from Egyptian Old Kingdom to Late Period tombs (Queen Hetepheres at Giza, Yuya and Thuya and Tutankhamun at the Valley of the Kings) wall paintings and reliefs, statuary, and models of furniture. The picture of Mesopotamian furniture is more difficult to reconstruct because in contrast with Egypt, few furniture remains are preserved as a result of that area's heavy annual rains. With exception of the Mari palace, which yielded schematized pictures of stools, no significant wall decorations depicting furniture are known until the Neo-Assyrian period. Nevertheless, a general picture of Mesopotamian furniture is reconstructed on the basis of such Early Dynastic finds as the furniture depicted on the Royal Standard at Ur (Strommenger and Hirmer, 1964, fig. 72), cylinder seals and stone sculpture, and seals and sculpture of the Akkadian to Kassite periods where both stools and high backed chairs are in evidence (Frankfort, 1963, pls. 54A, 57; Strommenger and Hirmer, 1964, figs. 73, 128 above, 129 right, 157, 159). Though a harpist on a terracotta relief sits on a folding stool, folding stools are rare in Mesopotamian art (Frankfort, 1963, pl. 59B). Likewise, the enthroned god depicted on the top of the stele of the Code of Hammurabi rests his feet on a footstool (Strommenger and Hirmer, 1964, fig. 159), footstools are relatively rare in Mesopotamian art. The most detailed views of Mesopotamian furniture are preserved in Neo-Assyrian wall reliefs that depict palace furniture (Strommenger and Hirmer, 1964, figs. 195, 241 below, and 260 below). Archaeological remains of ivory plaques (the largest assemblage coming from Nimrud [Mallowan, 1966, figs. 381–583]) and bronze furniture parts help to complete the picture. [*See* Mari; Ur; Nimrud.]

The Palestinian repertoire is based on the generally warped, fragmentary, yet informative furniture remains

from Middle Bronze Age tombs at Jericho, sculpture from Late Bronze Age Hazor and Tel Sippor in the Philistine plain; LB ivories from Megiddo and Tell el-Farʿah (South) and Iron Age ivories from Samaria, terra-cotta models and wall reliefs from Sennacherib's throne room that depict Assyrians carrying off furniture from Lachish. Though Ugarit has provided an important assemblage of LB ivories that originally come from wood furniture, the furniture has deteriorated. The ivories thus provide little information about the furniture they decorated. However, the Iron Age ivories from Nimrud, Arslan Tash, and Samaria enable the reconstruction of a more vivid picture of Syrian style furniture in the Iron Age. [*See* Hazor; Megiddo; Farʿah, Tell el- (South); Samaria; Lachish.]

Style and Repertoire. Furniture from Egypt and the Near East shared a repertoire, materials, and technology. It also shared in the conceptual transference of the idea of four-legged animals as the model for four-legged furniture. Nevertheless, in furniture as in art chronological and regional differences exist. For example, while bovine legs characterized Egyptian Archaic period furniture, Old Kingdom furniture is characterized by lions' legs. Furniture proceeds generally from simple forms and unostentatious decoration as in the furniture from the fourth-dynasty tomb of Queen Hetepheres, to more complex and ornate forms seen particularly in the New Kingdom examples from the tomb of Pharaoh Tutankhamun and in wall paintings and reliefs. Furniture represented in Mesopotamian third millennium statuary and cylinder seals is simpler and less ornate, and has softer, rounder forms that accord with Mesopotamian art in general. Thus, extrapolation can only be taken so far for example, to Early Bronze Age Palestinian and Syrian furniture (for which there are no data) from Egyptian Old Kingdom furniture, where third-millennium furniture is best represented. Indeed, comparing Egyptian Middle Kingdom furniture with the known examples of MB furniture from Jericho illustrates the problem. While the furniture from both regions generally shares techniques, the remarkable similarity among the Jericho examples demonstrates that this assemblage, which differs from the characteristic Egyptian furniture, was made at a location other than Egypt. Indeed, it may have been made locally or at least at some location in Syria-Palestine.

Some of the earliest-known furniture, consisting of the ivory bovine legs of couches and gameboards, comes from a first-dynasty cenotaph at Abydos, Egypt. [*See* Abydos.] Furniture items, consisting of two low-backed chairs with side rails, a curtain box, a bed and neck rest, and a litter entirely covered with gold foil, are among the reburied finds belonging to Queen Hetepheres (fourth dynasty) and are restored masterpieces of Egyptian furniture. By the Old Kingdom period, all the furniture types that characterize the furniture of the ancient world, and for that matter modern furniture, and all of the basic Egyptian woodworking techniques were already known. Like Egyptian art in general, Egyptian furniture is shaped at right angles and consummately crafted.

Evidence of high-backed chairs, a major contribution by Egypt to the evolution of furniture design, comes from Egyptian furniture (Manuelian, 1982, figs. 37, 38), from LB stone sculpture from Hazor (Yadin, 1960, pl. 197; 1961, pls. 326–330) and Tel Sippor in the Philistine Plain (Biran and Negbi, 1966, pl. 23), from ivory carving in the round from Megiddo (Loud, 1939, pl. 4:3), from an incised ivory plaque from Megiddo (Loud, 1939, pl. 4:2), from a wall painting from Kuntillet ʿAjrud, and from a painted sherd found at Samaria. [*See* Kuntillet ʿAjrud.] A variety of stool types are well-known from Egypt, where the folding stools frequently ended in ducks' feet. Remains of stools have been found at MB tombs at Jericho; stools are also depicted on LB ivories from Megiddo (Loud, 1939, pl. 32) and Tell el-Farʿah (South). Both Egyptian statuary and reliefs and Palestinian ivories (Loud, 1939, pls. 4, 32) provide evidence of footstools. Beds are best represented in Egypt, where they are known from Old Kingdom times onward. Though beds are known from biblical literature, terra-cotta models found at several Palestinian Iron Age sites are the only evidence. A variety of chests to hold clothing and boxes for wigs and cosmetics are well known in Egypt, but are not represented in Syria and Palestine. However, cosmetic or jewelry boxes inlaid with bone strips and silhouettes are well known from Palestine in the MB (and continue into the very beginning of the LB). The existence of plaited straw mats has been demonstrated by impressions on the bases of EB ceramic vessels.

Materials, Tools, and Techniques. Wood was the primary material used to produce furniture. Local woods used in Egypt include acacia, almond, fig, date palm, dom-palm, persea, sidder, sycamore, tamarisk, and poplar. Imported woods included ash, beech, box, carob, cedar, cypress, ebony, elm, fir, and juniper. Sycamore, pine, and oak, in addition to well-known fruit trees, were available locally in Palestine. More expensive furniture was made from a combination of wood and ivory, or overlaid with gold foil. In Egypt copper was sometimes used to raise the carved animal legs off the ground. Stools were frequently plaited with rushes; however, in Egypt there is also evidence for the use of leopard skin. This must have been viewed as a major luxury item because in some instances leopard skin is imitated in painted wood. [*See* Wood.]

The repertoire of carpenter's tools, reconstructed on the basis of recovered Egyptian tools (fine examples of which were found in a foundation deposit in the tomb of Hatshepsut at Deir el-Baḥari), model tools and wall paintings and reliefs, included ripping saws, bow drills, axes, adzes, mallets, mortising chisels, squares, and awls (Hayes, 1953, figs.

189, 190; 1959, fig. 47). Excavations in Palestine yielded saws, adzes, chisels, and awls. Methods of joinery were sophisticated; Jericho provides several examples, including evidence of the mitred bridle joint and tongues (mortising). Ancient carpenters bored holes through the frames of stools with bow drills in order to plait rushes. However, although veneering was common in Egypt, no evidence exists for its use in Syria and Palestine. Several Egyptian wall paintings and reliefs depict carpenter shops, tools, and carpenters at work.

Furnishings. Like furniture, furnishing varied both diachronically and synchronically. Moreover, it is difficult to determine the nature of Syro-Palestinian objects in their role of furnishings in particular since excavation reports rarely describe finds in the context of the rooms in which they were found, and there are no supporting artistic renditions of interiors. Yet, general observations can provide initial approaches to the topic: in palaces and in the homes of the wealthy, sitting or reception rooms would have been furnished with stools and high-back chairs, tables and stands, mixing bowls (kraters) and drinking cups, lamps, gameboards, and possibly musical instruments. Areas serving as offices in all likelihood contained shelves for papyrus and parchment scrolls. Fixed stone benches along walls, upper and lower millstones, grinding stones, ovens, cooking pots, and baking trays would have furnished courtyards, and were in most cases placed against or near the benches. In exceptional cases where bedrooms existed, they would have been furnished with beds, small tables, chests, lamps, and boxes containing toilet items. Sleeping areas for children most likely contained mats, toys, and chests. Humbler homes would have been more sparsely furnished with perhaps a few stools, mats, small tables, ceramic vessels, and millstones. Though no archaeological evidence for rugs exists, geometric patterns on Egyptian wall paintings suggest representations of rugs, which would corroborate biblical references to rugs. Shields and quivers may have adorned the walls of homes of fighting men, as finer pottery set out on shelves may have adorned the walls of the more peaceful.

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HAROLD A. LIEBOWITZ

Furnishings of the Bronze and Iron Ages

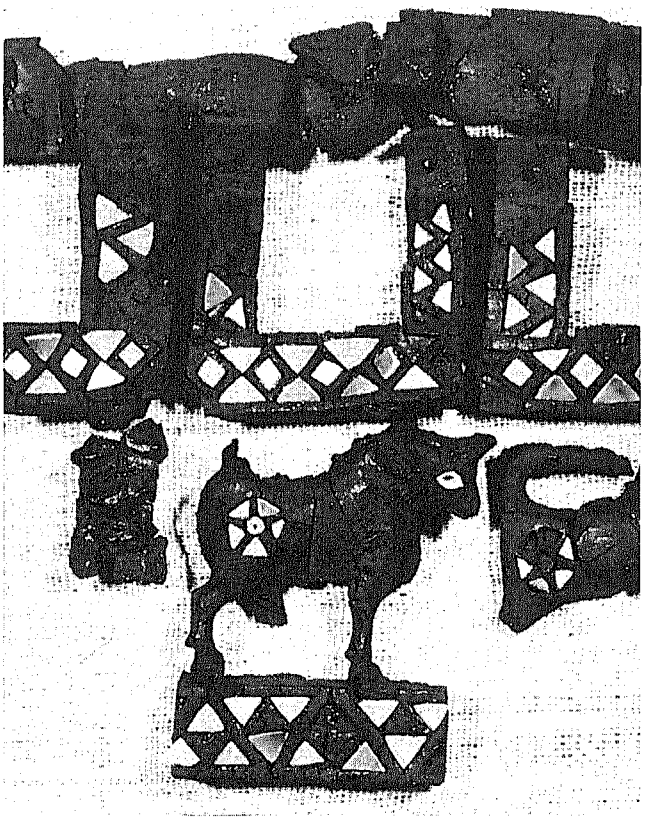
A discussion of the furniture and furnishings of Bronze Age Canaan and Iron Age Israel requires familiarity not only with the artifacts themselves, but also with the types of activities that took place in the Canaanite and Israelite home. The primary purpose of housing was to supply a safe venue for sleeping and eating, but houses in antiquity were also the locus of other important activities that varied according to geographic and social setting. Rural and urban dwellers, pastoralists, farmers, and merchants, nuclear and extended families all required different configurations of domestic quarters and different furniture and furnishings to support their requisite specialized activities. Financial well-being and social class also affected the ability of Canaanites and Israelites to furnish their houses with both utilitarian objects and objects of beauty.

Canaanite and Israelite houses incorporated many standard features. They were typically one or two stories high, with access to the second story provided by stairs or a ladder. The roof, reached by a ladder, often functioned as a terrace. A large central space in which multiple activities took place was common in Bronze and Iron Age housing. It is often difficult, however, to determine whether this space was roofed (living room) or unroofed (courtyard).

Even small, one-storied houses provided multiple locations for various domestic activities. A room used for food-related chores and other tasks during the day often served as a sleeping area at night. Domestic activities also took place in the courtyard and other outdoor areas. In many houses, the roof provided an additional venue for daytime chores, socializing, and sleeping.

Because garment production was often a domestic activity, a number of specialized tasks, including carding, spinning, weaving, and sewing, took place in Canaanite and Israelite homes. There is little evidence for where in a home a loom would have been located, but other tools for textile production—ceramic spinning bowls, whorls and loom weights; bone picks/shuttles, needles, spindles, and awls—are commonly found.

Roof maintenance required roof rollers: large cylindrical stones used to flatten rooftops and make roofing materials compact. Rollers were left on the rooftops, along with tools for other rooftop projects. Additional tools for housecleaning and maintenance, as well as for agricultural and livestock-related activities, were sometimes stored in small first-



FURNITURE AND FURNISHINGS: Bronze and Iron Ages. *Carbonized wood armrest of an Assyrian chair from Ebla, with shell decoration.* Dated from 2400 to 2250 BCE. National Museum, Aleppo, Syria. (Erich Lessing/Art Resource, NY)

floor "closets" that opened into the central living space or the courtyard.

Certain of the furnishings of Bronze and Iron Age houses were constructed as part of the houses themselves. Such furnishings were permanent fixtures, reused over decades and longer. They include benches and shelves raised above floors, niches cut into walls, depressions or rings of stones set into floors to support storage jars, and cooking pots and storejars partially sunk into floors.

Furniture. In antiquity, furniture was not considered indispensable to domestic comfort. What furniture there was was most often constructed of a combination of organic materials such as wood, rush, ivory, and leather. In consequence, few examples of domestic furniture are available for study; those that are preserved come primarily from tombs.

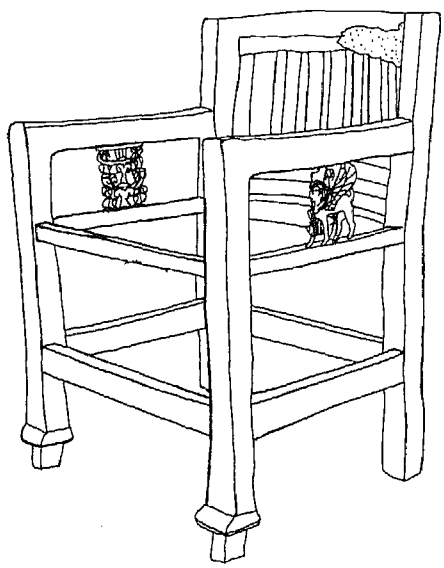
Many well-preserved pieces of furniture were found in the late MB tombs at Jericho. Economic status determined tomb contents, but most contained a limited assortment of furnishings. Included were low rectangular tables with three legs, beds, stools, and small tables. The legs varied in form from simple to decorated; most were geometrical in shape. Wooden tables were the most typical furniture in the Jericho tombs. A wooden bed was found in one Jericho tomb, but in homes rush mats more commonly provided the sleeping surface. Stools have also been found, but only rarely. Tabletops were made of wood; the seats of stools and the large horizontal surfaces of beds were of woven materials.

Stone and metal sculpture, remnants of furniture, and pieces of ivory inlay were found at LB Megiddo, Tell el-Farʿah (South), and Hazor and at Iron Age Samaria. Sennacherib's reliefs of the plunder of Lachish include depictions of furniture. Because the context of most of these pieces is either sacred or royal, and most of the representations are of thrones, this furniture cannot be considered typical for the average Canaanite or Israelite house.

Additional evidence for furniture has been excavated in Iron Age tombs at Beth-Shemesh, Lachish, and Tekoa, as well as at Samaria trench E207 and in Jerusalem Cave 1 (Holland, 1977; Tufnell, 1953). At these sites, Iron Age clay models of furniture (chairs, beds, and couches) imitate the simple forms of the full-sized originals.

Kitchen Furnishings. Other than sleeping, the most basic activities that took place in the Canaanite and Israelite house were food storage, preparation, and consumption. Archaeological remains of indoor food-centered activities from the Middle and Late Bronze Ages account for more than 90 percent of the artifacts excavated for those periods. There is no evidence to suggest that this is significantly different for the Iron Age.

Installations associated with food preparation, consumption, and storage included ovens and/or hearths, benches and/or shelves and bins, storage jars fixed in place, silos,



FURNITURE AND FURNISHINGS: Bronze and Iron Ages. *Drawing of a Phoenician ivory throne from tomb 79 in Salamis, Cyprus.* The ivory was set directly onto a wooden frame. Dated to the late eighth century BCE. (After Karageorghis, 1969: plate 6)

cisterns, and/or pits. Because most of these installations had multiple functions, the best identifier for the location of food-related activities is the oven. In the Middle Bronze Age, less than 5 percent of courtyards contained ovens, indicating that most cooking took place indoors. At the same time, seasonal considerations undoubtedly influenced the locus of food-related activities.

Tools for processing foodstuffs were permanent domestic features and include querns and grinding stones, mortar and pestles, pounders, and blades. The ceramic assemblage included cookware such as baking trays, mixing bowls, and cooking pots; serving vessels such as kraters, jugs, and juglets; and shallow bowls from which food was eaten.

Food products, including grains, were commonly stored indoors in covered or lidless storage jars placed in stands on the floor or set into depressions in it. Bins were built above ground, in corners of rooms, or against walls. Silos, cylindrical or bell-shaped, lined with plaster-coated stone or brick, were also used to store food products. Crudely excavated pits were occasionally used for storage and for refuse. The ceramic assemblage associated with food and water storage (in in-house cisterns) included small jars and juglets for dipping, scoops and small bowls for scooping, and funnels and strainers.

Various aspects of wine making and milk processing took place in houses or in courtyard areas. Other food preparation, including the slaughtering of animals and the initial processing of grains, took place outdoors, often in venues other than the family courtyard.

It is often assumed that animals were kept in or around houses, although little evidence from the Middle and Late Bronze Ages supports this idea. Animal care required storage bins for feed and troughs and mangers in which to place water and food.

Containers. Containers of various sorts were commonly found in Bronze and Iron Age houses. They were used to hold cosmetics, jewelry, combs, mirrors, and other personal items, as well as hand tools and other small items. Baskets and decorative pottery and wood, ivory, and leather containers have all been found in domestic settings.

Lamps and Hearths. In Bronze and Iron Age houses hearths were used for indoor heating. In the Iron Age, the houses of the wealthy often contained braziers (firepans of metal or clay). In both periods artificial lighting was obtained from ceramic lamps. Sometimes lamps were placed in niches built into the walls; alternatively, they stood on shelves, benches, tables and stools, or on the floor. [*See* Lamps.]

Business transactions often took place in Canaanite and Israelite houses. Furniture used for these transactions included tables, stools and benches used for seating and writing, and shelves and special containers for storing documents and materials. Artifactual evidence of business dealings includes weights, cylinder seals, and scarabs.

The primary biblical source for the discussion of furniture from ancient Israel is *2 Kings* 4:10. In this passage, an unnamed Shunammite woman fitted out an upper-story chamber for the prophet Elisha. In it she placed a bed (*miṭṭâ*), a table (*šulḥān*), a seat *(kisē)*, and a lamp *(mĕnôrâ)*. The Bible also documents Hebrew terminology for several additional parts of houses and items of furniture.

[*Most of the individual sites mentioned are the subject of independent entries.*]

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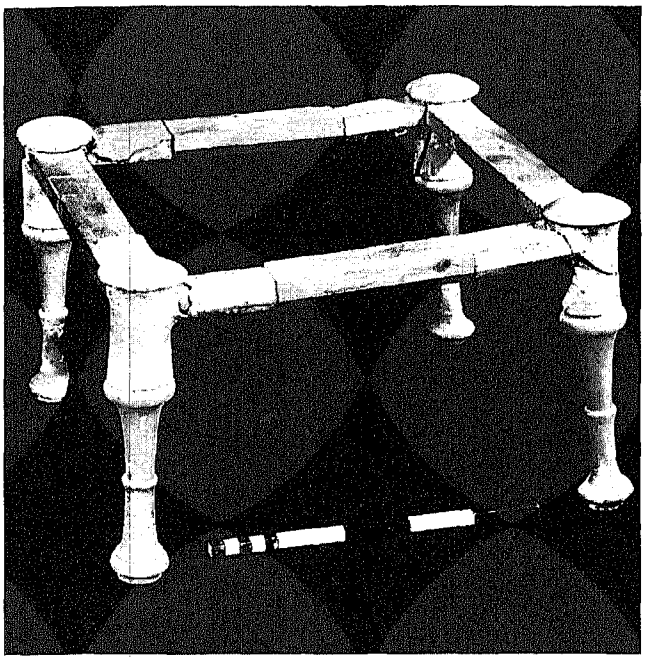
BETH ALPERT NAKHAI

Furnishings of the Persian Period

Some remains of furniture and large assemblages of metalware, alabaster, faience, and glass have been found in occupational strata and in tombs of the Persian period in Palestine (sixth–fourth century BCE). Favorable trade conditions seem to have been the stimulus for the sudden increase in luxury articles during that period. The objects reflect the society's standard of living, technical capability, and artistic level, as well as the foreign influences current in Palestine.

Of these objects, most were imported—from Persia, Phoenicia, Egypt, and Greece—and are examples of the crafts in which a high level of skill and production had been achieved in their country of origin: alabaster, faience, mirrors, and cosmetic utensils from Egypt; weapons and gold jewelry from Cyprus; weapons and cosmetic articles from Greece; and furniture, decorated metal bowls, and jewelry from Phoenicia. The importation of luxury items seems to have inhibited local production and stifled its growth. The small number of objects that can be attributed to a Palestinian source are generally inferior in quality and workmanship and are imitations of foreign (Persian or Greek) models.

In a tomb (no. 650) at Tell el-Farʿah (South), a great deal of metalware was discovered, including the bronze joints of



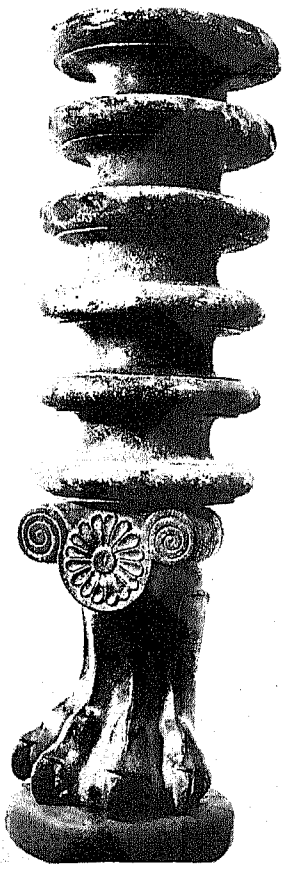
FURNITURE AND FURNISHINGS: Persian Period. Figure 1. *Stool, reconstructed after its bronze joints.* From a Persian-period tomb (no. 650) at Tell el-Far'ah (South). (Courtesy Israel Museum; provided by E. Stern)

a couch and stool (see figure 1); the furniture's wooden parts were not preserved. Following cleaning and restoration, the bronze was studied by J. H. Iliffe, who recognized the style of the furniture—and in particular the pairing of a stool and couch—from its frequent depiction on Greek pottery, suggesting a Greek origin. Cleaning revealed several Phoenician letters incised on some of the joints, one letter in each corner. The marks were apparently intended to implement the assembly of the parts (like the use made of masons' marks). The Phoenician letters in turn suggest that the furniture was produced in a Phoenician workshop that may have specialized in imitations of luxury imports.

Fragments of an Achaemenid throne from Samaria were studied by Tadmor (1974), who concluded that, despite its Achaemenid style, it had been produced in Samaria. Three of its components—two bronze lion's paws 13.7 cm high (see figure 2) and a bronze cylinder 22 cm high—are now in the Israel Museum in Jerusalem. They were acquired in Samaria, where they allegedly had been found. These bronzes were probably also manufactured in Samaria, a Persian province and the seat of its governors and therefore a likely location for objects that reflect Persian imperial art. A throne so similar to that used by the Achaemenid kings might have belonged to their representative, the governor of Samaria, with close connections to the Persian court. Similar bronze paws found in other parts of the Persian Empire such as Egypt and southern Russia strengthen this assumption. A clay mold discovered by the Harvard expeditions to Samaria may be further proof that this material originated in Samaria. The mold, in two parts, is strikingly similar to the bronze cylinder mentioned above. It might also have been used to cast the cylindrical sections of a throne's legs.

A pair of bronze candelabra were found on the floor of the tomb of the Sidonian king Tabnit, from the beginning of the Persian period. The candelabra are some 1.5 m high and are entirely Phoenician in style since their design and technique continue the type, in bronze and ivory, found in late Iron Age graves in the Phoenician cemetery at Salamis on Cyprus. Two other large bronze candelabra, one of distinctly Phoenician manufacture and the other of Persian origin, were found side by side in a fifth-century BCE tomb at Shechem.

Many household utensils from the Persian period made of metal, alabaster, and faience have been uncovered. They mainly include bronze and silver bowls, but a small, three-legged bronze pot (about 15 cm high) was found in a tomb in Gaza that resembles larger examples of much finer workmanship also known from Iron Age Phoenician graves at



FURNITURE AND FURNISHINGS: Persian Period. Figure 2. *Bronze leg of a governor's throne.* From Samaria. Note the end in the shape of a lion's paw. (Courtesy Israel Antiquities Authority)

Salamis. The vessels discovered in Palestine date mainly to the first part of the Persian period (end of the sixth and the fifth centuries BCE) and bear a strong resemblance to contemporary bowls found in Persia proper—at Persepolis, Susa, and Ecbatana. Some of these bowls may have been imported from manufacturing centers in Persia (which excelled in the production of metalware), but there is no doubt that the majority came from Phoenician centers of production on the Syrian coast. It appears that in the Persian period the Phoenicians primarily copied Achaemenid designs, rather than the Assyrian or Egyptian motifs that had served them as prototypes in earlier periods. Phoenicia was also the source of other metal vessels in Palestine, such as jugs, chalices, ladles, and strainers, which were rendered in a similar Achaemenid style.

The most common cosmetic article found was the mirror, of which two types have been distinguished: one of Egyptian origin and the other Cypriot. Kohl utensils, imported from Egypt, are frequently found in women's graves. The mirrors are of bronze, bone, wood, or paste. Only kohl sticks have been preserved, for the most part; kohl tubes are rarely found. Persian period tombs also contained many scores of alabaster vessels of two types: alabastra, or bottles, and flat-based, small bowls. The alabastra vary in shape from long and narrow to broad and squat and apparently held different amounts of oil or perfume. On several, probably containers for spices or bath oils, the amounts are designated on the outside. Small alabaster bowls appear less frequently and may have been used for grinding spices. In this period they seem to have replaced the well-attested Iron Age limestone bowls decorated with incised geometric motifs. The general consensus among archaeologists is that the alabaster vessels originated in Egypt, which possessed a long tradition of expert craftsmen in this field. After what had been an extended period of decline, the manufacture of alabaster objects was revived in Egypt at the end of the Babylonian period. I. Ben-Dor's study of these vessels revealed that the majority were imported; only a small group of crude examples was made out of the local alabaster. Similar vessels in other materials—such as glass, pottery, and bone—may also have been produced locally. It can be assumed that the Palestinian manufacture of these vessels was renewed as a result of its resumption in Egypt because they generally imitate the Egyptian prototypes of the time.

[*See also* Ecbatana; Far'ah, Tell el- (South); Persepolis; Persians; Salamis; Shechem; *and* Susa.]

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EPHRAIM STERN

Furnishings of the Hellenistic, Roman, and Byzantine Periods

The furniture of the Hellenistic, Roman, and Byzantine periods developed directly out of earlier classical Greek traditions. The major types of furniture include the throne *(solium),* chair with a curved back *(cathedra),* stool or bench *(subsellium),* couch *(lectus),* footstool *(scamnum; suppedarium),* table *(mensa),* chest *(arca, arcula, cista, capsa, scrinium, loculus),* shelf *(pegma, loculamentum, pluteus),* cupboard *(armarium),* and sideboard *(abacus).* These types occur throughout the hellenized world and in the later Roman Empire, well into the Early Islamic periods in the ancient Near East. Furniture and its components are uniform in widely separated parts of the Roman world, from Britain in the west, to North Africa in the south, and Asia Minor and Syria-Palestine in the east. Furniture was crafted out of various types of wood, stone (especially marble), and bronze. The wealthy often had furniture, especially beds, out of more precious metals, such as silver or even gold, and prided themselves on pieces inlaid with ivory or gems. Furnishings such as mattresses, pillows, covers, curtains, draperies, and canopies were decorative accessories for couches and chairs, adding to their comfort.

What is known of ancient furniture and furnishings in the Hellenistic, Roman, and Byzantine periods comes from three principal sources. Occasionally, pieces have been recovered from excavations, mostly from Pompeii and Herculaneum in Italy, but less frequently from sites in North Africa, Egypt, Asia Minor, and Syria-Palestine. More numerous are Roman and Byzantine reliefs, wall paintings, sculpture, and mosaics that depict furniture, albeit mainly of the wealthy classes. [*See* Wall Paintings; Mosaics.] The largest collection of reliefs and wall paintings depicting furniture and furnishings in the Near East comes from the eastern Roman cities of Palmyra and Dura-Europos in Syria. [*See* Palmyra; Dura-Europos.] Lastly, contemporary authors, especially Pliny and Pollux, provide detailed descriptions of furniture. Later rabbinic writings, such as the Mishnah and Talmud also are an important source of information on the furniture in use during the Late Roman and Byzantine periods in Roman Palestine.

Chairs. Several different types of chairs are known. The throne, with four turned or rectangular legs and solid sides, and the armchair, popular in the Roman period, were used mainly for official or public occasions. This type of seat did not usually appear in a domestic context. Latin authors,

such as Martial (3.63.7) in the first-century CE describe the *cathedra,* a chair with a curved back, as essentially a woman's chair. Depictions of banqueting scenes confirm this description, portraying men reclined on couches and women often seated on chairs or stools. In a funerary plaque of the mid-second century CE depicting a banqueting scene from Palmyra, Malku's wife (Malku was an important Palmyrene) sits on a *cathedra.* From the end of the second century CE, a Palmyran relief shows the goddess Leto seated on a similar basket chair. The *cathedra* was also used as a litter for the wealthy.

Two types of stools, one with perpendicular legs and a second with folding legs, are known from the classical Greek world and continued to be used commonly in the Roman period. One of the few existing examples of a Roman-period stool is represented by a wooden leg excavated at Rifeh, Egypt. A cross-legged stool with a seated woman appears on a wall painting depicting a banquet in a private house at Dura-Europos; a similar stool appears in the third-century CE scene of Solomon and the Queen of Sheba from the Dura-Europos synagogue. On a Palmyran second-century CE tessera (a small token issued for ritual banquets for the distribution of food stuffs), an artisan is shown seated on a folding stool. Often, stools were elaborately decorated with carved animal-head finials and terminated with animal feet, such as in the early third-century CE honorific statue of Ogeilu from Palmyra.

Benches were the most common form of seating in antiquity. The third–second-century BCE Roman writer Plautus (*Stichus* 2.36) describes benches as the seats of the "humble." Later rabbinic sources mention benches on many occasions in different contexts, including benches in private houses (Tosefta, *Ber.* 4.8; see also Tosefta, *B. Q.* 2.9 for a legal discussion regarding a broken bench). Erwin R. Goodenough (1953–1968, vol. 1, p. 106) even suggests that most Jews of this period preferred eating on benches rather than couches, although rabbinic sources refer to dining on couches (Tosefta *Ber.* 4.8).

Couches. The couch was used for reclining at meals *(lectus tricliniaris),* for sleeping *(lectus cubicularis),* and for reading or writing *(lecticula lucubratoria).* An additional nondomestic function of the couch was at funerary banquets. During the classical Greek period, beds had either rectangular or turned legs. In the Roman period, turned legs appeared more commonly, probably on couches of the more well-to-do. Simple couches, or beds, included legs on which a rectangular frame and flat surface, probably of interlaced leather cording, was constructed; bedding was placed on top. Later, head- and footboards were added that became higher and more elaborate in the Roman period. Occasionally, a couch with a back appears. Couches varied in height, from those that are lower than modern beds to those that are much higher, even requiring a footstool to reach the surface. Though most of what is known about couches depicts and describes the dining couch, it should be noted that the bed is mentioned in rabbinic sources as an essential piece of furniture in all households—not just for the wealthy (see, e.g., Tosefta *Ket.* 6.8, which states that the community had to provide a bed to an orphan setting up his household).

The dining couch was usually arranged in groups of three, as indicated by the Greek word for the dining room, triclinium (from the Gk., *kline,* "couch"). Couches were often arranged in a horseshoe-shaped or semicircular arrangement, with shared tables or one placed next to each couch. Tosefta *Ber.* 5.5–7 describes the appropriate seating arrangement where the middle couch, the *lectus medius,* was reserved for the most honored guest. The placement of the couches themselves is sometimes indicated in the mosaic pavement of the triclinium, as in the recently excavated Dionysos mosaic in an atrium building from Sepphoris, Israel, dating to the third century CE. [*See* Sepphoris.] Contemporary depictions demonstrate that a mattress was placed on top of the couch with one or two pillows to support the reclining diners.

No complete couch used in a domestic setting has survived. A few fragments of wooden couches have been preserved in Egypt's dry climate, including two pairs of legs and parts of three top rails on display in the Berlin Museum (incorrectly restored as a stool). A pair of lion-headed couch legs (originally belonging to a funerary couch?) from Illahun, Egypt, and several others, whose provenance is unknown, have also been preserved (Petrie, 1927). A few more pairs of legs from Roman Egypt are the only lathe-turned couch legs of the kind imitated in other materials and appearing in reliefs, wall paintings, and sculpture of the period. Pieces of a marble couch (second century BCE) were found at Pergamon in Turkey. [*See* Pergamon.] In contrast, a relatively large number of bronze couch fittings, including fulcra (head- and footboards), turned legs, and parts of sheathing for rails, have been found in North Africa and Asia Minor. [*See* North Africa.] The central part of the couch, which was originally constructed of wood, has not been preserved. One of the richest collections of bronze components from couches was discovered in Volubilis, Morocco (Boube-Picot, 1960). These Roman couches are similar to those found at first-century CE Pompeii and Herculaneum. Other parts of bronze couches, dating to the Hellenistic-Roman periods, have been found at Lixus (Morocco), Mahdiyya (Tunisia), Alexandria (Egypt), and Pergamon and Priene (Turkey). [*See* Alexandria; Priene.]

Popular motifs for the finials of the fulcra belonging to these couches include the heads of mules, horses, satyrs, maenads, swans, ducks, geese, lions, elephants, and dogs and figures of Aphrodite. Heads of mules, often with garlands, were especially common; Latin authors, such as Juvenal (11.96.98), refer to ornamental garlanded asses' heads on dining couches. Decorations typically incised on the frame of a couch include floral and geometric patterns.

Couches are seen usually in banqueting scenes and on tombstones depicting funerary banquet motifs. The scenes reached their peak in popularity in the second and third centuries CE. From Palmyra, one very detailed and monumental depiction from a foundation relief for Kitot (40 CE) shows a couch with turned legs and a very thick, richly decorated mattress and pillow. In the third century CE entire banqueting scenes of groups of diners appeared on Palmyran tombs. One well-preserved example is the banqueting scene from the tomb of Malku (c. 200 CE). In one of the private houses at Dura-Europos, a banqueting scene shows three guests with garlands above them reclining on a couch and propped on pillows. Several beds appear in the third-century CE Dura-Europos synagogue wall paintings—beds with turned legs, upon which Jacob is propped with large pillows, are illustrated in two scenes of Jacob's Blessing; a canopied bed with animal legs appears in the scene of Elijah reviving the widow's son.

Footstools. In order to mount couches and some types of chairs, footstools were necessary. Often the stools ended in animal paws or were even whole figures. A second type of footstool was rectangular and box shaped. Footstools are often shown in Roman- and Byzantine-period depictions, either with beds, as in Jacob's Blessing (see above) or with thrones, as in David, "king over all Israel," both scenes from the Dura-Europos synagogue wall paintings.

Tables. The Roman-period table had many more functions than it did in the preceding Greek period, where the most common three-legged rectangular table was used chiefly for dining. Many types of tables are known, including altar tables, honorary tables, funerary tables, domestic cult tables, apotropaic tables, dining tables, bedroom tables, tables as statue bases, tables for drinking vessels, and tables in shops. However, in the domestic context, tables were still used mostly for eating and serving meals. G. M. A. Richter (1906) distinguishes five main categories of tables: rectangular tables with three legs; rectangular tables with four legs; rounded tables with three legs; rounded or rectangular tables on a single support; and rectangular tables on two solid supports. All five types are known from contemporary depictions. Tables were often constructed of wood or stone, including marble, or a combination of the two, as mentioned in the Tosefta (*Kel., B. B.* 1.10). Rabbinic sources (Mishnah, *Shab.* 21.3) also speak of portable tables that could be dismantled.

A few wooden tables are known from Egypt. The best-preserved example is an elegant wooden round tabletop with three legs, dated to the Hellenistic period, from Luxor, Egypt. The legs of the table are in the shape of water birds at the top, with canine three-clawed feet at the base. A second circular turned wooden tabletop was recovered from Faiyum, Egypt.

Stone tables, mainly out of marble, are found in large numbers throughout the Roman Empire, especially from Pompeii and Herculaneum. Marble tables—and marble furniture and sculpture in general—begin to appear in second-century BCE domestic contexts and coincide with the rise of the more materialistic society of imperial Rome. Colored marble was especially prized by the upper classes of Roman society.

Several stone tables from domestic contexts were discovered in first-century BCE–first century CE contexts in excavations in the Jewish Quarter in Jerusalem's Old City (Avigad, 1983). [*See* Jerusalem.] The tabletops and supports were locally produced out of soft limestone, hard reddish Jerusalem limestone, a black bituminous stone, or imported black granite—similar to contemporary marble tables found at Pompeii and Herculaneum. The two types of stone tables found in Jerusalem are a round table on three low legs and a rectangular table on a high central support.

The round tables from the Jewish Quarter measure about 50 cm in diameter. Three depressions are visible on the underside of the tabletops, where three wooden legs had been attached (Avigad, 1983). Based on Hellenistic and Roman paintings and reliefs, the legs most likely were in the form of animal legs, such as are depicted in a Hellenistic tomb at Mareshah/Marisa in Israel and on several Herodian coins. [*See* Mareshah.] In contemporary depictions, these round tables with three legs are usually shown used at meals, surrounded by guests reclining on couches. However, it is noteworthy that in reliefs from Palmyra, three-legged tables appear only rarely in banqueting scenes.

The rectangular table on a single support, corresponding to Richter's fourth type, was extremely rare in classical and Hellenistic Greece (Richter, 1906). According to the first-century BCE Roman military historian Livy (39.6), the table with one leg was one of the types of furniture among the booty brought from Asia Minor and first introduced to Rome during Roman campaigns in the second century BCE. The first-century BCE Roman scholar Varro describes a tabletop resting on a single small column upon which bronze vessels were placed. Rabbinic sources (Tosefta, *Kel., B. B.* 3.4) also mention tables with one support in the context of a halakhic ruling regarding the contamination of tables by unclean liquids.

The rectangular tabletops excavated in the Jewish Quarter measure about 45 × 85 cm and rested on a single leg that was shaped like a column. The edges of these tables often were decorated in relief on three sides. The motifs include stylized wreath, meander and rosette, laurel sprig, and other geometric and floral decorations, similar to those designs on furniture depicted in the Palmyran reliefs (see above). A fish with meander and floral decorations is the only faunal motif found in Herodian-period Jerusalem. The rectangular tables with a single leg were used as serving tables to hold drinking vessels, as is illustrated in a relief decoration on the edge of a stone tabletop purchased on the Jerusalem antiquities market (Avigad, 1983).

Marble rectangular tabletops resting on two solid transverse supports are known in large numbers from Italy. This table, used primarily for outdoor functions, corresponds to Richter's fifth type (Richter, 1906). It had Hellenistic antecedents, as is indicated by its occurrence at Pergamon, and elsewhere in the second century BCE.

Containers and Shelves. Several different furniture types were used for storage and display: chests, cupboards, sideboards, and wall shelving. The cupboard probably appears for the first time in the Hellenistic period. Cupboards were usually rectangular, with either a gabled or flat top two doors that reached from top to bottom. The interior had shelving, on which items were placed. The Torah shrine, a type of ceremonial cupboard used for the storage of scrolls in synagogues, is shown in numerous depictions, including mosaic pavements and the Dura-Europos synagogue wall paintings. [*See* Synagogues.] The sideboard was in two parts: the lower section was a table on which shelving was constructed. It was another type of furniture that, according to Latin authors Livy (39.6.7) and Pliny (36.8.14), was brought to Rome following the Roman conquest of Asia Minor in 187 BCE.

Furnishings. By modern standards, ancient furniture and furnishings in their domestic setting would be considered scanty. The interiors of large mansions were decorated with wall paintings, stucco, and mosaics. The walls of simpler domiciles were covered with mud plaster.

Wall paintings were designed to be decorative and often were related to a room's function. Frescoes from Pompeii, Herculaneum, and Rome are the most important source of information about this kind of decor. The four "styles" of Pompeian wall paintings still provide the framework for the classification of all Roman-period frescoes. From Roman Palestine, numerous wall paintings and fresco fragments in the Pompeian "architectural" or Second Style have been uncovered in late first-century BCE Herodian-period buildings at Jerusalem, Masada, Jericho, Herodium, and Samaria. At Jericho, ceramic vessels containing remains of the ground pigment powders used in the wall paintings indicate that the Jericho artist was familiar with Roman techniques and materials.

Stucco refers to a slow-setting lime plaster used for producing a hard, durable surface or a quick-setting gypsum plaster used for producing sharp impressions. Stucco decoration originated in the Hellenistic cities of Asia Minor and reached Rome late in the Hellenistic period. Molded stucco was applied for ornamental purposes to the walls and ceilings of the mansions and palaces of the wealthy, reaching its peak in popularity during Late Republican times. Decoration in stucco appears throughout the Roman Empire. In Judea (Judah) in the late Second Temple period (first century BCE–70 CE), the walls of several mansions and palaces in Jerusalem, on Masada, and at Herodium were decorated with white-stucco ornamentation, imitating ashlar masonry. Pieces of stucco from a coffered ceiling with geometric ornamentation were recovered from the Herodian mansion in the Jewish Quarter of Jerusalem (Avigad, 1983).

Other types of furnishings, being of perishable organic materials, are rarely preserved in the archaeological record. The main sources of information about them are from several ancient lexicographers (Hesychios, Suidas, Pollux), who mention mattresses, pillows, mats, covers, curtains, and draperies, supplemented by contemporary depictions of these objects. Couches are usually shown with a mattress covered with a richly decorated fabric and one or two pillows, on which the guest reclines. A leather mattress, probably similar to those on beds and couches, was excavated in association with Hellenistic coffins in the Jericho cemetery from the Second Temple period (Killebrew and Hachlili, 1983). Valances and loose draperies and, occasionally, canopies over the couch are portrayed in sculpture, wall reliefs, and wall paintings.

From fragments of textiles that have been recovered at Palmyra, Dura-Europos, and several sites in Egypt, it is possible to reconstruct many aspects of these furnishings. [*See* Textiles, *article on* Textiles in the Classical Period.] The main materials used to manufacture these furnishings include wool, linen, camel hair, cotton, silk, leather, and sheepskin. Wool was the material used most commonly for mattress and cushion covers. Many of the second- and third-century CE fabrics from Palmyra and Dura-Europos were probably woven and embroidered in Roman Syria. The largest collection of textiles dates to Roman and Islamic Egypt, or to what are referred to as Coptic textiles. Among these preserved pieces are fabrics used for cushion and mattress covers, draperies, and wall hangings. Popular designs included floral, geometric, and figurative motifs, sometimes in a medallion pattern. They resemble the patterns used in other media, such as in contemporary mosaic pavements and in stucco, the ornamentation of walls and ceiling coffers.

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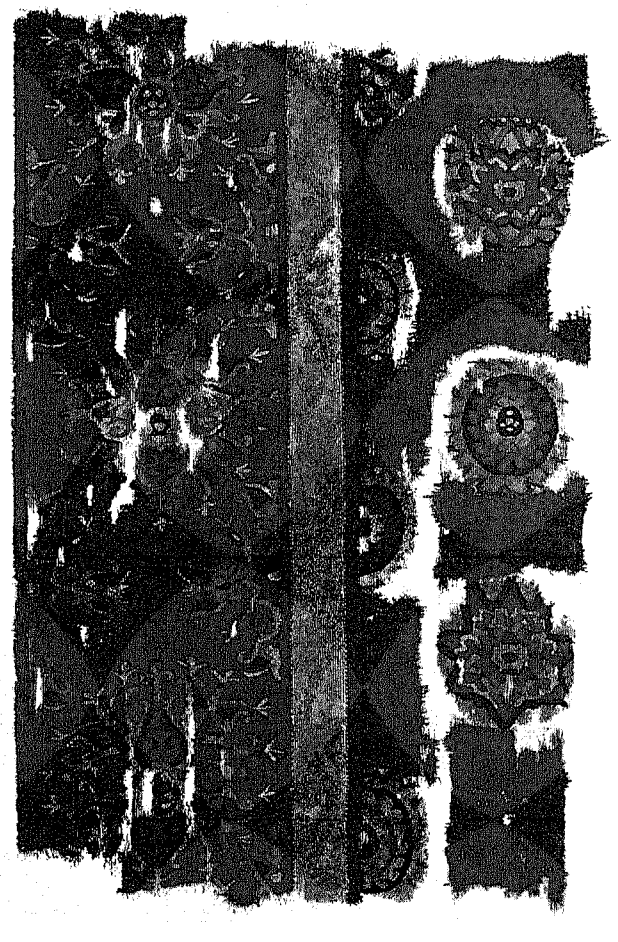
ANN KILLEBREW

Furnishings of the Islamic Period

As a general rule, the interior of houses in the Islamic world contained very little furniture but plenty of furnishings. The most dominant feature apparent at a glance on entering a home—be it in the Maghrib or the Mashriq—was a profusion of multicolored fabrics scattered on the floors or hanging from the ceiling. The best carpet took pride of place on the *ṣadr* (the wall opposite the main entrance of a room and its most prestigious side), either covering it or spread in front of it. Placed against the *ṣadr* was the *martaba* (lit., "step"), a sort of sofa for seating during the day, composed of piles of fabrics and cushions and bolsters of diverse types arranged to enhance comfort. In more modest households, the *martaba* was replaced by a single piece of furnishing, the *maṭraḥ,* a word from which the English mattress is derived together with its Italian, French, and German equivalents.

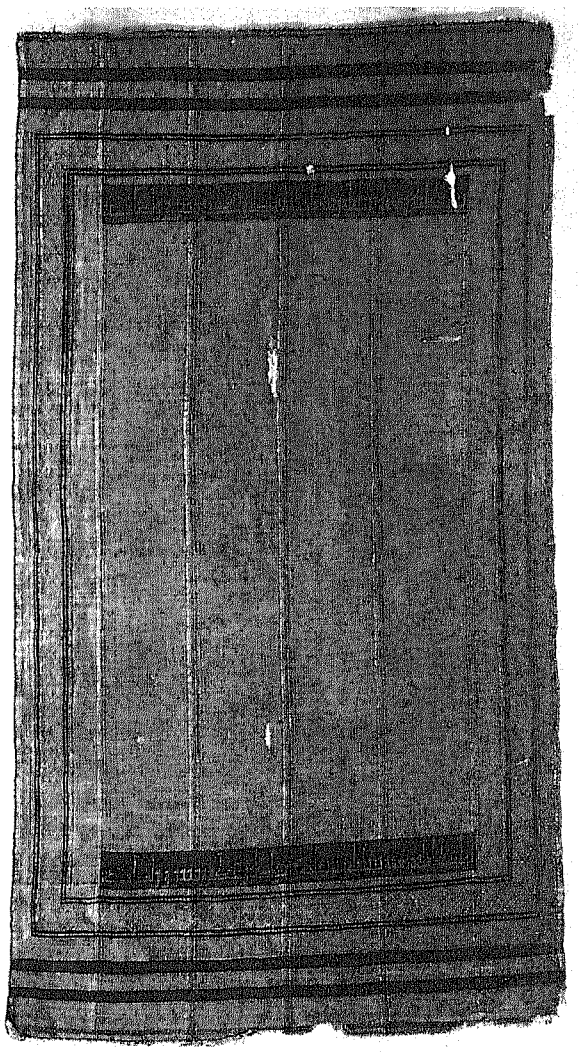
The most expensive furnishing, for the quality of its fabrics, usually silk produced in Tabaristan, was the *majlis* ("seat," also the name for the sitting or living room) that replaced the *martaba* in the houses of wealthy families. The interior of the home was very much enlivened by the colorful cushions and bolsters on sofas and divans and on the floors, which were covered with simple mats. The cushions, usually quadrangular or oblong rather than round, were covered with fabrics with motifs of flowers, animals, and birds. The function of the cushions, apart from providing comfort to those who used them, was probably to introduce color to the interior, to contrast with the surrounding monochromatic desert landscape found in many countries in the Islamic world. The proper bed *(firāsh)* was a single piece of furnishing that was long enough to stretch out on and was usually kept apart from a family's daytime quarters. Sometimes the *firāsh* was made of costly materials, such as imported silks; in many cases a less expensive local fabric was used. The covers for the bed included a padlike collection of fabric called *barda'a.* The proper blanket was the *liḥāf,* which was stored in a chest during the day (it also carried a symbolic meaning of "conjugal blanket," and for this reason was the most precious item of furnishing). The *liḥāf* was usually made of Byzantine or Maghribi brocade or of a special type of damask called *siqlāṭun.* A multicolored *killa* (a "canopy" or "mosquito net") made of fine linen completed the bed's nighttime outfit.



FURNITURE AND FURNISHINGS: Islamic Period. Figure 1. *Wool textile fragment.* Possibly a curtain from eighth-century Iran or Iraq, 18.75 × 12 in. (Metropolitan Museum of Art, Rogers Fund, 1950, 50.83)

In the house there were many curtains (Ar., *sutūr*) and hangings, also expensive furnishings (see figure 1). They were not used to prevent too much light from filtering through windows, however: in the Islamic world, pierced screens performed that function and also allowed ventilation. Where wood was scarce, though, such as in Egypt and in the Maghrib, curtains replaced doors, serving as portieres, and probably covered open bookcases and multiple recesses in walls. In Anatolia and in the eastern Islamic countries, where wood was more abundant and less expensive, doors were certainly more common than curtains. In private homes, curtains were hung across a room to allow privacy, when needed; otherwise they were raised, to make a room more spacious. The sources have transmitted many stories in which curtains are mentioned, among which the most famous is that concerning the palaces of the ʿAbbasid caliph al-Muqtadir (r. 908–932 CE): the palaces were covered with thirty-eight thousand curtains made of gold brocade embroidered with gold and adorned with representations of elephants, horses, camels, lions, and birds (Khātib al-Baghdādī, b. 1071 CE, quoted in Lassner, 1970, pp. 88–89). Umayyad princes had a curtain drawn between them and their audience (Grabar, 1987, p. 149). One of them, the future caliph al-Walīd II (from 743 CE), had a curtain drawn across a pool filled with wine, into which he would dive after each song performed by a singer on the other side of the curtain (Serjeant, 1972, p. 203). The best curtains were produced at Basinna in Khuzistan; Bahnasa in Egypt; Mawsil in northern Jazira; Wasit in Iraq; and Tirmah in Transoxiana, among other places. The curtains were usually inscribed with an embroidered *ṭirāz* (calligraphic decorative band) attesting to their place of manufacture (Gervers, 1977, pp. 74–75).

Carpets *(namaṭ, ṭunfusa, bisāṭ)* were also commonly found in houses, especially in the eastern Islamic countries, where they were produced in great number. The best were as prized as the most expensive textiles; carpets, like textiles, were placed over mats to cover the floor almost entirely. A room's carpet arrangements were completed by long, small rugs laid between the entrance door and the central carpet (the best of the house, placed in front of the *ṣadr*) in order to protect its edge; such small carpets were called *ʿatabas* (lit., "doorsill" or "threshold"). A special function of the carpet was religious. Ernst Herzfeld's reconstruction of the arrangement of carpets in the audience hall of the ʿAbbasid caliphs shows a large frontal carpet (the *ṣadr*) bordered on its sides by two runners called *muṣallās* ("prayer carpets") that show an arched pattern symbolizing multiple prayer niches (Herzfeld, 1948, p. 222). A similar arrangement, composed of small, single prayer rugs, must also have been present in private homes because a Muslim is not compelled to go to the mosque five times a day for the prayer but may pray at home in a sacred space (a carpet with a prayer niche). However, not all floor coverings were textiles, especially in hot regions, where mats made of reeds or rushes were preferred. These usually covered rooms wall to wall and were made to order in a single piece. The most renowned center of production was Alexandria, Egypt, which exported its mats all over North Africa. Many other places in Egypt provided this commodity, as did Abbadan in Iran. In the Early Islamic period, the floors of both large congregational mosques and of smaller ones were covered, as a rule, by mats rather than carpets. Two small mats, probably for religious buildings, have survived in exceptionally good condition: one was made in Tiberias in Palestine and the other, very close in date (tenth century CE), in Greater Syria (see figure 2). Hides or leather mats (*anṭāʿ*, sg. *naṭʿ*) were



FURNITURE AND FURNISHINGS: Islamic Period. Figure 2. *Hemp and straw mat.* Dyed brown and black with two inscriptional bands containing blessings to the owner. From Greater Syria (Palestine?), first half of the tenth century, 63.375 × 33.875 in. (Metropolitan Museum of Art, Pulitzer Fund, 1939, 39.113)

also used as spreads beneath a dining tray or for other uses, although rarely.

This information represents a reconstruction of the furnishings in homes in the first centuries of Islam. It is information that relies exclusively on written sources (by far the most informative of which are the documents that were found in the Cairo Geniza [Goitein, 1967–1983, esp. vol. 4, pp. 105–129]) because textiles, wood, and leather are among the most perishable materials. They rarely survive intact even in the driest climates. For this reason, only fragments of textiles are preserved in any number, in particular from Egypt (Fustat, i.e., Old Cairo, and Bahnasa); none can be identified positively as part of a curtain, a bed, a hanging, or of a garment, however. In only one case can a multicolored wool fragment showing a human head surrounded by running hares and bearing an inscription stating that it was made at Bahnasa perhaps be considered part of a curtain because Bahnasa was famous for this particular commodity. In general, the thickness of the fabric could be of some help in identifying its function—although many outer garments were probably as thick as draperies and curtains.

Fragments of carved and painted wood have also been found in good number, some at excavated sites (e.g., from Samarra, north of Baghdad, the capital of the ʿAbbasids for a few decades in the tenth century) and others still in situ when discovered (e.g., ornamental wooden beams from one of the Fatimid palaces in Cairo). However, ordinary domestic furnishings were probably undecorated.

FURNITURE AND FURNISHINGS: Islamic Period. Figure 3. *Incense burner in the shape of a feline.* Cast bronze with openwork decoration, from Khurasan, Iran, dated to AH 577/1181-82 CE, height 33.5 in., length 31.5 in. (Metropolitan Museum of Art, Rogers Fund, 1951, 51.56)

Among the objects found in houses were baskets *(qafaṣ)* of different vegetal materials with covers made of palm fronds or decorative lacing. Baskets were used to store earthenware and glass vessels and writing materials. Light and heat were certainly among a household's first necessities. Hundreds of small oil lamps (usually called *sirāj*) made of clay, metal, stone, or glass have been collected in excavations all over the Islamic world (e.g., Nishapur in eastern Iran). Hanging glass lamps as well as lanterns made of metal or glass *(miṣbāḥ),* inside of which a small glass vessel containing oil was suspended, were also used (sometimes they were hung for votive purposes). Pottery or stucco portable lanterns, also found at Nishapur, were used to circulate light inside and outside the house at night. Bronze or copper candleholders in various shapes, sometimes decorated, completed the lighting system and were provided with beeswax candles. Candleholders were less common than lamps and lanterns because wax candles were quite expensive. Although almost nothing for heating purposes has survived from before the thirteenth century, metal braziers, firepots, and coal pots have been found in houses, even in countries with the hottest climate.

Finally, fumigators were common pieces of furnishing in the houses of the middle and upper classes: square or cylindrical, surmounted by a domical cover and standing on four legs, or animal-shaped (usually birds or felines) with a hinged opening on the chest or with a detachable head and standing on their legs (see figure 3). Pierced incense burners or censers (*mijmara,* possibly made only of silver; *mibkhara,* of bronze; and *midkhana,* of bronze or other materials) could be of any size and range from undecorated to sumptuously ornamented. A large number of them, sometimes with provenience, can be seen in museums all around the world.

[*Many of the sites mentioned are the subject of independent* entries.]

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STEFANO CARBONI

FURTWÄNGLER, ADOLF (1853–1907), German historian of ancient art and field archaeologist. In 1874, Furtwängler completed his doctorate at Munich and soon after spent three years (1876–1879) traveling and excavating in Italy and Greece. These laid the foundations for a remarkably varied series of studies of prehistoric Greek, Etruscan, classical Greek, and Roman art that demonstrated his particular talent for the stylistic and historical organization of enormous corpora of artifacts. In Greece, Furtwängler collaborated with Georg Löschcke in publishing Heinrich Schliemann's pottery from Mycenae (1879) and in constructing a typology for Mycenaean ceramics (1886). Furtwängler published (1890) the more than fourteen thousand, mostly fragmentary bronze votives and other small finds of Geometric, orientalizing, and later styles from the Olympia excavations in Greece in which he had participated (1878–1879). Beginning in 1881, he devoted himself to organizing museum collections in Berlin, producing inter alia a comprehensive study of the development of Greek vase painting (1885), as represented by examples in the Antiquarium at the Royal Museum in Berlin, and an encyclopedic study of Greek and Roman gems in relation to the art of the Near East and Etruria (1900). His justifiably famous *Meisterwerken der griechischen Plastik* followed in 1893 (1895 in English translation). In 1894, Furtwängler assumed the chair of classical archaeology at the University of Munich. In 1901, he began new archaeological investigations at the Temple of Aphaia on Aigina, at the center of the classical city-state, and at the sanctuary of Zeus Hellenios on Mt. Oros. The excavations of the Temple of Aphaia, published promptly in 1906, allowed a more accurate sculptural history of its pediments and produced the first evidence for a Mycenaean presence on Aigina. Among the many projects underway at the time of his death was his monumental publication of select Greek vases, *Griechische Vasenmalerei.*

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JACK L. DAVIS

FUSTAT, original site from which Cairo grew. When Amr ibn al-'Aṣ led an army into Egypt in AH 18–19/639 CE after the quick and spectacular Muslim victories in Greater Syria, the first objective was the capture or reduction of the Byzantine fortress of Bab al-Lun (Babylon) just opposite the Nile island of Roda. Not only was this locus the clear access point to the Delta and, therefore, the land route to Alexandria (the second and supreme objective of the campaign), it also formed the terminus of the river traffic coming from Upper Egypt. Because Amr found it impossible to take the fort or the island by storm, he sustained its slow reduction. To accomplish this attrition he established a campsite to the north of the fortress, arranged his troops relative to tribal origins, and built a ditch around the encampment complete with caltrops (pronged ground-lying weapons) to repel cavalry sorties. This trench configuration is known as *fustat* in Arabic, no doubt deriving from the Latin *fossatum.* (In later European fortifications it is termed a *fosse.*)

Bab al-Lun capitulated. Amr led his army up the Delta, attacked Alexandria, and arranged its surrender. It was assumed that Alexandria, with its unrivaled position relative to the trade and culture of the Mediterranean, would become the capital of the newest Islamic province. The caliph in Medina, 'Umar ibn al-Khattab, however, ordered Amr to return to Fustat and make it the capital and base for further conquests westward. He acquiesced, returned to the campsite, removed the palisade and ditch, and assigned land grants to the various tribes represented in his army. These grants ensured settlement north to the present aqueduct, east to the edge of the Muqattam quarries, and south to the

area known as Stabl Antar in the early sources. Sensing the riches to be gained in Egypt, many Syrians and Arabs from the peninsula migrated throughout the seventh and eighth centuries CE, as well as a continuous movement of craftsmen and artists from Alexandria, to serve and seek the patronage of the new governing class centered now at Fustat.

The growth of the original Fustat was agglutinative because each new set of rulers founded new quarters and the old city grafted onto them. In AH 132/750 CE the ʿAbbasids went to the north to establish al-Askar while Ahmad ibn Tulun went in 254/868 to the northeast to found yet another capital at al-Qata'i, which contained his famous mosque on the height of Jabal Yashkur. From this elevation eastward to the Muqattam hills he not only gave a northern boundary to the sprawling metropolis, but he also connected it with the old foundation area and the cemetery area to the east and farther southeast to the settlement around Stabl Antar. All the intervening area filled up gradually (but never totally) along three axes: one continued along the eastern bank of the Nile eventually reaching to Helwan, another went roughly from the mosque of Amr towards the mosque of Ibn Tulun, and a third went from the latter mosque east and southeast to the cemetery areas culminating in Stabl Antar.

This somewhat compact urban mass reached its apogee with the founding of the Fatimid quarter of al-Qahira (Cairo) in 969 CE. This was a fully planned and walled city replete with administrative, military, and religious personnel presided over by an Ismaili caliph, who promptly arrived from Mahdiyya in Tunisia. The compact earlier city did not disappear although it was more often called Misr or Masr than Fustat. At first it remained distinct from Cairo; but eventually the heretofore stable border of al-Qata'i moved north to attend the southern wall. The older axial arrangement continued, but an exact emphasis became visible when the Qarafa road connected the Bab al-Zawayla to the shrine of Sayyida Nafisa. A secondary route also now connected the mosque of Amr with the Fatimid city. Thus, old Fustat was reenergized and experienced its apex of prosperity in the Fatimid period.

This new and most profitable dispensation was shattered in 564/1169. To prevent its falling into the hands of an army of Crusaders poised to the south of Stabl Antar, the grand vizier, Shawar, put all the southern unwalled portions to the flames and the entire population fled to the north toward al-Qahira. Salah ad-Din (Saladin) ordered the resettlement of the old quarters after his seizure of power in 567/1171, and built a girdling wall to protect the much-contracted area of settlement. There are also records of industries during the Mamluk era. Otherwise, Fustat simply decayed and was abandoned, except for the area around the mosque of Amr. Potters from Ballas farther south arrived in the latter half of the eighteenth century. With riverine commerce, Old Cairo (now termed Misr ʿAtiqa and not Fustat) presented a sizable habitation strung out along the Nile. Behind this bustling facade, however, the mounds of the former chief emporium of the country stretched to the Muqattam Hills and abutted the cemetery areas to the south.

These mounds were ransacked by searchers for *sibakh,* the nitrogenous layer above the architectural remains, and became the haunts of free-lance excavators in search of antiquities. A more rational approach toward the tumuli was instituted by Ali Bey Bahgat in 1912 when a concession was granted to the Museum of Arab Art (now the Islamic Museum). He probed over a wide area and by 1924 had uncovered a substantial area to the east of the mosque of Amr. By modern standards Bahgat's excavations were wanting in chronological precision, but they did reveal the general configuration of the urban fabric of the Fatimid period. His work was continued and expanded after World War II by Cairo University (much further to the east of Bahgat's revelations and among the building remains of the more southerly cemetery) and by the Egyptian Antiquities Organization, excavations which stretched out from Bahgat's perimeters. Although very little of this latter work has been published, it did confirm the street context and housing modules revealed by Bahgat. In 1965–1966 a house with an upper story intact was uncovered under the direction of Gamal Mehrez; this has been preserved but only partially published.

After the 1952 revolution a four-lane highway was thrust through the mounds to connect Giza with the back route to Heliopolis and the Cairo airport. The land between this road (now known as Sharia Salah Salem) and the standing remains of the aqueduct became available for low-income housing. Apart from some emergency probes there was no archaeological investigation of this huge area. By 1963 the Cairo Governorate announced plans for further housing developments south of Sharia Salah Salem, which alerted the Antiquities Organization to seek outside assistance toward a rapid investigation of the threatened area. Three concession areas were granted to the American Research Center in Egypt, which began its excavations in 1964. [*See* American Research Center in Egypt.] The 1967 war diverted attention from the scene, but by 1973 it was clear that the Governorate had again turned its attention to the open spaces of Fustat and large-scale commercial, industrial, and domestic projects (generally unlicensed) ensued. These latter activities resulted in two new problems: the cemetery areas were no longer sacrosanct and large parts of the unexcavated reaches had become the dumping ground of the Cairo Governorate in a move to achieve an all-over level for building and street projects.

The American concessions were worked between 1964 and 1981. They achieved the chronological profile lacking in earlier excavations, more particularly through the stratification of the ganglia of streets. They confirmed the same profile when cuts were allowed into the streets revealed by Bahgat. Because there was no grid plan, the narrow, curling

streets dictated the plans of the housing units, which were quite asymmetrical externally and variations of the Tulunid Samarra module internally, centering on one, two, or even three courtyards. Some housing units reached five stories, each in essence a series of flats as described in the Geniza documents or combinations of domestic housing and commercial units in the huge conglomerations of the Geniza merchants. (The Geniza, which means "synagogue" in Arabic, was the place where Jewish merchants deposited their commercial archives.) This endeavor also corrected the impression left by Nasir-i Khusrau that the Fustat houses reached heights of ten and twelve stories. He had not taken into account the upward slope of the *jebel* (hill), which was about 12 m (39 ft.) between the mosque of Amr and the present mosque of Abu Su'ud.

Sections of the main funerary route, the Darb al-Ma'asir, the widest street in the medieval settlement, now stand clear as well as a *serdab* (underground hot-weather living space) dating from the early eighth century CE, the earliest Islamic instance of the phenomenon so far recorded, along its northern edge. Over 200 m (656 ft.) of a rough aqueduct came forth in the area directly adjacent to Bahgat's work, a monument that he overlooked. It is not mentioned in any of the known texts. This aqueduct served the bourgeois area attending the Darb al-Ma'asir, an area that contained one Fatimid complex complete with a small bath *(ḥammam)*. This combination had been associated heretofore only with Mamluk palaces. Of more interest to the social historian is the workers' quarter revealed in 1980. Their dwellings were built not on the *jebel* but on accumulated rubble, making them extremely unstable. The presence of such a quarter, which is associated with the huge pottery kilns uncovered by the Antiquities Organization in an adjoining mound, contradicts S. D. Goitein's theory of class homogenization as deduced from the Geniza documents.

The pottery yields from the subsequent excavations generally paralleled Bahgat's but showed a greater variety of imports. It is now clear that Chinese pottery first entered the Egyptian markets in the ninth century CE and was preferred (as proved by their imitation) through the seventeenth century. There was substantial representation of the wares of Spain and North Africa; Greater Syria, Iraq, and Iran; the Crusader states and Cyprus; and the excellent slip-painted (but unglazed) wares of Christian Nubia. Very few ceramics from Ottoman Turkey have been found.

Glass finds were plentiful, and it is now reasonable to assume that lustering began on glass in Egypt probably in the early seventh century. The bowl of a stemmed goblet lustered on both sides carried the name of 'Abd al-Samad ibn 'Ali, granduncle of Harun al-Rashid and governor of Egypt in 155/771–72. Only in the 1980 season were discoveries of textile fragments plentiful. Among them was an example of resist-dye decoration of the eleventh century, probably earlier than any reported from India, the natural home of the technique. That same season yielded substantial paper and parchment fragments among which were a complete wedding contract dated to 348/959, a rare rental receipt dated 432–433/1041, and a block-printed amulet text dated to the eleventh century.

Two other sets of excavations have begun at Fustat. One, begun in the 1970s under the aegis of Waseda University and directed by Dr. Kawatoko, has limited itself to the area between the southwest limit of Bahgat's excavation and the mosque of Amr. The purpose has been to discover the position and extent of the area known from the sources as *ahl al-raya,* that area taken by Amr ibn al-'Aṣ and his tribal commanders and directly contingent to the early mosque. To date the publications (in Japanese) have produced little toward attaining the stated goal; rather the finds and most of the plans echo the work of Bahgat and of the Fustat Expedition/American Research Center in Egypt. The other, ongoing excavation, which was begun in 1984 under the aegis of the Institut Français d'Archéologie Orientale du Caire is concentrated in an area connected with the ancient cemetery at Stabl Antar. [*See* Institut Français d'Archéologie Orientale.] Menaced on all sides by an ever-growing settlement of permanent housing, the French have been most fortunate in their small area. Approximately 230 m (754 ft.) of the Atfih Aqueduct running from the Birket al-Habash and servicing the cemetery have now been revealed, providing an earlier parallel to the Aqueduct of Ibn Tulun in the Basatin area. Very early (late seventh- and early eighth-century CE) remains of habitation, which were never subsequently built upon, provide a sharper chronological gauge than has been hitherto realized in areas with more complex patterns of reuse and amalgamation. Ancillary structures including a *ḥammam* of what might be Fatimid family royal funerary establishments have recently come to light along with some tombs of the tenth and eleventh centuries. If the work is unhampered by further building projects, these excavations will provide unrivaled insights into the social and religious contexts of the Stabl Antar section far to the southeast of Bab al-Lun and the mosque of Amr and add significant tesserae to the mosaic of what we are getting to know of Fustat.

[*See also* Cairo; Fatimid Dynasty.]

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porate any archaeological findings post-Bahgat, see Jacques Jomier, "Al-Fusṭāṭ," in *Encyclopaedia of Islam,* new ed., vol. 2, pp. 957–959 (Leiden, 1960–). André Raymond, *Le Caire* (Paris, 1993), surveys the results of excavations subsequent to Bahgat's findings (see pp. 18–55).

To supplement these views of Fustat, it is now mandatory to consult research based on the reports and letters of the *soi-disant* Geniza merchants who either lived in or passed through Fustat from the mid-tenth century CE to the burning of Fustat in the late twelfth century CE. Though rather lean for the period of Fustat's economic dominance (eleventh century CE), these original sources complement, correct, or extend the results garnered from archaeology and the standard Arabic sources. S. D. Goitein has published the material in five volumes as *A Mediterranean Society: The Jewish Communities of the Arab World as Portrayed in the Documents of the Cairo Geniza.* Volume 4, *Daily Life* (Berkeley, 1983), is particularly important.

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GADARA. *See* Umm Qeis.

GALILEE. [*To survey the archaeological history of the Galilee region, this entry is chronologically divided into two articles:* Galilee in the Bronze and Iron Ages *and* Galilee in the Hellenistic through Byzantine Periods.]

Galilee in the Bronze and Iron Ages

The Galilee region in northern Israel consists of the Upper and Lower Galilee and the upper Jordan Valley, thus incorporating both the hill country and the surrounding plains. The diverse nature of the subregions is reflected in the number and scale of their tells and in their settlement history.

Only a few tells have been excavated in the Galilee, none of which are in the hill country. Most of our information about the region has been gained from the excavations carried out at Hazor and Dan and from the periodic surveys conducted in the twentieth century—from the early 1920s (by William Foxwell Albright, John Garstang, Appaly Saarisalo, and others) through the 1950s (Ruth Amiran, Yohanan Aharoni, and Nehemyah Zori). Since the 1970s, systematic surveys have been carried out on behalf of the Israel Archaeological Survey (Yaaqov Olami, Raphael Frankel, Avner Raban, Zvi Gal, and others).

In the Chalcolithic period (fourth millennium), a few subregional pastoral cultures dominated the Galilee. The first settlements in the area, small rural sites, appeared in the Early Bronze I period (3100–2800 BCE). These were replaced in the Early Bronze II–III period (2800–2200 BCE) by large, flourishing urban centers. A dense occupation is indicated by a network of large sites, all of which were fortified cities. Among the main sites are Tel ʿAlil, Tel Gat-Ḥepher, Tel Ḥannaton, Naḥaf, and Tel Rechesh in the Lower Galilee; Jish, Meʿona, Tel Qedesh, and Tel Rosh in the Upper Galilee; and Dan, Hazor, and Tel Naʿamah in the upper Jordan Valley. The limited evidence gathered from the excavations at Hazor, Dan, Tel Naʿamah, Tel Qedesh, and Meʿona focuses on the enormous scale of their fortifications. These sites represent the well-developed urban life that existed in the region throughout the Early Bronze II–III period. The enclosures at Ḥorvat Shahal and at Farod are unusual and are known mostly in the neighboring Golan; they apparently were fortified camps for large herds of cattle.

In the Intermediate Bronze Age (2200–2000 BCE), the Galilee's population was seminomadic, as is evident from the burial caves that comprise most of the archaeological data. On the basis of the pottery, it seems that the region was dominated by a single cultural group. Only a few settlement sites have been found, including that of Murhan on the southern margins of the eastern Lower Galilee, the dwelling caves at Tel Ḥarashim, and the cultic cave near Tel Qedesh.

An elaborate settlement hierarchy developed during the Middle Bronze II (2000–1550 BCE) that is characterized by major cities and many small rural sites. The main sites in the hill country include Tel Gat-Ḥepher, Tel Ḥannaton, Tel Qedesh, Tel Rechesh, and Tel Rosh. However, in the upper Jordan Valley, some of the finds from the large cities of Dan and Hazor, such as the former's mud-brick gate and the latter's liver model and cuneiform tablets, suggest that these cities were culturally associated with northern Syria, or even Mesopotamia. This view is also supported by a few of the Mari texts, which mention commercial and political connections between Mari and Hazor and Mari and Laish (Dan).

During the Late Bronze Age (1550–1200 BCE), while the cities of the upper Jordan Valley (Hazor and Dan) flourished, the Galilean hill country was poorly settled. It is this period to which the Bible refers when it describes Hazor as "the head of all those kingdoms" (*Jos.* 11:10). The interpretation of the Egyptian texts, especially the list of Thutmose III (fifteenth century BCE), by some scholars as support for a major occupation of the hill country in this period is not borne out by field surveys, which postulate on the contrary, a distinctly sparse occupation. Only a few large sites were settled in the Lower Galilee, of which Tel Ḥannaton was the largest. The Upper Galilee was even more sparsely occupied, the main site being Tel Rosh (equated with biblical Beth-ʿAnat). One of the el-Amarna texts confirms this situation: it describes the region between Hazor and Tyre as settled by the Apiru and under dispute between the two cities. The settlement process in the Iron Age I (1200–1000 BCE) should be understood in the light of this reality.

Toward the close of the thirteenth century BCE, the large Canaanite cities were destroyed, as is evident from the excavations at Hazor, Dan, and Tel Qarnei-Ḥittin. Either simultaneously, or just a short while later, a network of rural sites in the Galilee was settled, of which Tel Ḥarashim, Har-Adir, and Ḥorvat ʿAvot, as well as Hazor and Dan, have been excavated. The pottery found at these sites exhibits Phoenician as well as local characteristics, suggesting that they were occupied by both Israelites and Phoenicians. The Bible describes the battle at Merom (*Jos.* 11) as a major episode in this period; its location should be looked for at Tel Qarnei-Ḥittin. The finds at Dan may illustrate the migration of the Danites into the Galilee (*Jgs.* 18:28).

During the period of the United Kingdom (tenth century BCE), the Galilee reached its settlement peak. An elaborate settlement pattern consisting of fortified cities, villages, farms, and other small sites sprang up. The fortifications, fortress, storehouses, water system, and domestic structures at Hazor and the gate and the cultic *bāmâ* at Dan demonstrate that development.

Political, commercial, and cultural relations were established between Israel and other nations—with Phoenicia in particular. The result of King Solomon's exchange of the "Land of Cabul" (equated with parts of the Akko plain) for Phoenician supplies (*1 Kgs.* 9:10) is represented by the Phoenician fortress excavated at Ḥorvat Rosh Zayit, in western Galilee.

The ninth century BCE was marked by military clashes between Israel and the Aramaeans (*1 Kgs.* 20) and in the campaign of the Assyrian king Shalmaneser III in 841 BCE. There is evidence of these events in the archaeological record at various sites such as Rosh Zayit. The campaign of Tiglath-Pileser III in 732 BCE brought an end to Iron Age settlement in the Galilean hill country. This end is described both in the Bible (*2 Kgs.* 15) and in Assyrian sources and is evident at excavated sites such as Hazor, Dan, and Megiddo. The valley settlements survived, however, and became a part of the new Assyrian administrative system. According to the archaeological evidence, the Galilean hills were almost completely deserted for more than a century. They were reoccupied only in the late sixth century BCE, a harbinger of the Galilee's dense postbiblical settlement.

[*See also* Amarna Tablets; Dan; Fortifications, *article on* Fortifications of the Bronze and Iron Ages; Hazor; Jordan Valley; Mari Texts; *and* Settlement Patterns.]

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ZVI GAL

Galilee in the Hellenistic through Byzantine Periods

There are hints in the literary sources of a greater Galilee than the territory entrusted to Josephus at the outbreak of the first revolt (cf. *Antiquities* 18.4; *War* 2.218, 3.35–39). Archaeological remains can confirm such a picture, since architectural forms, ceramic styles, and language patterns do not recognise the boundaries that political expediency imposes. Other factors such as climate, natural resources, and access in terms of travel also determine human habitation. In this regard it is worthwhile to recall the Mishnah's divisions of the region into Upper and Lower Galilee and the valley and Josephus's description of the fertility of the Plain of Gennesar (Mishnah, *Shev.* 9.2; *War* 3.516–521).

The results of the limited survey of some nineteen sites where synagogue remains existed convinced the members of the Meiron Excavation Project of a cultural continuum between Upper Galilee and western (Lower) Golan (Meyers, Strange, and Groh, 1978). [*See* Golan.] They based their conclusion on the obvious similarities in architectural styles for synagogues, including the absence of representational art; the predominance of Hebrew and Aramaic inscriptions, and the similar pottery types. The sites were technically villages rather than cities, and therefore, might be thought to

have lacked a broader cultural horizon, especially because the area's mountainous terrain makes Upper Galilee relatively remote. Even in Late Roman times, Upper Galilee was known as Tetracomia (lit., "the four villages"), despite the fact that a policy of urbanization prevailed elsewhere in Palestine for administrative reasons, especially from the second century CE onward.

The distinctive profile this region presents on both sides of the Jordan River is not one of cultural isolation, however, but that of strong group identity in terms of adherence to the Jewish way of life despite participation in other aspects of the surrounding culture. Undoubtedly, the migration to the north that was the direct result of the Bar Kokhba revolt, meant an increase in Jewish presence. [*See* Bar Kokhba Revolt.] The archaeological data suggest that this area was chosen because of an earlier well-established Jewish presence there, at least in Upper Galilee (Aviam, 1993), and to a lesser extent in the Golan, which was sparsely populated until the Late Hellenistic/Early Roman period (i.e., second–first century BCE; Urman, 1985). A study of the pottery has established the presence of household ware originating in Galilee competing at various sites with local Golan ware from the early Roman period onward (Adan-Bayewitz, 1993). This would seem to suggest that from the very beginning of Jewish expansion in the north under the Hasmoneans the Upper Galilee/Lower Golan formed a continuous region as far as the population of the north was concerned.

On the basis of the Meiron Survey it was concluded that the cultural continuum between Upper Galilee and the Golan was not maintained in respect of Lower Galilee (Meyers, 1976 and 1985; Meyers, Strange, and Groh, 1978). There, different influences could be discerned that brought the area more into line with the cultural life of the Greek cities of the Decapolis and the coast. [*See* Decapolis.] The results of ongoing excavations at Sepphoris in Lower Galilee seem to support this view (Meyers, 1986 and 1992; Strange, 1992), provided the overall perspective is maintained that Jewish identity was well-established in both Upper and Lower Galilee, certainly from the early Roman period onward. Despite the emergence of Sepphoris and Tiberias as important administrative and market centers in Lower Galilee in the first century CE, introducing such trappings of Greco-Roman life as the theater, it is noteworthy that neither of these centers has so far yielded evidence of pagan worship such as statues, dedicatory inscriptions and temples that are found, for example, nearby Scythopolis/Beth-Shean or in the Phoenician coastal cities. [*See* Sepphoris; Tiberias.] Even when the material culture shows far greater signs of a non-Jewish presence at Sepphoris, as witnessed, for example, by the third-century CE Dionysiac mosaic and the Byzantine Nile mosaic, there was at the same time a thriving Jewish intellectual presence at these centers corresponding to that which has left its traces in the great synagogue remains of Upper Galilee and the Golan (Miller, 1984; Meyers, Meyers, and Netzer, 1992; Netzer and Weiss, 1994). Synagogue remains in Lower Galilee, such as Hammath Tiberias, Ḥorvat ha-ʿAmudim, and Sepphoris with mosaic floors do appear to adopt a different attitude to the question of representational art (Levine, 1981 and 1987) to those in Upper Galilee, except for the Ark of Nabratein with the two lions and the decorated mosaic floor that has been overlain on the original stone one in the fifth-century CE Meroth synagogue (Meyers, 1993; Ilan, 1993). When all differences are allowed for, including climatic and geophysical realities, the material remains do not support a completely different profile for Upper and Lower Galilee in terms of lifestyle, openness to wider cultural influences, and opportunities (Edwards, 1988 and 1992; Overman, 1988 and 1993).

Population. Some of the most pressing problems in regard to Galilean history are those concerned with the issues of demography and ethnography. Archaeology contributes greatly to clarifying the changes from one period to another, and surveys have not only produced relative figures for settlement densities, but in some instances have identified their ethnic affiliations from the material remains. Pottery analysis, utilizing the most up-to-date methods—neutron activation analysis, binocular microscopy, xeroradiography, and thin-section analysis—has made it possible to draw much more precise conclusions about the provenience, manufacture, and distribution of those goods (Adan-Bayewitz and Wieder, 1992).

The findings of Zvi Gal's survey of Iron Age III sites (i.e., seventh–sixth centuries BCE) challenge Albrecht Alt's contention, argued from the literary sources for the most part, that the Israelite population in the Galilee was relatively undisturbed throughout centuries, thus providing the framework for the incorporation of the region into the *ethnos ton Ioudaion* by the Hasmoneans in the second century BCE (Gal, 1992; Alt, 1953). Alt believed that Galilee had fared better in the first Assyrian onslaught in 732 BCE than Samaria did in 721, when the native population was replaced by people of non-Israelite stock (*2 Kgs.* 15:29; 17:6, 24). The absence from eighty-three surveyed sites in lower Galilee of four different pottery types, dated to that particular period on the basis of stratified digs at Hazor and Samaria, has convinced Gal that there was a major depopulation of the area in the century after the fall of Samaria. Only additional stratified digs will decide whether this population gap was the result of the Assyrian aggression or was due to the migration of the country people to larger settlements.

It was only in the Persian and Early Hellenistic periods that signs of new settlements began to appear in this area once more. Preliminary results from the Archaeological Survey of Israel for Upper Galilee show an upward curve from 93 sites in the Hellenistic period to 138 for the Roman and 162 for the Byzantine periods, respectively (Aviam, 1993). This trend corresponds to the results of Dan Urman's survey of the Golan carried out for the Association for the Ar-

chaeological Survey of Israel and the Israel Antiquities Authority (Urman, 1985). It is best explained in terms of the incorporation of the whole Galilee/Golan region into the Jewish state and the need for new settlements and military outposts on both sides of the Jordan. The further increase of settlements in the Roman and Byzantine periods is directly attributable to internal Jewish migration for the most part, both in the wake of the second revolt and as a result of the increased Christian presence in the south from the fourth century CE onward.

These suggestions raise more acutely the issue of the ethnic mix of Galilee. Josephus reports (*Antiq.* 13.318ff.) on the enforced judaization by Judah Aristobulus I (in 105 BCE) of the Itureans, a semi-nomadic Arab people who became sedentarized in the Hellenistic period and who are associated with the Hermon region (Dar, 1988). The claim is that with the breakup of the Seleucid empire during the second century BCE, the Itureans infiltrated Upper Galilee—according to some (Schürer, rev. ed., 1973–1987, vol. 2, pp. 7–10, e.g.), almost all of Galilee—which was hitherto sparsely populated. Archaeological considerations give rise to a number of difficulties with this scenario, however. First, Upper Galilee was not as sparsely populated in the early Hellenistic period as the results of the Archaeological Survey already alluded to make clear (Aviam, 1993). Nor is the character of the settlements similar to those confidently identified as Iturean in the Golan (e.g., Khirbet Zemel), since the Upper Galilean settlements reflect an agricultural rather than a pastoral milieu, so obvious in the Golan remains (Hartel, 1987). According to Mordechai Aviam (1993) many of these settlements were abandoned in the Hellenistic period, only to have been replaced by others (regarded as Jewish from the period of the expansion in the second century BCE, based on the preponderance of Hasmonean coins). To complicate the matter further, sherds which, in terms of clay composition (pinkish brown with coarse grits) and style (from large storage jars, poorly finished) are not dissimilar to so-called Iturean ware from Hermon/Golan (Epstein and Gutman, 1972; Urman, 1985, pp. 162–164; Hartel, 1989, pp. 124–126), have also been found in Upper Galilee. The current political situation has prevented surveying the western Hermon region, which might reveal a greater Iturean presence that can be postulated at present. In any event the notion that most of the Galileans who appear in the first-century CE literary sources were forcibly converted Itureans receives no support from the archaeological data. The evidence indicates rather that if there were Itureans in Upper Galilee in the Early Hellenistic period, they left with the advance of the Hasmonean armies of conquest, an option which they were given according to Josephus (*Antiq.* 13.318ff.).

As already indicated, the marked upsurge in settlements from the Hellenistic to the Byzantine period is understandable in light of Jewish history. In some instances the synagogue remains alone, with their distinctively Jewish iconography, inscriptions, and liturgical architecture leave no doubt about the strength of the Jewish presence, especially in Upper Galilee/Golan from the Middle Roman to the Early Arab period at least. Architectural remains of synagogues from Lower Galilee are less well preserved, with a few notable exceptions (Chorazin, Capernaum, Hammath Tiberias), nonetheless a recent survey of some seventy sites shows almost as many remains for Lower as for Upper Galilee (Ilan et al., 1986–1987). [*See* Chorazin; Capernaum.] Based on stratigraphic evidence and literary sources, it can confidently be asserted that several of these later sites in both Galilees were Jewish settlements beginning in at least the Late Hellenistic period. It is surprising, therefore, that with the exception of Gamla and possibly Magdala, no remains of pre-70 CE synagogues have been identified [*See* Gamla; Magdala.] This may merely mean that in some instances at least they were insignificant edifices, and possibly smaller settlements had no communal building before the destruction of the Temple (Ma'oz, 1992). On the other hand the presence of *miqva'ot* (ritual baths) at such sites as Sepphoris, Jotapata, Gamla, and Khirbet Shema' from the Middle Roman period are clear indications that a sizable number of the population of such places were concerned with issues to do with ritual purity and its attendant way of life. [*See* Jotapata; Shema', Khirbet; Ritual Baths.] Presumably, the pattern did not differ greatly in the many other Jewish or predominantly Jewish settlements in the Galilee in the same period. The absence of any human or animal representations on the coins of Herod Antipas, the first to be struck in Galilee itself, would appear to support strongly such a conclusion.

The map of known Jewish settlements, especially where synagogue remains have been claimed, shows a concentration of sites in certain areas of both Galilees. In those districts there are few or no remains of a non-Jewish presence, whereas outside those subregions the evidence is unmistakable. The situation is most obvious in Upper Galilee where a Roman temple from the second century CE at Qedesh points to a thriving pagan culture (Aviam, 1985; Fischer et al., 1984). Farther north the bilingual inscription from Dan ("To the God who is in Dan"), as well as the grotto of Pan at Banias from Seleucid times at least, show that the region south of Hermon was thoroughly hellenized from an early period (Biran, 1981; Tzaferis, 1992b). [*See* Dan; Banias.] Herod the Great dedicated a temple to Augustus at Caesarea Phillipi (*War* 1.404–406; *Antiq.* 15.360). No material remains of Jewish presence have been found above a line that runs just north of Sasa, Bar'am, and Qazyon, all of which show unmistakable signs of having been Jewish communities. [*See* Bar'am.] To the west-southwest no synagogal remains have been found west of the line from Peqi'in to Rama in Upper Galilee, and a similar situation obtains in Lower Galilee west of the line running from Rama through I'billin to Tiv'on (Ilan et al., 1986–1987; Aviam, 1993). In the south

no clear evidence of Jewish communities have been found south of the Nazareth ridge. Outside these lines one is moving in the orbit of the Greek cities, especially Beth-Shean/Scythopolis and Akko/Ptolemais, while to the north Tyre was the dominant urban influence, even on Jewish Galilee. [*See* Akko; Beth-Shean; Tyre].

It is noteworthy that as well as the absence of synagogues, dedicatory inscriptions to pagan gods have so far been found only on the fringes of Galilee, such as the third-century CE inscription addressed in Greek to the Syrian gods Hadad and Atargatis from the region of Akko/Ptolemais, or the one addressed to the Heliopolitan Zeus on Mt. Carmel (Avi-Yonah, 1951 and 1959). On the other hand, the only remains of pagan worship from Jewish Galilee (apart from some personal votive objects from Sepphoris) is the Syro-Egyptian shrine at Har Mispe Yamim in the Hermon massif, a site which was abandoned already in the second century BCE (Frankel, 1992). The Jewish and non-Jewish areas were not hermetically sealed from one another, however. The evidence points only to the predominant ethnic identities being localized. The literary evidence that there were Jews living in the city territories of Palestine and that some non-Jews were also to be found in Jewish areas, is not negated. In both instances they would have constituted minorities that were more or less influential on their immediate environment at different periods.

This distinction between Jewish and non-Jewish elements in Galilee is strikingly confirmed by Christian remains. Early archaeological work concentrated on the important Christian sites associated with the life of Jesus, such as Nazareth, Mt. Tabor, Capernaum, and Tabgha. [*See* Nazareth; Tabgha; Tabor, Mount.] In these areas it would seem that Jews and Christians lived side by side from the Middle Roman period (i.e., second century CE onward) until the Persian conquest in 614 CE (Bagatti, 1971). In western Galilee Aviam (1993) has found many Christian settlements, identified by the number of crosses as well as dedicatory inscriptions on remains of tombs and churches, however. Some of the inscriptions are in Syriac and others are in Greek, suggesting that some of the local Semitic, non-Jewish population may have converted to Christianity. This concentration of a Christian presence in western Galilee seems to corroborate the fact that in that area at least, bordering on the territories of the Phoenician cities, the non-Jewish element continued to predominate from pre-Christian to Christian times.

Trade and Commerce. The literary sources presuppose a rural Galilee thickly populated with towns and villages, and well endowed with natural resources, not least the lake of Gennesar, with its thriving fish industry (Freyne, 1988, 1995a). This has been dramatically corroborated, not just by the discovery of the Galilean boat, but also by the survey of the many anchorages, breakwaters, harbors, and fish pools, often Roman in date, discovered around the lake when the water levels were very low in 1985 and 1986. (Nun, 1988; Wachsmann, 1990). [*See* Galilee Boat.] The names of two settlements on or near the lake, Tarichaea (Gk., "salted fish")/Magdala and Bethsaida, are directly associated with the fishing industry, the former in particular alluding to the practice of salting fish for export, introduced in Hellenistic times. [*See* Bethsaida.] The boat's discovery and the analysis of its construction underline the ancillary industry of boat-building which must have been considerable, especially if Josephus's figures are anything to go by (*War* 3. 522–531).

In light of recent analysis of the pottery (see above), it seems that the interior of Galilee also could boast of a thriving industry from the Early Roman to the Byzantine periods. Three important centers of pottery manufacture, both known in Talmudic sources for their wares, have been identified: Kefar Ḥananyah, on the borders of Upper Galilee overlooking the Beth-ha-Kerem valley (where a large, fourth-century CE kiln has been excavated; see Adan-Bayewitz, 1986 and 1989); Shikhin, tentatively identified with a site close to Sepphoris (Strange et al., 1994), and Nahf in western Galilee where two kilns have been uncovered (Vitto, 1983–1984). [*See* Kefar Ḥananyah.] Adan-Bayewitz's (1993) study of the pottery of Galilee not only distinguishes typologies as in previous studies (Díez Fernández, 1983), but also traces provenience and distribution patterns in order to determine local (intra- and interregional) trade. Pottery sherds from seventeen excavated and one surveyed site in Galilee and the Golan were subjected to a chemical analysis of the clay, enabling three separate provenience groups to be determined: Kefar Ḥananyah, Shikhin, and Golan wares. It was concluded that the two Galilean centers provided the majority of the household wares for all of Galilee in addition to a sizable minority of the Golan wares over a considerable period of time. The wares from Kefar Ḥananyah and Shikhin are distinguishable from each other by both form and clay components. Thus, two local manufacturing centers emerge in what would technically be described as Galilean villages (and no doubt there were others like Nahf), each with its own specialization and use of local resources. This points to a rapidly developing market economy, that is interested in supplying surplus goods within a regional trading network of some significance for Galilee as a whole (Adan-Bayewitz and Perlman, 1990).

Kefar Ḥananyah provided 10–20 percent of household wares in the Golan from the Early to Late Roman periods, but no Golan ware has so far been found in Galilee, according to David Adan-Bayewitz's (1993) findings. The fact that the Galilean wares are found not just at Jewish Golan sites such as ʿEin-Nashut and Dabiye but also at Tel Anafa and Hippos/Susita, both Hellenistic foundations, shows that the trade was not just interregional but also interethnic, something that is confirmed by the presence of the Kefar Ḥananyah ware at Akko/Ptolemais also. [*See* Anafa, Tel.] The fact that no Galilean ware was found among the pottery

remains of sites south of the Nazareth ridge, such as Samaria and Beth-Shean/Scythopolis, as well as at the more southerly sites in Transjordan, is surely significant in terms of the extent of the trade. This may be due to several factors: transportation difficulties, ritual concerns to do with vessels, interregional—or, in the case of Samaria, interethnic and religious—rivalries, or competing local ware (as in the case of the Golan, where a local pottery trade could be identified, but which clearly was not sufficient to meet all the local needs).

The pattern of local trade emerging from this study of the pottery is also substantiated by a consideration of the coins to be found at Galilean sites. Money played an important role in the development of more sophisticated modes of exchange in ancient economies (Freyne, 1995b). Galilee had its own coinage, albeit of modest proportions, under Herod Antipas, for whom three strikings of bronze coins have so far been identified. In addition, the cities of Sepphoris/Diocaesarea (from 67 CE) and Tiberias (from 100 CE) struck coins, but the scale appears to be limited by contrast with such important trading centers as Tyre (Meshorer, 1985). The coinage of Tyre (both autonomous city coins and Roman imperial ones struck there) predominates at both Upper and Lower Galilean sites, as well as in the various hoards of coins that have been unearthed. No coins from Lower Galilee occur at any of the Upper Galilean sites, however (Ben-David, 1969; Barag, 1982–1983; Hanson, 1980; Raynor and Meshorer, 1988). Thus a pattern emerges in which Tyre continued to be the predominant outlet for Galilean produce, as suggested by the prophet Ezekiel (chap. 27) already in the sixth century BCE (Diakonoff, 1992). In turn, it depended on the hinterland for its own needs, grain and oil in particular, as well as benefiting from the export trade. The identification of olive and wine presses from western Galilee in particular conforming to a typology found in the Syro-Phoenician region generally, confirms this network of everyday influences that transcends ethnic and cultural affiliations (Frankel, 1992). It is probable that there were regional exchange centers within Galilee also, such as the sites excavated by the Meiron Expedition (Khirbet Shema', Meiron, Gush Ḥalav) and equally Sepphoris for Lower Galilee, where storage cisterns as well as a weight inscribed with the word *agoranomos* (a Greek magistrate who oversaw transactions in the marketplace) has been discovered (Meyers et al., 1986).

Of the excavated Galilean sites in Upper Galilee, only Nabratein does not seem to conform fully to this pattern. The coin profile there is quite different from the other sites excavated by the Meiron Expedition, with Tyrian coins poorly represented. At the same time the evidence from many plastered storage pits is that it, too, served as a collection center for local produce, wine, and oil. This suggests that its location pointed Nabratein in a more easterly orientation, toward the Hulah valley and beyond for its trading contacts. This conclusion underlines the adaptability of the Jewish population to its larger environment, and in the case of Nabratein, animal representation in the synagogue shows how this diversification is echoed in religious expressions also, but within a thoroughly Jewish framework. Even at the other Upper Galilean sites that might be labeled conservative in terms of their religious observance, the detailed excavation reports of the Meiron team note the presence of imported fine ware from Cyprus, North Africa, and the East in the late Roman period. This shows that these places were thriving economically, and suggests that their religious views did not isolate them from the trappings of affluence, as expressed in luxury household wares in the region generally (Meyers, Strange, and Groh, 1978).

Charting of the road systems contributes greatly to an understanding of Galilean trading patterns, even when developments in this regard for the Roman period are associated with the greater military presence in Palestine rather than with trading, after the two revolts, especially that under Hadrian (132–135 CE). The presence of milestones and paving, often on top of older tracks from the Hellenistic period, can help in the dating of this process (Roll, 1983 and 1994; Strange, 1994). Earlier discussions of the road systems tended to concentrate on the through roads, particularly the Via Maris, which was believed to bifurcate on crossing the Jordan below the Sea of Galilee, one branch traveling south via Beth-Shean/Scythopolis to Jerusalem and the other heading for the coast through the Great Plain. In addition a road linking Tyre with Damascus through Banias is also suggested (Avi-Yonah, 1966). The more recent archaeological evidence fills out this picture considerably for Lower Galilee through the discovery of milestones: a road from Akko/Ptolemais to Sepphoris and on to Tiberias (nine milestones, seven before and two after Sepphoris, going west); a road from Tiberias, south to Beth-Shean/Scythopolis (nine milestones); a second-century road from Beth-Shean/Scythopolis to Legio in the Jezreel Plain (fifteen milestones); another second-century road from Legio to Akko/Ptolemais (five milestones); a road from Legio to Sepphoris (thirteen milestones), and a road from Bethsaida-Julias northwest past Chorazin, possibly linking to Akko/Ptolemais (Roll, 1983 and 1994). Further exploration will undoubtedly uncover a much more complex network of local roads than is possible to document at present, especially around the larger settlements, such as those reported for the Sepphoris region by Strange (1994).

Language. Language is a general indicator of a wider pattern of cultural affiliation. Inscriptions alone, therefore, are of only limited value in determining everyday language patterns. They may be stylized and atypical, depending on the circumstances in which they occur, as well as on other, more far-reaching factors to do with language, such as its use for administrative or commercial purposes and the possibility of bi- or trilingualism in mixed ethnic contexts. In the Gal-

ilee setting the foremost archaeological data for language patterns are the many inscriptions from the necropolis of Beth-She'arim in western Lower Galilee. These are normally dated from the period of Rabbi Judah the Prince (c. 200 CE). [See Beth-She'arim]. The site continued as a necropolis until after the Gallus Revolt in the mid-fourth century CE. Some have suggested that chambers 6 and 11 where only Greek is found should be dated to the first century CE (Lifshitz, 1965). Even then, however, the question is raised about how representative this evidence is of the linguistic habits of Galileans. The Greek is, in many cases, "vulgar" rather than cultured in style, which may point to its being rooted in the region's colloquial practices. The location of Beth-She'arim, however, on the borders of the district of Akko/Ptolemais might be seen as making it unrepresentative, even for Lower Galilee. The practice of secondary burials from the Diaspora also needs to be borne in mind in evaluating the significance of the language of burial inscriptions.

In Upper Galilee, where it might be expected that Greek would be well represented at sites as a result of trade links, Hebrew and Aramaic were found to dominate. A few scattered examples of Greek have emerged—an ostracon and ring from Gush Ḥalav, an inscribed storage jar from Meiron, and a bilingual inscription from Firim (modern Rosh Pinah), and the well-known inscription from Qatsyon (possibly from a Jewish site) honoring Emperor Septimius Severus (Meyers and Strange, 1981; Meyers, 1985, p. 120). [*See* Gush Ḥalav.] This is in sharp contrast to the linguistic picture emerging further north in the non-Jewish areas from sites such as Qedesh, Banias, and the Hermon region generally (Fischer et al., 1986; Tzaferis, 1992; Dar, 1992). It seems that in Upper Galilee, a conservative linguistic pattern corresponded to an equally conservative attitude toward religious art, despite the readiness of the Jewish inhabitants to trade with the most influential commercial center in the area, Tyre, with its pagan associations.

In Lower Galilee the regional differences in terms of ethnic mix and openness to the surrounding culture (see above) come into play. In addition to the possibly exceptional site of Beth-She'arim, Greek appears at sites along the western shores of the lake and in the lower part of central Lower Galilee, the very areas where, on the basis of both the literary and architectural remains, the Jewish population was located. Yet those Hebrew and Aramaic inscriptions that are found in lower Galilee also occur in these regions. This suggests a pattern of bi- or even trilingualism for Jews in Lower Galilee (Greek, Aramaic, and Hebrew), as distinct from Upper Galilee, where the pattern is Aramaic/Hebrew. However, several factors urge caution: the majority of Greek inscriptions are at Christian sites and date from the Byzantine period; there is a relative paucity of Hebrew/Aramaic inscriptions, which may not reflect the actual picture, but may simply be the result of the poorly preserved state of synagogue remains in Lower Galilee; and the rabbinic sources, though written in Aramaic and Hebrew, show a high incidence of Greek loan words, pointing to a situation in which Aramaic was the lingua franca, but with a gradual infiltration of Greek.

The attempt to produce a comprehensive picture of Galilean society on the basis of the archaeological evidence alone, highlighted by this discussion of the epigraphic evidence for linguistic practices, inevitably must be tentative and open to constant revision. New discoveries are made yearly and more and more sophisticated methods are applied to examine the data from the region from which two world religions have emerged. Archaeological evidence and literary descriptions must be critically correlated, a task that calls for considerable methodological sophistication in several disciplines. Literary theorists have made us aware that all texts are tellings rather than showings; archaeology provides a showing in need of a critical telling.

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SEÁN FREYNE

GALILEE BOAT. A two-thousand-year-old vessel was discovered in the Sea of Galilee in 1986, south of Kibbutz Ginosar. Found by Moshe and Yuval Lufan, the boat was entirely buried in sediment on an expanse of exposed lake bed. A severe drought had lowered the lake's water level.

The Israel Department of Antiquities carried out a probe that indicated that much of the lower portion of the hull had survived in good condition. Initial investigation revealed that its strakes (planking) had been edge-joined one to the other with pegged mortise-and-tenon joints. This method is known to have been used in the construction of Mediterranean seacraft at least by the Late Bronze Age; it continued in use at least until the end of the Roman period.

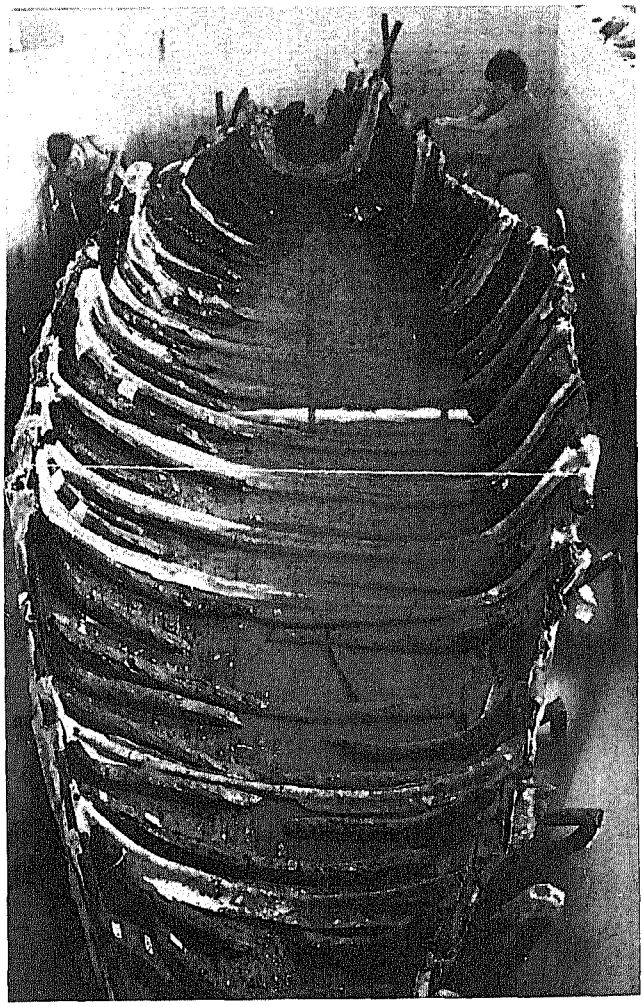
Upon the vessel's discovery, the media termed it the Jesus Boat, causing a great stir and initiating a chain of events that threatened the hull's well-being. To prevent any danger to it, the Department of Antiquities carried out an unusual salvage excavation, assisted by volunteers from the Yigal Allon Center, Kibbutz Ginosar, and Moshav Migdal. During the excavation the project's conservator, Orna Cohen, invented a novel method for packaging the hull for transport using fiberglass frames and polyurethane. Once excavated, the boat was sailed out onto the lake and brought to the Allon Center, where a specially built conservation pool was built to conserve it (see figure 1).

The boat's dating was determined by the techniques used in its construction, by pottery found in its proximity, by a battery of carbon-14 tests, and by historical considerations. While no one of these methods is sufficient by itself, together they strongly suggest that the boat was in use on the Sea of Galilee between 100 BCE and 67 CE.

During the excavation, noted ship reconstructor J. Richard Steffy carried out a preliminary study of the hull (see figure 2). Its method of construction was typical in the Mediterranean basin at the time, when it was the practice to build the shell first: after laying the keel and posts, the builder(s) edge-joined the planking one to the other with mortise-and-tenon joints. Only after the hull was raised to a sufficient height were frames inserted into it. [*See* Seafaring.] The boat's preserved length is 8.2 m; its maximum width is 2.3 m. At the stern, where it is best preserved, it is 1.2 m high.

Two timbers were joined with a scarf to form the keel, which is rectangular in section and rockered (curved so that it is deeper amidships than at the boat's extremities). It has no rabbets (grooves). Instead, the abutting garboard strakes are attached horizontally to the keel with mortise-and-tenon joints into which pegs were driven from above. The forward part of the keel contained a row of mortise scars indicating that it had seen previous use.

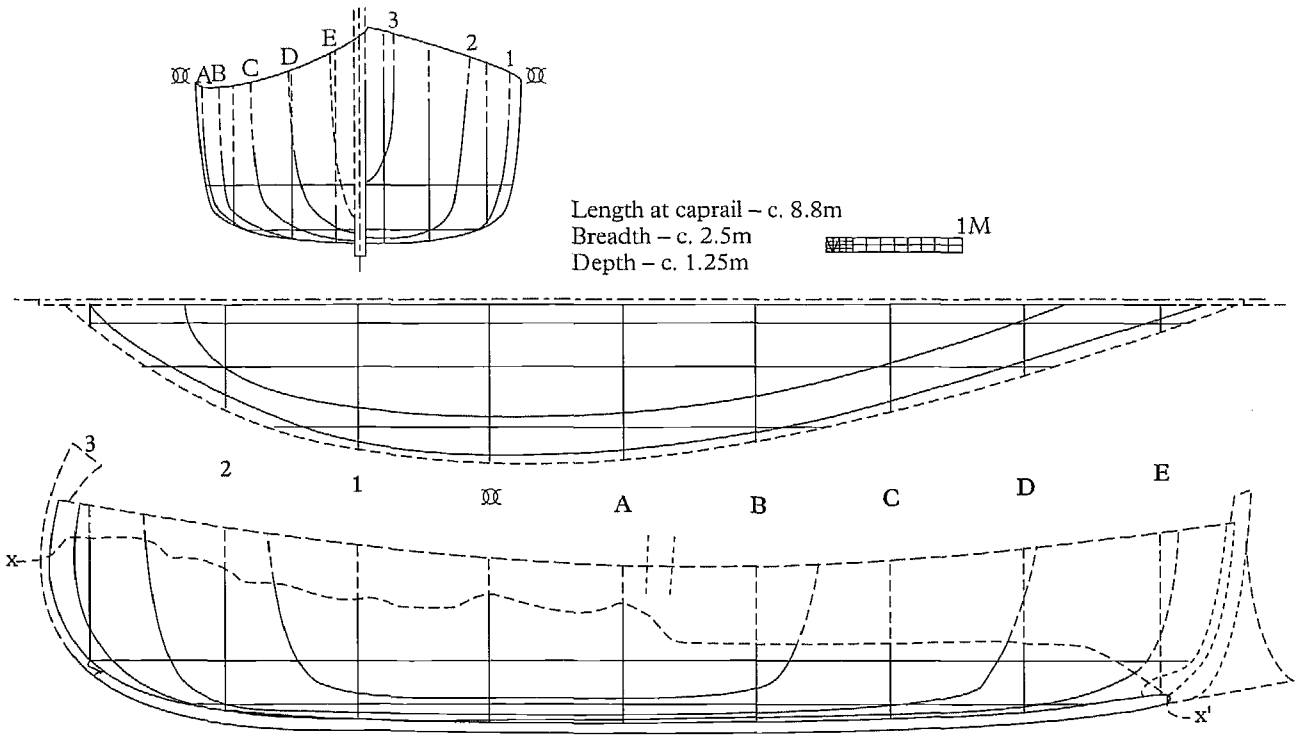
The hull's planking is somewhat unusual. In many cases the strakes are peculiarly narrow, apparently the result of at least some of the planks also having been recycled from earlier vessels. This would have required the removal of the mortise-and-tenon scars on the lateral and dorsal edges, which resulted in the narrowing of the planks. The mortise-and-tenon joints are placed at 12-cm intervals and locked with tapered pegs driven from inside the hull.



GALILEE BOAT. Figure 1. *The Galilee Boat in its conservation pool.* (Photograph by D. Syon, courtesy Israel Antiquities Authority)

The "floor and half-frame" framing pattern is also typical of contemporary Mediterranean ships. Frames were fashioned from timbers poorly suited to their purpose, so that at times they spring significantly from the planking. Some frames still have their bark attached. The boat's construction suggests that it was built by someone familiar with the shipbuilding techniques prevalent on the Mediterranean coast. However, the boatwright used timber of inferior quality to that normally in use on the Mediterranean.

Forty-one of the boat's timbers have been identified by E. Werker. The majority of the strakes studied were fashioned from Lebanese cedar *(Cedrus);* most of the frames were made of oak *(Quercus)* branches. Five additional types of wood have been identified in the boat's construction: sidder (*Ziziphus spina-christi,* also known as christ-thorn or jujube)



GALILEE BOAT. Figure 2. *Preliminary line drawings of the boat.* (Drawing by J. R. Steffy, courtesy Institute of Nautical Archaeology)

for the aft part of the keel; Aleppo pine *(Pinus halepensis)* for one of the planks; and single examples of frames from hawthorn *(Crataegus)*, willow *(Salix)*, and redbud *(Cercis siliquastrum)*. With the exception of the cedar, all these trees grow, or grew, in the vicinity of the Sea of Galilee and its environs. The use of a variety of different woods (some of which are inappropriate for naval construction) is highly unusual. Taken together with the evidence for the recycling of wood, this suggests either a deficit of wood or that the boat's owner could not afford better timber.

The boat could have been propelled by oar or sail. It had had a long work life, as evidenced by numerous repairs to the hull. Some repairs had been made by strengthening the planking with large iron staplelike fastenings where the mortise-and-tenon joints had given way.

This type of boat appears to have been built specifically for use with the large seine net (Gk., *segena*) by means of which fish were caught near the shore (*Mt.* 13:47–50). [*See* Fishing.] It was probably the largest type of boat on the lake. Boats of similar size, termed *Arabiye* in Arabic, were used for fishing with the seine net on the Sea of Galilee into the twentieth century. In addition to fishing, the boat probably served a variety of other purposes, including transporting passengers and supplies around the Sea of Galilee.

Some parts of the hull had been intentionally removed in antiquity, among them the stem construction, the sternpost, the mast step, and several of the frames.

Some of the most memorable Gospel stories deal with voyages and fishing on the lake. The Sea of Galilee and its fishermen and sailors serve as the backdrop to Jesus' ministry. Until the discovery of the Galilee boat, however, virtually nothing concrete was known concerning the boats used on the lake then.

A boat depicted in a first-century CE mosaic from Migdal carries two oars and a quarter rudder on its port side, thus requiring a minimum crew of five: four oarsmen and a helmsman/captain. [*See* Mosaics.] Steffy postulates that a similar number of crew would have been required for the Galilee boat. Furthermore, references to the boats of Zebedee and Simon/Peter—the only two boats specified in the Gospels—indicate that they also had crews of five or more men (*Mk.* 1:20; *Jn.* 21:2–3). Thus, all these sources refer to the same type of boat. Similarly, Josephus, in describing a "sham" fleet he brought against the citizens of Tiberias during the first Jewish Revolt against Rome, mentions placing skeleton crews of four sailors in each of the (fishing) boats in his fleet; elsewhere he refers to helmsmen, indicating that his boats were manned by crews of five men (*Life* 32.163; *War* 2.635, 641). [*See* First Jewish Revolt.]

Despite popular belief, it is not possible to determine how

many individuals took part in any of the boat trips recorded in the Gospels. Josephus, however, indicates that a boat of this type could hold up to fifteen men (*Life* 32.164; 33.168; *War* 2.639).

The boats used by Josephus in his sham fleet are apparently the same ones later used by Jewish forces in their naval battle against Vespasian's troops, following the fall of Migdal, in fall 67 (*War* 3.522–531). During the Roman investiture of the city, some Jews managed to escape in a fleet of fishing boats that had been prepared in anticipation of the Roman advance. Against this fleet Vespasian's forces built makeshift vessels, perhaps catamarans constructed from Jewish boats that had been left behind—and vanquished the Jews.

A pyramidal iron arrowhead found in the sediment inside the Galilee boat is apparently of foreign origin and may have been fired by a Roman *auxilia* archer during the battle. Fourteen similar arrowheads were found at Gamla, the next Jewish city conquered by Vespasian after Migdal. [*See* Gamla.] The arrowhead was not found in an archaeological context, however, and therefore does not indicate that this particular boat participated in the battle. Rather, the evidence suggests that, at the end of a long work life, the boat was brought ashore to have all its reusable parts cannibalized. What remained of the hull was then pushed into the lake, there soon to be buried under sediment.

During the excavation portions of two additional hulls were found in the immediate vicinity of the Galilee boat, suggesting that the boat's find site was an area of boat-building activity in antiquity.

The Galilee boat has provided valuable information about a type of large boat in use on the Sea of Galilee during the first centuries BCE and CE. However, there presently is no evidence to suggest that this vessel took part in any of the events mentioned in contemporary literary sources.

[*See also* Anchors; *and* Ships and Boats.]

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SHELLEY WACHSMANN

GALLING, KURT (1900–1987), Hebrew Bible scholar and archaeologist. Born in Wilhelmshaven, Germany, Galling, after completing his gymnasium studies in Berlin in 1917, joined the army, in which he served until the end of World War I. He went on to study theology and oriental studies at the universities of Berlin and Jena. He completed his thesis "Licht und Beleuchtung in Vorstellung und Darstellung israelitisch-jüdischer Kultur" in 1921 and was promoted to doctor of theology. Continuing his studies in classical archaeology, Galling received a Ph.D. with the thesis "Der Altar in den Kulturen des Vorderen Orients." In 1925, having written a third thesis, "Die Erwählungstraditionen Israels," he was promoted to lecturer for Old Testament and biblical archaeology at Berlin's Humboldt University. Between 1928 and 1946 he taught at the university in Halle, where he was an associate professor. From 1946 to 1955, as a full professor, he held an Old Testament chair at the University of Mainz and then, from 1955 to 1962, at the University of Göttingen. He served as director of the Institute of Biblical Archaeology at Tübingen University from 1962 to 1969. He lived in Tübingen until his death.

Galling combined the philological and archaeological aspects of Old Testament studies. Although he had participated in the excavations at Shechem and Tell Beit Mirsim, he never took an active part in fieldwork. Nonetheless, he wrote numerous articles on archaeological subjects and in 1937 published the *Biblisches Reallexikon*, with the intention of illustrating biblical terms, texts, with information about the archaeology of Palestine and other lands of the Bible (a second edition appeared in 1977). Galling's primary area of research was the history and archaeology of the Persian period. As editor in chief he succeeded in publishing the third edition of the theological encyclopedia *Die Religion in Geschichte und Gegenwart*. At the end of his academic career, in 1970, he was honored with a Festschrift, *Archäologie und Altes Testament*, that includes articles written by his colleagues and pupils from all over the world as well as a comprehensive bibliography of his work.

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VOLKMAR FRITZ

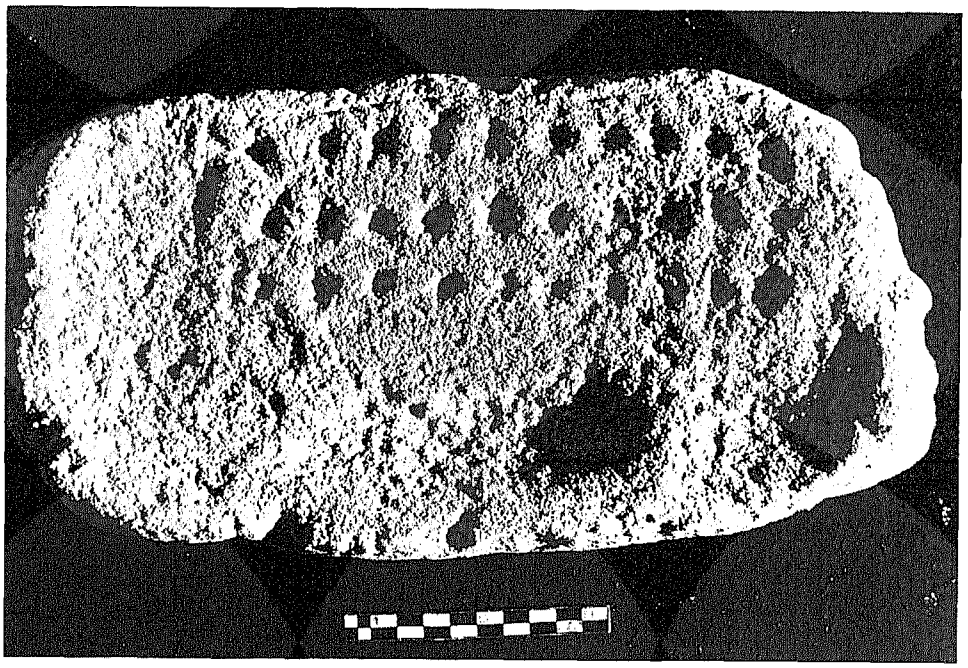
GAMES. Play is one of the central human expressions. Although anthropologists suggest that human beings have always played games, they have not always produced play-

things for use in their games. Objects that are clearly identifiable as toys do not appear in the ancient Near East until the Neolithic period. In general, games and toys can be reconstructed using literary, epigraphic, archaeological, and iconographic sources. Ethnological findings complement and secure the overall picture. The legitimacy of such process of reconstruction is greatly strengthened by the essentially conservative character of most games: a majority of the games played in the various cultures of the ancient Near East were played in the same or a similar manner. Many games have preserved their continuity over centuries and millennia into the modern period. As a whole, however, the historical reality can only be partially recaptured. Because an appreciable portion of ancient playthings was produced of perishable materials such as leather, wood, and unburnt clay or consisted of living animals or were the spontaneous inventions of children, it is clear how little the evidence for the reconstruction approaches historical reality. In addition, the lack of evidence for a game does not necessarily mean that it was unknown in the region under consideration. For example, neither swings nor seesaws are evidenced in ancient Palestine, yet they are well attested among various other pre- and post-Hellenistic cultures in the Near East. Thus, it can be deduced, with probability bordering on certitude, that Palestinian children of the first millennium BCE played with swings and seesaws, even without direct material evidence. From both a phenomenological and an empirical perspective, practically anything can become a toy. Therefore, definitions of playing and playthings are deliberately avoided here (Vandenberg, 1982).

The first toy played with by young children was probably the archaeologically well-attested rattle. Older children enjoyed playing with live birds (cf. *Jb.* 40:29) and turtles, as the votive statues from the Eshmun sanctuary in Bustan esh-Sheikh near Sidon (fourth century, BCE) indicate. Other archaeologically and literarily attested toys include terracotta model wagons, miniature dishes, and beds and animals made of clay, wood, and other materials (cf. Lucian, somn. 2; *Arabic Infancy Gospel* 26:1f). Indirect evidence for playing in the sand is found in *Ezekiel* 4–5. *Isaiah* 22:18 attests to play with balls made of scraps of wool and cloth; they also appear iconographically in Mesopotamia and archaeologically in Egypt. Boys probably liked to play hunting and war games with various weapons, while girls enjoyed playing house with dolls. Together they probably played hide-and-seek (cf. *Arabic Infancy Gospel* 40:1), the "royal game" of *basilinda* (cf. Philo of Alexandria, *In Flacc.* 36–129; *Arabic Infancy Gospel* 42:2) and even *kollabismos* (Gk., a game of teasing; Pollux 9.129). Children in the ancient Near East often played with tops. A series of tops made of wood and other materials is preserved from pharaonic and postpharaonic Egypt. On an eighth-century BCE relief from Carchemish, youths are depicted rotating tops by means of straps. Small (clay) disks in which holes are bored are widely attested in Bronze and Iron Age Palestine, Phoenicia, Syria, and Mesopotamia: a string run through two holes would be by stretched and then relaxed, making the disk whirl, jump, and emit a buzzing or humming sound. This type of disk, known as a buzz or a bull-roarer in English, was called an *iygx* in the Greek world and an *iunx (iynx)* in Latin (Van Beek, 1989).

Both children and adults played with astragali, or animal knucklebones. Astragali are not only the most widely attested but also among the earliest evidenced toys in the ancient Near East. Owing to their four long sides, they were used as four-sided dice. Astragali could be reproduced in other materials, such as stone, metal, and glass. Games employing astragali were played until modern times. Astragali could also be used as dice for board games or as lots for divination. In addition, a number of games were played solely with astragali, including *pentelitha* ("five stones," a game of skill); *ludere par impar* ("to play odds and evens," a guessing game); and *tropa* (also called *orca*) and *ōmilla* (two types of "marbles" games; see the Carchemish relief). In the Middle Bronze Age, six-sided dice in the shape of cubes or truncated pyramids were also used. In the centuries that followed, astragali and dice were used concurrently. Dice, which can be manufactured from a wide range of materials, have, like astragali, been used by children and adults in dice and board games and as lots. In the Roman and Byzantine Near East, playing (throwing) dice is evidenced both iconographically and literarily (Nonnos, *metaphrasis Evangelii Ioannis* 19:23–24; Gk., *morra,* and Lat., *digitis micare*).

Among the various board games attested archaeologically in the Near East, the most popular was the thirty-field game called Senet in Egypt. Evidence for the game has been found from the prehistoric through the Ptolemaic periods (Pusch, 1979). The board consisted of three parallel rows of ten square fields each. The rules are largely unknown, although it is clear that the pieces were advanced by two players by throwing dice. The game was known in Palestine as early as the Neolithic period; in the Bronze and Iron Ages, evidence of the game has been found in Syria, Phoenicia, Mesopotamia, Iran, and on Cyprus. Varieties of the game were played into the Hellenistic-Roman period. Of equal popularity was a game that consisted of a board with 4 + 4 + 12 (= 20) fields (and variations; see, e.g., *ANEP,* 2d ed., no. 212). It was played as of the Middle Bronze Age in Palestine, Syria, Mesopotamia, Egypt, and on Cyprus (*ANEP,* 2d ed., no. 214). In addition, board games usually evidencing about fifty-eight holes were widespread in Egypt, Palestine, Syria, Mesopotamia, Iran, and Anatolia in the Bronze and Iron Ages (*ANEP,* 2d ed., nos. 213, 215). Nine Men's Morris (merels), checkers (draughts), and mancala are board games that are still being played. The first appeared in the Near East in the Roman-Byzantine period, as did a twelve-line dot game (Lat., *ludus duodecim scripta* or *tabula;* Ar.,



GAMES. *Middle Bronze Age gaming stone found at Episkopi-Phaneromeni, Cyprus.* (Courtesy ASOR Archives)

ṭāwila or *nard*) that is similar to modern backgammon. The gaming pieces used vary widely in form and material. Board games, like other games, could be played not only by the living, but by the dead (cf. grave inventories) and by the gods (cf. *Is.* 22:18; *Jb.* 40:29; *Ps.* 104:26; and Plutarch, *De Iside et Osiride* 12).

The inhabitants of both cities and villages were entertained by jugglers, jesters, fire (Jerome, *Apol. contra Rufin* 3:31) and sword swallowers, wandering musicians, and acrobats, as indicated, for example, on reliefs in Turkey at Alaca Höyük (fourteenth century BCE) and Zincirli (eighth century BCE), and by later literary sources (Jerome, epistle 58:4; Tosefta, *San.* 67b; B.T. *Suk.* 53a; see Blocher, 1992). Exhibitions of strength, such as weightlifting (Jerome, *In Zaccharaim* 12:3; *vita Hilarionis* 17), wrestling, and boxing, were also included (cf. *ANEP,* 2d ed., nos. 218, 219; *Testament of Job* 4:10; 27:3–4; *Armenian Infancy Gospel* 21:6–7).

Traditional games that belonged to the private sphere (e.g., tops, astragali, board games) continued to be played in the Hellenistic-Roman period. Hellenization and its cultural and economic opportunities brought with them a gaming culture that had hitherto been largely unknown in the Near East. It was a culture in which the indigenous inhabitants were passive onlookers, rather than participants. If at first these games consisted of athletic and musical contests in the Greek tradition (cf. Plutarch, *Alexander* 72), in the Roman period the most popular ones were horse and chariot races, wrestling and boxing matches, gladiatorial contests, animal hunts, and naval battles. In order to organize these mass entertainments, most large cities in the Roman Empire built theaters and odeums (odeons); gymnasiums, or palestras; and amphitheaters and hippodromes. (The latter often cannot be distinguished because they were erected as multipurpose structures.) The level of distribution of these archaeologically well-attested structures decreased from west to east. Nonetheless, theaters (or odeums) are to be found in Syria at Palmyra and Dura-Europos, and gymnasiums are found in Babylon and at Ai Khanum on the Oxus in Afghanistan. The new gaming culture also left behind many traces in the native languages of the Near East: in Aramaic and in Syriac, for example, many Greek and Latin loanwords appear, among them theater, stadium, and circus.

[*See also* Odeum; *and* Theaters.]

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ULRICH HÜBNER

Translated from German by Carl S. Ehrlich

GAMLA, Jewish town in the southern Golan Heights at the time of the First Jewish Revolt against Rome (map reference 219 × 256). It is first mentioned by the Jewish historian Josephus Flavius in connection with Alexander Jannaeus's military campaign in the region in about 83–80 BCE (*War* 1.105; *Antiq.* 13.394). The town was conquered by the Roman legion and destroyed in the fall of 67 CE. Josephus describes in some detail the city and the topography of the hill on which the town was constructed (*War* 4.1–83). Based on this description, Y. Gal first identified a rocky spur between the branches of Naḥal Daliyyot near the village of Deir Qeruh in the southern Golan at Gamla. The site, called es-Sunas in Arabic, was surveyed by Shmaryahu Gutman in 1970. The lower flank of the spur was excavated under his direction beginning in 1976 on behalf of the Israel Department of Antiquities and Museums. The excavations confirmed Gal's hypothesis.

Remains recovered at Gamla date mainly to the Late Second Temple period through the Jewish Revolt of 66–74. The earliest numismatic remains date to the reign of Antiochus I Soter (280 BCE); the latest are a coin of Akko from the time of Vespasian and six Jewish coins of the First Revolt with the legend "For the redemption of h[oly] Jerusalem," a coin type found only at Gamla.

During the first century, Gamla had a fortification wall that extended for about 350 m to the east of the settlement. Gutman excavated along the wall for its entire length, both within and outside the city. The excavations revealed residential areas and an olive press. On its other sides the town was protected by the hill's steep cliffs. On the east, a large public building identified as a synagogue was discovered adjacent to the town in the first season of excavation. During the Roman siege, the wall was breached at this place. It was repaired once by the defenders and reopened by the Romans.

The synagogue building was constructed of local basalt. It was a rectangular structure (25.5 × 17 m) situated on a northeast–southwest axis. The main entrance was on the west, with an exedra and an open court in front of it. A ritual bath *(miqveh)* was uncovered to the right of the court. The center of the hall (13.4 × 9.3 m) is unpaved and surrounded (except for the main entrance) by stepped benches. Columns divided the unpaved area into two sections: the section on the west is aproximately 7.0 × 6.5 m, and the one on the east 4.0 × 6.5 m. Above the benches is a broad, paved platform with benches that adjoin the exterior walls. The hall is surrounded by four raised platforms. A small basin that the excavator believes was used for hand washing was uncovered (Gutman, 1993). It was fed by a water channel that passed through the wall at the northern part of the basalt paved platform above the four benches on the east. The lintels and capitals of this building, also of basalt, were carved with ornamentation.

Several rooms were discovered to the east of the synagogue, within the first section of the city wall. Gutman suggests that during the siege the room adjacent to the synagogue was filled in to strengthen the wall. Benches on the sides of this room, and what apparently is a window through to the synagogue, were uncovered there. Gutman identifies this as a study room. He suggests that the synagogue, adjoined by a study room, a ritual bath, and a courtyard constituted a community center of sorts for study and prayer. His model for this interpretation is the medieval European synagogue complex, a form that (like synagogue prayer) is presently still unattested. The function of this study room is unknown.

[*See also* First Jewish Revolt; Golan; *and* Synagogues.]

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STEVEN FINE

GARDENS. [*To provide a general typology and morphology of gardens, this entry comprises three articles:*

Gardens in Preclassical Times

Gardens of the Hellenistic and Roman Periods

Gardens of the Islamic Period

Each article surveys the historical development, forms, and functions of gardens during the periods in question.]

Gardens in Preclassical Times

In Mesopotamia, Persia, and Egypt, gardens and parks were generally irrigated land enclosed for collections of cultivated plants and animals; in Lebanon and in temperate areas, managed native habitats or reserves are attested. Gardens are differentiated from other cultivated areas by the water supply and labor regime needed to maintain them, by the language and images used to describe them, and often by their association with architecture. Few gardens have been excavated, but landscape archaeology is an emerging subdiscipline; as cultivated sites are excavated, the textual and art historical evidence will grow.

Mesopotamia. Gardens in Mesopotamia existed in parks, palaces and estates, and temples.

Parks. Gardens first appear in the texts of the third millennium (Postgate, 1994, p. 174). The Epic of Gilgamesh describes a park. Gilgamesh and his companion enter a bounded wood in the Amanus Mountains. The fearsome Humbaba guards its straight paths and tends the cedars. The story raises themes constant in Near Eastern garden history: fascination with foreign landscapes and plants; the admirable, essentially human order of the straight path and plantings; and the violent act of cutting down the trees of one's vanquished enemy.

Stephanie Dalley (1986) points out that in the Sumerian language no distinction is made between an orchard of trees and a garden. Kings boast of large parts of cities devoted to these parks, of the great irrigation works that feed them, and of the distant lands from which the plants and animals are gathered. Tiglath-Pileser I (1114–1076 BCE) created a combined zoological park and arboretum of exotic animals and trees. Ashurnasirpal II (883–859 BCE) created a garden/park at Nimrud (Kalḫu) by diverting water from the Upper Zab River through a rock-cut channel for his impressive collection of foreign plants and animals. [*See* Nimrud.] Sennacherib (704–681 BCE) makes a similar claim for Nineveh. [*See* Nineveh.] Parks are beautifully represented on the reliefs from Sargon II's (721–705 BCE) palace at Khorsabad, in which a variety of trees and a small pavilion with proto-Doric columns are depicted. [*See* Khorsabad.] Other reliefs depict lion hunts and facolnry in the parks. A clay tablet from Babylon names and locates vegetables and herbs in the garden of Merodach-Baladan II (721–710 BCE). [*See* Babylon.] In the palace reliefs of Ashurbanipal, the garden symbolizes the abundance and pleasures of peace after bravery in battle (Albenda, 1977).

Not only are plants collected, but so are entire landscapes. One of Sennacherib's parks is rare in garden history: a recreated marsh of the southern Euphrates River, with canebrakes, wild boar, and roosting herons. [*See* Euphrates.] Elsewhere, terracing provided the three-dimensional evocation of mountains. The famous Hanging Gardens of Babylon of Nebuchadrezzar II (605–562 BCE) were described as being in imitation of the alpine landscape of Media. An archaeological identification of their location on the Euphrates has been rejected, however (Dalley, 1986, p. 370).

Palace and estate gardens. Gardens also formed part of the architecture of the ancient Near East. Texts locate a garden in the internal courtyard of the royal palace at Mari (nineteenth century BCE), featuring palm trees and an ornamental pool. [*See* Mari.] In fifteenth century BCE Ugarit, texts speak of a court with a large stone pond and another with plants and walkways, a pavilion, and a large trough. [*See* Ugarit.] Other texts range from fables that take place in gardens to ration lists, indicating that gardeners were members of a palace's staff (Pritchard, 1950). Most known palace courtyards still await excavation. [*See* Palace.] First-millennium BCE estate records indicate that nonroyal residences of the wealthy in northern Mesopotamia featured gardens with vines, fruit trees, vegetables, pools, ponds, and gardeners' cottages.

Temple gardens. Temple gardens for the provision of fresh offerings are attested but poorly known. According to the excavator of the ziggurat at Ur, trees and shrubs were planted on its tiers, but there is no physical evidence. [*See* Ziggurat; Ur.] At the Temple of the New Year Festival at Aššur, rows of planting pits for shrubs and trees are cut into the rock of the inner courtyard and surrounding area. [*See* Aššur.] Esarhaddon's records describe a temple garden with water channels and vegetable beds. Nebuchadrezzar's temple (see above) included cypress and juniper groves, as well as gardens that supplied offerings for Marduk.

Persian Gardens. The Persian *pairidaeza* are first attested in the works of the Greek Xenophon, who saw these enclosed gardens in Anatolia and Persia. The source of the *paradeisos*, paradise, *pardēs* (Heb.), parcus, and park—monumental, geometric gardens—are the Achaemenid Empire's most enduring cultural contribution. They are known from texts, reliefs, and archaeological remains at Pasargadae, Persepolis, and Susa. [*See* Pasargadae; Persepolis; Susa.] A recent field survey on the Persepolis plain, compared with textual evidence, gives the first regional sketch of Achaemenid royal and nonroyal estates.

There is no clear distinction between parks and palace gardens; in fact, at Pasargadae tombs are part of the complex as well (Strabo 15.3.7). [*See* Tombs.] The palaces are pavillions set into shady, irrigated parks laid out orthogonally. Excavations at Pasargadae revealed the first-known quadripartite, or *chaharbagh* garden (Cyrus is referred to in Babylonian texts as "king of the four quarters"). The axial "vista of power" down the center from the main pavillion allows a glimpse into the political role gardens played (Stronach, 1994). From the throne in his pavillion, Cyrus could view his *paradeisos* in the heat or the day, or festivals and recreation at other times.

The Achemaenid *paradeisoi* may have been influenced by gardens of palaces taken over by the Persian satraps

throughout the empire. *Paradesoi* are found at Sardis, Daskyleion, and Kelainai in Anatolia and at Sidon and Lachish in Syria/Palestine, as well as at the unlocated palace of Belyses, satrap of northern Syria. [*See* Sardis; Sidon; Lachish.] Xenophon's description of Cyrus the Younger's garden at Sardis (c. 407 BCE), is definitive: fine trees set in even rows with clean angles, a place rich in fruit and pleasant scents—and cultivated by the satrap himself (*Oeconomicus* 4.20–24). Lydian gardens are later a part of the classical topos for luxury (cf. Athenaeus, *Deipnosophists*). The remains of a Lydian stone pavilion have been found on the terraced site presumed to be the palace of Croesus. The Achaemenid kings rebuilt the Median capitol of Ecbatana in the Zagros Mountains as a summer residence. [*See* Ecbatana.] With its terraced gardens, orchards and vineyard, natural streams, and high altitude, it is the place the Median wife of Nebuchadrezzar II sought to recreate in the Hanging Gardens of Babylon. Diodorus, however, attributes the gardens to an Achaemenid king. Archaeological evidence suggests that a change in the course of the Euphrates destroyed the earlier gardens, and the Achaemenids rebuilt them on a new site (Dalley, 1986).

Egypt. The Egyptians probably cultivated gardens in the Nile Valley as early as the fourth millennium. However, evidence from texts, images, and archaeological excavation begins in the second millenium BCE. The regular flooding of the Nile and the annual need to re-mark the boundaries of fields and gardens is cited by Herodotus as the origin of geometry—"land measurement." The rectilinear order of irrigation channels structures the overall design of Egyptian gardens and fields south of the Delta throughout antiquity. [*See* Delta.]

Palace and house gardens. Palace gardens are known from excavations at Tell ed-Dabʿa in the eastern Delta (1782–1650 BCE), which have revealed walled vineyards, flowerbeds, and tree pits (Wilkinson, 1990). The pharaonic palaces at Amarna (Akhenaten) and the Malkata palace (Amenhotep III) at Thebes contained zoological gardens, parks, lakes, and pavillions. [*See* Amarna, Tell el-.] The palace of Apries (588–563 BCE) continued this long tradition, including an impressive approach avenue and grand forecourt (Nielsen, 1994). Information about walls, planting design, and details of life and horticulture is available from tomb paintings. [*See* Wall Paintings.]

The large gardens of rich officials usually featured pools, shade-tree plantings, and shrines. The great abundance of paintings in tombs attests to the variety and vivacity of royal and official estate gardens. Even those who had just a small strip beside their house planted trees in pots. In the workers' village at Amarna, where conditions were crowded, gardens were located outside the housing quarters (Kemp, 1987, pp. 36–41).

Temple and tomb gardens. "The garden was the place of creation from which grew the temple with its vegetal architecture and the habitable world. The pool represents the water of Nun from which life originally sprang" (Wilkinson, 1990, p. 202). Gardens are associated with many types of religious buildings, from the small chapel courtyards in the workers' village at Amarna to the great mortuary temples of the pharaohs. They provided offerings during life and after. The earliest archaeological remains are from Amun's temple at Karnak; they are illustrated further in the tombs of eighteenth-dynasty officials and in texts that describe the trees later brought back from Punt, Palestine, and Syria by Rameses III (1182–1151 BCE). Sycamore fig, tamarisk, and palm trees had particular significance. Queen Hatshepsut, whose paintings at Deir el-Bahari also indicate journeys made to collect plants for Amun, created gardens between Karnak and Luxor for the Feast of Opet, confirming her right to rule. Like that of Mentuhotep (for which there is a stone plan), Hatshepsut's mortuary temple was reached by a long avenue lined with T-shaped pools for papyrus and sycamore figs found by the excavators to have been cut down, perhaps in *damnaio memoriae* by her son. A similar processional alley was found in the temple at Hermopolis, its flanking trees set into brick-ringed pits. Even the most modest of sacred gardens possessed T-shaped or rectangular pools, and those at the main chapel at Amarna seem to have been rotated in their use, some filled with water, others with soil.

Generally, the gardens provided for the pleasure of the deceased were not planted but painted in the tomb chamber: representations of water and fruit provided nourishment, while the trees allowed the soul to perch. Many garden paintings are quite elaborate, and it can be difficult to distinguish the fictional from the actual. Archaeological remains of tomb gardens are known from Amarna, Abydos, and Thebes. [*See* Abydos.]

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KATHRYN L. GLEASON

Gardens of the Hellenistic and Roman Periods

Gardens of the Hellenistic, Roman, and Sasanian periods draw heavily on the Persian *paradeisos,* as interpreted by Alexander the Great at Alexandria. However, in this period, *paradeisos* also refers to any land with trees or orchards interspersed with crops, even grain. Gardens are frequently mentioned in texts and depicted in wall paintings and mosaics throughout the classical and Byzantine eras. Evidence for common domestic gardens and garden practice is abundant in Egyptian and Palestinian papyri, the Hebrew Talmud and Mishna, and the Hebrew and Christian Bibles, as well as in the archaeological remains of intensive agriculture practiced by the Nabateans and other cultures in the arid countryside. The writings of Theophrastus outline botanical knowledge gained during Alexander's campaigns, while Pliny the Elder provides important knowledge of gardens and plants of the Roman Empire.

Egypt. The *basileia* of Alexandria, a great built landscape of palaces, theaters, temples, sanctuaries, and tombs interspersed among groves and parks, provided the model of the garden for the entire Hellenistic and Roman world. Inge Nielsen (1994) demonstrates that the palaces in which Alexander stayed during the course of his campaigns influenced the creation of the city of Alexandria. [*See* Alexandria.] Although little remains archaeologically, the city's plan has been approximated, and Strabo (*Geog.* 17.1.9–10) provides a detailed description of the *basileia,* which occupied one third of Alexandria. Ptolemy VIII *Physcon* wrote a treatise on the birds of the palace area, so that zoological and botanical gardens are perhaps a pharaonic rather than a Persian legacy (Nielsen, 1994, p. 133).

The *Thalamegos,* a Nile festival barge of Ptolemy IV, featured a pavilion and grottoes with statuary, set against the cultivated shoreline of the Nile (Nielsen, 1994, p. 136). Nilotic landscapes inspired gardens, mosaics, and paintings throughout the Roman and Byzantine periods, from Rome to Palestine.

The abundant letters, daybooks, and official documents written on papyrus dealing with gardens and agriculture contribute another view of the estate garden: the logistics of its upkeep. *The Paradise or Garden of the Holy Fathers* (Budge, 1907) gives a similarly detailed view of gardens in the Christian monasteries on the Nile from 250–400 CE. [*See* Papyrus; Monasteries.]

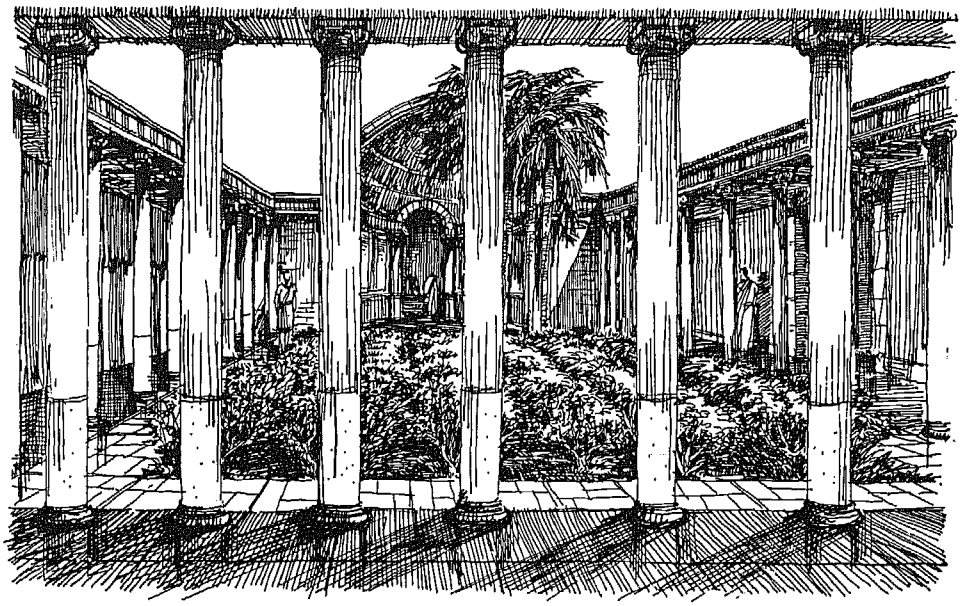
Judea/Palestine/Nabatea. The gardens of ancient Palestine mixed Babylonian and Alexandrian influences. In Ptolemaic Palestine, the palace of Hyrcanus the Tobiad (d. 168/69 BCE), the Qaṣr el-ʿAbd near ʿIraq el-Amir (Tyros), has a preserved, extensive wadi-based irrigation system that served a large park and lake set within an estate described by Josephus (*Antiq.* 12.4.1). [*See* ʿIraq el-Amir; Irrigation.]

The Hasmonean royal palace in the dynasty's capital, Jerusalem, is not preserved; however, the Hasmoneans (168–38 BCE) built a series of palaces in Wadi Qelt, near Jericho, that featured swimming pools and dining rooms, amid balsam and palm groves watered from springs in the surrounding Judean hills. [*See* Hasmoneans.] The buildings for public entertainment and sacred buildings characteristic of other Hellenistic palace complexes are notably absent in this recreational palace of the Jewish priestly class. [*See* Palace.]

Herod the Great played an important role in Roman garden history, as a friend of the emperors Augustus and Agrippa, who brought eastern elements into their culture; in turn, Herod drew upon Italic traditions, integrating them with Hasmonean and Alexandrian precedents. Josephus gives a detailed description of the gardens of Herod's palace in Jerusalem (*War* 5.177–183), of which only the platform remains. His palaces at Masada, Herodium, and Caesarea bear traces of gardens, but the best-preserved examples are at Jericho. [*See* Jerusalem; Masada; Herodium; Caesarea; Jericho.] In addition to the Hasmonean gardens, Herod built a Roman-style entertainment complex spanning Wadi Qelt. Archaeologists have found the locations of its peristyle gardens, ambulatory walks, and great sunken garden (see figure 1). In many areas flower plots used for propagation and transport were planted with shrubs (perhaps balsam), thus giving a configuration to the general design. An artificial tell with a pavilion on top permitted visitors to admire the great estate of balsam groves and rare palms.

Gardens figure in Hebrew halakhic and aggadic literature. Halakhic discussions give valuable information about cultivation, including such specific features as flowerpots. Aggadic descriptions portray distinctly Hellenistic houses with their gardens (*Taʿan.* 9b; B. T. *Meg.* 12a). Gardens are used in veiled political commentaries by rabbis and sages in rejecting Persian and Hellenistic influences. Gardens and groves are also mentioned in the official documents among the Dead Sea Scrolls.

The Nabateans, described as a nomadic people who cultivated nothing (Diodorus Siculus 19.94.1–6), are in fact known for their intensive cultivation of the desert. [*See* Nabateans.] Their capital at Petra, as described by Strabo (*Geog.* 7.353), possessed irrigated gardens, probably for cen-



GARDENS: Hellenistic and Roman Period. Figure 1. *Reconstructed view of a Herodian Ionic peristyle garden.* (Drawing by Chang Shan Huang; courtesy K. L. Gleason)

turies—as attested in recently discovered Byzantine papyri. [*See* Petra.] The papyri cite the names of owners, the locations and sizes of gardens, and the houses and agricultural land south of the city (Glen L. Peterman, "Conservation of the Petra Papyri," *Biblical Archaeologist* 57 [1994]: 243.)

Syria. The Seleucids continued the Persian tradition of building *paradeisoi* at their new capitals of Antioch and Seleucia. [*See* Seleucids; Antioch, Seleucia on the Tigris.] The royal sanctuary at Daphne, south of Antioch, featured large groves of trees, fountains, and streams that served as a place of festivals (Strabo 16.2.4–5). The site was recaptured in the fine mosaics of the Roman and Byzantine eras. The Alexandrian novelist Achilles Tatius (second century CE) sets *Clitophon and Leukippe* in Sidon (1.15–17), with a vivid description of a villa garden. Theophrastus (*Inquiry* 5.8.1, 3) describes *paradeisoi,* royal parks of managed cedar forest, in the mountains of Syria. [*See* Sidon.] At Tyre the remains of an enclosed Roman funerary garden include niches, irrigation channels, basins, and planting beds for produce; the latter provided a subvention for the upkeep of the monument. [*See* Tyre.]

Asia Minor. The kings of Pergamon drew less from Persian examples than from Macedonian ones, which strongly influenced the gardens in Rome. [*See* Pergamon.] The palaces of the Pergamon kings were tightly grouped alongside the temples and theater on the terraced acropolis. The courtyards typically were paved, except for the garden peristyle in palace V of Eumenes II (d. 160), the most monumental palace in the group. His brother and heir, Attalus II (220–138 BCE), had a well-known garden in which he cultivated poisonous plants (Nicander of Colophon wrote poems on vegetable poisons and their antidotes).

The writings of Athenaeus (*Deipnosophistae* 12) give a fanciful picture of garden luxury in coastal Asia Minor, while a rather different picture emerges from Hellenistic and Roman inscriptions at Sardis (*Sardis* 8:1, 1932, no. 12.6). [*See* Sardis.] The sacred grove of the Greeks is seen in the verdant temple garden of Aphrodite at Knidos. A wall painting in the "hanging houses" at Ephesus, dated to the second century CE, depicts a lush garden in the manner of paintings from Pompeii. [*See* Ephesus.]

Parthian and Sasanian Gardens. During the second and third centuries CE, Persia was held by the Parthians, who received embassies from China bearing new garden plants such as peaches and apricots. [*See* Parthians.] Sasanian rulers adopted the Achaemenid *paradeisoi* as hunting parks and as settings for their palaces. [*See* Sasanians.] Pools have been found within the palace of Ardashir (226–240 CE) in Fars. Khusrau I (531–579 BCE) built a palace at Ctesiphon on the Tigris River. [*See* Ctesiphon; Tigris.] The palace was known for its 30-meter-long Winter Carpet, the legendary model for all Persian garden carpets. Khusrau II built an extensive terraced garden at Taq-i Bostan, of which only the grottoes remain. Its reliefs depict royal ceremonies, vegetation, and hunting scenes. Another *paradeisos* of Khusrau II and his lover Shirin, on the slopes of the Zagros Mountains at Qaṣr-i Shirin, is known from an aqueduct, a 900-meter pool, and the terraces of a 300-acre estate. [*See* Aqueducts; Pools.] Shabusti (ninth century CE) tells of a fourth-century Christian monastery at Marmi in which gardens adjoined each

monk's cell, watered by canals and shaded with fruit trees. [*See* Monasteries.] Other Early Arab sources note the gardens and parks of the settlements they first encountered throughout Iran.

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KATHRYN L. GLEASON

Gardens of the Islamic Period

A number of Arabic and Persian terms (*djanna, rawḍa, bāgh, bustān, gulistān*) are included under the English designation *garden.* Gardens in Islamic times rested on historical and sacred foundations. Eastern Roman gardens, particularly in association with country villas, established a tradition of sheltered, irrigated, and agriculturally productive retreats in Palestine and Syria that continued in early Islamic times, especially under the patronage of Umayyad caliphs (661–750 CE), but it is likely that pre-Islamic Iranian prototypes exercised the greatest influence on the development of royal and aristocratic gardens in Islam. The Achaemenid ruler, Cyrus the Great (550–529 BCE), constructed numerous walled gardens: at Pasargadae the garden had two pavilions with pillared porches *(tālār)* that served as transitional spaces between building and garden. The best-known site in pre-Islamic Iran, the ʿImarat-i Khusrau at Qaṣr-i Shirin built for Shah Khusrau II Parviz (591–628 CE), was a vast walled garden *(pairidaeza)* with an eastern entrance leading to a long rectangular pool and palace from which the garden could be viewed. Subsequently, a pool or pools, watercourses, viewing platform, and pavilion or palace, often sited on an axis with the main gate, became central elements in most Islamic gardens.

The Muslim conquerors of Iran found not only walled gardens, but also works of art replete with garden references. Sasanian (224–651 CE) silver dishes showed emperors reclining, drinking, and listening to music in garden settings, and early Arab writers referred to a carpet made for Shah Khusrau Anushirvan (531–579) that was intended for the audience hall at Ctesiphon near Baghdad: destroyed when this palace was captured in 637, the *Spring of Khusrau* carpet is said to have measured 30 × 150 m (98.5 × 492 ft.) and to have had a garden design with tree branches shown in silver thread; earth rendered in gold thread; watercourses limned with crystals; and leaves, petals, and roots made of colored silk and jewels.

References to springtime meadows, gardens, and water abound in pre-Islamic Arabic poetry, reflecting the importance of water and verdure in an arid environment and indicating that gardens were probably accessible to the well born and wealthy of the Hijaz: the Qur'an's description of the garden of Eden *(djannāt ʿadn)* and of paradise *(djanna)* as "gardens underneath which rivers flow" (surah 2:25 and many times thereafter) was connected to a long-established upper-class ideal. Paradise is the most sensually developed image in the Qur'an: it has four rivers (surah 47:15), fountains, cool pavilions, cushions, couches, brocades, beautiful youths, green pastures, palm trees, pomegranates, and two kinds of every fruit. Subsequent worldly gardens thus presented immediate sacred references and provided a pervasive language of garden imagery in Islamic mystical poetry, such as the legend of Shaddad, the pre-Islamic king of South Arabia, whose garden of Iram, built to rival paradise in splendor, brought divine retribution on the patron. Surah 55:46–75 mention a total of four gardens in paradise and may be the source for the predilection that Islamic patrons and builders had for the *chahār-bāgh,* four-part gardens divided by cruciform water courses and walkways. Paradise also had multiple levels, and growing there are the *ṭūbā* tree, more slender than the cypress but providing great shade, and the *sidra* tree (lote-tree). Metaphors for the loveliness of gardens came from both pagan and pious sources: the eleventh-century Iranian poet Manuchihri Damghani could compare a springtime orchard to the idol temple at Farkhar, its birds to the priest, and its rose bushes to the idols but

could also liken an orchard to a mosque, for the trees' branches bent down in prayer, and a dove issued the call to prayer. A self-contained architecture within its walls that allowed few references from the outside world, the garden supplied an internal, moderate, and distinctive nature protected from wild and threatening nature outside. A place of coolness, calm, peace, and plenty, as well as an ordered landscape under the direction and control of the owner, the garden supplied valued and repeated metaphors: the rose was compared to the beloved's face or cheeks, her figure to the slender cypress, the jasmine to her hair.

Although no gardens from the Umayyad period (661–750) have survived intact, the pre-Islamic or early Islamic gardens in or around Damascus were likely the inspiration for the mosaics of the Umayyad Great Mosque of Damascus, and the Rusafa garden in the same city was memorable enough so that the first Umayyad ruler of al-Andalus, ʿAbd al-Rahman I (755–788), tried to replicate it in exile in Cordoba. In his *Laṭāʾif al-Maʿārif* the Iranian scholar al-Thaʿalibi (961–1038) elaborately praises the Ghuṭa of Damascus as one of the four wonders of the world and an earthly likeness of paradise. The late Umayyad palace at Khirbat al-Mafjar had a garden pavilion, and country villas, like Qaṣr al-Ḥayr East, were centers of agricultural estates and must have had gardens, both for entertainment and food. The widespread use of medieval Arabic manuscripts based on translations of the *Materia Medica* of Dioscorides suggests that such estates, as well as smaller households, nurtured herbal and medicinal gardens, like their monastic counterparts in Europe.

With the ʿAbbasid (750–1258) dynasty's predilection for pre-Islamic Iranian models of kingship and culture, and its vigorous promotion of imperial culture, the form of the Iranian garden was spread to other parts of the Islamic world. Al-Khatib describes Baghdad in 917 as having one royal garden that served as a wild animal park and another so extensive that it contained four hundred palm trees, as well as citrus and other fruit trees. Most amazing of all was the garden around the Palace of the Tree, for it contained a great circular pool that had in its center an artificial tree with gold and silver branches on which sat gold and silver birds that sang when the wind moved the branches: the entire construct may have been intended to replicate the design of the Sasanian *Spring of Khusrau* carpet.

In the Jawsaq al-Khaqani palace (836) in the ʿAbbasid capital of Samarra there were 69.6 ha (171.9 acres) of walled gardens with reception halls and pavilions, and the palace was approached on the east through a vast garden reminiscent of the ʿImarat-i Khusrau. Samarra's Balkuwara Palace (849–859) contained three successive four-part courtyards at the end of which was a four-part garden, flanked by pavilions overlooking the Tigris. They indicate the continuance of two basic palace-garden types from pre-Islamic Iran, namely the large walled garden that contained the palace within it, and the inner court garden (generally referred to as a *bustan*) that was contained within the palace. Aristocratic houses also had interior gardens. Agriculture expanded vigorously thanks to capital investments in irrigation made possible by the empire's wealth and to a commercial market stretching from India to Spain. Royal and aristocratic gardens and orchards were sometimes experimental grounds for new fruits and vegetables, as well as for innovations in farming techniques; instead of growing staples, they cultivated new and exotic produce that underscored sharp distinctions between the diets of the urban ruling classes and the agricultural lower class. Likewise, an abundance of water, particularly when its principal purposes were to create a cool and pleasant ambience and to sustain luxury produce, was a sign of wealth, and the ordered layout of water channels, pools, and fountains was an expression of control and power over this vital resource: mausolea situated within geometric gardens continued this imagery of power by the expectation that the deceased, buried in an earthly paradise, would eventually be lodged in the paradise described in the Qur'an. The widespread use of garden imagery in poetry, ceramics, manuscripts, ivories, metalworks, carpets, and other arts also implies that enclosed gardens were maintained by those who had power and could afford them and that their wealth enabled them to create tomb gardens for their dead. Religious establishments maintained gardens too as expressions and producers of wealth and as places of contemplation that prefigured paradise.

Although Muslim Spain is outside the area of the Near East, it provides invaluable evidence for the structure and function of the gardens that served as models and that are no longer extant in the central Islamic lands. Designed to emulate the eighth-century Rusafa garden in Damascus, the Rusafa garden in Cordoba was praised by Ibn Saʿid, the thirteenth-century Andalusian historian and man of letters, for its irrigated gardens. It was also famous for plants and animals brought from all over the Islamic world, Turkestan, and India. Most of Cordoba's considerable area was taken up by gardens and orchards that belonged to the city's mosques and palaces, and the courtyard of the Great Mosque was occupied by neat rows of orange trees fed by stone-edged water channels. The most elaborate gardens, however, were in the royal precinct of Medina al-Zahra. The Upper Garden was divided into four parts, and at the crossing of the channels was a pillared rectangular pavilion bordered on each side by a pool, and the Prince's Garden was centered on a rectangular pool with a raised viewing platform on its north side. Observation points such as this one underscored royal perspective and the central authority of the caliph: gardens functioned not only as places of beauty and refuge but also as focused demonstrations of power and prestige.

Evidence indicates that rather than being in massed beds, plantings were individual or in small groups. Flower and

orchard beds were frequently sunk below the level of the walkways, so that a visitor strolling on the paths would have had the sensation of walking on a living and luxurious floral carpet. Gardens in Spain functioned also as grave sites: the eleventh-century poet Ibn Shuhai'd was buried in a garden in Cordoba that was described by Ibn Khaqan as having symmetrically rowed trees and a white marble courtyard with a curving water channel and a lower basin into which the water fell, presumably down a waterslide. Luxury objects carried garden themes as well: an ivory pyxis made in 1004–1008 for the Cordoban royal chamberlain Sayf al-Dawlah clearly shows a walled garden with arcades along its sides. Because ivories were originally painted, it would have offered an even more vivid resemblance to a garden.

The Arab historian Muqaddisi (d. 1000) reported that the Buyid ruler of Iran and Iraq, ʿAḍud ad-Daulah (949–983), built a two-story, 360-room palace in Shiraz with orchards around it and water channels flowing through its ground floor rooms and arcades. Their successors, the Seljuks (1038–1194), further developed the concept of the *bāgh,* or garden with a pavilion or palace, and fourteenth-century manuscript paintings indicate that these buildings were multi-colored and multi-storied: Malik Shah (1072–1092) is credited with constructing four gardens of this type in late eleventh-century Isfahan. The metaphoric content of garden imagery continued to be exploited. The tulip *(lāleh)* had all the same letters of the symbol of Islamic power, the crescent *(hilāl),* and the name of the God (Allāh), and the rose *(gul)* was considered the most perfect manifestation of divine beauty on earth. A ruler like the Seljuk sultan Malik Shah (1072–1092) may even be compared to a doorkeeper *(riḍwān)* guarding a garden containing streams, fruits, trees, and flowers of paradise; elaborating the metaphoric link between the ordered garden and the ordered universe, the Seljuk court poet Muʿizzi (d. 1147) described a royal garden filled with streams, herbs, fruits, trees, and flowers like those of paradise, and compared the sultan to the sun and his throne to the seventh heaven.

[*See also* ʿAbbasid Caliphate; Baghdad; Ctesiphon; Damascus; Mafjar, Khirbat al-; Pasargadae; Qaṣr al-Ḥayr ash-Sharqi; Samarra, *article on* Islamic Period; *and* Umayyad Caliphate.]

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ANTHONY WELCH

GARROD, DOROTHY ANNIE ELIZABETH

(1892–1968), prehistorian whose work at the Tabun, Skhul, and el-Wad caves in the Carmel range in Israel provided what became a standard chronological and cultural scale for the region, beginning with the Upper Acheulean and ending with the Natufian culture. Garrod studied at Newnham College at Cambridge (1913–1916). In 1921 she enrolled in the archaeology-anthropology program under R. Marrett at Oxford, and in 1922 she became a student of Abbé Breuil at the Institut de Paléontologie Humaine in Paris. She worked at the site of La Quina in southwest France under Henri Martin and published a summary volume on the British Upper Paleolithic in 1926. Following Breuil's suggestion, she excavated Devil's Tower, a Mousterian rock-shelter on Gibraltar (1925–1927), where a broken juvenile skull cap was uncovered. In 1927 she was invited to participate on the European committee that examined the Glozel figurines, which turned out to be forgeries. In 1928 she excavated the Shukbah cave in Palestine and named its previously unknown microlithic and bone industry the Natufian culture, after the wadi by that name. She later dug two small caves in northeastern Iraq: Hazar Nerd, a Mousterian site, and Zarzi, where the microlithic assemblage was named Zarzian. In 1929 she began, as a salvage project, excavations in the caves at the outlet of Naḥal ha-Meʿarot (Wadi Mughara) in the Carmel range. Upon completing the fieldwork there in 1934, she published, in 1937, together with Dorothea Bate, who did the faunal analysis, the seminal volume *The Stone Age of Mount Carmel.* In 1938, after a survey in Anatolia, Garrod excavated the cave of Bacho Kiro in Bulgaria and uncovered an early Aurignacian industry. From 1939 to 1952 she was Disney Professor at Cambridge University, a position interrupted during World War II, when she served in the army (1942–1945). From 1948 to 1963 she partici-

pated in the excavations of Suzanne de Saint Mathurin in Anglees sur l'Anglin, a Magdalenian rock-shelter rich in relief representations of animals and humans. From 1958 to 1963 Garrod conducted excavations in the Bezez, Zumoffen, and Ras el-Kelb caves in Lebanon, where Acheulo-Yabrudian and Mousterian layers were exposed. These led her to provide a new synthesis of the Near Eastern Middle Paleolithic that was published in 1962.

[*See also* Carmel Caves.]

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OFER BAR-YOSEF

GARSTANG, JOHN (1876–1956), British archaeologist who began his academic career in mathematics at Jesus College, Oxford University, but while still an undergraduate turned his attention to archaeology. His first fieldwork was done in Egypt, where, at the age of twenty-three, he joined Flinders Petrie. He then worked in Anatolia (1904–1909), returning for a final season of excavations at Sakçagözü in 1911. His influential work, *The Land of the Hittites,* was published in 1910. While still very young (he was twenty-six), he was appointed honorary reader in Egyptian archaeology at Liverpool University. Five years later (in 1907) he became professor of the methods and practice of archaeology, a post he held until his retirement in 1941. From 1909 until 1914 he excavated in the Sudan, at Meroë, capital of an ancient Nubian kingdom.

Garstang was the founding director of the British School of Archaeology in Jerusalem in 1920. In that same year, he made what is probably his most lasting contribution to archaeology by becoming the founding director of the British Mandatory Department of Antiquities of Palestine, a post he held until 1926. In that capacity he drafted the country's antiquities laws, which were notably liberal, enlightened, and practical. Garstang used the material belonging to the Ottoman Palestine Museum as the basis of the collection for the Palestine Museum in Jerusalem, now the Rockefeller Museum. Garstang carried out the first post–World War I excavations in Palestine at Ashkelon, followed by a series of soundings at sites across the country. In 1922, at a historic meeting with William Foxwell Albright of the American School of Oriental Research in Jerusalem and Louis-Hugues Vincent of the École Biblique et Archéologique Française, Garstang formulated the terminology still used for the classification of the archaeological material of the southern Levant. From 1930 to 1936 he carried out a major excavation at Jericho, funded by Charles Marston. Although this excavation was poorly published, and although Garstang's views of Jericho regarding the accounts in *Exodus* and regarding the Israelite conquest are no longer accepted, his work there provided the first information about the existence of an aceramic Neolithic culture.

Following World War II, Garstang returned to Anatolia, where he became the founding director of the British Institute of Archaeology at Ankara (1947). His final excavation was at the site of Mersin, in Cilicia, where he discovered important remains of the Neolithic and Early Bronze Ages. Two days before his death, though very ill and weak, he was able to realize his wish to revisit this site, coming ashore from the boat on which he was enjoying a last cruise.

[*See also* Ashkelon; British Institute of Archaeology at Ankara; British School of Archaeology in Jerusalem; Cilicia; Jericho; Meroë; *and the biographies of Albright, Petrie, and Vincent.*]

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RUPERT CHAPMAN

GAULANITIS. *See* Golan.

GAZA (site). *See* 'Ajjul, Tell el-.

GENESIS APOCRYPHON. One of the seven scrolls found by bedouin in Cave 1 at Qumran in spring 1947 is the *Genesis Apocryphon* (1QApGen). Together with three other scrolls from that cave, it was sold to Mar Athanasius Yeshue Samuel, the Syrian Metropolitan attached to

St. Mark's Monastery in Jerusalem. Unlike the other scrolls, the *Genesis Apocryphon* was not opened until it was sold—to the State of Israel, in June 1954. After the sale, authorities turned the scroll over to J. Biberkraut for unrolling. The scroll's beginning and end were missing and, of the twenty-two columns that survived, only the last three—the scroll's innermost portions, as it was rolled—were more or less completely preserved. The opening portions had suffered greatly from exposure to the elements and from the mordant ink with which the scroll was inscribed. The ink had eaten into the leather, so that many of the words are blurred.

Yigael Yadin and Nahman Avigad published a preliminary edition of the scroll in 1956—only the five columns (2, 19–22) that could readily be deciphered. They never published the other columns, a project that recently was turned over to two Israeli scholars, Jonas Greenfield and Elisha Qimron. They have, to date, published an additional column of the scroll, column 12. In addition, J. T. Milik published fragments belonging to the missing beginning of the scroll as 1Q20. He did not succeed in reading much of the text on what are very badly darkened fragments, but recently new photographs enabled Michael Wise and Bruce Zuckerman to read and reconstruct the 1Q20 fragments as "column 0." Moreover, Zuckerman has brought to light a previously unknown portion of column 1, dubbed the Trever fragment.

The importance of the *Genesis Apocryphon* lies in two principal spheres: language and interpretation. The scroll is written in Aramaic; as a fair amount of text has been preserved, it constitutes one of the primary witnesses to the literary use of that language in late Second Temple period Palestine (200 BCE–70 CE). The interpretive method of the scroll belongs to the category designated "rewritten Bible," in which biblical stories are retold with explanatory changes and additions. The *Genesis Apocryphon* is an early and significant witness to this method of biblical interpretation, with important connections to the pseudepigraphic *Jubilees*.

Largely following the analysis by Joseph A. Fitzmyer, the contents of the scroll can be broken down as follows: columns 0–2, the birth of Noah; 6–10, Noah and the Flood; 11, Noah's covenant; 12–?, Noah's division of the earth among his sons; 18, Abram in Ur and Haran; 18–19:10, Abram in Canaan; 19:10–20:33, Abram in Egypt; 20:33–21:22, Abram in the Promised Land; 21:23–22:26, Abram defeats the four kings; and 22:27–?, Abram's vision of an heir.

[*See also* Dead Sea Scrolls.]

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MICHAEL O. WISE

GEOGRAPHIC INFORMATION SYSTEMS.

See Computer Mapping.

GEOLOGY. The consulting relationship between geologists and archaeologists/historians is designed to achieve a fuller understanding of a site's occupational and socioeconomic story, ideally as excavation is taking place. Another term for archaeological geology is *geoarchaeology*, the activity in which a geological scientist engages in historical/archaeological analyses and diagnoses from an empirical base.

The locus, a fundamental unit of archaeological stratigraphy, has discrete geological analogues in the bed, tongue, or layer units of a sequence of rock strata in any exposure/outcrop of unconsolidated sediments anywhere on earth. Sedimentary analytic techniques can be applied to a locus to determine its geological makeup: texture, fabric, particle size, micro/macrobedding, mineral/lithic, and material science diagnosis. (the identification of any artifact and its chemical composition and its function in human applications). [*See* Locus.] Studies propose multiple working hypotheses, which set forth probable agencies/events of origin and form the operational archaeological geological research basis.

Geological investigations in historical environmental remains may draw from various subsciences to address the action and interaction of human and natural depositional and erosional activities in, about, and regionally near a site: mineralogy (elements, salts, compounds), sedimentology (origin, movement, accumulation of particles), stratigraphy (forms of layering), structure (spacial geometry of any lithic body), petrology (igneous, sedimentary, and metamorphic rock origin and description), geomorphology (genesis and shape of the earth's surface), aerial photography (database for mapping), geohydrology (presence and behavior of groundwater), pedology (soil science), and especially soil-clay mineralogy, geophysical survey (archaeomagnetism with magnetic- and resistivity-force mapping), tephra (volcanitic ejecta—ash, shards), chronology, radiometric dating (radioactive elements and their isotopes, especially carbon), geochemical analyses (including trace element and isotope, useful for provenance), palynology (pollen and spore identity), and floral or plant inventories (including phytoliths),

and coastal paleogeography (ancient shore-zone environments and locations). These and other disciplines form the geological framework through which the depositional record of natural and human agencies are interpreted.

Agents of earth sculpture that are active on/or in terrestrial and submarine surfaces include weathering; erosion; movement and deposition of earth materials by means of atmospheric interaction with mineral, rock, and plant material; gravity-slope kinetics; streams; underground water; waves and currents; wind; ice; and even volcanic activity. Vertical land movement and sea-basin volume changes may need to be considered (site elevation, submergence with associated effects). Physiographic surface environments express socioeconomic settlement-opportunity options often governed by the demands that specific cultures require.

The topographic configuration of a specific site locale is a function of rock and sediment body resistance to forces of degradation (removal) and aggradation (surface buildup), whose rates of progress determine how quickly human presence alters a surface. The difference between the highest and lowest elevations is mapped as a contour (the interval is determined by the steepness of slope and the amount of detail required). An overlay of geologic rock outcrops affords a convenient means of illustrating those formations that were affected by a site's occupants in construction phases. Other surface environments to be understood in archaeohistorical research include plains, plateaus, mesas, hills, mountains (volcanic, folded, fault-block), canyons, basins (graben or rift valleys), alluvial fans, valleys (stream and glacial), alluvial terraces, floodplains, deltas, beach/shore zones, glacial moraines, till plains, and outwash terrains. Historically, these natural depositions formed human-site contexts in temperate, tropical, arid, and polar settings in which settlers would need to control terrain, water, food acquisition/production, trade, roads, and defensible shelter.

Geologic activities that affect human-settlement decisions include water supply—springs, streams, water tables, and even artesian flow. Geothermal (heated) waters find expression as hot springs. Other water-bearing geochemical activities in the earth's crust generate mineral (ore) deposits (ion concentrations) yielding metals such as copper, tin, iron, lead, and zinc. Certain igneous reactions yield other ore deposits. The earliest metal acquisition by humans involved mining naturally occurring elements. As smelting/refining extraction techniques from the ores of those metalic compounds were discovered, the metals were incorporated into tool and weapon economies, recording the historical results of metallurgy. [*See* Metals.] Precious metals and stones also occur because of geologic concentration conditions. Such utilitarian metal ores were mined for noble and royal use: jewelry, tableware, and (by the end of the seventh century BCE) coins. The geochemical generation of petroleum and its by-products—bitumin, naptha, and sulfur and the organogenesis of woods, fibers, amber, spices (fragrances), foods, and shell remains—has heavily influenced human behaviors, as recorded in archaeological remains.

Knowledge of the local and regional bedrock—its stratigraphy and structure—gave ancient masons of both stone and mud brick and quarrymen construction resources with which to erect, pave, wall, arch, and bridge for human requirements in urban, domestic, and defensive structures. Some rock types exhibit cutting properties that would produce poor to excellent architectural and sculptural results—cemented beach sands, rock and shell fragments (imprecisely termed poros), versus the finely crystalline limestones employed for Herodian structures in Roman Palestine and white marble for sculpture.

A brief inventory of common construction, building, and sculptural stone utilized throughout the Mediterranean and the Near East consists mainly of limestones, chalks, caliche (such as *nari*), coquina, travertines, quartz and bioclastic sandstones/conglomerates, quartz (and other lithic) sandstones, chert, various lithic-type conglomerates (such as *kurkar*), siltstones, marls, shales, alabasters, halites (from Mt. Sedom, a salt-block feature near the southwestern shore of the Dead Sea), granites, diorites, gabbros, lavas (basalt, from which Levantine and Mediterranean millstones were often crafted), and porphyrys, tuffs, slates, schists, gneiss, marbles, quartzites, and greenstones.

No less vital in human history has been the function of clays, formed mostly in the soil-genesis process, in grazing grasses and food crops. The mineralogical agricultural fertility of floodplain environments (river-valley sediments forming terraces) is well known. These clays and clay minerals have historical significance because they were utilized as tokens, tablets, and letters, mud bricks and mortars, terra cottas (sculptures and ovens), tiles (roofing, flooring, water and drainpipes), and, finally, as pottery.

Commonly, analytic studies and procedures in archaeological geology include, sediment-body (locus) identification, working hypotheses as to origin (source and agent), and sediment surface recognition; architectural building-stone type and source; historical geological/geographic site area-surface morphology; water source and management; pottery composition and provenance; evidence of the presence/absence of bedrock soil-cover depth and extent; stone and ore sources and their proximity to a site; clay/mud sources and their employment throughout the site's cultural history; the encouragement of multidisciplinary site and environmental studies (botany, entomology, zoology, and ecology).

Some of the most important geoscientific methods in archaeological research are petrology (e.g., study of rocks, pottery, bricks, roofing, tiles) in hand specimens and microscopic thin-sections to ascertain mineral makeup, texture, and ultimately, provenance; sedimentology (mineral com-

GEOLOGY. *Scored basalt slabs paving a Roman/Byzantine decumanus at Abila, northern Jordan.* Observe the stratified sediment showing the evidence of disoccupation. Both colluvial slope deposits and architectural fragments have covered the street and its sidewalks. Slumping drain cover blocks reveal the drain path. (Courtesy R. G. Bullard)

GEOLOGY. *Calicheated chalk bedrock used as the foundation level for a wall constructed of the same material.* Step-ledge quarrying techniques are evident. This quarrying method was employed by the Romans all over the Mediterranean. (Courtesy R. G. Bullard)

position and particle size—from clays to boulders), along with hypotheses concerning agency of deposition; ore and gemstone identification and qualitative analysis from wet chemical to X-ray spectroscopy; laser-probe spectroscopy of metals and gems; and core drilling in sediment strata, in- and off-site, to determine shore/harbor boundaries. [*See* Spectroscopy.] Typical field-geology research tools and equipment serve most of the study requirements. A binocular stereo-zoom microscope of 10–45× has been found indispensable in the dig house.

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REUBEN G. BULLARD

GERASA. *See* Jerash.

GERISA, TEL (Ar., Tell Jerishe), a medium-sized mound (2.6 ha or 6.5 acres) located in the Yarkon valley at the fork of the Yarkon and Ayalon Rivers (32° 05′ N, 34° 48′ E). This location suggests that the site served as a main harbor city during the Middle and Late Bronze Ages. The modern Hebrew name of the site is adapted from the Arabic name of a small nearby village. It is also known by the local population as Napoleon's Hill, a name confirmed by Jacotin's map (prepared by Napoleon's engineer during their campaign to Palestine in 1799). The site is marked as the location of a military camp under the command of one of Napoleon's generals. Topographically, the mound forms a saddle, with the southern summit higher than the northern one. A deep depression on its western side is undoubtedly the location of the city gate. On the opposite side, on the east, the *kurkar* bedrock is exposed, apparently the result of continuous quarrying for building material. Benjamin Mazar identified the site with the Levitical city of Gat-Rimon (Maisler [Mazar], 1950–1951), but this identification is negated by geographic considerations and because the only find for the tenth century BCE was a small farmstead (Rainey, 1987–1989). [*See* Farmsteads.]

The site was excavated by an expedition from the Hebrew University of Jerusalem, directed by Eleazar L. Sukenik for five seasons spread over twenty-five years (1927–1951). No excavation report was published, but a short summary of the work, written by Nahman Avigad (1976), is available. In 1976 Yigael Yadin and Shulamit Geva cut a small probe into the remains exposed in the 1951 season and concluded that the city wall and its glacis had been erected during Middle Bronze IIB period (Geva, 1982). Exploration of the site was renewed in 1981 by a Tel Aviv University expedition directed by Ze'ev Herzog. By 1993, nine seasons had been conducted in four areas, A–D (Herzog, 1993). The eleventh season was scheduled to begin in June 1995.

Bronze Age. The earliest occupation of the site took place in the Early Bronze Age, remains of which were found in the stratigraphic trench cut at the southern end of the mound (area A) and in area C. In both cases shallow depressions in the *kurkar* contained EB III pottery sherds in an ashy debris, pointing to an agricultural settlement. An unfortified village was also erected early in Middle Bronze IIA, whose remains consist of walls belonging to residential units and a circular clay silo. The first fortified city was erected in the second occupational phase of this period. The earliest city wall (1.70 m wide) was made of mud bricks laid on a single course of stone foundations. Two floors, the lowest covered by a thick layer of burnt debris, join this wall inside the city, and a sloped glacis is laid against its outer face. A second MB IIA city wall (2.20 m wide), made solely of clay bricks, was erected about 90 cm farther into the city. Two floors were also laid against this wall; the upper one contained pottery typical of the period's latest phase. On its outer side a new and formidable glacis was erected out of sloping brick layers, with a coating of crushed *kurkar.* Area A's high elevation, the thick walls found there, and some luxurious pottery vessels all suggest that this was the location of the ruler's palace.

During MB IIB, a third fortification system was constructed. A 3-meter-wide brick wall was built above the earlier remains, and a third glacis was laid over the solid remains of the former ones. Inside the city a large building abutted the city wall, which contained four square rooms and a long corridor. Many large storage jars were found smashed on the floors of the rooms, indicating that the rooms had been used as storehouses. The city wall was reused in the Late Bronze Age I, but then only small rooms of a domestic nature were built against it. The ruler's palace was apparently moved to the lower part of the city.

During one of the MB subphases—the only period in which the city was fortified—a water system was constructed at Tel Gerisa. The project's impressive remains consist of a circular shaft (6 m in diameter) hewn into the *kurkar* (see figure 1). Narrow stairs were carved out of the rock along the side of the shaft that descend to the water source, about 22 m below the top of the shaft. So far only the upper 5 m have been exposed. The shaft was converted into a stone-lined well, with space between the well and the original hewn shafted filled in, in the Iron Age I (see below).

Excavation exposed widespread LB remains at the center of the mound (area C), in an area unoccupied in later periods. Its main feature is a large (17 × 16 m), square building located in the center of the tell, directly in front of the city-gate area. The building features a stone-paved courtyard of similar size adjacent to it on the north. The building, whose outer walls are 1.90 m thick is divided into three rows of rooms. The large room in the central row might have been a throne room. The building was artificially elevated by a fill of sandy red soil and retained by a stone revetment. To the west of the palace, immediately south of the presumed location of the city gate, a large open space was covered with thick white plaster. This area and the structure around it are interpreted as the local marketplace, a function supported by the large quantities of Mycenaean and Cypriot imported vessels, Egyptian scarabs and pottery, and several weights found on and around the plastered floor.

There was no LB city wall at Tel Gerisa. The easternmost walls in area C were constructed over the remains of the MB IIB city wall. Most of the site, except for the palace, was covered by domestic buildings in the LB IIB period, as revealed by the small probes cut into those levels (under the Iron Age I remains) in areas B and D. A large refuse pit, found full of ashy debris, had been dug into the debris of the older acropolis (area A).

Iron Age. During the Iron Age the size of the settlement at Tel Gerisa was considerably reduced. The remains of the Iron I settlement consist of dwellings and storage pits at both the southern and the northern summits of the mound. The center of the mound was not settled and may have been used for horticulture. It has been suggested by Tsvika Tsuk, excavator of the water system, that the well built into the old water system was constructed to irrigate the cultivated plots. The settlements belonged to two separate small villages or farmsteads, each rebuilt several times during the period. Philistine sherds of monochrome (Late Mycenaean III:$C1_b$) ware, bichrome pottery, and late red-slipped wares indicate occupation of the site during Iron IB. The central site of

GERISA, TEL. Figure 1. *Hewn shaft of a water system.* (Courtesy Z. Herzog)

Philistine occupation in the region was at Tell Qasile, located 1.5 km across the Yarkon River. [*See* Philistines, *article on* Early Philistines; Qasile, Tell.]

Sukenik's expedition cleared a large part of the settlement at the southern end of the site. Remains exposed by the renewed excavations consisted of two houses with stone bases that had held wooden columns as internal partitions. One of the houses had been destroyed by fire. In the destruction layer among the finds recorded were ceremonial pottery vessels and a pair of small bronze cymbals. Nearby a carved five-sided pyramidal seal and a female pillar figurine were found. The occupation on the northern end had been poorer, and in its final stage contained mainly deep storage pits, eventually reused for garbage.

In Iron IIA the occupation at Tel Gerisa was even more limited and was restricted to the southern summit. Remains of a single domestic building were exposed right under the surface. The house had been used in two phases, both dated to the tenth century BCE. Following the destruction of the last phase, the site was deserted for two millennia. Habitation was renewed at the northern end of mound for a short time in the Early Arab period (tenth century CE).

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ZE'EV HERZOG

GERMAN SCHOOL (Jerusalem). *See* Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes.

GEZER, ancient site identified with modern Tell el-Jezer in Israel (35°51′ N, 34°55′ E; map reference 142.5 × 140.7), 8 km (5 mi.) southeast of modern Ramla. The prominent 33-acre mound, about 650 yards long and 240 yards wide, is about 225 m above sea level (see figure 1). It is the last of the foothills of the Central Hills where they slope down to join the northern Shephelah, guarding the western end of the Valley of Ayalon. Gezer is thus at the crossroads of the Via Maris and the trunk road leading up to Jerusalem and beyond.

Gezer was correctly identified in 1871 by Charles Clermont-Ganneau, on the basis of several of the now well-known bedrock inscriptions reading "boundary of Gezer" (see below). It was excavated by Robert Alexander Stewart Macalister in 1902–1909 for the Palestine Exploration Fund, in one of the first large-scale modern projects, published as *The Excavation of Gezer* (3 vols., 1912). Alan Rowe conducted brief soundings in 1934, again for the PEF. The Hebrew Union College–Jewish Institute of Religion in Jerusalem, with the Harvard Semitic Museum, carried out major excavations in 1964–1974, directed by G. Ernest Wright, William G. Dever, and Joe D. Seger (again in 1984 and 1990 by Dever, sponsored by the University of Arizona).

History. The excavations have brought to light twenty-six strata, from the Late Chalcolithic to the Roman era.

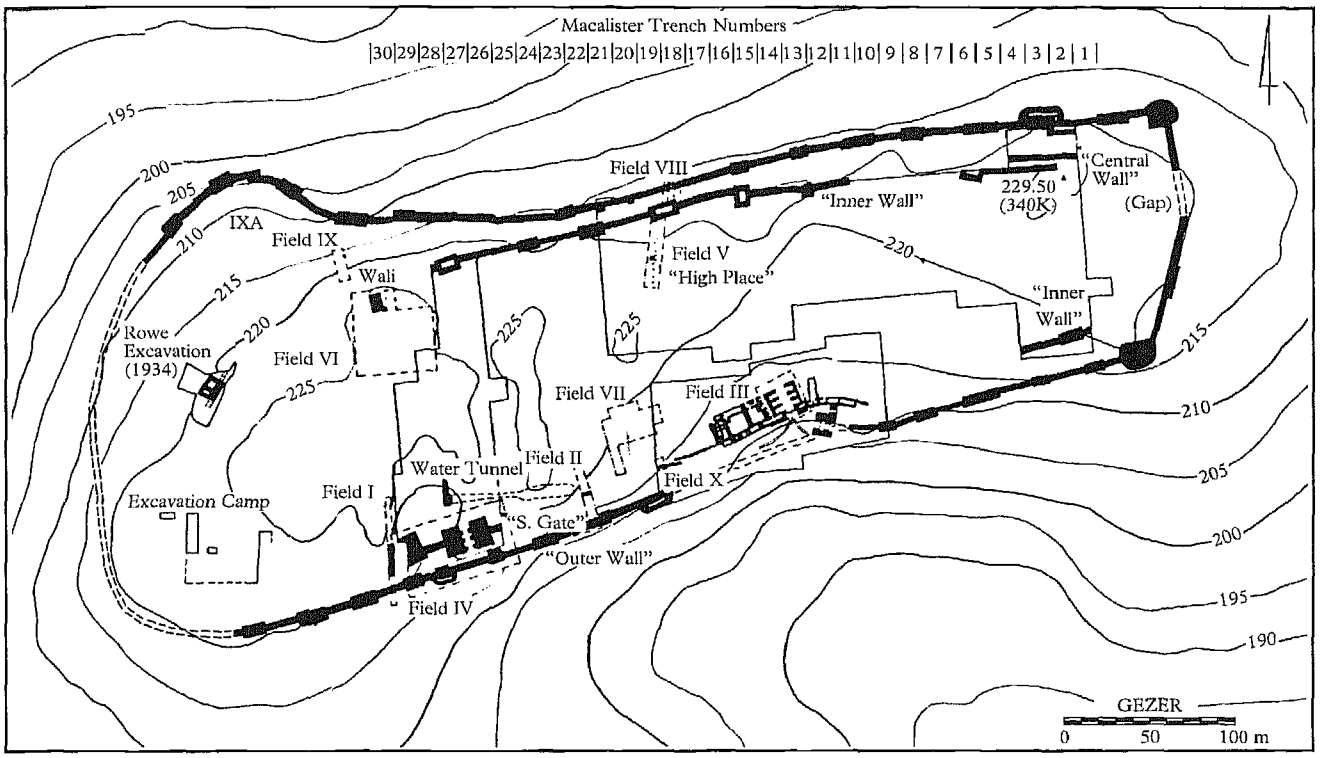
Stratum XXVI. Gezer was founded in the Late Chalcolithic period, about 3500 BCE. Most of the material (including some of Macalister's "Pre-Semitic") comes from flimsy dwellings on bedrock. The pottery and other material overlaps with both the Beersheba and coastal cultures.

Stratum XXV. The Early Bronze I material from Field I (including some of Macalister's "Pre-Semitic," "First Semitic," and "Troglodyte" cave materials) suggests an expanded settlement, about 3200–3100 BCE. In addition to fragmentary house walls, there are natural and enlarged caves in the bedrock that were used extensively for dwellings and storage. One of them, Cave I.3A, produced an assemblage of storejars and other vessels, as well as stone implements. The scant pottery of Stratum XXV is typical of Early Bronze I, including some red-slipped and "trickle-painted" wares.

Strata XXIV–XXIII. During Early Bronze II, roughly 3100–2600 BCE, Gezer expanded considerably, but it still did not boast city walls such as many other sites had. House walls in Field I were well constructed and had several phases of continuous occupation. The pottery repertoire includes typical red-burnished vessels, Abydos-style pitchers, and a few Egyptian imports. Gezer was abandoned from the end of the Early Bronze II period through Early Bronze IV, during which time a deep layer of humus-like soil formed at the surface (now deeply buried, of course).

Stratum XXII. After a long gap, Gezer was reoccupied sometime in the late Middle Bronze I period, about 1900 BCE. Some of Macalister's "Second Semitic" and several of his tombs, including one typical cist-tomb (III.3) belong to this horizon. A small statuette of Heqab, probably a twelfth-dynasty Egyptian official, also belongs here. Our material, which comes only from Field VI, consists of a partly subterranean plastered granary; a few domestic dwellings; and several infant jar burials. The pottery includes fine red-slipped and burnished carinated bowls.

Strata XXI–XX. Gezer appears to have grown into a relatively large urban site in Middle Bronze II. Much of Ma-



GEZER. Figure 1. *Plan of the site.* (Courtesy W. G. Dever)

calister's "Second Semitic" belongs here. In Field VI there is a continuous development of domestic dwellings; houses are now constructed along terraced slopes and share large courtyards and cisterns fed by runoff water conducted through well-built drains. The pottery is unexceptional but typical of Middle Bronze II, about 1750–1650 BCE.

Stratum XIX. Late in Middle Bronze II or early in Middle III, around 1650 BCE, Gezer was first fortified. Macalister's "Inner Wall" and "South Gate" belong here. In Field I Dever's team reexcavated the "Outer Wall" and its adjoining "Tower 5017." Macalister's plans show the wall encircling the entire site, a length of perhaps 1,300 yards, and incorporating many rectangular towers. The walls of the tower, constructed of dressed cyclopean masonry, are 53 feet wide and still stand to a height of 15 feet. The superstructure is entirely missing today, but the building, probably a citadel, must have stood originally three or four stories high. In Field IV to the west, Macalister's "South Gate," a typical three-entryway monumental gateway, was reexcavated. Its mud-brick superstructure still stands more than 25 feet high, and the springers of the arches are still visible. Late in this stratum, or early in the next, "Glaçis 8012" was added to the "Inner Wall." It was carefully constructed of alternating layers of tamped chalk and occupational debris, rising at a slope of 45 degrees to a preserved height of nearly 20 feet.

Also to be attributed to Stratum XIX is Macalister's "High Place," reexcavated by Dever's team in Field V (see figure 2). It consists of a north–south alignment of ten large standing stones (the biblical *massēbôt*), some nearly 10 feet high, surrounded by a plastered pavement and a low stone curb. Quantities of burned animal bones and teeth associated with the pavement suggest animal sacrifice at an outdoor cultic installation, perhaps a covenant-renewal sanctuary.

In Field VI on the acropolis, remains of a massive citadel adjoining a cobbled street were found, as well as established houses, courtyards, and cisterns, continuing the strata XXI–XX tradition.

Stratum XVIII. Middle Bronze Age Gezer was brought to a violent end by a fire that was evident in several fields. This may have been the work of Pharaoh Thutmose III, who mentions Gezer in his Karnak inscription, among sites conquered on his first Asiatic campaign about 1468 BCE. Just inside the connector wall between "Tower 5017" and the "South Gate," several destroyed houses yielded almost two hundred pieces of pottery. There was also a cache of gold jewelry, including two foil female figurines, found under the skeleton of a young women who had been crushed by roof-fall.

Stratum XVII. Gezer was probably abandoned for a time following the massive destruction of Stratum XVIII, through most of Late Bronze IA–B. The only evidence of occupation

consists of the earliest burials in Cave I.10A (below). The scant Bichrome ware found by Macalister may belong early in this or the preceding phase.

Stratum XVI. By Late Bronze IIA, around 1400–1300 BCE, Gezer is flourishing again. In Field VI, "Palace 14120," although badly ruined later, was a splendid, multistoried building, its few remaining contents speaking of considerable wealth and sophistication. Like Macalister's "Canaanite Castle" in Field XI, it may have been an Egyptian-style "residency" of the Amarna Age. From Amarna itself there are ten letters from Gezer, from three different kings. To this general horizon belongs one of Macalister's cuneiform tablets, apparently from an Egyptian official who is summoning someone or something to Kiddimu, perhaps nearby Tell Ras Abu Hamid (biblical "Gittaim"?). A number of Macalister's tombs and parts of his "Second" and "Third Semitic" belong to this horizon.

Macalister's "Outer Wall" is now dated to the stratum XVI horizon. This wall, built on bedrock, is about 15 feet wide and is preserved in places some 12–14 feet high. It runs some 1,400 yards around the site outside the perimeter of the "Inner Wall." The excavators have dated this wall to the Amarna Age, both on stratigraphic and pragmatic grounds, although others date it to the Iron Age, largely because of the ashlar towers built into it (see below).

Some of the most spectacular finds came from the major period of burials in Cave I.10A in Field I, just outside the "Outer Wall." There were sixty-eight individuals—adults, juveniles, and children—interred in this cave from around 1450 to 1300 BCE. Many suffered from advanced artereosclerosis. Yet in addition to dozens of ordinary local pots and bronzes, there were imported luxury items such as Cypriot vessels, and Egyptian alabasters, scarabs, ivory pieces, and a fine cast sand-core glass vase.

Stratum XV–XIV. During the Late Bronze IIB period, about 1300–1200 BCE, Gezer gradually declined. The end may have come around 1207 BCE in the campaign of Pharaoh Merneptah, whose famous "Victory Stela" names Gezer among conquered cities and peoples in Canaan. In Field II there is a major late thirteenth-century BCE destruction; in Field VI a period of disruption and abandonment is followed by deep pitting and trenching operations. Among Macalister's finds is a carved stone sundial bearing the cartouche of Merneptah.

Stratum XIII–XII. At the transition from the Late Bronze to the Iron Age, about 1200 BCE, Gezer shows both continuity and discontinuity. The disruptions in Fields II and VI have already been noted. In Field I, however, there are new structures in the early twelfth century BCE but no fundamental changes. Also, the ceramic repertoire in all areas shows marked continuity from the mid-thirteenth until at least the mid-twelfth century BCE.

The major changes are in Field VI, where above the filled-in trenches noted above a large, multiroomed public granary

GEZER. Figure 2. *The "High Place."* Middle Bronze III period, c. 1600 BCE. (Courtesy W. G. Dever)

was constructed, surrounded by an extensive threshing floor with many burn-layers. The first typical Philistine Bichrome pottery appears precisely with the earliest floors of this building. The building goes through three building phases interspersed by disruptions, with a massive destruction at the end, about 1150 BCE. The debris produced many restorable vessels, numerous miscellaneous objects, and three contemporary Egyptian scarabs.

Stratum XI. By the late twelfth century BCE the granary had been replaced by two large, well-constructed courtyard houses flanking a lane. Both were violently destroyed in a fire after the first phase; partially rebuilt and destroyed again; and finally abandoned after a third, poorer phase. By the last phase, in the mid-eleventh century BCE, Philistine wares are disappearing, and a few red-slipped wares appear. From the destruction layers came two ceramic swan's heads and a terra-cotta circumcised phallus. Structures of this horizon were also brought to light in Fields I and II, but they were unexceptional.

Stratum X–IX. The late eleventh–early tenth-century BCE horizon is represented mainly by several poor structures and a distinctive "post-Philistine/pre-Solomonic" pottery covered with a thin, streaky red wash.

Stratum VIII. This stratum, spanning the mid- to late tenth century BCE, sees major changes, especially in Fields II and III. In Field III, Macalister's "Maccabean Castle" was reexcavated; Yigael Yadin had already interpreted it, sight unseen, as a four-entryway city gate and stretch of casemate wall, like those at Hazor and Megiddo. He cited the reference in *1 Kings* 9:15–17 to Solomonic defenses at all three sites. Yadin turned out to be correct, the Gezer date confirmed by red-slipped and hand-burnished pottery in the deep constructional fills underlying the walls and first roadway. Low benches ran around the walls of each chamber, and a large stone basin was in one chamber. At the two jambs the masonry was fine ashlar, but elsewhere large boulders were used in the construction. After the first two resurfacings of the roadway, a deep drain was cut into the roadway and downslope that was incorporated into a two-entryway lower gatehouse. At this time "Palace 10,000" was also added, to the west of the gate.

The upper gate was connected on both sides to a short stretch of casemate wall. This wall continued west to Field II, where it was ceramically dated to the late tenth century BCE by hand-burnished wares. Downslope from the gate, the gatehouse was connected on both sides to the "Outer Wall," which was now rebuilt with the addition of several courses of somewhat different masonry, a much higher roadway, and an ashlar tower. In the excavators' opinion, this tower would go with the twenty-five or more ashlar towers that Macalister says were "inserted" in the "Outer Wall" that is now dated to the Late Bronze Age. In Field VI, on the north side of the mound, we also found two markedly different phases of the "Outer Wall," although the one ashlar tower excavated there seems to go with a third phase of the wall, probably ninth century BCE in date. Both the upper gate and portions of the casemate wall were destroyed by a fire that left the structures severely damaged, probably to be associated with the well known raid of Pharaoh Shishak (Sheshonq) about 920 BCE.

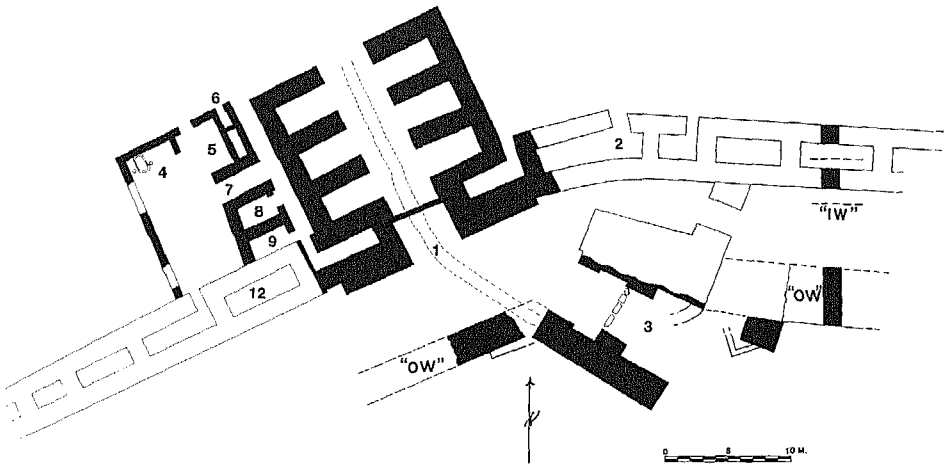
Stratum VII. The ninth century BCE is not well represented at Gezer. The Field III upper gate, badly damaged, was reinforced and rebuilt as a three-entryway gate (see figure 3). Either in the late ninth or early eighth century BCE, "Palace 8,000" replaced "Palace 10,000" west of the gate. In Field VI, the third phase of the "Outer wall" and some of the ashlar towers probably belong to Stratum VII.

Stratum VI. Stratum VI belongs broadly to the eighth century BCE. In Fields II, III, and VI the casemate wall and "Outer Wall" and towers continue, the Field III gate being rebuilt as a two-entryway gate. In Field VII, several fine courtyard houses belong to this horizon (although some may have been built first in the tenth–ninth century BCE).

Stratum VI ends in a violent conflagration. In Field VII the houses are partially destroyed. In Field III the upper gate, the casemate wall, "Palace 8,000," and the lower gatehouse all show dramatic signs of this destruction. Within the casemate walls there is a heavy burn-layer, which produced mid- to late eighth-century BCE pottery encrusted with molten lime, more than 100 fire-baked loom weights, and several unique ceramic inkwells. The lower gate was fired, cracking some of the ashlar stones; and the "Outer Wall" was partially breached, hastily repaired, then finally heavily burned. This destruction is certainly that of Tiglath-Pileser III in his early Asiatic campaigns, about 733 BCE. A relief found by Austen Henry Layard in the Palace of this Assyrian king at Nimrud depicts a siege machine battering the city wall and gate of a Palestinian town, with the name *gaz (ru),* "Gezer," written at the top in cuneiform characters.

Stratum V. Gezer never really recovered from the Assyrian destruction. Stratum V spans the late eighth–early sixth century BCE, but the remains are unimpressive. The city gate and walls in Fields II and III seem not to have been rebuilt. The Field VII private houses do continue, but in decline. That Gezer was now reckoned with Judah, not Israel, is indicated by a few royal stamped jar handles and shekel-weights found both by Macalister and the later excavators, and two Neo-Assyrian tablets. The end came with the Babylonian destruction of Judah in 598–586 BCE, evidence of which is clear in the Field VII houses.

Stratum IV. The Persian period, the sixth–fourth centuries BCE, is poorly represented at Gezer. There are ephemeral remains of domestic structures in Fields II and VI. Among Macalister's Persian materials, however, are several rich tombs (his "Philistine Tombs"), a few *yehûd* seal impressions, and some small limestone incense altars.



GEZER. Figure 3. *Plan of field III gateway, showing outer and inner city walls.* (1) drain; (2, 12) casemate walls; (3) outer gatehouse; (4-9) palace 10,000. (Courtesy W. G. Dever)

Stratum III. The early Hellenistic period, the late fourth–third century BCE, sees Gezer recover slightly, although few remains have been found in any of the excavations.

Stratum II. The second-century BCE witnesses a last revival of Gezer, especially during the Maccabean period, after about 170 BCE. The Iron Age gate in Field III was partially rebuilt as a single-entryway gate, with repairs made in bossed, marginally drafted masonry. Macalister's "Building H" over the eastern half of the gate dates to this period. Many of the ashlar towers of the "Outer Wall" were now surrounded by semicircular bastions, and upper courses were added to the wall here and there. In Fields II, VI, and VII domestic houses are in evidence, particularly in the latter field. Here a large house produced a horde of iron tools; an inscribed lead weight; stamped amphorae handles, and a coin of Antiochus VII, about 133 BCE.

Stratum I. From the early–mid-Roman period, there is little evidence, except for some domestic remains in Field II. However, the several "boundary inscriptions" found by Macalister and by the later excavators belong to this period and suggest that Gezer was now part of a private estate. These inscriptions, cut into the bedrock, read in Hebrew, *tehûm gezer,* "boundary of Gezer"; and in Greek, *Alkiou,* "belonging to Alkios," presumably the owner of the estate.

After that, Gezer was virtually abandoned, the only later material being Macalister's several Byzantine tombs and a few medieval and Crusader remains in the vicinity.

[*See also the biography of Macalister.*]

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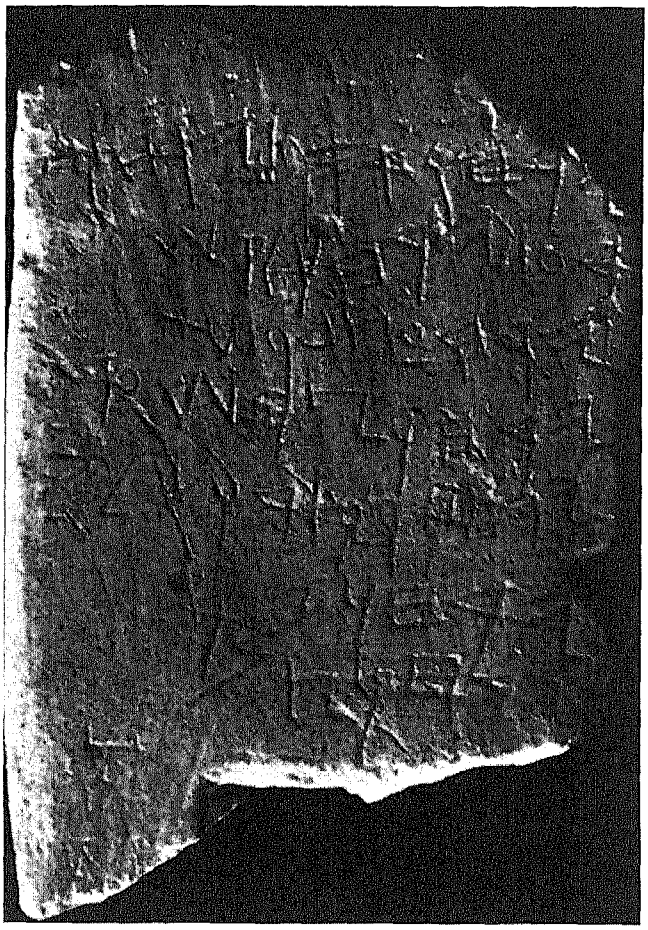
WILLIAM G. DEVER

GEZER CALENDAR. The so-called calendar text, discovered at Tel Gezer in 1908, is a showpiece of early Hebrew inscriptions, in spite of various linguistic problems. The text does constitute a "calendar," in the sense that it outlines the principal agricultural activities over a twelve-month period; however, it names the months only by their characteristic activities and presents some activities as spanning two months.

This brief text, inscribed rather roughly on a limestone plaque (see figure 1), may be translated as follows: "Two months of ingathering [lit., its two months are ingathering], two months of sowing, two months of late sowing, one



GEZER CALENDAR. Figure 1. *The Gezer Calendar.* (Courtesy ASOR Archives)

month of chopping flax, one month of barley harvest, one month of harvest and completion [i.e., the wheat harvest ends the grain-harvesting season], two months of grape cutting, one month of summer fruits." The precise meaning of some of the terms is uncertain, but it is clear that the text refers to a sequence of twelve months, beginning with the fall equinox.

In spite of imprecise stratigraphic results from the early excavations at Gezer, the archaeological and paleographic indicators agree on a date for this text of roughly 900 BCE (Albright, 1943). The script, however, as many scholars have remarked, shows no features characteristic of Hebrew (cf. Naveh, 1982, p. 65); the linguistic identification is therefore dependent on internal analysis. The text is generally classified with the Hebrew inscriptions, with one feature indicating a Northern Hebrew or Phoenician classification: the writing {qṣ}, "summer fruits," is unusual for Judean inscriptions, where {qyṣ} is expected, but it is characteristic of both Northern Hebrew (Borowski, 1987, pp. 43–44) and Phoenician (Dahood, 1983, pp. 597–598). Two other features lean more positively in the direction of a Phoenician classification: the forms {w} (*yrḥw*) and {ø} (*yrḥ*) for the third-person masculine dual(/plural); third-person masculine singular pronominal suffixes are characteristic of early Byblian (the feature is as yet unattested in Northern Hebrew), while the proleptic use of these suffixes is more characteristic of Phoenician than of Hebrew (Pardee, 1987, p. 139, n. 20; add to the bibliography cited there Honeyman, 1953, and Rainey, 1983, p. 630).

On the lower left corner of the calendar is a partially preserved word generally taken as a personal name, perhaps that of the author/scribe: {*'by* [. . .]}. Some reconstruct the name as Yahwistic (e.g., Albright, 1943, p. 22), but the elements {'b} and {-y-} also appear in Phoenician names; the correct reconstruction of the name and the ethnic identification of its bearer are thus unknown.

[*See also* Gezer; Hebrew Language and Literature; *and* Phoenician-Punic.]

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DENNIS PARDEE

GHIRSHMAN, ROMAN (1895–1979), archaeologist who devoted his career to research in Afghanistan and Iran.

Born in Karkhov, Russia, Ghirshman left his country during the revolution and arrived in Paris in 1923, where he studied history and Orientalism at the Sorbonne and the École du Louvre.

Ghirshman worked at Tello in Iraq in 1930, and in 1931 was made director of the Louvre's new mission to Iran. There he worked at Tepe Giyan, near Nehavend, accompanied by his wife Tania, a dental surgeon, who became his collaborator as an illustrator and restorer. Between 1933 and 1937, Ghirshman explored two necropoleis from the second and first millennia BCE at Tepe Sialk, near Kachan.

His main research began after World War II, as director of the French archeological delegation in Iran. He excavated at Susa for twenty-one seasons, until 1967, establishing its stratigraphy from Islamic times until the end of the third millennium and contributing greatly to what is known of the Elamites and their culture. [*See* Susa; Elamites.] He simultaneously explored a temple city of the fourteenth century BCE at Chogha Zanbil, near Susa, with its ziggurat, a huge five-story tower of which only two stories remain. [*See* Chogha Zanbil.] In 1959–1960, the Iranian National Petroleum Company invited Ghirshman to dig at Kharg Island in the Persian Gulf, where he cleared a Greek temple, a Nestorian church, a Sasanian fire temple, and a mosque. Until the age of seventy-seven, Ghirshman excavated in the Bakhtiari Mountains, at Bard-i Nishandeh and Masjid-i Suleiman, Parthian and Sasanian period sites, respectively.

Ghirshman published the results of his excavations as well as other scholarly works, including twenty-three volumes and more than two hundred articles in scientific reviews. He was a member of the Institut de France and of several international academies and received many honors. He exhibited great energy and enthusiasm up until his death, in Budapest, during an international congress.

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AGNÈS SPYCKET

GHRUBBA, site located on the southern side of Wadi Nimrin in Jordan, about 2 km (1 mi.) west of the police station in the village of Shunah (South), on the main Amman-Jerusalem road (31°53′43″ N, 35°34′54″ E). The extent of the site has not been determined, but it is estimated to be about one meter high.

Soundings were made at the site in 1953 by James Mellaart (1956, pp. 14–40). In 1976 the site was resurveyed by Moawiyah Ibrahim, James Sauer, and Khair Yassine under auspices of the Department of Antiquities of Jordan, the University of Jordan, and the American Center of Oriental Research (Yassine et al., 1988, pp. 191, 194) and the collected material studied by Zeidan Kafafi (Kafafi, 1982). In his soundings Mellaart observed sixteen layers. Layers 1–4 had been partially disturbed by a modern burial and produced pottery sherds related to the Ghassulain culture. Sealed by these layers was a pit dug through a layer of unstable gravel down to the underlying soft limestone. The pit appeared oval in shape, measured about 5 × 3 m, and is 1.80 m deep. Inside this pit twelve layers (5–16) of ash and gravel were registered. Only one floor (layer 15a) was recorded.

The pottery from layers 5–16 was mostly handmade. Mellaart distinguished four categories: plain or coarse ware; painted and incised ware; burnished ware; and painted ware. In the plain and coarse ware collection, bowls with knobs and with flaring sides, as well as small jars with lug handles, were noted. Straw temper was visible only in the case of a few coarse white bowls (Mellaart, 1956, p. 30). Bow-rim jars similar to those from Jericho VIII were found in layers 12, 14, and 16 at Ghrubba (Mellaart, 1956, fig. 4, pp. 40–42). The second group was characterized by a red or brown paint or wash covering the vessels, as well as incised decoration—a horizontal band below the rim of the bowls or at the base of the neck of the jars. In the case of jugs the decoration passed through the opening of the loop handles. Below the horizontal band were usually zigzag or herringbone decorations. The painted ware is the most common at Ghrubba. It was handmade and well fired. The surface of the vessels is buff, pink, or whitish, and evidently no slip was used. The decoration consists mostly of triangles, chevrons, diagonal parallel lines, and dots. Mellaart argued that Ghrubba represented a different painted pottery tradition than that at Jericho, comparing it with Hassunian Archaic painted ware (Mellaart, 1956, p. 31).

Because Ghrubba yielded some pottery forms distinct from those of Jericho IX and at Shaʿar ha-Golan and that reflect contact with the earliest painted pottery at Mersin and ʿAmuq B, Mellaart placed Ghrubba in the later phase of the Hassuna period and earlier than Jericho IX and the Yarmukian (Mellaart, 1956, pp. 31–33). While Ghrubba has its own characteristics, it may not be earlier than Jericho IX and Shaʿar ha-Golan, however. For instance, bow-rim jars

like those from Jericho VIII have been found at Ghrubba. However, when Mellaart excavated at Ghrubba in 1953, no other sites related to the Neolithic and Chalcolithic periods except Sha'ar ha-Golan, Jericho, and Ghassul had been excavated in the Jordan Valley. A. M. T. Moore, on the other hand, has suggested that Ghrubba should be related to the Early Chalcolithic period and not the Neolithic, stressing that the pottery Mellaart published strongly resembles the Ghassulian (Moore, 1973, p. 60). This argument was not confirmed by the pottery collected during the 1976 survey (see above), which resembled the pottery of Late Neolithic (Kafafi, 1982, p. 200).

Based on the results of the excavations in the Jordan Valley at Munḥata (Perrot, 1964, 1966), Tell Tsaf, and Abu Ḥamid (Dollfus and Kafafi, 1993) and in Jordan's hill country, at Abu Thawwab, Ghrubba is either a Yarmukian site or, like Abu Ḥamid, it is postclassical Yarmukian. Its painted pottery resembles that found at Abu Thawwab (Kafafi, unpublished), except that no "classical" incised or painted pottery was evident.

[*See also* Jordan Valley. *In addition, many of the sites mentioned are the subject of independent entries.*]

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ZEIDAN A. KAFAFI

GIBEAH. *See* Ful, Tell el-.

GIBEON. A site of some importance in the Bible, located approximately 9 km (5 mi) north of Jerusalem (35°11′ N, 31°51′ E; map reference 167.6 × 139.7). The best-known biblical references to Gibeon describe a battle there between the Israelites and the Amorites. The Israelites, led by Joshua and newly allied with the people of Gibeon, protected the city from an Amorite attack led by Adonizedek of Jerusalem. In the battle, Joshua drove back the Amorites and asked God to make the sun stand still at Gibeon until the Israelites were fully victorious (*Jos.* 10:9–14). Gibeon was first identified by the American explorer Edward Robinson in 1838, although two traveler's accounts had suggested the identification as early as 1666 and 1738. Robinson saw the modern Arabic name el-Jib as a corruption of the ancient town name of Gibeon. The identification was confirmed by the excavations carried out by James B. Pritchard for the University Museum of the University of Pennsylvania, between 1956 and 1962. During those excavations, thirty-one Iron Age jar handles were found, inscribed with the name *gb'n* (Gibeon). A survey of the site carried out by the Palestine Exploration Fund was published in 1870, a plan of the water tunnel was published in 1889 by Conrad Schick of the PEF, and an Iron Age tomb was discovered and published in 1950 by Awni Dajani of the Jordanian Department of Antiquities. A recent survey, done by Hanan Eshel of the Hebrew University of Jerusalem in 1983–1984, documented additional Iron Age burial caves.

The University of Pennsylvania excavations at Gibeon revealed several periods of occupation. The earliest, on the top of the tell, dates to the Early Bronze Age. Unfortunately, much of this level was disturbed in both ancient and modern times, and little can be said about it. There are few occupational deposits but many tombs from the EB IV. The tombs consist of shafts cut into the limestone slope of the tell that lead to circular chambers containing the inhumation. Burial goods include ceramic vessels for food and drink, metal tools, and adornments for the deceased. Some of these tombs were reused for burials in the Middle Bronze II period and in the Late Bronze Age, when additional tombs were cut. A few remains of MB domestic architecture were found, but the main excavations on the tell concentrated on the Iron Age occupation. [*See* Shaft Tombs.]

Gibeon has a large and impressive water system that was built in two stages, both within the Iron Age. The first part of the system was probably begun in the Iron I period. It consists of a long spiral staircase dug to reach a deep pool of groundwater within the city walls. The second system was designed slightly later, perhaps to enhance the pool's water supply. This system involves a stepped tunnel whose mouth is inside the city. The tunnel was cut down to a water chamber that, in turn, had a feeder tunnel connecting it to an underground spring. The water chamber had another point of access in addition to the tunnels, in the form of a door that led outside the city walls and could be sealed in times of siege. [*See* Water Tunnels.]

A winery was discovered that belongs to the eighth and seventh centuries BCE. It contained many wine presses, channels, and basins, as well as sixty-three large vats, cut deep into the limestone. The vats were used as wine cellars for temperature control and once contained hundreds of storage jars as evidenced by the broken jar fragments as well

as one complete jar that were found. Much of the wine produced at Gibeon was probably exported; many jar handles inscribed with the name *gb'n* were found in this industrial area.

There is very little evidence for occupation at Gibeon between the end of the Iron Age and the Roman period. In the Roman period, however, although the site was reoccupied it was not fortified. Excavation of the later remains revealed baths and an elaborate columbarium tomb.

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RACHEL S. HALLOTE

GILAT, a Chalcolithic commercial and cultic center located in the northern Negev desert, along the eastern bank of Naḥal Patish, about 20 km (12 mi.) northwest of Beersheba. The site (about 10 ha, or 25 acres) is comprised of a large mound (about 8 acres) that rises more than 2.5 m above some 7 ha (17 acres) of surrounding plain.

Gilat was discovered in the early 1950s by David Alon, who, based on the surface discovery of hundreds of artifacts characteristic of the Chalcolithic period (c. 4500–3700 BCE), first recognized the site's archaeological significance. Under the sponsorship of the Israel Antiquities Authority, Alon conducted three seasons of excavations between 1975 and 1977. More recently, in 1987 and from 1990 to 1992, excavations were carried out on behalf of the Hebrew Union College (HUC) in Jerusalem under the direction of Thomas E. Levy and Alon. Largely as a result of its proximity to both the coastal plain and the inland foothills, Gilat served as one of the earliest ritual centers in western Palestine. Similarly, its development as a regional center of exchange can be explained by its central location among the area's large Chalcolithic village sites—south of Gerar, west of Abu Hof, east of the Naḥal Besor sites, and north of the Beersheba valley sites, among them, Shiqmim, Abu Maṭar, Ḥorvat Beṭer, and Bir es-Safadi. Because of this commercial and ritual importance, Gilat held a special status in Israel's protohistory.

In the 1970s, working in the eastern portion of the site, the excavators uncovered an area of approximately 450 sq m and delineated four main strata. The HUC excavations uncovered an area of about 800 sq m, with seven occupational phases distinguished. All architectural remains from the latest occupational level (stratum I) were destroyed by plowing (the site is in the field of Moshav Gilat), as was stratum II in the east; in the west, however, this stratum was subdivided into subphases IIa, IIb, and IIc (the last labeled stratum III in the first published reports). Remains from stratum III were found all over the site, whereas those from stratum IV, the earliest occupational level, were uncovered in only a few places, in probes dug into a small Pleistocene hill rising above the plain.

An unusually large number of exotic artifacts made of nonlocal materials were uncovered during the HUC excavations. Among these finds were 58 violin-shaped figurines—more than at any other site in the eastern Mediterranean—54 enigmatic tokens, 82 stone palettes, 54 pendants, some 200 fenestrated stands (incense burners) made of ceramic and basalt, 150 spindle whorls, 28 mace heads, and a host of additional objects made of obsidian, green stone, and other materials. Intrasite spatial analysis has not revealed a statistical correlation between the finished stone objects and the raw materials found on site, an indication that the violin-shaped figurines, palettes, fenestrated stands, and other exotica were manufactured elsewhere and brought to the site in finished form. Petrographic studies of the unique Gilat "torpedo" jars also confirmed nonlocal production. These findings, viewed in conjunction with the site's location, indicate that Gilat controlled access to grazing lands on the Negev coastal plain, access that seasonal herders gained by bringing offerings to the sanctuary. Objects found in connection with the architectural remains in stratum IIc suggest a variety of cultic activities. About seventy of the cult objects were discovered in the stratum's main cult room, designated room A (about 3 × 4.5 m). The most important of these finds were the Gilat Ram and Lady. The other finds with cultic significance were recovered in the courtyards linked to this room.

Well-preserved architecture was excavated in the western part of stratum IIb: the remains of three broadroom buildings; three circular, mud-brick and stone platforms; and a large, mud-brick lined silo. A building complex from stratum IIc was exposed in the eastern sector. The stratum IIb structures, which also produced many ritual objects, were connected by a hard mud-brick floor about 10 cm thick. After stratum IIb was abandoned, much of the area was prepared for new construction (stratum IIa)—numerous structures that were short-lived.

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THOMAS E. LEVY

GILEAD, region named in the Hebrew Bible, located on the rocky, and in those days forested, parts of the eastern side of the Jordan River and the Dead Sea, roughly between the Arnon River (Wadi el-Mujib) in the south and the Yarmuk River in the north. The Jabbok River (Nahr ez-Zerqa) divides the area in two: "half the Gilead" is used to cite both (*Dt.* 3:12; *Jos.* 12:2–5). The inhabitants are called Gileadites (*Nm.* 26:30, 36:1; *1 Chr.* 7:17) and belonged to the Israelite tribes of Reuben, Gad, and half of Manasseh. Machir, a son of Manasseh, is the "father of Gilead" (*Jos.* 17:1). The word-stem *gl'd* is to be found in Ugaritic (Gordon, Texts 170 and 301), but the geographic connection is not well defined. In Akkadian, *ga-al'a-⌜a⌝-(za)* (III R 10.2; K 2649) is bordering Aram, possibly Ramoth Gilead, during the reign of Tiglath-Pileser III. The name Gilead is certainly preserved in the Arabic Khirbet Ǧel'ad (or Jel'ad), a site in the area of es-Salt.

Culturally, Gilead is related to Cisjordan. There is evidence of *homo sapiens* in the area about two million years ago (at Abu el-Khas, Wadi Ḥammeh, and Pella). The prehistoric finds are comparable with those at 'Ubeidiya for the Early Paleolithic period. In Mesolithic times, nomadic hunters became sedentary and food producing and were influenced by the Natufian culture.

In the Pottery Neolithic period (5500–4500 BCE), climatic conditions changed in Palestine. Transjordan gradually dried out and became desertic and settlers moved to new agricultural communities. They built circular, and then later, rectangular, houses arranged in communities, such as at 'Ain Ghazal in Amman. In their burial practices they prepared the skulls of the dead with plaster and shells as at Jericho. The following period, the Chalcolithic (4000–3200 BCE), is substantiated at Teleilat el-Ghassul and in the Golan. Ghassul is then a fortified village with dwellings clustered around courtyards measuring 15 × 5 m, made of hand-modeled, sun-dried mud bricks. Of special interest are the buildings' geometric wall paintings in white, black, red, and brown.

The beginning of city life appears in the Early Bronze Age (3200–2100 BCE). On the Bab edh-Dhra' plain and in Khirbet Iskander, Pella, and Khirbet ez-Zeraqun, fortified cities with irrigation systems were founded. More than 200,000 graves have been discovered at Bab edh-Dhra', and at Zeraqun a cultic area with the same layout as the one at contemporary Megiddo was found. Parts of central and northern Gilead were populated in the Middle Bronze Age (1900–1550 BCE), during which time Pella was heavily fortified. The Late Bronze Age (1550–1200 BCE) has been regarded as a dark age in Transjordan. However, at Irbid and Tell el-Fukhar prosperous towns existed with defense walls built with large boulders and cobble chinking. Temple architecture is known from Umm ed-Dananir and Amman, and there was a citadel at Lehun in the south.

The transitional period into the Iron Age is represented at Tell el-Fukhar, which was then transformed into an unfortified settlement on large stone pavements. Remains of pillared buildings and sherds of collar-rim jars belong to this period. In the Iron Age (1200–600 BCE), according to the Bible, many dramatic events took place in Gilead: King Saul rescued Jabesh Gilead (*1 Sm.* 11), and his son Ishba'al governed his kingdom from Maḥanaim (*2 Sm.* 2:8), a town at Wadi Zerqa, in an area densely settled throughout the period; King David besieged his son Absalom in the forest of Ephraim (*2 Sm.* 18:6); and King Solomon cast the pillars for the Jerusalem Temple in the Jordan Valley (*1 Kgs.* 18:6). There are, however, no Iron II A–B remains at Tell el-Fukhar. Surveys in the Ḥesban and Madaba regions show that there was an agricultural expansion throughout the Iron Age, using land belonging to the former LB towns along the King's Highway. The "balm of Gilead" was famous (*Jer.* 8:22; 46:11). Inscriptions in Moabite, Ammonite, and Aramaic dialects are found at Dibon/Dhiban (the Mesha Stone) at Tell Deir 'Alla (the Balaam texts), Amman (the Siran bottle), and Tell el-Mazar and Tell es-Sa'idiyeh (ostraca).

The Persian period is represented by a square building at Tell es-Sa'idiyeh in the Jordan Valley. The same architectural style appears in the Hellenistic period at some sites. At 'Iraq el-Amir the Tobiad Hyrcanus built a fortress he called Tyros, and there is evidence of a Hellenistic villa at Tell el-Fukhar. Gilead may not have been ruled by the Nabateans, whose culture straddled the Hellenistic and Roman periods, but their main caravan roads passed it. During the Roman period some towns of the Decapolis were situated in Gilead (Gadara, Pella, and perhaps Tell el-Ḥusn). Well-built bridges and roads can still be seen, and the Via Nova Trajana was not far away. Many graffiti written in Safaitic script have been found, especially to the east. In the Byzantine

period, the population increased and the towns prospered. Gadara's mosaics and the churches in the Madaba region with their mosaic floors and original motifs (including the mosaic map of ancient Palestine) reflect their great wealth.

The Crusaders seem not to have been interested in Gilead. However, in the Ayyubid period (1174–1263 CE), castles were built at Rabadh and es-Salt. Iron was mined and smelted at Mugharat el-Warda.

[*Many of the sites mentioned are the subject of independent entries.*]

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MAGNUS OTTOSSON

GILOH (map reference 165 × 125), Iron Age site approximately 2 acres in area located in a southern suburb of modern Jerusalem that bears the same name. Giloh is located on a high ridge 830 m above sea level, overlooking the entire Jerusalem and Bethlehem area. Small-scale salvage excavations were directed here between 1978 and 1982 by Amihai Mazar, on behalf of the Institute of Archaeology of the Hebrew University of Jerusalem and the Israel Department of Antiquities. The ancient name of the site is unknown; it should not be confused with biblical Giloh, which must be located south of Hebron (*Jos.* 15:51). It may be the Ba'al-Perasim mentioned in *2 Samuel* 5:20 or the Har-Perasim in *Isaiah* 28:21.

Giloh is one of the few Iron Age I sites excavated in the central hill country. It was abandoned after the Iron Age and subsequently destroyed by erosion and human activity. A shallow defensive wall surrounded at least its southern part. A solid square stone structure (11.58 × 11.15 m) at its northern part may be the foundation of a building, perhaps a fortified tower.

The site was divided by long walls into large, subsidiary areas that may be animal pens. Dwellings were constructed along the defense wall and near some of the inner dividing walls. It thus appears that the settlement was divided into family units consisting of dwellings attached to animal pens. The one house that was excavated appears to be an early version of the pillared houses that are typical of the Iron Age in Palestine—an early example of a four-room house. [*See* Four-room House.] No cisterns were found at the site, so that water was probably transported from springs located in the Sorek Valley farther to the north. It is estimated that about a dozen families settled here, living on stock breeding and some agriculture. The enclosure wall and the solid tower suggest that the settlement faced challenges to its security, which its proximity to Jebusite Jerusalem may have created.

Giloh's Iron I material culture resembles that at other central hill country sites. Collared-rim store jars, small storage jars, and cooking pots comprise most of the rather limited ceramic assemblage. The pottery is made in a local Canaanite tradition, but no decorated pottery was found. The site appears to have been settled in the twelfth century BCE and may have been abandoned in the eleventh.

The inhabitants' socioeconomic status is similar to that apparent at many other Iron I sites in the hill country. It has been suggested that these settlers were part of an Iron I wave of settlement in the hill country that is commonly identified with the appearance of the Israelites in this region.

In the Iron II (8th–7th centuries BCE), an isolated, large (10 × 10 m) tower was constructed at the summit of the site. Its massive stone walls created a podium on which an unpreserved superstructure would have been constructed. The tower was probably part of Jerusalem's defense system. It would have been used for observation and to give warning to the city by fire signals.

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AMIHAI MAZAR

GIRSU AND LAGASH, urban centers, along with Nina-Sirara, in the Sumerian city-state of Lagash in ancient Mesopotamia that also comprised several smaller settlements. Girsu (modern Telloh) was located at 31°31′ N, 46°12′ E; Lagash city (modern al-Hiba) at 31°25′ N, 46°24′ E; and Nina-Sirara (modern Zurghul) at 31°21′ N, 46°35′ E. Inscriptions from Telloh identify the site as the ancient city of Girsu in the state of Lagash, while excavation and survey have enabled identification of al-Hiba as Lagash City and Zurghul as Nina-Sirara. Inscriptions and other archaeological evidence have demonstrated the great importance of Lagash, particularly during the later Early Dynastic and

immediately post-Akkadian periods. The three main cities of Lagash have received varying amounts of archaeological investigation.

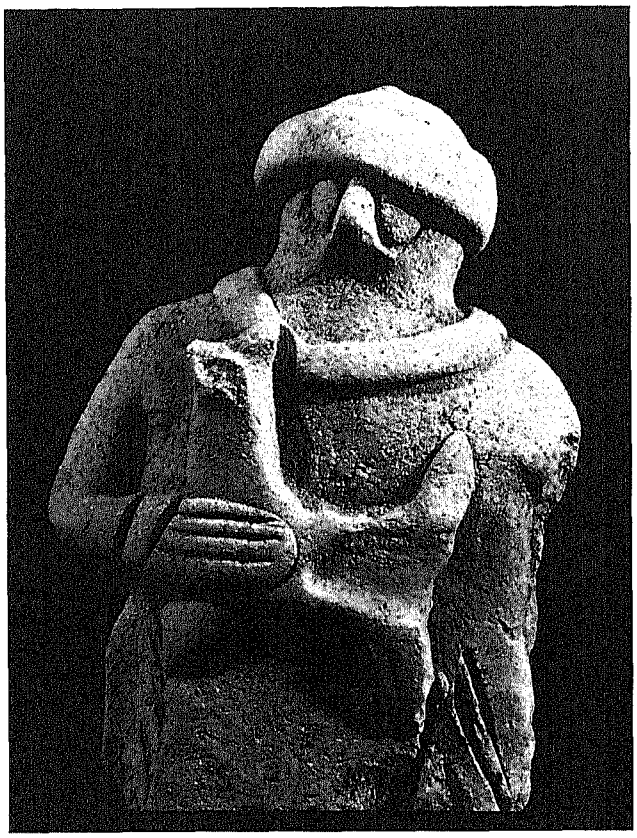
Girsu (Modern Telloh). The mounds of Telloh, ancient Girsu, cover an area of more than 100 ha (247 acres), rising to a height of 15 m. They are located approximately halfway between the Tigris and Euphrates Rivers. The site is made up of a series of adjacent mounds that in ancient times were connected by a substantial waterway to al-Hiba and Zurghul to the south. Telloh was the first Sumerian site ever to undergo archaeological investigation. Encouraged by local reports of inscribed statuary, the French vice-consul at Basra, Ernest de Sarzec, conducted a series of campaigns at Telloh from 1877 to 1900. His spectacular discoveries, the first excavated evidence of Sumerian art and culture, caused a sensation when exhibited in Paris in the 1880s. In 1879, Hormuzd Rassam excavated at Telloh for three days in de Sarzec's absence. Subsequent excavations at Telloh, all French, were undertaken by Gaston Cros (1903–1909), Henri de Genouillac (1929–1931), and André Parrot (1931–1933), amounting to a total of twenty field seasons. Between legitimate field seasons Telloh suffered badly from illicit excavations, especially prior to 1900, which produced up to forty thousand cuneiform texts from tell V, principally of the Ur III period. There have been no excavations at Telloh since 1933.

Little is known of Telloh's prehistory, beyond the presence of Ubaid period pottery and other artifacts in the lower levels of de Genouillac's large sounding on tell K. Many objects appeared higher up in this sounding, including cylinder and stamp seals, metalwork, and pottery of both the Uruk and Jemdet Nasr periods, often as deliberate deposits within graves. Very few remains dated to Early Dynastic I and II have been identified at Telloh. It is not until the Early Dynastic III period that the importance of the site comes into focus, helped by significant finds of inscribed material. Many details, however, remain obscure, partly because of poor excavation standards. The Early Dynastic III texts from Telloh survive principally in the form of royal inscriptions giving details of building projects, irrigation works, and warfare. From these texts something of the political history of the state of Lagash and its neighbors can be reconstructed from roughly 2550–2350 BCE, during which time, at least, the city of Girsu was the capital city of Lagash State.

Lagash. The earliest attested rulers of Lagash state are Lugalsha-engur, a contemporary of Mesalim, king of Kish, and Enhegal, both of whom date to the early part of the Early Dynastic III period. Royal inscriptions at Telloh from about 2500 BCE attest the existence of nine successive rulers, constituting the first dynasty of Lagash. Surprisingly, this dynasty does not feature in the Sumerian king list, despite its considerable achievements in the late Early Dynastic period. The first of these rulers, Ur-Nanshe, tells of his many building projects in Lagash, some involving the transport of timber by ships of Dilmun (the modern island of Bahrain) from distant foreign lands. Ur-Nanshe also provides accounts of his wars against other Sumerian city-states, such as Ur and Umma. Conflict with Umma, in particular, was to continue more or less unabated for centuries thereafter, caused by dispute over territory located between the two city-states. Few texts survive from the time of the next ruler, Akurgal, but his successor, Eanatum, has left a substantial record of his activities. Again the Lagash-Umma border conflict figures large in Eanatum's inscriptions, most spectacularly on the Stela of the Vultures monument. Other texts tell of his defeat of Elam, Uruk, Ur, Akshak, Subartu, and Mari, an indication of far-ranging military achievements that to some extent presage those of Sargon of Akkad some 150 years later. More building activities are attested in the inscriptions of Enanatum I, while his successor, Enmetena, tells of continued conflict with Umma. At the same time, the inscriptions of Enmetena mention interstate relations, including "establishing brotherhood," between Lagash and Uruk, Larsa and Badtabira, rare hints of the pattern of shifting alliances that is likely to have characterized Sumerian city-state politics at that time. Inscriptions of the next three rulers, Enanatum II, Enentarzi, and Lugalanda, relate to temple construction. The last ruler of the first dynasty of Lagash, Uruinimgina (also known as Urukagina), left many interesting inscriptions, not only relating to his prodigious building feats and strife with Umma, but also telling of his social and religious reforms, implemented, he asserts, at the command of the chief god of Lagash, Ningirsu. Contemporary texts from the Bau Temple at Girsu indicate the wide range of economic activities engaged in by a Sumerian temple. In about 2,350 BCE, Uruinimgina was defeated by Lugalzagesi of Umma, immediately prior to the conquest of all Sumer by Sargon of Akkad.

In spite of the wealth of historical information about the Early Dynastic III period from excavations at Telloh, much less is known of this period than might have been the case: inadequate excavation techniques failed to place the inscribed material within any meaningful architectural contexts. Indeed, the excavators of Telloh identified very few Early Dynastic III buildings. Two small structures, the Construction Inférieure and the Maison des Fruits, are probably religious buildings dating to Ur-Nanshe and earlier. Of the artifacts from this period, the inscribed Stela of the Vultures is an unquestioned masterpiece of Sumerian art, showing on one face a scene of battle and conquest, with the king in a chariot, and on the other face a more mythological scene of the king with a lion-headed eagle. Inscribed stone wall plaques of Ur-Nanshe also display scenes of royal activities. Other important artifacts include inscribed copper foundation figurines, copper daggers and animal heads, and an impressive silver vase of Enmetena engraved with cultic scenes and dedicated by him to Ningirsu.

Of the subsequent Akkadian period (c. 2350–2230 BCE)



GIRSU AND LAGASH. *Shepherd carrying a lamb.* Sumerian terracotta figure; early second millennium. Musée du Louvre, Paris. (Erich Lessing/Art Resource, NY)

there is almost no direct evidence from Telloh, apart from some inscriptions of Rimush, son of Sargon, and of Naram-Sin. For the century or so after the Akkadian period, artifacts and inscriptions from Telloh once more thrust the site into the historical limelight. At that time the city of Girsu appears to have attained its maximum extent. The most famous objects from this period are the statues of Gudea, many examples of which now grace the Louvre Museum in Paris. These statues consist of standing and seated representations, carved in diorite, of Gudea, ruler of Lagash. Inscriptions detail his achievements, largely in terms of building projects at Girsu, Lagash City, and Nina-Sirara, involving the procurement of raw materials from far-flung areas of the ancient Near East. During this period Lagash was clearly once more a city-state of major significance within Mesopotamia, but again the architectural remains at Telloh are disappointing. Little has been identified beyond platform structures, a series of circular brick pillars, and a large baked-brick structure that almost certainly functioned as a water regulator within the city.

Following the Akkadian period, the city of Girsu settled into a long, gentle decline. During the Ur III period large numbers of economic texts show that the city was active, while respecting the suzerainty of the city of Ur. A few texts indicate a low level of activity at the site in the subsequent Isin-Larsa and Old Babylonian periods, with scattered evidence of occupation through the late second and early first millennia BCE. In the second century BCE, during the Parthian period, Telloh enjoyed a brief revival. A ruler called Adadnadinahe constructed an impressive palace on tell A, whose inscribed bricks give his very Mesopotamian name in both Aramaic and Greek. The latest evidence of occupation at Telloh is in the form of Sasanian seals.

Al-Hiba. Located 25 km (16 mi.) southeast of Telloh is the mound of al-Hiba, ancient Lagash City. In area, al-Hiba is one of the largest mounds in the ancient Near East, reaching up to 600 hectares (1,482 acres) at its greatest extent, but with a maximum height of only 6 m. Study of inscriptions from al-Hiba and Telloh has established that al-Hiba's ancient name was Lagash City, at some time the capital of Lagash State, in a manner analogous to New York City, the capital of New York State. It is not known when al-Hiba was the capital of Lagash State, but it may have been during the earlier part of the Early Dynastic period, when al-Hiba reached its maximum size and before Telloh/Girsu assumed

GIRSU AND LAGASH. *Seated diorite figure of Gudea, king of Lagash.* Dated to 2120 BCE. Musée du Louvre, Paris. (Erich Lessing/Art Resource, NY)

the role of capital in Early Dynastic III times. The earliest excavations at al-Hiba were conducted in 1887 by a German expedition led by Robert Koldewey. Houses and streets were uncovered, but the abundance of intramural burials led Koldewey to conclude mistakenly that the entire site was a necropolis. Brief archaeological surveys in the region of al-Hiba were carried out in 1953 and 1965. A new program of excavations was initiated in 1968 by Donald P. Hansen for the Institute of Fine Arts of New York University and the Metropolitan Museum of Art. Six field seasons have been conducted.

As with Telloh, little is known of al-Hiba's prehistory, although there is some slight evidence for Ubaid and Uruk period occupation. The recent excavations have uncovered buildings, including a large oval precinct probably belonging to a temple, dating to the Early Dynastic I. Substantial deposits from this period remain to be excavated. Most of the excavated remains at al-Hiba date to the Early Dynastic III period, when much of the city was devoted to religious buildings: indeed, one ancient epithet of al-Hiba was Uruku, "holy city." The chief god of Lagash was Ningirsu, whose temple precinct was called the Bagara. Part of this complex has been located and excavated in the central western part of the mound. A building with a buttressed facade and baked-brick pavements contained within a curtain wall yielded inscribed objects dating to Eanatum, in the Early Dynastic III period, indicating that the building was part of the Bagara of Ningirsu. A nearby building contained features and texts that have led to its interpretation as a brewery for the Bagara complex. At the city's southwestern limit, another temple complex has been excavated: the Ibgal of Inanna. This complex takes the form of a building with elaborate foundations set within an oval precinct wall. Inscribed foundation figures identify the builders of the Ibgal as Urnanshe and Enanatum I, successor to Enantum. These temple structures are the earliest known Mesopotamian buildings that can with certainty be associated with historically known figures. Elsewhere on the mound a large administrative building was excavated that provided tablets and sealings dating to Eanatum and Enanatum I and an extremely early example of a die.

There appears to have been a widespread abandonment of al-Hiba at the end of the Early Dynastic III period, perhaps as a consequence of the conquest of Lagash state by Lugalzagesi of Umma. A few Akkadian texts have been found. On the highest central part of the mound there is evidence for the rebuilding of the Bagara by Gudea; an Ur III king, Amar-Sin, is also textually attested. There are traces of further rebuilding in the Isin-Larsa and Old Babylonian periods, with tablets dating to the ruler Sin-iddinam of Larsa (1849–1843 BCE). There is no evidence of any later occupation at al-Hiba.

Ten kilometers (6 mi.) southeast of al-Hiba is the smaller mound of Zurghul, ancient Nina-Sirara, which is 15 m high and covers some 65 hectares (161 acres). Koldewey carried out the only excavations at Zurghul, in 1887, prior to his work at al-Hiba. He also mistakenly concluded that Zurghul was an ancient necropolis. As at Telloh and al-Hiba, there is some evidence for the Ubaid and Uruk periods at Zurghul. The main occupation belongs to the Early Dynastic and immediately post-Akkadian periods, however, as indicated by finds of inscribed bricks and cones relating the construction undertaken by Enanatum I and Gudea, including the a temple for Nanshe.

[*See also* Isin; Larsa; *and* Ur.]

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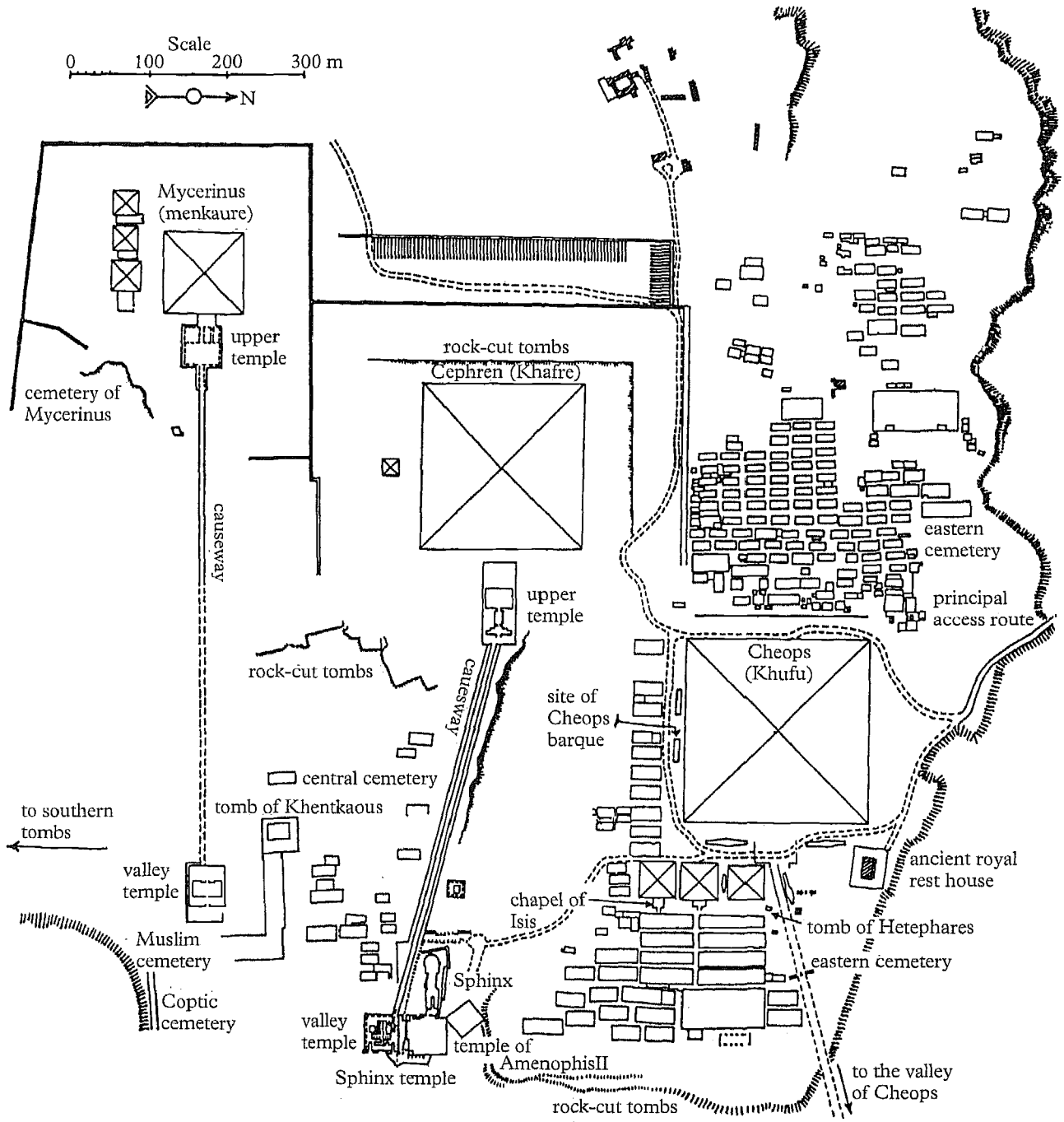
R. J. MATTHEWS

GISCHALA. *See* Gush Ḥalav.

GIZA, originally a village (30°00′ N, 31°13′ E) established in 642 CE on the west bank of the Nile opposite Fustat-Masr, has also come to designate the much larger ancient site of the fourth-dynasty (c. 2575–2134 BCE) Sphinx; the pyramids

of Cheops, Chephren, and Mycerinus; and the adjacent cemeteries of nonroyal persons (see figure 1). Giza lies on a plateau, which is part of the Libyan mountain range in Egypt's western desert, and stretches approximately 1,000 m (3,280 ft.) from north to south and 2,000 m (6,562 ft.) from east to west. Bounded by two wadis (dried-up riverbeds) and dominating the surrounding plain from a height of some 40 m (131 ft.), Giza is one of the cemeteries of the Memphite region that forms an unbroken line from north to south between Abu Roash and Dahshur.

The site was already famous in antiquity, first in Greece and then in Rome. The pyramids were ranked as one of the wonders of the world. Arab historians and Western travelers had mentioned Giza in their writings since the Middle Ages, but more systematic explorations did not begin until the first half of the nineteenth century. Giovanni B. Caviglia, Henry



GIZA. Figure 1. *General plan of the site.* (Courtesy C. Zivie-Coche)

Salt, Giovanni B. Belzoni, R. W. Howard Vyse, John S. Perring, and Patrick Campbell uncovered and explored the pyramids' mortuary chambers, which had been ransacked in antiquity. Later C. Richard Lepsius, Auguste Mariette, W. M. Flinders Petrie, and Gaston Maspero excavated the royal complexes and *mastaba*s (tombs). In the earlier twentieth century, the plateau was divided into large concessions that were excavated by Austrians (Hermann Junker), Americans (George A. Reisner), and the Egyptian Antiquities Service (Pierre Lacau and Selim Hassan). Excavations continue and have yielded discoveries of a "satellite" pyramid next to the great pyramid of Cheops, even more *mastaba*s in the western cemeteries, and other tombs belonging to the workers and overseers who built the various pyramids at Giza. [*See the biographies of Mariette, Petrie, Maspero, and Reisner.*]

Although the most spectacular monuments belong to the fourth dynasty, Giza had a very long history, extending practically without interruption from predynastic times up to the Roman period. Located in southern Giza, the earliest monumental remains are the *mastaba*s from the first three dynasties. As evidenced by lithic objects and ceramics, however, the site had been occupied already in predynastic times. The toponym Ra-setau ("entrance to the underworld") probably dates to these initial periods of settlement. Mentioned in the *Pyramid Texts,* ancient Egypt's oldest extant funerary literature, Ra-setau was associated with a cult of Osiris that was maintained until the Late Period.

During the fourth dynasty the three pyramids of Cheops, Chephren, and Mycerinus and their families were erected rather rapidly, using methods of transportation and construction that remain uncertain. These architecturally flawless constructions, which served as royal tombs, had different plans for the burial chambers, which were uninscribed. (Not until the end of the fifth dynasty did the *Pyramid Texts* appear on the walls of royal burials.) Each of the three prominent pyramids at Giza comprises only parts of four elements in a complete royal funerary complex; the others, often drastically destroyed, were a "high" mortuary temple adjacent to the pyramid, a "low" temple in the valley, and an avenue or causeway connecting the two. Almost nothing remains of these temples at the Cheops complex, but the Chephren structures are relatively well preserved. The low temple in the valley was associated with rituals connected to the actual royal burials, whereas the high temple functioned as the site for the postmortem cult of the king. Large disassembled boats, which are known as "solar barques" because the king supposedly traveled in them across the sky in his role as sun god, were buried in hull-shaped pits cut in the rocky plateau. One of them was reassembled and housed in its own museum near its place of discovery.

Chephren added an important element to his pyramid complex by erecting a monumental sphinx with his own image for the head and the body of a lion. The Sphinx was carved from a single knoll of rock north of the pyramid causeway. It was preceded by granite temple, no doubt used for a solar cult. Impressive statues of Chephren were found in his valley temple.

Close family members of the pharaohs—children, mothers, and wives—were also buried on the Giza plateau. The royal wives were sometimes honored with small "satellite" pyramids but more often with decorated *mastaba*s. Hetepheres, wife of Snefru and mother of Cheops, was buried not far from her son's pyramid in an underground tomb that had no superstructure. In 1925 Reisner, director of a joint expedition sponsored by Harvard University and the Museum of Fine Arts, Boston, discovered Hetepheres' remarkable funerary furniture and jewelry that had escaped the depredations of ancient tomb robbers. Another queen, Khentkaues, had a mortuary complex including a vast tomb, albeit a commemorative pyramid was erected for her farther south at Abu Sir.

Cemeteries for private persons were carefully planned and built by royal decree around the royal pyramids. The large necropoleis to the east and west of the Cheops pyramid are particularly significant for their gridlike arrangement; the "streets" formed by the rectilinear plan of the tombs are especially visible in the eastern cemetery. The *mastaba*s found in all the private cemeteries are so named for the Arabic word for "bench." The elaborate design features a large rectangular superstructure covering rock-cut underground rooms, including cult chapels and burial chambers. The walls of these tombs were originally built for the kings' relatives or prominent members of the royal court and, like the tombs at Saqqara, were decorated with reliefs (usually painted) of remarkable quality, featuring scenes of daily life and practically devoid of religious symbols. Placed in the tombs were admirable statues of the deceased, such as the famous bust of Ankhkhaef, now in the Museum of Fine Arts, Boston, as well as the so-called reserve heads, which probably served as spares in case the real head of the mummy was damaged.

After the fourth dynasty, the pharaohs were buried elsewhere, but the private cemeteries continued to grow. Indeed some of the "reserve heads" from Giza burials date to the fifth or sixth dynasty or even a little later. After the end of the Old Kingdom, however, when burials were no longer assured by the king, the site was gradually abandoned. It was forgotten for several centuries; no documents from the Middle Kingdom have been found there.

With the rise of the New Kingdom (eighteenth–twentieth dynasties, c. 1550–1070), Giza benefited from the growth of the nearby city of Memphis, which was Egypt's administrative center. Residence of kings and princes, Memphis was of great economic, military, and artistic importance. Moreover, Heliopolitan religious traditions returned to favor with the growth of the cult of the sun god Amun at Thebes. For these two reasons, Giza became an important pilgrimage site, both for kings and crown princes (as revealed by the

stelae or commemorative tablets of the pharaohs Amenophis II, Thutmosis IV, Seti I, and Rameses II) and for individuals, who left votive offerings. The focus of worship was the great Sphinx of Chephren, uncovered and protected from the desert sands by Thutmosis IV and known by the names Horemakhet ("Horus-in-the-Horizon") in Egyptian and, later, Harmachis in Greek. Chephren's image was reinterpreted as a form of the sun god, guarantor of royalty and divine protector, but also accessible to mere mortals. The Sphinx was also linked to a Syro-Palestinian deity, Hauron, worshiped in Egypt since the beginning of the eighteenth dynasty, along with Reshep and Astarte. Hauron appeared on stelae and in sculpture as a sphinx or hawk. At the same time, several texts indicate the continuation of the Osiris cult at Ra-setau, which had a chapel at least in the nineteenth and twentieth dynasties. Beginning in the eighteenth dynasty, the goddess Isis was also worshiped at Giza at her chapel not far from the pyramid of Cheops.

During the Third Intermediate period (twenty-first–twenty-fifth dynasties, c. 1070–712), under the reigns of Psusennes and Amenemope, the chapel of Isis, who was known thereafter as "the lady of the pyramids" and was thus the tutelary deity of Giza, was rebuilt and enlarged. There were several subsequent additions and reconstructions, particularly during the twenty-sixth dynasty (c. 664–525). A document of that time, an inscription, the so-called stela of the daughter of Cheops, names precisely the deities worshiped at Giza: Isis, lady of the pyramids; Hauron-Harmachis; and Osiris of Ra-setau. The cults of the ancient kings regained their prominence, the plateau of Giza being considered by the Egyptians as a historical site with a long and never-forgotten tradition. At the same time, Giza was once again used as a private cemetery. Ancient *mastabas* were reused and new tombs were built, particularly near the Chephren causeway. On such tomb contained the sarcophagi of the wife and a son of the twenty-sixth dynasty pharaoh Amasis (c. 570–526). The discovery of numerous inscribed *shawabtis* (small magical funerary figurines) provides a partial index of the persons buried in the necropolis. In Greek and Roman times, Giza was a prestigious destination for both tourists and religious pilgrims, who inscribed prayers on the paws of the Sphinx.

[*See also* Pyramids.]

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CHRISTIANE ZIVIE-COCHE

Translated from French by Monique Fecteau

GJERSTAD, EINAR (1897–1988), Swedish historian and classical archaeologist; father of Cypriot archaeology. Having first excavated in Cyprus from 1923 to 1924, Gjerstad published his results in his Ph.D. dissertation entitled *Studies on Prehistoric Cyprus* (1926). Here he presented a fundamental account of the prehistory of the island.

Gjerstad was leader of a Swedish expedition to Cyprus from 1927 to 1931 and excavated together with Alfred Westholm and Erik Sjöqvist at nearly twenty different sites covering the periods from Aceramic Neolithic to Late Roman. The greatest finds consisted of two thousand terra-cotta figures of the sixth century BCE at the cult center Ajia Irini and the Vouni palace, which dates to the fifth century BCE. The excavated material was published in the three-volume *Swedish Cyprus Expedition* (*SCE,* 1934–1937). The six volumes of conclusions, published together as *SCE* volume 4, appeared between 1948 and 1972. The finds were divided between the Medelhavsmuseet in Stockholm and the Cyprus Museum in Nicosia.

Gjerstad was director of the Swedish Institute in Rome from 1935 to 1940 and professor from 1940 to 1957 and research professor from 1957 to 1972 at the University of Lund. Having devoted twenty-five years (1923–1948) mostly to Cypriot archaeology, Gjerstad spent the same amount of time (1948–1973) to research on early Rome. In 1949 he presented his sensational theory that Rome was not founded in 753 BCE, the traditional date, but around 575, when the first floor was laid on the Roman forum. Therefore, according to Gjerstad, the period of the Roman kings lasted from 575 to 450, instead of the commonly accepted 753–509, and the Roman Republic thus started around 450. Gjerstad published the material from the Roman forum and its vicinity in *Early Rome* (1953–1973).

Although Gjerstad's hypotheses about Cyprus were widely accepted, his theories about early Rome are contro-

versial. Recent studies have lowered the date of the first floor of the Roman forum from 575 to 625. Gjerstad's importance lies in his development of the stratigraphical method of excavation, his formulation of the typology of Cypriot pottery and sculpture, and his brilliant synthesis of historical and archaeological evidence from both ancient Cyprus and early Rome.

[*See also* Cyprus; Vouni; *and* History of the Field, *article on* Archaeology in Cyprus.]

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CARL-GUSTAF STYRENIUS

GLASS. Glassmaking emerged from a long period of experimenting with glasslike materials. Craftsmen had discovered faience prior to 4000 BCE by heating granules of crushed quartz until their surfaces melted, so that, upon cooling, they fused into a solid mass. By 2000 BCE, beads and other small objects were being manufactured out of glass—that is, out of silica (crushed quartz or sand) and plant ash or the mineral natron (alkalis that act as fluxes). Small amounts of lime, probably introduced unintentionally, made the glass chemically stable.

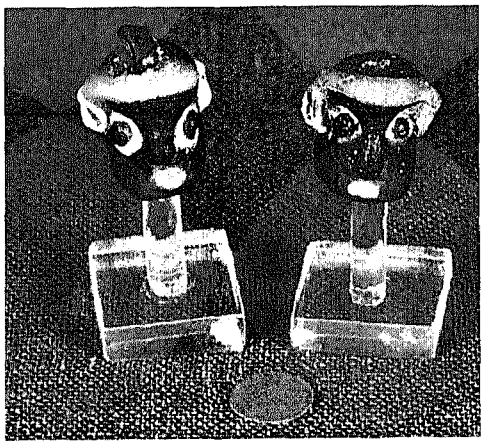
The first glass vessels were made in western Asia in about 1550 BCE and in Egypt shortly afterward. Their manufacturers used a variety of techniques, including casting in open molds; making "mosaic glass" (in which preformed elements were fused); and, most frequently, core forming (in which the hot glass was formed around a removable clay core). Far more ancient Egyptian glass has been recovered than glass from Mesopotamia. The great majority of the vessels were core formed and decorated with brightly colored trails with featherlike, polychrome designs. Egyptian glassmakers created a number of different forms to contain cosmetic preparations and liquids for drinking. All of these objects are small because there was a limit to the size of the vessel that could be formed around a core, and perhaps also a limit to the quantity of glass that could be melted in primitive furnaces.

Between 1500 and 1150 BCE, the Egyptians produced some of the world's first glass masterpieces. At the same time, craftsmen in parts of the eastern Mediterranean made rather simpler objects. On Cyprus, they imitated Egyptian core-formed vessels shaped like pomegranates. In southern Greece, Mycenaeans cast beads and pendants in molds made of stone, using raw glass imported in the form of ingots. In the twelfth century BCE, the civilizations of Egypt, Mesopotamia, and the eastern Mediterranean collapsed, and technology (glassmaking included) declined.

Glassmaking was revived in the eighth century BCE in two regions where civilization itself revived: in Mesopotamia and on the Syro-Palestinian coast. In Mesopotamia, the Assyrians produced core-formed containers for perfumes and other cosmetics, as well as objects that were cast and finished by the lapidary techniques of cutting, grinding, and polishing. On the Mediterranean coast, Phoenician glassmakers produced colorful beads and pendants in the form of human and animal heads (see figure 1).

The Phoenicians created one of the leading cultures in the eastern Mediterranean between 800 and 300 BCE; another such culture was created by the Greeks. In parts of the Greek-speaking world (most probably, the islands in the eastern Aegean), craftsmen produced large numbers of small, core-formed perfume bottles, using techniques borrowed from the Near East. The Greeks also experimented with the use of glass as architectural ornament, and the fifth-century BCE sculptor Pheidias created statues with drapery made of cast-glass panels.

Iran emerged as a new world power in the sixth century BCE, under the Achaemenid dynasty. The finest glass of the Achaemenid period consisted of cast, cut, ground, and polished vessels. Careful selection of the raw materials resulted in glass that was almost colorless, like rock crystal; the ex-



GLASS. Figure 1. *Phoenician glass beads, c. 500 BCE.* (Courtesy Pictoral Archive)

pertise of glassmakers enabled them to produce the most accomplished cold-worked glass that had ever been made.

Between 334 and 323 BCE, Alexander the Great conquered the Persian Empire. Following Alexander's death, the empire was divided among his generals, who established independent kingdoms. The Ptolemys became the kings of Egypt, creating a culture that combined Greek and Egyptian elements. In this Hellenistic culture, glassmakers exploited old and new techniques to manufacture exotic luxury objects. Between the fourth and the first centuries BCE, Hellenistic workshops were producing a dazzling array of tableware and perfume bottles out of mosaic glass; *reticelli,* or lace-mosaic glass (with twisted canes of colorless and white glass); and gold sandwich glass (with designs cut out of gold foil sandwiched between two closely fitting vessels fused to form a single object).

In the first century BCE, Rome's leader, Octavian (the future emperor Augustus), annexed Egypt, and emerged as the ruler of an empire. At its greatest extent, the Roman Empire stretched from the Atlantic Ocean to the Persian Gulf and from the Rhine River to the Sahara. The Romans were the last great glassmakers in the ancient world; they inherited the Hellenistic tradition and adapted it to create stunning luxury glass. Some of the finest examples were made between about 30 BCE and 70 CE. Wealthy Romans could purchase multicolored ribbon mosaic glass (made from ribbonlike canes arranged in geometric patterns); gold-band glass (a variation of ribbon mosaic glass that includes strips of gold leaf); and cameo glass (overlays of one or more different colors in which the upper layers are carved, ground, and polished; at the end of the process, the object has an ornament in low relief on a background of a different color). The most popular Roman combination was white on dark blue. Cameos were the most costly glass objects made in the Early Roman Empire. The least expensive objects were made by blowing, a technique discovered in the region of Syrian-Palestine between about 75 and 50 BCE. In the next hundred years, glass vessels took their place beside earthenware in all but the poorest households in the Mediterranean. By 50 CE, glass manufacturers were also operating in several European provinces.

It was a short step from discovering that glass could be blown to discovering that it could be blown into molds. Blowing into decorated molds enabled glassmakers to produce large numbers of identical, often highly ornate objects quickly and inexpensively.

Blown glass can be decorated in a number of other ways while it is hot. One of the techniques used by the Romans was to roll the hot glass on a surface strewn with chips of colored glass, to give a vessel a multicolored appearance. Another, more common technique was to make patterns by trailing molten glass over the surface. Glass can also be decorated when it is cold, by painting, cutting, or engraving. Roman wheel-cutting varied in complexity from simple horizontal lines to faceting and pictorial designs with figures, landscapes, and inscriptions. In late third- and fourth-century workshops, for example, vessels were produced with hunting scenes, episodes from pagan mythology, and scenes from the Hebrew Bible and New Testament.

Hellenistic glassware had included vessels with gold foil sandwiched between two fused layers of glass. A similar technique was practiced in the third and fourth centuries, with glassmakers producing medallions decorated with portraits and roundels forming the centerpieces of dishes or bowls.

The rarest of all Late Roman luxury glass consisted of objects with "cages" made by cutting and grinding the glass when it was cold. The best known of these open-work vessels are cage cups: bowl- and beaker-shaped vessels whose bases and sides are enclosed by open-work cages attached to the wall by posts. The entire object—bowl, cage, and posts—was cut from a single piece of glass.

The Roman Empire disintegrated in the fifth century. In western Europe, Roman rule was replaced by the kingdoms of the Franks and other Germanic nations; in the eastern Mediterranean, the Byzantine Empire was taking shape. In the west, the Franks and their neighbors used basic glass-working techniques to fashion a variety of drinking vessels. In the Byzantine Empire, sixth- and early-seventh-century glass included mold-blown vessels with Christian or Jewish symbols. In both regions, however, glassmakers' skills had declined and elaborate objects ceased to be made. When, centuries later, glassmaking was revived in Europe, the greatest achievements were not luxury tablewares, but stained-glass windows for churches.

Meanwhile, in Iran, the Sasanians made vessels that included cups with wheel-cut facets or bosses. Sasanian glass never achieved the technical mastery of the finest Roman products, but it was prized all over Asia; examples have been found in fourth- to seventh-century tombs and treasuries in China, Korea, and Japan.

In 622 CE, the prophet Muhammad proclaimed a new religion: Islam. Within the next one hundred years, Arab armies carried Islam from the Arabian Peninsula to the Indus Valley in the east to Morocco in the west. The Byzantine Empire was reduced to a fraction of its former extent, and the Sasanian Empire was swept away. Islam's expansion created a multinational community in which styles and techniques spread rapidly, with the result that similar products appeared almost simultaneously in widely separated areas. Early Islamic glassmakers continued to make traditional products. Indeed, it is often impossible to decided whether objects from Syria, Egypt, and Iran were made just before or just after the Islamic conquest. At the same time, Islamic glassmakers were responsible for important innovations, such as the development of luster. This shiny effect was achieved by painting copper or silver oxide on the object, which was then fired at a relatively low temperature in ox-

ygen-free conditions that fixed a film of metallic oxide on the surface.

The first dynasty of Islamic rulers, the Umayyads, lived in Damascus, Syria. In 750, they were overthrown by the ʿAbbasids, who founded a new capital at Baghdad, Iraq. There, the presence of the court attracted artists and craftsmen who developed a distinctive decorative style, in which Iranian elements came to the fore. Sasanian glassworkers had finished vessels by cutting and grinding, techniques revived under the ʿAbbasids. ʿAbbasid wheel-cut objects are among the finest achievements of Islamic glassmaking. Vessels were decorated by relief cutting, in which the entire background was removed, leaving the ornament in relief. Hundreds of relief-cut glass objects have been found in northern Iran. Many scholars associate this style with the city of Nishapur in Khurasan. [*See* Nishapur.]

By far the rarest variety of Islamic cut glass is cameo glass. Islamic cameo glass almost invariably consists of colorless objects cased with another color (usually blue or green) and cut, ground, and polished so that the design is outlined in color on a colorless background. The latest major group of Islamic glass was decorated with gilding and colored enamels made from powdered glass mixed with an organic medium, painted on the surface, and fixed by firing at a low temperature. Usually, the decorative elements are outlined in red and filled with gilding or enamel. A high proportion of Islamic gilded and enameled glass was made in Syria, the only other known center of production being in Egypt.

The Mongol ruler Timur (Tamerlane) is said to have deported the glassmakers of Damascus to Samarkand in central Asia in 1400, which may have put an end to the manufacture of fine Islamic glass in Syria. The Venetians seized the opportunity and invaded the market. A number of fifteenth-century enameled beakers from Syria are believed to be Venetian, as are Islamic-style enameled lamps from Egypt. Brascha of Milan, a traveler who visited the Holy Land in 1480, tells how the captain of his ship "sent . . . to Damascus glass vessels from Murano" (quoted in Carl Johann Lammu, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem Nahen Osten,* Berlin, 1930, vol. 1, p. 494). The golden age of Islamic glassmaking was over and Venice was about to set new standards for glassmakers all over the world.

[*See also* Vitreous Materials.]

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DAVID WHITEHOUSE

GLUECK, NELSON (1900–1971), pioneer of the archaeology of ancient Israel and a leading figure in the development of Reform Judaism in the United States. Born in Cincinnati, Ohio, Glueck was ordained in 1923 at the Hebrew Union College (HUC) there. In 1927, he earned his Ph.D. at the University in Jena, Germany, writing on the biblical concept of *ḥesed* (Heb., "goodness," "divine kindness"). That year, he also became a student of William Foxwell Albright's at the American Schools of Oriental Research (ASOR) in Jerusalem (now the Albright Institute); in 1930 and 1932, he worked with Albright in the excavations at Tell Beit Mirsim. While holding a faculty position at HUC, Glueck also served as director of ASOR in Jerusalem (1932–1933, 1936–1940, and 1942–1947) and as field director of ASOR's Baghdad school (1942–1947). During World War II, Glueck worked with the U.S. Office of Strategic Services. In 1947, he was elected president of HUC and in 1949 became president of the combined Hebrew Union College–Jewish Institute of Religion, a position he held until his death. In 1963, under Glueck's leadership, the HUC Biblical and Archaeological School was opened in Jerusalem. In

1972, its archaeological component was renamed the Nelson Glueck School of Biblical Archaeology.

Between 1932 and 1947, Glueck explored Transjordan, surveying more than one thousand sites (for the most part previously unknown) in Moab, Ammon, and Edom. In 1937 he excavated the Nabatean temple at Khirbet et-Tannur, and in 1938 he dug at Tell el-Kheleifeh, which he believed to be Solomon's seaport at Ezion-Geber. [*See* Tannur, Khirbet et-; Kheleifeh, Tell el-.] Between 1952 and 1964, he identified more than five hundred archaeological sites in Israel's Negev desert.

Among Glueck's seminal publications are his four-volume report, *Explorations in Eastern Palestine* (1934–1951); *The Other Side of the Jordan* (1940); *Rivers in the Desert* (1959); and *Deities and Dolphins* (1966). A festschrift in his honor was published on his seventieth birthday (Sanders, 1970).

Glueck's major achievement, a demographic synthesis of the history of Transjordan, was best summarized by G. Ernest Wright in 1959: "Glueck's work is to be rated as one of the two most important individual contributions to the field of Palestinian archaeology in our generation" (*Biblical Archaeologist* 22.4 [1959], p. 98). Later, Albright wrote that "Glueck's most important contribution to general history is his work on the history of the Nabateans and on the economy and ecology of the most important north Arab nation of pre-Islamic times" (*Bulletin of the American Schools of Oriental Research* 202 [1971], p. 5).

While Glueck's theories on Bronze and Iron Age settlement patterns in Jordan and in the Negev are currently being reevaluated, his work remains a textbook for contemporary scholars. The first project Glueck initiated at HUC's new archaeological school in 1964, the watershed excavations at Tell Gezer, also continues to have an enduring effect on archaeological research in the Middle East. Gezer was the training ground for almost the entire current generation of senior American archaeologists working in the eastern Mediterranean basin. [*See* Gezer.]

As a proponent of biblical archaeology, Glueck believed that the biblical tradition reflects historical memory. He also held, however, that no one could "prove the Bible, for it is primarily a theological document" (*Biblical Archaeologist* 22.4 [1959], p. 106). Glueck, the indefatigable scholar, the man of rare imagination, vision and insight, was one of the most renowned and productive archaeologists of his time.

[*See also* Nelson Glueck School of Biblical Archaeology.]

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SEYMOUR GITIN

GOATS. *See* Sheep and Goats.

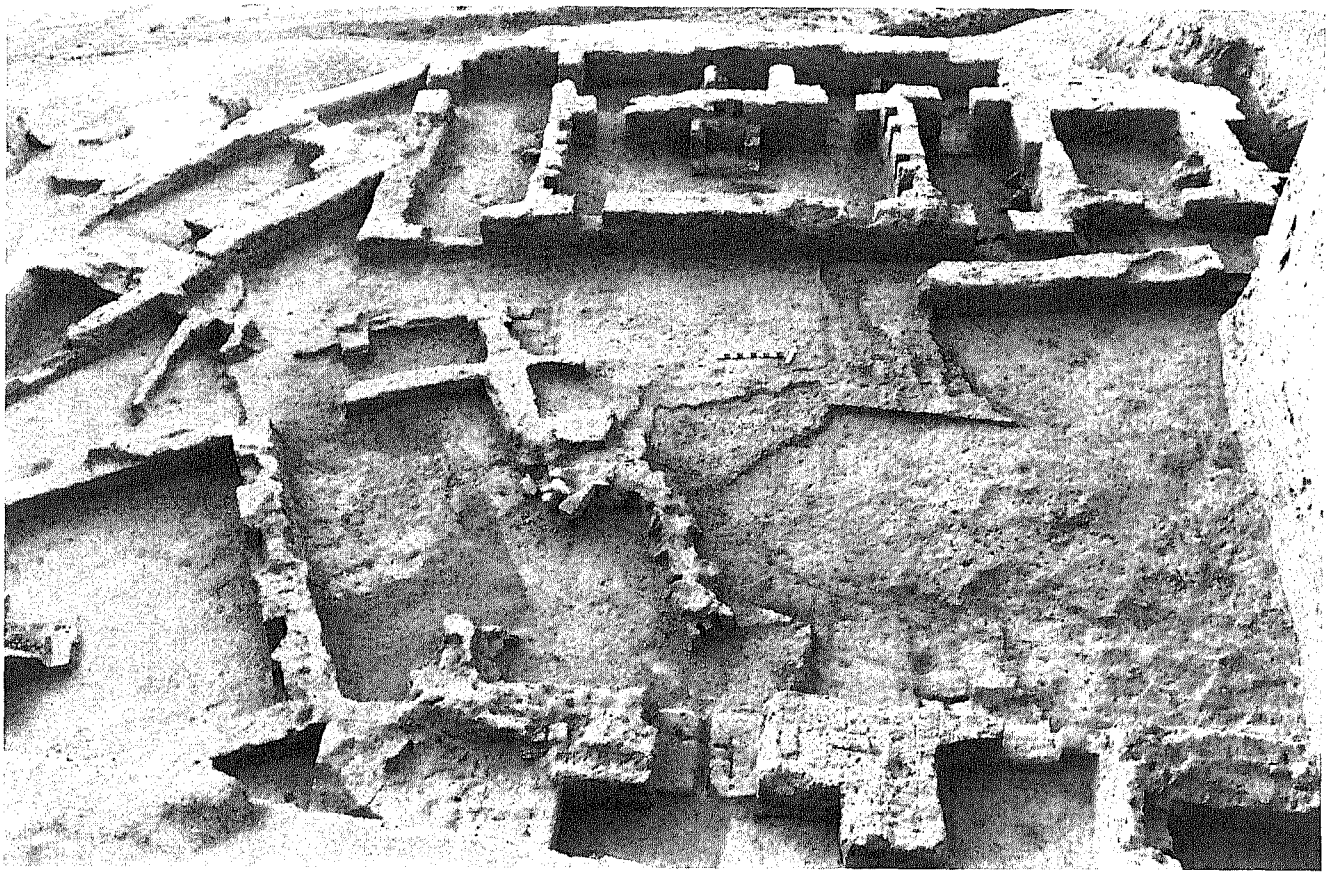
GODIN TEPE,

site located in the Kangavar Valley of central western Iran (34°31′ N, 48°04′ E). Found on survey in 1961, a test sounding was made in 1965, and large-scale excavations directed by T. Cuyler Young, Jr., were conducted in the summers of 1967, 1969, 1971, and 1973, sponsored by the Royal Ontario Museum, Canada. Eleven distinct cultural phases were identified. Periods VI–XI were excavated in only a small test trench; except for period XI, they are much more widely exposed at the neighboring site of Seh Gabi. Period I is recent Islamic. Excavations at Godin concentrated on periods II–V.

Period V (c. 3500–3200 BCE) was exposed over an area of about 500 sq m, in an oval enclosure containing a central courtyard, three major structures, a gatehouse, and storage rooms (see figure 1). Pottery and small finds have close parallels in Uruk IV and Susa Acropole 17 (Late Uruk period). The oval is at the summit of the mound, the remainder of which was contemporaneously occupied by a local Chalcolithic Zagros culture, Godin VI. It is assumed that the Oval Enclosure was occupied by Sumerian or Elamite traders. [*See* Sumerians; Elamites.]

Period IV (c. 3100–2650 BCE) was also exposed over an area of about 500 sq m. It reflects a major incursion from the north into the central western Zagros Mountains of the Transcaucasian Early Bronze I culture. At Godin this phase yielded village houses, elaborate ceremonial open air-structures on the summit of the mound, and an industrial area (metalworking?). The "invasion" of this culture from the north is probably responsible for the abandonment of the period-V Oval Enclosure.

Period III (c. 2600–1500/1400 BCE) was exposed over an average area of 700 sq m; it is an uninterrupted sequence for some 11 m of Bronze Age occupation. Six subperiods were identified stratigraphically and by distinct changes in both painted and plain ceramics. The period's strong initial connections with Susa D and Late Banesh Malayan and its continuing connections with most of Luristan suggest that Godin was, throughout period III, within the Elamite confederacy (perhaps Shimashki). At this time Godin was the largest site in the valley. It can be called a town in this period because its pottery was manufactured in centralized workshops and meat was sold from butcher shops. Godin was abandoned between 1400 and about 750 BCE, at which time



GODIN TEPE. Figure 1. *Oval enclosure, period V.* (Courtesy T. C. Young)

the north side of the mound was considerably eroded by the Khorramrud River.

Period II is a single structure: a fortified palace of a Median khan (about 133 × 55 m). The structure contains three major columned halls, magazines (with a second story for living quarters), and a kitchen. It has ceramic and architecteial parallels with Hasanlu III, Ziweye, the Zendan-i Suleiman, Nush-i Jan, Baba Jan, and Pasargadae. [*See* Hasanlu; Pasagardae; Medes.] The building was abandoned at an unknown date and subsequently occupied by squatters. Founded in the Iron Age III period (c. 750/700 BCE), it may well have been occupied into Achaemenid times (c. 500 BCE). Period I is represented by an Islamic shrine (c. fifteenth century CE) and by an associated modern cemetery.

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T. CUYLER YOUNG, JR.

GOLAN. The region east and northeast of the Sea of Galilee, the Golan (Heb., Ramat Ha-Golan; Ar., el-Jaulan) extends from the Yarmuk River in the south to the slopes of Mt. Hermon in the north and from the Jordan Rift Valley and the Sea of Galilee on the west to the Raqqad River on the east (1200 sq km, or 744 sq. mi.). This volcanic plateau rises from 250 m above sea level in the south to 900 m above sea level in the northeast; because of geological faults, it breaks sharply on the west, toward the Rift Valley. The streams that flow on the plateau are shallow, but nearing the Jordan Rift they rapidly descend through waterfalls into deep canyons or wide basins. The basalt rock covering most of the surface of the Golan Heights originated in a series of volcanic eruptions dating from 3.7 to 0.14 million years BP (Mor, 1986). Four main routes cross the region from east to west connecting Damascus and the Bashan to the Mediterranean: Banias—Damascus, Gesher Benot Ya'aqob

("daughters of Jacob bridge")–Quneitra (Via Maris), Bethsaida–Khushniye, and Zemah–Rafid.

The Golan is divided into three subunits, the south, the center, and the north:

1. *South.* A level, fertile plain ranges from the yarmuk gorge to Wadi Samakh in the north. It is the region's main agricultural zone and was densely occupied throughout all archaeological periods.

2. *Center.* A rough area suitable mainly for grazing and limited agriculture, especially olive groves, the center of the Golan extends from Naḥal Samakh to the Naḥal Shelef–Tell Khari'a line (8 km, or 5 mi., south of Quneitra). The area was inhabited in most archaeological periods, although with many gaps in the sequence. It was densely settled in the Byzantine period.

3. *North.* The northern Golan, from Naḥal Shelef to Naḥal Sa'ar is mostly covered with thick oak forests; it has limited arable land and a few springs. Sparsely settled in the Early Bronze and Iron I periods, it was, however, densely occupied in the Hellenistic period by a settlement of Iturean Arabs.

Paleolithic–Neolithic Periods. The earliest human remains unearthed in the Golan date to the Upper Paleolithic period. At Berekat Ram (east of Mas'ada), a paleosol layer containing flints and basalt implements from the Acheulean culture indicates habitation over a quarter of a million years ago (Goren-Inbar, 1985; Davies et. al., 1988). The Mousterian culture is represented by an open-air site at Biq'at Quneitra (Goren-Inbar, 1989) and by a few industrial sites (approximately 50,000 BP). The large site of Mjhiyye in the southern Golan belongs to the Pre-Pottery Neolithic period (Gopher, 1990).

Chalcolithic Period. Some thirty Chalcolithic sites have so far been found in the central Golan, fifteen of which have been excavated or probed (Epstein, 1986). Extensive pasturelands and moist tracts were exploited for sheep and goat rearing and the seasonal cultivation of wheat, barley, and legumes. [*See* Sheep and Goats; Cereals.] The sites are unwalled and spread over a large area. There are villages of between fifteen and forty houses, as well as smaller hamlets and individual farms. The houses are built in parallel rows in chain formation, with neighboring houses sharing a joint side wall. They have a broadhouse plan with basalt walls constructed in dry masonry and an average size of 15 × 6 m. They were entered from the south, are characterized by a bench at the base of the walls, and, in a few cases, have grain silos. [*See* Granaries and Silos.] The internal partition walls form either a long narrow back room or smaller side rooms.

At all the sites a wide range of ceramic, basalt, and flint vessels was found. They show affinities to assemblages in other regions but with many features unique to the Golan. Many vessels are decorated with bands of impressed rope ornament, while others are ornamented with incised and punctured designs. Particularly noteworthy is the large number of pithoi for storing grain. Other vessels include jugs, bowls, holemouth jars, spouted jars, bowls with a fenestrated foot ("incense burners"), and spindle whorls. Few vessels for everyday use, such as cups and cooking pots, have come to light. The repertoire of basalt vessels includes bowls, basins, querns, and grinding and pounding stones, and such tools as hammers, hoes, and digging sticks. The flint implements include axes, adzes, scrapers, awls, fan scrapers, and a large number of sickle blades. In addition, there are circular or ovoid perforated tools made of tabular flint, some with peripheral denticulations. They are found mostly in the northern Golan (Epstein and Noy, 1988).

A unique feature of the Golan culture are cylindrical basalt pillar figures: they display a shallow offering bowl above, with a protruding nose and, in some cases, horns and a goatee (Epstein, 1982, 1988). The horned and bearded figures were associated with fertility for the flocks and the hornless ones with the general concept of life, fertility, and abundance for humans and their crops.

The Chalcolithic culture of the Golan represents a single phase that lasted from between two hundred to three hundred years. Calibrated carbon-14 dates of charred wood fragments provide a date of 4140 ± 150 BCE; burned wheat grains provide a calibrated date of 3800 ± 100 BCE.

Early Bronze Age. The EB I is found so far only at three sites adjacent to the Yarmuk River and Naḥal Meizar, in the southern Golan (Epstein 1985c). In the rest of the region there seems to be a gap in occupation in this period. In contrast, surveys located forty-two sites inhabited in EB II throughout the Golan (Epstein and Gutman, 1972; Hartal, 1989): seven in the south, twelve in the center, seventeen in the north, and six more at the foot of Mt. Hermon. [*See* Hermon, Mount.] The sites include settlements and large fortified enclosures. At Za'arta, Zalabeh, and Gamla, sections of fortification walls have been identified together with building remains. [*See* Gamla.] The enclosure sites are surrounded by massive fortifications that sometimes incorporate natural elements such as rocks, cliffs, and abysses overhanging wadis (Mitham Yitzhaki, Mitham Leviah, Mitham Bardawil). Other enclosures, erected in areas without natural fortifications, are surrounded on all four sides by huge stone-heaped walls (Sha'abniah, Es-Sur.) Excavations at Mitham Leviah (Kochavi, 1989) revealed three parallel walls (up to 4 m thick) crossing the narrow spur that are otherwise protected by steep precipices on the north, south, and west. On the west of the site EB III rectangular stone-built houses were discovered together with Khirbet Kerak ware in situ. EB IA, EB IB, EB II and EB IV/MB I pottery, also found in this area, indicate habitational continuity at the site. It is clear that the enclosures sometimes incorporated buildings, such as at Mitham Leviah and es-Sur, but the function of the enclosures has yet to be clarified. They may either be fortified areas, occupied by an unsettled local pastoralist

population and their flocks in times of danger, or walled cities.

An unusual and unique site, perhaps dating to EB II is Rujm el-Hiri (Zohar, 1989; Kochavi, 1989). It contains a huge central tumulus (20–25 m in diameter, 7 m high) surrounded by four concentric walls; the outer walls, in which there are two entryways, is 155 m in diameter. The central tumulus, recently excavated by Yonathan Mizrachi and Moshe Kochavi for Tel Aviv University, housed an oval burial chamber entered through a dromos. It was robbed in antiquity, but the few remaining earnings, arrowheads, and sherds date the burial to the Late Bronze Age. Stone-paved courts surrounded the tumulus, on top of which a few Iron I and Byzantine sherds were found. The site's original function and date have not yet been established, but it may have been a ceremonial center with symbolic significance for the contemporary population. [*See* Rujm el-Hiri.]

Early Bronze Age IV/Middle Bronze Age I (2350–1950 BCE). At the end of the third millennium a significant change occurred in the pattern of settlement in the Golan. No occupation sites have been located in the north and central Golan. In the south eight sites have been identified, of which three are burial sites. The indications are that during this period pastoralists, whose origins have not yet been fully established, moved through the north and central Golan but did not construct any permanent settlements. [*See* Pastoral Nomadism.] On the other hand, they erected hundreds of dolmens in standing groups and sometimes concentrated in dolmen "fields" (Epstein, 1985a. [*See* Dolmen.] The type of dolmen most frequently found is a rectangular, or sometimes trapezoidal (about 3.5 × 1.5 m), construction with an entrance on one of its short sides. Built of monolithic basalt blocks, upright slabs served as walls and the floors were paved. In one type of dolmen the roof is constructed of large stone slabs that rise toward the center in a steplike formation. A huge capstone creates a corbeled ceiling within the chamber. The Golan dolmens are frequently covered by a surrounding oval stone heap, or tumulus, supported at the bottom by a circular wall; in many cases only the top roof stone is visible.

The earliest finds from the dolmens date to EB IV/MB I and include jars, "teapots," a bottle, pedestal lamps, and round, handleless cooking pots. The metal finds are of copper and include a long pin with a bent head, pins with points at each end, a bracelet and ring, and weapons, including a dagger, a socketed spearhead, and leaf-shaped blades. [*See* Jewelry; Weapons.] These ceramic and metal types have clear parallels in assemblages from burials from this period in northern Israel and Syria (e.g., Megiddo, Ugarit). [*See* Burial Sites; Grave Goods; Megiddo; Ugarit.]

Middle Bronze Age II–Late Bronze Age (2950–1200 BCE). Following the EB IV/MB I period there was probably an occupation gap in the Golan of about 150 years as no sites that can be dated to the MB IIA have been found. The only finds are a few pottery vessels from a dolmen in secondary use. The vessels are characteristic of the transition between MB IIA and MB IIB, with parallels in graves at Ginossar, Hazor, Dan, and other northern sites (Epstein 1985a). [*See* Hazor; Dan.]

The beginning of MB IIB saw the resettlement of the Golan. About forty sites, including cemeteries, have been identified in surveys (Epstein and Gutman, 1972; Hartal, 1989): eleven in the north, only four in the center, and twenty-five concentrated in the southern Golan. Many settlements, often fortified, were established in MB IIB at strategic locations for defense and for control of roads and territories, with a particularly strong concentration on the slopes overlying Naḥal Samakh and its tributaries. The main tells include Ai/et-Tell in the Bethsaida valley, Masharfawi in Naḥal Kanaf (surrounded by a cyclopean wall), Fakhuri, el-Mudowarah, Hutiyye in the Samakh basin, and Tell ed-Dahab (wall remains). [*See* Ai.] Only fourteen of these sites continued to be occupied in the LB period. In addition to the tell sites there are small forts, such as site 151 in Naḥal Samakh: a rectangular fort (20 × 24 m) whose fortification wall incorporates small rooms and two square towers. Other sites are burial caves rich in funerary goods. Noteworthy in the ceramic repertoire from surveys are large storage jars of coarse clay, decorated with applied bands of incised herringbone or zigzag patterns, with parallels at Hazor and other sites in the northern part of the country.

Late Bronze Age. The number of sites in the Golan decreased by more than a half in the Late Bronze Age. Most overlie MB II sites and continued into the Israelite period (tenth–ninth centuries BCE). No LB sherds were found on the surface at Tell el-Mudowarah indicating a gap in the settlement there. However, a burial cave with complete LB vessels was found at the foot of the site, indicating, perhaps, the existence of pastoralists in the area. Another burial cave has been found at the foot of Tel Soreg, a small tell in Naḥal ʿEin-Gev (Kochavi, 1989, p. 7). Tel Soreg itself indicates settlement continuity from EB IV/MB I through MB IIB and LB II to the Israelite period.

Characteristic of LB pottery in the Golan are storage jars of coarse, light-colored clay decorated with red-painted geometric motifs. Noteworthy is a bichrome fragment decorated with a bird eating a fish. In some dolmens imported Cypriot ware was found; and the figurine of a woman wearing a Hathor wig was also recovered.

Egyptian records from Amarna relate directly to the area of the Golan. [*See* Amarna Tablets.] In EA364 a dispute over three cities between the kingdoms of ʿAshtartu and Hazor is reported, and it is likely that the area of controversy was the central Golan. Another letter (EA256) describes a conflict between Pihilu (Pella) and ʿAshtartu on the one hand, and the land of Ga-ri on the other (Pritchard, 1955, p. 486). It appears that the two cities of URU Ha-iu-ni and URU Ia-bi-li-ma were captured from the prince of Pihilu by the cities

(a league?) of the land of Ga-ri. [*See* Pella.] William F. Albright (1943) identified the former city with Khirbet el-Ayun, in the southern Golan, and the latter with Tell Abil in the Yarmuk riverbed. Other cities in the letter have also been identified in the southern Golan. Subsequently, Benjamin Mazar argued that the reading *Ga-ri* in EA256:23 should be emended to *Ga-⟨su⟩-ri*—that is, biblical Geshur (Mazar, 1986a). It may thus be deduced that the land of Geshur existed as a political unit in the southern Golan at least as early the fourteenth century BCE.

Maʿacha, the entity bordering Geshur (*Jos.* 12:5, 13:11), is alluded to even earlier, in the Egyptian Execration texts, as a tribal name (E62) and a place name (E37; Ahituv, 1984, p. 132). It is presumed to lie north of Geshur, in the northern Golan, extending to the Hula Valley and southern Biqaʿ Valley.

Iron Age (1200–732 BCE). Following the decline in settlements in the Late Bronze Age, a renewed spread of sedentarization took place in the Iron Age, in which many MB II settlements were reoccupied. Surveys reveal more than fifty-two sites (twenty-two in the north, ten in the center, and twenty in the south). They include small settlements, forts, and dolmens in secondary use for burials (see above). Among the sites established for the first time in this period are fortresses and fortified settlements, erected at strategic locations: Tel Dover at the western entrance to the Yarmuk valley; Khirbet Dajajiyye at the western entrance to Naḥal Samakh; ʿEin-Gev and Tel Hadar (Sheikh Khadr), both on the east bank of the Sea of Galilee; and Tell Abu Zeitun and "Mezad Yehonatan" (Tannuriyye) on the Golan plateau. [*See* Hadar, Tel.] Strata of this period have been exposed at the following excavated sites: ʿEin-Gev, Tel Soreg, Tel Hadar, Mezad Yehonatan, Tell Abu Zeitun, Bab el-Hawa, Ḥorvat Kanaf, and Qaṣrin. [*See* Qaṣrin.] At ʿEin-Gev, five Iron Age strata were exposed (Mazar et al., 1964). Limited probes at the southern and northern edges of the mound (about 250 × 120 m) revealed a sequence of fortifications, the earliest (stratum V) of which was a solid wall (1.85 m wide) followed by a casemate wall (stratum IV). These fortifications are similar to those unearthed at Hazor and Megiddo. The probes also detected a citadel (about 60 × 60 m) erected at the northern end of the site. The construction of stratum IV is attributed to King Solomon. In stratum III (ninth century BCE), which was destroyed in a conflagration, an offset/inset wall (5 m thick) was erected, beyond which was an alley and a courtyard building. Stratum II (838–790 BCE) continued the same building plan. Stratum I (790–732 BCE) was unfortified, but a public building (perhaps a fort) was located in the north. The ceramic repertoire includes red-slipped burnished bowls similar to the Samaria type, cooking pots with triangular rims, jugs, storage jars, holemouth jars, and lamps. The stone objects include basalt pestles, a tripod bowl, an "incense bowl," and a votive axe out of nephrite. Especially important is an ostracon inscribed in Aramaic: *lsqy'* (c. 850 BCE), probably a dignitary title such as "cupbearer" for an official at the site. [*See* Ostracon.]

At Tel Hadar a substantial round fort, surrounded by two fortification walls some 70 m across and a gate, was exposed that dates to Iron I (and perhaps before MB II) (Kochavi, 1989, pp. 9–11). Inside the fort were granary rooms containing quantities of charred grain and four-room houses. [*See* Four-room House.] This stratum was destroyed in a fire at the end of the eleventh century BCE. After a gap, the site was reoccupied in the ninth–eighth centuries BCE. The floors of the houses overlie the old walls.

A similar round or ovoid fort (some 70 m in diameter) was partially exposed at Tell Abu Zeitun, on the upper plateau of the southern Golan. Part of the outer face of a well-preserved fortification wall came to light there, with pottery dated to Iron I. At Tel Soreg, a fortified settlement from the ninth to eighth centuries BCE was exposed, including a fortification wall, a large building, and a series of dwellings (Kochavi, 1989, pp. 6–9).

At Mezad Yehonatan, on the upper tributary of Wadi Tannuriyye in east-central Golan another fort (26 sq m) dating to Iron I was probed (Epstein, 1984, p. 77). Its walls, preserved to a height of about 3 m in three–seven courses, were built with an inner vertical wall (1.7 m thick) abutted on the outside by a sloping stone glacis. The gate (2.45 m wide, 1.65 m deep), set in the east, was narrowed on the inside by a pair of pilasters.

According to the Bible, the area to the east of the Golan—the southern Bashan—was occupied by the Israelite tribe of half-Manasseh, while the Golan itself remained in the domain of the tribes of Geshur and Maʿacah (*Jos.* 12:5).

According to 2 *Samuel* 8:3–6, David smote Hadadezer, the king of Zobah, and his ally Aram-Damascus and set up garrisons in Damascus. [*See* Damascus.] The area under the control of Solomon (*1 Kgs.* 9:18) reached Tadmor and Hamath and would have included Geshur and Maʿacah probably as vassal states. Geshur became David's political ally, as is indicated by the marriage pact between David and the daughter of Talmai, king of Geshur. Maʿacah, on the other hand, took part in a coalition led by Hadadezer of Damascus against David (2 *Sm.* 10:6–19). Ben-Hadad (Bir-Hadad I), campaigned against Baasha, the king of Israel in about 886 BCE (Mazar, 1986b; Pitard, 1987, pp. 107–114), "and smote Ijon, and Dan, and Abel-Beth-Maʿacah and all of Kinneroth, over all the land of Naphtali" (*1 Kgs.* 16:20). This campaign led, according to Mazar, to the destruction of several cities, including the Israelite stratum IV at ʿEin-Gev and the establishment of an Aramean fort at the site (Mazar et al., 1964, pp. 29, 32; Mazar, 1986b). [*See* Arameans.] Another series of clashes between Israel and Aram Damascus, with a decisive battle at Aphek in the southern Golan, is recorded in *1 Kings* 20:1–43. [*See* Aphek.] Though the name of the king of Israel mentioned in this cycle of stories (*Kgs.* 20, 22) is Ahab, it has been suggested that the event took place later,

in the days of Joash of the dynasty of Jehu (Pitard, 1987, pp. 114–125). 2 *Kings* 10:32–33 records: "In those days, Yahweh began to cut off parts of Israel, and Hazael smote them in all the territory of Israel from the Jordan eastward, all the land of Gilead, the Gadites, the Reubenites, the Manassites, from ʿAroʿer, which is in the Arnon Valley, Gilead, and Bashan." Revival seems to have come only in the reign of Joash, after the death of Hazael, at the beginning of the eighth century BCE (Pitard, 1987, pp. 161–170). In a series of battles lasting some five years, Hazael's son, Ben-Hadad (Bir-Hadad III), was first repulsed in battle close to Samaria (*2 Kgs.* 6:24–27) and then defeated near Succoth in Transjordan (*1 Kgs.* 20:1–21). [*See* Samaria.] The third, and final, battle was fought near Aphek (*1 Kgs.* 20:24–43). This site has been identified recently with Tel Soreg, in the southern Golan (see above). In the ensuing period, the territory of the Golan probably remained in Israel's hands (*2 Kgs.* 14:25) and was only finally annexed to the Assyrian Empire, together with the rest of northern Israel, by Tiglath-Pileser III, following his conquest in 732 BCE (*1 Kgs.* 15:29; Pitard, 1987, pp. 186–189). [*See* Assyrians.]

The Golan Heights was probably not settled during the Babylonian, Persian, and Early Hellenistic periods (sixth–third century BCE). From the time Palestine was conquered by the Seleucids in 200 BCE until the Byzantine period, there is an impressive growth in the number of sites in the Golan (more than 173 sites in the sixth century CE). The number of sites and settlements in the Byzantine period amounts to six times the figure for the Middle Bronze Age. Settlements are particularly prominent in the central and northern Golan, which had almost no permanent agricultural settlements during the earlier periods.

Hellenistic Period (200–64 BCE). The earliest settlements in the Hellenistic period were established at the beginning of the second century BCE, mainly in the southern Golan, where they were situated at the edges of the fertile plains, above the rich springs, and in the nearby river valleys. In addition to the agricultural villages, a system of fortresses and towers were built to defend and control the region and its roads, chief among them Hippos/Susita. Toward the end of the second century BCE their number was reinforced by the addition of Gamala/Gamla. These fortresses are typical products of Hellenistic military doctrines—strongholds built on high hills, isolated from their surroundings, and out of range of artillery fire—controlling the main highways, while ascents and secondary roads were defended by towers.

The Itureans, a tribe probably of Aramean stock, established settlements in the northeastern Golan in the middle of the second century BCE. Their distinctive pottery, "Golan ware," has been found at sixty-seven sites from this period. Fifty of these Iturean sites remained populated through the Late Roman and Byzantine periods. Excavations have been conducted at three Iturean sites in Golan: Ḥorvat Zemel, where there were remains of five houses, and a large quantity of pottery, some with Greek inscriptions; Ḥorvat Namra, which had one building and courtyard, with a great deal of pottery; and Bab el-Hawa, where there were a street and a building with two or three apartments.

Early Roman Period (64 BCE–67 CE). Excavations at Gamla and Ḥorvat Kanaf, together with remains from about 141 surveyed sites throughout the Golan, indicate the magnitude of the settlement in the Early Roman period. At Gamla—an example of a planned city—the construction is of an exceptionally fine quality with a magnificent synagogue, private houses, streets, and an oil extraction installation. Fragments of stone vessels made of chalk, attest to socioeconomic contacts with the metropolis of Jerusalem. The town was destroyed by the Roman army in 67 CE and abandoned. [*See* Gamla.]

Excavations at Gamla and Ḥorvat Kanaf and surveys of other sites testify to an archaeological gap from the late first to the early fourth centuries CE. Moreover, as there is almost no mention of places in the Golan in the Mishnah or the Talmud, it would seem that the Jewish population was obliterated in the First Revolt, following which there was a drastic decline of Jewish settlement in the region. [*See* First Jewish Revolt.]

Middle and Late Roman Periods (67–365 CE). Excavations have exposed occupation levels from the Middle Roman period, with the most impressive finds coming from the cities of Hippos, where a *cardo maximus,* an imposing east gate, sections of a stonepipe siphon, a nymphaeum of basalt stone, a subterranean stone-vaulted reservoir, monumental basalt buildings, and ornate Corinthian capitals attest to the wealth and magnificence of this city in the Middle Roman period; and Banias, which had a sanctuary to the god Pan above the spring, including an Augusteum, a Cult Court to Pan and the Nymphs with niches hewn in the rock escarpment, a Temple of Zeus, a Court of Nemesis, a Tomb-Temple of the Sacred Goats, and a Temple for Pan and the Goats. In the city center there were monumental public buildings and a gigantic late third-century CE palace with horrea, circular halls, and vaulted passages. [*See* Banias.]

In some Golan villages, private houses built of basalt ashlars with stone ceilings have been preserved. In some sites in the southern and eastern Golan, finds associated with cults from the Roman period have also been discovered, like statues of Tyche, altars, and architectural fragments from temples.

Remains of pavements, milestones, and watchtowers characteristic of Roman roads attest to the existence of several roads: A Roman road from Banias toward Damascus; possible remains of the Scythopolis–Hippos road; remains of a branch of a road linking the road to Hippos with the road coming from Bethsaida; and impressive remains of a paved road from the Lawiyye spur eastward to Nawa in Syria.

Byzantine Period (365–636 CE). The Byzantine period was a time of great prosperity in the Golan, as in other parts of the country, proved by the increase in the number of sites and in the extent of the built-up area. The southern Golan, including the city of Hippos and a chain of small towns, was the most densely populated area, while central Golan only had one town, Dabura. To the north, the city of Banias enjoyed great prosperity at this time, in part because of its abundant water sources and its location on the road from Tyre and Sidon to Damascus.

Village and house plans. The village plan followed one of three basic patterns: (1) orthogonal, where narrow streets and parallel lanes run between the buildings, crossing one another at right angles, with buildings of different sizes; (2) streets like the spokes of a wheel, with the streets converging toward the center of the village; and (3) no regular plan, with houses dispersed according to the topography. Village streets were unpaved and houses were built of local basalt, with stone ceilings. The pottery repertoire of this period in the southern and central Golan is basically similar to that common in the country as a whole, the most common household vessels being storage jars, cooking pots, kraters and bowls, as well as jugs, juglets and a variety of lamps. Most of this pottery was produced in Golan itself with only a small amount imported from the Galilee.

Ethnic makeup. Excavations of public buildings such as synagogues and churches provide clear guidelines to the ethno-religious map of the Golan in this period. Remains of synagogues have been found at twenty-five sites. Numerous remains of churches and Christian symbols have been found in the eastern and southern Golan, but only in a few villages in the Iturean territory of the northern Golan.

Churches. Two main architectural types of churches have been found. The first was most common in the coastal and valley regions of Palestine, and consisted of basilicas with walls built of stones and mortar, two rows of arcades on columns that divide the building into a nave and two aisles, a semicircular apse, mosaic floors, and tiled roofs (Hippos, Kursi, and Khisfin). The second type was common at the time in the Hauran, with the apse sometimes being square, the ceilings of basalt slabs resting on large arches supported by square pillars, and the floors generally paved with stone slabs and, rarely, mosaics (er-Ramthaniyye, Deir Qeruh, Duer el-Loz, and Deir Sras). [*See* Churches; Basilicas; Kursi.]

Synagogues. Remains of seventeen synagogues were found in the western part of the central Golan, at eight other sites architectural fragments were found from synagogues whose exact locations are unknown. The synagogue was generally the only public building in the typical Jewish village in the Golan. They were built on the best location available, often on the highest point on a slope or near a spring. These synagogues constitute a regional architectural group, sharing certain common features: basalt ashlar masonry, thick dry-stone walls, a single entrance in an ornamented facade, columns and stone architraves, an internal division by two rows of columns, galleries, and gabled roofs made of tiles. At the same time different "schools" of masons each had its own distinctive plan, elevation and carved decorations:

1. *Chorazin–'Ein-Nashut "School."* Features of this school, assigned to the mid-fifth century, include richly decorated facades, columns on pedestals, and an abundance of sculptures in relief. Among the finds are decorations with lions, eagles, vine branches, the Ark of the Law, a seven-branched menorah, Ionic, Corinthian, and Doric capitals, and Aramaic and Hebrew inscriptions. Examples of this school are: Chorazin, on the west bank of the Jordan River; 'Ein-Nashut, on the banks of Naḥal Meshushim; and ed-Dikkeh, situated on the east bank of the Jordan River. [*See* Chorazin.] Some of the synagogues of this school have been surveyed, but not yet excavated: Khirbet er-Rafid, overlooking the east bank of the Jordan River; Khirbet Khawkha, on the southern bank of Naḥal Daliyyot; Ḥorvat Beth-Lavi (Wakhshara), northeast of the peak of Qubbat Qar'a; Khirbet Zumeimira, north of Naḥal Zavitan; and Jarabeh, west of Naḥal Meshushim.

2. *Kanaf "School."* Assigned to the beginning of the sixth century, the Kanaf school is notable for its meager decoration in a simple style concentrated on the outer facade and columns without pedestals. Among the finds are reliefs of lions, Hercules knots, vine branches, Doric capitals, and an Aramaic inscription. The group includes Ḥorvat Kanaf, in south Golan, between Naḥal Kanaf and Naḥal Sfamnun; Deir 'Aziz, on the southern bank of Naḥal Kanaf; and probably Taibeh, on the banks of Naḥal Yahudiyye.

3. *Qaṣrin "School."* Also dated to the beginning of the sixth century, the Qaṣrin school features decoration concentrated on the entrance of the synagogues, all of them with the same type of portal frame; in the hall two rows of columns stand on Attic bases with Ionic capitals; there is an elevated clerestory rather than galleries. Among the finds are decorations with seven-, nine-, and eleven-branched menorahs, the Ark of the Law, shofars, incense shovels, eagles, vines and grapes, and an Aramaic inscription. Some of these synagogues are: Qaṣrin, in central Golan; Assaliyye, a large ruin west of Qaṣrin; Yahudiyye, a village north of Naḥal Yahudiyye; Khirbet Qusbiyye, a small abandoned village on a hill west of the Yahudiyye–Khusniyye road. [*See* Qaṣrin.]

In some Golan synagogues the main entrance in the facade of the building was displaced from the center. This was done in order to make place for the Torah shrine on the inside. The orientation of these synagogues and the direction of prayer are still open questions. Some are built along an east–west axis, with the facade oriented west. However, other Golan synagogues were aligned north–south, with their facades facing south; the facade of the Qaṣrin synagogue is in the north, but the Ark of the Law was installed in the southern wall, so that there too, the congregation

faced south. A common Jewish symbol in synagogue art in the Golan is the menorah with varying numbers of branches, generally carved on the lintels of side entrances or windows, on capitals, and on arch stones. Another Jewish symbol is the Ark of the Law, featured on lintels. [*See* Synagogues.]

The literary sources do not attest to a Jewish population in the Golan Heights during the Late Roman and Byzantine periods. Only archaeological data enable a reconstruction of its size, history, material culture, and artistic achievements. It seems that after the destruction of most of the settlements during the First Revolt and their subsequent abandonment, Jewish settlement in the Lower Golan was interrupted until the end of the third century CE. It was only in Dabura that a Jewish village survived up to the time of the Mishnah and the Talmud. Jews returned to the Golan in the fourth century CE, migrating from the Galilee. The economy of the region based on agriculture, particularly the production of olive oil. Villages were generally small, not more than twenty to fifty buildings, owing to the scarcity of water. It appears that the first synagogues were built in the second half of the fifth century CE, and a few buildings were added in the sixth century. Some of these synagogues were damaged by earthquakes in the sixth century and repaired in the sixth and seventh century. The architectural and artistic level of the Golan synagogues is high, revealing influences from the Galilee, as well as the culture of the eastern Mediterranean coastal region. The Aramaic and Hebrew inscriptions point to the congregants' familiarity with the Torah. Excavations reveal that many of the villages were abandoned as early as the end of the sixth and beginning of the seventh century CE, probably because of the continuing state of war between the Persians and the Byzantines, a possibly frequent Bedouin raids. In Qaṣrin, however, the Jewish community persisted until the Early Arab period, probably coming to an end only with the earthquake of 749 CE, at the end of the Umayyad period.

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ZVI URI MA'OZ

GOLD. *See* Coins; Jewelry; Metals.

GOLDMAN, HETTY (1881–1972), member of the Institute for Advanced Study, Princeton, New Jersey, and excavator of Tarsus, in southern Turkey. Born in New York City, Goldman received a bachelor's degree from Bryn Mawr College in 1903 and a master's degree in classical language and archaeology from Radcliffe in 1910. From 1910 to 1912 she attended the American School of Classical Studies in Athens, which sponsored her excavations at Halae, a small classical and prehistoric village in central Greece. During the excavation her interests shifted to prehistory and she made the necropolis at Halae the subject of her Ph.D. dissertation, also from Radcliffe (1916). In 1922 Goldman began excavating Colophon in Ionia, western Greece, sponsored by the Fogg Museum of Harvard University; and from 1924 to 1927 she excavated at Eutresis in Boeotia, also in central Greece. She was appointed a professor at the Institute for Advanced Study in 1936.

Goldman's most important contribution to Near Eastern archaeology was the result of her last excavation, Gözlü Kule, in Tarsus, carried out under the auspices of Bryn Mawr College, Harvard University, and the Archaeological Institute of America. She directed the excavations between 1934 and 1939 and resumed them after World War II from 1947 to 1948. Having selected Tarsus for its potential as a link between east and west, Goldman identified interconnections with Troy and the Aegean region in pottery as early as Early Bronze Age III (c. 2500 BCE). She also identified evidence for interaction with Mycenaeans or "Sea Peoples" in the pottery of the end of the Late Bronze Age (c. 1200 BCE). The recovery of tablets, inscribed seal impressions, and seals dating to the Hittite period revealed the historical importance of Tarsus and its interaction with the Hittite Empire. The meticulous care she gave to excavation, recording, analysis, and publication of finds and architecture allowed Goldman and later scholars to produce the only reliable stratigraphic sequence for Cilicia from the Neolithic to the Roman period (Goldman, 1956–1963). The Tarsus volumes are still used as a standard reference in comparative dating of Anatolian and North Syrian sites, particularly for the Bronze and Iron Ages.

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BONNIE MAGNESS-GARDINER

GÖLTEPE, site located 2 km from the Kestel mine on top of a large natural hill 4 km (2 mi.) from Çamardı, a town in the Taurus Mountains of south-central Turkey (37°50′ N, 34°58′ E). The natural hill measures close to 60 ha (148 acres) and is fortified at the summit, with cultural deposition covering its surface. Göltepe is located 1,767 m above sea level.

In 1988, intensive surface surveys revealed multifaceted molds, tin-rich slagged crucibles, ores, and an estimated fifty thousand ground-stone tools for ore dressing on the site's surface. A total of 698 sq m was excavated at Göltepe in 1990 and 1991 (see below); 2,500 sq m were tested through magnetic resistivity, which indicated anomalies where underground structures may exist. A total of 858 sq m was excavated at Göltepe in 1993. The excavations aimed at horizontally exposing as much of an area as possible to obtain settlement layout and densities and differential quarters with special functions and to understand the use of space and the distribution of artifacts. The extent of the settlement has now been estimated to be 8–10 ha (148 acres) between the mine and processing and habitation areas. C14 uncalibrated dates from the 1990 season at the Göltepe site range from 3290 to 1840 BCE. A dendrochronological date of 1978 ±37 years was obtained for a piece of charcoal from a pit fill context. [*See* Resistivity; Dating Techniques.]

The excavations at Göltepe, which began in 1990 and were continued in 1991 and 1993 under the direction of K. Aslıhan Yener under the auspices of the Niğde Archaeological Museum (1990–1991) and the Oriental Institute of the University of Chicago (1993), were designed to illuminate the origins, formation, and organization of a tin-production/habitation site and its contemporary tin mine. Parallel excavations proceeded at the Kestel mine in 1987, 1988, 1990, and 1992. These sites were discovered during ten years of archaeological and mineralogical surveying in Turkey's metal-rich zones. A result of these surveys was the solution of an enigma that had puzzled scholars for decades: a source of the elusive tin of antiquity. It is tin, when alloyed up to 5–10 percent with copper, that produces bronze. Its economic role in metal technology, prior to the introduction of

iron, is perhaps akin to that of oil in industry today—that is, it was the most important additive to the then high-tech metal of its age, bronze. The alternative form of alloy, made with arsenic (1–5 percent), was widespread in Anatolia in the fourth millennium but diminished with the use of tin alloys.

The project focused on a search for the sources of these vital raw materials in Turkey, the birthplace of some of the earliest pyrotechnological innovations. The primary intent was to track down the direction and magnitude of the traffic in metals and the impact of this trade on the producers of metals. The second goal was to understand the technological processes involved in the manufacture of tools, weapons, and ornaments in the Taurus area, a major source zone accessible to neighboring Syria, Mesopotamia, and the coastal Mediterranean. The objectives were multidimensional: where the sources of metals were, how they were made, and the socioeconomic and political systems that impacted on and in turn were changed by this industry.

Göltepe is architecturally unlike any site in Turkey. The workshop/habitation units are semisubterranean and fully subterranean pit houses. Apart from its location and time span, the site's relatively unique morphology was created by carving the clays for habitation. Subterranean structural units were cut into the underlying basal clays using the outcroppings as walls—that is, the cultural deposition consisted of the accumulation of strata all cut into underlying geologic sediments, a highly unusual architectural feature in Anatolia during this period. Göltepe yielded several neighborhoods of subterranean and semisubterranean pit houses that may have functioned as combined workshop/habitation units. The pit-house structures are cut into the graywacke bedrock and associated with smaller subsidiary pits. The smaller houses measure 4–6 m in diameter. Larger units are 9 × 7 m and are terraced off the slope, much like the present-day neighboring mountain village, Celaller. The superstructure of these units is wattle and daub, great numbers of branch impressions on mud, structural daub, as well as postholes have been found that may enable a reconstruction of the architecture of the site. In some instances a dry-laid stone wall served to buttress the crumbling bedrock. Although very few postholes were identified, a superstructure of wattle and daub is inferred by the branch impressions on vitrified mud lumps in the collapse levels. The units were repeatedly plastered, and up to twenty-five layers of plaster could be identified. Additional smaller pits cut into the bedrock probably served storage functions. The pits ranged in size from under one meter in diameter and less than 0.5 m in depth to several meters. All of the pits were filled with a similar debris: small to medium stones, ground-stone tools, relief-decorated slabs, crucible fragments, powdered ore and ore fragments, and ceramic sherds. Some storage pits were identified by pot rests on the bottom for large pithos vessels. Unique also are what appear to be structural features: geometrically designed clay panels may have decorated the interior of the pit houses, providing decorative borders for doors, bins, and altars.

The earliest phase at the site is phase V, basal pits. Phases III and IV are characterized by subterranean pit structures and storage/refuse pits. Tentatively, they correspond to the Early Bronze II period on the basis of pottery parallels with Tarsus. Phase II, which overlies them, represents a stratigraphic break and an architectural reorientation. The phase is characterized by the construction of above-surface structures and represents a period of expansion. The walls of the phase II buildings were often built over the underlying pit houses, which were filled in with industrial and domestic debris. Although pit houses continued to be built, large walled structures were erected on top of massive terraces constructed of colluvial stones. In area E, only the terrace is preserved; the architectural plans of the structure are lost to erosion. The circuit wall dates to this phase and corresponds roughly to EB III at Tarsus. At Tarsus there is an architectural break between EB II and EB III as well, when megaron-related structures appear. The uppermost levels are dated to phase I. These are topsoil and transitional levels and represent collapse and site abandonment at the end of the third millennium. In one restricted sector on the eastern slope, an Iron Age reuse of EB pit houses was also identified.

Some of the most important finds relating to the processing of tin have been the hundreds of vitrified earthenware crucibles with a glassy slag accretion rich in tin. Constructed with a coarse straw-and-grit-tempered ware, they have slagged surfaces measuring between 30–90 percent tin content; they range from a rim size of 6 cm in diameter to one of 50 cm. In some instances, tin particles were entrapped in the slag and identified by microprobe, scanning electron microscopy, and X-ray diffraction as the product of the smelt. [*See* Spectroscopy; Microscopy; X-ray Diffraction Analysis.] The activities demonstrated by analysis at the Conservation Analytical Laboratory of the Smithsonian Institution in Washington, D.C., include a labor-intensive, multistep, low-temperature process carried out between 800° and 950° C. Processing involved intentionally producing tin metal by reduction firing tin oxide in crucibles—with repeated grinding, washing, panning, and resmelting. The raw materials being processed in the crucibles consisted of tin oxide (cassiterite) with no copper ores present, along with calcium carbonate, iron oxide with minor amounts of magnesia and titania, an alumino-silicate containing more than 12 percent potassia, and soda and charcoal as the reduction agent. This recent evidence put to rest initial skepticism over the concentrations of tin in the Taurus and reveals it to be an important tin processing center (Yener et al., 1993a; Yener and Vandiver, 1993b).

Large numbers of crucibles came from multicelled structures at Göltepe. Along with the crucibles, the pithouse structures contained pyrotechnological installations, many

ore-processing ground stones, and tin-ore nodules. One pit-house structure revealed an unusual crucible, possibly in situ. Pulverized ore of the consistency of fine powder, containing from 0.3–1.8 percent tin was discovered in cups in sealed deposits on the floors of these pit houses. Other indicators of ore processing and metal production came from the more interesting ore-dressing equipment—large mortars and pestles (weighing 26.3 kg and 6.5 kg)—used for crushing the ore. Querns, grinding stones with multiple flat facets, polishing stones, and large ground-stone axes weighing 2.9 kg, as well as bucking stones with multiple hollows, also indicate an important commitment to industry. A number of sandstone and clay molds with beds carved on several surfaces with bar-shaped forms suggest that tin metal was being produced and poured into ingot forms before transshipment to locations for bronze alloying. Tin-bronze pins, awls, rings and other fragments containing 4.75–12.3 percent tin were also found in several of the pit houses.

The EB ceramic assemblage at Göltepe is similar to the finds from Kestel mine. Important parallels with Tarsus, Mersin, and Kültepe give comparable chronological spans for both sites. Cups with a single handle and miniature vases, both plain and painted, are dated to roughly the end of the third millennium. Also called Anatolian metallic ware, this pottery was surveyed in the same regions; Machteld Mellink (1989) describes it as an import to Tarsus from the Taurus Mountains and adjoining plateau and suggests connections with the metal sources. To prevent confusing it with Syrian metallic wares, this pottery is called Anatolian metallic ware at Göltepe and at Kestel mine. The dark-burnished wares come in red and black, as well as in a related unburnished variant. Tempered with fine grit and with some chaff, the pottery is handmade and is often slipped. Simple bowls and single-handled cups are some of the more predominant shapes. The closest parallels for this pottery come from EB I and II at Tarsus for the plain black-burnished and red-burnished types.

The work done at Göltepe has gone a long way toward couching intelligent questions regarding the context and organization of tin production in the region: were specialist laborers operating out of a larger site, was it part of a more complex system, was it a cottage industry? The possibilities are interesting and quite varied. Clearly, tin processing occurred at Göltepe and, to judge from the quantities, on a large scale.

[*See also* Kestel; Taurus Mountains.]

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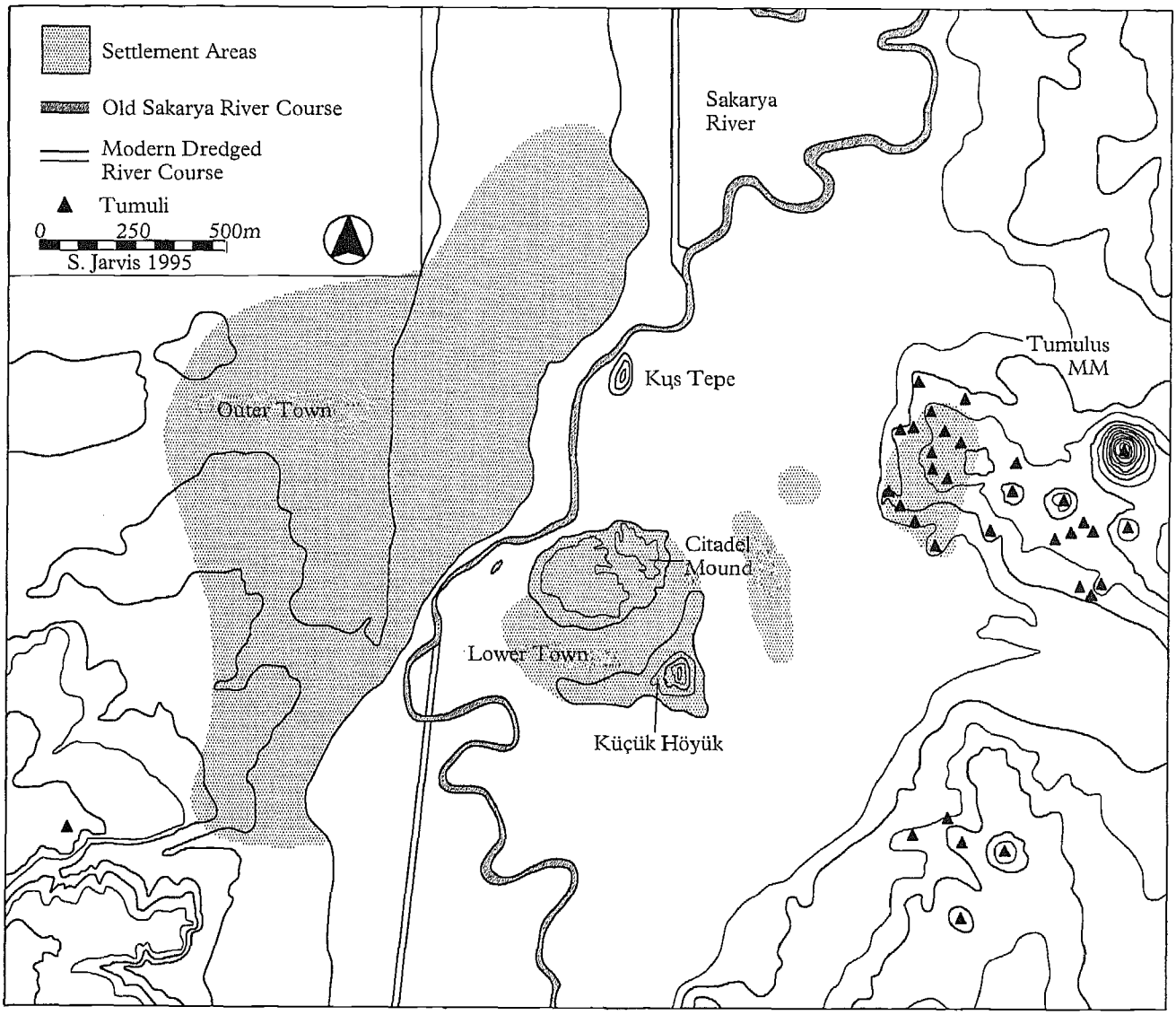
K. ASLIHAN YENER

GORDION. Near the juncture of the Porsuk and Sakarya rivers in central Turkey lies a large, flat-topped mound called Yassıhöyük (39°39′ N, 32°00′ E). The form of the site, typical of large, long-term settlements in this region, plus the presence of small, conical burial mounds on nearby slopes, suggest a place of some importance. In 1900 two German scholars, Gustav and August Körte, began to investigate the site convinced that their trenches would reveal Gordion, capital of the Phrygian kingdom of the first millennium BCE (Körte and Körte, 1904). They selected Yassıhöyük because it alone conformed to an ancient historian's descriptions, which placed Gordion on the Sangarios (Sakarya) River, at a point "equally distant from the Pontic and Cilician Seas" (Quintus Curtius, *Historiae Alexandri Magni Macedonis* 3.1.11). Today this identification is supported by excavated remains of appropriate scale and date and by associated inscriptions in the Phrygian language; the site has not, however, yielded inscribed material attesting either the place name Gordion or the name of its most famous king, Midas. In fact, with the exception of a few references to well-known historical figures and pivotal events, most of our information about Gordion and the Phrygians comes from archaeology rather than texts.

The ancient settlement is actually composed of three distinct topographic units (see figure 1). Yassıhöyük itself rises 16 m (52.5 ft.) above plain level, and measures 500 × 350 m (1,640 × 1148 ft.). At least 4 m (13 ft.) more of archaeological deposit lie beneath the modern land surface; thus, the mound consists of more than 20 m (65.6 ft.) of occupation debris dating from the Early Bronze Age to medieval times. Heavily fortified during much of its history, this area is referred to here as "the Citadel Mound" (formerly the "City Mound"). A fortified lower town lies adjacent to the Citadel to the south and west, and to the north and northwest a large, unwalled outer town extends over an area of nearly 1 sq km. Surface survey and excavation conducted between 1987 and 1994 have provided some information on fluctuations in the size and topography of ancient Gordion. We now know that the lower and outer towns were settled by the seventh century BCE if not earlier; by the third century the lower town had been abandoned, but parts of the outer



GORDION. Figure 1. *Map of the Gordion area.* (Courtesy of the Gordion Project)

town were occupied into the Roman period. It is worth noting that estimates of site size are more likely to be too small than too large because the land surface of ancient times lies buried beneath about 4 m (13 ft.) of alluvium; parts of the site have also been eroded by the meandering Sakarya River, which flowed to the south and east of the site until relatively recently.

Scattered along the slopes and ridge tops surrounding Gordion are about one hundred burial mounds or tumuli, of which nearly forty have been investigated by archaeologists. The greatest number lie to the east, where a linear distribution suggests that they may have lined an ancient road or ceremonial way. The mounds vary considerably in size. The largest (Tumulus MM) is about 50 m (164 ft.) in height with a diameter of nearly 300 m (984 ft.) and some of the smaller mounds have been so reduced by erosion and plowing (not to mention robber trenches) that they are barely visible. The excavated tombs range in date from the eighth to first century.

Previous Excavations at Gordion. Alfred and Gustav Körte placed three trenches on the Citadel Mound and excavated five tumuli, two of which produced burials dated to the Early Phrygian period. Far more extensive in scope and duration was the research carried out by the University of Pennsylvania Museum's Gordion Project, directed by Rodney S. Young. Working with Machteld Mellink and G. Roger Edwards, Young excavated for sixteen seasons between 1950 and 1973. On the Citadel, much of a burned settlement destroyed by fire was cleared, providing a rich and unique picture of the Early Phrygian capital. Young's team also ex-

plored the lower-town fortifications and excavated thirty-one burial mounds. To document earlier periods Young and Mellink dug below the destruction level until they were stopped by ground water rising in their trenches. This phase of fieldwork ended with Young's accidental death in 1974.

In 1988 a new cycle of excavation and regional surface survey began, directed by Mary M. Voigt in cooperation with G. Kenneth Sams. The initial goals of Voigt's research were to record a detailed stratigraphic sequence for all periods of occupation on the Citadel Mound and to recover information on the economy of the settlement including the subsistence system, land use, and manufacturing. Attention was also focused on the documentation of domestic architecture and on variation in material culture between areas within the city.

Archaeological Sequence. The earliest-known occupation at Gordion dates to the mid-third millennium, when the settlement consisted of small mud-walled houses surrounded by an embankment and fortification wall. Material dating to the first half of the second millennium consists primarily of ceramics obtained from the citadel soundings, supplemented by more complete vessels from extramural cemeteries.

Better known are the Late Bronze and Early Iron Age settlements. The final Late Bronze Age level (c. 1200) includes a house with nearby storage pits, which eventually filled with domestic trash. The house was constructed by cutting a rectangular cellar more than a meter deep and lining the walls with large stones; this preparation served as the foundation for a wooden superstructure, with a porch on one end. The settlement is linked to the Hittite Empire by similarities in architecture, ceramics, metal artifacts, and glyptic material. Mass production of ceramics points to an economy based on specialization and exchange. We cannot estimate the size of Gordion at this time, but it appears to be part of a small polity in contact with the Hittites and affiliated with them to some degree.

Built directly above and partially into the ruins of the Late Hittite building was an Early Iron Age architectural complex. Small houses, sometimes consisting of a single room, were set in shallow rectilinear pits that were lined with mud plaster or stone slabs. Around the edge of the house pit were built walls of reeds or other lightweight material covered with mud; characteristic domestic features include ovens and bins built of stone slabs plastered with mud. Found on the floors of these houses were handmade pots fired at low temperatures; these vessels are extremely variable in form and decoration, attributes of a household ceramic industry. Architecture, artifacts, and a preliminary assessment of household economy suggest a relatively small and isolated community.

This archaeological sequence can be used to address a question raised by historians: What was the relationship between the migration of Phrygian speakers from Thrace into Anatolia, and the fall of the Hittite Empire? Gordion provides no evidence for a significant hiatus in settlement between the Late Bronze Age and Early Iron Age occupations; nevertheless, there are changes in virtually every aspect of material culture between these periods. Thus the archaeological remains suggest that the Late Bronze Age/Hittite affiliated population moved out of the area or at least away from Gordion and that a new group settled there at near the beginning of the first millennium. Based on admittedly vague similarities between the Early Iron Age pottery at Gordion and roughly contemporary pottery from Thrace, it is reasonable to identify the archaeological remains of this period with the immigration of Phrygian speakers into central Anatolia.

The Phrygians' growing political power was soon reflected by new construction on the Citadel Mound. A visitor to the heart of Gordion around 800 would have passed through massive fortifications into a small gate building constructed of red, white, and gray stone. Inside, red and white stone paving led to a large court with a packed earth floor; bordering the court were at least two rectangular buildings constructed of soft white stone and wood. One or more of the structures was decorated with stone sculptures in a style related to Syro-Hittite reliefs of the ninth century. With the exception of the fortification system, all of these structures were demolished as part of a rebuilding of the elite quarter during the eighth century, and it is the latter architectural phase that was preserved by fire and explored by Rodney Young.

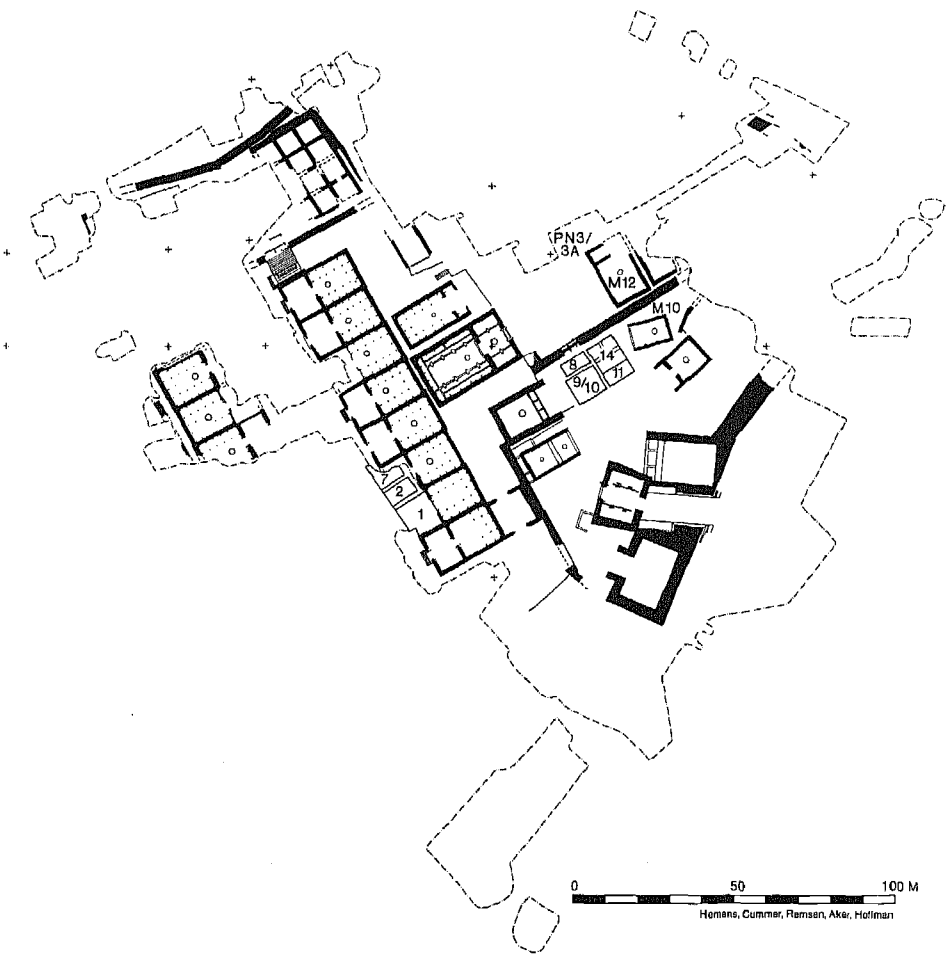
In 700 the kingdom of Phrygia was ruled by a king known as Midas to the Greeks, and Mita of Muški to the Assyrians. By this time Gordion had grown and may have covered much of the area now lying beneath Yassıhöyük. There were now two distinct zones within the city: the walled elite quarter to the east, and an area to the west, which was presumably occupied by ordinary people. Although only 2 sq m (2.4 sq. ft.) of the western zone has been excavated, the elite quarter has been exposed over an area of more than 2 ha (5 acres). Inside its walls were three functionally differentiated zones that were physically separated by walls and changes in level: a palace complex divided into two courts; two long service buildings; and a large building composed of small cell-like rooms (see figure 2). The stone-paved outer court of the palace complex was bordered to both east and west by large megarons (halls) built of stone or mud brick with timber elements, and possibly gabled roofs made of reeds covered with clay. Because the outer-court buildings were empty when discovered, there is little direct evidence of their precise function, but from their location we may surmise that they housed reception and storage areas, and one building may have been a temple. The most elaborate structure (Megaron 2) had a multicolored pebble mosaic floor set in geometric motifs; incised on the soft-stone walls of this building were many graffiti, showing gable-roofed buildings,

birds, animals, and (occasionally) people. Although these "doodles" may simply be the work of people waiting to see officials or members of the royal household, some scholars see hawk and lion graffiti as evidence that Megaron 2 was a cult building dedicated to Matar or Cybele—the primary Phrygian goddess, who is often depicted with raptors and lions.

A thick wall separated the outer court from an inner court, which was again bordered by megarons. The largest of these (Megaron 3) contained large quantities of smashed and charred artifacts including metal and ceramic storage and serving vessels, foodstuffs, carved wooden furniture, ivory inlays, and textiles. Either this building or the adjacent Megaron 4 (which was disturbed after the fire and so presumed to have contained things worth salvaging) probably served as the royal residence. Another partition wall separated the inner court from a structure made up of small rectangular rooms; this structure was used for many years after the fire. Artifacts provide no clue to its function during the Early Phrygian period.

To the west of the palace complex was a high terrace with two long service buildings facing each other across a broad street. Each building is divided into a series of megaron units consisting of a large inner room with central hearth and a smaller anteroom. The rooms often contained ovens, and most had rows of grinding stones set on mud platforms. Their function as cooking and storage areas is also indicated by charred grain and other seeds and masses of pottery. Other evidence for domestic production includes spindle whorls, loomweights, and partially woven textile fragments. Two rooms stored more valuable items such as imported ivory horse trappings, bronze vessels, and animal figurines, and gold and electrum jewelry.

The wealth and craftsmanship of the Phrygians suggested by charred and broken fragments within the Citadel are clearly documented by tombs, especially Tumulus MM and P. Huge conical mounds of clay and stone were laid over wooden chambers containing elaborately inlaid wooden furniture, local and imported pottery of high quality, bronze and brass vessels, and jewelry such as belts and fibulae



GORDION. Figure 2. *Plan of the Early Phrygian period.* (Courtesy of the Gordion Project)

(brooches). The largest tumulus (MM) is interpreted by many as the tomb of Midas, who supposedly committed suicide when his kingdom was destroyed by the Cimmerians shortly after 700. Other scholars prefer a late eighth-century date for the log tomb chamber and/or its contents and suggest that an earlier ruler was interred there—perhaps Midas's father.

Lying above the ruins of the destruction level on the Citadel is a 3–5-meter-thick layer of clay supporting new stone buildings that had rubble foundations set deeply into the clay. In plan, the elite quarter of the rebuilt or Middle Phrygian settlement replicates key elements of the Early Phrygian settlement lying directly below. There are differences, however, in construction methods and in the plan of individual structures, especially the gate building. With its increased height and massive polychrome walls, the settlement dominated the surrounding countryside. Its topography was relatively complex. The walled elite quarter and the western residential zone (also built on a 5–6-meter-thick layer of clay) were distinct mounds, separated by a broad, paved avenue, which led south, presumably into the lower town. It is not clear whether the western mound was fortified, but protected by its own height it contained well-built houses, which probably belonged to merchants or minor officials. In the lower town, stone and mud buildings were protected by 3.5-meter-thick fortification walls with square towers set at regular intervals; the walls were anchored by a mud-brick fortress (the Küçük Höyük). On the slopes to the north and west of the twin mounds lay the unfortified outer town where houses may have been interspersed with gardens or small fields.

The absolute date of the Middle Phrygian rebuilding, and therefore its historical significance, has been the subject of considerable discussion, debate, and revision. Although Rodney Young had long thought that Gordion was rebuilt during the second half of the sixth century, after the Persians gained power in central Anatolia, during the last years of his life he placed the rebuilding in the first half of the sixth century. This dating has been accepted by other scholars, some of whom credit the Lydians with support for this project if not direct sponsorship (see, e.g., DeVries, 1990, pp. 391–392). New evidence challenges this view, suggesting that the rebuilding process began almost immediately after the fire and was completed by the middle of the seventh century, if not earlier (Voight, 1994; see also Henrickson, 1994). If this dating is correct, the Phrygian political system was not destroyed in 700, and the ruling elite was able to mobilize a substantial labor force to recreate and enhance a citadel that was both product and symbol of their right to collect tribute or taxes.

By the early sixth century, Phrygian Gordion was certainly under strong Lydian influence, incorporated into the kingdom of Alyattes and Croesus. This situation ended when Cyrus the Great took the city in 547, an event documented in the archaeological record by the destruction of the Küçük Höyük fortress. Under the Persians, Gordion was reduced in importance as a political center, but its role as an economic center continued or was perhaps enhanced by the unification of Anatolia within the Persian Empire. One source of prosperity seems to be manufacturing, with evidence for the production of stone, bone, ivory, and metal artifacts. The items received in exchange for such goods included Attic and Lydian fine wares and Greek wines. Gordion under the Achaemenids was in fact a fascinating place: juxtaposed with elements of indigenous Phrygian material culture were new Iranian ceramic forms and horse harness, a building decorated with painted tiles in Lydian style, and a room decorated with polychrome murals painted in Greek style.

No archaeological remains testify to the visit of Alexander the Great in 334/33, but its effect is clear. Gordion became thoroughly hellenized, as evidenced by Greek inscriptions and graffiti, Greek style house plans and grain mills, and the importation of masses of black-glazed pottery. The settlement appears to have been reduced in size, but ashlar (dressed masonry) walls indicate the presence of one or more monumental structures, this time in the northwest quadrant of the citadel. The low street between the two mounds was filled, and houses were built above the former palace quarter and its walls. The best known phase of the Hellenistic occupation is also the latest. Early in the second century, houses on the Citadel caught fire and were abandoned with their contents left in situ. The Roman historian Livy provides an explanation for this catastrophe (*History of Rome* 38.12.1–27.9). At the end of the third century Gordion was an *oppidum* or hill fort occupied by immigrant Galatian mercenaries. In 189 the Roman consul and general Manlius Vulso campaigned against the Galatians in Anatolia. When he came to Gordion, its inhabitants had fled, and he found an empty settlement, which he presumably looted of its more valuable items before setting it afire.

Nearly two centuries later, Roman settlers reestablished Gordion, which was known in Latin as Gordium. Although the settlement was small (Strabo refers to it as a "village" in *Geog.* 12.5.3, 568), it may have been important as a market and source of agricultural products. This function is suggested by the location of Gordion along the road between Pessinus and Ancyra, cities founded by the Romans after the annexation of Galatia into the empire in 27. Gordion's prosperity is indicated by imported red-glazed ceramics from the settlement and by grave goods deposited in cemeteries located in the lower town and on the east slopes of the valley. Cremations and inhumations were sometimes accompanied by glass or pottery vessels as well as jewelry incorporating carved stone signets. When Roman prosperity declined in Asia Minor during the initial phase of warfare with the Sasanian Empire in the second half of the third century CE, Gordion was again abandoned. It was briefly

occupied during medieval times, but excavated material from graves and houses has not been analyzed or precisely dated.

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MARY M. VOIGT

GRAINS. *See* Cereals.

GRANARIES AND SILOS. The beginning of grain storage can be attributed to surplus production associated with the domestication of cereals and other crops at the beginning of the Neolithic period. As social structures developed, so did different types of grain-storage facilities that were either publicly or privately owned. Such facilities were subterranean or above ground; the grain was deposited in bulk or in containers.

Most above-ground facilities seem to have been publicly owned. Some of the earliest have been found in the Ubaid 4 level at Tell el-'Oueili in Iraq (Huot, 1992, p. 192); however, the shape of the superstructure is unknown. The development of beehive-shaped granaries for storage in bulk probably originated in Egypt in the Early Bronze Age (Borowski, 1987, p. 76) and spread to Palestine. Remains of similar structures dating to the EB II and EB III were discovered at Arad (Currid, 1986) and Beth-Yerah (Mazar, 1990), respectively. The latter, which could hold 2,250 cubic meters of grain, was made of nine circular structures connected to what appears to be a temple (Mazar, 1990, pp. 129–130). Similar buildings were discovered in Anatolia and on Crete. Artistic representations show that this type of granary also continued in use during the New Kingdom (Gressmann, 1927, pl. 177). These structures were filled through windows at the top by ladder-climbing, grain-carrying workers and emptied through doors at the bottom. Remains of Late Bronze Age beehive granaries were found at Bir el-'Abd in northern Sinai, where a fort from the time of Seti I was maintained (Oren, 1973). Similar structures dating to the Hellenistic period were discovered at Tell Jemmeh by Sir William Flinders Petrie (1928, pp. 8–9, pl. 14) and more recently by Gus Van Beek (1986). The absence of remains of beehive granaries during the Iron Age gives credence to Petrie's suggestion that the structures at Tell Jemmeh were constructed under foreign influence, possibly from Mesopotamia.

During the Iron Age, the main publicly owned storage facilities were the tripartite, pillared buildings uncovered at Tell el-Ḥesi, Tell Qasile, Tell Abu Hawam, Megiddo, Hazor, and Beersheba. At Tel Hadar (Kochavi et al., 1992, pp. 36–41) the only above-ground, rectangular grain-storage complex known from the Iron Age Levant was recently dis-

covered, attached to a tripartite building. The function of the tripartite buildings is controversial; some consider them stables. Another common type of Iron Age storehouse, with long rooms and thick walls, has been discovered at Jericho, Lachish, Megiddo, Beth-Shemesh, Tell Jemmeh, Tell en-Naṣbeh, and Tell Beit Mirsim (Borowski, 1987; pp. 78–79), in which jars and other vessels such as jugs and bowls held commodities. In the Bible, storehouses are called *miskĕnôt,* from the Akkadian *maškanâti.*

During the Roman Empire, granary construction was standardized. Whether for civilian or military use, granary buildings were long and narrow with thick walls, raised floors, and proper ventilation. Examples can be found throughout the former Roman Empire in cities, at harbors, and at military installations (Rickman, 1980).

Subterranean facilities were publicly and privately owned. This type of storage facility dates back to the time of the Neolithic revolution. Some of the earliest grain-storage pits have been discovered at Maghzaliyeh (Iraq) dating to the seventh millennium BCE (Huot, 1992, p. 189). Plastered subterranean granaries have been found at Gezer in Iron Age I and Middle Bronze IIA levels. The stone-lined, sometimes plastered, storage pit was a very common feature in the Late Bronze and Iron Ages, in both large and small communities. Privately owned storage pits have been discovered near dwellings and in courtyards at Tell Beit Mirsim, 'Izbet Ṣarṭah, Beersheba, Tell Ḥalif, and many other sites. One of the best examples of publicly owned storage pits, or silos, was found at Megiddo. There, a round pit has two sets of stairs along the wall to facilitate the heavy traffic of workers bringing in or taking away grain. Storage pits at Beersheba had mortars and grinding stones set next to their rim to enable more efficient grinding of grain. Tell Beit Mirsim and Beersheba may be the only sites where an Iron Age cellar was used for storage in jars. The biblical term for a privately owned storage pit is *'āsām*.*

Publicly owned grain-storage facilities were mostly used for the collection and disbursement of revenues to functionaries, such as the civic and religious bureaucracy and the military. Private facilities were located close to or in dwellings, to facilitate the use of grain in daily food preparation and to store seeds.

[*See also* Agriculture; Cereals; *and* Food Storage. *In addition, most of the sites mentioned are the subject of independent entries.*]

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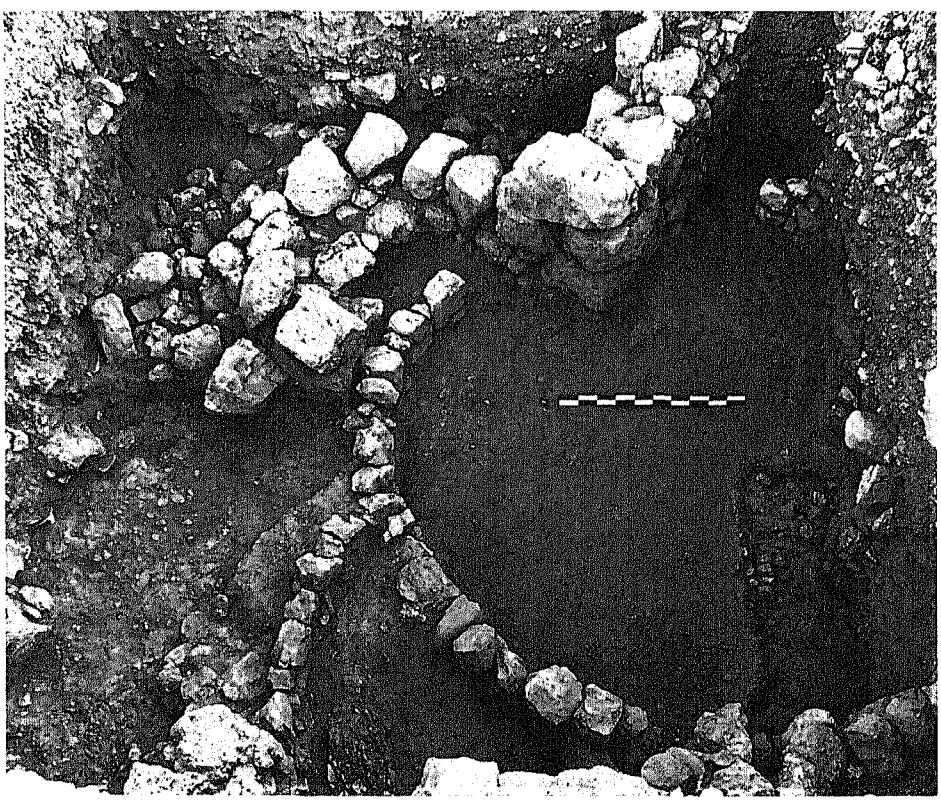

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ODED BOROWSKI

GRAPES. *See* Viticulture.

GRAVE GOODS.

The objects that accompany the dead in mortuary contexts are widely interpreted as part of the sustenance required in a postmortem existence (the netherworld or afterlife). The repertoire of grave goods is usually similar but not identical to that of domestic contexts; particular shapes or types of decoration are sometimes reserved for burial alone. Tombs also tend to contain richer assemblages per square meter than living contexts. While in some cases this wealth may actually reflect the elite status of the dead or the cultic nature of mortuary rites, it more often seems to mirror the perceived importance of wealth in the hereafter, using a fairly standardized format and inventory. Food and drink were ubiquitous provisions, preserved in the form of animal bones (cuts of meat), open vessels (for perishable produce), and closed vessels (liquids: wine, oil, water and perhaps milk for infants). Other containers, fashioned of exotic materials—alabaster, faience, and glass—may have contained cosmetics, ointments, or processed, scented oils.

A grave good inventory can reflect social status. Warrior status is inferred by the presence of weapons in certain burials, generally of adult males. Equid (usually donkey) burials in Middle Bronze Age tombs at Jericho, Tell el-ʿAjjul, and Tell ed-Dabʿa, for example, probably imply status distinction as well—perhaps that of a merchant. [*See* Jericho; ʿAjjul, Tell el-; Dabʿa, Tell ed-.] Some Mesopotamian necropoli show a disparity in grave good affluence that may betoken social stratification (e.g., Tepe Gawra, Ur, and Aššur). [*See* Tepe Gawra; Ur; Aššur.] The same was true for Egypt, albeit to a lesser extent, because it is probable that only the upper classes are represented in the archaeological record. Certain tombs or burial sites whose contents are several degrees more profligate than other contemporary burials may be interpreted as elite tombs (e.g., the Royal Cemetery of Ur, the royal necropoli on the west bank of the Nile in Egypt, and, probably, the Chalcolithic Naḥal Mishmar "hoard" in Israel). [*See* Judean Desert Caves; Cave Tombs.] Subsidiary, "servant" burials appended to larger, more extravagant ones have been discerned at the Royal Cemetery of Ur in southern Mesopotamia and at Tell ed-Dabʿa in the Egyptian Delta. Graves of the southern Levant show less class division based on wealth, though the sample may not be completely representative if, in certain periods, only the elite adopted enduring tomb types.

In the southern Levant, the Middle Bronze Age cemeteries show the greatest variety of offerings and status categories. Infants are found buried without offerings or with just a few—a juglet near the mouth and a talismanic scarab are the most common. Tombs of children tend to contain an equally modest array, though they rarely lack offerings completely. Adult interments are generally the most affluent, each corpse typically being accompanied by a number of objects of the kind described above.

The Middle Bronze and Roman period tombs at Jericho have been especially instrumental in permitting an understanding of the nature of grave goods because of the remarkable preservation of their organic contents. The many wooden objects—beds, stools, headrests, bowls, boxes, and combs—and the remains of foodstuffs—cuts of meat, pomegranates, and grapes—reveal that such organic materials were used more frequently than the remains of other tomb assemblages suggest.

Subtle changes occurred during that time: in the southern Levant, cooking pots, for example, only became statistically significant as a grave good in the Iron Age and truly common in the Hellenistic–Roman period. In the grave good assemblages of the Hellenistic, Roman, and Byzantine periods glass vessels, lamps, unguentaria, and various personal possessions are commonly found. In coffin burials these offerings were placed inside the coffin. In ossuary burials, the presents were most often found next to, but not inside, the box. [*See* Ossuary.] A new custom of the period, introduced by Hellenistic culture, was the placing of coins on the eyes or in the mouth of the deceased for paying ferry charges to Charon to cross the river Styx. This was a common practice among Gentiles but is rarely found in Jewish tombs.

The placement of grave goods was a normal, if not universal, practice until the Islamic period. Theological developments in the classical periods were paralleled first by

changes in the way burial offerings were perceived and later by the gradual cessation of the practice. The frequent occurrence of defective goods and Mishnaic writings decrying the wasteful disposal of wealth in Jewish burials suggest that burial offerings came to be considered nonessential or purely symbolic, and eventually as superfluous and downright sinful.

[*See also* Burial Sites; *and* Burial Techniques.]

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DAVID ILAN

GREEK. A highly inflected language, Greek encodes the syntactical structure of the sentence by accentuation of words rather than by word order. Verbs are typically marked to express tense, mood, voice, person, and number, and adjectives, articles, pronouns and nouns can be marked to reflect gender, number, and case. Greek, like Latin, Sanskrit, and German, has three genders: masculine, feminine, and neuter. In addition to singular and plural, classical Greek (like Sanskrit) has a dual. The eight Indo-European cases were reduced to five in Greek: nominative, vocative, accusative, genitive, and dative. Greek (again like Sanskrit), has three voice distinctions: active, passive, and middle (which has a generally reflexive meaning). In classical Attic prose, accent was based on differences in pitch (i.e., the high tone is *the* accent of a word), and duration. Poetry, however, had duration only. Unlike Latin, the rules of accent involve primarily the vowel elements. During the fifth and fourth centuries BCE, Attic developed two phonemic subsystems revealed through orthographical variations in inscriptional evidence, a conservative subsystem with six vocalic phonemes */i, e, a, o, u, y/*, and sixteen consonantal phonemes */p, t, k, b, d, g, ph, th, kh, s, z, h, l, r, m, n/*, and an innovative subsystem consisting of eight vocalic phonemes */i, e, ɛ, a, ɔ, o, u, y/*, though retaining the same sixteen consonantal phonemes (Teodorsson 1978, pp. 94–98).

History of Greek. Included under the generic linguistic term *Greek* are several related dialects that can be traced back to a reconstructed Proto-Greek language, which in turn derives from the Indo-European family of languages. The Greeks called themselves *Hellenes,* recognizing mutual ties of history, language, and culture. They labeled everyone else as *barbaroi* (i.e., non-Greeks). It is uncertain just how the Romans came to call the Hellenes *Graeci* (a latinized form of the Greek term *Graikoi,* of uncertain etymology) and their language as *Graecum* (Apollodorus, 1.7.3; Aristotle, *Meteorologica* 1.352a), perhaps because the first Hellenes whom the Romans encountered were the settlers in Cyme north of the Bay of Naples called *Graii* after their place of origin, Graia in Euboea (Homer, *Iliad* 2.498). During the late republic and early empire many Romans used a diminutive to refer disparagingly to Greeks as *Graeculi* (Cicero, *De oratore* 1.47; Pliny, *Epistula* 10.40.2). Some Romans even described the philhellene emperor Hadrian disparagingly as a *graeculus* (*Historia Augusta Hadrian* 1.5). The Indo-European family of languages includes most European languages as well as Sanskrit. Basque, the Finno-Ugric languages, and ancient Etruscan are major exceptions. The two major divisions of Indo-European are the eastern *satem* languages (Indo-Iranian, Balto-Slavic, Armenian, Albanian, Tocharian) and the western *centum* languages (Celtic, Italic, Germanic, Greek, Hittite), though this division is not without difficulties. The comparison of numerals from one through ten in a selection of these languages in table 1 reveals a genetic relationship still recognizable despite various vocalic and consonantal shifts and transformations.

Linear B syllabary. Speakers of Proto-Greek very probably arrived in the Greek peninsula about the beginning of the second millennium BCE. The earliest written Greek is found in the syllabic inscriptions on clay tablets of Linear B, now called Mycenaean Greek. It is found on Crete at Knossos and on mainland Greece at Pylos, Mycenae, and Thebes. This syllabary originated in the Mycenaean and Minoan periods (1450–1200) and served the needs of the royal administration, particularly the scribes. The syllabary consisted of eighty-seven signs representing a consonant-vowel combination (e.g., *da, do, de, du*) and did not distin-

TABLE 1. *Numerals in Selected Indo-European Languages*

English	Sanskrit	Greek	Latin	Gothic	Indo-European[1]
one	ekas	heis	unus	ains	*sem
two	duvâ, dvê	duo	duo	twai	*duwô
three	tráyas	treis	tres	trija	*trejes
four	čatvâras	tettares	quattuor	fidwor	*q^{w}e-twores
five	páñca	pente	quînque	fimf	*penq^{w}e
six	sas-	hex	sex	saihs	*s(w)eks
seven	sapta	hepta	septem	sibun	*septm
eight	astâ	oktō	octo	ahtau	*oktô
nine	náva	ennea	novem	niun	*newn
ten	dáśa	deka	decem	taihun	*dekm(t)

[1]All items in this column (marked with an asterisk) are reconstructed, nonattested forms in Proto-Indo-European.

guish between *r* and *l*. The decipherment of the syllabic script of Linear B shows a close relationship with later Greek dialects, particularly Arcado-Cypriot, which was located in the central Peloponnesus and Cyprus. The comparison in table 2 of some common Greek words with transliterated Mycenaean syllabic symbols suggests that Linear B is in fact an earlier form of Greek.

Adoption of the Alphabet. Mycenaean civilization disintegrated about 1200 BCE approximately the same time as the fall of Troy. The collapse of Mycenaean civilization was closely followed by the Dorian migrations into Greece, but there are no distinctive material features that allow archaeologists to identify this invasion. Survivors of the various conflicts at this time, the so-called Sea Peoples (i.e., Philistines, Sicilians, Tyrrhenians, Etruscans, and Sardinians), moved along the Mediterranean coast and settled in different places. This cultural collapse was followed by the Dark Age (c. 1100–950), an era of illiteracy in which earlier writing was only a dim memory. A written form of the Greek language appears again toward the end of the eighth century in an alphabetic script borrowed from North Semitic (see figure 1). The earliest evidence for Greek alphabetic writing is found on the Dipylon Jug (c. 724), a few decades after Greek trade with the eastern Mediterranean had resumed. The Greeks called their alphabet *grammata phoinikēia,* "Phoenician letters" (Herodotus, 5.58; *Sylloge Inscriptionum Graecarum,* ed. W. Dittenberger, Hildesheim, 1960 38.37; Diodorus, 5.74.1) and believed that the alphabet was introduced by the Phoenicians accompanying Cadmus, king of Tyre, who settled in Thebes (Herodotus, 5.58; Diodorus, 3.67.1; see Tacitus, *Annals* 11.14). Rhys Carpenter has argued persuasively that the Greek alphabet was taken over and modified only shortly before the first extant written inscriptions, that is, in the latter half of the eighth century BCE (Carpenter, 1933). This alphabet existed in a large number of local variations (see Jeffery, 1967), though the Ionic form eventually predominated over the many epichoric alphabets.

TABLE 2. *Comparison of Equivalent Greek and Mycenaean Words*

English	Greek	Mycenaean Greek
king	basileus	pa-si-re-u
priest	hiereus	i-je-re-u
fuller	knapheus	ka-na-pe-u

Major dialects. By the fifth century, two major groups of Greek dialects appeared. West Greek included "strict" Doric dialects (Laconian, Messenian, Cretan, Cyrenaean), "middle" Doric dialects (West Argolic, East Aegean Doric), and "mild" Doric dialects (Megarian, Corinthian, East Argolic, Northwest dialects). East Greek (or non-West Greek) included Attic-Ionic (Attica, Euboea, the Cycladic islands and the coast of Asia Minor), Aeolic (island of Lesbos, Thessalia, Boeotia), and Arcado-Cypriot or Achaean (spoken in central Peloponnesus and Cyprus). The Greeks themselves distinguished four dialects—Attic, Ionic, Doric, and Aeolic (Strabo, 8.1.2; 14.5.26).

Following the Dark Age, a period of Greek colonial expansion began during the mid-eighth century, motivated both by merchants seeking profit and by hunger for land. Various groups of Greeks from the mainland, the Peloponnesus, and the coast of Asia Minor founded colonies and established trade throughout much of the Mediterranean world. Two of the earliest trading centers were founded by traders from Chalcis and Eretria in Euboea, Al Mina at the mouth of the Orontes River in northern Syria in the east, and the island of Ischia (Pithecusae) north of the Bay of Naples in the west. Among the earliest Greek inscriptions extant is the longest eighth-century inscription, a graffito on a Geometric-period cup from Ischia in Euboean Greek (*Supplementum Epigraphicum Graecum,* vol. 14, edited by A. G. Woodhead, 1957, p. 604). Later colonies were founded on the coast of the Black Sea, the Propontis (the narrow

PHOENICIAN		GREEK		
Name	*c. 900 BCE*	*800–600 Attic (400)*		*Name*
ʾalef	𐤀	Α Α Α	Α	alpha
bet	𐤁	Β Β Β	Β	beta
gimel	𐤂	Γ Γ C	Γ	gamma
dalet	𐤃	Δ Δ D	Δ	delta
he	𐤄	Ε Ε Ε	Ε	epsilon
waw	𐤅	F F Ꞟ		(digamma)
zayin	𐤆	Ζ Ζ Ι	Ζ	zeta
ḥet	𐤇	Η Η Η	Η	eta
ṭet	𐤈	⊗ ⊕ ⊙	Θ	theta
yod	𐤉	ξ ϟ Ι	Ι	iota
kaf	𐤊	Κ Κ Κ	Κ	kappa
lamed	𐤋	L Γ Λ	Λ	lamda
mem	𐤌	ᴹ ᴹ Μ	Μ	mu
nun	𐤍	Ν Ν Ν	Ν	nu
samek	𐤎	⋇ Ξ ☰	Ξ	ksi
ʿayin	𐤏	Ο Ο	Ο	omikron
pe	𐤐	Γ Γ	Γ	pi
ṣade	𐤑	Μ		(san)
qof	𐤒	Φ Φ		(qoppa)
reš	𐤓	Ρ D Ꝑ	Ρ	rho
śin/šin	𐤔	ξ ϟ ξ	Σ	sigma
taw	𐤕	Τ	Τ	tau
		Υ Υ V	Υ	upsilon
		Φ Θ ϕ	Φ	phi
		Χ +	Χ	chi
		Ψ Ψ	Ψ	psi
		Ω Ω Ω	Ω	omega

GREEK. Figure 1. *Comparison of the Phoenician consonantal signs and the letters of the Greek alphabet.* (After Peter T. Daniels and William Bright, eds., *The World's Writing Systems,* New York, 1996; courtesy Oxford University Press)

passage between the Aegean and the Black Sea), the northern shores of the Aegean, Sicily (by the Euboeans and Dorian groups), the southern coasts of Italy, Magna Grecia (by the Euboeans and Achaeans), the southern coast of France, and the northern coast of Africa at Cyrene, all linked by sea routes which carried their trade. In Italy the Greeks had important cultural and commercial contacts with the Etruscans, which in turn affected the Romans.

From Imperial Attic to Koine. The common Greek of the Hellenistic period (325–150) and the Roman period (150 BCE–300 CE) is called Koine, following the ancient designation *hē koinē (dialektos),* "the common (dialect)." This common dialect was based on fourth-century Attic Greek and was in use from the late fourth century BCE to the mid-sixth century CE, when it developed into Byzantine Greek. The independence and isolation of the Greek city-states had encouraged the preservation of local dialects, but the formation of political leagues tended to foster linguistic homogenization. The key role Athens had played in resisting and defeating the Persians in the early fifth century (490–479) was parlayed into political power through the formation of the First Maritime League. The linguistic corollary of the ensuing sociopolitical developments was that Attic replaced Ionic as the most prestigious Greek dialect; mercenaries in the Athenian army and fleet had to learn Attic, the language of command. After unifying Macedonia, Philip II of Macedon (372–336) defeated the Athenians and the Thebans at the battle of Chaeronea, thereby forming an extensive Greco-Macedonian empire. Philip adopted Greek culture to provide cohesion to his empire, and made Attic Greek, the dialect of Athens, the official language of his court and his diplomatic correspondence, transforming what was primarily a local dialect in the fifth century into Imperial Attic, a new common dialect. This policy was continued by Alexander III (356–323), better known as Alexander the Great, who succeeded Philip in 336 and immediately planned and expedited the invasion and conquest of the Persian Empire, whose official lingua franca was Aramaic. As he marched through Asia Minor, Syria-Palestine, and Egypt, and then proceeded east by means of the Fertile Crescent through Mesopotamia to India, Alexander established numerous city-states and military garrisons that were populated with Greek-speaking Macedonian soldiers, veterans, and thousands of Greek settlers including artisans and merchants from Macedonia and all other parts of the Greek world. They brought with them their native dialects, but Koine was the language of the army and the common speech of settlers; therefore, these other dialects disappeared by the third generation. Koine became the language of government, diplomacy, commerce, and education, the spoken and written language of the ruling elite and upper-class natives because Greek language and culture was tacitly considered superior to other languages and cultures. In much of the Near East, literacy meant literacy in Greek, and the native languages were spoken by those who did not read or write. Aramaic, however, was never completely displaced. Greeks who settled throughout the Near East, however, tended to be monolingual because of the high status of their own language and culture. Indigenous languages were regarded as culturally inferior by both Greek immigrants and upper-class natives. After the death of Alexander in 323, his successors consolidated power in three great Hellenistic monarchies—Antigonid Macedonia, Seleucid Syria, and Ptolemaic Egypt—in addition to many petty kingdoms. Koine was the official language of all these Hellenistic kingdoms.

Written Koine was a uniform language that had no local dialects but exhibited only stylistic, lexical, and phonological variation. Hellenistic Koine became the standard language

of Greece and was realized in many regional phonological substandards, that is, Attic-Ionic, Aegean-Doric, Achaean-Doric, Northwest-Doric, South-East Aegean, Egyptian, Syro-Palestinian, and Asia Minor (Bubeník, 1989, pp. 175–255). The uniform character of the written language appears to have contributed to the standardization of the spoken language. The transformation from Attic to Koine was characterized by a variety of linguistic developments that occurred throughout the Hellenistic and Roman periods: (1) The Attic preference for the double consonant *-tt-* (as in *thalatta,* "sea") was bypassed by the Koine preference for *-ss-* (as in *thalassa*); *-ss-* was actually an earlier preference of the Athenian tragedians and Thucydides; (2) in Koine there was an increasing tendency to ignore the Attic distinction between long and short vowels; (3) the athematic aorist disappeared; (4) the optative became obsolete; (5) the dative was gradually phased out; (6) prepositions were increasingly used to indicate case relations; (7) the Greek vowels or diphthongs *i, ei, ê, oi,* and *u* were pronounced so similarly that they were frequently interchanged in orthography during the Roman period; (8) the sounds of *o* and *ô, e* and *ai, ei* and *i, ou,* and *u* were confused orthographically.

Greek in the Near East. During the Mycenaean and Minoan periods, mainland Greece and Crete had extensive commercial contacts with the Near East. The Mycenaeans apparently brought their language to Cyprus. The Arcado-Cypriot dialect is known exclusively from inscriptions in the Cypriot syllabary (related to Linear A), used from the seventh to the third century) Pottery from Mycenaean Greece and Cyprus were discovered at Ugarit (modern Ras Shamra) in northern Syria as well as tablets in the still-undeciphered Cypro-Minoan script. Although interrupted by the dissolution of Mycenaean-Minoan civilization, commercial contacts were renewed and extended when Greek city-states began extensive colonization in the eighth century. Throughout the Hellenistic cities of Egypt and Syria-Palestine, the middle- and upper-class Greeks lived in relative isolation from the natives; consequently, the influence of indigenous languages (e.g., ancient Egyptian, Aramaic, Phoenician, Hebrew, and Arabic) was not strong. Greek was still spoken in the Hellenistic cities in the former Persian Empire, such as Seleucia on the Tigris and Susa.

In the sixteen Roman provinces of the Greek East, the use of the Greek language was dominant and was the language of local Roman administration. Many Greeks, however, disregarding the existence of the Roman Empire, continued to divide humanity into two categories, Greeks and barbarians (Strabo, 6.1.2; Dio Chrysostom, *Orations* 1.14; Josephus, *Antiquities* 18.20; Philo, *Legatio* 8, 83, 145, 292), and Apollonius of Tyana supposedly divided the Roman world up into Greek-speaking and Latin-speaking provinces (Philostratus, *Vita Apollonii* 5.36), and Aelius Aristides even wanted to modernize the Greek-barbarian division into a Roman vs. non-Roman one (*Orations* 26.63). Others wanted to expand the categories to Greeks, Romans and barbarians (Cicero, *De finibus* 2.49; Plutarch, *On the Fortune of the Romans* 324B).

In the Greek-speaking provinces, even official Roman decrees, letters and edicts, and honorary inscriptions to Roman magistrates, emperors, and members of the imperial family were routinely promulgated in Greek. Most inscriptions on public works, however, are in Latin, and about 30 percent are bilingual. Milestones are often bilingual, but in Syria and Arabia they are almost always in Latin. In Asia Minor and Thrace there are many written only in Greek. Latin and Greek were used in the administration of eastern Roman provinces. Latin was the language of administration used for communication between the central government and Roman magistrates, between Roman magistrates and Roman colonies (as well as within Roman colonies), and sometimes between Roman citizens. The language of the native population was nearly always Greek.

Egypt. Although Minoans had visited Egypt sporadically since the seventeenth century, the first significant Greek presence in Egypt did not occur until the seventh century when a trading colony was established in the northwest Delta. Greek domination of Egypt was established in 332 and lasted until 30. In Ptolemaic Egypt, Greco-Macedonian immigrants settled in two new urban centers of Hellenism, Alexandria in the north and Ptolemais in the south.

The preservation of non-literary Greek papyri in Egypt from the third century BCE through the third century CE provides an important avenue into the written Koine of this period, but the absence of comparable documentary material from other Mediterranean lands makes it impossible to detect the presence of a distinctive dialect. Papyrus letters in Greek begin to appear in the third century BCE. Evidence for Egyptian Koine is found in documents written by bilingual Egyptians (primarily those in the inferior local administration). These documents exhibit linguistic interference. An example consists of the Egyptian-Greek contracts from Soknopaiou Nesos in the northern Faiyum (Papyrus Rylands 160–160D), which reveal the interchange of voiced stops (*b, d, g*) with voiceless stops (*p, t, k*), and the interchange of the liquids (*l, r*). Some letters written by Greeks also exhibit a high degree of interference. Such orthographic confusion, however, reflects differences in phonology or accent rather than differences in dialect.

The evidence from inscriptions indicates little dialectal difference between the Koine of Egypt, Asia Minor, Italy, and Syria-Palestine. Low-status Egyptian natives continued to speak Egyptian until the third century CE. In the second century CE, the Egyptian language, at this stage known as *Coptic,* was increasingly written using Greek characters and was heavily dependent on other aspects of Greek. As much as 20 percent of the Coptic lexicon, for example, consists of Greek loanwords, and some Greek verbs were adapted to Coptic morphology. Upper-class administrators and aris-

tocrats as well as the lower social classes (especially in Upper Egypt), were generally monolingual.

Syria-Palestine. The earliest Greek loanword in Hebrew is the name *Yāwān* (*Gn.* 10:2; *1 Chr.* 1:5). It was borrowed before the seventh century BCE because *Yāwān* reflects the reconstructed archaic form **Iawones* with the phoneme [*w*], which became generally obsolete by the sixth century. Elsewhere in the Hebrew Bible, *Yāwān* is used as a generic term for the Greeks (*Jl.* 4:6; *Zec.* 9:13; *Dn.* 8:21; 10:20; 11:2), and in some Qumran texts it refers to Seleucid Greeks (4Q *Pesher Nahum* frags. 3–4 i 2, 3; *Damascus Document* [CD] 8.11). This occurrence suggests that the first Greeks whom the Hebrews contacted were the Ionians. Similarly, Akkadian records from the reign of Sargon II (eighth century) designated western Asia Minor as *Jawan* or *Jaman,* again with the archaic phoneme [*w*], and the Persians of the sixth century referred to their satrapy of Ionia as *Yauna,* a form already missing the phoneme [*w*] (Aeschylus, *Persians* 178, 563). Ten of the Arad ostraca (605–595) mention the *Ktyym* (from *Kition,* a Phoenician city on Cyprus), referring to Greek or Cypriot mercenaries in the Judean army. *Ktyym* in the Hebrew Bible refers to Greeks (*Is.* 23:1; *Jer.* 2:10; *Ez.* 27:6; see also 1 *Mc.* 1:1; 8:5), but later to the Romans (1Q *Pesher Habakkuk* 2.12–13; 4.5–6; 6.1–4; 4Q *Pesher Nahum* frags. 3–4. i. 3).

After the death of Alexander in 323, Coele-Syria, Syria, Phoenicia, and Palestine were controlled by Ptolemaic Egypt until these lands were conquered by the Seleucids in 201. From the third century, most of the inscriptions found in Syria-Palestine are in Greek. Among the earliest Greek documents from Palestine are two of a cache of six ostraca, four in Aramaic, one in Greek, and one an Aramaic-Greek bilingual, found at Khirbet el-Qom (12 km [7 min] west of Hebron). They are dated to 12 Tammuz, year 6, probably the sixth year of Ptolemy II Philadelphus (277). From 259 to 257 the Zenon papyri reflect the relationship between the Jew Tobias and Egyptian authorities.

The Phoenician coastal cities of Aradus, Byblos, Berytus (Beirut), Sidon, Tyre, and Akko, were most affected by Hellenistic culture and were in effect Greek cities. Many Greek settlers had arrived during the third century BCE. The traditional bilingualism of these cities was replaced by a Hellenistic Koine monolingualism, but inscriptions in Phoenician occur as late as the first century CE. Palmyra, an oasis in the Syrian desert midway between the Phoenician coast and the Euphrates, was multilingual in the Greco-Roman period. The educated class was bilingual, speaking both Palmyrene Aramaic and Hellenistic Koine.

The role of Greek in Palestine during the Roman period has been intensely investigated because of the problem of the language(s) of Jesus and the more general problem of the degree to which Palestinian Judaism was hellenized. It now seems clear that Hebrew was a spoken language in Palestine until the Mishnaic period, but it is not clear how widely it was spoken. In reference to Palestine, instead of the terms *bilingual* or *trilingual,* it is more useful to use the sociolinguistic designations *diglossic* and *triglossic,* that is, the use of two or three languages for different kinds of social communication in a variety of social contexts. From this perspective, it is probable that both Hebrew and Greek were *both* regarded as prestige languages *in different social contexts.* During the second and first centuries BCE, Hebrew was used at least as a literary language. Compositions such as *Daniel, Ben Sira,* and much of the Qumran literature were written in Hebrew. Hellenistic and Roman Palestine was a bilingual speech community. Hellenistic Koine was used by all social classes, not just the educated elite. Oddly, public and private Hellenistic Koine inscriptions do not display any Semitisms. Among the Dead Sea scrolls are a number of Greek manuscripts dating from the mid-second century BCE to as late as the mid-first century CE, including fragments of four Septuagint scrolls from Cave 4 (two of *Leviticus* and one each of *Numbers* and *Deuteronomy*) and two other fragmentary Greek scrolls closely related to the Bible. A scroll of the minor prophets in Greek was discovered at Naḥal Ḥever (perhaps late first century BCE).

Two of the fifteen Bar Kochba letters (written 132–35 CE) from Naḥal Ḥever are written in Greek, and the other thirteen together with nine Bar Kochba letters from Wadi Murabba'at are in Hebrew and Aramaic. In addition there is the Babatha archive from Naḥal Ḥever, consisting of thirty-six or thirty-seven documents written around 93 to 132 CE in Nabatean, Aramaic, and Greek. The 221 Greek inscriptions from the third and fourth centuries CE discovered in the necropolis of Besara or Beth-She'arim in Galilee far outnumber those in Hebrew and Aramaic and reveal the extent to which the Greek language had penetrated Palestinian Jewish culture. In the case of epitaphs, however, there are sociolinguistic differences between the language(s) of the deceased (as formulated by family and friends), usually Hebrew or Aramaic, and inscriptions formulated by family and friends for the consumption of visitors and pilgrims, frequently Greek. More than 60 percent of all Jewish funerary inscriptions in Palestine are written in Greek, and even in Jerusalem the ratio of epitaphs in Greek is approximately 40 percent. The fact that there are approximately 1500 Greek loanwords in Talmudic literature underlines the widespread use of Greek in the first centuries CE.

Writing Systems. The twenty-two-character Semitic syllabic alphabet was borrowed and modified by Greeks into a twenty-six-character alphabet toward the end of the eighth century BCE. The Greeks required fewer consonants than the Phoenicians. An important innovation was the transformation of some Semitic consonantal symbols to represent vowels (i.e., the Semitic consonantal glottal stops *aleph* and *ayin* were used to represent the vowels *a* and *o,* and the consonants *he* and *yod* were used for the vowels *e* and *i.* Although Greek required fewer sibilants than the Phoenicians *(šin,*

shin, ṣade, samekh), they introduced five additional characters to the Semitic alphabet: *upsilon,* representing the vowel *u,* the *digamma* (both from the Phoenician letter *waw*), and the double consonants *phi, chi,* and *psi* (combinations of two phonemes). The sources for these letters remain unknown. The consonant *s* was represented in some Greek alphabets by the letter *san,* which was eventually dropped, modeled on the Semitic *ṣade* or the *sigma,* which was adapted from the *shin,* but never both (Herodotus, 1.139). Later the *omega* was added to represent long *o*. The *omicron* was restricted to the short *o*. Earlier inscriptions, following the Semitic pattern, were written right-to-left (retrograde), or left-to-right, the style that came to predominate. Some texts were even written in the previously mentioned *boustrophedon* style (Pausanias, 5.17.6), which lasted into the fifth century. Another inscriptional style called *stoichedon* aligned letters both horizontally and vertically.

Genre and Text. Modern knowledge of ancient Greek is derived from three kinds of sources: (1) Byzantine-period copies of earlier Greek texts (2) literary and nonliterary papyri preserved primarily in Egypt and dating from 300 BCE to 300 CE and even later; and (3) public and private inscriptions from all over the Greek world.

Literature. Greek literature consists of an enormous number of texts beginning with the *Iliad* and *Odyssey* of Homer through to late antiquity (survey in Easterling and Knox, 1985). The language of the *Iliad* and *Odyssey* is an artificial amalgam (including archaisms and new coinages), constructions, and dialect-forms from the Late Bronze Age (i.e., the Late Minoan and Late Helladic periods, c. 1600–c. 700 BCE), which based on a spoken form of Ionic. The language of Homer was formed and transmitted in a nonliterate environment (Kirk, 1976). It was the invention of writing that froze the ordinarily varied oral performances of the Homeric poems into their final, authoritative form in the late seventh century.

The dissemination of epic poetry throughout the Greek world resulted in the literary imitation of Homeric language by Hesiod of Boeotia for his didactic, moralizing poems including the *Theogony* and *Works and Days*. Elegaic, iambic, and solo lyric poetry developed in the seventh century by Ionian poets writing in Ionic in a modified form of epic hexameter and spread from there to the mainland. Important elegaic poets, who are known from references by later writers, include Callinus of Smyrna, Tyrtaeus of Sparta, Mimnermus of Colophon, Solon of Athena, and Theognis of Megara (the only author whose work has survived). Elegaic epitaphs became popular in the sixth century and were written until the fourth century. Archilocus of Paros was a seventh-century iambic poet, and Sappho of Lesbos was a solo lyric poet who wrote in Aeolic. Choral lyric poetry, which was written in the Doric dialect, arose in the Peloponnesus, Sicily, and Boeotia, where Pindar, its most famous exponent, lived. Fifth-century Athenian tragedy, which was written in Attic, developed during the zenith of the Athenian Empire, was an extremely popular form of entertainment. The important tragedians include Aeschylus, Sophocles, and Euripides. Old Comedy, which emphasized satire and fantasy, consists primarily of works by Aristophanes, who wrote in an educated form of Attic. The development of Middle Comedy (c. 404–321 BCE), represented by Aristophanes' *Ecclesiazusae* and *Plutus,* served as a transition to the development of the realism of New Comedy (after 321 BCE), represented by Menander.

Greek prose literature first appeared during the fifth century in Ionia with the work of the Ionian philosophers (Heracleitus, Democritus, Hippocrates). The greatest philosophical and scientific writers, Plato and Aristotle, were Athenians. The first significant historian was Herodotus (c. 485–425), who was born in Asia Minor but wrote in the Ionic dialect for a largely Athenian audience. He narrated the wars between Greeks and the Persians and is considered the father of history. Thucydides, the author of an incomplete account of the Peloponnesian War, was the first genuinely Athenian historian. Historiography became one of most important literary genres in the following centuries and spawned many subgenres including local history, geography, and antiquarian history. Some of the more important later historians include Xenophon (fourth century), Polybius (second century), Diodorus Siculus (late first century BCE–early first century CE), his contemporary Dionysius of Halikarnassos, and his imitator Flavius Josephus (late first–early second century CE).

After the conquests of Alexander the Great and the division of his empire into the various Hellenistic kingdoms, the earlier literary hegemony that Athens had in the Greek world ended. The new Hellenistic capitals, particularly Alexandria, were not Greek city-states but centers of great imperial governments. Hellenistic poetry flourished particularly in Alexandria under the patronage of the Ptolemies. Callimachus and later Apollonius of Rhodes were poets who were also librarians at the royal Ptolemaic library at Alexandria. One of the influential literary monuments of Hellenistic Koine was the translation of the Jewish Bible into the Greek translation known as the Septuagint beginning in the early Ptolemaic period (c. 300 BCE).

Papyri. The Greek term *byblos* or *biblos,* meaning "papyrus" (Strabo, 17.1.15) and connoting "papyrus roll, book," may have been derived from Byblos, the hellenized name of the Phoenician port Gubal, an important trading center from which Greeks obtained Egyptian papyrus, though by the mid-seventh century they must certainly have imported it directly from Egypt. With few exceptions most of the extant literary and nonliterary papyrus documents come from Egypt and parts of Palestine and Mesopotamia, primarily because of the dry climate. Major exceptions are the fourth-century BCE Derveni papyrus, preserved through carbonization and the approximately eight hundred papyrus

rolls discovered at Herculaneum (destroyed by Vesuvius in 79 CE). [*See* Papyrus.]

Inscriptions. Two categories cover the vast range of inscriptions. "Public" inscriptions are determined by a magistrate or official body and consist of such texts as decrees, dedications, honorary inscriptions, epitaphs, manumissions, and milestones. "Private" inscriptions are formulated by an individual. Among the many types of private texts are funerary inscriptions, private dedications, manumissions, and curses. Our knowledge of "vulgar" Attic is based primarily on curses epitaphs. The survival of local inscriptions and the use of dialect in comedies provides the primary basis for our knowledge of dialects other than Attic and Ionic. The earliest Ionic inscription known is a graffito on a *kylix* (shallow drinking cup) from the seventh century BCE found at Smyrna (*SEG* 12.480).

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DAVID E. AUNE

GREENFIELD, JONAS CARL (1926–1995), American scholar of ancient Semitic languages. Born in New York City, Greenfield, like many of his generation, received a parochial education that included a traditional American as well as a traditional Jewish curriculum. By the

time he was thirteen, he was fluent in both Hebrew and Aramaic, which he had studied in texts at school; at the age of fourteen he studied Aramaic grammar from a copy of Casper Levias's grammar of Babylonian Aramaic and taught himself Arabic, as well.

While majoring in English at the City College of New York, he was simultaneously studying Arabic and comparative Semitics at the New School for Social Research. After receiving his bachelor's degree in 1949, he went to Yale University, where he planned to do advanced work in English; however, under the influence of the cuneiform scholar Albrecht Goetze, he switched to ancient Near Eastern studies. He received his Ph.D. in 1956, with his dissertation "The Lexical Status of Mishnaic Hebrew." The legacy of his work in English to his Semitic scholarship was a finely honed instinct for semantic nuances and stylistic subtleties. He began his teaching career at Brandeis University in 1954 and went on from there, in 1956, to teach at UCLA and, in 1965, at the University of California at Berkeley. In 1971 he joined the Hebrew University of Jerusalem, where he became the Casper Levias Professor of Ancient Semitic Languages, a position he held until his death.

Greenfield was interested in almost everything that had to do with the ancient Near East. A voluminous reader who could recall with ease much of what he had read, he was conversant with most of the scholarly literature. A convivial person, notorious punster, and excellent raconteur who enjoyed attending scholarly meetings, he was familiar both with most living scholars and with the history of scholarship. Because of his knowledge, diligence as a scholar, and generally easy bearing, he was in constant demand as a referee, adviser, mentor, and colleague. Students commented that after introducing them to scholarly articles in his seminars, he introduced them to the scholars in his living room.

He edited the *Israel Exploration Journal* (1976–1995) and was on the editorial staff of the *Bulletin of the American Schools of Oriental Research* (1969–1971; 1991–1995). In addition, he coedited nine books; wrote 150 scholarly articles; was part of the New Jewish Publication Society's (NJPS) translation committee for the Writings; was a trustee of the Albright Institute of Archaeological Research in Jerusalem; was a member of the Dead Sea Scrolls Supervisory Committee; and advised on countless dissertations in Israel, the United States, and Europe.

His own publications focused primarily on Hebrew and Aramaic lexicographic matters, but by the 1970s his interests expanded to include Qumranica and other documents discovered in the region. His studies were characterized by the juxtaposition of diverse elements from the ancient Near East to the issue at hand—be they legal, historical, religious, literary, etymological, or lexicographic—by a wealth of ancillary details and by the latest literature on each subject from even the most obscure sources.

Greenfield was an honorary member of the Royal Danish Academy of Sciences and Letters and a member of the Royal Asiatic Society, the Israel Academy of Sciences and Humanities, and the American Academy of Arts and Sciences.

[*See also* Dead Sea Scrolls.]

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ZIONY ZEVIT

GRID PLAN. A common way for excavators to make easy reference to a specific location on an archaeological site is by using a grid. The meaning of any archaeological information, such as an excavated object or architectural remain, is derived largely from its context, and a grid helps to identify that location and context. To form a grid, an arbitrary system of intersecting perpendicular lines is imposed on a site. The lines are usually established according to magnetic directions, running north–south and east–west. A midpoint for the grid is often set at the center of the excavation area. However, at complex urban sites or at sites with visible surface remains or important topographic features, it may make more sense to center the grid on those elements. The size of the resulting square areas and the means used to refer to them may be determined by an excavator's goals and the kind of site being investigated. On large urban tells in the Near East, areas of 50 × 50 m or 100 × 100 m are given designations, and smaller grids are established for excavation purposes within them. A surveyor or an expedition's architect usually determines the boundaries of the areas, where permanent markers are established at a corner. Selected portions of the grid are conventionally excavated within squares of 5 × 5 or 10 × 10 m.

The use of the same site grid over the entirety of a complex tell allows for the easy correlation of the locations of recovered features, such as wall lines or roadways, from

widely spaced portions of the site. In recording archaeological data, some form of grid or area designation accompanies all aspects of the excavation of specific structures and artifacts.

[*See also* Architectural Drafting and Drawing; Recording Techniques; *and* Site Survey.]

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KENNETH G. HOGLUND

GUÉRIN, VICTOR HONORÉ (1821–1890), French Palestinologist. Born in Paris, Guérin studied classical philology at the École Normale Supérieure, Paris, and then taught in several *lycées.* He joined the École Française d'Athènes in 1852 and spent two years traveling and doing research in Greece, the Aegean, Turkey, Syria, and Palestine. He thus inaugurated a lifetime of scientific travel that also took him to Malta, Tunisia, Libya, Egypt, and Nubia.

Most of Guérin's time and energy from 1863 onward were devoted to the study of ancient Palestine. He carried out three major surveys: a detailed exploration of Judea (Judah) in 1863, of Samaria and the Jordan Valley in 1870, and of Galilee and Phoenicia in 1875. His subsequent travels to Palestine and Lebanon (in 1882, 1884, and 1888) were to prepare his last major publications, *La Terre Sainte* and *Jérusalem,* which were geared to the general public.

Guérin's major contribution to archaeology and Near Eastern studies is the seven volumes of his *Description géographique, historique et archéologique de la Palestine,* an admirable achievement for one person and comparable to the scope and teamwork of the publications of the Palestine Exploration Fund. Nobody before him had conducted such a systematic exploration of the country. Traveling on horseback, he visited and recorded in detail and with scrupulous exactitude every ruin and village in Judea, Samaria, and Galilee, discovering numerous sites in the process. His method was to identify biblical sites from the landscape, analyze their mutual relationship, and combine his observations with the biblical evidence. His work greatly advanced what was known about the historical geography of Palestine. Guérin's surveys belong to the prearchaeological phase of exploration in Palestine, when it was not yet recognized that the country's many tells covered the sites of ancient cities and "progress" had not yet destroyed so many ancient remains.

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PIERRE DE MIROSCHEDJI

GUSH ḤALAV (Ar., el-Jish; Gk., Gischala/Giscala), site located on the western flank of a deep wadi (Wadi Gush Ḥalav) several miles northwest of Safed in Upper Galilee (map reference 191 × 270). The Greek name is probably a corruption of the Hebrew *gush ḥalav,* (lit., "block of white"), perhaps in reference to the towering white cliffs on the east side of the wadi. Another possibility is that the name means "fat ground," a derivation reflecting the area's flourishing olive oil trade in antiquity.

Josephus, the first-century Jewish historian, presents the activities of an individual named John of Giscala, whose economic dealings are viewed harshly in both *Life* (70–76) and *War* (2.590–592; 4.92–120). The site is also mentioned in *Ecclesiates Rabba* (2.8), in a document from Wadi Murabba'at, on a sixth-century marble plaque from Beersheba, and in the Mishnah (*Arakh.* 9.6). The church father Jerome (in *Lives of Illustrious Men* and in his commentary on the Epistle to Philemon) reports, enigmatically, that the apostle Paul came from "Giscalis in Judea."

The full extent of the ancient settlement, which was an important trading center in the Roman and Byzantine periods, cannot be determined. It surely included the top of the prominent hill now occupied by the Arab village of el-Jish; an ancient synagogue may have existed at the top of the hill, where a Maronite church now stands. A number of chamber tombs in the vicinity, which were the focus of medieval Jewish pilgrims, were excavated in 1937 (Makhouly, 1938); and a monumental tomb on the western side of the modern village was discovered and excavated in 1973 (Vitto and Edelstein, 1974). A hoard of 237 coins was discovered some time prior to 1948 (Hamburger, 1954). The tombs and coins date to the Roman and Byzantine periods.

Sustained excavations at Gush Ḥalav have concentrated on a monumental building on the eastern slope of the Jish hill. Early in the twentieth century, the German team of

Heinrich Kohl and Carl Watzinger (1916) spent several days clearing and recording this building, identified as a synagogue, as part of their investigation (1905–1907) of Galilean synagogues. [*See* Synagogues.] Two seasons of excavation at this lower synagogue site were carried out by a Duke University team, as a project of the American Schools of Oriental Research in 1977 and 1978 (Meyers, Strange, and Meyers, 1979; Meyers, Meyers, and Strange, 1990). Additional support for both seasons came from Garrett Evangelical Seminary at Northwestern University; the University of the Orange Free State in Bloemfontein, South Africa, supported the 1977 season. Eric M. Meyers served as project director; James F. Strange and Carol L. Meyers were associate directors.

To the surprise of the excavation team, the synagogue was found to be built on a considerable depth of debris, attesting to a long history of occupation at the site. In addition to a scattering of Late Bronze II/Iron I sherds, the ceramic horizon includes some Iron II, Persian, Hellenistic, and Early Roman material; however, no structural remains from those periods could be discerned in the very limited area in which the excavation team was permitted to dig. The synagogue itself had stood for some three centuries; its history spans the Middle to Late Roman (250–306 CE), Late Roman (306–363), Byzantine I (363–460), and Byzantine IIA (460–551) periods. After the collapse and abandonment of the synagogue in the mid-sixth century, some sporadic occupation continued in the Byzantine IIB and the Early and Late Arab periods.

Although the synagogue appeared almost square to its earliest investigators, the work of the 1978–1979 expedition established that it is a small basilical building with two rows of four columns. [*See* Basilicas.] The interior dimensions of its main room, which is bounded on three sides by corridors or rooms, are 13.75 × 10.6–11.0 m. Only its southern, Jerusalem-oriented wall borders directly on exterior space. That facade wall is also the only one constructed with well-dressed ashlar masonry. The single major entry is in the center of that wall, and the building's bema is situated against the inside of the southern wall to the west of the entrance. Benches were recovered on the west and north. Remnants of heart-shaped columns and other architectural fragments, as well as a hoard of 1,953 coins dating mainly to the fourth–sixth centuries, were found in the debris in or adjacent to the building. Perhaps the most notable architectural fragment is a lintel with an eagle and a garland finely carved on its underside. Anyone entering the building would have to look directly overhead to see this decorative element. An Aramaic dedicatory inscription on one of the columns, first published in the nineteenth century, reads "Jose bar Nahum/made this (column?)/may it be for him/a blessing."

The paucity of decorative elements suggests religious conservatism; yet, the adaptive use of space, the high quality of the prominent masonry, and the idiosyncratic placement of the essential features of a synagogue building reflect authentic independence and technological expertise. The flourishing of Gush Ḥalav in the Late Roman and Byzantine periods is reflected in the sophisticated simplicity of its lower synagogue.

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CAROL L. MEYERS

GUY, PHILIP LANGSTAFFE ORDE (1885–1952), British archaeologist and administrator, instrumental in the establishment of both the Palestine and Israel departments of antiquities. Born in Lanarkshire, Scotland, Guy was educated at the universities of Glasgow and Oxford. After active service in World War I, he joined Leonard Woolley's expeditions to Carchemish and Amarna, where he served as ceramic specialist. In 1922, he was appointed chief inspector of the newly established Palestine Department of Antiquities and in that position was called upon to undertake salvage excavations and surveys throughout the country. In 1927 Guy succeeded Clarence Fisher as director of the Megiddo excavations of the Oriental Institute of the University of Chicago. There, in addition to supervising the excavation of the Megiddo tombs, Guy introduced the extensive use of aerial photography from helium balloons to aid in mapping and analyzing the excavated architecture. As a result of professional disagreements with the authorities of the Oriental Institute, however, Guy ended his association with the Megiddo expedition in 1935.

As director of the British School of Archaeology in Jerusalem in 1938–1939, Guy planned a comprehensive archaeological survey of Palestine. He personally undertook initial explorations for this survey in the Negev desert and on the coastal plain. During World War II, Guy served in the British army as military governor of Benghazi and Asmara and as a member of the Allied Supply Mission to Syria. After the war, he returned to the civil service in Palestine, as director of the Government Stud Farm in Akko for the Department of Agriculture (1945–1947). He subsequently

renewed his professional connection to the Palestine Department of Antiquities (1947–1948).

As one of the few British administrators to remain in the newly created State of Israel, Guy was appointed chief of the Division of Surveys and Excavation of the Israel Department of Antiquities in 1948. In that position, he carried out important salvage excavations at Jaffa, Beth-Yeraḥ, and Ayyelet ha-Shaḥar. He also established the department's system of regional inspectors and revived his earlier plans for a comprehensive national archaeological survey.

[*See also* Beth-Yeraḥ; British School of Archaeology in Jerusalem; Jaffa; Megiddo; *and the biographies of Fisher and Woolley.*]

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NEIL ASHER SILBERMAN

H

HABAKKUK COMMENTARY. The scroll known as the *Habakkuk Commentary,* or *Pesher Habakkuk,* was discovered in 1947 at Qumran in Cave 1. In the corpus of Dead Sea Scrolls it is designated 1QpHab. W. H. Brownlee prepared the *editio princeps* (Burrows, ed., 1950). The scroll contains thirteen columns (originally the first twelve columns with seventeen lines each, and the last column with four lines). It is preserved almost intact, except that in the first column only the ends of the lines remain, and, because the bottom of the scroll deteriorated, that the last two or three lines of every column are lost. The scroll was written by two scribes, A and B: scribe A wrote col. i–col. xii, l. 13a, and scribe B col. xii, l. 13b–col. xiii, l. 4. The script of both hands is Herodian, characteristic of the second part of the first century BCE.

This scroll, like other scrolls of its type from Qumran, incorporates a commentary of the prophetic words (Heb., *pesher*), which is placed between the lemmas, or verses, in the scroll. In 1QpHab column ii, lines 6–10, and in column vii, lines 4–5, the *pesher* interprets mysterious presages contained in the words of the prophets concerning their actual fulfillment in historical events leading to the eschatological era. The man inspired by God to unravel the prophetic mysteries is the Teacher of Righteousness (see below).

The relationship between the prophetic words and the *pesher* is formally carried out in a lemmatic pattern—namely, citations of the biblical text of the first two chapters of *Habakkuk,* verse by verse—followed by *pesher* sections. The sections of the *pesher* follow the biblical lemmas by means of an introductory formula such as *pšrw ʿl* ("its interpretation concerns . . .") and *pšr hdbr ʿl* ("the interpretation of the quoted text concerns . . ."), applied to persons, and *pšrw ʾšr* ("its interpretation is that . . .") and *pšr hdbr ʾšr* ("the interpretation of the quoted text is that . . ."), applied to events. The phraseology of the *pesher* sections is related to the biblical text principally by paronomasia (a punning of its words and letters in variegated forms). The adaptation of the biblical content into new historical circumstances is achieved by means of exegetical techniques such as analogy, allegory, and double meanings. Through such techniques, the content of the *Book of Habakkuk* became typological and was adapted to specific historical situations in the Second Temple period. For example, the Chaldeans of *Habakkuk* became the Kittim, in all probability the Romans, the imperialistic power since the second century BCE. Other figures in the *Book of Habakkuk* became typological for figures who took part in the internecine struggles in Judea (Judah) in that period. *Pesher Habakkuk* hints at the halakhic controversy between the Teacher of Righteousness, the first leader of the Qumran community (see Cairo Damascus [CD], col. i, l. 11; *Pesher Psalms,* manuscript a [4QpPs^{a}], col. iii, ll. 14–17), and the Man of Lie (1QpHab col. v, ll. 8–11; col. x, ll. 9–13), a leader of an opposing community, probably the Pharisees, who was supported by those who had left the Qumran community (col. i, l. 16–col. ii, l. 6; col. v, ll. 8–11). It also depicts the political and cultic struggle between the Wicked Priest, probably the Hasmonean king who was also the high priest, and the Teacher of Righteousness, who criticized his politics (col. viii, l. 3–col. ix, l. 3; col. xi, ll. 2–10). As these figures are not called by their names but are referred to cryptically, scholars disagree on their identification—particularly about whether the Wicked Priest was Jonathan, the first Hasmonean high priest (161–142 BCE), during whose rule the Teacher of Righteousness would have established the Qumran community, or Alexander Jannaeus (103–76 BCE), who ruled when the internal political and religious struggle in Judea was most critical. (These are the two principal interpretations; others exist.) However, the symbolic presentation of figures and events is typological within the apocalyptic concept held by the Qumran community. It places their destiny in the universal struggle between righteousness and wickedness at the end of days, when wickedness is to be destroyed forever (col. vii, l. 1–col. viii, l. 3; col. xii, l. 10–col. xiii, l. 4).

[*See also* Dead Sea Scrolls.]

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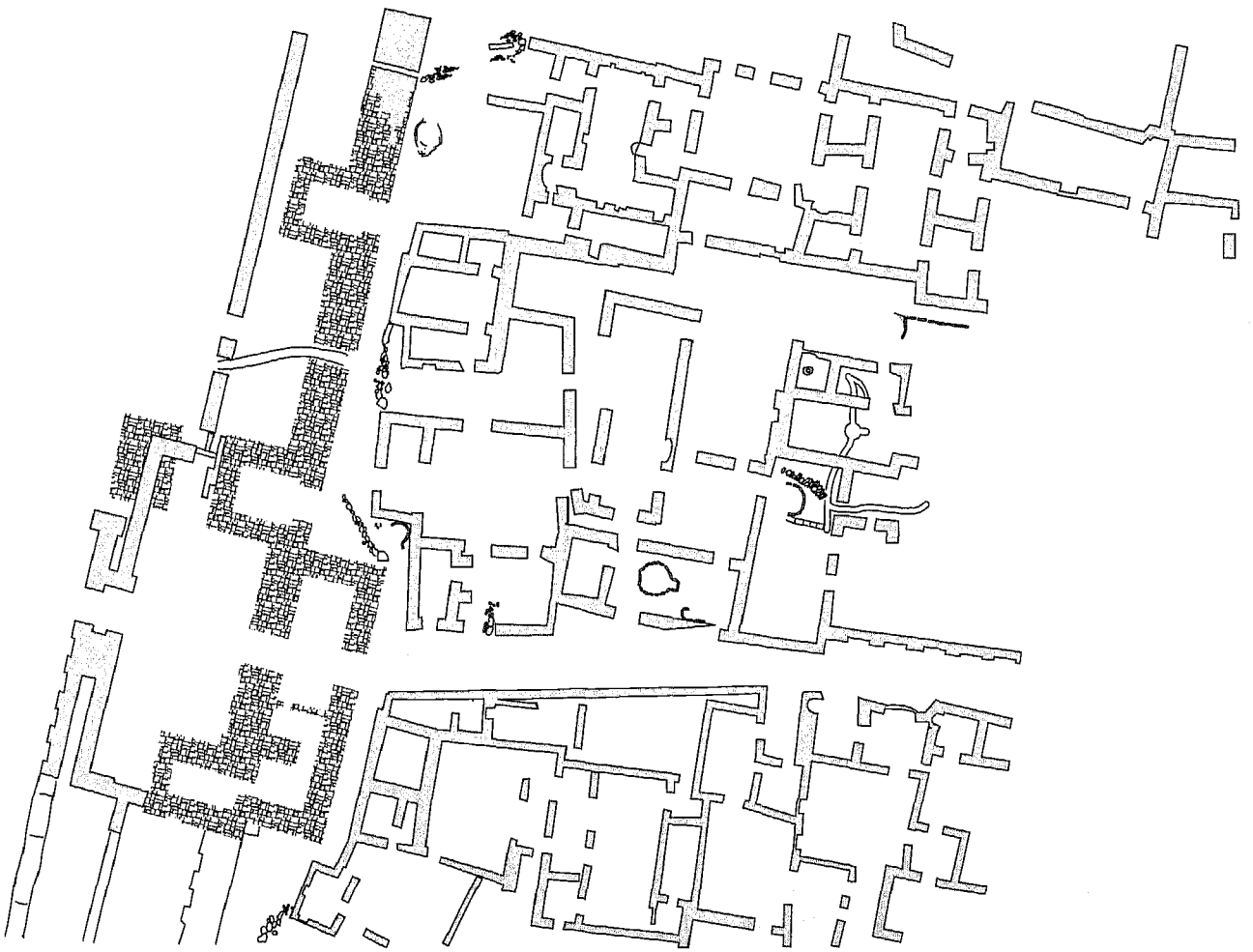
BILHAH NITZAN

HABUBA KABIRA, site of two ancient settlements, located on the western edge of the Euphrates River's Tabqa dam reservoir in Syria (36°10′ N, 38°4′ E). One of the settlements was a mound of medium size, Tell Habuba Kabira; the other was a large settlement, about 900 m long, Habuba Kabira South, whose size could only be ascertained from the extent to which sherds were scattered and within which lay a smaller mound (Tell Qannas).

The site was noted in surveys carried out by American and Syrian teams directed by Abdel Kader Rihaoui and Maurits N. van Loon in 1963 and 1964. Tell Habuba Kabira and Habuba Kabira (South) were investigated from 1969 to 1975 by the Deutsche Orient-Gesellschaft, under the direction of Ernst Heinrich and Eva Strommenger; Tell Qannas was excavated by a Belgian mission headed by André Finet. [*See* Deutsche Orient-Gesellschaft.]

Habuba Kabira (South) is the only large-scale example of Late Uruk residential architecture. [*See* Uruk-Warka.] The administrative-religious center of the city was hidden in the lower layers of Tell Qannas. The regional administrative center was not in this town, but on a slope of the Jebel ʿAruda Mountain to the north. There were other contemporary settlements in the vicinity, at Tell Hajj, Tell Hadidi, and Tell Sheikh Ḥassan, the latter on the east bank of the Euphrates and certainly dating back to the Middle Uruk period. [*See* Hadidi, Tell.] Habuba Kabira (South) existed only for a short time, as is indicated by a maximum of three building levels. Tablets, clay balls with tokens inside, and clay bullae,



HABUBA KABIRA. *Plan of the southern gate and houses.* (Courtesy Habuba Kabira Expedition, Deutsche Orient-Gesellschaft)

HABUBA KABIRA. *Room with pottery in situ.* (Courtesy Habuba Kabira Expedition, Deutsche Orient-Gesellschaft)

all with numerical signs, as well as the pottery, point to a date that corresponds to Uruk-Eanna, archaic levels VI–V. The later level of Habuba Kabira (South) has been carbon dated to 3290–2920 BCE and 3030–2910 BCE (calibrated; all dates according to Günter Kohl and Jochen Görsdorf).

The settlement was a station along the routes from Anatolia and northern Syria to Mesopotamia. It was involved mainly in a long-distance trade. Its role in the local exchange system is not yet clear. The town was obviously deserted peacefully, presumably as the result of a blockade of the trade routes to the south. The main roads in Habuba Kabira (South) followed the contour lines of the bank terrace or were at right angles to them and were equipped with drains. The development of peripheral areas and the subdivision of courtyards indicate that some of the site's residential quarters became densely built up.

The buildings vary in type. Most common are houses with a large hall flanked by small rooms along both long walls (tripartite houses) or along one of them. Rooms sometimes were added to the short wall. These houses were used for all daily activities and domestic duties, except for preparing meals. The main room was lived in or sometimes also used for storage, along with small chambers. Less common are large halls that open onto inner courtyards through two or three doors in one long wall (one-hall buildings). This long wall was usually remarkably thick. Rooms with one entrance on the long wall near the corner were probably used as workshops or food preparation or storage areas. They are monocellular or surround a courtyard. Multicellular buildings without a main room are scarce. Sometimes several buildings formed a domestic unit. The most important estates consisted of one tripartite house and two one-hall buildings. Sometimes the outline of buildings has the 3:4:5 proportion of the Pythagorean triangle. The settlement was at first unfortified but later was surrounded by a city wall. Parts of this 3-meter-thick wall were uncovered to the north and to the west. Eight towers or bastions protect the northern front, twenty-nine are still preserved on the western front, as well as two gates. The central buildings at Tell Qannas were, next to the large storage areas, two tripartite houses and a one-hall building whose dimensions (approximately 13.6–17.2 × 9.6–15.7 m) are greater than comparable buildings in the settlement.

Handicrafts in Habuba Kabira (South) included a recycling workshop for stone objects and a metal workshop. There was, in particular, evidence of lead processing—along with copper—pieces of oxide, which are residuals of cupellation for separating silver from lead ores. Kilns for pottery were outside the settlement. Apart from ceramics, the small finds include a wide spectrum of stone, terra-cotta, and copper objects. Worthy of mention are large stone vessels, amulets and cylinder seals, copper axes, pins and fishhooks, tokens and sealed clay tablets, bullae, and door locks.

The principle source of meat was domesticated animals and, to a lesser extent, wild animals and fish. It is difficult to prove this on the basis of the fish bones because they may be poorly preserved. Much more beef was consumed than smaller ruminants (according to Angela von den Driesch et al.).

Tell Habuba Kabira is an irregular, oval mound approximately 230 m in diameter and with 9 m of settlement debris. Its stratigraphy is numbered according to the largest excavation area, which is in the east. The lowest level, East 1, yielded only Late Uruk sherds. The corresponding building structures must have been placed in the unexcavated center of the mound. Level East 2, which belongs to an earlier phase of the Early Bronze Age, revealed a small settlement with living areas and workshops near each other and a unified outer boundary. Four radiocarbon dates for the burnt level in level East 3 range from 2900–2690 BCE to 2860–2520 BCE (calibrated). The settlement's exterior, with a gate in the east, was continuously reinforced so as to serve as a protective wall. In level East 8, a protective forecourt with a well was built in front of this gate. The courtyard was enclosed in level East 9 with a building, in all probability a temple, consisting of two broad rooms with gates in the central axes. A road paved with stones led to the entrance from the river. Fire and flood brought about the end of the East 9 level. One radiocarbon dating indicates the period from 2870 to 2510 BCE (calibrated).

In level East 10, a long temple with an open porch was erected in the northeast. In the following level, the temple was reinforced and an entrance was installed in one of the antae. Carbonized beams from the temple (level East 12) were dated to 2290–2040 BCE (calibrated). In level East 13, the settlement was extended east with a wall 2.8 m thick. The wall had been rebuilt several times in East 15 and reached a thickness of 3 m and a minimum height of 6 m. The buildings within, apart from the temple, were residential in character. The temple can be followed as far as level East 17, in which small houses covered the summit of the mound. This level and the following ones, up to the most recent Middle Bronze Age level, East 20, were badly disturbed by Islamic period graves.

From the small finds, it seems as if the economy of Tell Habuba Kabira was based on stone and metal processing. Molds and a hoard of bronze objects including fragments of plano-convex ingots are worthy of mention. In addition jewelry and ceramics were produced. The inhabitants kept cattle, sheep, and goats. Over time, the percentage of cattle diminished; in the Middle Bronze Age, sheep and goats predominated, which can be taken as evidence of the impoverishment of the grazing land. Game included onagers and gazelles. Donkeys have been shown to have existed at the site in the Early Bronze Age and horses in the Middle Bronze Age (according to Reinhard Ziegler).

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KAY KOHLMEYER

HACILAR, prehistoric mound (37°17′ N, 30°32′ E) situated 1.5 km west of the village of Hacılar, about 26 km (16 mi.) southwest of Burdur on the southwest Anatolian plateau, on the main road from Burdur to Yeşilova and Denizli. This small and rather inconspicuous mound is about 150 m in diameter and fewer than 5 m high. It lies in an intermontane valley at an elevation of approximately 940 m above sea level and 100 m above the level of Lake Burdur. Steep rocks overlook the village from a height of 560 m. At the foot of this great limestone crag is a perennial spring, known as Koca Çay. In this region of the plateau (Pisidia), also known as the Lake District, the proximity of the coast provides for a rather mild Aegean climate. Rainfall is abundant, with a current average of 30–50 cm; an occasional snowfall between December and February is not unusual.

The prehistoric mound of Hacılar was excavated by James Mellaart from 1957–1960, on behalf of the British Institute of Archaeology at Ankara. Mellaart had first visited the site, already known to the villagers of Hacılar, in 1956. He had been informed that painted wares similar to the sherds he found in the provinces of Burdur, Afyon, and Antalya in his southwestern Anatolia survey in 1951 and 1952 were being illegally excavated at Hacılar. Mellaart considered the discovery of a prehistoric mound with no overlying late deposits to be a unique opportunity to investigate the Neolithic and Chalcolithic periods in this part of the plateau. The stratigraphic sequence he published suggests that the site was first inhabited during the Aceramic Neolithic period. He

briefly investigated seven phases of occupation from the period in an area of 150 sq m with a cultural deposit 1.5 m deep. It was impossible to determine the size of the village, but he did establish that its occupants had been farmers living in permanent mud-brick houses. The houses had plastered floors and walls and were comprised of small rectangular rooms, possibly including a courtyard. Some of the floors and lower inner walls were painted with red ocher. This village was abandoned for unknown reasons, and the site remained uninhabited for an unspecified period of time.

Following a considerable gap in occupation, architectural levels IX–VI revealed evidence of renewed occupation in the sixth millennium BCE. Of these four levels representing a Late Neolithic village, the earliest three were poorly preserved. The last level, VI, produced important data concerning socioeconomic aspects of the Late Neolithic community. The villagers lived in mud-brick houses built on stone foundations. These domestic units, with plastered floors, had a central courtyard and perhaps a second story constructed of wood. The units were no doubt occupied by fully sedentarized farmers. Unlike the mostly single-room houses at the Early Neolithic village of Çatal Höyük (with entrances through the roof), the dwellings at Hacılar were large, about 60 sq. m. They contained built-in features such as ovens, hearths, benches, and small storage bins; access was through a doorway along one of the long walls. The handmade and well-burnished monochrome pottery of the period has its roots in the Early Neolithic pottery of the southern Anatolian plateau. Light and cream wares from Hacılar levels IX–VIII were gradually replaced by the brown- and red-slipped and burnished wares of levels VII–VI. The pottery repertoire of this period consisted of cups, bowls, and jars. In level VI, carved and polished white-marble vessels were produced in small numbers. They disappear in level I. The chipped-stone industry consisted of flint and obsidian flakes, scrapers, angular knives, blades (including sickle blades), and micropoints.

The Late Neolithic village produced a large quantity of terra-cotta female statuettes in standing, resting, and seated positions that vary in height from 7 to 24 cm. Some of these figures wear some sort of a skirt and are sometimes depicted holding an infant, a young child, or a leopard cub in their arms. The community's economy was based on agriculture, supplemented by hunting, fishing, and cattle, sheep, and goat herding. Farmers grew einkorn and emmerwheat, barley, lentil, purple pea, and bitter vetch. Red and roe deer, aurochs, wild sheep, goat, and probably leopard were hunted.

After the destruction of Hacılar VI, by the mid-sixth millennium, the village was rebuilt (level V) and the Late Neolithic culture developed into the Early Chalcolithic. The most characteristic feature of this period (levels V–I) is the popularity of red-on-cream painted wares. The decorative patterns show a preference for geometric and curvilinear motifs. The pottery repertoire includes—in addition to simple cups, bowls, and jars—new shapes, such as collar-neck jars and oval cups.

Building remains from levels V–III are not well preserved at Hacılar. The level II remains suggest that the small walled village was composed of a few mud-brick units built on stone foundations. These units, which included a number of domestic facilities and pottery workshops, were grouped around several courtyards within the village.

Hacılar II was destroyed in a conflagration in the last quarter of the sixth millennium and rebuilt shortly afterward with fortresslike characteristics. The new village, Hacılar I, was much larger and roughly circular. It had a generous central courtyard surrounded by large blocks of rooms built in mud brick and forming the inner part of the casematelike fortification wall. During this period of occupation, Hacılar potters produced wares that differed from those of level II: in addition to red-and-cream monochrome wares, they produced large quantities of linear-style red-on-white painted ceramics. The repertoire of this period includes cups, shallow bowls, deep bowls, and collar-neck jars with square, oval, ovoid, and basket shapes. The female statuettes of this period are rather crude, compared to those from the Late Neolithic levels.

Evidence for the economic activities of the villagers is not abundant, but it can be postulated that farming still constituted the main subsistence economy of the village. This Early Chalcolithic village was abandoned at the end of the sixth or early fifth millennium.

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JAK YAKAR

HADAR, one of the most productive hominid fossil-bearing sites in Africa. Roughly 300 km (186 mi.) northeast of Addis Ababa and situated in the west-central Afar Depression of Ethiopia (11°10′ N, 40°35′ E), the mid-Pliocene site of Hadar takes its name from a large wadi known by the local Afar tribesmen as the Kada Hadar. Paleontological field investigations at Hadar during 1973–1977, 1980, 1990, and 1992–1994 have produced more than 300 hominid fossil specimens. Most noteworthy is nearly 40 percent of a single skeleton (nicknamed Lucy) and the partial remains of at least thirteen individuals (the so-called First Family) from a single geological stratum at.

The fossiliferous deposits, extending over roughly 100 sq

km (39 sq. mi.) and known as the Hadar Formation, consist of 160 to 270 m (525–886 ft.) of lacustrine, lake-margin, and fluvial sediments. Widespread and distinctive volcanic-marker beds permit the subdivision of the formation into four stratigraphic members (from bottom to top): Basal, Sidi Hakoma, Denen Dora, and Kada Hadar.

In 1968 Maurice Taieb first visited Hadar and recognized its great potential for paleoanthropological research. Following a regional survey of sites in the Afar Depression in 1972, Taieb established the International Afar Research Expedition with his coworkers Donald C. Johanson, Yves Coppens, and John E. Kalb. Based on geological considerations as well as the superb preservation of faunal remains, the team initiated intensive study of Hadar in 1973. It was then that the first fossil hominid, a knee joint, confirmed the presence of human ancestors within the Hadar Formation.

The sparsely vegetated and heavily eroded outcrops at Hadar permitted the recovery of close to seven thousand fossil specimens of a wide variety of carnivora, poboscidea, perissodactyla, artiodactlya, rodents, birds, reptiles, fish, nonhominid primates, and other mammalian taxa. The faunal picture is characteristically African (Ethiopian faunal region) and indicates a mosaic of habitats, ranging from closed and open woodland bush and grassland conditions. Fossil pollen and microfauna indicate that the elevation of site was considerably higher than the present day altitude of 500 m (1,640 ft.).

Age calibration of the Hadar Formation is now firmly established on the basis of vertebrate biostratigraphy (correlation to other sites of known absolute age), paleomagnetism, and fission track dating as well as K-Ar and $^{40}Ar/^{39}Ar$ dating of the volcanic horizons. The hominid fossil-bearing strata at Hadar span a time range from at least 3.4 million years to approximately 3.0 million years ago. The best age estimate for the Lucy skeleton is 3.2 million years old.

Detailed anatomical study of the Hadar hominid collection led to the recognition that they were morphologically identical with those from the 3.5-million-year-old site in northern Tanzania known as Laetoli. In 1978, because of the recognition of a number of primitive cranial, mandibular, and dental characteristics these hominid fossils were distinguished from other known hominids, and placed in a new species, *Australopithecus afarensis* (Johanson et al., 1978). Although individual anatomical features are seen in other species of *Australopithecus* it is the constellation of features in *A. afarensis* that makes this species distinct.

A. afarensis is sexually quite dimorphic, and males are considerably larger than females. The locomotor skeleton, represented in the Hadar collection including the lower limb, the pelvis, and the foot, as well as the remarkably well preserved hominid footprints from Laetoli indicate that *A. afarensis* was fully bipedal. Some investigators have pointed out that primitive features in the pelvis, ankle, and foot suggest a more arboreal lifestyle for this species. However, it is more likely that these features are merely "evolutionary baggage" from an arboreal ancestry.

Now widely recognized as a distinct hominid species, *Australopithecus afarensis* with its amalgam of primitive and advanced features is currently the best link between an ancient ape ancestor and more recent hominids. Although the precise geometry of the human family tree is widely debated, this primitive species of *Australopithecus* is considered to be an ancestor to all later hominids, including the lineage which ultimately led to modern *Homo sapiens*.

No archaeological traces have been found in association with the Hadar fossil hominids. However, during survey and limited excavation in the Gona area, west of the hominid bearing deposits at Hadar, lithic artifacts were found. The flakes and cores are broadly assigned to the Oldowan industry. They are stratigraphically above the hominid bearing deposits and have been estimated to be approximately 2.5 million years old, making them among the oldest stone tools in Africa.

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DONALD C. JOHANSON

HADAR, TEL (Ar., Sheikh Khadhr), site situated on the eastern bank of the Sea of Galilee, 1.6 km (about 1 mi.) north of the estuary of Naḥal Samakh, which was, and still is, the main ascent to the Golan Heights (32°53′ N, 35°24′ E; map reference 2112 × 2507). Two of the site's concentric defense walls can be seen aboveground, enclosing an area of about 2 ha (5 acres). Tel Hadar was discovered by the Golan Survey Team of 1967–1968 (site 140) and was excavated from 1987 to 1995 by the Land of Geshur Project of Tel Aviv University, under the direction of Pirhiya Beck and Moshe Kochavi; Esther Yadin was field director.

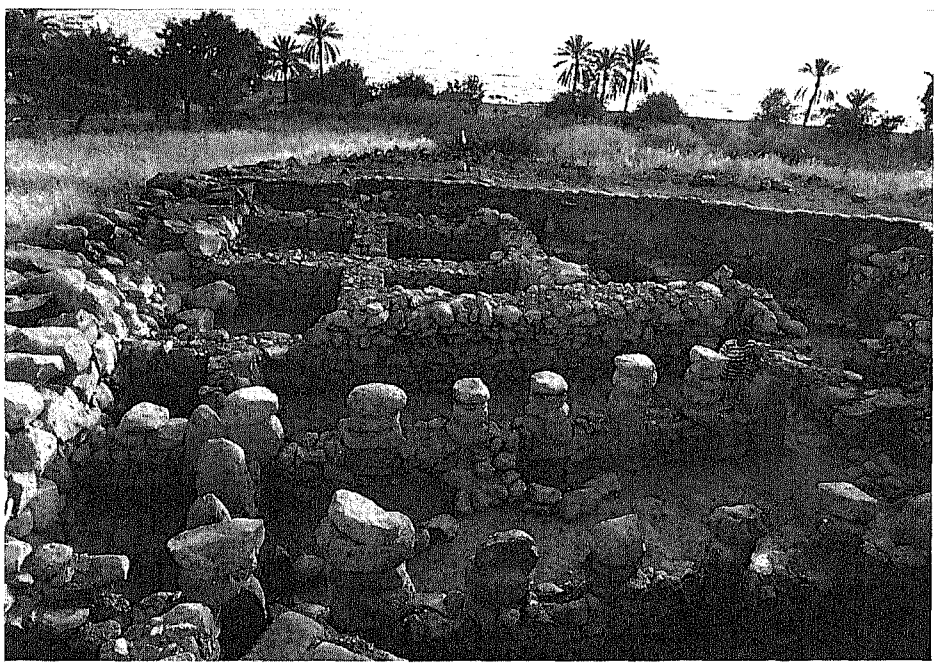
The site's final stratigraphy was established only after virgin soil was reached in 1992. The site was founded in the Late Bronze Age I (stratum VI). The inner city wall, about 2.5 m wide, was built of large basalt boulders in this stratum; the outer wall was not yet built. A round tower with a di-

ameter of 19 m adjoining the inner wall crowned the site. The excavation of one of its rooms revealed a floor of leveled bedrock. Of the two doors that gave access to a room, one was found with its lintel in situ. The site was destroyed and deserted during the LB I. No later Bronze Age occupation was attested.

The site was resettled in the Iron Age I (stratum V), when some stone-lined silos were constructed adjacent to the inner wall amid the debris of the tower. The site's most important stratum (stratum IV), is dated to the eleventh century BCE. During that period, the southern part of the area within the inner wall was leveled, and two large public buildings were constructed on two terraces. The first, a storehouse comprised of three long, narrow halls, was built parallel to the inner city wall on the upper terrace; the second, a tripartite pillared building with a unique granary, was built perpendicular to the wall, on the lower terrace. The storehouse had solid stone walls and beaten-earth floors. Portions of its halls were used for grinding flour and similar activities. A door led to the two wings of the second building. Some of the pillars in the building on the lower terrace were monoliths; others were built of several stones (see figure 1). Its outer halls were paved, but the central one was not. There were no troughs or holes in the pillars. The granary had six rooms (3 × 3 m) connected by doors raised 0.80 m from the floor. It was completely plastered and found full of carbonized wheat grains. More than one hundred complete vessels were found in the destruction level of this building, most of them in the tripartite wing. Besides the usual eleventh-century BCE assemblage, there were three-handled storage jars, jars with handles drawn from their lip, "Phoenician" decorated flasks and jugs, bowls previously found only at Gilead, a unique model of a shrine, a juglet full of astragali, a cup-and-lamp vessel, and a Greek Proto-Geometric bowl.

Following the total destruction of stratum IV, there was a long gap in occupation at the site. When it was resettled, in strata III–I, its plan and function were entirely different. Only private buildings, dated to the ninth–eighth centuries BCE, were attested in these strata. The 4-meter-wide outer wall was the settlement's only defensive wall. The broad-room plans of most of the private buildings were uncommon for the Iron Age, and the use of pillars was restricted to stratum III. Among the finds are the Gileadite bowls, small basalt anchors, and an incised enigmatic Aramaic inscription on the shoulder of a jar: LSD'L. The site was abandoned forever at the end of stratum I.

In summary, Tel Hadar's *raison d'être* stemmed from its location near the Sea of Galilee and the main highway leading from Bashan to the Galilee and beyond. The site's heyday was in the eleventh century BCE, when it probably played a major role in the Kingdom of Geshur. In the ninth century BCE, after Geshur was integrated into the Kingdom of Aram-Damascus and 'Ein-Gev was built as the main Aramean stronghold in the area, Tel Hadar became a small village inhabited by fishermen and peasants. [*See* 'Ein-Gev; Arameans.] The destruction of both Aram-Damascus and Israel



HADAR, TEL. Figure 1. *General view of the site.* Note the various stone pillars along two of the walls. (Courtesy M. Kochavi)

by Tiglath-Pileser III in 732 BCE brought an end to settlement at Tel Hadar.

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MOSHE KOCHAVI

HADHRAMAUT (Heb., Ḥazermawet, probably "the court of death,"), one of the largest wadis on the Arabian Peninsula, stretches about 465 km (288 mi.) parallel to the south coast and descends from west to southeast to the Indian Ocean. The wadi bed, about 308 m deep, cuts through the Eocene limestone tableland (the Jol), and varies in width from 15 km (9 mi.) on the west to about 92 m in Wadi Maseila. Its bed has an elevation of about 920 m above sea level. The Ḥadhramaut receives less than 200 mm of rainfall annually and is dry except during April–May when flash flooding, fed by numerous tributaries on both its north and south sides, inundates groves of date palms and fields for cereals. During the remainder of the year, wells, ranging from 15 to 20 deep, provide water for garden plots. The major section of the Ḥadhramaut boasts of three cities, built entirely of mud brick and featuring some of the world's most exotic architecture: Shibam, Seiyun, and Tarim. Although neither environment nor known historical events justifies or explains the name *Ḥadhramaut,* it is used for both a wadi and a pre-Islamic kingdom.

The kingdom of Ḥadhramaut was centered in the main wadi and extended eastward and southward to the ocean. Its capital, Shabwa, was located in the westernmost part of the valley. It is one of six pre-Islamic kingdoms; the others are Sheba, Ma'in, Qataban, Ḥimyar, and Ausan. [*See* Sheba; Qataban; Ḥimyar.] Ḥadhramaut is the easternmost state. Names of Ḥadhrami kings are known as early as the fifth century BCE, and they, with later rulers, can be correlated in a chronological framework with kings of the other South Arabian states.

In the Table of Nations (*Gn.* 10:26; *1 Chr.* 1:20), Ḥadhramaut belongs to the fifth generation descended from Shem via Eber and is one of the thirteen sons of Joktan. Among classical authors, Strabo (16.4.4) mentions Chatramotitis (Ḥadhramaut) as the beginning of an incense route crossing Arabia to Gerrha on the Arabian Gulf. Pliny the Elder (12.35.64) refers to Astramitica (Ḥadhramautic) as a variety of myrrh. He also notes (12.32.63–64) that Shabwa marks the beginning of the major incense route along the western fringe of the Arabian desert to the Mediterranean port of Gaza.

Theodore Bent and his wife were the first Western visitors to the Ḥadhramaut in 1893–1894, but the beginning of major exploration began in the 1930s. Daniel Van der Meulen and Hermann von Wissmann conducted research in historical geography in 1931 and 1939. A number of British political officers, notably Harold and Doreen Ingrams, published information gleaned during their extensive travels throughout the region. Freya Stark conducted explorations in 1935 and in 1937. The first excavation occurred in 1937–1938 at Ḥureidha, undertaken by Gertrude Caton-Thompson, Elinor Gardner, and Stark. [*See* Ḥureidha.] The following year, R. A. B. Hamilton (Master of Belhaven) undertook exploratory excavations at Shabwa. [*See the biography of Caton-Thompson.*]

Following World War II, G. Lankester Harding visited sites in the Ḥadhramaut and elsewhere in the Aden Protectorates (1959–1960). [*See the biography of Harding.*] During 1961–1962, Gus Van Beek, Glen Cole, and Albert Jamme, under the auspices of the Smithsonian Institution, conducted an intensive archaeological survey between Tarim and Qarn Qaimah, along tributaries, and the Jol. The French Archaeological Mission, directed by Jean-François Breton, excavated Shabwa from 1975–1987. During this period, Russian scholar Mikhail Piotrovski and his colleagues conducted excavations and historical research at Raybun.

The earliest prehistoric evidence stems from the Middle Paleolithic, characterized by a Levallois technique of flake preparation. This phase continued without obvious development until tools produced by a preagriculture, desert Neolithic technology appeared. To this or the succeeding period belong numerous megalithic structures, large stone circles, and a unique complex of four dolmenlike structures whose inner surfaces are decorated with repeated rows of a pecked meander or crenellated design.

The excavation of pre-Islamic town sites shows that Ḥadhramaut culture developed with mainstream South Arabian culture, as at Qataban, Sheba, Ma'in, and Ḥimyar, with only a few minor differences. It shared the same language, with characteristics like those at Qataban and Ma'in. Identical methods of flash-flood and well irrigation were used. A similar religious pantheon featuring the moon god, known

there as Sin, and cult paraphernalia prevailed. The architectural forms and designs are identical, except for the discovery at Shabwa of "skyscrapers," or tall buildings. One of these, reaching six stories, preserves a post-and-beam skeleton, not unlike structural steel frameworks used today, featuring massive *'ilb* (jujube) wooden beams, rigidly assembled with tongue-and-groove, pegs, and with brick curtain walls. This building, a palace, probably dates to the second century CE and was destroyed by fire in the fifth century.

[*See also* Shabwa.]

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GUS W. VAN BEEK

HADIDI, TELL, site located near the now-submerged village at Hadidi, situated on the west bank of the Euphrates River in Syria, about 110 km (68 mi.) east of Aleppo (36°15′54″ N, 38°8′56″ E). The site was excavated between 1972 and 1978 by the Milwaukee Public Museum, in cooperation with the University of Wisconsin, Milwaukee, and the University of Michigan, under the direction of Rudolph H. Dornemann, and from 1972 to 1974 by a Dutch expedition from the University of Leiden under the direction of Henk Franken. Tell Hadidi was one of many sites affected by the construction of the hydroelectric dam at Tabqa and the creation of Lake Assad. It was noted in the 1964 survey of the region conducted by Maurits van Loon of the University of Chicago. The occupation sequence is primarily Bronze Age (3050–1400 BCE), with areas of Early Roman and Early Islamic remains. At its greatest extent, the site occupied 135 acres along the terrace overlooking the Euphrates. Its basic outline is semicircular, with a diameter of 500 m. A smaller, higher portion of the tell, 55 acres in extent, is situated on the western side of the site.

Despite the large number of areas excavated—several with sizable exposures—only a small portion of the site has been exposed. The sequences of occupation are clear, and at least a basic assemblage of artifacts is represented for each. An excellent pottery sequence, a good representation of small finds, and a some of tablets have been excavated.

The earliest occupational remains date to the beginning of the Bronze Age. A series of buildings excavated in area RII and sherds found in the earliest fills in many areas indicate settlement over the entire 135 acres. The most abundant remains date to the Early Bronze III and IV periods, with buildings in most areas cutting through earlier occupation to virgin gravel. A large number of EB tombs were encountered, many of which were examined. The tomb assemblages, for the most part, had to be reconstructed from sherds because most of the tombs had been disturbed. A large quantity of reconstructed vessels from the tombs complemented the stratified materials, however. The tombs illustrate a variety of construction methods, including both stone-built chambers and simple shaft tombs excavated into the virgin gravel. Scanty remains of a mud-brick fortification wall were preserved.

Occupation seems to have been continuous from the Early to the Middle Bronze Ages, but the size of the settlement was reduced significantly and shifted to the western part of the tell. Excavation exposed a good sample of MB domestic occupation and sections of the fortification system. One excavated tomb showed evidence of reuse in the Middle Bronze Age, and a number of infant burials were recovered from under floors inside buildings.

Occupation was again continuous through the transition from the Middle to the Late Bronze Ages. The major exposure in area B showed a Middle Bronze fortification wall that was rebuilt at the beginning of the Late Bronze Age in an extension of the city. The pattern of fortification wall with moat was repeated. The lower eastern portion of the tell was apparently reoccupied when the city was rebuilt. In area H, two adjacent houses were excavated that had been constructed when the city was expanded in the Late Bronze Age. These two adjacent but successive houses had similar plans, organized around large, rectangular central rooms. The southernmost house, excavated by the American expedition in area H, was well preserved, to heights of more than 2 m and with its inventory basically intact.

A small but important collection of tablets from private archives was discovered in this building and provided dating evidence as well as a name for the site: two tablets attest that in antiquity it was the city of Azu. A number of houses with similar plans and inventory have been excavated at Tell Mumbaqat/Ekalte, not too far across the Euphrates. The remains of two LB tombs were excavated at Tell Hadidi; several others showed signs of reuse at this time. The Bronze

HADIDI, TELL. *Clay tablet depicting a beer-drinking ceremony.* Middle Bronze II period. (Courtesy R. Dornemann)

Age occupation came to an end with the decline of the kingdom of Mitanni at the end of the fifteenth century BCE.

Later occupation was preserved on the southern, river side of the tell. A large shallow area of Roman occupation was excavated on the lower, eastern side of the tell and on the southeastern side of the high tell. The Umayyad through ʿAbbasid occupation was confined primarily to the river side of the high tell, and an extensive ʿAbbasid cemetery stretched from the southwest corner of the tell toward its center.

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RUDOLPH H. DORNEMANN

HAFT TEPE (Pers., seven mounds), site located in Khuzistan province, on Iran's southwestern alluvial plain, about 10 km (6 mi.) southeast of Susa and 50 km (31 mi.) south of Andimeshk (at approx. 32° N, 48° E). This large Elamite site, composed of many individual mounds, forms an imposing and prominent mass rising above the surrounding plain. As early as the late nineteenth century, Jean Jacques de Morgan of the French Archaeological Mission in Iran described its ancient remains, referring to them as Haft Shogal (lit., "seven jackals"), apparently a misunderstanding of the name in the local dialect in which it is called Haft Chogha, with *chogha* being the local word for an artificial mound, or tell. In Persian, seven is a term often used to indicate any large number, a reference to the multiple mounds of the complex. [*see* Susa; Elamites.]

The site's ancient name remains in question. Some scholars have suggested that it may have been Tikni, which is described in early documents as a religious center located between Susa and Chogha Zanbil. While no evidence has yet appeared at Haft Tepe itself to support this theory, several seal impressions and clay tablets found there contain the name *Ka-ap-nak,* which may have been the site's original name (Herrero, 1976).

In the 1950s and 1960s, Haft Tepe became the center of a large sugar cane plantation. In leveling land for planting, some archaeological remains were destroyed and others exposed. During construction of the main road to the plantation, a baked-brick wall was uncovered that the project's managers reported to the Iranian Archaeological Service.

In 1965 an expedition was organized to excavate the site, sponsored by the Ministry of Culture and Art. From the

fourth season onward, a program of field training in excavation techniques was instituted for graduate students of the Institute of Archaeology of the University of Tehran. Eventually, a site museum was built, along with permanent headquarters for the excavation team. Although the expedition worked for fourteen seasons, until political conditions in Iran made it impossible to carry on, only a small fraction of this large site has yet been uncovered.

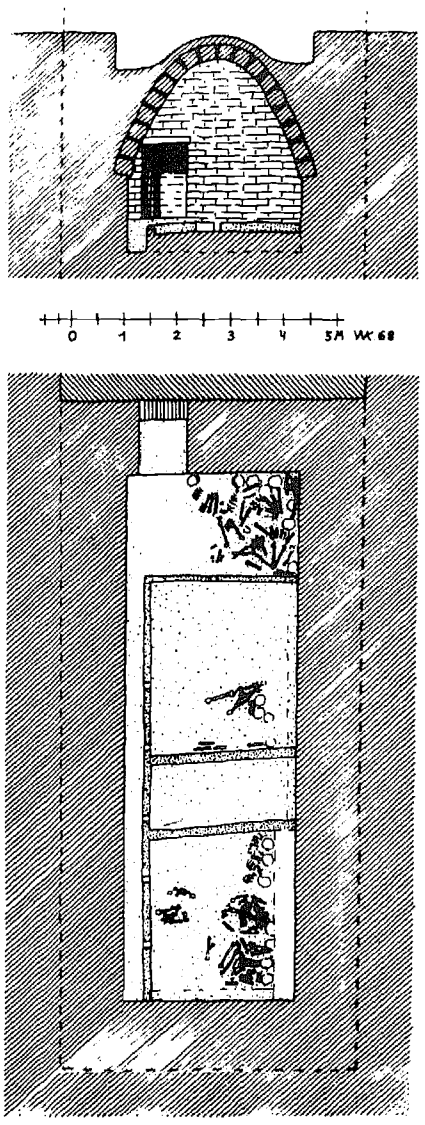
The archaeological complex contains fourteen major visible mounds, the largest of which rises about 17 m above the surrounding plain, with extensions covering an area about 1,500 m long and 800 m wide. This is a single-level site with almost no evidence of occupation before its major period of construction and very minimal evidence afterward. The massive sun-dried and baked-brick buildings of Haft Tepe, which seem to be of a religious or other public nature, were constructed during a single period that lasted for one or at the most two centuries in the mid-second millennium BCE, at which time Haft Tepe was a major Elamite city.

Most of the construction is of sun-dried brick, with baked brick used only for very important buildings and in areas particularly exposed to weather. Between sun-dried bricks is simple clay mortar; and between the baked brick is an extremely strong gypsum mortar. Gypsum was also used as a covering for the baked-brick pavements and for plastering walls and the inner surfaces of vaulted roofs. Natural bitumen was used to seal basins and water channels and as a mortar and surface covering.

The architectural remains thus far uncovered include a royal tomb of baked brick with a barrel-vaulted roof (see figure 1) and another subsidiary baked-brick tomb, also with a vaulted roof, now collapsed. Both were attached to a large temple of sun-dried brick with two parallel halls opening onto a long portico that in turn opened onto a large courtyard paved with several layers of baked brick. The courtyard contained two broken stone stelae inscribed with the name of the Elamite king Tepti-ahar. It is believed that he built the Haft Tepe complex in the mid-second millennium BCE.

A massive wall of sun-dried brick surrounds the temple complex. Large architectural remains, with a massive wall at least 60 m long, extend in an easterly direction from the outside wall of the courtyard. About 100 m southeast of the temple complex, connected by this massive wall, is a large, solid, sun-dried brick construction that forms a many-sided terrace (Terrace Complex 1), built in sections. It may have served as the foundation of a much taller structure, a ziggurat palace or temple, whose plan can no longer be distinguished. [*See* Ziggurat.] Around this massive terrace are numerous halls, many of whose walls had been covered with polychrome paintings on gypsum surfaces. The halls had had flat roofs supported by large slats of palm tree fiber covered with reed and matting.

On the eastern side of the massive terrace, a particularly interesting large hall, apparently an artist's workshop, was



HAFT TEPE. Figure 1. *Tomb-temple complex of Tepti-ahar.* (Courtesy E. O. Negahban)

partitioned into several sections, in which various crafts had been produced. Bowls with dried paint, a sawn elephant skeleton, a solidified cluster of several hundred oxidized bronze arrowheads and small bronze tools, fragments of colored-stone mosaic framed in bronze, and a butterfly pin of gold and carnelian were found there. The most unusual objects recovered are two life-sized painted portrait heads of an Elamite king and queen (see figure 2), together with a clay mask. Directly in front of this workshop was a very large kiln, composed of two long, partitioned wings with a fire chamber in the center, in which apparently pottery was fired and bronze was smelted. South of Terrace Complex 1 another massive solid brick terrace was only partially excavated. Altogether, during the fourteen seasons of work, one

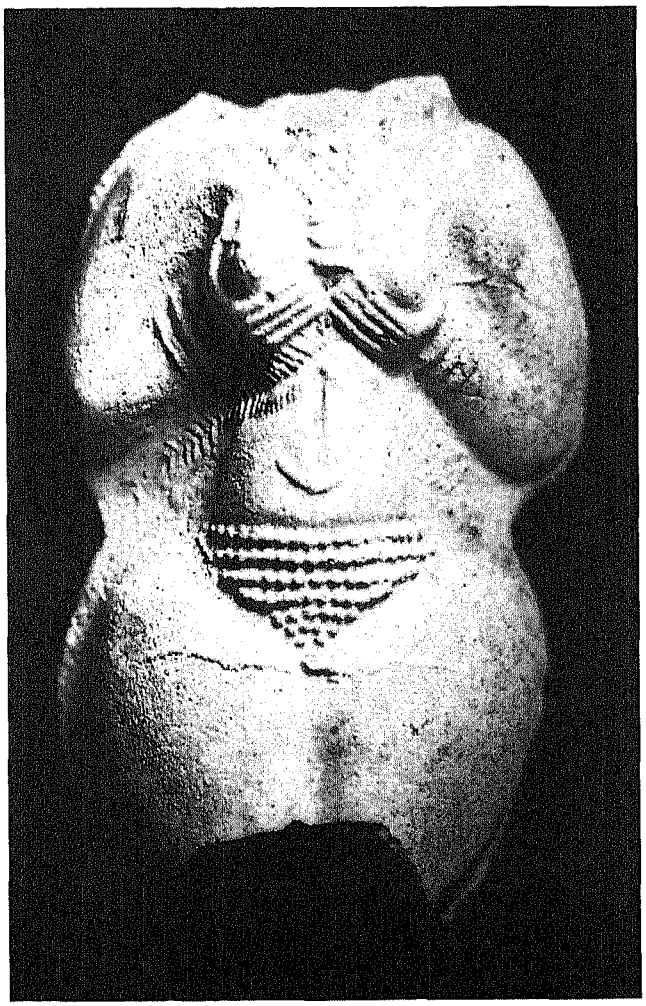
HAFT TEPE. Figure 2. *Portrait head of an Elamite queen.* (Courtesy E. O. Negahban)

hundred and fifty trenches (10 × 10 m), concentrated for the most part and covering an area of 15,000 sq m, were opened.

Among the most important remains are the written records, which include several stone stelae and many hundreds of inscribed clay tablets. The tablets were almost all Elamite tablets written in Babylonian; they include letters, accounts, scholarly treatises, and works of divination. The name *Kadashman Enlil* is inscribed on one, with an impression of the seal of Tepti-ahar. It seems that Tepti-ahar, king of Elam, was a contemporary of Kadashman Enlil I, the Kassite king of Mesopotamia. The Kassite king reigned before Burna-Buriash III, whose rule began in about 1375 BCE (Negahban, 1991). Many cylinder seals and seal impressions belonging to the middle of the second millennium BCE were also found, some with specific design details unique to Haft Tepe. [*See* Kassites; Seals.]

The bulk of the Haft Tepe pottery is comparable to that of the Late Kassite period. Most of the vessels, including jars and bowls, are of plain, unpainted pottery in various shades of buff; a very limited amount is plain gray pottery. Some stone vessels and mace heads were also found. Other objects from the site include many broken figurines of Ishtar, in a wide variety of costumes and headdresses (see figure 3); male figurines, including musicians holding stringed instruments; animal figurines in different materials, and, among the bronze objects, arrowheads, axes, daggers, and tools, including a wide variety of chisels.

Evidence indicates that the complex had been sacked and burned at some time. In the courtyard of the Tomb Temple Complex, a solidly built platform formed of nine layers of baked brick with gypsum mortar had been completely cut into. Scattered over this platform were pieces of stone inscribed in cuneiform writing. They apparently belonged to stone stelae originally installed on the platform but were found lying elsewhere in the courtyard. It seems that after the stelae were dismantled, they proved to be too heavy to carry away and so were abandoned. In many of the halls of Terrace Complex 1, traces of roofing slats were found on the floor, indicating that the rooms had been set on fire. Nothing was found to show when this destruction took place, but the material uncovered in the Tomb Temple



HAFT TEPE. Figure 3. *Figurine of Ishtar.* (Courtesy E. O. Negahban)

Complex and Terrace Complex 1 points to a major occupation of the site for, at most, two to three centuries during the second half of the second millennium BCE.

Because Haft Tepe itself is a single-level site, during the first season of excavation a step trench was dug into the large mound of Abu Fandowa, about 1 km northwest of Haft Tepe, in order to obtain background material on the area's prehistory. This step trench revealed twelve archaeological levels, from the sixth millennium through the protoliterate and Elamite periods. During the last two seasons of the Haft Tepe excavation, work was reopened at Abu Fandowa. On its northwestern and northeastern slopes, kilns from the protoliterate period were uncovered and remains of the early first millennium BCE, including some inscribed cuneiform tablets of the Neo-Elamite period, were found in the mound's topmost levels.

[*See also* Chogha Zanbil; Elamites; *and* Susa.]

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EZAT O. NEGAHBAN

HAJAR BIN ḤUMEID, site located about 255 km (158 mi.) north-northeast of Aden and about 82 km (51 mi) south-southeast of Marib (14°54′0″ N, 45°45′45″ E). It occupies the east bank of Wadi Beihan opposite the strategic Mablaqah Pass. This major caravan route led to Wadi Ḥarib, Marib, and northward to Gaza, the primary Mediterranean incense port. The site probably served as a control point under the aegis of Timnaʿ, the capital of the kingdom of Qataban.

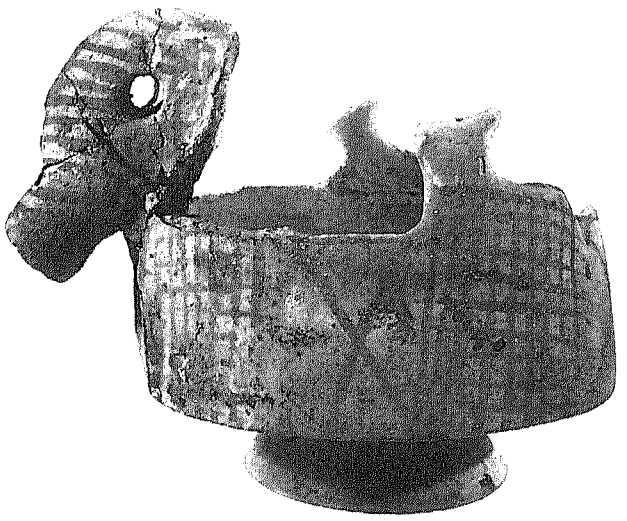
Hajar Bin Ḥumeid is an oval-shaped mound with almost 15 m of debris. In area, the site measures 9.79 acres at the 10-m contour; 5.05 acres at the 14-m contour; and 2.67 acres at the 20-m contour. Flash floods have partially destroyed the site's long west side, and a modern irrigation canal was dug through the talus on this side.

The site was discovered by Nigel Groom, a British political officer, in 1948. Two years later, the American Foundation for the Study of Man, with Wendell Phillips, who was its president, and William Foxwill Albright, its archaeological director, excavated an area of 392 sq m on the west side, along the escarpment, through the upper four strata. In 1951, under Albright's direction, Don Dragoo and Gus Van Beek were in charge of excavation. To reach virgin soil during the field season and to protect excavators from sloughing debris, the digging area was reduced by a series of broad steps, making the area of stratum S one-tenth that of stratum A, or 39.2 sq m.

The excavations disclosed eighteen strata, spanning from about the eleventh century BCE to the second–fourth centuries CE. Two strata—D and F—had two phases each. From strata S through D, buildings were built entirely of sun-dried mud brick, with or without coursed rubble foundations; strata C–A featured fine ashlar buildings; this change in architecture corresponds to a change in pottery type frequencies, indicating a break with traditions in the late second–early first centuries BCE, when Qataban reached the zenith of its prosperity and power.

The site was a small town with a population of from six hundred to twelve hundred. It was an agricultural community utilizing both flash-flood irrigation and well irrigation. U-shaped, fired clay spouts were efficiently used to break the dikes surrounding garden plots to admit water during well irrigation. Among the crops cultivated were barley, tef grass, millet, cumin, sesame, flax, sorrel, grapes, possibly oats, and probably other crops for which evidence is lacking. Bovines, sheep, goats, and game, probably including fowl, provided protein; sheep, goats, and camels yielded wool; camels and asses were used for transport; bovines, camels, asses, and people served in draft work.

The economy of Hajar Bin Ḥumeid must have been greatly enhanced by the customs collected from caravan traffic through the Mablaqah Pass. Imported artifacts indicate wide-ranging international trade: a small brass chalice with delicately tapped designs was probably imported from Egypt; a lead glazed crater, made with a molded exterior and turned interior, may have come from Asia Minor, per-



HAJAR BIN ḤUMEID. *Bowl.* Note molded ibex head and recumbent bulls on rim, eighth century BCE. (Courtesy G. W. Van Beek)

haps Tarsus; and an unusual green-and-white glass base probably came from Mesopotamia. Cultural influences were wide ranging as well: a calcite (alabaster) stela showing a man holding a staff imitates a Syro-Hittite prototype, and pottery-finishing techniques were borrowed from southern Palestine and some shapes from Ethiopia. Local craftsmen plied their trades: metallurgy; ceramics; and stone-working, including carving inscriptions, sculpture, and vessels; and mud and stone construction. There is no evidence of fortifications or of destruction by warfare, suggesting a peaceful life isolated from potential predators.

The most significant of the results of the Hajar Bin Ḥumeid excavations was Van Beek's development of the first pottery chronology for pre-Islamic South Arabia, covering the period from about 1100 BCE to 200 CE. Owing to the paucity of pottery and restorable pots in ancient Arabia, it relies on a typological method developed by James Ford (1962) that quantitatively measures the frequencies of all possible pottery traits (e.g., tempers, forming techniques, and types of decoration). These categories serve as the principal typological criteria, with shape relegated to secondary status.

The ubiquitous remains in every wadi of diversion dams and sluices, together with silt deposition and rectangular erosion patterns, led Richard Bowen (1958) to the first comprehensive reconstruction of techniques for pre-Islamic flash-flood and well irrigation. For environmental reconstruction, a technique borrowed from paleontology enabled Thomas R. Soderstrom (1969), Elizabeth F. Wiseman, and Van Beek to identify both wild and domestic plants from seed impressions in plant-tempered pottery. Hajar Bin Ḥumeid was the site of the first successful use of X-rays to identify joints in pots assembled from multiple sections. With subsequent technological development, the technique become standard procedure.

[*See also* Qataban; *and the biographies of Albright and Phillips.*]

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GUS W. VAN BEEK

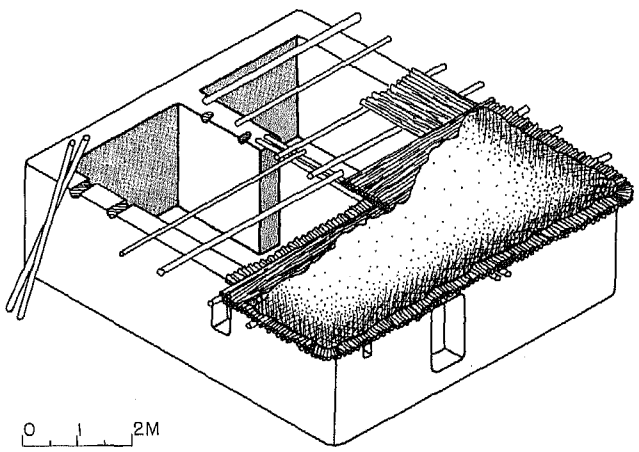
HAJJI FIRUZ, a small, mounded site in the Solduz valley of northwestern Iran (37°01′06″ N, 45°28′ E). The site was first recorded in 1936 by Aurel Stein and named after a nearby village (Stein, 1940). In 1956, Robert H. Dyson, Jr., of the University of Pennsylvania Museum began a long-term program of archaeological research in Solduz, focused on the large site of Hasanlu with its well-preserved Iron Age citadel. [*See* Hasanlu.] One of Dyson's goals was to document the history of settlement in the region; to achieve this goal, soundings were made at several sites with limited periods of occupation. Located only 2 km from Hasanlu, Hajji Firuz was tested in 1958 by Charles Burney and in 1961 by T. Cuyler Young, Jr. More extensive excavations were carried out by Mary M. Voigt in 1968.

The site can be divided into two topographic areas: a high, relatively steeply sloping central mound and a low, gently sloping outer flat. Burney's small sounding near the center of the mound defined three distinctive ceramic assemblages dated to early prehistoric times. All absolute dates for these assemblages are based on calibrated radiocarbon determinations. Resting on virgin soil are deposits assigned to the Hajji Firuz period (Hasanlu X, c. 6500–5500 BCE); stratified above were occupations designated as the Dalma (Hasanlu IX, c. 5100–4800 BCE) and Pisdeli (Hasanlu VIII, c. 4800–

3800 BCE) assemblages. Subsequent excavation was focused on the Hajji Firuz, or Neolithic, period and was carried out on the lower slope of the mound, where the sixth-millennium settlement lay near the site's modern surface. Young defined a sequence of building levels spanning about five hundred years (6000–5500 BCE), but did not reach virgin soil, which lay under the water table near the edge of the mound. Voigt's principal goal was to understand better the architecture and settlement plan of the village. She therefore cleared a broad area of the latest well-preserved Hajji Firuz occupation. Additional information was obtained from a regional surface survey that showed that Hajji Firuz Tepe was one of (at least) six Neolithic villages clustered in a well-watered zone in the Solduz valley. One additional site was located on the Gadar River in the Ushnu valley to the west.

The Ushnu-Solduz valley was initially occupied in about 6500 BCE by farmers who migrated across the Zagros Mountains from northern Mesopotamia, carrying with them a material culture similar in many ways to that of such Hassuna sites as Umm Dabaghiyeh and Tell Hassuna. [*See* Hassuna.] Floral and faunal evidence from Hajji Firuz indicates that these people cultivated wheat, barley, and lentils and herded sheep, goats, and pigs. Although domesticates provided the bulk of their food supply, they also gathered wild plants and hunted both large and small game (aurochs, red deer, wild boar, hare, and a variety of birds). The restriction of settlements to areas with relatively rich pasture suggests that herding played a significant and perhaps crucial role in the subsistence system of these frontier farmers; it provided a buffer against serious crop shortages caused by drought, as well as a means of avoiding minor (seasonal) shortages.

The village at Hajji Firuz was made up of small rectangular houses built of mud bricks covered with mud plaster and roofed with a layer of reed and mud resting on short wooden beams (figure 1). Each house was oriented along the cardinal points of the compass and was divided into two rooms. The rooms differed in details of construction and contents: a cleaner and more elaborately finished "living room" and a "utility room" with uneven floors covered with trash and evidence of food storage (pottery storage jars, bins) as well as cooking (hearths, ovens).



HAJJI FIRUZ. Figure 1. *Reconstruction of a mud-brick house.* C. 5500 BCE. (Courtesy M. M. Voigt)

The small size of the Hajji Firuz houses (about 30 sq m of roofed space) suggests that each served as the domicile of a single nuclear family. The archaeological distribution of artifacts and manufacturing debris indicates that each family controlled its own food supply and manufactured such commonly used items as flint, obsidian, and bone tools. The pottery was handmade; the variation in form, finish, and painted decoration suggests a large number of potters and probably manufacture within each domestic unit. Thus, at Hajji Firuz the household was the unit of consumption and the basic (if not sole) unit of production.

That village households were homogeneous with regard to wealth and status can be inferred from the houses (similar in both size and contents) and from burial patterns. Clay bins used as ossuaries were built inside most of the excavated houses, usually in the living room. [*See* Ossuary.] The bones of males, females, and children apparently remained exposed for some time, but eventually the bins were sealed with clean clay to form platforms. In some cases human bone was scattered in a layer between house floors, and children were sometimes placed in jars or pits beneath the lowest floor. The bones were almost always disarticulated before interment, so that there must have been an area outside the village where bodies were exposed until scavengers had picked the bones clean. In one case a bone was intensely burned, an early example of cremation. Items commonly deposited as grave goods included small pots, clay spindle whorls, and grindstones.

Hajji Firuz (c. 6000 BCE) can be described as an egalitarian society, similar to the model of the "early farming community" proposed by anthropologist and archaeologist Robert Braidwood in the 1950s, and typical of the earliest food-producing villages in the Near East. [*See* Jarmo.] Ironically, recent evidence suggests that most seventh-millennium villages had more complex social and economic systems, and that Hajji Firuz may represent a conservative group that chose to move into a new area rather than participate in the changes taking place on the plains of northern Mesopotamia.

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MARY M. VOIGT

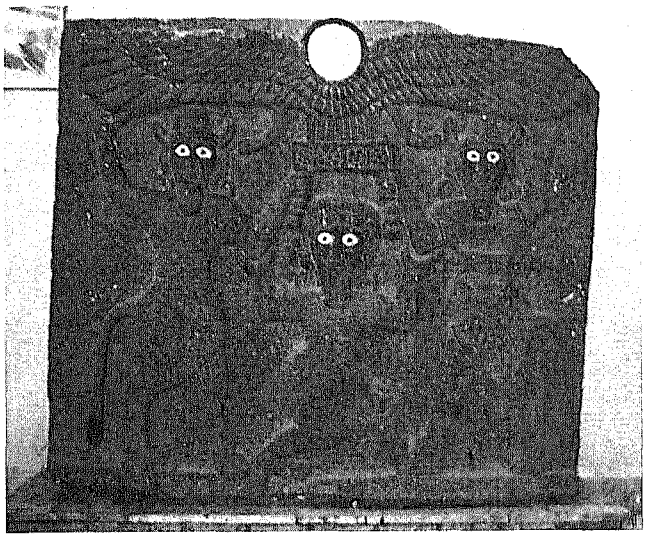
ḤALAF, TELL, site located at Ras al-ʿAin, at the headwaters of the Khabur River, at the Syrian/Turkish border, about 60 km (38 mi.) south of the foothills of the Taurus Mountains (36°48′ N, 40°02′ E). It is about 70 km (43 mi.) northwest of Hasseke and about 130 km (81 mi.) southwest of the Qamishli/Nisibin area. It is 330 km (205 mi.) northeast of Aleppo, Syria. The fertile North Syrian plain there supports excellent rainfall agricultural production. The closest major ancient archaeological site is Tell Fakhariyah, about 3 km (2 mi.) to the east, on the other side of the Khabur. The archaeological sequences at Ḥalaf and Fakhariyah complement each other and sometimes seem to overlap. Tell Ḥalaf is associated with the name *Guzana* in both the Bronze and Iron Ages, while the name for Fakhariyah is uncertain in the Bronze Age and is documented as Sikanu in the Iron Age (Abou Assaf et al., 1982). Guzana was the capital city of the Aramean state of Bit-Baḥiani. [*See* Fakhariyah, Tell.]

Tell Ḥalaf was first explored by the German diplomat Max Frieherr von Oppenheim with soundings in 1899 and excavations between 1911 and 1913 and again in 1927 and 1929 (von Oppenheim, 1931). Two major periods of occupation were encountered. The first was a sixth-millennium BCE occupation with a distinctive ceramic assemblage that has given the site name to this period for North Syria and northern Iraq. The stratum was excavated at a depth of 22 m, primarily under the acropolis area and near the spring that issues from the ground at the foot of the mound on the north side and feeds into the Khabur. The present-day contours of the site reflect its Iron Age plan. A large, basically rectangular area about 600 × 360 m was framed by a fortification system of straight stretches of walls with regularly spaced rectangular towers. This lower town surrounded the rectangular acropolis (about 150 × 200 m) in the north-central area, backing up to the banks of the Khabur.

Ḥalaf and Earlier Material. The earliest ceramic material from the lowest levels at the bottom of deep test pits is coarse, unpainted pottery, apparently dating to the earliest phases of the Pottery Neolithic (early in the sixth millennium BCE). Red, gray, and plain burnished wares occur at this time and then continue side by side with more elaborate painted wares followed by the deposits of the Ḥalaf period itself (mid-sixth–fifth millennium). The Ḥalaf-period assemblage is characterized by beautifully decorated polychrome vessels. A large repertoire of decorative motifs is executed in a fine, lustrous paint that appears to be almost a glaze. It was applied primarily on jars and bowls in a number of quite distinctive forms. Copper objects, flint tools, handmade figurines, and stone vessels are among the categories of objects that comprise this rich assemblage, but they are summarily represented because of the limited soundings (von Oppenheim, 1943). The Ḥalaf culture has now been investigated or recovered from a range of sites that covers a wide band across northern Mesopotamia, from the Khabur area west to the Euphrates River and east to the Zagros Mountains.

Aramean and Assyrian Occupations. The excavators do not mention any occupation between the earliest levels of the Pottery Neolithic through the Chalcolithic and the earliest occupation in the Iron Age. Several levels of Iron Age settlement were blocked out from at least the tenth through the seventh centuries BCE. The *altbau* (early building) period was encountered in soundings that provided earlier phases of fortification, a gateway, and major building construction underlying the extensive remains of the Kapara period (von Oppenheim, 1950; see below).

The name of the Iron Age city at Tell Ḥalaf is known as Guzana from Assyrian sources and materials found at the site. The literary references date from the time of Adad-Nirari II (911–891 BCE). He is said to have received tribute from Abisalamu of Bit-Baḥiani, where Guzana is the capital city, to the time of Sargon II (721–705 BCE), when the latest of many governors is mentioned. The Assyrian rulers Tukulti-Ninurta II and Ashurbanipal II mention the site in their inscriptions. Among a long list of governors mentioned in the Assyrian eponym lists, down through 706 BCE, are Mannukiaššur (793 BCE) and Pursagale (763 BCE). The seventh-century BCE site is considered to have been fully assyrianized on the basis of letters and legal documents recovered there. At what point in the eighth century BCE the Assyrian governors replaced the local Aramean rulers is not clear. Many inscriptions were found from the ruler Kapara; his father Handianu is also mentioned, but it has not been possible to fix precisely the years in which they lived, though a tenth–



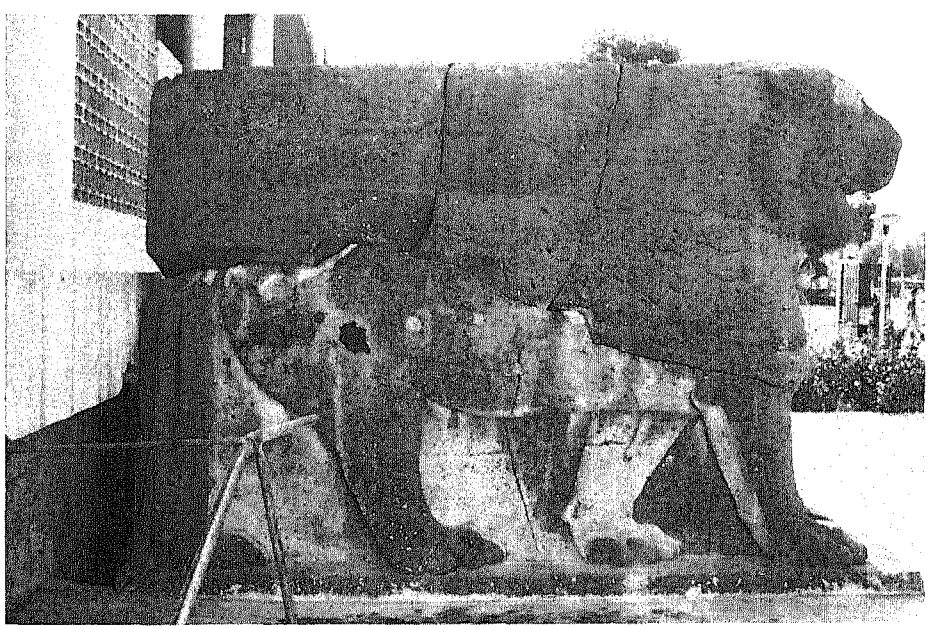
HALAF, TELL. Figure 1. *Basalt orthostat.* Aleppo Museum. (Courtesy J. S. Jorgensen)

ninth-century date is probable. At nearby Tell Fakhariyah, ancient Sikanu, a statue with a bilingual inscription in Aramaic and Akkadian, possibly dating to the end of the ninth century BCE, was dedicated to the god Hadad by Hadadyis'a, son of Shamash-Nuri. [*See* Fakariyah Aramaic Inscription.] In the Assyrian version he is referred to as the governor of Guzana, and in the Aramaic version he is king of Guzana. Tukultisharru, the son of Hadadyis'a, may have been one of the last of the Aramaic rulers of Guzana.

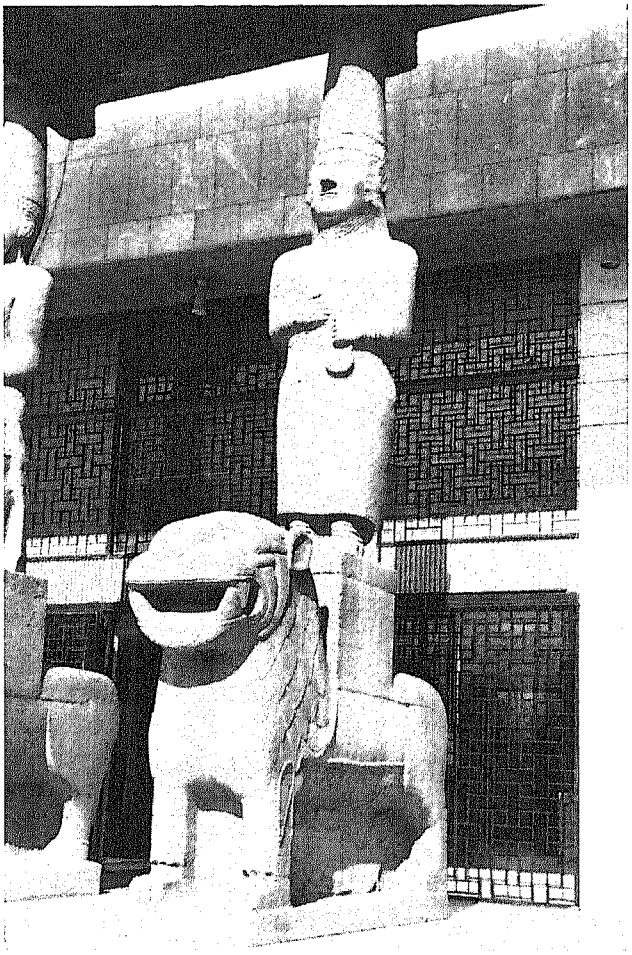
Assigned to the ninth century BCE, though possibly earlier in date, is the later palace structure, the northwestern palace, with its many sculptural embellishments and inscriptions of the ruler Kapara. A two-chambered gateway on the western side of the south wall gives access to the acropolis. A large mass of brickwork was encountered west of the gateway, covering an area of about 3600 sq m, whose function is unclear. A street runs directly north of this citadel gateway, through a gateway on the eastern side of the northwest palace, that connects to the courtyard north of the palace.

Alternating small basalt and limestone orthostats (see figure 1), each with a separate carved scene, decorate the southern facade of the building from its western corner, around its eastern corner, and continuing up to the palace gateway. The orthostats were carved in a variety of styles that include representations of soldiers standing with their weapons, engaged in combat, or hunting. The animals represented include horses, bulls, lions, a panther, reindeer, gazelles, an ostrich, birds, fish, and snakes; mixed creatures include a scorpion man, a fish man, bull men, sphinxes, griffins, and a human figure with two lion heads; and even a camel rider and a boat are included. There is also a variety of ritual scenes. Evidence of rebuilding indicates that this row of sculptures belonged to an early phase of the palace, but it contains inscriptions of Kapara, to whom other inscriptions attribute the palace. Two inscriptions appear over erasures of earlier inscriptions. They refer to the building both as a temple and as a palace. The early phase of occupation in the citadel area is best represented in the gateway. It was a complex structure with an indirect-access plan. [*See* Palace; Temples, *article on* Mesopotamian Temples.]

At the palace gateway, the entrance to the first chamber



HALAF, TELL. Figure 2. *Orthostat of a lion.* Aleppo Museum. (Courtesy J. S. Jorgensen)



HALAF, TELL. Figure 3. *Entrance support from the Palace of Kapara.* Aleppo Museum. (Courtesy J. S. Jorgensen)

is flanked by large, elaborate orthostats carved in the form of human-headed birds with scorpion stingers. The palace's main entrance is located on the north. Raised on a terrace reached by a flight of stairs from the northern courtyard, its decoration is innovative and unique. The doorway is flanked by sphinxes and the base of the front wall is decorated with a basically symmetrical arrangement of carved orthostats of lions, (see figure 2), bull and lion hunts, and other scenes. Most of the action in these scenes is directed toward the entrance. The portico's wide entrance is supported by three elaborately decorated columns representing two men standing on lion and bull figures in the round (see figure 3) and a woman standing on a lion, similarly sculpted in the round. The style of the figures and the orthostats combines elements from different artistic traditions into the distinctive style of these locally produced works. The interior door leading from the portico is flanked by griffins. Other sculpture in the round is scattered at a number of locations. (The sculpture is published in von Oppenheim et al., 1955; stylistic analysis is included in Orthmann, 1971, pp. 119–129, 178–181, and 233–474.) A freestanding griffin is notable, as is a group of human figures that was associated with a rich royal tomb.

At the front of the palace, green and yellow glazed bricks were used in the elaborate geometric decoration of a structure that may have been a freestanding altar. A number of decorated gold items and silver and bronze vessels were part of the inventory of the royal tomb, but they represent only a small part of the site's rich inventory: carved stone stands; decorated ivory fragments, primarily for inlays; cylinder and stamp seals; scaraboids; small relief plaques; and beads. Only a very basic and general inventory of the pottery vessels is published (Hrouda, 1962, tafeln 56–85).

The northern palace was not nearly as well preserved as Kapara's palace, but a basic plan of a portion of the building identified as the governor's residence was cleared. It and a number of smaller, probably private, buildings were excavated close to the surface of the site and attributed to the Assyrian phase of occupation, primarily to the late ninth–seventh centuries BCE.

Hellenistic, Roman, and Islamic remains were encountered in the upper 1.5 m of deposit. Very little of this material is published besides fragments of Hellenistic and Roman mold-made figurines.

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RUDOLPH H. DORNEMANN

HALA SULTAN TEKKE, Cypriot Bronze Age town situated in a field west of the mosque of Hala Sultan Tekke and the Larnaca Salt Lake, south of Laxia tou Riou and Kition, and east of Klavdhia. The site's ancient name is unknown.

Hala Sultan Tekke has been excavated by two missions

sponsored by the British Museum (1897 and 1898) and by the Department of Antiquities of Cyprus (1948, 1968, 1983). Since 1971 a Swedish expedition there has been directed by Paul Åström of Göteborg University. The British excavators emptied many tombs containing a wealth of precious objects of gold, silver, bronze, ivory, and faience and imported pottery, all dating to the Late Bronze Age before 1200 BCE. In 1948 the Department of Antiquities recovered a huge pithos and two so-called chimney tombs in 1968 dating to about 1200 BCE. Although the British Museum excavations produced material earlier than 1200 BCE, the Swedish excavations, conducted in various parts of the site, have revealed a later town, mainly from the Late Cypriot IIIA period.

The site was founded in the Middle Cypriot III (c. 1600 BCE) and flourished until the end of the Late Cypriot IIC (c. 1190 BCE). Like the town of Sinda in eastern Cyprus, it was probably destroyed twice, in 1190 and 1175 BCE; it experienced a scant reoccupation until about 1100 BCE and was partially resettled in the Hellenistic period.

In the central part of the town, a street 4–5 m wide stretches in an approximately north–south direction. Three domestic complexes there consist of a courtyard surrounded by rooms similar in plan to houses at Pyla near Dhekelia in eastern Cyprus. Another large rectangular building with two interior stone bases for pillars and an inner room may be a sanctuary. Some of the walls in two well-cut, luxurious bathrooms were built of ashlars. The houses were, as a rule, built on a foundation of fieldstones, sometimes of ashlar blocks, with a superstructure of terre pisée and walls plastered with crushed lime.

The finds reveal various activities: copper working (copper slag, a mold for making arrowheads, and bronze tools such as a pruning hook, trident, shepherd's crook, and a charcoal shovel); jewelry making (gold- and silverwork); fishing (fish bones and net weights of lead and beach stones); and ivory working (carved pieces of elephant tusk). They testify to widespread connections with eastern Mediterranean countries. Mycenaean and Minoan pottery were imported from Greece and Crete, gray Minyan vases from Asia Minor, and so-called Canaanite jars and a silver bowl with a West Semitic cuneiform inscription from Syria-Palestine. Fragments of bones of Nile perch throw light on the Story of Wenamun, who received baskets of fish from Egypt during his stay at Byblos. Wine jars and cartouches of Horemheb, Seti I, and Rameses II are among the witnesses to contact with Egypt.

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PAUL ÅSTRÖM

HALIKARNASSOS (Lat., Halicarnassus; mod. Bodrum), city founded by Greek colonists from the northeastern Peloponnesos on the western coast of what is now Turkey around 1000 BCE, but always populated by a large number of Carians (37°03′ N, 27°28′ E). Little is known of the city prior to the classical period and Halikarnassos seems to have experienced its first flourishing during the early and middle part of the fifth century. At that time it was politically dominated by a dynasty whose most famous representative, Artemisia the Elder, fought at Salamis in 480 on the side of the Persian king Xerxes (Herodotus, 7.99). The dynasty was removed from power toward the middle of the century after civil strife in which both the historian Herodotus and his uncle (or cousin) the epic poet Panyasis were involved (Suidas, S. V. Panyasis and Herodotus).

In the fourth century the Hecatomnid dynast Mausolus and his sisters and brothers ruled Halikarnassos in turn as Persian satraps (provincial governors) from 377 to 334, when the city was conquered by Alexander the Great. These decades constitute the most important epoch in the history of Halikarnassos. The Hecatomnids initiated rich building activity both in Halikarnassos and on other sites of the Carian satrapy, thereby giving an impetus to the fourth-century "Ionian renaissance," which can also be studied in Labraunda, Priene, and in the new temple of Artemis at Ephesus. After Alexander (r. 332–323), the city entered the epoch of the great Hellenistic monarchies. During the succeeding centuries Halikarnassos received the buildings and monuments characteristic of a provincial Hellenistic-Roman city, but generally it seems to have played a less important role. A certain flourishing in late antiquity is indicated by important archaeological discoveries. In 1404 CE the knights of the Order of St. John started building the impressive castle of St. Peter, and these constructions, which utilized ancient material from the Mausoleum (tomb of Mausolus) and other monuments, were carried on until the castle was ceded to the Turkish sultan in 1522.

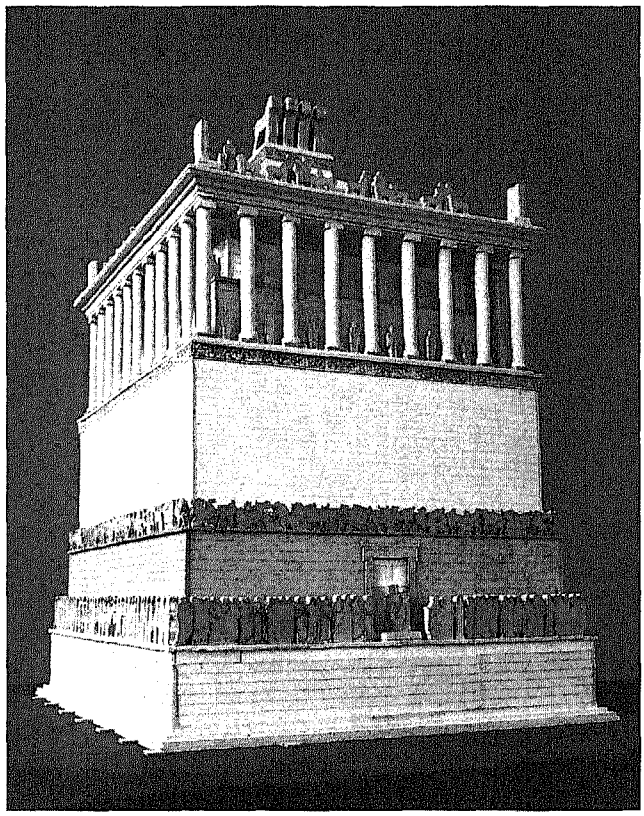
An extant eyewitness report of the demolishing of the Mausoleum by the Crusaders forms the beginning of modern investigation of ancient Halikarnassos. Travelers of the eighteenth and nineteenth century have reported on its topography and monuments, but the first comprehensive investigations were carried out by an English expedition directed by Charles T. Newton in 1856–1858. In 1921–1922 Amadeo Maiuri published studies in Halikarnassos, and an important report was given by George E. Bean and John M.

Cook in 1950. New excavations on the Mausoleum site were carried out by a Danish expedition directed by Kristian Jeppesen in 1966–1977 and in the 1970s a Turkish team directed by Ümit Serdaroğlu excavated the theater. Since then, excavations have been carried out by the Museum of Bodrum (Oğuz Alpözen, Akyut Özet) occasionally in cooperation with the Danish Halikarnassos Expedition (Poul Pedersen, Birte Poulsen).

Although Late Mycenaean and Protogeometric tombs have been found in the surroundings of Halikarnassos, only very few finds from before the classical period are known from the city itself. In the fifth century the central area of the city had a cemetery with large rock-cut tombs, possibly of the local nobility. This probably indicates that the city was divided into a western part, Salmakis, and an eastern part on the mainland opposite the Zephyrion Peninsula, where the Greek colonists probably first settled down. Some ornamented column drums of exquisite workmanship could perhaps originate from an early classical temple of Apollo on the Zephyrion Peninsula.

When Mausolus made Halikarnassos capital of the Carian satrapy around 370, the city was refounded on a large scale, obliterating most traces of the earlier city. The inhabitants of six neighboring towns were transferred to Halikarnassos to populate the new city.

The Roman writer Vitruvius gives an important description of the topography of the new city, the configuration of which he compares to that of a theater (2.8.10–15). The city was surrounded by a city wall, almost 7 km long, which ended in the Salmakis fortress on the west side of the well-sheltered harbor and the Zephyrion fortress on the east. The latter probably still contained the old temple of Apollo and in addition the palace of Mausolus, of which a large terrace wall as well as other remains have been discovered (see Pedersen, 1994b, 1995, 1996). The city received an orthogonal street-plan with a 15-meter-wide main avenue running west–east from the Myndos city gate past the north side of the Mausoleum terrace and probably continuing all the way to the Mylasa gate on the east. Outside these two gates were the cemeteries, of which the eastern was partly investigated by the English in the nineteenth century. In 1989 a rich tomb of the late fourth century, possibly belonging to a woman of the satrapal family was excavated in the eastern necropolis (see articles by Özet, Prag and Neave, and Alpözen in Isager, 1994, pp. 88–114). On the site of the earlier cemetery in the center of the city Mausolus built his monumental tomb on a very large terrace. The Mausoleum is described by Pliny (*Natural History* 36.30–31), and although it was demolished by the Crusaders, it has now been reconstructed (see figure 1) in most details by Jeppesen (1992). The foundations are 32.5 m (106.6 ft.) wide and 38.25 m (125.5 ft.) long. The lower part consisted of a podium, perhaps 25.2 m (82.6 ft.) high surrounded by two high bases carrying large groups of sculpture. On top of the podium was a peristyle (colonnade) of 9 × 11 Ionic columns and then followed a pyramidal roof of twenty-four steps of marble. The height of the monument has been calculated to approximately 49.6 m (162.7 ft) including the quadriga (statue of chariot drawn by four horses), on the top. The monument was unusually rich in sculptures, which no doubt added much to its reputation as one of the Seven Wonders of the ancient world. The actual tomb chamber was placed off axis in the rock below the building and may already have been robbed long before the arrival of the Crusaders. The location of the Mausoleum in the center of the city, fronting the marketplace probably indicates Mausolus's wish to be regarded as new founder hero of Halikarnassos.



HALIKARNASSOS. Figure 1. *Reconstruction of the mausoleum.* (Courtesy Kristian Jeppesen)

Prominent among the other fourth-century buildings of Halikarnassos are the temple of Ares situated on a large terrace in the northern part of the city and a fine, but smaller Ionic temple, from which several architectural members have been found a few hundred meters further to the southeast in the Türkkuyusu district.

The "Doric stoa," which is illustrated on eighteenth-century engravings may be part of the gymnasium and is probably of early Roman date. In 1987 well-preserved parts of the ancient stadium were temporarily unearthed during modern construction works in the eastern part of the city.

The theater is about 110 m (361 ft.) in diameter and has fifty-three tiers of stone seats. It is of the Hellenistic type and was originally constructed in the fourth century (Ümit Serdaroğlu, "Bautätigkeit in Anatolien unter der Persischen Herrschaft," *Palast und Hütte,* 1982, p. 347ff.).

Mosaics and other remains of the Late Roman period have turned up in different parts of the city. Most important among these are the remains of a large villa of the fifth century CE, which was partly excavated by the English in the nineteenth century. Additional parts of this villa have been investigated by Bodrum Museum and the Danish Halikarnassos Expedition in 1990–1993, but the total extent of this large building and its mosaic decorations is unknown (Poulsen, forthcoming).

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HALUṢA (Ar., el-Khalus), a Negev settlement founded by the Nabateans as a trade route site, located about 20 km (12 mi.) southwest of Beersheba (map reference 117 × 056). Translators of the Bible into Aramaic (the targum) joined the site's Hebrew name, Ḥaluṣa, to the name *Shur* in the Jerusalem Targum of *Genesis* 16:7. In the mid-second century CE, Ptolemy included Ḥaluṣa (Gk., Elousa) in his *Geography* (5.16.10) locating it in Idumea (Gk., Edom), west of the Jordan River. The site's ancient Arabic name, as recorded in Greek-Arabic papyri, is retained in the modern Arabic designation el-Khalasa.

Hellenistic pottery dates the earliest settlement to the third century BCE, when Ḥaluṣa developed as a trade station for Nabatean caravans venturing from Petra to Gaza. An Aramaic-Nabatean inscription dedicating a shrine to the "king of NBTW," a reference to Aretas I (c. 168 BCE), and pottery uncovered at the site indicate that the Nabatean settlement continued into the reign of Aretas IV (9 BCE–40 CE). According to an account by the church father Jerome, a temple to Venus was in use at Ḥaluṣa in the fifth century CE, at the time a small Christian community resided there. That bishops from Ḥaluṣa attended the early church councils at Ephesus (421 CE) and Chalcedon (451 CE) further demonstrates that pagans and Christians coexisted at the site. Two sixth-century Byzantine sources, the mosaic Madaba map and the Nessana papyri, describe Ḥaluṣa as a large city; the papyri refer to it as a district capital, a status it apparently retained into the Arab period. [*See* Madaba; Nessana.]

Edward Robinson first identified the site in 1838. His discovery was followed, in 1897, by the first of several visits to the site by Alois Musil, who later concluded, based on the ruins of one large public building, that the entire site had been destroyed. The exploratory excavation conducted in 1938 by the Anglo-American Colt expedition centered on several dumps at the site. These large mounds, made up almost entirely of sand and dust, were probably created by the sweeping of public areas in the Late Roman period. A full-scale survey of the site was undertaken by Avraham Negev in 1973 on behalf of the Hebrew University of Jerusalem. The purpose of the survey was to test Musil's thesis regarding the total destruction of Ḥaluṣa—an extrapolation that proved to be false. Negev investigated the site further in 1979 and 1980, both seasons on behalf of the Hebrew University and in collaboration, respectively, with Ben Gurion University and Mississippi State University. Among the finds from these excavations were two burial grounds, both uncovered east of the town site. One dates to the Nabatean period; the other, to the Late Roman and Byzantine periods.

Ḥaluṣa was most prosperous in the Late Nabatean and Late Roman periods but continued as a major city of the Negev into the Byzantine period. Findings from the 1973 survey, including various suburbs, showed that Middle and Late Nabatean settlements were concentrated on the eastern third of the site, and the Late Roman and Byzantine settle-

ments covered the rest of it. The site was bounded by two wadis, Nahal Besor, running southeast–northwest, and its tributary, Nahal Atadim. The main streets of the Late Roman city were laid out parallel to these wadis, and a series of towers—the site's only line of defense—faced them. The remains of a large fortified palace, believed to have been that of the district governor of Palaestina Tertia, were found at the western edge of town. A sophisticated reservoir system, a Nabatean innovation, supplied water to residences as well as to the public bathhouse. In addition, a three-level wine press was discovered about 1 km north of the site. [*See* Reservoirs; Baths.]

The remains of a small theater, located in the eastern third of the site, were partially excavated in 1979 and 1980. The theater is an Early Roman design with local modifications. For example, the outside corridor surrounding the semicircular cavea (auditorium) did not contain the customary principal entrances (vomitoria) but instead was filled with earth and served as a support for the tiered seating. Access was through two vaulted corridors (parodoi) located at either side of the auditorium. The lower midsection of the cavea held a special box seat, apparently for nobles or priests—one of several indications that the theater was associated with cult activity. A dedicatory inscription on a lintel found in the remains of one of three portals leading from the *scaena frons* to the orchestra dates the laying of a new floor to the mid-fifth century; however, much earlier Nabatean capitals were found among the remains of another portal in the same area. [*See* Theaters.]

Also uncovered in the eastern third of the site, immediately northeast of the theater, were the remains of a church that may have been constructed on the ruins of a Nabatean temple. Much larger than most churches in the Negev (29.60 × 77.40 m), it had an expansive, roughly square atrium (28 × 32 m) enclosed by colonnades. The basilica (17.70 × 39.45 m) featured two long rows of columns, ten columns per row, with Corinthian capitals and Attic bases made of imported Proconessian marble. [*See* Basilicas.] The nave comprised two aisles of slightly unequal widths; the depth of the bema in the sanctuary was two and a half column spaces. The central apse was dominated by a structure with seven steps that at one time had a marble facade with a bronze balustrade. If this structure was in fact the base of the bishop's throne, then the church also served as a cathedral. Originally, the central apse was flanked by two rectangular rooms, but in a later period those rooms were turned into separate apses, situated north and south of the central apse. Excavators estimate the date of the two building phases at 350 and 450 CE, respectively—both toward the end of the church's history. Reliquaries were found in the southern apse.

[*See also* Churches; Nabatean Inscriptions; Nabateans; *and* Petra.]

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AVRAHAM NEGEV

HAMA, city on the Orontes River, between the barren Syrian steppe to the east and the well-watered western Mediterranean highland zone to the west (35°08′ N, 36°44′ E). The highlands include the Jebel Ansariye, which separates the Orontes Valley from the Mediterranean littoral. Hama is located 146 km (91 mi.) south of Aleppo, about 140 km (87 mi.) to the east of Banias on the Mediterranean coast, about 47 km (29 mi.) north of Homs and 209 km (130 mi.) north of Damascus. The course of the Orontes River moves through Hama in a northwesterly direction from the desert toward the Ghab, an area of exceptionally rich, dark soil from Asharneh to Qarqur that until recently was a marshy area. Hama has a long history, documented for thousands of years by written, cultural, and archaeological remains. The extended modern city, whose emblem is the *nouria,* or "water wheel," traces its history back to the Early Islamic city. Islamic buildings and building remains are still visible throughout the modern urban configuration, which supports almost 200,000 people and includes the classical city (Epiphaneia Syriae or Epiphaneia ad Orontem) and still earlier ones.

Medieval and classical remains were encountered in the highest levels of the ancient tell excavated by a Danish expedition supported by the Carlsberg Foundation between 1930 and 1938. An Iron Age acropolis, in phases E and F of

the site's sequence, contains monumental buildings most likely associated with the capital city of the biblical land of Hamath (*2 Sm.* 8:9). In the Bronze Age, the site is identified with an Ematu mentioned in the Ebla texts and possibly with the Imat or Amata mentioned in Egyptian texts. After the Islamic conquest, the name reverted from its classical name to the earlier form.

Earliest Remains. Scatters of Paleolithic artifacts in the vicinity of Hama attest to a long human history in the area. A long sequence of cultural remains in focused on the ancient tell (45 m high and approximately 400 × 300 m). The earliest documented remains on the tell date to the sixth millennium: an assemblage of Neolithic flint, plaster-vessel fragments, and pottery. These materials, in the earliest levels of phase M, provide the beginning of the long sequence of thirteen phases encompassing forty-two levels, one of the most complete sequences yet excavated on a single site in northwestern Syria. The Hama citadel continues to be one of the main reference points for archaeological sequences excavated in Syria, Palestine, and elsewhere in the Near East.

The earliest phases on the tell were exposed in limited areas at least 27 m below the surface of the mound. Following the Neolithic remains in phase M, Ḥalaf and Ubaid materials are represented in phase L; phase K represents an increasingly developed society at the end of the fourth millennium and the beginning of the third. The potter's wheel is first in evidence at the beginning of the phase in K10 and, like the possible remains of a city fortification wall, demonstrates an important feature of the local culture. Subfloor burials, common since the Neolithic layers, gradually disappear after phase K. Levels K9–2 contained beveled-rim bowls and Mesopotamian-type seals, as well as primitive local sculpture and handmade clay figurines. In levels K7–1, examples of Red and Black-Burnished, or Khirbet Kerak, Ware represent a remarkable tradition of handmade pottery found over an extended area from southeastern Anatolia to the Jordan Valley.

Bronze Age. The remaining Bronze Age sequences in phases J, H, and G on the citadel are much better documented. There is evidence primarily for domestic architecture in densely occupied areas with narrow streets. The occupation remains are rich in artifacts. In addition to the distinctive ceramic inventories, characteristic utilitarian and decorative metal items, pottery figurines, stone tools, decorated stamp and cylinder seals, and ivory and bone inlays were recovered.

Phase J primarily covers the second half of the third millennium with a sequence that is now complimented by excavated remains from the ʿAmuq to the north on the Orontes; Tell Mardikh (Ebla) to the northwest; and the Euphrates Valley salvage sites to the east. [*See* ʿAmuq; Ebla.] In addition to the artifactual assemblages, botanical and zoological remains document the ecology of the area then. Barley, wheat, horsebean, lentil, a plant resembling peas, grapes, cherries, and olives are represented in the botanical sample, and donkeys, oxen, sheep, goats, and pigs are represented in the zoological sample. [*See* Paleobotany; Paleozoology; Cereals; Olives; Viticulture; Cattle and Oxen; Sheep and Goats; Pigs.]

In phase H, a shift in the ceramic sequence takes place with many new forms for simple, primarily light-brown wares, best represented by vessels with comb-incised decoration and a variety of carinated bowls. Architecturally, the large cylindrical grain silos excavated in the center of the town are the most significant features. [*See* Granaries and Silos.]

Phase G provides a sketchy representation of the final international phase of the Bronze Age, with representations of imported Cypriot and Mycenaean pieces from the fourteenth and thirteenth centuries BCE, as well as earlier Nuzi painted ware. Buildings in this phase were more spacious than earlier.

Iron Age. The Iron Age remains in phases E and F on the citadel and in the cemeteries south and west of it provide important but incomplete documentation of the period. Cremation burials are an important feature of the cemetery remains, and a valuable typological sequence was reconstructed from the pottery and other grave goods. [*See* Tombs; Burial Sites; Grave Goods.] The contemporary stratified remains on the tell do not, however, provide a convincing framework with which to structure these sequences. Some pottery forms and decoration reflect Greek traditions of the twelfth century BCE. Iron tools and weapons became part of the material inventory, as did, in particular, the fibula, which replaced the straight garment pin. [*See* Jewelry.]

Phase E provides a portion of an administrative center of an Aramean state capital and Assyrian administrative center. [*See* Arameans; Assyrians.] It is contemporary with the historical records in Assyrian and biblical texts, but the artifactual and stratigraphic record is not securely tied to the sources. Several monumental buildings ring a courtyard entered through a gateway on the south. A few cuneiform tablets and fragments, including a letter to king Uratamis, were found, as well as some fine ivory carvings, cylinder and stamp seals, and a gold-plated statuette of a seated god. The entrances to several buildings were flanked by lion sculptures, and a decorated stela was reused as a threshold for a building tentatively identified as a temple. A large building (no. II) is considered a palace by the excavators. It has a buttressed facade and on the ground floor its most noteworthy features are an entrance court and a large number of storage rooms. The royal residence is considered to have been located on the second floor. The storerooms contained jars for grain, wine, and oil; among the many other items excavated were tools, weapons, and horse trap-

pings. Bricks with incised Aramaic inscriptions were found in the pavement at the front of the building. [*See* Cuneiform; Weapons; Aramaic.]

Iron Age Textual References. Assyrian texts mention King Urahilina of Hamath as one of the leading figures in a coalition of states that confronted the Assyrian army of Shalmaneser III at Karkara, within the territory of Hamath, when the Assyrians tried to dominate northwestern Syria between 853 and 845 BCE. Urahilina is also mentioned in a Luwian inscription in hieroglyphic script found on the citadel many years before the excavations began. [*See* Luwians.] It also mentions his son Uratamis and his father Paritas, as well as a temple of the goddess Baalat. A later inscription dated to the beginning of the eighth century BCE is written in Aramaic. It is a victory stela of Zakkur, king of Hamath and Luʿath, and was found at Tell Afis, about 110 km (68 mi.) north of Hama. [*See* Zakkur Inscription.] The last-known Iron Age ruler of Hamath is mentioned both in Assyrian texts and in a local inscription. He is designated as a usurper in the texts of Sargon II dated to 720 BCE. This Iaubi'di was defeated and killed, and his kingdom was incorporated into the Assyrian Empire as a province. Some citizens of Hamath were deported and a contingent of its military forces was incorporated into the Assyrian army. Little evidence is available for the seventh and sixth centuries BCE, though literary sources continue to mention Hamath.

Classical and Medieval Periods. A new settlement was constructed over the Iron Age remains in a rectangular plan across the tell. Its streets were oriented north–south and east–west. Coins from the third and second centuries BCE found under the buildings of this settlement date the new construction securely to the Seleucid era. They connect it with Antiochus II Epiphanes, whose name is undoubtedly reflected in the city's designation as Epiphaneia.

In the subsequent Roman period, the city gradually expanded into the valley. Building remains from this period are limited, but portions of a third-century CE temple are preserved in the present Great Mosque. The temple was transformed into a church in the fourth and fifth centuries and was rebuilt in the sixth century. Remains of other churches from this period have been documented in the city. A reference to a local bishop is known from 325. Occupation was continuous on the ancient tell until the thirteenth century, when it apparently came to an end with the Mongol invasion of Syria in 1260.

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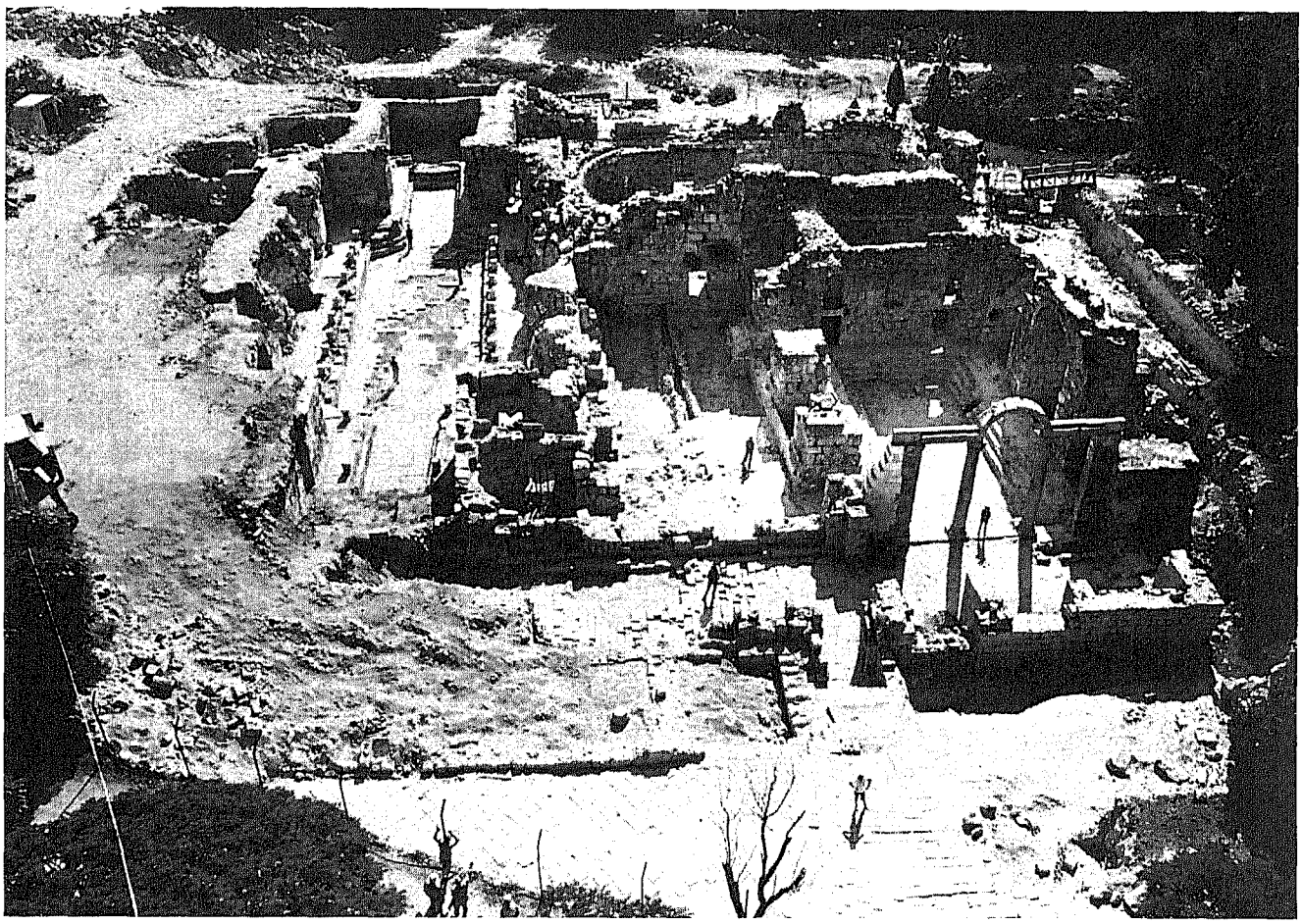
HAMADAN. *See* Ecbatana.

HAMMATH-GADER (Ar., El-Hammeh)

Transjordanian site noted in antiquity for its hot medicinal baths, located on the Yarmuk River, in a valley 7 km (4.5 mi.) east of the Sea of Galilee (map reference 212 × 232). The site is 1,450 m long and 500 m wide (180 acres). The site's ancient name is preserved not only in the modern Arabic place name but also in the name of the mound, Tell Bani ("mound of the bath").

Historical References. The earliest recorded mention of Hammath-Gader was made late in the first century BCE by the Greek geographer Strabo in his description of the hot springs located near Gadara (*Geography* 16.45). Some two and a half centuries later, the early church father Origen mentioned the baths in his commentary on John's gospel. The Greek biographer Eunapius asserted in his *Life of Jamblichus* (late fourth century CE) that only the baths at Baia in the Bay of Naples were more beautiful than those at Hammath-Gader, which apparently attracted a wide variety of visitors (Epiphanius, *Haereses* 30.7). According to Antoninus of Placentia, a pilgrim who visited Hammath-Gader in the second half of the sixth century CE, the baths, called *Thermae Heliae,* had been named for the prophet Elijah and were believed to heal leprosy (*Itineraria Antoninum* 7).

Excavation of the Baths. Much of the Roman bath complex was cleared during seven seasons of excavations, beginning in 1979 (see figure 1). This work, conducted by the Hebrew University, the Israel Exploration Society, and



HAMMATH-GADER. Figure 1. *General view of the Roman baths, looking south.* (Photograph by Zeev Radovan; courtesy Y. Hirschfeld)

the Israel Department of Antiquities and Museums, was led by Yizhar Hirschfeld and Giora Solar. An area of about 5,200 sq m was cleared, including seven bathing pools housed in individual halls of various shapes and sizes. These pools, constructed around the site's hot spring (52° C), were filled via an elevation pool built at the edge of the spring. The water in the pools became increasingly hot, gradually acclimating bathers to the high temperature of the pool closest to the spring.

The bath complex was constructed of coarsely dressed basalt stones. The walls of the long Hall of Fountains and the ceilings of many halls were of finely worked limestone. The floors of the complex were paved with slabs of a buffed clayey limestone. The most impressive construction was carried out between the fifth and seventh centuries CE. The complex was destroyed in the eighth century, probably by the earthquake of 749. It was subsequently abandoned, although people seeking cures continued to visit the site until the modern period.

Other Excavation Work. The earliest excavation work at the site was undertaken in 1932 by Nelson Glueck, in whose soundings at Tell Bani sherds were recovered from the Early Bronze Age. The absence of any Middle Bronze sherds indicated that the site, like others in Transjordan, was abandoned by that time. Hammath-Gader was not resettled until the Roman period.

Also in 1932, Eleazar L. Sukenik, leading a team sponsored by the Institute of Archaeology of the Hebrew University of Jerusalem, made soundings along the artificial mound (11 m high) on which a Roman theater had been built. Excavators determined that the cavea had fifteen rows of seats and held between one thousand five hundred and two thousand spectators. The row farthest from the stage was situated 6.6 m above the orchestra, whose diameter was 13 m. The stage (5.8 m deep and 29.6 m long) was 1.5 m higher than the orchestra.

The Sukenik expedition also uncovered a synagogue hall on the summit of Tell Bani, whose excavation was resumed

by the Israel Department of Antiquities and Museums in 1982. Three phases of construction were discerned, with the building Sukenik discovered representing the latest phase. Based on names in the dedicatory inscriptions in the mosaic floors, the excavators dated the synagogue to the first half of the fifth century CE. However, the mixture of architectural elements characteristic of both early and late synagogue types (the transverse row of columns and the square hall are representative of the former; the apse and mosaic pavement, of the latter) suggests an earlier date, in the transitional period between the two synagogue types.

[*See also* Baths; Synagogues; *and the biography of Sukenik.*]

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HAMMATH TIBERIAS, site located on the western shore of the Sea of Galilee, extending from the hots springs (Ar., el-Ḥammam) south of ancient Tiberias (32°47′ N, 35°32′ E). The Talmudic identification (J.T., *Meg.* 1, 70a) with biblical Hammath (*Jos.* 19:35) is questionable, given a survey of the area and excavations that revealed no remains prior to the Hellenistic period. Originally separate, walled cities (J.T., *Meg.* 2:1–2), the Mishnah records that sometime in the first century CE Tiberias and Hammath were united (Tosefta, *ʿEruv.* 7:2). In the third century CE, Hammath benefited from Tiberias's distinction as Judaism's spiritual center. Hammath fell into decline in about 429 but capitalized on its noted hot springs and continued as a city until about 750.

In 1921 N. Slouschz excavated at the site on behalf of the Palestine Department of Antiquities, about 500 m north of the southern part of the city wall. He uncovered a square, basilica-style synagogue with a double row of columns separating a nave and two aisles. [*See* Basilicas.] There were three entrances on the north. On the east, a doorway opened to an outer courtyard. At the southern end of the nave four small columns partitioned an enclosed area, perhaps for the Ark of the Law. Multiple levels of pavements, mosaics, and alterations in the building confirm at least two phases of construction, with the first placing the entrance on the south. Slouschz identified the building as the synagogue of Hammath in the Early Roman period, disagreeing with Louis-Hugues Vincent. Comparing the building's small size to other ancient synagogues, Vincent in 1921 had assigned the later phase to the fourth or fifth century CE. Subsequent research identifies the building as a fourth-century synagogue. [*See the biography of Vincent.*]

Moshe Dothan directed excavations for the Israel Department of Antiquities from 1961 to 1963 near the hot springs, about 150 m west of the Sea of Galilee. He excavated three major construction levels dating from the first century BCE to the eighth century CE. Dothan assigned the primary building in level III to the first century or first half of the second century CE. Consisting of a central court with halls or rooms on three sides, the plan resembled a public building—a gymnasium or possibly a synagogue. Meager finds included a cantharus-shaped glass goblet. Level III was apparently destroyed in the mid-second century.

In level II, the synagogue of phase IIA is a broadhouse building based on the earlier phase IIB. Building IIB is a separate structure with three rows of columns, each with three columns each, creating four halls, the widest being the nave. A mosaic-paved corridor is attached to the building on the south with an entrance on the east. A small room in the northeast corner may have been a stairwell.

In building IIA, the corridor was divided into cells and the entrance on the east was closed. According to Dothan (1983) there were three entrances on the north. The northeast stairwell went out of use and a staircase was placed in one of the cells in the former south corridor. At the nave's south end a step led to a raised niche in the corridor for holding the Ark of the Law. Excavated debris contained remains of brightly painted interior walls. [*See* Wall Paintings.]

Magnificent mosaics using thirty hues, superbly preserved, paved the nave and aisles. Most significant are three panels in the nave mosaic. The southern panel depicts the Ark of the Law, flanked by a seven-branched menorah with flames, a lulab, ethrog, shofar, and incense shovel. The center panel depicts the zodiac surrounding the figure of the sun god Helios riding in his chariot. A halo is above his head, his right hand is raised in benediction, and he holds a globe

of the universe in his left hand. In each corner of the panel a female bust with a Hebrew name beside it symbolizes each of the four seasons of the year. In the north panel a dedicatory inscription in Greek is flanked by two lions. [*See* Mosaics.] The high artistic level, in design and execution, of the mosaics, as well as the various finds, confirm a date of 300–350 CE for level IIA. This unique broadhouse plan remained in use until the fifth century, when it was replaced by a new synagogue in phase IB, built in the basilica style common to the period.

The buildings of level IB–A, also oriented southwest–northeast, were divided by two rows of columns into a nave and two aisles. An entrance hall was formed with a transverse division of the nave by a third row of columns. A second-story gallery running along three sides of the building was supported by all three of the columns' rows. From the nave, three steps led to the apse. In a room east of the apse, a staircase gave access to the second floor; in a room to the west, the synagogue's "treasury" had been hidden in the floor. The three main entrances were on the north. On the west, three doorways opened to a paved courtyard. Tiny colored tesserae formed the hall's mosaic in faunal, floral, and geometric designs. Level IB was destroyed in about 600–650 CE, perhaps by the reconquering Byzantines, and replaced by a very similar structure in level IA.

Rich finds in level IA included pottery of a type found at Khirbat al-Mafjar, Arabic inscriptions on some of the many clay lamps, and a jug inscribed in Aramaic concerning a gift of oil from Sepphoris. [*See* Mafjar, Khirbat al-; Sepphoris.] Numismatic evidence indicates that level IA was destroyed at the beginning of the 'Abbasid period (c. 750), never to be rebuilt. Squatters occupied the site from about 1100 to 1400, using the ruins for habitation and storage.

[*See also* Synagogues; Tiberias.]

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HAMRIN DAM SALVAGE PROJECT. In 1977 the Iraqi State Organization for Antiquities and Heritage invited foreign archaeological teams to join Iraqi teams excavating sites threatened by flooding from a dam built on the Diyala River where it flowed through Jebel Hamrin, about 100 km (60 mi.) northeast of Baghdad (34°07′ N, 44°59′ E). Earlier travelers had noted archaeological sites in the valley and Robert McC. Adams included twelve sites in his survey (*Land behind Baghdad,* Chicago, 1965, pp. 135–136, map section 1B). During the Hamrin Dam Salvage Project about one hundred archaeological sites were identified in the approximately 425 sq km (265 sq. mi.) area to be flooded (below 108 m above mean sea level) and some sixty-five were excavated as part of the project. Some of the excavations were extensive and others were small soundings. The Iraqi State Organization excavated twenty-three sites and the Universities of Baghdad and Mosul worked at two. In addition, American, Austrian, Belgian, British/Canadian, Danish/American, French, East German, three West German, Italian, Japanese, Lebanese (called Palestinian by the Iraqis), and Polish expeditions each worked on one or more sites. The foreign expeditions paid their own expenses but equipment, accommodations, and labor were paid for by the State Organization. Most of the excavations were completed by March 1980 when the lake first began to fill, but excavations at the sites of Tell Haddad and Tell Suleimeh continued until 1984.

The Diyala River flowed across the plain, and near the site of the dam it was joined by two smaller streams, the Narin, flowing down from the northwest, and the Kurdere, from the southeast, both running along the edge of Jebel Hamrin. Geomorphological investigations showed that in the past a major branch of the Diyala River had flowed farther north, entering the Hamrin basin from the north; it seems probable, however, that both courses remained in use.

The valley lies near the limits of the dry-farming zone, with an average of 250–300 mm of annual rainfall; the surrounding hillsides provide grazing for flocks. The most important route from Iran to Mesopotamia, the Khorasan road, part of the so-called Silk Route, crossed the valley. At right angles to this an important route, perhaps on the course of the so-called Achaemenid Royal Road from Susa to Sardis, ran along the northeast side of the valley. In the Ottoman period, and probably also in certain earlier periods, the main route from southern Iraq went via the Hamrin basin, crossing Jebel Hamrin west of the Diyala, and continuing via Qara Tepe to Kifri and on to Kirkuk, Arbil (Erbil), and Mosul.

The excavations in the Hamrin basin give an outline of the history of settlement in the region, although the picture has gaps that cannot be filled, and the pattern of settlement does not exactly match that derived from a study of historical texts. In addition it does not mirror the settlement pattern adumbrated by Adams for the lowland plains of Iraq (*Heartland of Cities,* Chicago, 1981). The reason for this seems to be that the prosperity of the Hamrin region was extremely sensitive to considerations of political stability: dry farming and irrigation agriculture, as well as the trade routes through the region, were dependent on outside investment which was not normally forthcoming when the region lay on the border between different political powers.

It is also likely that for most periods sites have not been recorded either because they are covered by alluvium (excavations at Tell Madhhur in the northern part of the basin showed that there had been as many as 4 m of silt deposited in the last six thousand years) or have been eroded. Furthermore, settlements that were not marked by substantial

mud-brick buildings were probably missed. Thus nomadic settlements, settlements of tents or insubstantial wood or reed structures, and scattered buildings have probably not been observed.

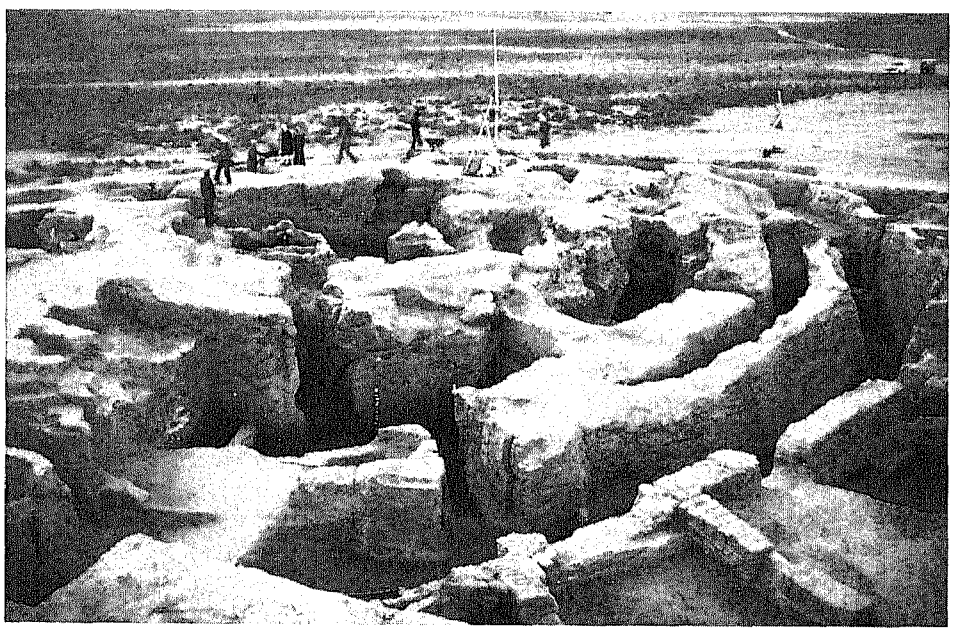
The earliest site recorded was an aceramic settlement at Tell Rihan. Two Samarran sites were investigated, including that at Tell Songor A, where eight buildings with regular grid plans, like those at Chogha Mami, and a possible surrounding wall belong to the late Samarran period. The Hamrin basin lies at the southeastern end of the maximum extent of the Halaf culture and four sites were excavated with late Halaf pottery. On two sites occupation levels containing both Halaf and Ubaid 3 pottery were stratified above Halaf pottery.

Perhaps the greatest surprise of the Hamrin Salvage Project was the number of sites from the Ubaid period. Fourteen sites with Ubaid occupation levels were excavated. Most of these belonged to the later Ubaid (Ubaid 3 and 4) period, but in level III at Tell Abada Samarran, Chogha Mami Transitional, Eridu (Ubaid 1), and Hajji Muhammad (Ubaid 2–3) sherds were found together. [*See* Eridu.] This unusual combination suggests that either the level was mixed or that the earlier sherds were residual. A complete village consisting of eleven building units was excavated in level II (Ubaid 2–3) at Abada, and some were rebuilt in level I (Ubaid 3). The buildings are mostly tripartite with cruciform central rooms. Some have an intricate arrangement of three interlocking cruciform rooms. A similar plan was found at Kheit Qasim III (Ubaid 3), and a house with a similar but simpler plan was excavated at Tell Madhhur. The house at Madhhur had been burned and the walls were still standing up to 2 m high and much of its contents was found in the house. [*See* Ubaid.]

There were no definite Early or Middle Uruk settlements, but four Late Uruk sites were recorded. The following Jemdet Nasr period, or late Protoliterate, was represented at three sites: Tell Suleimeh, Tell Gubba, and Tell Abu Qasim. The architectural remains at Tell Gubba were spectacular, including intact corbeled vaulting. The building (about 70 m in diameter), consisted of a central circular core with seven concentric walls and a surrounding moat. [*See* Uruk-Warka; Jemdet Nasr.]

In contrast to the Uruk and Jemdet Nasr periods, the Early Dynastic I period, characterized by scarlet ware pottery was a time of prosperity in the valley, with numerous settlements and a variety of substantial architecture and rich cemeteries. The Tell Gubba building remained in use. A second round building (27 m in diameter) of different design was excavated at Tell Razuk: this had a circular courtyard surrounded by curving corbel-vaulted rooms (see figure 1). This appears to have been the citadel of a small settlement. Two further round buildings were excavated at Tell Suleimeh and Tell Madhhur. Extramural cemeteries were excavated at Kheit Qasim and Ahmed al-Hattu. The settlement associated with Kheit Qasim I, Abu Qasim, a small rectangular walled settlement, was also excavated.

The archaeological sequence revealed by the excavations in the Hamrin was very similar to that established by the Oriental Institute of the University of Chicago excavations in the Diyala in the 1930s, but the Early Dynastic II period



HAMRIN DAM SALVAGE PROJECT. Figure 1. *Round fortress at Tell Razuk.* ED I-II period. (Courtesy I. Thuesen)

was not as easily recognized in the Hamrin basin. [*See* Diyala.] There were a number of important sites in the late Early Dynastic and Akkadian periods. At Tell Suleimeh (probably to be identified with ancient Awal or Batir), a temple with a thick oval wall rebuilt many times was in use from the Early Dynastic to the Akkadian period. Cuneiform tablets of the Akkadian period were also found there. At three sites, Tell Madhhur, Tell Gubba, and Tell Razuk, the abandoned mounds were used as burial places and produced large, rich tombs. Among the grave goods were equids (bringing to mind, albeit on a smaller scale, the Royal Tombs of Ur and Kish, except that there was no evidence for chariots in these Hamrin graves). [*See* Ur; Kish.]

The Ur III period was not well-recognized in the valley, but it is likely that some of the sites with Akkadian and Isin-Larsa material were also occupied in the Ur III period. [*See* Isin; Larsa.] The Isin-Larsa period was one of prosperity, during which the Hamrin was under the control of the rulers of Eshnunna. [*See* Eshnunna.] There were a number of important towns in the region with public buildings, such as the palatial building excavated at Tell Suleimeh. At the neighboring mounds of Tell Haddad and Tulul al-Sib, which formed part of the city of Me-Turan, the city wall, various temples, and private houses were investigated. More than eight hundred cuneiform tablets were recovered, some of which came from a temple library and include letters, contracts, omens, and mathematical, literary, and school texts. Another palatial building was excavated at Tell Yelkhi, where some seventy tablets were recovered. At Tell Khallawa an extensive area of an Isin-Larsa period settlement with houses and a small temple was exposed and cuneiform tablets were recovered.

The destruction of Eshnunna by Hammurabi might have been expected to have reduced the region's prosperity and, although in many reports a distinction between Old Babylonian and Isin-Larsa was not made, this does appear to have been the case. Cuneiform tablets from this period were found at Tell Yelkhi, but in general the middle centuries of the second millennium BCE are not well represented in the valley.

Several Kassite sites were investigated. [*See* Kassites.] A small palace was uncovered at Tell Yelkhi and thirteenth-century BCE cuneiform tablets were recovered from Tell Imleihiyeh and Tell Zubaydi.

Surprisingly, there was very little evidence for occupation in the valley in the Neo-Assyrian period. Shalmaneser III and Shamshi-Adad V both captured Me-Turnat (Tell Haddad) and campaigned against Gannanate, which may have been close to Sa'adiyeh. Archaeological evidence for the period is sparse. The most substantial remains are those of a well-preserved temple of Nergal at Tell Haddad which was restored by Ashurbanipal and may be the temple mentioned in the Cyrus Cylinder. Next to the temple traces of other large buildings were discovered. Elsewhere in the valley the only Neo-Assyrian remains are unstratified sherds and a few graves discovered near Tell Yelkhi.

With the fall of the Assyrian Empire, the Hamrin valley lay on the border between the Median and Neo-Babylonian Empires. The small square fortress at Tell Gubba, with parallels at Nush-i Jan and Persepolis, may belong to the early sixth century or perhaps to later in the Achaemenid period. [*See* Persepolis.] Other Achaemenid remains have been noted in the valley, but there is some doubt about the dating. It is possible that they really belong to the following period.

The Seleucid and Parthian periods were not distinguished by most of the excavators, and thus their chronological development is not well known. It is clear, however, that the Parthian period was one of the most important in the valley, with the largest occupation area. A two story fortress with some forty-eight rooms on the ground floor was excavated at Tell Baradan. Other fortified sites of this period were Tell Ababra, Tell Abqa, and Tell Abu Su'ud.

The most outstanding Sasanian site excavated in the valley was the small manor of Abu Shi'afeh. The building was square, with sides 30 m long with attached semicircular towers. It had a central courtyard and iwans *(ayvans)* on the northeast and southwest sides. In a small room on the northwest some eight hundred bullae, each with between one and twenty-five stamp seal impressions, were discovered. There may have been a similar building at Tell Ibn Alwan, but only a small area was excavated there. A large number of sites had superficial eroded remains from the Sasanian period, but the major settlements may have been outside the area to be flooded. The city of Jalawla, near which the decisive battle between the Islamic Arabs and the Sasanian Persians was fought in 637 CE, is to be sought near Sa'adiyeh, rather than in the modern city of Jalawla, which was previously called Qaraghan. Although Islamic remains were found at many sites, it is clear that the Hamrin basin had lost its importance by this period.

The investigations carried out in the Hamrin Dam Salvage Project make the Hamrin basin, "the Land behind the Land behind Baghdad" (T. C. Young and R. Killick in Killick, ed., 1988, p. 5), one of the most intensely investigated areas in the Near East. The slopes of Jebel Hamrin and Jebel Nasaz form natural borders on the southwest and northeast, but the flat alluvium extended with no natural obstacles to the southeast and north, and detailed survey of the sites outside the area of the project might alter our perception of the settlement distribution pattern. Furthermore, because the expeditions operated more or less independently and the standards of excavation and publication varied greatly, it is difficult to give a definitive and comprehensive evaluation of the results.

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MICHAEL ROAF

HARDING, GERALD LANKESTER (1901–1979), archaeologist who might well be called the father of Jordanian archaeology. Harding served for twenty years (1936–1956) as the director of the Jordanian Department of Antiquities. In 1951 he founded the *Annual of the Department of Antiquities of Jordan (ADAJ),* which continues to be one of the most important scholarly publications dealing with current archaeological work in Jordan. Born in China, Harding spent his childhood in Singapore and England. His introduction to archaeological fieldwork came in 1926, when he joined the Tell Jemmeh excavation directed by Sir Flinders Petrie. Petrie also served as his mentor on the Tell el-Farʿah North (1927–1928) and Tell el-ʿAjjul (1929–1932) excavations. From 1932 through 1936 he worked with James L. Starkey and Olga Tufnell at Tell ed-Duweir (Lachish). [*See* Jemmeh, Tell; Farʿah, Tell el- (North); ʿAjjul, Tell el-; Lachich; *and the biographies of Petrie, Starkey, and Tufnell.*]

Harding is best known for his work at Qumran and his documentation of Safaitic inscriptions from the Jordanian desert. Following the discovery of the Dead Sea Scrolls, he worked with Père Roland de Vaux for several seasons at the excavation at Khirbet Qumran. He was instrumental in assembling an international team of scholars to reconstruct, study, and publish the scrolls. [*See* Qumran; Dead Sea Scrolls; *and the biography of Vaux.*]

In the latter years of his career, Harding focused his attention on pre-Islamic inscriptions. In a series of expeditions to Jordan's northeastern (H5, oil pipeline pumping station) desert region, he collected nearly six thousand Safaitic inscriptions. He published them in numerous books and articles, including *An Index and Concordance of Pre-Islamic Arabian Names and Inscriptions* (1971), which is still considered an authoritative text. Harding concluded his work as a field archaeologist with surveys of the Aden Protectorates (1959–1960) and northwestern Saudi Arabia (1970; 1972).

In addition to his extensive scholarly publications, Harding promoted greater public awareness of Jordan's archaeological heritage through such popular publications as *The Antiquities of Jordan* (1959).

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DAVID W. MCCREERY

HAROR, TEL (Ar., Tell Abu Ḥureyra), site located in the western Negev desert, on the north bank of Naḥal Gerar (31°23′ N, 34°37′ E). The site has been identified with Beth-Merkabot (William F. Albright, 1925, p. 6), Gerar (Yohanan Aharoni, 1954, pp. 110–111), Gath (Lawrence Stager, 1995, pp. 342–343), and Sharuhen (Anson F. Rainey, 1993, p. 185*). This 40-acre trapezoidal mound is crowned by an upper tell some 3 acres in size and 10 m high. Excavations conducted between 1982 and 1992 by an expedition from Ben Gurion University, directed by Eliezer D. Oren, indicated that the site had been inhabited only sporadically during the Chalcolithic–Early Bronze Age I, but continuously between the Middle Bronze and Persian periods.

The MB II–III town is represented by a 40-acre compound surrounded by a formidable defense system of earthen ramparts (20 m wide × 8 m high) and a deep fosse (5–7 m deep × 15 m across). Area K, in the southwest corner of the compound, was occupied by the architectural remains of a spacious cult precinct. The two-phased (K4–5) temple complex comprised a massive Syrian-style *migdal,* or "tower," sanctuary; a chamber with benches and niches for offerings; and a mud-brick (offering ?) altar. [*See* Altars.] The *favissae,* or "pits," in the courtyard yielded many bones

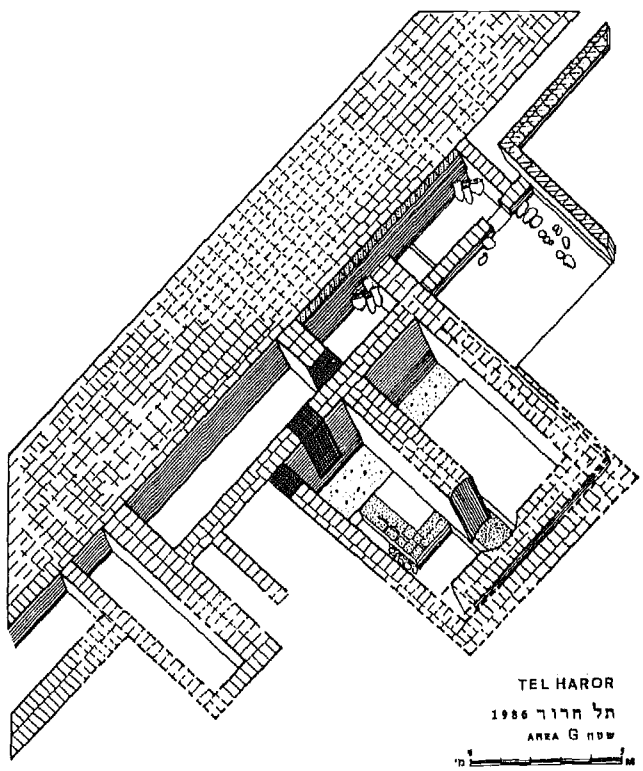
HAROR, TEL. Figure 1. *Cult stand from the MB temple courtyard.* (Courtesy E. D. Oren)

of ritually slaughtered animals, including complete skeletons of puppies and birds. Nearby, another pit was uncovered, that contained skeletons of donkeys. The rich store of cult vessels and ex-votos—animal and human figurines, incense stands, vessels applied with figures of horned animals and snakes—supplies details of Canaanite cult and religion during the Middle Bronze Age (see figure 1). [*See* Canaanites; Cult.] In area L, on the upper slope of the rampart, the remains of a large MB III public building were found, apparently a courtyard-style palace, with stone-lined buttressed foundations (L4). [*See* Palace.] In area B, under Iron Age I strata, a stone-lined MB grave with the burials of infants and an adult was recovered. [*See* Burial Techniques.] Although the extent of the succeeding LB I–III settlements at Tel Haror remains undetermined, it was probably considerably smaller than, and restricted to certain areas of, the MB town. A large and well-organized public structure (L2–3), perhaps a patrician house, was explored in area L, directly above the walls of the MB palace. Excavations in area K unearthed various installations from the LB III, notably a well-preserved potter's kiln and associated refuse pits.

The main Iron I settlement is recorded in area B and on the upper slope of the rampart. Excavations yielded a sequence of building phases (B7–1) that span the LB III and the end of the Iron I period. The remains of phases B6–5 of Iron I belong to a spacious structure with a stone-paved courtyard. It is noteworthy that these deposits produced locally manufactured monochrome pottery of Aegean types. Phases B4–2 are represented by a series of carefully constructed buildings on stone foundations and by stone-lined grain silos that yielded rich assemblages of both monochrome and bichrome painted ceramics as well as nicely cut stone seals. [*See* Granaries and Silos.] To the last phase of Iron I (B1) in the late eleventh century BCE belongs a massive citadel and a building with a cobbled courtyard. Certain activities, industrial and domestic, in this period were also recorded in other areas of the tell (D, K, L).

Excavations in 1982–1986 in areas D, E, and G on the upper tell uncovered exceptionally well-preserved remains of a highly organized Iron II–III fortified citadel at the northeastern corner of the MB rampart (see figure 2). The overall shape of the upper tell was determined by the defense complex, which included a rampart, massive defense wall, glacis, and probably also a corner bastion. The 4-meter-wide enclosure wall is preserved to a height of 4 m; its base is supported by a massive embankment and glacis constructions. A formidable mud-brick tower (about 9 × 7 m) protrudes from the wall; nearby, a mud-brick platform had supported the corner tower.

A cluster of well-planned and exceptionally well-preserved storehouses was explored in area G, including long-halled magazines constructed against the enclosure wall. The magazines were elevated on mud-brick platforms that



HAROR, TEL. Figure 2. *Isometric view of the citadel wall and magazine.* (Courtesy E. D. Oren)

consisted of massive foundation walls with stones and fragments of bricks packed tightly in between them. Stratigraphic and artifactual considerations imply a mid- or late eighth-century BCE date for the construction of the citadel and the buildings inside it (G6–5). For some reason (earthquake?), soon after their construction, both the fortification system and the buildings inside underwent a major renovation (G4) that involved the raising of the glacis and floors for some 2 m. The citadel (G3) came to an end in a violent conflagration sometime in the mid- to late seventh century BCE, likely caused by an Egyptian military expedition of the Saite kings. Excavations yielded a rich store of finds, such as Phoenician-style transport amphorae, as well as jars with incised inscriptions, including one inscribed with the word *lbgd* alongside an Egyptian ankh and the hieratic numeral 8 inscribed four times. The results of the excavations on the upper tell suggest that the building of the citadel at Tel Haror may have been part of Assyria's overall military and economic organization in southern Philistia and on the border of Egypt. [*See* Assyrians.] The reoccupation in the Persian period (G, D1) of the upper tell involved a large-scale leveling of the preceeding Iron Age site. The remains in area G consisted of a spacious building with cobbled floors and grain pits; another building, in area D, had a large courtyard paved with stone slabs. The finds included Greek and Cypriot imports, clay figurines, and Aramaic ostraca.

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ELIEZER D. OREN

HARṬUV (Ar., er-Rujum; map reference 149 × 129), Early Bronze I site located near Naḥal Sorek, north of Beth-Shemesh, in Israel's northern Shephelah. Harṭuv is the site's modern Hebrew name. The site was discovered during field surveys; small-scale excavations were conducted between 1985 and 1988 under the direction of Pierre de Miroschedji and Amihai Mazar, on behalf of the French Research Center in Jerusalem and the Hebrew University of Jerusalem.

The site is approximately 7.5 acres in area; two strata dated to the EB I were observed, apparently founded on virgin soil. Only a few remains from later periods were found.

A hillock at the center of the site (area A) marks the remains of a public architectural complex, a rare feature in an EB I settlement. The complex, only partially excavated, includes a central courtyard surrounded by rooms on at least three sides. The main room on the south was probably a sanctuary (5.8 × 15 m), with a line of pillar bases along its long axis and an entrance in one of the long walls. The wall opposite the entrance was lined with standing stones, fronted by a narrow bench. Some of the stones were smooth and shaped into rectangles. The excavators identified them as a line of *maṣṣēbôt* ("standing stones"), used in the cult as memorials to tribal ancestors or as symbols of deities. It is possible that in an earlier stage the stones stood in an open cult place and only later were incorporated into the building.

Another broad hall in this complex had a monumental entrance with two monolithic doorjambs made of well-cut stone blocks up to 1.9 m high. These architectural features are unknown from other EB I sites. Two narrow subsidiary chambers formed another part of the complex. The complex may have served as the community's joint religious and secular center.

The pottery assemblage found at the site is homogeneous and can be identified as a southern version of the EB I culture in Palestine. It is characterized by an abundance of incised and painted designs but lacks red slip and burnish. Similar assemblages are known from several sites in southern Palestine. Some of the sherds belong to a group of pottery inspired by Egyptian techniques and forms, though they were produced in southern Palestine. These connect Harṭuv with the Egyptian colony at Tel 'Erani to the south, dated to the time of the first dynasty.

Harṭuv has important implications for several aspects of EB I culture, such as architectural forms and monumental building techniques; regionality in the material culture; and perhaps also cult practices and the role of religious institutions in the society. The site was abandoned before the end of the EB I, perhaps when nearby Yarmut developed as an urban center.

[*See also* Yarmut, Tel.]

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AMIHAI MAZAR and PIERRE DE MIROSCHEDJI

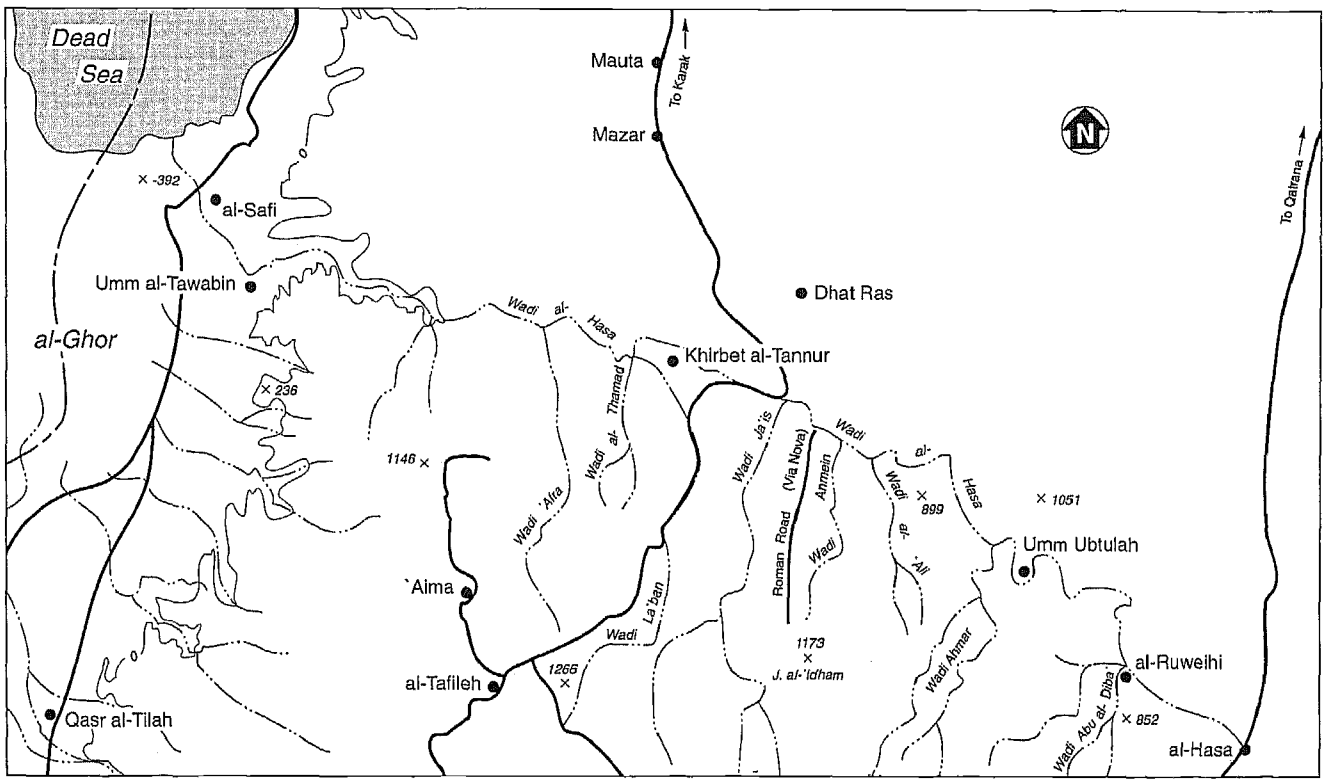
HASA, WADI EL-, one of the main east–west wadis in Jordan; it begins in the eastern Jordan desert and flows in a northwesterly direction to the Southern Ghors at eṣ-Ṣafi at the southeast end of the Dead Sea. Elevations range from about 800 m near its eastern end at Qal'at el-Hasa (2392.5 × 0278) to about −370 m at its western end, just west (194.9 × 49.9) of eṣ-Ṣafi. Elevations to the north and south of the wadi range in excess of 1,200 m, however.

Wadi el-Hasa is situated on the west side of a physiographic province geologists describe as the mountain ridge and northern highlands east of the Great Rift Valley. Immediately west of the wadi is a sharp change in geologic style. The north–south boundary fault of the Dead Sea Rift is located just east of eṣ-Ṣafi. This is marked by a sharp change in elevation with values being in excess of 1,000 m east of the fault and fewer than −200 m to its west.

A number of explorers visited the area south of Wadi el-Hasa in the nineteenth and early twentieth centuries. Among them, Nelson Glueck extensively explored the area (1934–1939), excavating the Nabatean temple at Khirbet et-Tannur (2173 × 0420), immediately south of Wadi el-Hasa, in 1937 and 1938 (Glueck, 1966). Manfred Weippert (1979) surveyed several sites immediately south of Wadi el-Hasa in 1974.

Between 1979 and 1983, Burton MacDonald directed the Wadi el-Hasa Archaeological Survey (WHS), examining 1,074 sites both within and south of the wadi. The survey published a final report in 1988 (MacDonald, 1988). The occupational history north of the wadi is reported on in Miller (1991). Wadi el-Hasa was the WHS's northern boundary. On the east, the survey territory extended to Qal'at el-Hasa, immediately west of the Desert Highway; on the west, it went just beyond the edge of the plateau where the terrain drops off appreciably toward the southeast plain of the Dead Sea. The WHS's southern boundary went from 15 km (9 mi.) in the west to less than 1 km in the east, south of Wadi el-Hasa. The survey territory is cut by a number of impressive and deep wadis flowing south to north.

The WHS found lithic evidence of human occupation in the area beginning as early as the Lower Paleolithic period. This evidence spans all time-strategic units from the Lower Paleolithic through the Pre-Pottery Neolithic periods (PPN). There is little evidence of a Pottery Neolithic presence except in the western segment of the survey territory. The number of Chalcolithic sites seems to indicate an increase in population south of Wadi el-Hasa then. This trend continues into the Early Bronze I period but not into the Early Bronze II–IV. The Middle Bronze and Late Bronze Ages are poorly represented in the WHS territory. There is evidence, however, for the renewal of sedentary occupation in the area at the end of LB II. There are further indications of population increase during the Iron I period, with twelfth–



HASA, WADI EL-. *Map of Wadi el-Hasa Archaeological Survey territory.* (Courtesy B. MacDonald)

eleventh-century BCE settlements in the western section. This population increase seems to accelerate during Iron II and possibly is sustained until it begins to wane at the beginning of the Hellenistic period. Nabatean sites are found, especially in the wadis, throughout the WHS territory. Roman period sites are also found throughout the territory and a segment of the Via Nova Traiana is well preserved in the central segment. The Byzantine period seems to be, on the basis of the number of sites, one of significant population. The Early Islamic evidence is sparse, but there are several major sites among those from the Ayyubid/Mamluk period. A number of the Ottoman period sites are probably villages associated with the pilgrimage route to Mecca.

Since the completion of the WHS fieldwork in 1983, a number of archaeologists have worked on sites the WHS surveyed, illuminating human occupation in the area in the Paleolithic period: Gary O. Rollefson and Zeidan A. Kafafi (1985) studied WHS site 149, Khirbet Ḥammam/Abu Ghrab (2136 × 0437), a PPNB village site; Brian F. Byrd and Rollefson (1984) revisited WHS site 895, Ṭabaqa (2322.5 × 0342), an Epipaleolithic site; Zeidoun Muheisen and François Villeneuve began excavating the Nabatean-Roman village, temple, and cemetery at Khirbet ed-Darih, WHS sites 253–254 (2172 × 0352), in Wadi La'ban in 1984 (Villeneuve, 1988); and Philippe Bossut, Zeidan Kafafi, and Genevieve Dollfus investigated WHS site 524 (2173 × 0362), a Pottery Neolithic site, more extensively in 1987 (Bossut et al., 1988). In particular, in 1984 Geoffrey A. Clark began excavating a number of WHS sites at the eastern end of Wadi el-Hasa and in Wadi el-'Ali: WHS site 618 (2387.5 × 0278), a series of Upper Paleolithic Ahmarian and Levantine Aurignacian as well as Epipaleolithic Kebaran sites located on the northwest shore of Pleistocene Lake el-Hasa, with a C-14 date of 20,000 years BP from its Kebaran component, and a probable age for the sites at about 25,000–15,000 years BP; WHS site 621 (2380.5 × 0286.5), a slightly later Middle Paleolithic (*tabun* B–C-type Mousterian) open site located on the northwest shore of Lake el-Hasa, that is probably about 60,000 years old; WHS site 623X (2380.5 × 0288), a small (4 sq m) Upper Paleolithic Ahmarian open-air knapping station on the shore of Lake el-Hasa with many reconstructible cores that is undated but whose probable age is about 25,000 years BP; WHS 634, 'Ain Difla, (2274.5 × 0349.1), located in Wadi el-'Ali (one of the main south–north wadis emptying into Wadi el-Hasa), an early Middle Paleolithic (*tabun*-D-type Mousterian) rock-shelter associated with the middle terrace of Wadi el-'Ali, with 7-meter-high stratified deposits (the Oxford thermoluminescence date for burnt flint from the uppermost five levels, of the twenty excavated so far, is 105,000 ± 15,000 years BP); WHS 784X, Yutil el-Hasa (2375 × 0311), a terminal Ahmarian collapsed rock-shelter site with excellent faunal preservation, hearths, features, and a pollen sequence C-14 dated to 19,000 years BP; and WHS 1065, 'Ain el-Buheira (2385.5 × 0276.5), an Epipaleolithic Kebaran and Natufian open-air site associated with Lake el-Hasa and found adjacent to a rock-shelter and a fossil spring (five of its C-14 dates range from 16,900 to 15,600 years BP).

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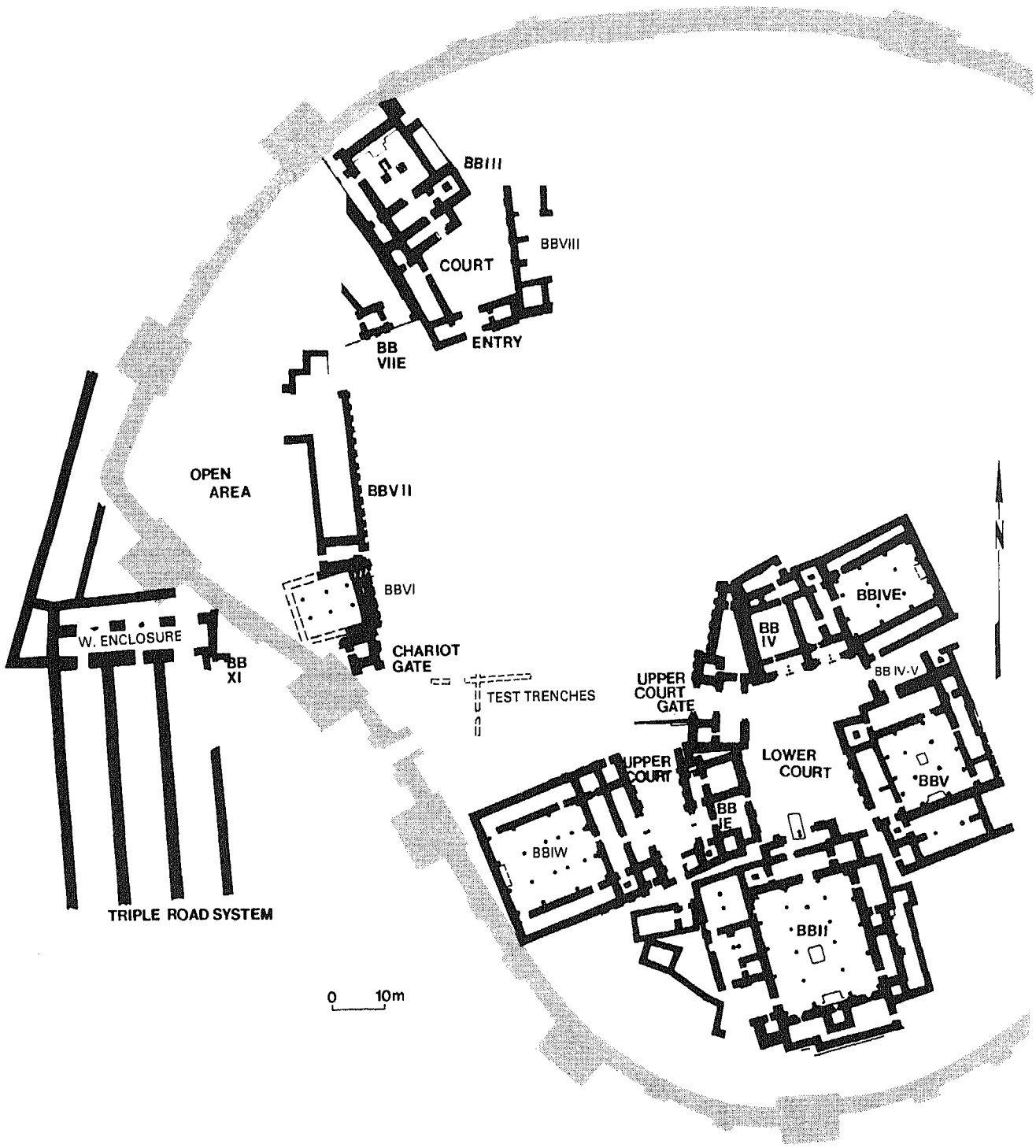
BURTON MACDONALD

HASANLU, site located in the northern half of the Solduz valley, just south of the southwestern corner of Lake Urmia in western Azerbaijan province, Iran (37°00′ N, 45°13′ E). The site rises 25 m above the surrounding plain and consists of a central high mound (the Citadel mound),



HASANLU. Figure 1. *Plan of the site.* The period IV B structures in black were destroyed c. 800 BCE. The fortification wall in gray belongs to the Urartian occupation (period III B), c. 750-600 BCE. (Courtesy University of Pennsylvania Museum, Philadelphia)

about 200 m in diameter (see figure 1), flanked by a low terraced mound about 8 m high and about 600 m in maximum diameter as presently preserved (the Outer Town). The site clearly extended farther in antiquity because archaeological deposits occur in nearby fields and have been found beneath the modern village of Hasanlu. Soundings on the central mound indicate that the total depth of deposit is more than 27.5 m, extending beneath the present water table.

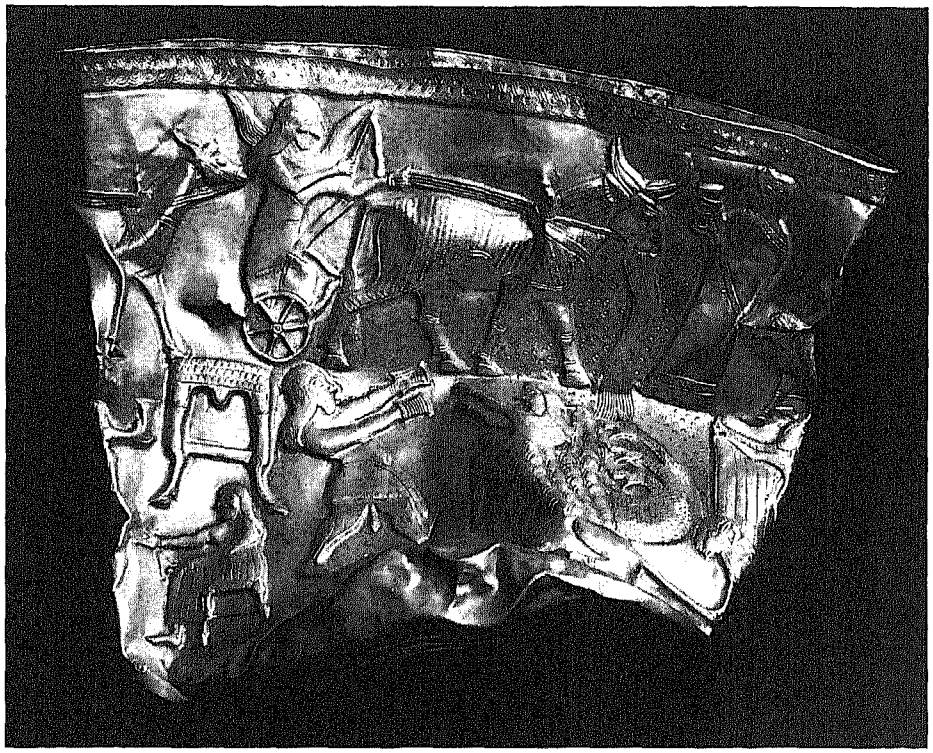
Solduz lies at the eastern end of the Qadar River valley, which runs from the Zagros Mountains on the Iraq frontier on the west to the edge of the grassy plains of Miandoab on the east. The kingdom of Assyria to the west and Urartu to the north vied for control of this region during the early first millennium BCE. In the ninth century BCE, the Qadar valley and Solduz appear to have been under the influence of the Assyrians, to judge from the material culture dating to that period at Hasanlu. Between 800 and 780 BCE the Urartians, who had established settlements and fortresses to the north and west, appear to have pushed south and occupied the Qadar valley. Joint inscriptions of Ishpuini and his son Menua are found at Kel-i Shin near the sources of the Qadar, at Qalatgah (down the Qadar about 27 km [17 mi.] to the west of Hasanlu) and at Tash Tepe to the east, at the edge of the Miandoab plain. In the eighth century BCE the Urartian settlement of Musasir was located to the west of Hasanlu, somewhere near the Kel-i Shin pass. East of Hasanlu, an Urartian inscription at Tash Tepe mentions the name of the Mannean town of Meshta. By general consensus, the kingdom of Mannai (biblical Minni) lay to the southeast of Tash Tepe, in the region of modern Mahabad and Saqqiz—although the details of the historical geography of this area are much disputed as a result of the lack of written records (Levine and Young, 1977; Reade, 1979). In the late eighth century BCE, the well-known eighth campaign of Sargon II passed through some part of this region (Levine and Young, 1977). Archaeological remains show an Urartian occupation of Hasanlu in the late eighth to seventh century BCE.

Archaeologically, the best-known period of occupation at Hasanlu is the Iron Age (periods V–III), but earlier periods have also been documented, extending back to the Late Neolithic (Hasanlu X, or the Hajji Firuz period; see Dyson, 1983). Hasanlu V begins in the second half of the second millennium BCE; period IV, dating from the end of the second millennium to the end of the ninth century BCE is richly documented because it was destroyed by fire sometime around 800 BCE. A short hiatus was followed by an Urartian occupation (IIIB) that in turn was followed by an occupation of the Achaemenid period (IIIA). Period II is poorly known but appears to belong to the end of the fourth or beginning of the third century BCE. After a long abandonment, the site was reoccupied in later Islamic times (period I).

The archaeological remains of Hasanlu Tepe first became known in 1934–1935 as a result of commercial digging in a cemetery along the northeastern edge of the Outer Town. The contents of one of these graves was published by Roman Ghirshman (1939, pp. 78–79, 253–254, pl. C). In 1935–1936, Erich F. Schmidt photographed the site from the air for the first time, although the picture was not included in his volume *Flights over Ancient Cities of Iran* (Chicago, 1940). In 1936 the British excavator Marc Aurel Stein spent six days at the site putting trenches in at the northern Outer Town and at the foot of the northern slope of the Citadel Mound (Stein, 1940, pp. 389–404). These excavations also encountered Early Iron Age burials; some artifacts from these contexts are now housed in the British Museum. In 1947 and again in 1949, the Archaeology Service of Iran undertook further excavation in both the northern and eastern Outer Town cemetery areas (Hakemi and Rad, 1950). They recovered Early Iron Age graves (later designated as Hasanlu V and IV; c. 1500–800 BCE).

The Hasanlu Project of the University Museum of the University of Pennsylvania was directed by Robert H. Dyson, Jr., from 1956 through 1977, when the Iranian Revolution ended fieldwork. After 1958 this research was conducted jointly with the Metropolitan Museum of Art (New York City); the project enjoyed the cooperation of the Archaeological Service of Iran during its early years, and, after 1971, the collaboration of the Iran Center for Archaeological Research (directed by Firouz Bagherzadeh). Excavation included stratigraphic soundings, horizontal clearance of the well-preserved Iron Age levels, and test excavations at smaller, adjacent sites (Hajji Firuz, Dalma, Pisdeli, Dinkha, and Agrab Tepes); general survey of the valley was also carried out. (See Dyson, 1983; for a bibliography of the project through 1976, see Levine and Young, 1977).

Excavation at Hasanlu Tepe focused on the ninth-century BCE level (period IVB), which was uniquely preserved because the site was burned during a military attack, probably by Urartians. Within the surrounding walls of this settlement four major buildings were set around two open courtyards. Each building was characterized by a portico and a large central columned hall surrounded by first- and second-story storerooms. These are the oldest such buildings so far excavated in later Iran and form an architectural link between Bronze Age Anatolia and Iron Age Iran. These large buildings and the smaller structures surrounding them collapsed, burying their contents in piles of debris. As a result, thousands of objects were recovered made of copper, bronze, iron, silver, gold, glass, ceramic, amber, ivory, bone, shell, wood, antler, and other materials. A wide variety of objects was found, including a large quantity of horse trappings (bits, bridles, breastplates), containers, weapons, personal ornaments, and tools (de Schauensee, Muscarella, 1988; Winter, 1980). Cylinder seals and sealings (Marcus, 1988) relate to Assyria and to local traditions, as do carved



HASANLU. Figure 2. *Gold bowl.* Photographed in the Tehran Museum, Iran. (Courtesy University of Pennsylvania Museum, Philadelphia)

ivories (Muscarella, 1980, 1988). No tablets were found, but several fragments of stone artifacts carry names that indicate both Assyrian and Elamite contacts. A unique object, found in 1958, was a large gold bowl (see figure 2) covered with repoussé figures representing religious mythology involving three gods riding in chariots (storm god, sun god, and moon or local god), offerings, heroes in combat, and other elements (Porada, 1967; for detailed color illustrations see *Life* magazine 12 January 1959). These episodes draw on older Mesopotamian and/or Anatolian (Hurrian?) myths and symbols but are executed in a technique of metalwork common to late second and early first millennium BCE Iran (*Expedition,* 1989; Muscarella, 1980, 1988; Winter, 1989).

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HASMONEANS. The Hasmonean state was created in the second century BCE, following a long struggle with the Seleucids and with some of the peoples settled in Palestine. The house of Mattahias the Maccabee, a priestly family from Modi'in, began a military struggle against the Seleucid

Empire (168 BCE). A struggle was also launched against the hellenizers connected to the Seleucid court, led by the most prominent priestly houses. The struggle started with the limited goal of achieving religious autonomy, which had been taken from the Jews by the restrictions of Antiochus IV Epiphanes. After Mattathias's death in 168, his son Judah (Judas), called the Maccabee, took over the command. After many battles with the Seleucid army and the hellenizers, he managed to take hold of the Temple Mount and purify the Temple (164 BCE). He fell bravely in battle in 161/60 BCE, and his brother Jonathan took over the command. [*See* Seleucids.]

As soon as the Hasmoneans became more powerful, their goal shifted to the more political one of creating a Jewish state in Palestine. Thus, from the 150s BCE onward, the Hasmonean brothers became preoccupied with fighting the Seleucid princes and strengthening their foothold in Palestine. After 161 BCE they were supported by Rome, which concluded a treaty with them; by Sparta; and by the Ptolemies, who ruled Egypt. After Judah's successor, Jonathan died, their brother Simeon took over. In 143 BCE Simeon officially laid the foundation of an independent Hasmonean state, which became an important political factor in the ancient Near East. The state fell to the Romans in 63 BCE, when the Roman commander Pompeius conquered Palestine. Simeon's successors, John Hyrcanus I (135–104 BCE) and his sons Aristobulus I (104/03 BCE) and Alexander Jannaeus (103–76 BCE), wanted to enlarge the area of the land of Israel and to make it their sovereign territory. Whereas Hyrcanus I mainly subjected the Samaritans and conquered and judaized the Idumeans, Aristobulus I (who ruled for less than one year, dying prematurely in 104/03 BCE) conquered the Galilee and judaized the Itureans (Arab tribes). His successor, Alexander Jannaeus, conquered even more land, and under his rule the territorial dimensions of Palestine were comparable to the Davidic kingdom at its peak. His wife, Salome Alexandra, who ruled the country after his death (76–67 BCE), did not extend the territory further. [*See* Samaritans; Idumeans.]

The conquering Jewish dynasty based its claims on the historical legitimacies of the biblical period, asserting that the land was theirs because it belonged to their ancestors. However, both during and after their conquest, they had to live alongside the Gentiles in Palestine—the Idumeans, the Arabs, the Greeks in the cities on the coastal plain, as well as the Phoenicians who lived throughout the land. Their most problematic relationships were with the Samaritans, who claimed themselves to be the true Jews, and who were settled in the center of Palestine, in the region around Shechem in the Samarian hills. [*See* Shechem.] Whereas at the beginning of the Hasmonean era the Jews lived mainly in the hill country of Judea (Judah), toward the period of the Roman conquest Jews were settling in many other regions of the country—in Gezer, Jaffa, the Galilee, and Transjordan.

From the reign of Jonathan in 152 BCE onward, the Hasmoneans, as well as being secular rulers, took upon themselves the high priesthood. The position was vacant between 159 and 152 BCE because Onias III (or IV) had gone to Egypt, where he had founded a new Yahweh temple at Tell el-Yahudiyeh. [*See* Yahudiyeh, Tell el-.] The high priesthood enhanced the stature of the Hasmoneans in the eyes of their own people and the outside world. Although the Hasmoneans were primarily secular rulers, they did not take the throne until Aristobulus I, who, in 104/03 BCE became the first Hasmonean king. Thus, the last three Hasmoneans to rule before the Roman conquest of Palestine were monarchs of a new Jewish dynasty. The Hasmoneans had some of the attributes of a Hellenistic kingdom—for example, they had a strong army that, since the reign of John Hyrcanus I, employed foreign mercenaries—although the exact proportion of Jews as opposed to foreigners in this army cannot be ascertained. It is, however, thought that the number of mercenaries increased throughout the reigns of Alexander Jannaeus and Salome Alexandra. During that period the army began to adopt techniques of warfare from the armies of the Hellenistic princes in the region (Shatzman, 1991).

The Hasmoneans, like other Hellenistic monarchs, ruled a vast territory that, at the time of Alexander Jannaeus, included almost the whole of Palestine on both sides of the Jordan River. Hyrcanus I was the first ruler to mint Hasmonean coins, and under the later monarchs these coins had a Greek inscription on them, "the king" *(basileus),* together with a Hebrew inscription. The inscriptions in Greek were probably meant both for foreigners who had settled in Palestine and for use outside the kingdom. No coin of the Hasmonean kings bears any human figure, however, which, in this matter at least, indicate that they were Jewish rulers and resisted Hellenistic influence. (Meshorer, 1982). Although the last monarchs of the Hasmonean dynasty wanted to appear to be like the Hellenistic monarchs elsewhere in the region, the extent of their hellenization remains an enigma.

The hellenization of Jews and of Judaism in Palestine during the Hasmonean era is a subject that has attracted many scholars. They point to the use of Greek as opposed to Aramaic and Hebrew, to archaeological remains showing Greek influence, to Greek motifs in the art and literature of the period, and to the Greek influence on Jewish thought. However, the existing literature that can be dated with any certainty to the Hasmonean era shows very little Greek influence (see below). Even less is known about the Hasmonean institution of kingship at the time, and the archaeological remains are too scant to lead to any definite conclusions as to the degree that Hellenism penetrated Jewish Palestine. Also, although there are sites at which it can be shown that

Jews lived in houses whose architectural motifs were Greek, that is not evidence that those Jews were hellenized (Kuhnen, 1990). There are signs, however, of the hellenization of the pagan population—in, for example, the existence of some syncretistic dieties in the cities on the coastal plain (Ashkelon, Tyre). On the whole, the Jews who were settled in the cities and villages may have been more influenced by Greek architecture and culture than those living in rural areas. Some scholars point to another area of possible influence that infiltrated both Jewish and pagan Palestine long before the Hasmonean period, namely the eastern cultures—Iranian, Aramaic, and Phoenician.

During the Hasmonean era the Temple in Jerusalem was not only a religious center for the Jews throughout Palestine and the Diaspora (Jews in the Diaspora sent contributions to the Holy City), it also had considerable political significance because the Hasmonean kings were also its high priests. Indeed, just because of this, there was some Jewish opposition to the Hasmoneans that even became actively militant during the reign of Alexander Jannaeus. The Pharisees, Josephus relates (*Antiq.* 13. 288–292), told John Hyrcanus I to be content with secular rulership and to abandon the priestly office altogether (there is an echo of these disputes in Jannaeus's time; *Antiq.* 13. 372). Salome Alexandra had to nominate her son Hyrcanus II to become high priest because as a woman she could not hold the office.

The cultural heritage of the Hasmonean kingdom is uneven, inasmuch as a large part of the surviving literature is from the Essenes (see below), most of which was found in the caves surrounding the site of Qumran, near the Dead Sea. [*See* Essenes; Qumran; Dead Sea Scrolls; Judean Desert Caves; Temple Scroll; War Scroll.] For almost half a century many scholars have claimed that this literature has numerous ideas in common with the other Jewish schools of the day, the Pharisees and the Zaddokites. Some writings exist that may have come from these latter circles, although their exact identity is still problematic and their transmission indirect—such as the apocryphal and pseudepigraphic literature excluded by the Jewish Sages (parts of *1 Enoch, Jubilees,* the *Testaments of the Twelve Patriarchs,* and perhaps parts of *Judith*).

The sources for the period are archaeological, numismatic, and literary. The latter contain the two books of *Maccabees,* and Josephus's *Antiquities* (books 12–14) and his *Jewish War* (Book 1), which briefly describe the period. There is very little left of pagan Greek and Latin literature that adds to the picture. The two books of *Maccabees* differ considerably from each other: *1 Maccabees* was probably written in Hebrew during the reign of John Hyrcanus I, whereas *2 Maccabees* was written in Greek outside Palestine by a Diaspora Jew called Jason of Cyrene (probably second century BCE). It was a five-volume book covering the period 175–160 BCE (ending with the death of Judas Maccabee). The book was condensed, and only this version is available. In contrast with *1 Maccabees,* which gives a more or less linear history of the period up to the rule of Simeon, *2 Maccabees* is full of Jewish theology and constantly emphasizes the intervention of God in favor of the people of Israel. Josephus remains the only historiographic source for the period from John Hyrcanus I through the fall of the Hasmonean independent state in 63 BCE. His account is too concise to form a very comprehensive picture, however. Numismatic material abounds but adds little to what is known of the nature of the Hasmonean kingdom.

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HASSUNA, site located in northern Mesopotamia, about 35 km (22 mi.) south of Mosul, between the Tigris River and the western Jezireh (36°10′ N, 43°06′ E). It is a type-site for the Hassuna culture, which represents one of the early farming village cultures of the Near East, dating to the late seventh and early sixth millennia. Hassuna sites are located in the north-central Jezireh, where rainfall agriculture can be practiced.

Hassuna covers a maximum area of 2.5 ha (6 acres). The site was discovered by Fuad Safar in 1942, and excavations, under the direction of Safar and Seton Lloyd, were carried out by the Iraqi Directorate General of Antiquities in 1943–1944. The ceramic sequence at Tell Hassuna is important in reconstructing the relative chronology of the Late Neolithic/Early Chalcolithic painted ceramic traditions of northern Mesopotamia. [*See the biographies of Safar and Lloyd.*]

Fifteen stratigraphic levels were distinguished in two soundings. The main area, sounding 1, was located 20 m southeast of the summit of the mound and comprised an area of about 2,500 sq m. Sounding 2 was located on the summit. The two excavation units were linked by a 2-meter-wide trench. The earlier occupation phases were uncovered in sounding 1, the later in sounding 2. The excavators considered the material from levels XIII–XV unreliable because of the proximity of the surface.

The Hassuna period was divided into two phases on the basis of ceramic developments. The Hassuna Archaic of levels Ia–c, II, and III is characterized by large storage vessels made of coarse, straw-tempered material and by small burnished bowls. A painted variety of the Hassuna Archaic pottery emerged in level Ib. The Hassuna Standard spanned levels Ib–VI and was divided into three general types based on design: incised, painted, and painted and incised. Samarran pottery first appeared in levels III–IV and continued until level IX (level V had the most). The Samarran pottery included the neck of a tall jar. The neck was ornamented with a human face, partly in relief. Many of the Samarran vessels had been repaired with bitumen and riveting, which suggests that the ware was a valued import. Halaf material was found in levels VI–XII and Ubaid material in levels XI–XII. [*See* Ḥalaf, Tell; Ubaid.]

The earliest level at Hassuna, level Ia, rested on virgin soil. No architectural remains were recovered from it, leading the excavators to interpret it as the site of a series of tent encampments. Level Ia is now generally considered to date to the proto-Hassuna, a developmental phase of the Hassuna period recognizable primarily by its ceramics. As observed, for example, at Yarim Tepe (mound) I, the ceramics are stratigraphically earlier than the Hassuna Archaic and Standard ceramic traditions. In addition to Yarim Tepe I, proto-Hassuna remains have been found in Iraq at Umm Dabaghiyeh, Tell Sotto, Kültepe and Tellul eth-Thalathat, and at Tell Kashkashuk II, 20 km (12 mi.) north of Hasseke, in northeastern Syria.

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HATRA (mod. al-Hadhr), site located about 90 km (55 mi.) south-southwest of Mosul in Iraq (35°35′ N, 42°44′ E). Hatra was situated just a little to the west of ancient Aššur, along the route from the Euphrates River corridor at Seleucia/Ctesiphon that connected to the northern route from Bactria to the west (running from Arbela to Singara, Nisibis, Carrhae [Harran], Apamea, and Zeugma). The city was first settled in the Late Hellenistic period (second–first centuries BCE) by Aramaic tribes with ties to Adiabene. By the first century CE these semi-independent dynasts developed into a buffer state of the Parthian kingdom (240 BCE–226 CE), against the Romans. [*See* Parthians.] Hatra was the capital of their kingdom and apparently had close ties to the Parthian capital at Ctesiphon. Both Trajan (116–118) and Septimius Severus (197–198) were unsuccessful in attempts to conquer Hatra (see Dio Cassius 68.31). In about 220–226, with the collapse of the Parthians and the advance of the Sasanians, it allied with Rome and was reinforced as a legionary garrison. [*See* Sasanians.] It was taken by Ardashir and his son Shapur I in 239–241. The site was deserted by the mid-fourth century, as it was seen by retreating Roman troops in 363, after the death of Julian (Ammianus Marcellinus 25.8.5).

Excavations at Hatra revealed the city of the first–second centuries CE that had developed chiefly under the Parthian sphere, but with (as with other Parthian centers) significant Hellenistic influences. The early inscriptions are predominantly in Aramaic. In the last phase, however, numerous Greek and Latin inscriptions attest to the influence of the Roman garrison. The architecture and art similarly reflect the mixture of Hellenistic, Parthian (Neo-Iranian), and Roman elements. The city was laid out in a large circular plan (c. 320 ha, or 790 acres) with a towered circuit wall and defense ditch, very similar to the plan at Ctesiphon. There is no regular street plan, and houses are grouped around the center of the city. Both the domestic and public architecture are of Late Parthian types.

The city center was dominated by a rectangular walled enclosure subdivided by a partition wall into a large outer court to the east (c. 300 sq m) and a small enclosure to the west (c. 150 × 300 m). The western enclosure served as the precinct of the Temple of Shamash (the Assyrian sun god), but also contained other smaller sanctuaries and likely the administrative center. The temple precinct was entered by two gates flanking the central axis of the inner precinct. Before the temple proper was a series of lateral vaulted chambers (iwans) facing onto the open court. Two large iwans (21 m wide) stood in the center, directly opposite the two gates; each one was flanked by a row of smaller iwans. In contrast to the pitched-brick vaulting used in the grand iwan of Taq Kisra at Ctesiphon (third–sixth centuries CE), the vault construction at Hatra used stone voussoirs. The walls were made of rubble-and-mortar cores with a dressed-stone facing. This type of construction (Romano-Syrian) is highly unusual in the region, especially in connection with architectural forms. One inscription indicates that the Temple of Shamash was under construction in 77 CE, which is likely the period during which the entire complex was built in its present form. Adjacent to the iwan of Shamash is a square platform with vaulted galleries on all sides, usually called a fire temple. Other temples were arranged in the outer courtyard or against the partition wall; a large temple in the north-

ern part of the court was in an Early Hellenistic style, with a double colonnade. Both Ionic and Corinthian orders were found. The moldings may reflect influences from Baalbek, while some artistic elements suggest Achaemenid traditions.

The predominant language used at Hatra was Aramaic, as attested by more than three hundred inscriptions dating to the second century CE. Among other things, these texts indicate that the semi-independent dynasts took such titles as "king of Arab" (MLK' DY 'RB) and "king of the Arabs" (MLK' D'RBY'). If these titles were not used to connote rule over the neighboring region (called Arabia), as appears from similar texts at both Dura-Europos and Edessa, this may be the earliest preserved instance of *Arab* as a self-designation of a group, even though Hatra is quite a distance from the regions usually associated with the term. The Latin inscriptions all date to the 230s and 240s CE, during which time the city served as the easternmost garrison in Upper Mesopotamia. Whether the Roman presence is best understood as an alliance or an occupation is not entirely clear. The tribune of the I Parthica Legion was stationed there and made a dedication to Hercules. The tribune of the IX Maurorum Gordiana Cohort (238–244), also made a dedication to the Deus Sol Invictus ("The God, Unconquered Sun") of Hatra, a blend between the local tradition of Shamash and the romanized cult of Sol Invictus, found prominently in the third century and often in military contexts.

The date of the fall of Hatra is given by a reference from the Cologne Mani Codex, which preserves in a miniature fourth-century Greek codex a life of the Christian "heretic" Mani, the founder of Manichaeism. This document ostensibly preserves Mani's own account of his call to preach at the age of twenty-four, which he dates to the year in which Ardashir defeated Hatra and Shapur assumed the throne: "in the year in which Dariardaxar, the king of Persia, subdued the city of Atra, also in which his son Sapores, the king, crowned himself with the grand diadem" (*P. Colon.* 4780, col. 18.3–7). This yields a date based on the Persian regnal calendar of either 239/40 or 240/41 for the fall of Hatra, the death of Ardashir, and the accession of Shapur. This was also the beginning of the Sasanian encroachment on the eastern limes (border) of the Roman Empire, which would succede eventually in wresting the area from Roman control by the 260s. The Sasanian Empire lasted until 642.

[*See also* Hatra Inscriptions; *and* Persia, *article on* Ancient Persia. *In addition, many of the other sites mentioned are the subject of independent entries.*]

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HATRA INSCRIPTIONS. Hatra lies some 55 km (34 mi.) northwest of ancient Aššur and approximately 80 km (50 mi.) southwest of Mosul in modern Iraq. The site was probably a camping ground used for seasonal occupation by seminomads from the Jezireh in northern Mesopotamia before it became a permanent settlement in the first century BCE. On the periphery of the Parthian Empire, Hatra remained, until the end of the third century CE, an important caravan town on the trade route connecting Seleucia-Ctesiphon with Singara and Nisibis. In wartime, Hatra would have been a crucial halting place for any army marching from Singara to Ctesiphon. The Romans, however, failed to conquer it during the Parthian wars, and only a Roman cohort occupied the town for a short period in the third century CE. The site's religious prestige, always prominent, accounts for the existence of a monumental temple complex and of large number of smaller shrines there.

What is known of Hatra is derived from classical sources, Arab legends, and some four hundred inscriptions of little consequence for the historian and of very uneven value for the linguist. The Hatraean texts are written in an Aramaic dialect of northern Mesopotamia that differs from Syriac especially in the use of performative *l-* for the third-person imperfect. This is the major characteristic feature; other phonological, morphological, or syntactical features cannot be confidently described because a serious study of the epigraphic material has yet to be done. The presence of many local dialects in the whole area, replacing the Imperial Aramaic that had, a few centuries earlier, been its official language, can be explained by the incursion of Greek at the end of the fourth century BCE. The script is, in many respects, close to that of the inscriptions from Aššur, Sari, and Hassan-Kef in the Ṭur 'Abdin, and from other sites in the Upper Tigris River area. The similarities between some letters of the Hatraean script and those of the inscriptions found at Garni in Armenia and at Armazi in Georgia are not negligible. In the Hatra inscriptions, however, the neat, distinctive handwriting of the *aleph,* the long *nun,* the shape of the *shin,* and the absence of diacritics on *d/r* are noticeable. All of these features distinguish the script of Hatra from that of Palmyra and from Syriac. The Hatrean script, along with some of its orthographic conventions, was taken over from

Arsacids. This borrowing cannot be ignored in an area that was always exposed to cultural influences from the East, if not its direct control.

The studies produced so far are of uneven quality and have not succeeded in placing Hatra in its proper historical context. Thus, in spite of much excavation and reconstruction, the ancient city falls short of being as well known as Palmyra. For example, little is known about the tribes who first settled Hatra. Compared to the dozens of tribal names attested by the Palmyrene inscriptions, the paucity of the Hatraean data is disturbing. Only three tribal names are known: *bny bl'qb, bny rpšmš,* and *bny tymw,* raising the question of why its habitants left their ethnic background unmentioned when writing their names. The forms of the names themselves help to answer that question: they portray a population mostly of Arab origin in which Assyrian and Parthian families merged to create a society the inscriptions reveal as both homogeneous and very religious. Theophorous names of Shamash are frequent at Hatra because the cult of the sun deity was particularly important. Equally so was a trinity of deities whose cult was especially remarkable for its clear definition of the relationships among the three deities: one is "our lord," another "our lady," and the third is "their son." No other community in the West Semitic area worshiped such a group of deities.

[*See also* Hatra.]

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ḪATTUŠA. *See* Boğazköy.

HAYONIM, cave and terrace located in Naḥal Meged in western Galilee. From 1965 to 1979 the cave was excavated by Ofer Bar-Yosef, Eitan Tchernov, and Baruch Arensburg, under the auspices of the Institute of Archaeology of the Hebrew University of Jerusalem. In 1992 Bar-Yosef, Bernard Vandermeersch, and Arensburg, under the auspices of Harvard, Bordeaux I, and Tel Aviv universities, renewed excavations in the cave to clarify the stratigraphy and chronology of the Early Mousterian phase (see below). In 1974–1975 Donald Henry excavated Natufian remains on the terrace in front of the cave. François Valla of the French Archaeological Mission in Jerusalem has been excavating on the terrace since 1980.

A Paleolithic sequence (layers A–E) is represented in the cave. Layer A consists of ashy accumulations from the use made of the site by shepherds beginning in the third century CE. This occupation had been preceded by the construction of a glass furnace in the second century CE that leveled the first stratum of Natufian remains.

The Natufian layer (layer B; Epipaleolithic) consists of three major habitation phases: the partial remains of a building with a burial from the early phase and a series of burials from the late phase. The main finds from the middle phase are a series of nine or ten unroofed, well-built, rounded rooms, each with a fireplace. During the time they were occupied, several of the rooms were modified for a new use; in one case, a lime kiln was installed.

The skeletons in the Natufian burials were positioned in various ways: extended, semiflexed, and flexed. Secondary burials were also present in a few graves. On rare occasions, the skulls of an adult had been detached from the body with the mandible left intact, a practice that became widespread in the Early Neolithic period. Bodies were decorated with necklaces and bracelets of dentalium shells and belts and pendants out of bone and teeth. [*See* Skeletal Analysis; Burial Techniques.]

The Natufian lithic assemblage is characterized by burins, Helwan lunates, and elongated picks. Stone implements for grinding consist of basalt and limestone pestles and mortars in various sizes, including a rare, large, gobletlike basalt mortar. Bone objects include gorgets, awls, bone points, spatulae (some decorated with a net pattern), hide burnishers, broken sickle hafts, and rounded objects shaped from bovid bones. The pendants were shaped, polished, and subsequently perforated, as the unfinished or broken pieces found reveal. Three caches were uncovered near the cave wall: one contained a group of basalt pestles, the second burned gazelle horn cores, and the third bovid ribs cut in two, as well as an unfinished sickle haft that lacks a groove.

Gazelle was the main game represented, along with numerous birds and some fish. Radiocarbon-dated legume seeds and a few wild barley grains reflect, although poorly, plant gathering in the Natufian period; better evidence is provided by the rich collection of processing tools such as mortars and pestles. The high frequency of commensals—the house mouse, house sparrow, and rats—indicates that the terrace was occupied almost year-round.

Two circular Natufian houses, a well-built silo of stone slabs, and an abundance of flints and bone tools were uncovered on the terrace by Valla. The graves from the terrace usually contained a single skeleton in a flexed position. It is the joint burials of humans and dogs that are of special interest, however. Again gazelle appears to have been the primary game hunted, one-third of which were juveniles, re-

flecting year-round hunting. Analysis of the cementum increments of gazelle teeth, which demonstrates that the animals were culled in both summer and winter, supports this conclusion.

A Geometric Kebaran lithic assemblage with characteristic elongated trapeze-rectangle microliths was uncovered under the Natufian layer on the terrace. In the cave, the Kebaran layer (C) contained mainly lithics and rare bone tools. Dominant among the microliths in the upper levels were obliquely truncated backed bladelets (Kebara points); on the lower levels arched micropoints and retouched bladelets dominated. The scarcity of faunal remains indicates that the site was occupied seasonally, probably during late summer and fall.

The Aurignacian layer (D) in the cave was seriously damaged by the Natufian burials. Radiocarbon dates place it between 29,000 and 27,000 BP. The lithics consist mostly of carinated and nosed scrapers, a few blades, and burins; the numerous horn tools include awls, points, double points, a broken split-base point, spatulae, and pendants made of deer teeth with perforated roots. Among the stone objects recovered are slabs colored with red ocher, a shaft straightener, and two stone slabs with intentional engravings—one apparently depicting an animal reminiscent of a horse. The abundant faunal assemblage provided remains of more than 120 gazelles, but only a few fallow deer, red deer, and boar. Three deep hearths in the cave's lowest level were dug into the Mousterian layer, as well as one rounded hearth with many stones. Another hearth, at a higher level, was constructed of two stone slabs.

The partially probed Mousterian layers yielded only meager flint assemblages dominated by Levallois flakes, elongated Levallois points, and some side scrapers. Only a few isolated human bones were found. The study of the rodent bones showed similarities with sites such as Tabun (layer C) and Qafzeh cave, while the deeper levels contained archaic species, as at Tabun D. [*See* Tabun.] Bedrock was not reached.

[*See also* Carmel Caves.]

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OFER BAR-YOSEF

HAYYAT, TELL EL-, small (approximately 5,000 sq m) Bronze Age village site, located 2 km (1 mi.) east of the Jordan River, 240 m below sea level, on the first terrace above the existing floodplain (map reference 205 × 203). Nelson Glueck's report of his explorations in eastern Palestine between 1939 and 1947 suggests that Tell Abu Hayet (his site no. 154) was occupied during the Middle Bronze, Late Bronze, and Iron Ages (Glueck, 1951, p. 259). James Mellaart's 1953 Jordan Valley survey (1962) preserves this site name (his site no. 24) and notes the EB period, the EB–MB transition, and the Iron Age as possible periods of occupation. The East Jordan Valley Survey (Ibrahim et al., 1976) reports surface pottery from Tell el-Ḥayyat (their site no. 56) dating to the EB–MB transition, Middle Bronze A, B, and C periods, and the Persian era. These authors include Ḥayyat among a large number of sites threatened by agricultural development.

Excavations in 1982, 1983, and 1985 directed by Steven Falconer and Bonnie Magness-Gardiner (1983; 1984; 1989a; 1989b) exposed 400 sq m through 4.5 of cultural deposition. Ḥayyat's stratification, material culture, and four radiocarbon dates show that habitation began late in the EB–MB transition and continued through six stratigraphic/architectural phases to late MB IIC. Phase 6 (late EB–MB) and phase 1 (late MB IIC) deposits, which are limited to the center of the site, contain modest amounts of unmixed pottery and scanty floral and faunal remains. Phase 1 architecture consists of isolated stone wall foundations, whereas phase 6 lacks architecture altogether.

During MB IIA–C (phases 5–2), Tell el-Ḥayyat was a sedentary Canaanite farming hamlet, as demonstrated by abundant fragments of annual cereals and legumes (e.g., wheat, barley, peas, lentils) and perennial fruit-bearing trees and vines (e.g., figs, grapes, olives). Ninety-five percent of the animal bones are from domesticated farm animals (sheep, goats, pigs, and cattle).

This hamlet grew around a stratified series of four mud-brick temples at the tell's center, each of which is characterized by anterior "buttresses" and a surrounding enclosure wall. The temple forecourts in phases 5 (early MB IIA), 4 (MB IIA), and 3 (MB IIB) include small, undecorated standing stones, many with an adjacent stone lying flat at their base. The phase 2 temple (MB IIC) features plastered floors and walls; fragments of the exterior walls bear red paint. Phase 5 apparently lacks domestic architecture, but outside the enclosures of phases 4, 3, and 2 lie mud-brick houses, courtyards, and alleyways.

Copper and bronze artifacts include javelin points and

zoomorphic figurines. Carved limestone molds, a ceramic crucible, and slag indicate that tools and anthropomorphic figurines were cast here. Pottery manufacture is reflected by ceramic wasters and slag and an intact kiln (phase 4). The fill debris within this kiln included the severed head and hands of a young adult male.

The excavation areas at Tell el-Ḥayyat were backfilled after the 1985 season.

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ABBREVIATIONS AND SYMBOLS

ACOR	American Center of Oriental Research
AD	*anno Domini*, in the year of the (our) Lord
AH	*anno Hegirae*, in the year of the Hijrah
AIA	Archaeological Institute of America
AIAR	(W. F.) Albright Institute of Archaeological Research
AJA	*American Journal of Archaeology*
Akk.	Akkadian
Am.	*Amos*
ANEP	J. B. Pritchard, ed., *Ancient Near East in Pictures*
ANET	J. B. Pritchard, ed., *Ancient Near Eastern Texts*
AOS	American Oriental Society
APES	American Palestine Exploration Society
Ar.	Arabic
'Arakh.	*'Arakhin*
Aram.	Aramaic
ASOR	American Schools of Oriental Research
Assyr.	Assyrian
A.Z.	*'Avodah Zarah*
b.	born
B.A.	Bachelor of Arts
Bab.	Babylonian
BASOR	*Bulletin of the American Schools of Oriental Research*
B.B.	*Bava' Batra'*
BC	before Christ
BCE	before the common era
Bekh.	*Bekhorot*
Ber.	*Berakhot*
Bik.	*Bikkurim*
BP	before the present
BSAE	British School of Archaeology in Egypt
BSAI	British School of Archaeology in Iraq
BSAJ	British School of Archaeology in Jerusalem
B.T.	Babylonian Talmud
c.	*circa*, about, approximately
CAARI	Cyprus American Archaeological Research Institute
CAD	computer-aided design/drafting
CAORC	Council of American Overseas Research Centers
CE	of the common era
cf.	*confer*, compare
chap., chaps.	chapter, chapters
1 Chr.	*1 Chronicles*
2 Chr.	*2 Chronicles*
CIG	*Corpus Inscriptionum Graecarum*
CIS	Corpus Inscriptionum Semiticarum
cm	centimeters
CNRS	Centre National de la Recherche Scientifique
col., cols.	column, columns
Col.	*Colossians*
1 Cor.	*1 Corinthians*
2 Cor.	*2 Corinthians*
CTA	A. Herdner, *Corpus des tablettes en cunéiformes alphabétiques*
cu	cubic
d.	died
DAI	Deutsches Archäologisches Institut
diss.	dissertation
Dn.	*Daniel*
DOG	Deutche Orient-Gesellschaft
D.Sc.	Doctor of Science
Dt.	*Deuteronomy*
EB	Early Bronze
Eccl.	*Ecclesiastes*
ed., eds.	editor, editors; edition
ED	Early Dynastic
EEF	Egyptian Exploration Fund
e.g.	*exempli gratia*, for example
Egyp.	Egyptian
Elam.	Elamite
En.	*Enoch*
Eng.	English
enl.	enlarged
esp.	especially
et al.	*et alii*, and others
etc.	*et cetera*, and so forth
Eth.	Ethiopic
et seq.	*et sequens*, and the following
Ex.	*Exodus*
exp.	expanded
Ez.	*Ezekiel*
Ezr.	*Ezra*
fasc.	fascicle
fem.	feminine
ff.	and following
fig.	figure
fl.	*floruit*, flourished
ft.	feet
frag., frags.	fragment, fragments
gal., gals.	gallon, gallons
Geog.	Ptolemy, *Geographica*
Ger.	German
GIS	Geographic Information Systems
Gk.	Greek
Gn.	*Genesis*
ha	hectares
Heb.	Hebrew
Hg.	*Haggai*
Hist.	Herodotus, *History*
Hitt.	Hittite
Hos.	*Hosea*
Hur.	Hurrian
IAA	Israel Antiquities Authority
ibid.	*ibidem*, in the same place (as the one immediately preceding)
IDA(M)	Israel Department of Antiquities (and Museums)
i.e.	*id est*, that is

IEJ	*Israel Exploration Journal*
IES	Israel Exploration Society
IFAPO	Institut Français d'Archéologie du Proche-Orient
Is.	*Isaiah*
IsMEO	Istituto Italiano per il Medio ed Estremo Oriente
Jb.	*Job*
Jer.	*Jeremiah*
Jgs.	*Judges*
Jn.	*John*
Jon.	*Jonah*
Jos.	*Joshua*
JPOS	*Journal of the Palestine Oriental Society*
JRA	*Journal of Roman Archaeology*
J.T.	Jerusalem Talmud
KAI	H. Donner and W. Röllig, *Kanaanäische und aramäische Inschriften*
Kel.	*Kelim*
Ket.	*Ketubbot*
kg	kilogram
1 Kgs.	*1 Kings*
2 Kgs.	*2 Kings*
km	kilometers
KTU	M. Dietrich and O. Lorentz, *Die keilalphabetischen Texte aus Ugarit*
l	liter
l., ll.	line, lines
Lat.	Latin
lb.	pounds
LB	Late Bronze
lit.	literally
Lk.	*Luke*
LM	Late Minoan
Lv.	*Leviticus*
m	meters
M.A.	Master of Arts
masc.	masculine
Mal.	*Malachi*
MB	Middle Bronze
Mc.	*Maccabees*
M.Div.	Master of Divinity
Meg.	*Megillah*
mi.	miles
Mk.	*Mark*
mm	millimeter
mod.	modern
Mt.	Mount
Mt.	*Matthew*
n.	note
NAA	Neutron Activation Analysis
Nat. Hist.	Pliny, *Naturalis Historia* (Natural History)
n.b.	*nota bene*, note well
n.d.	no date
Nm.	*Numbers*
no., nos.	number, numbers
n.p.	no place
n.s.	new series
o.p.	Ordo Praedicatorum, Order of Preachers (Dominicans)
p., pp.	page, pages
para.	paragraph
PEF	Palestine Exploration Fund
Pers.	Persian
Ph.D.	Philosophiae Doctor, Doctor of Philosophy
Phil.	*Philippians*
pl.	plate; plural
PN	Pottery Neolithic
ppm	parts per million
PPN	Pre-Pottery Neolithic
Prv.	*Proverbs*
Ps.	*Psalms*
pt., pts.	part, parts
1 Pt.	*1 Peter*
2 Pt.	*2 Peter*
r.	reigned, ruled
RCEA	*Répertoire chronologique d'epigraphie arabe*
Rev.	*Revelations*
rev.	revised
Ru.	*Ruth*
SBF	Studium Biblicum Franciscanum
SBL	Society of Biblical Literature
SEG	*Supplementum Epigraphicum Graecum*
ser.	series
sg.	singular
Sg.	*Song of Songs*
Shab.	*Shabbath*
S.J.	Societas Jesu, Society of Jesus (Jesuits)
1 Sm.	*1 Samuel*
2 Sm.	*2 Samuel*
sq	square
St., Sts.	Saint, Saints
Sum.	Sumerian
supp.	supplement
Syr.	Syriac
Ta'an.	*Ta'anit*
Th.D.	Theologicae Doctor, Doctor of Theology
Ti.	*Titus*
Tk.	Turkish
1 Tm.	*1 Timothy*
2 Tm.	*2 Timothy*
trans.	translated by
Ugar.	Ugaritic
v.	verse
viz.	*videlicet*, namely
vol., vols.	volume, volumes
vs.	versus
Yad.	*Yadayim*
ZDPV	*Zeitschrift des Deutschen Palästina-Vereins*
Zec.	*Zechariah*
*	hypothetical; in bibliographic citations, English language pages in Hebrew journals
?	uncertain; possibly; perhaps
°	degrees
′	minutes; feet
″	seconds; inches
+	plus
−	minus
±	plus or minus
=	equals; is equivalent to
×	by
→	yields

H

CONTINUED

HAZOR, site located in the Upper Galilee, 15 km (9 mi.) north of the Sea of Galilee (map reference 2032 × 2691). The site is comprised of two distinct parts: the tell (or upper city), approximately 18 acres in area, and a vast rectangular plateau (the lower city), to its north, measuring some 200 acres. It was first identified by J. L. Porter in 1875 as Tell el-Qedaḥ (also Tell Waqqas), based on geographic references to Hazor in the Bible and in the works of Josephus. The name Hazor is mentioned in a clay tablet from the Old Babylonian period found at the site in the 1970s.

Excavations. Trial soundings were first made at Hazor by John Garstang in 1928. Large-scale excavations were conducted by the James A. de Rothschild Expedition between 1955 and 1958 and again in 1968, under the direction of Yigael Yadin, on behalf of the Hebrew University of Jerusalem, the Palestine Jewish Colonization Association (PICA), and the Anglo Israel Exploration Society. A small-scale trial excavation took place at the southeastern foot of the mound in 1987, under the direction of Amnon Ben-Tor. Large-scale excavations directed by Ben-Tor, the Hazor Excavations in Memory of Yigael Yadin, were resumed in the upper city in 1990. This current project is a joint venture of the Hebrew University; Complutense University, Madrid; and the Israel Exploration Society, in cooperation with Ambassador University, Texas.

History. The earliest reference to Hazor, as *hdwizi,* appears in the Egyptian Execration texts of the late twelfth–early thirteenth dynasties (nineteenth–eighteenth centuries BCE). It is in the Mari archives of the eighteenth century BCE that Hazor emerges as a major city. At least fourteen Mari documents refer to the city (as *Ha-su-ra, Ha-sura-yu,* or *Ha-su-ra-a*), the only one in Israel to be mentioned in that archive. Hazor's role as one of the major commercial centers in the Fertile Crescent, together with such city-states as Yamḥad and Qatna, is evident. The name of the king of Hazor, Ibni-Adad, appears several times in the documents.

Another group of documents mentioning Hazor (as *Ha-su-ri*) and its king, Abdi-Tirshi, is the Amarna letters of the mid-fourteenth century BCE. It also is included, as *ḥdr,* in the lists of conquered towns in Canaan compiled by the pharaohs of the New Kingdom, such as those of Thutmosis III, Amenophis II, and Seti I. The latest Egyptian reference to Hazor is in Papyrus Anastasi I, ascribed to Rameses II.

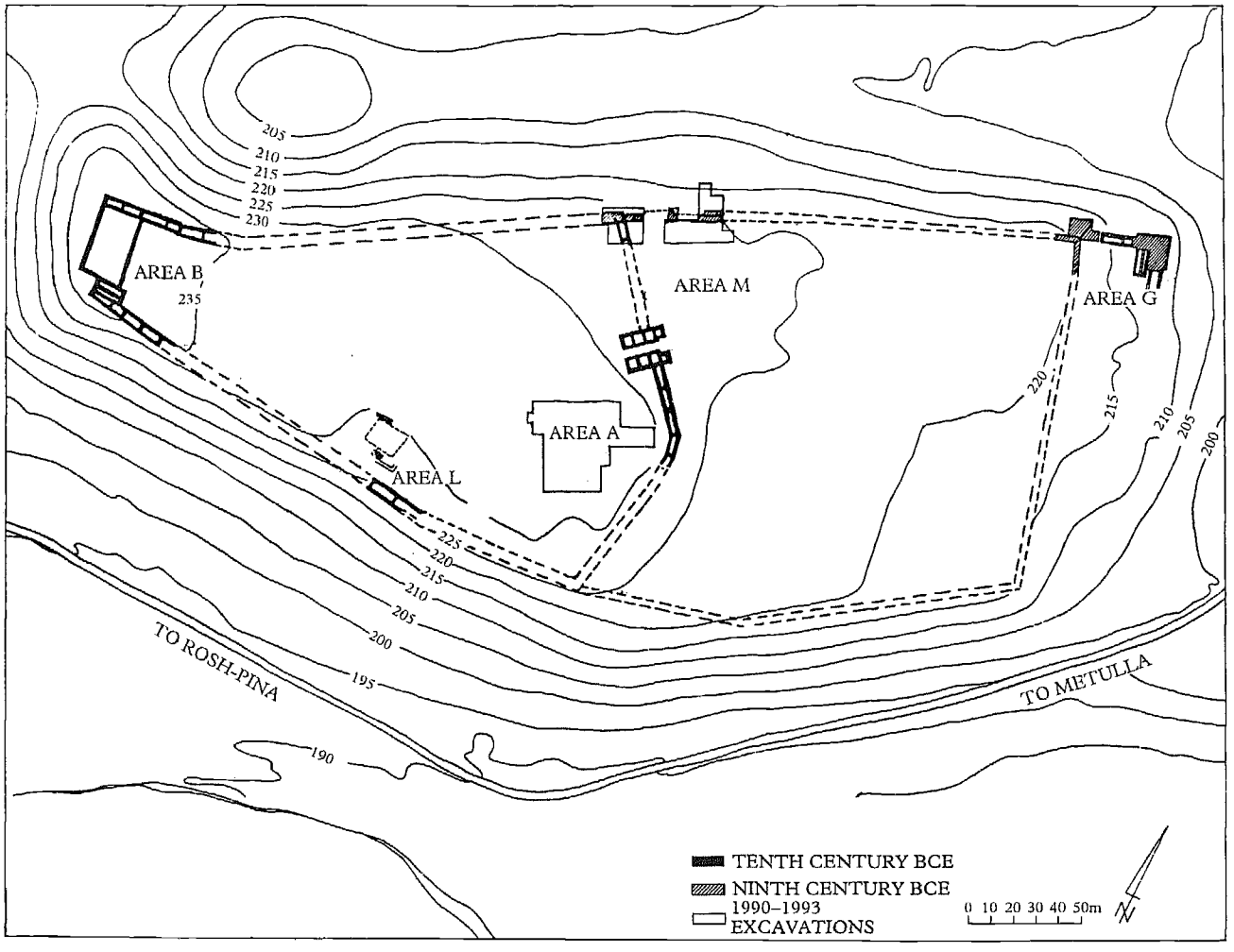
Hazor is mentioned several times in the Hebrew Bible in connection with the conquest and settlement accounts, first in *Joshua* 11:10–13 and then in *Judges* 4–5. The apparent contradiction between these two sources with regard to the process of conquest of Canaan by the Israelites in general, and to the history of Hazor during that time in particular, has been one of the most controversial subjects in the study of the history of ancient Israel as well as in the understanding of the books of *Joshua* and *Judges.* In *1 Kings* 9:15, Hazor is mentioned, along with Megiddo and Gezer, as one of three cities Solomon rebuilt. The last reference to Hazor in the Bible. *2 Kings* 15:29, describes the conquest of Hazor and most of the northern kingdom of Israel by Tiglath-Pileser III of Assyria.

The latest reference to Hazor in connection with historical event—the battle between the Hasmonean Jonathan and the Syrian Demetrius in 147 BCE, on the Plain of Hazor—is made in *1 Maccabees* 11:67. It is last mentioned in Josephus (*Antiq.* 5.199).

Excavation Results. Excavation has revealed that there is a difference in the history of occupation for the lower and upper cities. For this reason, the strata encountered in the upper city, where six areas were opened (A, AB, B, G, L, and M) were designated by Roman numerals, while those in the lower city, where seven areas were opened (C, D, E, F, H, K, and 210), were designated by Arabic numbers.

Hazor was first settled in the Early Bronze Age, but only in the upper city. The lower city was not occupied until the second millennium BCE. For most of the second millennium the upper and lower cities existed side by side as one city. Toward the end of the Late Bronze Age, both the upper and lower cities were violently destroyed. Following that destruction, occupation was confined once again to the upper city, until Hazor was finally deserted in the second century BCE.

Early Bronze Age (strata XXI–XIX). Remains datable to the Early Bronze period have been encountered only in deep soundings in areas A and L. Because of this limited exposure, the extent of the EB settlement is not yet known, and the date of its establishment is yet to be determined.



HAZOR. *Plan of the ancient city and excavation areas.* (Courtesy A. Ben-Tor)

The earliest sherds clearly connected with architectural remains date to EB II, and it is to that phase that Yadin ascribes Hazor's earliest occupation. A fine assemblage of Khirbet Kerak ware indicates a settlement in EB III. In general, the ceramic repertoire of these early strata shows a close affinity with Syria. Noteworthy are several cylinder seal impressions on storage jars, of types well known from other EB sites in the north of the country.

Middle Bronze I (stratum XVIII). The transitional phase between the Early and Middle Bronze Ages is represented at Hazor by a handful of sherds found exclusively in the upper city. Most of these belong to the black-slipped and reserve-slipped wares of the Orontes valley, demonstrating again the site's close relationship with Syria.

Middle Bronze Age II (upper city: strata pre-XVII, XVII, XVI, and post-XVI; lower city: 4, 3*).* The question of the date of the first settlement and that of the construction of the first fortifications in the lower city are of the center of a wide scholarly debate. Hazor's floruit as the most important city in southern Canaan is assigned by Yadin to the MB II–III, when the lower city was first settled (strata 4 and XVII), and when both the upper and lower cities were first encircled by impressive defensive systems. According to Yadin this "greater Hazor," founded sometime in the mid-eighteenth century BCE is the city mentioned repeatedly in the Mari archive. In the preceding phase, the MB I (stratum pre-XVII), Hazor was a rather insignificant site, confined only to the upper tell, consisting of a few buildings and several tombs. A tomb containing a large assemblage of complete clay vessels, discovered in area L in 1971, seemed to Yadin to confirm this view. The entrance to the burial cave must have been located under the (as yet undiscovered) line of the city's fortifications, so it must have preceded their construction. Because the vessels were attributed typologically to the transitional MB IIA-B phase and dated by Yadin to the mid-eighteenth century, the construction of the for-

tifications must have occurred later—early in the MB IIB, in the second half of the eighteenth century. Other scholars differ with regard to such points as the date of the first occupation in the lower city, the date of construction of the fortifications, and the absolute dates to be assigned to the different phases of the Middle Bronze Age.

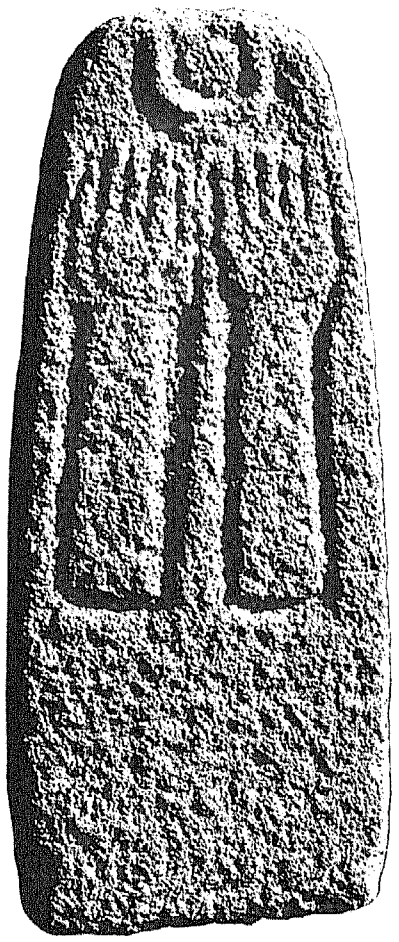
The most important monuments dating to that period are the huge earthen rampart and moat defending the western and, to a lesser extent, the northern flanks of the lower city; the city gates (one in area K and one in area P); the first in a series of temples (in area H); and the corner of a huge building, probably a palace (in area A). The earthen rampart is some 90 m wide and 15 m high. Similar examples known from such sites as Carchemish, Qatna, and Ebla, in Syria; from Dan, in Israel; and from other sites. The gates are of the "Syrian" direct-axis type, with three pairs of pilasters flanking the entrance. Similar gates are known again from such sites as Carchemish, Qatna, Ebla, and Alalakh in Syria, and Tel Dan, Beth-Shemesh, Yavneh-Yam, and elsewhere in Palestine. The area H temple, built in stratum 3, consists of an entrance hall flanked by two small rooms and a main room with a rectangular niche in the wall opposite the entrance. It is similar in plan to the temple in stratum VII at Alalakh. The same is true of the corner of the palace in area A: both stratum VII and the stratum IV palaces at Alalakh have a staircase located in the corner of the building, just as at Hazor. The use of finely cut orthostats, such as those incorporated into the walls of the area H temple and in the area A temple and palace, is another indication of the strong influences that reached Hazor from the north. The close connections between Hazor and the Syro-Mesopotamian cultural sphere, evidenced in the Mari documents, are also clearly reflected in a few cuneiform documents discovered at Hazor. These include a clay liver model for divination and a fragment of a bilingual Sumero-Akkadian text discovered by the Yadin expedition; the legal document discovered on the surface in the 1970s (see above); and an economic text and fragment of a royal letter discovered by the present excavation team.

Transitional Middle Bronze II–Late Bronze I (stratum post-XVI). The end of the prosperous MB city was catastrophic: a thick layer of ash separates its remains from those of the first Late Bronze Age city. A transitional phase was encountered only in areas A and B of the upper city, termed post-XVI by the Yadin expedition. It consists of several graves unrelated to any architectural remains.

Late Bronze Age (upper city: strata XV–XIII; lower city: strata 2–1A). No major change in population accompanied the destruction separating the Middle from the Late Bronze Age settlements at Hazor. The material culture, including the major architectural monuments (the earthen rampart, the city gates, the area H temple), shows a marked degree of continuity. A more profound change occurred at the end of the first LB stratum (XV; 2), dated to LB IB. In the next stratum, LB IIA (Yadin's LB II; stratum XIV of the upper city and 1B of the lower city), an open cultic area succeeded the stratum XV longroom temple in area A; a temple was founded in area C; an open High Place was founded in area F; and a major change took place in the plan of the area H temple. The city's defenses underwent minor changes, but the layout of the domestic buildings differs completely from that of the previous stratum. Stratum XIV (and 1B) was violently destroyed, perhaps by the end of the fourteenth century BCE, by Seti I, while, according to Yadin, Mycenaean IIIA was still in use. The last LB stratum at Hazor (XIII; 1A), dated to LB IIB (Yadin's LB III), shows a marked decline. Imported pottery, such as Mycenaean and Cypriot wares, is found in much smaller quantities than in the previous strata, and there is even some doubt about whether the city's fortifications were still in use.

Among the most significant finds attributable to LB Hazor are the various temples and the cultic and artistic objects connected with them. Noteworthy from the Stelae Temple in area C are several small stelae; a stela decorated in relief bearing the emblem of the moon god, Sin; a small orthostat of a crouching lion; a small basalt statue of a decapitated deity (or king) whose head was found nearby: a silver-plated bronze cult standard; and a pottery mask. Another important building is the Orthostat Temple in area H. Its plan in stratum 2 more or less follows that in stratum 3. In strata 1B and 1A, however, its plan is tripartite—including an entrance hall, a middle hall, and a rear hall (the temple's Holy of Holies)—an arrangement similar in concept to that in the Solomonic Temple in Jerusalem. The temple's walls are lined with smoothly cut basalt orthostats, which, together with its plan, are clearly reminiscent of the stratum IV temple at Alalakh. Important finds from this temple are a lion orthostat, a basalt statue of a decapitated king (or deity?), and offering and libation tables. The palace at LB Hazor is probably located in area A, on the acropolis. The Yadin expedition uncovered a corner of this impressive building in the mid-1950s. The current expedition is continuing the investigation of this building. Several orthostat-lined walls, two enormous column bases, and two steps uncovered so far probably belong to its entrance.

The last LB city at Hazor was violently destroyed. A level consisting of fallen mud brick, debris, ash, and burnt wood (in some places more than 1 m thick) was encountered almost everywhere in both the upper and lower city. It is the best indication of Hazor's catastrophic end. In areas C and H there is evidence of the deliberate mutilation and desecration of cult objects. Yadin fixed the date of that destruction in the last quarter of the thirteenth century BCE and tended to attribute it to the conquering Israelites, as described in *Joshua* 11:10. The current excavation encountered that same destruction layer in area A. The date of the



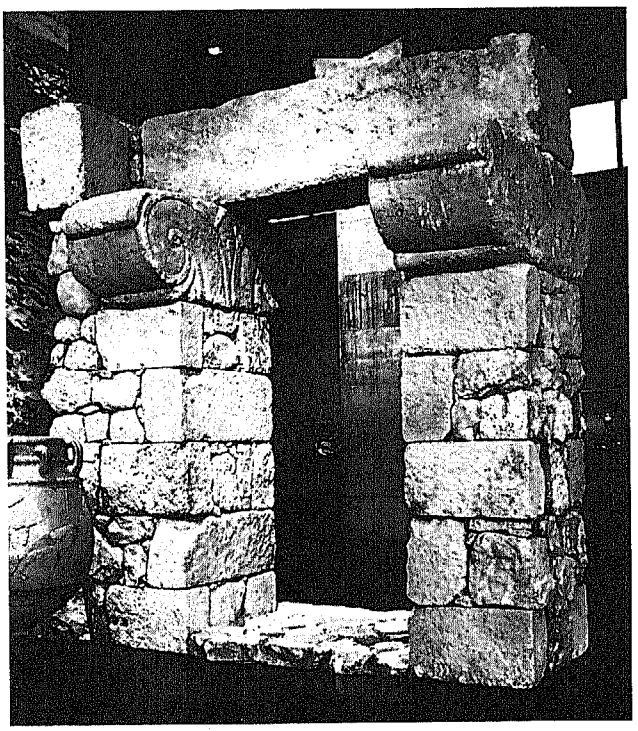
HAZOR. *Cultic stela.* From the Canaanite temple, area C. (Courtesy A. Ben-Tor)

destruction Yadin proposed, as well as its cause, should, for the time being, be left open.

Iron Age I (strata XII–XI). Meager remains of a settlement clearly postdating the destruction of LB Hazor have been discovered in various places on the acropolis. The remains consist mainly of stone-lined storage pits, close to thirty of which were encountered in areas A and B; cooking installations; and what appear to be foundations of huts and tents. The pottery associated with these remains is characteristic of Iron IA. In area B, a second level containing that same pottery was discerned. The most important feature of this stratum, XI, is the so called high place, consisting of several walls, remnants of pavements, stone pillars (some of which may have had cultic significance), two broken incense stands, and what is most probably a foundation deposit, a jar containing metal votive objects, the most important of which is a bronze figurine of a seated male deity. Yadin believed that the remnants of strata XII–XI belonged to an Israelite settlement in the twelfth–eleventh centuries BCE.

Iron Age II–III (strata X–IV). Stratigraphically, the following phases were established in the Iron II–III: X (Solomonic), with minor changes in IX, ending in a destruction attributed to the Aramean king Ben-Hadad I; VIII, with minor changes in VII (Omride dynasty), ending in a destruction attributed to the Aramean king Hazael; VI, destroyed by an earthquake in the mid-eighth century BCE; V, restoration and then final destruction by the Assyrians in 732 BCE; and IV, a minor phase of later Israelite squatters in the ruined city.

The most important monuments belonging to strata X–IX are the six-chambered city gate and casemate walls. Built in the tenth century BCE, Yadin ascribed them to Solomon, believing that, as at Megiddo and Gezer, they represent the defenses Solomon undertook (*1 Kgs.* 9:15). During that time only the western half of the acropolis was settled. The most prosperous period in the history of Israelite Hazor was the ninth century BCE. Under King Ahab the city expanded eastward, and the entire acropolis was encircled by a solid 3-meter-thick defensive wall. A water system, to ensure the water supply to the city in times of siege, was cut to groundwater level (area M). It is one of the most impressive engineering works so far found in Israel. A citadel was built on the western tip of the city (area B), and huge storage facilities were constructed (area A). In the second half of the eighth century BCE (stratum V), in the face of the growing



HAZOR. *Reconstructed entranceway to the citadel.* Ninth century BCE. (Courtesy Israel Museum, Jerusalem)

threat posed by the Assyrian Empire, Hazor's fortifications were strengthened and a watchtower was constructed in area B. Even these improved defensive works could not withstand the might of Assyria, which conquered and destroyed Hazor in 732 BCE.

Later periods (strata III–I). The stratum III settlement is confined to the western edge of the upper city. The Assyrians constructed a citadel in area B, and remnants of an Assyrian palace, contemporary with the stratum III citadel, were encountered within the bounds of nearby Kibbutz Ayyelet ha-Shaḥar.

Stratum II dates to the Persian period. Meager building remains and pits were encountered throughout the upper city. The most important remains are the restored and partially altered citadel in area B and a cemetery in area A. Imported Attic ware and a silver coin fix the date of stratum II to the fourth century BCE.

Stratum I is mainly the final phase of restoration of the area B citadel, which dates to the third-second centuries BCE.

[See also Alalakh; Mari Texts; *and the biography of Yadin.*]

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AMNON BEN-TOR

HEALTH. *See* Medicine.

HEBREW BIBLE. *See* Biblical Literature, *article on* Hebrew Scriptures.

HEBREW LANGUAGE AND LITERATURE.

The Hebrew language, or more accurately Biblical Hebrew, in the main the language of the Hebrew Bible is also called Early Hebrew, in contradistinction to the language's later stages (Rabbinic, Medieval, and Modern). It belongs, with, for example, Moabite and Phoenician, to the Canaanite family of Northwest Semitic languages (to which Ugaritic and Aramaic also belong). [*See* Phoenician-Punic; Ugaritic; Aramaic.]

Biblical Hebrew. As a Semitic language, consonants in Biblical Hebrew almost exclusively constitute its roots, while its vowels modify them, through the formation of verbal and nominal themes. As a West Semitic language, its suffix conjugation (e.g., *kāṯaḇtī,* "I wrote") has become a veritable verbal form denoting the past, rather than a state (as in East Semitic). By not expanding the use of broken plurals and of the conative verbal theme *fāʿala,* as have the Southwest Semitic tongues (e.g., Arabic, Ethiopic); and by shifting *w* in initial position to *y,* Hebrew pertains to the Northwest Semitic languages. [*See* Arabic; Ethiopic.] By exhibiting for example, the consonantal shifts $\bar{a} > \bar{o}$, $\underline{d} > z$, $\underline{t} > \check{s}$, $\underline{d}/z > \underline{s}$ and showing the vowels *i-i,* rather than *a-a,* in the active derived verbal themes; and by forming many participles from the stem of the suffix conjugation (*qām, zāqēn, nišmār*) and themes like *rōmēm,* "he exalted," rather than **riyyēm,* in the hollow and geminate verbs, it belongs to the Canaanite family (although the last two features occur in Ugaritic as well).

Sources. Biblical Hebrew is mainly known from the predominantly Hebrew parts of the Bible (only *Dn.* 2:4–7:28, *Ezr.* 4:8–6:18, further *Jer.* 10:11, and two words in *Gn.* 31:47 are in Aramaic). It is transmitted in a consonantal script of which the characters are historically Aramaic, adopted for the (also consonantal) Old Hebrew alphabet following the destruction of the First Temple. Inscriptions written during the period of the First Temple were in the Old Hebrew script and, during the Second Temple period, in Old Hebrew and Aramaic characters alternatively. Because they are written in a consonantal script, little precise information regarding the vocalization of the language can be elicited from inscriptions. Ancient transcriptions are also of uncertain value for determining vocalisms because of the pitfalls connected with transcription from one language to another. Nevertheless, they serve as an important corrective for the biblical material, transcriptions because they include vowel markings, and inscriptions because they provide new pho-

Latin (English)	Original name	Graphic Picture	Earliest known forms	South Semitic (Sabaean)	Modern Ethiopic	Northwest Semitic (Early Hebrew)	Phoenician	Aramaic (Modern Hebrew)	Arabic
A	'alf	ox-head							
B	bēt	house							
C,G	gaml	throw-stick							
D	dāg	fish							
E	hē	man calling							
U, V, W	waw	mace							
Z	zēn	?							
H	ḥēt	fence							
I, J, Y	yad	hand w/closed fist							
K	kapp	palm							
L	lamd	ox-goad (whip)							
M	maym	water (waves)							
N	naḥāš	snake							
O	'ayin	eye							
F, P	pēh	mouth/corner							
Q	qu(p-)	?							
R	ra'š	head							
S, X	ṯann	composite bow							
T	taw	cross-marker							

HEBREW LANGUAGE AND LITERATURE. *The Semitic background of the Roman alphabet.* The letters *tet* and *ṣade* are excluded since they have no counterparts in the Roman alphabet.

netic and morphological material. Moreover, inscriptions provide additions to the limited vocabulary of Biblical Hebrew.

The transcriptions are, to a great extent, limited to the transliteration of proper nouns—for example, into Akkadian and Greek (as in the Septuagint [third century BCE onward]) or Latin (as by St. Jerome [342–420 CE]). Yet, Greek transcriptions are not restricted to proper nouns because Origen (185–254 CE) transliterated the Hebrew Bible into Greek letters and a few fragments of the transliteration of *Psalms* are preserved. [*See* Akkadian; Greek; Latin.]

The most important Old Hebrew inscriptions from the biblical period are the Gezer Calendar (c. tenth century BCE); the Kuntilet ʿAjrud votive inscriptions (from the site on the Sinai border; late ninth century BCE); ostraca from Samaria (from the eighth [?] century BCE); the Murabbaʿat palimpsest (*Mur.* 17), the oldest Hebrew papyrus (eighth–seventh centuries BCE); the Siloam tunnel inscription (c. 700 BCE); the Meṣad Ḥashavyahu ostraca; two small silver amulets found in Jerusalem in the Hinnom Valley, one of which contains the Priestly blessing also known from *Numbers* 6:24–26 (seventh century BCE); the Arad and Lachish letters (sixth century BCE); as well as a large number of inscribed seals. [*See* Gezer Calendar; Kuntillet ʿAjrud; Samaria Ostraca; Murabbaʿat; Siloam Tunnel Inscription; Jerusalem; Meṣad Ḥashavyahu Texts; Arad Inscriptions; Lachish Inscriptions; Seals.]

The biblical text itself is not easy to evaluate. It is made up of three distinct historical strata. In order of their antiquity and their importance, they are the consonantal text, the use of consonants as reading indicators (*matres lectionis,* "mothers of reading"; Heb., *ʿimmôt qĕrîʾâ*), and the system of diacritical marks for vowels and cantillation. The twenty-two letters of the Hebrew alphabet were originally purely consonantal. Some were polyphonic—*šin/śin*—and distinguished even in modern traditional pronunciation as *š/s,* except according to the Samaritan tradition, and also presumably *ʿayn/ġayn* and *ḥet/ḫet,* respectively. This implies that the Hebrew speakers took over the alphabet from a dialect in which these consonants coincided, preferring to use these letters polyphonically, rather than invent new letters for the consonants not represented. A more original form of the alphabet, as reflected in Ugaritic, contained twenty-seven letters. (The Ugaritic alphabet also included three additional letters, added secondarily at the end of the alphabet.) The existence of twenty-nine consonantal phonemes is usually posited for Proto-Semitic. It stands to reason (and is also proved by deviating translations of the Septuagint) that the

earliest stage of the biblical text was written in a purely consonantal script and that the use of *matres lectiones* came about through changes in pronunciation and subsequently through analogical usages and intentional reform. These *matres lectionis*—namely *waw/yod* marking *o* and *u/e* and *i* (originally *ō* and *ū/ē* and *ī*), respectively, and *heh* in word final only and *'alef* only in words in which it had been used as a consonant—were increasingly utilized by the scribes of the Bible, yet they were a rather restricted aid for enabling the exact reading of the holy text. [*See* Writing and Writing Systems; Scribes and Scribal Techniques.]

It was for that reason that vowel and cantillation marks were introduced. This occurred at a rather late period (between 600 CE, the date of the final redaction of the Talmud, in which they are not yet mentioned, and the beginning of the tenth century, from which time dated manuscripts are known). The marks are, however, based on a much older tradition. The only vocalization and cantillation system used today by the Jewish community is the so-called Tiberian system. It is the most elaborate system and the only one completely preserved. Accordingly, it serves as the main basis for linguistic investigation. In principle, however, the other vocalization (and cantillation) systems are equally important: the Babylonian one (in which *a* and *æ* are not distinguished) and the so-called Palestinian system (a subsystem of which corresponds to modern Sephardi pronunciation used in academic teaching and in modern Israeli speech). The Tiberian vocalization differs from both the Babylonian and Palestinian by the shift of *u* to *å*, thus coinciding with *å* < *ā*. The Samaritan tradition is quite different.

Layers. Despite the multilayered character of the linguistic tradition, Biblical Hebrew though stretching over many hundred of years and stemming from different parts of ancient Palestine, reflects a surprisingly uniform language. This is the result of its being a standardized literary language, presumably emerging from Judea (Judah) in general and Jerusalem in particular, on the one hand, and to the later changes the that text (especially its vocalization) underwent, on the other. Nevertheless, a distinction must be made between poetry and prose, and then between early and classical poetry and between classical and late prose, without going into details and differentiating between various types of prose (e.g., historical, legal). Thus, poetry in general uses the longer (original) forms of the prepositions *'æle,* "to"; *ʿale,* "on"; and *ʿade,* "until"; it restricts the use of the definite article, the relative pronoun, and the definite direct object marker; it sometimes adds the endings *-i/o* to nouns in construct (*-i* in other cases as well); it utilizes the pronoun *-mo,* "their/them"; and it uses construct forms preceding prepositional phrases. Early poetry has preserved the short prefix conjugation to mark the past (even when not following the "conversive" *waw*). For Late Biblical Hebrew, see below.

Phonetics. The Hebrew alphabet's twenty-two letters originally marked only consonants—*'b g d h w z ḥ ṭ y k l m n s ʿ p ṣ q r š/ś t.* The adduced order of the letters is very old, reflected not only by internal evidence (i.e., by biblical acrostic), but also by the Ugaritic alphabet. The penultimate letter remained polyphonic, yet the lateral *ś* disappeared in pronunciation. It was replaced by *s*, identical with the fifteenth letter, so that the alphabet reflects the pronunciation of twenty-two letters only. Historically, however, it exhibits twenty-three phonemes (though in biblical orthography *ś* and *s* sometimes are interchanged). On the other hand, the letters *b, g, d, k, p, t* have allophones, for after vowels they are pronounced as spirants—*b̲, ḡ, d̲, k̲, p̄, t̲.* Yet, the automatic shift of these plosives (which are regularly marked in the Tiberian system by an internal point, the so-called *dageš lene*) to spirants (which are, in accurate manuscripts, marked by a superposed line, the so-called *raphe*) has been preserved in word-initial position only; elsewhere the spirant allophones are on the point of becoming phonemes (cf. *låqaḥat,* "you took" [fem. sg.], as against *lāqaḥaṭ,* "to take"; cf. also the very same word with alternating plosive and spirant pronunciation: *qorbān,* "offering," as a rule with b; but see *Ez.* 40:43, *qorb̲ān,* with *b*).

The realization of the phonemic status of noninitial *b, g, d, k, p, t* is of utmost importance also for understanding the biblical vowel system: because the plosive/spirant pronunciation does not necessarily depend on being preceded by zero vowel or by *ə* respectively, *ə* must not be analyzed as a phoneme (see below). Between short vowels, *h* tends to disappear, as does *aleph* in certain positions, especially in syllable final; *n* preceding a consonant is almost invariably totally assimilated to it. The doubling of final consonants is given up (**gabb* > *gab̲;* only final *tt* tends to be preserved, as *'att,* "you" [fem. sg.]). This may also occur in a medial position preceding a consonant (*tåsob̲nå,* "they will turn" [fem.]), even when the originally following *ə* has only later become *zero* (as **wayyəhī* > *wayhī,* "and it was"). Final consonant clusters tend to be opened by an auxiliary vowel, usually *æ*, which, however, as a rule, does not acquire phonemic status. At a later phase, laryngeals/pharyngeals—*', h, ḥ, ʿ*—became weakened. Therefore, not only did they (and *r*) lose their ability to be doubled, they also often trigger the insertion of ultrashort vowels (^{a}, ^{æ}, ^{å}) when they are in word-medial position immediately followed by a consonant. These vowels also regularly replace *ə* after laryngeals/pharyngeals, which also tend to change *i/u* to *a* (*i* also to *æ*).

As to vowels, the Tiberian vowel system, with the exception of ultrashort vowels (^{a}, ^{æ}, ^{å}), denotes only quality, rather than quantity. That is proven, inter alia, by the use of the same vowel sign to mark *å* both when it developed from long *ā* and short *u*. It also tends to mark allophones, not only, as mentioned above, *b, g, d, k, p, t,* whether plosive or spirant, in word-initial position, and auxiliary vowels opening a final

consonantal cluster, but also when it is inserted automatically as a vocalic glide before final *h, ḥ, ʿ* after vowels other than *a/å* (the so-called furtive *patah*). It marks both the absence of a vowel and *ə* (according to Tiberian tradition, often pronounced ᵊ) by the same sign (*šwa*). Because the spirantization of *b, g, d, k, p, t* does not necessarily depend on a preceding vowel, including *ə*, and because *ə* often shifts to zero and vice versa, no phonemic status should be accorded to the opposition *ə*:zero.

Historically, the Hebrew vowels derive from the Semitic triads—short *a:i:u*, long *ā:ī:ū*. Whereas the number of the Semitic consonantal phonemes has been reduced in Hebrew, that of the vowels has increased. The original short vowels are preserved in closed, unstressed syllables. However, *a* is often "attenuated" to *i* (a rather late feature, in which the various vocalization systems differ), and *u* tends to shift to *å*, except when followed by a doubled consonant; *a* is also preserved in stressed closed syllables of verbs, as well as in nouns originally terminating in a doubled consonant, and in construct. Otherwise, *a* shifts to *å*, *i* to *e*, *u* to *o*. In stressed closed syllables, *i* tends to shift to *a* (sometimes also to *æ*)—the so-called Philippi's law, which occurred much later than generally assumed. In pretonic open syllables, *a* (and sometimes also *i*) shifts to *å* (and *e*, respectively; *i*, however in this position is often elided). Sometimes the consonant following the pretonic syllable is doubled, especially after *u*, and quite often this doubling spreads to the whole paradigm. Short open syllables two or four syllables before the stress are reduced. Long *ī* and *ū* are preserved (without length), whereas *ā* was originally kept in unstressed syllables, shifting to *o* in stressed ones (this distribution has, however, largely been altered by analogy). When unstressed, the diphthongs *aw/ay* were monophthongized to *o/e*, respectively—yet preserved, for example, preceding double *w/y*. In closed syllables bearing the main stress, they were split into two syllables, as **mawt* > *må:wæṯ*, "death"; **bayt* > *ba:yiṯ*, "house."

Stress. Because the cantillation marks in the Tiberian system are, as a rule, on the stressed syllable, the Tiberian stress system is known with certainty. Synchronically, stress, as a rule, falls on the ultima, not rarely on the penult. A stage of general penult stress can be reconstructed historically because words stressed in pause on their ultima are generally forms that have elided final vowels; those stressed on their penult in pause, however, have preserved their final syllables. Adding the vowels elided to the words stressed on their ultima even in pause results in the great majority of Hebrew vocabulary stressed on the penult. In pause, the penult stress of words that did not elide their final vowel, was as a rule, preserved because the penult, even when originally short, was lengthened in pause. Long vowels, as a rule, preserved their penult stress (e.g., **kātā:bū*, "they wrote," with penult lengthening of the first syllable, according to the Tiberian system, in which no long vowels existed, *kåṯå:ḇu*). In context, however, the penult was often short, which caused the stress to move to the ultima. Because pretonic lengthening preceded the shift from penult to ultima, the first syllable of the context form **kāta:bū*, "they wrote," was preserved, being long. Pretonic lengthening had already ceased operating, however, and therefore the open short unstressed penult, now losing the stress, was reduced to *ə*: **kātəbū:* and, according to the Tiberian system, *kåṯəḇu:*

This theory of general stress is of special importance for the proper understanding of Biblical morphology. Without this theory, chaos obtains; it enables discovering regularity almost everywhere, although it was often blurred by analogy. Thus, for example, the "conversive" *and* preceding the (generally short) prefix conjugation has the form *wa*, and the following consonant is doubled. Because, according to the theory of general penult stress, many forms of the short prefix conjugation, which consisted of two syllables only, were stressed on their first syllable, the *a* of *wa* was preserved by pretonic doubling.

Pronouns. In Hebrew in particular and in Semitic tongues in general, triradical consonantal structure prevails, and the main meaning is carried by the radicals. Vowels only add shades to it. Interjection and pronouns, because of their emotional character (which, to be sure, is to a large extent blurred in pronouns), deviate from this structure. Moreover, pronouns allow word composition, a feature alien to Semitic linguistic structure (with the exception of negations): for example, see *hallåzæ*, "this," compounded of the demonstrative *ha* (which serves as the definite article as well) + the emphatic element *lå* + the demonstrative *zæ*.

Although a substantive to which an attributive demonstrative is attached is automatically definite, it nevertheless is always also formally defined. When this is done by the definite article, it is attached to the demonstrative as well: *ballay:ɪå hahu*, "in that night"; yet, the more archaic form *ballay:ɪå hu*, in which the definite article is attached to the substantive only, is also attested.

The personal pronouns have basically two forms: the "nominatival" ones, serving as subject and predicate, are separate words. The "genitival" (denoting possession and governed by substantives and prepositions) and accusatival forms (denoting direct object and governed by [transitive] verbs) are enclitic and suffixed to the preceding governing word. The genitival and accusatival suffixes are identical, except for the first-person singular, "mine," being stressed *-i*, "me" unstressed *-ni*. Most of these suffixes are preceded by "connecting" vowels, stemming from the short final vowels in which the preceding words are terminated; the absence of these vowels is the result of secondary development. It is only after the third-person feminine singular of the suffix conjugation, which originally terminated in a consonant (the suffix *-aṯ*), that the pronominal suffixes join the governing word directly, without a connecting vowel.

Tense system. The Hebrew tense system, beside the im-

perative (in the second person only, in a form closely related to the short prefix conjugation), consists of four finite forms: the simple suffix and the conversive suffix conjugation, the simple prefix and the conversive (as a rule short) prefix conjugation. The prefix conversive forms are preceded by *wa*, "and." It is a moot question whether the verbal forms originally denoted aspects or time. In classical biblical prose, at any rate, these forms seem to mark time: the difference between the simple suffix and the conversive (as a rule short) prefix conjugation, both referring to the past, and between the simple prefix and the conversive suffix conjugation, both referring to the future/present, respectively, depends on the syntactical environment only. As a rule, whenever the use of *w*, "and," is possible, the "converted" forms are applied, in accordance with the demanded time; otherwise, the simple forms are used. This tense system, exhibiting two pairs of forms identical in meaning and differing in the syntactical environment only in which they occur, is quite unlooked-for. It was, to a great extent, therefore that Hans Bauer considered Biblical Hebrew to be a *Mischsprache*, a "mixed language."

It is, however, with Gotthelt Bergsträsser (*1918–1929*, vol. 2, p. 3, n. 1), very difficult to imagine that two systems should be absorbed in their entirety into one language. Accordingly, it stands to reason that originally the simple suffix conjugation denoted state, as it does in Akkadian, whereas the past was marked by the short prefix conjugation (which in Akkadian and Arabic, as in Hebrew, combines the meanings of past and jussive). As a designation of the past, the short prefix conjugation was then superseded by the suffix conjugation. It was only preserved (except in archaic poetry) in this usage in the closed syntagma preceded by *wa*. Accordingly, from the historical point of view, this *wa* is not conversive but rather preservative. The "converted" suffix conjugation is, it seems, secondary. It is formed by the analogy of *wa* + prefix conjugation, perhaps also because wishes could be denoted by the past tense verbal form as well. In poetry, however, the use of tenses is quite free, presumably because of an intentional archaism as well as a pseudoarchaism.

Besides the indicative, the prefix conjugation also denotes mood—some sort of volitive action: in the first person, the "cohortative," a lengthened form (by the suffix *-å*), is utilized, whereas in the second and third persons, a short form, the "jussive," is used. This jussive is basically identical with the short converted prefix conjugation after *wa*. It later differs from it in that the converted form often preserves the original penult stress.

Verbal themes. It is in verbs that consonantal triliterality has evolved most completely. Although historical traces of biliteral roots can be discovered, synchronically the Hebrew verb has to be analyzed as triradical—no doubt a late development, the result of analogy. The impact of far-reaching analogy can also be felt in the very restricted number of verbal themes, as against a plethora of nominal themes. There are seven main verbal themes, all but one of which are named after the form of the third-person masculine singular of the suffix conjugation: the basic theme, without any affixation or doubling, called *qal*, "light"—that is, "light" as regards addition, without any addition; *nifʿal*, formed with prefixed *n*, originally only reflexive, later, after the original passive of the *qal* had fallen into desuetude, also passive. From the passive of the *qal*, the *puʿal*, only some vestiges have been preserved. Even fewer have been preserved from its (reflexive-reciprocal) *t*-form (*hitpåʿal*) and the *t*-form of *hifʿil*, the *hitaf ʿal*. Both the causative *hifʿil* and the doubled middle radical (intensive-factitive) *piʿʿel* have (internal) passive forms, *hofʿal (hufʿal)/puʿʿal*, respectively. The latter also has a (reflexive-reciprocal) *t*-form, the *hitpaʿʿel*. Accordingly, with the exclusion of *nifʿal*, the well-balanced system shown in table 1 can be reconstructed.

Among the nonfinite forms, the Hebrew verbal system possesses a participle (in the basic theme also a passive participle) that has both nominal and verbal rection. There are two "infinitives": The so-called infinitive construct has the usual infinitive functions (but also that of a gerund); it is, as a rule, preceded, even when not used in a final sense, by the preposition *lə*, "to," which may, however, when the infinitive clause does not have a final sense, be missing. The so-called infinitive absolute (so-called because it does not stand in construct and is not governed by prepositions) is a peculiar blend between verbal noun and verbal interjection. It is often used, in addition to its rare infinitive functions, for example, to emphasize the verbal action, as a rule preceding the main verb. It also serves as a modal adverb, presumably an archaic feature, because in Akkadian and Ugaritic it terminates in the adverbial ending *-u*. Finally, it may substitute for any finite verbal form, though the replacement of the imperative is particularly well attested.

In the suffix conjugation of the basic theme fientive *fåʿal* tends to supersede stative *fåʿel* and *fåʿol*. The original patterns of the prefix conjugation of the basic theme were fientive *yafʿil* (which has been absorbed by *hifʿil*), *yafʿul*, and stative *yifʿal*. Yet, only vestiges of these patterns have been preserved, as *yaḥᵃloš*, "he weakens," as against *yæḥᵃlaš*, "he is weak"; *yaqum*, "he rises," as against *yeḇoš*, "he is ashamed"; *yåsoḇ*, "he turns," as against *yeqal*, "he is

TABLE 1. *Verbal Themes.* Obsolete forms are marked by an asterisk.

	Basic Theme	Double Theme	Causative Theme
	qal	piʿel	hifʿil
Internal passive	*puʿal	puʿʿal	ho/ufʿal
t-form (reflexive-reciprocal)	*hitpåʿal	hitpaʿʿal	*hitafʿel

light." In *pi"el* the *e* of the suffix conjugation is mainly preserved in the third-person singular masculine in pause. In context, as well as in the other persons (except in the third-person singular feminine), the *e*, through Philippi's law, shifts to *a*.

Nouns. Both triliteralism and the development of themes are less conspicuous in nouns than in verbs. There exists a set of biradical substantives with a fixed vowel. By their meanings they demonstrate that they belong to the oldest stratum of the language and are, even synchronically, best analyzed as biradical. Substantives are used in different states: in the absolute state (when standing alone), in construct (when closely attached to a following noun, the *nomen rectum,* historically a genitive, denoting relation of possession, etc.) and in the pronominal state (when attached to a genitival pronominal suffix). Two genders exist, the masculine, as a rule with zero ending, and the feminine, with *-å* (spelled *-h* in construct and pronominal state *-at*) and *-t* ending.

Numerals. The cardinal numbers 3–10 reflect the very surprising common Semitic feature that, in opposition to the other noun classes, those with a zero ending modify feminine nouns; those with an *-å* ending (in construct *-[a]ṯ*) modify masculine ones. They precede or follow the counted noun in the absolute state, but they may precede it in construct—historically an archaic feature. This is the rule with definite nouns, as well as with nouns often counted, as *yom,* "day." The "ten" in numbers 11–19 is *ʿåśår* for masculine, *ʿæśre* for feminine, spelled *ʿśrh.* The ordinal numbers have special forms only for the digits and ten built, as a rule, according to the theme *pəʿili.* The exceptions are *šiššiˌ* "sixth," built secondarily off of *šeš,* "six," and perhaps *šeni,* "second," "first" is *rišon,* derived from *roš,* "head," a relatively late form, as is customary in Semitic languages. The older usage of the cardinal number 1 appears in *Genesis* 1:5, *yomʿæḥaḏ,* "one day" = the first day."

Clause formation. It is in the domain of clause formation that Biblical Hebrew has best preserved the ancient Semitic character. In contradistinction to Arabic, it has not relinquished free sentence structure in favor of systemization. Yet, although it has lost, like Aramaic, case and mood endings, it has not been affected by a similar syntactic formlessness. The boundary lines between main and subordinate clauses, however, as well as between the coordination of sentences and subordination, is sometimes blurred. Thus, the main clause, when it follows the subordinate clauses, may be introduced by *wə,* "and." In classical prose, main clauses, as a rule, open with a verb preceded by the conversive *wa.* Sentences describing background tend to open with the subject and may even be nominal. Yet, because the sentence following the background sentence may open again with *wa* + verb, either when it continues the background sentence or resumes the main action, it is often difficult to understand the exact sentence structure. Moreover, if the verbal clause does not open with the finite verb or with the subject (i.e., it begins with an object or an adverbial), the finite verb has to precede the subject (i.e., the obligatory word order is object/adverbial + finite verb + subject). An example in *Genesis* 1:1–3, *bərešiṯ bårå' ʾᵉlohim 'eṯ haššåma:yim wə'eṯ hå'å:rəṣ wəhå'å:rəṣ håyṯå ṯo:hu wåḇo:hu . . . , wayyo:mær ʾᵉlohim:* "in the beginning God created the heaven and the earth [main action, opening with an adverbial], the earth being without form and void . . . [nominal clause serving as background], and God said [again main action; yet theoretically, it could have continued the background clause as well]. Quite frequently *wə* introduces the main clause in phrases like *wayhi ki . . . , wə,* "and it happened when . . . , then . . . ." After a jussive or an imperative, for example, the prefix conjugation following *wə,* by attraction to the preceding volitive, is transferred into the volitive mood (i.e., the long prefix conjugation in the first, the short one in the second and third persons—the so-called indirect volitive). This expresses consecutive or final action (e.g., *Gn.* 27:4, *håḇi:'å li wə'oḳe:lå,* "bring me in order that I eat"; *Dt.* 32:7, *šə'al 'aḇiḳå wəyaggeḏå,* "ask your father that he may tell you").

Circumstantial clauses resemble main clauses even more. Usually, they follow the main clause, connected by *wə* or asyndetically (e.g., *Gn.* 18:1, *wayyerå 'ælåw . . . wəhu yošeḇ,* "and He appeared unto him . . . while he was sitting"). When circumstantial clauses precede the main clause, it is the main clause that is connected by *wə,* and it is only the internal structure of the circumstantial clause (the subject preceding the verb, nominal clause, etc.) that differentiates it from the main clause; *Genesis* 38:25–26, reflects a quite intricate sentence structure: *hi muṣeṯ wəhi šålḥå . . . wato:mær . . . wayakker,* "and while she was being brought forth [preceding circumstantial clause], and she had already sent [background clause, the subject preceding the finite verb] . . . and had said [continuation of the background clause, yet theoretically it could denote the main action as well], . . . and he acknowledged [main action]"). The number of subordinating conjunctions is relatively small. The main relative pronoun is *ᵃšær.* In Hebrew, relative clauses differ in their structure from, for example, English ones, being much more independent. In their full form, pronominal suffixes, governed by a preposition/verb, refer back to the antecedent. In English it is the relative pronoun that is governed by the preposition/verb (e.g., *ʾᵃšær . . . bo* = "in which"). *ʾᵃ*šær is also used to introduce substantive clauses. The main conjunction for introducing substantive clauses is *ki,* which has a variety of functions, including emphasizing particle and causal and temporal conjunction. Important particles are the conditional *'im,* hypothetical *lu,* and presentative *hinne,* "behold"; the latter is often followed by a participle marking the future, whereas *wəhinne,* literally "and behold," is often dependent on verbs of "seeing." It marks what has been seen, as in *Genesis* 30:6: *wayyar(') 'oṯåm wəhinnåm zoʿᵃp̄im,* "and he saw that they were vexed."

Vocabulary. The vocabulary of the Bible (and even moreso of Hebrew inscriptions), is restricted; its language is also somewhat one-sided: it deals with religion, morals, and emotion, being the tongue of prophets, legislators, and poets. Small wonder that many semantic fields are poorly represented and that the number of hapax legomena is relatively high. Biblical vocabulary is especially influenced by Aramaic, whose impact increases in the book's later portions. Aramaic has also served as the intermediary for several Akkadian loanwords.

Second Temple Period. The destruction of the First Temple (587 BCE and the Babylonian Exile marked a new stage in the development of Hebrew culture and language. The returning exiles brought with them the Aramaic language and culture. The books of the Bible had been written during the First Temple period by people whose spoken language, for all their differences, did not differ from the literary tongue more than any other spoken language differs from its literary layer. With the return of the exiles a very much different dialect prevailed in everyday speech that was more and more influenced by Aramaic. This dialect had existed in the First Temple period (reflecting an only marginal Aramaic influence), but people speaking it were, as a rule, cut off from the literary tongue. In the Second Temple period, however, people speaking this dialect were among the authors of literary works written in Late Biblical Hebrew, which, accordingly, reflected genuine diglossia. It was only later that the rabbis adopted this spoken dialect as a literary language and utilized so-called Rabbinic Hebrew, which became the second classical Hebrew tongue, after Biblical Hebrew.

The biblical books composed during this period—such as *Chronicles, Ezra and Nehemiah, Esther, Ecclesiastes,* and *Daniel*—are, for all their differences, written in Late Biblical Hebrew. Besides utilizing *matres lectionis* more frequently, the language prefers, inter alia, *ʾani,* "I," to *ʾănoḵi* and tends to mark the direct object by *lə,* presumably through the impact of Aramaic. The latter might also have caused the reduction of the use of converted forms, and the increased use of noun patterns like *malḵūṯ,* "kingdom," instead of the classical *mamlāḵā.*

The apocryphal books are also written in Late Biblical Hebrew. Fragments of them have been discovered in Hebrew in *Jubilees,* the *Testaments of the Twelve Patriarchs,* and *Ben Sira.* The Hebrew parts of the latter, a book belonging to the Wisdom literature and composed in about 180 BCE, were first discovered in the Cairo Genizah (the storeroom of the Ben-Ezra Synagogue in Cairo in which worn Hebrew books and documents were kept) and later in the excavations on Masada. The Dead Sea Scrolls, the manuscripts found at Qumran, near the northern edge of the Dead Sea), and in its vicinity, were, except for biblical texts, composed by Jewish sectarians. Their historical importance lies in the light they shed on the two centuries following the Hasmonean uprising, a period decisive for the history of monotheistic religions. [*See* Dead Sea Scrolls; Qumran; Masada; Hasmoneans.] These scrolls are written in another variety of Late Biblical Hebrew, dubbed Qumran Hebrew. It utilizes, inter alia, pronoun doublets (forms with and without final *heh*), *bəlō(ʾ)*/*ləlō(ʾ)* with finite verbs, and predicatively used infinitives. Yet, although the language of the scroll *Miqṣat maʿaśe ha-Torah* from Qumran Cave 4 grammatically resembles Biblical Hebrew more than Rabbinic Hebrew, it is closer to the latter in its use of *še,* "that," and in its vocabulary, perhaps because of its halakhic character. Nothing certain can be said so far about the *Copper Scroll,* which reflects affinities with Rabbinic Hebrew as well. [*See* Copper Scroll.]

Rabbinic Hebrew is to be divided into two main periods: tannaitic and Amoraitic. In the Tannaitic era (in the first two centuries CE.), Hebrew was still a spoken language, though rivaled by Aramaic and even by Greek. The tannaim composed all their works in Rabbinic Hebrew: the large collections dealing with law (halakha)—the Mishnah, the Tosefta, and the Baraitot (halakhic traditions not accepted into the Mishnah and Tosefta)—and the early Midrashim, which comprise both halakhic and homiletic (haggadic) exegesis. No early manuscripts written in Rabbinic Hebrew survive. The earliest specimen in a somewhat different species of Rabbinic Hebrew are the Bar Kokhba letters, some of which were written in Aramaic and even in Greek (c. 135 CE), found mainly in Naḥal Ḥever and Wadi Murabbaʿat in the Judean Desert. [*See* Bar Kokhba Revolt; Judean Desert Caves.]

Later manuscripts were decisively influenced by Biblical Hebrew, so that the reconstruction of genuine Rabbinic Hebrew is somewhat precarious. The latter clearly differs from the former not only in vocabulary (partly the result of the Aramaic influence), but in grammatical structure as well. Converted verbal forms disappeared, as did the infinitive absolute. The infinitive construct coalesced with *lə* preceding it and in the basic verbal theme was restructured according to the prefix tense. In final position, the opposition of *m:n* was neutralized. The past is marked by the suffix tense, while the present and, as a rule, the future, are marked by the participle. The prefix tense is, to a great extent, used as a sort of subjunctive. The lengthened, and as a rule also shortened, forms of the prefix tense are no longer extant. The attributive use of the demonstrative pronoun is archaic when compared with Biblical Hebrew because it is not pleonastically determined by the definite article (Rabbinic Hebrew's *bayiṯ ze,* "this house," as against Biblical Hebrew's *hab-bayiṯ haz-ze*). The number of subordinate clauses is much higher than in Biblical Hebrew, and most are built with the conjunction *še.*

It was in the wake of the collapse of the Bar Kokhba Revolt in 135 CE that Hebrew ceased to be a living language and was used for cultural (religious) purposes only—though it

often flourished as a literary tongue. It was not spoken again until the end of the nineteenth century in Israel (Palestine). Because Biblical and Rabbinic Hebrew, despite the differences between them, continued to serve as cultural unifiers—Bible and Mishnah being the two main pillars of Judaism—once Hebrew ceased being spoken, various mixtures of Biblical and Rabbinic Hebrew were utilized in every historical period. Each of these dialects was influenced by the spoken non-Hebrew vernacular wherever Jews lived. In the Hebrew of later periods, significant archaizing tendencies can also be detected. Amoraitic Rabbinic Hebrew (c. 200–500 CE), attested in the later Midrashim, as well as in the primary source of Jewish law, the Palestinian and Babylonian Talmuds (compiled in the first half of the fourth and the second half of the fifth centuries, respectively), already reflects the mixture of the two, although Rabbinic Hebrew is its main component. It is decisively influenced by the vernacular—Aramaic—in which a great part of the Talmuds and the late Midrashim are written.

Similar mixtures of Biblical and Rabbinic Hebrew and the vernacular are reflected in the medieval varieties of literary Hebrew. Thus, Spanish Hebrew poetry, in the main, imitates Biblical Hebrew, yet it is not entirely devoid of elements belonging to Rabbinic Hebrew; moreover it is also influenced by the vernacular—Arabic.

Modern Hebrew. The revival of Hebrew as a living language in Modern (Israeli) Hebrew is the only case in the history of languages in which a dead language (i.e., one used only for literary purposes) again became a spoken tongue. The coincidence of three factors at the beginning of the twentieth century in Palestine (later the State of Israel) made the revival possible. Many of the Jews in Palestine had emerged from traditional Jewish society, which taught its members the Hebrew language as a part of Jewish culture, thus imparting to them a working knowledge of the language. Because these Jews used various vernaculars, Hebrew was their only common language. Many of the Jews in Palestine additionally were influenced by the zeitgeist of nationalism, which pleaded for the use of the national language in every domain. This provided the members of the Zionist movement with the motivation to revive Hebrew. It was through the Hebrew Language Committee (later the Academy of the Hebrew Language) that missing words, especially technical terms, were created. The morphology of Modern Hebrew is in the main identical with that of Biblical Hebrew. Yet, from doublets forms were chosen that occur in Rabbinic Hebrew as well. Its sentence formation is much closer to Rabbinic Hebrew, but it is also influenced by Standard Average European, in which the number of subordinate clauses is also much higher than in Biblical Hebrew. Standard Average European has also considerably influenced Modern Hebrew phraseology.

[*See also* Biblical Literature, *article on* Hebrew Scriptures.]

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HEBRON (Ar., El-Khalil), site situated some 30 km (18 mi.) south of Jerusalem (31°30′ N, 35° E). Twenty-five springs in the area, along with two ancient pools, provided an adequate water supply in antiquity for the inhabitants, their flocks, and their fields. The ancient city is mentioned more than sixty times in the Hebrew Bible, from *Genesis* to *Nehemiah*, as well as in the Pseudepigraphy. Traditionally built "seven years before Zoan in Egypt," the city was undoubtedly a Canaanite cultic place, made important by the "Oak of Mamre," under which Abraham is said to have pitched his tent, "built an altar to the Lord," entertained divine messengers, and pleaded for the innocents of Sodom. Much later, the spies of Moses beheld the richness of Hebron's vineyards. After the Hebrew tribes occupied the land, Hebron was "given" as an inheritance to Caleb and became a city of Judah, a place of refuge, and a Levitical sinecure (*Jgs.* 1:20; *1 Chr.* 6:57).

In the days of King David, the city achieved its greatest renown. At the death of Saul, David settled there and was subsequently anointed king of Judah. Joab's murder of Abner precipitated the fall of the unstable house of Saul in the north, and the elders of Israel came to Hebron to proclaim David king over all the land (*2 Sm.* 5:3). Jerusalem became the new capital of the United Monarchy (*2 Sm.* 5:7), but it was to Hebron that Absalom, David's son, went to attempt the usurpation of his father's throne (*2 Sm.* 15:10–11). Josephus (*Antiq.* 8.2.1) assigns Solomon's vision to Hebron, but in the Hebrew Bible it is mentioned again only in the lists of Rehoboam's fortified cities (*2 Chr.* 11:10).

Extrabiblical evidence may indicate that Hebron was an early Canaanite royal, as well as cultic, city, and some scholars have seen it as a possible Hyksos city during the Middle Bronze Age. [*See* Hyksos.] The Amarna letters include a possible reference to a local prince named Shuwardata, who may have ruled there; the Medinet Habu list of Rameses III may also contain a possible reference to the site. [*See* Amarna Tablets.] Stamped jar handles from the eighth century BCE suggest that the city functioned then as a royal pottery works of some sort. Wares bearing the name of the city are found throughout the borders of ancient Palestine.

No Assyrian or Neo-Babylonian records note the existence of the site, but its lush fields could hardly have escaped the notice of either set of conquerors. After the fall of Jerusalem, Edomites (Idumeans) occupied the area but were dislodged later by Judas Maccabaeus, who took the city and pulled down its fortifications in about 164 BCE. Herod the Great refurbished the city as part of his extensive building operations and enclosed the Cave of Machpelah, as his characteristic masonry there still proclaims. During the First Jewish Revolt, Shim'on bar Giora captured the city (in 68 CE), but the Roman general Cerealis recaptured and destroyed it. The emperor Hadrian later had a road built and established a market of some prominence nearby. [*See* First Jewish Revolt.] In the seventh century, the prophet Muhammad gave Hebron to the Tamin ed-Dari tribe and its families.

During the Latin Kingdom the site was known as the Castle of St. Abraham and was a major link in the fortress cities guarding the kingdom. In 1100 the city became the fief of Gerhard of Avennes, but it was under Baldwin I that the city achieved its military strength. It was also in this later period that the city's glass factories were revived, which continue to the present time. In 1167 Rainald became the Latin bishop of Hebron, further elevating the city's position. With the fall of the Latin Kingdom, the city reverted to Islamic control and soon became an important Muslim religious site.

The modern Arabic name, *El-Khalil* ("the friend"), harkens back to the Abrahamic saga ("the friend" = Abraham—*2 Chr.* 20:7, in which Abraham is called the "friend" of God; the site is also called variously Hebron and Kiriath-Arba in the biblical text). The designation *Kiriath-Arba*, after Arba, father of the giantlike Anakim (*Jos.* 14:13, 15:13, 34, 20:7, 21:11; *Gn.* 23:2, 35:27; *Jgs.* 1:10) led Jewish writers, followed by Jerome, to curious etymological gymnastics. The Hebrew word *'arba'* ("four") was taken to mean *the* "four"—Abraham, Isaac, Jacob, and Adam. During the Middle Ages, Hebron was also known as Castellum Aframia, Karicarba, and Arbothe. Charles Clermont-Ganneau also identified the site with the Roman Diocletianopolis. [*See the biography of Clermont-Ganneau.*]

Modern archaeological investigation of the site began in 1964, after a preliminary survey of the area in 1963 by the American Expedition to Hebron, led by Philip C. Hammond. Two further seasons were conducted by the same expedition, in 1965 and 1966. The American expedition concentrated on the observed ancient ruins located on Jebel er-Rumeide, across the valley from the modern city. Excavation produced material remains from the Chalcolithic, Early Bronze, Middle Bronze, Late Bronze, Iron, Hellenistic, Byzantine, and Islamic periods. Most significant was the identification of the city's original MB wall, which dates to the first half of the eighteenth century BCE and the mapping of its perimeters. Chalcolithic, EB, MB ("Hyksos"), and Byzantine burials were recovered, as well as ceramic and other cultural materials from those periods and extending into the Early Islamic period. Excavations were renewed at the site from 1983 to 1986 by Avi Ofer and Tel Aviv University. Major finds from those excavations included a fragment of cuneiform tablet written in sixteenth–seventeenth-century BCE East Akkadian and jar handles bearing the royal *lmlk* stamp.

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PHILIP C. HAMMOND

HEINRICH, ERNST (1899–1984), scholar of ancient Near Eastern architecture and professor of architectural history and Bauaufnahme (the recording of buildings) at the Technical University of Berlin (1951–1965). Heinrich's scholarship embraces the prehistoric periods in the Near East through classical antiquity to nineteenth-century urban development in Berlin and its reconstruction after World War II.

The son of an elementary school principal, Heinrich pursued a degree in architecture, became an assistant professor of architectural history, and later oversaw the preservation of historic monuments in Potsdam and Trier. As a government architect, he met Ernst Walter Andrae, who entrusted him with the final publication of the 1902–1903 German excavations at Fara (1931). [*See* Fara.] Heinrich gained practical experience as architect on the German excavations at Uruk-Warka (1930–1938), which generated numerous publications (1932, 1934–1939). [*See* Uruk-Warka.] He is noted best for his then exemplary excavation and publication of several temples and cult precincts at Eanna and area or square (plan quadrant) K XVII, which includes the first high temple (White Temple) on the Anu ziggurat. Together with Adam Falkenstein, he conducted the first survey of the region surrounding Warka (1938, p. 31ff.). The results of his deep sounding at Eanna (1932, p. 6ff.) are still central to the chronology of the prehistoric and early historical periods in Mesopotamia. His later fieldwork included Tell Fakhariyah, Munbaqa, and Habuba Kabira in North Syria. [*See* Fakhariyah, Tell; Habuba Kabira.]

Heinrich's lifetime research on ancient Near Eastern architecture was crowned by a series of articles and monographs that concentrate on Mesopotamia. A general overview (1975) and an article on domestic architecture (1972–1975) were followed by three volumes devoted to the development of temples and temple precincts (1982) and palace architecture (1984).

Heinrich was a consultant at the German Archaeological Institute beginning in 1942. He later served as a board member of the Koldewey Society and the German Oriental Society (Deutsche Orient-Gesellschaft), where he succeeded Andrae as president. Heinrich received the Order of the Federal Republic of Germany in 1974.

[*See also* Deutsche Orient-Gesellschaft; *and the biographies of Andrae and Koldewey.*]

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Vierter Vorläufiger Bericht über die von der Notgemeinschaft der Deutschen Wissenschaft in Uruk unternommenen Ausgrabungen. Berlin, 1932. See "Die Schichten und ihre Bauten" (pp. 6–24).

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Fünfter Vorläufiger Bericht über die von der Notgemeinschaft der Deutschen Wissenschaft in Uruk unternommenen Ausgrabungen. Berlin, 1934b. See "Arbeiten in Eanna, im Stadtgebiet und im Südbau" (pp. 5–38).

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DIANA L. STEIN

HELIOPOLIS, ancient Egyptian center of astronomy and theology, located northeast of modern Cairo (30°05′ N, 31°20′ E). The site is largely covered by the modern settlements of Mataria and Tell Hisn. Unlike most ancient Egyptian sites, it is situated not on the Nile but inland some 20 km (12.5 mi.) east of the river, to which it was connected by an ancient canal beginning at the southern edge of modern Cairo.

The ancient Egyptian name of the city was *jwnw* ("pillar"). A cuneiform transcription gives the pronunciation *a-na,* which is also preserved in the biblical Hebrew *'ōn* (Gen. 41:45). The name Heliopolis ("city of the sun") occurs in classical sources from Herodotus (c. 450 BCE) onward, reflecting the city's association with solar theology.

Most of what is known about Heliopolis comes from textual sources rather than from archaeology. By the time of the Old Kingdom (beginning c. 2650 BCE) it was already established as a center of astronomy, aptly characterized by the title of its high priest, "chief of observers." The city also had a reputation for learning and theological speculation, which it retained until classical times (Strabo reports visiting schools of Plato and Eudoxos there). Much of this activity was centered on the role of the sun in the creation and maintenance of the world in the persons of the gods Atum and Re-Harakhti. Heliopolitan theology was summarized in the concept of the Ennead, a group of nine gods embodying both the creative source and the chief operational forces of the universe. By the beginning of the Old Kingdom this system had already been largely formulated into a coherent philosophy, and it continued to dominate Egyptian thought for the next three thousand years.

Despite the intellectual prominence of Heliopolis, very little is known about the city itself. Its chief feature was a temple devoted to Atum and Re-Harakhti, the precise location and shape of which is uncertain. The only standing monument visible today is a large obelisk, which is still in situ, dedicated by Senwosret (Sesostris) I (twelfth dynasty, c. 1970 BCE). Earlier structures include a fragmentary shrine of King Djoser (third dynasty, c. 2650) and part of an obelisk of the sixth-dynasty pharaoh Teti (c. 2300), as well as several tombs of high priests from the Old Kingdom. A stela of Thutmosis III (eighteenth dynasty, c. 1433) commemorates his erection of an enclosure wall around the solar temple. Excavations have also revealed extensive Ramesside construction (nineteenth–twentieth dynasties, c. 1290–1100), comprising several temples and a cemetery for the Mnevis bulls (incarnations of the sun god).

Donation lists from the time of Rameses III (twentieth dynasty, c. 1190) indicate that the temples of Heliopolis were second only to those of Amun at Thebes. After the Ramesside period, however, the fortunes of Heliopolis began to decline. Later building activity is represented primarily by a few Saite tombs (twenty-sixth dynasty, c. 650). The city was largely destroyed during the Persian invasion of 525, though enough of its structures and reputation remained to attract tourists such as Herodotus and Strabo. In the first century CE most of its statuary and obelisks were removed to Alexandria and Rome, and its remaining structures served as a quarry for the building of medieval Cairo. Apart from the standing obelisk of Senwosret I, the ancient site is commemorated today only in the name "Heliopolis," designating northeast Cairo.

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JAMES P. ALLEN

HERMON, MOUNT (Heb., Har-Ḥermon), one of the highest peaks in the southern Anti-Lebanon range, rising some 5,146 m (8,300 ft.) above sea level. To the west and southwest is a magnificent panorama across southern Lebanon and northern Israel; to the northwest, a view to well beyond Damascus; and to the south a view of the whole of the Upper Jordan Valley. The upper peaks are covered with snow much of the year, making Mt. Hermon a notable landmark. The lower slopes are thick with oak, pine, and fruit trees of various kinds. The prominence, natural beauty, and fertility of Mt. Hermon are often praised in the Hebrew Bible, as well as by classical authors.

The name, not known from ancient Near Eastern sources outside the Bible, derives from the common Semitic *ḥrm,* which in Hebrew and Arabic denotes something that is "taboo," that is, set apart or consecrated, as for instance a sacred place.

In the Hebrew Bible, in addition to references to its beauty and sanctity, Mt. Hermon is often referred to as a prominent natural boundary or as marking the northern borders of the territory claimed by Israel east of the Jordan River. The Bible alludes to other names, such as Senir, which occurs in Assyrian texts; or Sirion, which is attested in the Egyptian Execration texts and at Ugarit. Both names occur in Tal-

mudic texts, and Josephus (*Antiq.* 5.3.1) uses the name Mt. Lebanon. Later Arabic names are Jebel esh-Sheikh, "mountain of the sheikh"; and Jebel eth-Thalj, "mountain of snow."

The cultic associations of Mt. Hermon are easily understood in light of its majesty and the frequent association of ancient Near Eastern deities with mountains. The Hebrew Bible alludes to shrines there to Baal-Gad and Baal-Hermon, as well perhaps as to the Israelite deity (cf. *Jos.* 11:17; *1 Chr.* 5:23; *Ps.* 89:12). More than twenty temples and sanctuaries have been located around Mt. Hermon, including a large Roman temple on the highest peak, known as Qaṣr esh-Shabib, with a large enclosure wall and a Greek inscription to the "Greatest and Holiest God."

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WILLIAM G. DEVER

HERODIAN JERICHO, site located in the Jordan Valley (31°80′ N, 35°30′ E; map reference 192 × 142), northwest of the Dead Sea, about 2 km (1 mi.) northwest of the modern oasis of Jericho (Ar., er-Riḥa) and to the east of the mountains of Judah. The Jericho valley was probably first developed in the days of Alexander Jannaeus (103–76 BCE). Jericho itself flourished during the first century BCE as a garden city and royal estate. The Hasmoneans were the first to build aqueducts in the western Jordan Valley, where the availability of water and land, as well as the mild climate, enabled the development of agriculture. Date palm and balsam cultivation, spurred the city's economic growth. It was for these reasons that first the Hasmoneans and later King Herod built winter palaces here.

History of Excavation. The site was discovered by Edward Robinson in 1838. Charles Warren excavated in 1868 at two of the mounds; A. Nöldeke, Carl Watzinger, and Ernst Sellin conducted excavations in 1909 and 1911. In 1950, a joint expedition of the American Schools of Oriental research and the Pittsburgh-Xenia Theological Seminary, directed by James L. Kelso and D. C. Baramki, conducted an extensive excavation at the two mounds, and on the other side of Wadi Qelt. In 1951, James Pritchard directed the excavation on behalf of the American Schools. He discovered buildings on the southern mound and the structure he identified as the "Gymnasium." During the years 1973–1983 excavations were carried out by the Hebrew University, Jerusalem, under the direction of Ehud Netzer.

Hasmonean Palace Complex. Built at the outlet of Wadi Qelt, on a hill overlooking the Jericho valley, the Hasmonean palace complex included a 50- × 50-m building surrounded by a moat, recently excavated, on three sides. This building was later covered by an artificial mound constructed by Herod. The palace probably had a central open court. In its southeast part, a hall decorated with stucco and frescoes was found in the excavations. Its walls are preserved to a height of 7 m, indicating that the palace was two stories high. Two small swimming pools were probably surrounded by a peristyle-shaped building also decorated with frescoes and mosaic floors. The drowning of Aristobolos III, as described by Josephus in *Antiquities* 15.53, may have occurred in one of these pools. The Hasmoneans also erected a splendid building, a pavilion similar to a Doric temple. It may have been destroyed by an earthquake, as only its foundations, columns, and architrave survive. This leisure complex had a magnificent view of the valley and Wadi Qelt. At a later period, it was extended to the south. Two "twin" palace complexes were found by Ehud Netzer, dating to the reign of Queen Alexandra (Shlomzion, 76–67 BCE). Each has a central open court surrounded by rooms, a hall, a bathhouse, and a *miqveh* ("ritual bath"). The palaces were decorated with frescoes. Each had an adjacent court with a small swimming pool. Other buildings, houses, installations, and *miqveh* complexes were built around the palaces, perhaps used by priests for purification rites. The Hasmonean palace complex was likely still standing at the outset of Herod's reign. [*See* Ritual Baths.]

Herodian Winter Palace I ("Gymnasium"). Winter Palace I, identified by Pritchard as the Gymnasium, was used for residential and ceremonial purposes. It is dated to the early years of Herod's reign, following his defeat of Mattathias Antigonus (c. 35–30 BCE). The Herodian palace, a splendid villa, was built south of Wadi Qelt. It was rectangular in plan, with a central peristyle court, a triclinium, a peristyle hall, a bathhouse, and a pair of pools that may have been ritual baths.

Winter Palace II. In 31 BCE an earthquake destroyed the Hasmonean palace complex. Herod rebuilt and extended it to include several wings. The south wing, a small building, was erected on an artificial platform above the buried Hasmonean palace. It was probably Herod's private villa. The two pools from the Hasmonean complex were retained and combined into one large swimming pool; another smaller pool was surrounded by gardens, as evidenced by archaeological finds such as flower pots and water installations. Gardens were also planted over the remains of the destroyed Hasmonean twin palaces. The eastern wing of this palace was constructed on two levels. On the upper level a peristyle court was surrounded by rooms on three sides and had a hall decorated with frescoes. The lower level consisted of two swimming pools from the Hasmonean palace inside a

peristyle court. Attached to these was a bathhouse. This wing seems to have been devoted to recreation.

Winter Palace III. Herod built his enlarged palace on both sides of Wadi Qelt. It consisted of a northern wing on the north bank of the wadi, a sunken garden, a large pool, and an artificial mound with a building on the south bank. The north wing contained two triclinia and one large hall with three rows of columns open to the south to Wadi Qelt. Included in the north wing was a five-room bathhouse. This wing also possessed two peristyle courts, the western one of which had a wide semicircular apse. Several other rooms and an entrance were included in the north wing, which probably was used for leisure activities. The sunken garden had an impressive facade with a semicircular structure at its center. On both sides of this structure were twenty-four rows of niches. Two colonnades were located at either end. The orientation of the large pool west of the sunken garden differed from that of all the other structures, probably because it is parallel to the natural slope. It was used for swimming and water games. The south mound had a rectangular interior and round exterior. A bridge connected the mound with the garden.

Hippodrome Complex. The hippodrome and theater complex near Jericho was unique in the Greco-Roman world. It was uncovered at Tel el-Samarat, 600 m south of ancient Jericho. The hippodrome's rectangular course is evident, but no trace remains of its spina. The spectators presumably sat in the theaterlike structure at the northern end of the course. This structure has survived nearly intact, lacking only its benches, steps, and passages. It is built on an artificial platform. Its excavator, Ehud Netzer (1980), asserts that this hippodrome complex was used for Olympic games that could be viewed from the theaterlike structure. A building is attached to the rear of the theater, interpreted by Netzer (1992) as a guesthouse or a gymnasium.

Cemetery. The cemetery at Jericho in the Second Temple period was located outside the town, on the hills flanking the Jordan Valley. A large necropolis, with approximately fifty tombs, containing both primary burials in wooden coffins and secondary collected bone burials in ossuaries, was excavated by Rachel Hachlili on behalf of the Israel Department of Antiquities; approximately seventy-five robbed tombs were surveyed. The Jericho cemetery consists of loculi tombs only, which are hewn into the hillsides, each loculus serving as a family tomb but with provision for individual burials.

Burial Types. Two distinctly different types of loculi tomb burials, primary and secondary, were discovered during the excavations in the Jericho cemetery. They can be classified typologically, chronologically, and stratigraphically into primary burials in wooden coffins (type 1) and secondary burials of collected bones that were either placed in individual ossuaries (type 2a) or piled in heaps (type 2b).

Type 1. Primary burial in wooden coffins is the earliest type of burial in the Jericho cemetery. The coffins were placed in the rock-cut loculi tombs, each loculus usually holding one wooden coffin. The deceased were evidently brought to the cemetery inside their coffins. The coffin, once inside the tomb, its lid securely in place, was deposited in the loculus; only when all the loculi were filled would additional coffins be placed on the benches or in the pit.

Coffins took the form of a wood chest (several kinds of wood were used) with a post at each corner and a gabled roof. They were constructed by means of mortising. One well-preserved example has a hinged lid. Iron nails and knobs found with the coffins were probably used for decoration or structural support. The coffins were decorated with painted red and black geometric patterns and designs.

Manner of burial. All the bodies were extended, face upward, in the coffin, usually with the head to one side and the hands close to the side of the body. Most of the coffins contained one individual. There are, however, several instances in which one or two bodies were added to a coffin that already contained an individual.

The orientation of the bodies in the *kokh* and tomb does not seem to be significant, as the heads are pointed in various directions. The discovery of several coins inside skulls may indicate that coins were traditionally placed on the mouth of the deceased. It should be noted that the wooden coffins in Jericho were used for primary burials only and never as containers for secondary burials.

Grave goods. In most of the coffin tombs, grave goods consisting of both personal possessions and objects of daily use were found with the deceased. The articles were usually placed near the head or the feet and were found mostly with women and children.

Type 2. Secondary burial in ossuaries was initially practiced only in Jerusalem but later spread to other parts of Palestine. It is clear from the finds and stratigraphy of the ossuary burials at Jericho that they postdate coffin burials. Ossuaries were hewn from one large block of limestone, usually in the shape of a small rectangular box resting on four low legs. A stone lid—flat, slightly curved, or gabled—was placed on top. The ossuaries were often decorated and many had inscriptions recording names and family relations (Hachlili, 1978, 1979b). [*See* Ossuary.]

Manner of burial. The ossuaries were placed in the loculi or on the benches. Often, two ossuaries would be stacked one above the other or placed next to each other. The bones were placed inside the ossuary in a traditional order. Usually, the bones of a single individual were placed in the ossuary, but there are several examples of more than one individual interred.

Grave goods. No personal objects were found inside the ossuaries. However, objects identical to those used in daily life were found in the Jericho ossuary burials: unguentaria

and other glass vessels, bowls, and "Herodian" lamps and cooking pots dated to the first century CE. They were usually placed close to the ossuaries or in the pit. [*See* Grave Goods.]

Burial Dating. The dates for the appearance of these burial customs are still the subject of debate. Nevertheless, the Jericho cemetery can provide a chronology for the two types of burials: primary burials in coffins can be dated from the mid-first century BCE to about 10 CE; secondary burials in ossuaries followed immediately, and are dated to about 10–68 CE. These dates are based on the coins found in the tombs, the ossuary inscriptions of Agrippina and others, the comparative stratigraphy of the tombs, as well as the pottery. L. Y. Rahmani (1986) dates the practice of secondary burials in ossuaries in Jerusalem to 30/20 BCE–70 CE, a practice that continued sporadically until about 135 CE or until the third century.

[*See also* Baths; Burial Techniques; *and* Hasmoneans. *For the site in earlier periods, see* Jericho.]

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RACHEL HACHLILI

HERODIUM (Gk., Herodion; Ar., Jebel Fureidis), a securely identified site (map reference 1729 × 1193) 5 km (3 mi.) southeast of Bethlehem and 12 km (7.2 mi.) south of Jerusalem. The site's Arabic name evidently derived from *Herodis* (i.e., "Herod's mountain"), the site's designation during the period of the Second Jewish Revolt against Rome (see below). Herod the Great constructed Herodium at some time between 24 and 15 BCE on a conical mountain whose shape Josephus compared to a woman's breast (*Antiq.* 15.324). According to Josephus, Herodium was intended to serve as a fortress, as the capital of a toparchy, and as a memorial to Herod (*Antiq.* 15.324; *War* 1.419, 3.55). Josephus also describes the procession of Herod's funeral and his burial at Herodium (*War* 1.670–673; *Antiq.* 17.196–199). During the First Jewish Revolt against Rome (67–70 CE), Herodium was occupied by Jewish rebels, one of the last three strongholds to fall to the Romans after the destruction of Jerusalem (*War* 4.518–520, 7.163). [*See* First Jewish Revolt.] Texts found in Wadi Murabba'at that were written during the revolt led in 132–135 by Shim'on (Simeon) Bar Kokhba indicate that he used Herodium as a headquarters. [*See* Murabba'at; Bar Kokhba Revolt.]

Between the seventeenth and nineteenth centuries CE, Herodium was visited by a number of explorers, including Richard Pococke (1743), Edward Robinson (1838), Félicien de Saulcy (1863), Conrad Schick (1879), and Claude R. Conder and Horatio H. Kitchener (1881). From 1962 to 1967 Virgilio C. Corbo of the Studium Biblicum Franciscanum excavated on the top of the mountain. In 1967 and 1970 Gideon Foerster conducted conservation and restoration work on behalf of the Israel National Parks Authority. Between 1970 and 1987 Ehud Netzer of the Hebrew University of Jerusalem excavated the lower part of Herodium. [*See the biographies of Robinson, Saulcy, Schick, Conder, Kitchener, and Corbo.*]

The site of Herodium consists of a palace-fortress on the

top of the mountain and a Lower City. The palace-fortress is located inside the summit of an artificial mountain created by pouring vast quantities of earth and stone fill around the outside of a double circular wall (the diameter of the outer wall is 62 m). A round tower (18 m in diameter) was set into the double wall on the east. Three semicircular towers projected from the wall at the three other cardinal points. The double wall and towers, constructed on a series of vaults, rose several stories in height, with their tops originally protruding above the earth and stone fill. Herod's palace-fortress was built inside the double circular wall, as if set into the mouth of a volcano. A stepped, vaulted passage was cut through the fill from the base of the mountain to an entrance on the northeast side at the summit.

The circular area at the top of the mountain is divided into two symmetrical halves. The eastern half was occupied by a peristyle garden flanked by exedrae. The palatial rooms, including dwellings, service rooms, a triclinium, and a bathhouse, occupied the western half. During the period of the First Revolt, the triclinium was converted into a synagogue. In the Byzantine period (fifth–seventh centuries CE) a small monastic community occupied the summit (Foerster, 1993, pp. 619–621).

The buildings in the Lower City, or Lower Herodium, have the same axial orientation as those of the mountain and apparently were constructed as part of the same overall plan (Netzer, 1993, p. 622). A large (46 × 70 × 3 m deep) pool with a circular pavilion in the center dominated the Lower City. The pool was surrounded by a garden with porticoes along the sides. To the southeast of the pool complex was a long, narrow racecourse or track (350 × 30 m), with a large palace just above it to the north. The racecourse is too narrow to have served as a hippodrome. An elaborate structure described by Ehud Netzer, its excavator, as a "monumental building" faces directly onto the western edge of the racecourse (Netzer, 1981, pp. 35–45). It consisted of a single rectangular hall of ashlar masonry, whose bottom part was cut into the bedrock. The interior of the hall is surrounded by niches with half-columns set on pedestals between them. The thickness of the side walls indicates that there was a vaulted ceiling and perhaps also a monumental roof. Netzer considered, but rejected, the possibility that the monumental building was Herod's mausoleum; however, he believes that the latter may have been located in the vicinity and that the racecourse may have been used for Herod's funeral procession. Netzer has also noted the similarity between the interior of the monumental building and the triclinium of the Roman Soldier Tomb at Petra (Netzer, 1981, pp. 43–45; p. 135, n. 70). Post-Herodian remains at Lower Herodium include a network of tunnels (mostly at the northeastern edge of the mountain) that served as hiding places during the Bar Kokhba Revolt and three churches from the Byzantine period.

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JODI MAGNESS

HESBAN (biblical Heshbon), Transjordanian mound rising 895 m above sea level that guards the northern edge of the rolling Madaba plains, where a southern tributary of Wadi Hesban begins to descend sharply toward the Jordan River, about 4 km (15 mi.) to the west (map reference 1344 × 2267). The tell is about 56 km (35 mi.) east of Jerusalem, 19 km (12 mi.) southwest of Amman, 6 km (4 mi.) northeast of Mt. Nebo, and 180 m higher than 'Ain Hesban, the perennial spring with which it is associated.

Werner Vyhmeister (1968) has traced Hesban in the work of Early Arab historians, followed by its mention in travel accounts of nineteenth- and twentieth-century Western explorers such as Ulrich Seetzen (1806), John S. Buckingham (1816), Charles L. Irby and James Mangles (1816–1817), and Edward Robinson (1838). The first archaeologists to explore the site include John Garstang (1931), Nelson Glueck (1933), and Bernhard Anderson (1963); all assumed it to be biblical Heshbon.

From 1973 to 1976, a regional survey of most of the territory within a 10-km (6 mi.) radius of Tell Hesban was conducted by Andrews University (Berrien Springs, Michigan). It heightened interest in the hinterland correlates of changes observed on the tell. The ruins and pottery discovered by the survey as it crisscrossed the tell's hinterland provided opportunities for comparisons between what was happening both on the tell and nearby (LaBianca, 1986, 1990).

There are altogether thirty-eight biblical references to Heshbon; its earliest history appears in *Numbers* 21:21–25 (cf. *Dt.* 2:16–37; *Jdt.* 5:15), where it is referred to as the city of the Sihon king of the Amorites. *Numbers* 21:26–31 claims that at least the southern half of Sihon's kingdom, the geographic tableland known in the Hebrew Bible as the Mishor (*Nm.* 21:30; cf. *Dt.* 2:36), had been Moabite, but that Sihon had earlier wrested it from Moabite control. Israel's claim that though Moabite territory was forbidden to them, the Mishor was an exception because it had been Amorite dur-

ing the conquest is again made in *Judges* 11:12–28. The tribes of Reuben and Gad requested the territory of Sihon's kingdom for their tribal allotment (*Nm.* 32:1–5), but it was actually Reuben that built Heshbon and other nearby towns (*Nm.* 32:37), whose names were changed, according to the difficult and cryptic verse 38. *Joshua* 13:15–23 confirms the allotment of Heshbon to Reuben, though verses 24–28 indicate that it was contiguous to Gad's allotment. When Heshbon became a Levitical city it was considered a city of Gad (*Jos.* 21:34–40). *Song of Songs* 7:4 (Masoretic Text 5) says, "Your eyes are like [with the versions] pools in Heshbon, by the gate [pl. in Septuagint and Vulgate] of Bath-rabbim." Heshbon figures in both extant recensions of a prophetic oracle against Moab (*Isa.* 15:4, 16:8f; *Jer.* 48:2, 34f). By that time it may have been a steep tell, for fugitives stop in its shadow (*Jer.* 48:45). In *Jeremiah* 49:3, Heshbon appears again in an oracle against the Ammonites (it may have changed hands again). Heshbon's final biblical mention is in *Nehemiah* 9:22, where it is included in a historical allusion to the Israelite conquest.

In the postbiblical literary sources (collected by Vyhmeister, 1968), Heshbon is commonly called Esbus (though there are many variant spellings). Josephus says that in the second century BCE Tyre of the Tobiads was located "between Arabia and Judea, beyond Jordan, not far from the country of Heshbon" (*Antiq.* 12.4.11.233). Further on he lists Heshbon among the cities (perhaps the capital) of Moabitis (*Antiq.* 13.15.4.397) and among the Jewish possessions in Moab during the reign of Alexander Jannaeus (103–76/75 BCE) (*Antiq.* 13.15.4.397). Esbus is next mentioned in the late first century BCE, when Josephus includes Esbonitis among several fortresses and fortified cities that King Herod built to strengthen his kingdom (*Antiq.* 15.8.5.294). During the rule of Herod's son, Antipas (4 BCE–39 CE), his territory of Peraea was on the south "bounded by the land of Moab, on the east by Arabia, Heshbonitis, Philadelphia, and Gerasa" (*War* 3.3.3.47). Then, at the beginning of the First Jewish Revolt against Rome (66 CE) the Jews sacked Esbonitis (*War* 2.18.1.458). [*See* First Jewish Revolt.] When the Roman province of Arabia Petrea was created in 106 CE, Esbus was certainly part of it—at least it appears there in Ptolemy's *Geography* (5.17), which reflects political conditions in about 130–160.

Though Late Bronze Age sherds have been identified, six seasons of archaeological excavation at Tell Ḥesban between 1968 and 1978 failed to uncover any architectural or soil remains antedating about 1200 BCE. This poses a problem for locating biblical Sihon's Amorite capital (see above). [*See* Amorites.] Amorite Heshbon may not have been found either because it is elsewhere on the site (unlikely) or because its (seminomadic) impermanent nature left no trace to be discovered (more likely). More extreme options are to consider the biblical account unhistorical or at least anachronistic (now favored by such Hebrew Bible scholars as J. M. Miller and John Van Seters) or to seek the Amorite capital at another location—Jalul (S. H. Horn). Most at least identify Tell Ḥesban with Greco-Roman Esbus, based on coin and milestone evidence coupled with Ptolemy's geographic specifications (see above) and those in Eusebius's *Onomasticon* (84:1–6). Acceptance of Frank M. Cross's reading of (Ammonite) ostracon A.3 found at the site in 1978 would support such an identification for Iron Age Ḥeshbon as well (Cross, 1986). The preferred transliteration of the Arabic name for the tell is now Ḥisban, identified with biblical Heshbon (Heb., *ḥesbon;* Septuagint, Esebon).

The expedition from Andrews University is responsible for the first five of the six seasons of excavation at the site (1968–1976). Baptist Bible College in Clark Summit, Pennsylvania, continued the excavation of a Byzantine church in 1978. The university team has reconstructed nineteen superimposed strata from the excavated remains, which cover a period from about 1200 BCE to 1500 CE.

The Iron Age remains (c. 1200–500 BCE) are very fragmentary as a result of periodic removals of earlier strata on top of the hill by later builders; nevertheless, evidence for at least four strata remains. Stratum 19 (twelfth–eleventh centuries BCE) probably represents a small, unfortified village with an agrarian-pastoral economy. In its earliest phase, its most notable installation was a trench (15 m long and 3.6 m deep) crudely carved out of bedrock on the tell's southern shelf. There is no real clue as to its purpose, but suggestions include a moat for defense, storage, cultic activity, subterranean habitation, and a water channel (if not a narrow reservoir itself). In its later phase, this installation was filled in with soil and both the cobbled floor of a room and a "filler" wall 2.5 m wide were built into it. An egg-shaped cistern may also be associated with this phase, which produced so many loom weights they may represent a cottage industry. [*See* Cisterns.] Stratum 18 (tenth century) left no in situ remains; however, its typologically later pottery was found in deep dump layers outside the contemporary settlement on the western slope (it may have been a continuation of the stratum 19 village).

Stratum 17 (ninth–eighth centuries) is also represented by sloping debris layers dumped to the west, but it is better known for what may be the initial construction on the tell's southern shelf of a reservoir of almost 2 million 1, 15 m to a side (its thrice-plastered eastern wall supplemented bedrock cut by a header-stretcher retaining wall) and 6 m deep. Though several channels carved out of the adjoining bedrock tunneled rainwater to the reservoir, its capacity appears to exceed the normal amount of winter rain that would fall in the catchment area; it may be that the extra water was transported up to the reservoir from below the mound. If so, this stratum may be what is left of King Mesha's attempt to fortify his northern border with Israel. (Might this be the pool referred to in *Sg.* 7:4?) Stratum 16 (seventh–sixth centuries) was the best-preserved Iron Age stratum; its remains

indicate a general prosperity and continued growth, probably clustered around a fort. A few scattered domestic units came to light on the western slope, and the reservoir continued in use—perhaps as part of a way station or supply depot on the King's Highway. It was probably controlled by the Ammonites, to judge from the pottery and several ostraca found in the reservoir fill. The ostraca have added to what is presently known of the Ammonite dialect and script. Stratum 16 may have come to a violent end, considering the great quantity of ash in the debris scraped from the abandoned town into the reservoir by rebuilders (Maccabeans?) in the second century BCE.

After about a three-hundred-year absence of settled remains at the site, Tell Ḥesban was again occupied in the Late Hellenistic period. The remains from the Hellenistic and Roman periods (c. 200 BCE–365 CE) comprise at least five strata. Stratum 15 (c. 200–63 BCE) consisted primarily of a rectangular military fort at the site's summit, probably surrounded by the dwellings of dependents that were often associated with bell-shaped subterranean silos. [*See* Granaries and Silos.] In Stratum 14 (c. 63 BCE–130 CE) Esbus came under the control of Herod the Great, probably as a border fort against the Nabateans. [*See* Nabateans.] There is abundant evidence for extensive underground dwellings on the mound and characteristic Herodian-period family tombs in the cemetery (two such tombs were sealed with rolling stones). [*See* Tombs; Burial Techniques.] The stratum 14 town was destroyed by an earthquake, so that stratum 13 (130–c. 193 CE) contained much new building. A new inn with an enclosed courtyard south of the fort testifies to the increased traffic past the road junction (Via Nova Trajana and Esbus/Livias) at which Roman Esbus was located. In stratum 12 (c. 193–284 CE), the inn was partially rebuilt and saw considerable use. On the acropolis, earlier masonry was incorporated into what has been interpreted as a small temple—perhaps the one depicted on the Elagabalus coin minted for Esbus, a very fine example of which was found at the site in 1973. Access to the temple from the south was via a ramp. Stratum 11 (c. 284–365 CE) continued to demonstrate a modest level of prosperity. A porch was added to the temple and a double colonnade was built to the east of it. The inn south of the acropolis platform was demolished, and a wide monumental stairway replaced the earlier earthen ramp. The stratum came to an abrupt end with the severe earthquake of 365. Apart from the earthquake, the transition from the Roman to the Byzantine period was a gradual one. The Roman cemetery continued to be used.

At least six strata encompass the Byzantine and Early Arab remains (365–c. 1000). Two basilica-style churches were built during this period, though at the end of the period the site was apparently abandoned. [*See* Basilicas.] Although it was a village of no particular significance during the early periods of Islamic rule, after a gap in its sedentary occupation Ḥesban flourished again immediately after the Crusades. It even replaced Amman as the capital of the Belqa region of central Transjordan. [*See* Amman.] Its remains comprise at least three strata (c. 1200–1456) that were relatively well preserved compared to earlier remains. The tell was apparently deserted in the fifteenth century, but in the late nineteenth century there was a gradual return to limited occupation in the Ottoman and modern periods.

[*See also* Ammon; *and the biographies of Garstang, Glueck, and Robinson.*]

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HESI, TELL EL-, site located on Israel's southeastern coastal plain (31°32′ N, 34°43′ E; map reference 124 × 106) 23 km (14 mi.) from the Mediterranean coast, near the borders of the Shephelah and the Negev. Situated on a cluster of sand dunes on the south bank of Naḥal Shiqmah (Wadi Ḥesi), the site consists of a 25-acre terrace with a 4-acre mound at its northeast corner. Ḥesi was occupied almost continuously from the Chalcolithic through the Hellenistic period (c. 4300–200 BCE), with a gap in occupation during the Middle Bronze Age.

The ancient identity of Ḥesi is unknown. In 1878, Claude Conder identified Ḥesi with ancient Lachish. This seemed to be supported by the discovery there in 1891 of an Amarna tablet mentioning Lachish. In 1924, William Foxwell Albright suggested that Ḥesi was not Lachish but Eglon, a Canaanite city-state conquered by the Israelites. Excavations in the 1930s at Tell ed-Duweir, however, revealed that site to be Lachish. Biblical Eglon was located in the foothills of the Shephelah, so Ḥesi, situated several kilometers west of the Shephelah, is not likely to be Eglon.

Two major excavations have taken place at Ḥesi, the first by the British Palestine Exploration Fund from 1890 to 1892. The first season's work was directed by Sir Flinders Petrie. It was at Ḥesi that Petrie first applied the principles of stratigraphic excavation and ceramic chronology that have become the essentials of modern archaeological method. Because the site's summit was under cultivation, Petrie probed into the sides of the mound and into the terrace. He was able to identify three major periods of occupation: Amorite (c. 1700 BCE), Phoenician (1350–850 BCE), and Jewish (to 450 BCE). His Amorite period can now be equated with the Early Bronze Age, the Phoenician with the Late Bronze and Iron ages, and the Jewish with the Persian and Hellenistic periods. [*See the biography of Petrie.*]

The 1891 and 1892 excavations were directed by an American, Frederick Jones Bliss. He removed the entire northeast quadrant of the mound in search of the horizontal exposure of architecture. Bliss enumerated eleven layers of architectural features and grouped them into eight "cities" that he correlated with Petrie's chronology. [*See the biography of Bliss.*]

The second excavation, the Joint Archaeological Expedition, was affiliated with the American Schools of Oriental Research and carried out eight seasons of fieldwork between 1970 and 1983. Both the mound and the terrace were found to be covered by a modern bedouin cemetery. A trench along the south slope of the mound revealed occupation from the Chalcolithic through the Hellenistic period, with a gap in the Middle Bronze Age. Excavation along the southern perimeter of the terrace revealed an Early Bronze Age occupation. Surface survey also revealed unstratified Roman period sherds and, on the east bank of the Wadi Ḥesi, remains of the Paleolithic period.

Major finds date to the Early Bronze, Iron II, and Persian periods. The Early Bronze Age city, occupying the full 25 acres of the terrace, was surrounded by a mud-brick city wall about 7 m wide, supported at the southeast corner by a crushed limestone glacis. Inside the city wall were remains of domestic and industrial activities. During the ninth century BCE, the site was confined to the mound, which was surrounded by a casemate, or double wall, system. A platform 7 m high elevated the summit to provide better defense, and a large courtyard building filled the area. These structures parallel contemporary constructions at Lachish, and at this time Ḥesi probably served as a military outpost to protect the southwestern border of Judah. A military function continued into the Persian period, when once again a large platform prepared the summit for the construction of a small citadel, which probably served as a depot and storehouse for the Persian military.

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HIEROGLYPHS. Used since the Ptolemaic period (323–30 BCE) the term *hieroglyphs* is the Greek counterpart

(*hieroglyphika grammata* "sacred incised letters") of the Egyptian expression *mdw.w-nṯr* "god's words" to indicate the basic writing system of the ancient Egyptian language. Because of the formal similarities with Egyptian hieroglyphs, the term has also been applied less appropriately since the nineteenth century to the writing system of Luwian, an Anatolian language related to, but not identical with, cuneiform Hittite (hence the misleading definition "Hittite hieroglyphs"). Luwian was spoken and written during the Late Bronze and Iron Ages (c. 1500–700 BCE) in southern and southwestern Anatolia and northern Syria.

Egyptian Hieroglyphs. A variable set of graphemes, Egyptian hieroglyphs range from about 1,000 in the Old Kingdom (third millennium) to approximately 750 in the classical language (early second millennium) to many thousands during the Ptolemaic and Roman rule in Egypt (third century BCE–second century CE). Hieroglyphic signs are pictograms (picture signs) that represent living beings and objects, such as gods or categories of people, animals, parts of the human or animal body, plants, astronomical entities, buildings, furniture, and vessels.

This pictographic system represents a combination of phonological and ideographic principles. A written word usually consists of a sequence of uniconsonantal, biconsonantal, or triconsonantal signs called *phonograms,* which convey a substantial portion of its phonological structure: normally all the consonants, occasionally also the semivocalic phonemes (sound units), vowels remaining for the most part unexpressed. This sequence of phonograms is usually followed by a *semagram,* called *determinative* by Egyptologists, which specifies iconically the semantic sphere of the word. For example, a sitting man 𓀀 expresses the lexical sphere of man, mankind; a sitting man touching his mouth 𓀁 denotes the realms of eating, feeling, thinking, sensing; a scribe's equipment 𓏛 indicates the semantic realm of writing; the stylized map of a settlement 𓈖 identifies the word as a toponym. Although some words of common use (such as pronouns, prepositions, a few lexical items such as *rn* "name" or *ḏd* "to say") are written only phonologically, that is, with the combination of consonantal signs indicating <r> + <n> or <ḏ> + <d> respectively, many items of the basic vocabulary of Egyptian are expressed only by semagrams, which directly represent, evoke through rebuses, or metonymically symbolize their own semantic reference. These are called *logograms* (often improperly termed *ideograms* by Egyptologists): for example, the hieroglyph representing the enclosure of a house (𓉔) means "house" (phonologically **pār*), or the sign representing a human head (𓁐) means "head" (phonologically **tap*). In order to distinguish the logographic ("HOUSE" = /pār/ = "house") from the purely phonological use of the same sign ("HOUSE" = /p (+ optional vowel) + r/, independent of the lexical sphere of the word in which it appears), logographic uses are often marked by a vertical stroke following the sign.

TABLE 1. *Egyptian Monoconsonantal Signs*

Sign	Transliteration	Object Depicted
𓄡	*ꜣ*	Egyptian vulture
𓇋	*j*	flowering reed
(1) 𓏲, (2) 𓏴	*y*	(1) two reed-flowers (2) oblique strokes
𓂝	*ꜥ*	forearm
𓅱	*w*	quail chick
𓃀	*b*	foot
𓊪	*p*	stool
𓆑	*f*	horned viper
𓅓	*m*	owl
𓈖	*n*	water
𓂋	*r*	mouth
𓉔	*h*	reed shelter in fields
𓎛	*ḥ*	wick of twisted flax
𓐍	*ḫ*	placenta(?)
𓄣	*ḫ*	animal's belly with teats
(1) 𓋴, (2) 𓊃	*s*	(1) bolt (2) folded cloth
𓈙	*š*	pool
𓎡	*q*	hill-slope
𓎼	*k*	basket with handle
𓎟	*g*	stand for jar
𓏏	*t*	loaf
𓍿	*ṯ*	tethering rope
𓂧	*d*	hand
𓆓	*ḏ*	snake

Egyptian writing also displays a set of twenty-four "alphabetic," that is, uniconsonantal signs. Although these covered almost completely the inventory of consonantal and semiconsonantal phonemes of the Egyptian language (the only exception being the phoneme /l/, for which an autonomous sign appears only in Demotic), this set of signs never developed into a genuine alphabet, but always remained embedded in the original complex system of word signs and sound signs. This situation shows that the development of the alphabetic writing is not, as often assumed, the result of a predictable evolution from a nonalphabetic system, but rather that there is a very different "philosophy of writing" underlying the two graphic models. With the final breakthrough of the Hellenistic cultural Koine and eventually the emergence of Christianity in Egypt (second–third century CE), when a changed cultural and religious setting suggested the adoption of an alphabetic system, the hieroglyphic system was completely superseded by the Coptic writing, an alphabet written from left to right and derived from that of Greek, with the addition of six or seven Demotic signs for the indication of phonemes absent from Greek: ϣ = /š/, ϥ = /f/, ϧ (in some dialects ϩ) = /χ/, ϩ = /h/, ϫ = /c/, ϭ = /kʲ/, ϯ = /ti/.

Table 1 shows the set of Egyptian "alphabetic" signs (from Gardiner, 1957, p. 27).

Some examples of biliteral and triliteral signs are as follows:

	jr		*bꜣ*		*ḥꜣ*
	wr		*wꜥ*		*ḫꜥ*
	nfr		*ꜥnḫ*		*ḥtp*

The signs below illustrate semagrams, used either as determinatives (i.e., following a sequence of phonograms) or as logograms (i.e., indicating both the phonological structure and the semantic value of the word they represent or evoke).

	man, person	★	star		*pr* house
	woman		fire, heat, cook		*jrt* eye
	people		air, wind, sail		

Alan H. Gardiner (1957, p. 25) provides a very accessible specimen of how the Egyptian hieroglyphic system worked (figure 1). Numbers indicate the sequence of the individual signs. Phonograms are indicated in *italic*, logograms in SMALL CAPITALS, and semagrams also in SMALL CAPITALS and "quotation marks"; Supplements necessary to complete the grammatical structure of the corresponding words are added in parentheses.

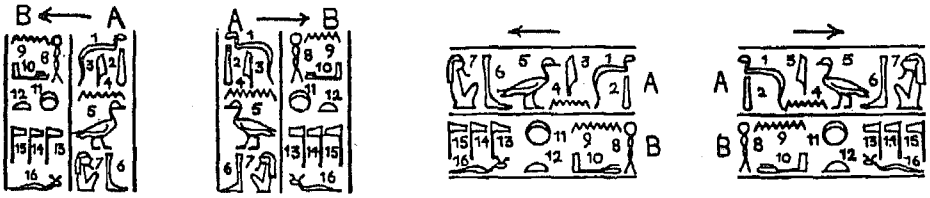
Unlike most other systems of pictographic origin, such as Mesopotamian cuneiform or Chinese ideograms, Egyptian hieroglyphs kept their original iconic structure throughout their entire history without progressively developing stylized forms. Quite on the contrary, the increasing consciousness of the symbolic potential inherent in the relation between the signs used to write words and the semantic meaning of the words themselves led to the development of new, previously unknown phonological associations and also of so-called cryptographic solutions in Ptolemaic Egyptian. For example, the two signs and were used in the classical system only to indicate the phonemes /m/ (or the sequence /g [+vowel] + s/) and /f/ respectively; in Ptolemaic Egyptian, they are creatively combined to represent the two verbs *ꜥq* "to enter" (with the *f*-snake "entering" the *m*-sign) and *prj* "to exit" (with the snake "coming out" of the sign):

ꜥq "to enter" *prj* "to exit"

On the one hand, this evolution threatened the accessibility of the system and eventually favored its purely aesthetic, rather than linguistic use; on the other hand, it expanded the meaning of the individual hieroglyphs and made the system more perfect as a pictorial-linguistic form. It is exactly this radical change in the nature of the writing system in the Greco-Roman periods that is at the origin of the view held in the Western world since Late Antiquity until the emergence of modern Egyptology (and still surviving to the present day in some aspects of popular culture) of the "symbolic," rather than functional character of the hieroglyphic writing. One needs only to think of the decorative use of Egyptian hieroglyphs during the Renaissance and the Neoclassical period in Europe.

The hieroglyphic system was used mainly for monumental purposes, more rarely (in a cursive form) for religious texts in the Middle and the New Kingdoms (c. 2000–1070). During their history, however, hieroglyphs developed two cursive varieties: Hieratic (2600–third century CE), which represents a direct rendering in the scribes handwriting (with ligatures and diacritic signs) of a sequence of hieroglyphic signs; and Demotic (seventh century BCE–fifth century CE), which radically modifies the writing conventions by introducing a shorthandlike simplification of hieratic sign-groups. (For samples of Hieratic and Demotic writing followed by their hieroglyphic transcription, see Gardiner, 1957, pl. 2.)

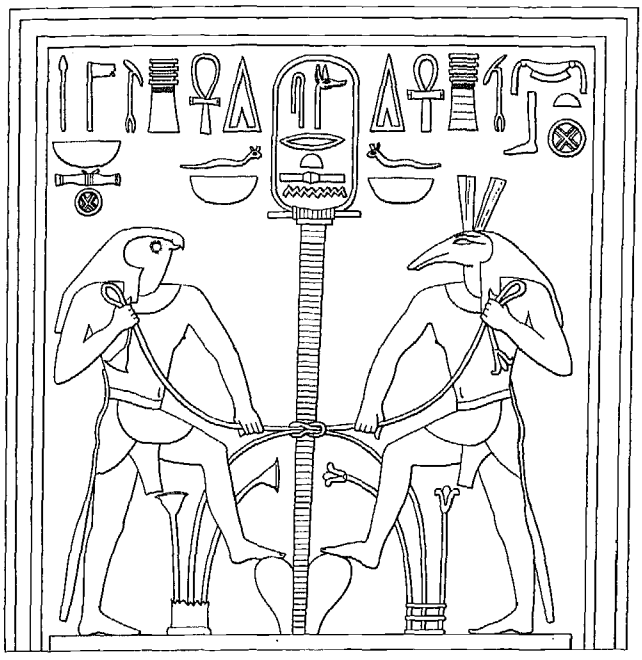
The basic orientation of the Egyptian writing system—and the only one used in the cursive varieties—is from right to left, with signs facing the right; in epigraphic, that is, monumental texts, this order may be inverted for reasons of symmetry or artistic composition. In the monumental text of the Middle Kingdom (King Sesostris I, c. 1971–1928) shown in



Hieroglyphs:							
Transliteration:	$^{1}ḏ$	^{2}MDW	^{3}j -	^{4}n	^{5}gb -	^{6}b -	^{7}"GOD"
Transcription:	*ḏ(d)*	*mdw(.w)*	*jn*	*Gbb*	*ḥnꜥ*	*Psḏ.t=f*	
Translation:	"To say	the words	by	Geb	with	his Ennead."	

Hieroglyphs:						
Transliteration:	$^{8}ḥ$ -	^{9}n -	^{10}ꜥ	^{11}PSḎ -	^{12}t -	$^{13\text{-}14\text{-}15}$"GODS" -	^{16}f
Transcription:							
Translation:							

HIEROGLYPHS. Figure 1. *Example of hieroglyphic writing.* The same sentence is shown in four different arrangements, the arrows showing the direction in which the sentence is to be read. Note that the human and animal figures face toward the beginning of the text. (Griffith Institute, Ashmolean Museum, Oxford)



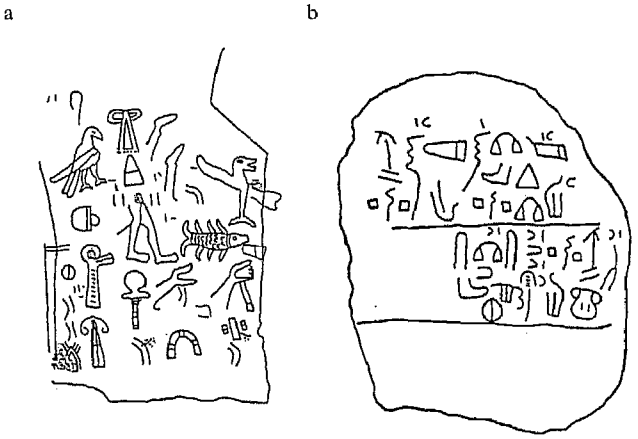
HIEROGLYPHS. Figure 2. *Monumental text from King Sesostris I.* Middle Kingdom. (After B. J. Kemp. *Ancient Egypt: Anatomy of a Civilization,* London-New York, 1989, p. 28)

figure 2, the hieroglyphic sign in the middle, pictographically representing a lung with windpipe, phonologically a triconsonantal sequence /z + m + 3/, semantically a verb with the meaning "to unite," is being tied together with papyrus and lotus, the heraldic plants of Upper and Lower Egypt, by the two gods Horus and Seth. The cartouche in the center encircles the king's name *z(j)-n(j) wsrt.* The inscription on the left side is read from right to left and refers to the god Horus *nṯr ʿ3 nb msn ḏj.f ʿnḫ ḏd w3s nb* "the great god, lord of Mesen, may he give every life, stability, and power," whereas the one on the right side is read from left to right and refers to the god Seth *nbwt(j) ḏj.f ʿnḫ ḏd w3s nb* "the Ombite, may he give every life, stability and power" (from B. J. Kemp, *Ancient Egypt: Anatomy of a Civilization,* London and New York, 1989, p. 28). Beginning with the Middle Kingdom Egyptian developed a particular use of hieroglyphic sign-groups to express words of foreign languages, mostly of northwest Semitic origin. This procedure, commonly known as "syllabic orthography," allowed the rendering of sequences of Semitic syllables (consonants and vowels) by combining Egyptian signs in a conventional groups. More specifically, Egyptian weak consonants (such as *'aleph*) semiconsonantal signs (such as *yod* and *waw*) were used to express vowels, in a procedure similar to the *matres lectionis* in Northwest Semitic. Although the general trends of Egyptian syllabic orthography are well understood, disagreements remain as concerns the exact vocalic values to be attributed to specific sign-groups.

The most decisive contribution to the decipherment of the hieroglyphs was achieved around 1822–1824 by the French Orientalist Jean-François Champollion. On the basis of the writing of Greek royal names in the so-called Rosetta Stone, a trilingual (hieroglyphic, Demotic, and Greek) document from the Ptolemaic period discovered in 1799 in the Egyptian town of Rosetta (in Arabic, al-Rashid) during Napoleon's expedition to Egypt, Champollion was able to establish the nature of the system. He thereby broke away from the traditional symbolic approach that had prevailed in the West since the knowledge of this writing was lost during the first centuries CE. [*See the biography of Champollion.*]

Hittite Hieroglyphs. Between 1500 and 700 BCE, Luwian, an Indo-European language of the Anatolian group related to Hittite, was written in a logographic script, traditionally called *hieroglyphic* because of its formal resemblance to the Egyptian writing system. During the first part of this timespan, that is, between 1500 and 1200, hieroglyphic Luwian was sporadically used in the Hittite Empire, especially on seals. From 1200 to 700, it was the language of monumental inscriptions in all the Neo-Hittite kingdoms in southeast Anatolia and northern Syria.

The structure of Luwian hieroglyphs is completely different from the Egyptian counterpart, to which it probably bears no historical connections. Rather, its ancestors have to be sought within the Aegean world and the Cretan Linear A writing. The Luwian hieroglyphic system is a syllabary consisting of pictorial signs, which, unlike Egyptian hieroglyphs, from their earlier to their later stages show a progressive loss of their original iconic content (see figure 3) to become stylized signs mostly indicating a syllable consisting of a sequence "consonant + vowel" or, in very rare cases, a sequence of phonemes derived through rebus writing from the original pictorial value of the sign. The direction of writ-



HIEROGLYPHS. Figure 3. *Specimens of (a) earlier and (b) later Luwian hieroglyphic writing.* (After Gelb, 1963, pp. 82–64)

ing changes from line to line. Although monuments with Hittite hieroglyphs were known since 1870, their decipherment was significantly favored by the discovery in 1947 of the Phoenician-Luwian bilingual inscription from Karatepe in Cilicia, dating from the eighth century. [*See* Karatepe Phoenician Inscriptions.]

[*See also* Egyptian; *and* Luwians.]

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ANTONIO LOPRIENO

HILPRECHT, HERMANN VOLLRAT (1859–1925), Assyriologist. Born in Hohenerxleben in Anhalt, Germany, Hilprecht was professor of Assyrian (1886–1902) and later Clark Research Professor of Assyriology (1902–1911) at the University of Pennsylvania. He was a member of the first expedition to Nippur (1888–1889) and scientific director of the fourth expedition (1889–1900), there. Hilprecht is perhaps best known as a major figure in American Assyriology in the nineteenth century, having set high standards for the publication of cuneiform texts. He apparently laid out plans for the publication of the results of the Babylonian expedition in four series—a total of twenty volumes. Hilprecht was general editor of series A (cuneiform texts), which he inaugurated by publishing *Old Babylonian Inscriptions Chiefly from Nippur* in 1893.

In 1905–1908, Hilprecht was embroiled in a bitter dispute with John P. Peters that eventually involved not only everyone connected with the Nippur excavations, but a good number of scholars in the discipline. Peters sparked the dispute when he alleged that Hilprecht had exaggerated his claims to having found a temple library during the fourth campaign of excavations in 1900 and had misrepresented purchased tablets as excavated artifacts and falsified the findspots of others. There was also the question of who owned certain artifacts the Ottoman sultan had given to Hilprecht.

In 1893, while in Constantinople working on the Nippur finds, Hilprecht was asked to reorganize the Imperial Ottoman Museum. In recognition of his efforts, over a period of many years, the sultan presented him with a large number of tablets and other artifacts excavated at Nippur or purchased while the expedition was in Mesopotamia. Hilprecht maintained that the artifacts were his personal property but gave the bulk to the museum. He did, however, keep some very important pieces. His critics argued that the sultan's "gift" was a legal fiction and suggested that the finds really belonged to the University of Pennsylvania Museum (the excavations' sponsoring institution).

The university's trustees appointed a committee to act as a court of inquiry in the so-called Peters-Hilprecht controversy. In its report, the committee found the charges unsustainable and untrue, but the controversy did not end. A subsequent controversy arising over Hilprecht's publication of a Sumerian cuneiform tablet fragment that he claimed confirmed the biblical Flood story eventually led to his resignation in 1911.

Hilprecht maintained a residence in Jena, from 1899 to 1905. His first wife, Ida Haufe, died there in 1902. In 1903 he married Sallie Crozer Robinson, a Philadelphia socialite. Following his resignation from the University of Pennsylvania, Hilprecht went to Germany, where he remained during World War I. He returned to the United States after the war. He died in Philadelphia, leaving most of the antiquities and small finds from the Nippur excavations to the University of Jena. He ceded a nearly complete *kudurru* and two copper goats' heads, acquired at Abu Habbah (Fara), to the University of Pennsylvania Museum as the Sallie Crozer Hilprecht Collection.

[*See also* Babylon; Nippur; *and the biography of Peters.*]

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RICHARD L. ZETTLER

HIMYAR, region located in the southern highlands of modern Yemen. In antiquity Ḥimyar was the land of the Homeritae (Homerites), or Hameroi, of classical authors. The last and largest of the indigenous South Arabian kingdoms, it may have been founded in 115 BCE, the approximate starting point for the Ḥimyarite dating system. Otherwise, the earliest firmly datable references to Ḥimyar are found in classical sources. Aelius Gallus observed in 24 BCE, via Pliny (*Nat. Hist.* 6.32.161), that the Homeritae were the area's most numerous tribe. During the mid-first century CE, the author of the *Periplus of the Erythrean Sea* (23) mentioned Charibael, king of the Homerites and Sabaites, reigning at Ẓafar, who was in diplomatic contact with Rome. The kingdom lasted until shortly before the arrival of Islam. The language of the Ḥimyarites is known primarily from highly formalized monumental and dedicatory inscriptions that employed standard South Arabic based on the Sabaean dialect and used the consonantal South Arabic alphabet of twenty-nine characters.

By the beginning of the common era the older South Arabian kingdoms (Maʿin, Saba'/Sheba, Qataban, and Ḥadhramaut) were in decline, and population and political power were shifting to the highlands. The highlands required new agricultural techniques that emphasized terracing and using local rainfall runoff. New kingdoms arose, among the earliest and foremost of which was Ḥimyar, with its capital at Ẓafar. [*See* Sheba; Qataban; Ḥadhramaut; Ẓafar.]

The next two and a half centuries were marked by a complex rivalry between the kings of Ḥimyar and other highland dynasties, a process only sketchily documented by surviving inscriptions. The Ḥimyarites at times managed to take and hold the ancient Sabaean capital of Marib, a principal prize in these contests, while on other occasions Ẓafar itself was overrun and occupied. By the early fourth century CE, the Ḥimyarites had largely defeated their highland rivals, the older eastern kingdoms were extinct, and Ḥimyarite control extended from Ḥadhramaut to Najran and included bedouin tribes from the adjacent deserts. [*See* Marib; Najran.]

Inscriptions and other historical sources for Ḥimyar are sparse for the fourth and fifth centuries, consisting primarily of a few dedicatory inscriptions mentioning building projects and occasional military campaigns. The reign of Abu-Karib Asad, a particularly long-lived king of the late fourth and early fifth centuries, may have marked the apogee of Ḥimyar. Later Arab traditions credit him with conquests as far afield as India and China. Late Ḥimyar is usually characterized as increasingly feudal, though there is little evidence for its social and governmental organization.

Behind-the-scenes serious sectarian rivalries must have been developing. South Arabia's indigenous religion had primarily been astral, with ʿAthtar, a male god associated with the planet Venus, worshipped under various epithets in the Ḥimyarite heartland. By the mid-fourth century, however, paganism was in decline. When the missionary ambassador Theophilus Indus, sent by the emperor Constantius II, arrived in about 350, he found Jews already present at the Ḥimyarite court. He reportedly converted the king to Christianity and built churches at Ẓafar and Aden. Dedicatory inscriptions referring to pagan deities disappeared shortly thereafter, to be replaced with monotheistic formulae that might be Christian, Jewish, or of an indigenous monotheism. The royal house ultimately converted to Judaism. [*See* Aden.]

Systematic excavation is needed to detail cultural developments in South Arabia during the Ḥimyarite period. Material from Ẓafar, Marib, al-Huqqa, Sanʿa, and objects in the National Museum in Sanʿa demonstrate that the region was in close contact with the cosmopolitan world of the Mediterranean basin and the Near East in the early centuries of the common era. The museum's collection displays a rich variety of fluted columns, acanthus capitals, and reliefs with vine scrolls, winged Victories, griffins, sphinxes, and various other motifs of the orientalized Hellenism of Late Antiquity. [*See* Sanʿa.]

By the early sixth century, Christian and Jewish rivalries had led to open conflict, marked by occasional Ethiopian intervention on behalf of Ḥimyarite Christians, perhaps at Byzantine instigation. The details are lurid though sketchy. The king, Yusuf Asar Yathar, the *dhu nuwas* ("lord of curls") of later traditions, determined to purge his kingdom of Christians, massacring Christian communities at Ẓafar and Najran. These events brought on a massive Ethiopian invasion that resulted in the defeat and death of Yusuf and the installation of an Ethiopian viceroy named Abraha. [*See* Ethiopia.] The Ethiopians were later expelled with the aid

of Sasanian Persia. When emissaries of the Prophet Muhammad came to South Arabia in 628, they found a Persian governor in San'a. He adopted the new faith. Yemen, as the region would thereafter be known, was the first area outside the Hijaz to submit to Islam.

[*See also* Yemen.]

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HIPPOS. *See* Decapolis.

HISTORICAL ARCHAEOLOGY.

In contrast to prehistoric archaeology, which deals with periods when there were no written records, historical archaeology is both the archaeology of historical periods and a methodology in which archaeological materials are discussed in the context of a theoretical framework determined by the study of written documents. In the latter sense, historical archaeology is to be contrasted not with prehistoric archaeology but with, for example, anthropological archaeology. In anthropological archaeology, anthropological theory rather than historical studies provides the matrix within which both excavated archaeological materials and historical documents are understood.

Much Near Eastern archaeology was traditionally "historical," in the second of the two ways described above. This was the result of a keen and persistent interest in exploring archaeology's potential to shed new light on the study of the Bible and other ancient texts. Even where there were no explicit points of contact between materials recovered from an excavation and written records, the excavated materials were frequently interpreted within categories defined by the study of historical documents. Elsewhere, however, other methods of interpretation are the norm. For instance, archaeology in the Americas (New World archaeology) is notable for its study of cultures that achieved a high level of complexity but for the most part without leaving written records.

The invention of alphabetic writing in the Near East, and the creation of the Bible and the many other pieces of literature that are central to Western civilization, account for the fact that archaeologists working in the Near East have very often been critical students of the ancient literature as well as archaeologists. This has made for a lively and critical intersection of textual and archaeological studies.

However, some attempts to use archaeological information to shed new light on historical or textual problems have met with a surprising lack of success. For example, when brought to bear on the historical problem of settlement narratives in *Joshua* and *Judges*, the archaeological data apparently conflict irreconcilably with the textual evidence at major points. The relationship between textual evidence on the one hand and artifactual data on the other turned out to be more problematic than many had hoped.

Written Records and Excavated Material. In the early 1960s many archaeologists, especially those specializing in American, or New World, archaeology but also including European scholars, began to advocate a split between archaeology and historical studies. The conceptual framework of historical studies, they felt, simply did not fit the materials they were trying to interpret. One of their concerns was the very different nature of excavated materials and of written documents. For one thing, most written documents handed down from ancient times were produced, transmitted, and preserved by a relatively narrow spectrum of society, a literary elite, reflecting its biases and interests. Archaeological evidence, being essentially refuse, is more democratic in its origins.

Another concern was dating. Historical documents contain a mixture of evidence: some of this evidence no doubt dates to the time of the subject matter, but some dates to the time of writing, which could be much later, especially where there is an oral tradition behind the written texts. Information can also be inferred from a corpus of historical documents because only a tiny minority of documents has been passed down. Much has been lost, but what has been preserved also bears the stamp of selective community interests that chose to preserve some documents and not others.

A deeper concern shared by those scholars was the absence of a meaningful theoretical context within which to interpret their excavated finds. Their data, if properly approached, could be used to articulate models of ancient cultures that addressed political and economic dimensions of human activity. However, the conceptual vocabulary available to them from historical studies was geared to the written word and historical epochs, not to material artifacts and stratigraphic phases. Generations of historians had created and refined theories about various aspects of human history,

but those theories were based on evidence fundamentally different from the kind of data archaeologists study. Many archaeologists began to believe that they had to replace historical models with theoretical models based on archaeological data and the conceptual associations native to those data.

Related to this theoretical concern was a practical concern about the destruction of evidence. Once excavated, the archaeological site in its original form is lost. The materials chosen for preservation and the observations recorded are limited by the excavator's interests and training and by the field and laboratory technology available. Subsequent archaeologists, with other interests or training, or better tools, can never go back to an excavated site to study it in its pristine state. It is the essentially destructive character of the discipline that exacerbated the need for a theoretical framework to guide excavation activity.

Text-Assisted Archaeology. If modern archaeology is understood as a discipline in its own right, then historical archaeology is to be thought of as archaeology in which textual data are available for further study and analysis. The primary source of data for archaeologists, whether they deal with historic or prehistoric periods, is excavated artifacts, their spatial relationship both locally and regionally, and the physical environment in which they are found. Artifacts include both manufactured items and naturally occurring ones, such as shells or other remains of human foods, that have been used or acted on by humans. These data form the basis of a theoretical framework within which questions can be posed. To the extent that information contained in written documents can be determined to derive from a human group that also produced excavatable artifacts, the documentary information may be thought of as an "intellectual artifact" of that group. As such, it contributes along with the other data, to an understanding of the group. Other features of this kind of archaeology follow here.

Material-cultural framework. One virtue of historical archaeology as formerly understood was that, superficially at least, it provided a chronological framework within which it was easy to orient a discussion of excavated materials. However, this historical framework has already largely been displaced in scholarly archaeological discussions by the ceramic chronology of the region in which the excavations take place. Decades of careful stratigraphic excavation have established sequences of pottery types from the initial appearance of ceramic technology in the Neolithic period through medieval times. The ubiquitousness of potsherds makes it possible to establish relationships among the finds associated with them—not only within sites but also between sites. Using strict stratigraphic controls on the materials they excavate, modern archaeologists are in the process of establishing a material-cultural-analytical framework that is independent of historical documents.

Systems approach. Establishing a chronological framework largely independent of historical documents allows the development of a series of archaeological "pictures" of ancient times that complement the "story" told by historical documents. In general, the archaeological pictures will show more about the everyday life of people of all ranks than say anything particular about the great events or individuals usually featured in the historical record. These pictures derive from analysis of the people and of their physical environment. Archaeologists see humans, their cultural institutions, and their physical environment as interacting parts of a systemic whole. This "ecological" focus helps balance the urban and elite emphases of written records with an understanding of the rural environment that was the economic backbone of preindustrial societies.

Explanations for cultural change. In general, explanations for cultural change that were based on interpretations of historical documents saw change as driven by events. In contrast, consonant with an approach to understanding human experience in terms of systems, archaeological explanations for change focus on adaptation. Human institutions and behavioral patterns adapt in response to ecological factors (gradual desalinization of soils or variations in the extremity of topography in a region), internal systemic factors (evolution of social institutions and technologies), and interactions with other human groups across regions and over time. Furthermore, these factors interact with one another in unexpected ways to produce further change: when systems change, gradually or very suddenly, the explanation is sought in the complex interactions of a range of factors, some internal, some environmental.

Looking to the Future. Archaeology is well along the way toward becoming a scientific discipline with an agenda independent of, though still in communication with, historical studies per se. It will contribute to what is understood of the human experience in its ecological context in ways that, in many respects, have little to do with insights gained from the traditional kinds of study of historical documents. Archaeologists are developing increasingly sophisticated models of human society that include political, economic, and religious dimensions. In doing so, the value of artifact-based models will increase as objective and independent sources of information that can be more meaningfully integrated with text-based models of human societies.

[*See also* Biblical Archaeology.]

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HISTORICAL GEOGRAPHY.

Multidisciplinary in nature, historical geography is a comprehensive examination of a region's ecosystems, cultures, and artifactual remains. It depends on teams of scholars and bodies of data compiled and analyzed to determine the factors in settlement patterns, the environmental impact of human activity, and the cultural developments that grow out of natural resources, trade routes, and diffusion patterns.

For example, the manner in which the ancient cultures of Mesopotamia and Egypt developed was based in large part on the activities, both beneficial and devastating, of their river systems and on the presence or absence of natural barriers to invaders. Thus, cyclic invasions by new peoples characterize Mesopotamia throughout its history because it lacked the desert and sea barriers that effectively protected Egypt. The divergence in the cultures of these two cradles of civilization can also be traced to the regularity of the Nile River's flow and flooding and to the intermittent, catastrophic flooding of the Tigris-Euphrates river valley.

More specifically, historical geography has been an important approach in the analysis of the cities of the Mesopotamian alluvial plain. Examination of that region's basic topography suggests that the growth, and often the physical survival, of cities was based on their ability to channel watercourses into irrigation systems, to keep those canals free of the heavy load of river sediment, and to respond to the increasing salinization of farm land. [*See* Irrigation.] Trade and warfare also followed river systems, contributing to shifts in political control. For instance, cuneiform texts from the Old Babylonian period (1800–1700 BCE) describe revenues derived from river tolls and cities captured by troops traveling down the river.

History of the Field. The historical geography of the ancient Near East has been a topic of interest since Christian pilgrims visited the region and noted its sites, rivers, and major landmarks in their diaries. The Byzantine (sixth century CE) Madaba map provides clues to the routes these pilgrims followed and the sites of major religious centers. [*See* Madaba.] With the advent of the nineteenth century, perhaps heralded by Napoleon's scientific expedition to Egypt (1798–1799), travel and the need for accurate maps and site reports once again became of great importance. Among the most helpful of the travel accounts produced during this period are those of the American explorer Edward Robinson (1838, 1853). [*See the biography of Robinson.*] His maps and compilation of geographic data laid the foundation for modern historical and scientific geography, the practical aspects of map making and information gathering, and later, more systematic surveys, such as that produced for the Palestine Exploration Fund/Society (1870–1876), the efforts of Nelson Glueck *(Explorations in Eastern Palestine)* from 1935 to 1949, and a recent survey of Jordanian sites (J. M. Miller et al., *Archaeological Survey of the Kerak Plateau,* 1991.) [*See* Palestine Exploration Fund; *and the biography of Glueck.*]

The enterprises of historical geography in the Near East from the nineteenth century to the present have included the identification of biblical sites through survey, excavation, and the examination of modern Arab place names. Among the pioneers in this effort was George Adam Smith, whose *Historical Geography of the Holy Land* (1894) is still a valuable primary source for modern scholars. [*See the biography of Smith.*] W. F. Albright and G. Ernest Wright also contributed to the discipline through their philological studies of Arab place-name traditions, their development of modern field-school techniques for analyzing artifactual remains, and their regional approach to ceramic chronology. [*See the biographies of Albright and Wright.*]

Among the first truly scientific treatments of the geography of the regions of the Near East was that of Denis Baly (*Geography of the Bible,* 1957), which served as a model of data collection for climate, topography, and geology. Also of importance were the efforts of Yohanan Aharoni (*The Land of the Bible,* 1979) and Michael Avi-Yonah (*The Holy Land,* 1966). They not only gathered a wealth of data, but also trained a generation of scholars in the tools of historical geography and created a model for scientific atlases of the Near East: *The Macmillan Bible Atlas* (3d ed., 1992).

The legacy of these and many other scholars has been the expansion of what is understood of the geographic features of the lands of the Near East. This, in turn, has markedly increased interest in the relationship between the environment and human activity that shaped the cultural development of the peoples in the region.

Approaches to Historical Geography. It is tempting to take a deterministic attitude regarding historical geography. Environmental conditions can too easily be cited as the primary or even sole factor in cultural development. Certainly the basic character of any geographic location will affect the nature of culture and the directions it takes. However, it is short-sighted to assume that humans will not place their own peculiar mark on an area. Factors other than environment influence cultural forms.

The study of historical geography in the Near East is complex because of the region's numerous ecosystems: deserts, savannahs, steppes, wetlands, marshes, and swamps. The topography includes floodplains, plateau regions, hill country, and mountainous areas. The availability of water and arable farmland have been the prime elements in the establishment of permanent human settlements. This does not discount the pastoral nomadic groups that have ranged over it, but their cultural mark is less visible than that made by village and urban dwellers. [*See* Pastoral Nomadism.]

Because of the wide range of topographic features, it seems best to take, as the ancients did, a regional approach to the problems of Near Eastern historical geography. They understood that the interaction between an area and its adjacent regions was responsible for the initiation of all types of economic activity (agriculture, pastoralism, industry). [*See* Agriculture.] The ancients thought beyond their immediate, local concerns, establishing communication and economic links. [*See* Roads; Seafaring; Transportation.]

Just as pastoralists had to know the physical characteristics of the areas in which they grazed their herds, the leaders of ancient city states needed to obtain information that would allow them to target effectively particular locales to be exploited through trade and military conquest. In this way, and at the speed allowed by the terrain and the determination of the exploiters, cultural diffusion occurred and new ways of dealing with environmental conditions were introduced. The many Mesopotamian royal annals that describe a king's "march to the sea" and the Gilgamesh epic, in which the hero conquers the monster Humbaba and captures the resources of the cedar forest, demonstrate how widespread this determination was. A multidisciplinary approach involving many subdisciplines is necessary to study this process and these phenomena.

Topographic analysis. Fieldwork, mapping, and aerial photography are necessary in analyzing the natural resources of any geographic area. [*See* Photography.] A topographic analysis can point to the origin of settlements, the opportunities for economic exploitation, and the likelihood of contact with other regions. Analysis also utilizes records of important natural resources—minerals, timber, arable land, and water. The availability of water, in terms of average annual rainfall, water-table levels and accessibility, as well as streams, lakes, and rivers, must be traced. Fossil sources, such as the dry riverbeds in the Sinai and Negev deserts and on the southern Arabian Peninsula, enable researchers to speculate on the possible demographics in prehistory and in antiquity in regions often no longer inhabited.

Contiguous regional analysis. No locale in the Near East is so isolated that it has been without outside influences. Thus, the historical geographer must treat each area both specifically and as part of a region. In so doing, ancient routes of travel (on land and sea) must be traced with an eye to locating commercial centers and areas of intense agricultural and industrial activity. Additionally, the movements of empires as they absorb wide areas must be taken into account, especially in regard to cultural diffusion—such as the introduction of new architectural styles and technologies (e.g., the use of iron).

Disparate regional analysis. Comparative studies can be made between settlement patterns in the Near East and in other parts of the world. For instance, it is informative to compare Near Eastern architectural styles, strategies for dealing with dry farming, and the harnessing of water for power and irrigation purposes with those in Greece or Italy. These noncontiguous regions had an impact on the material culture of the Near East in the Hellenistic period, but studies comparing settlement strategies can be useful even when areas have not directly or historically, influenced one another. One example is the comparison that can be made between the transhumant pastorals of Spain (as described by F. Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, New York, 1972) and those of the ancient Near East.

Cartographic analysis. With the introduction of satellite imagery, Geographic Information System (GIS) databases, and computer programming and modeling, a truly regional approach to historical geography is possible. These tools allow for a finer analysis of the interrelationship of natural resources and human settlement patterns than was previously possible. Using mathematical models and infrared photography, the extent of topographic change that has occurred over time can be determined, thereby facilitating the identification of ancient sites. [*See* Computer Mapping; Computer Recording, Analysis, and Interpretation.]

Settlement and demographic analysis. Once a settlement area has been identified, the researcher can use the region's basic geographic features (terrain, natural defenses, water sources) to estimate the size of the population and the extent of the land used for cultivation, mining, or grazing in antiquity. [*See* Paleoenvironmental Reconstruction.] The remains of architectural forms can also be examined, keeping in mind that building styles might have been influenced by

aesthetic or functional concerns. For instance, specific forms of Roman architecture (baths and theaters) are identifiable in vastly different geographic settings (from Damascus to sites in England and France) but generally exhibit regional variation. [*See* Baths; Theaters.] Climatic or topographic factors are often the basis for design and construction, but the use of structures for religious or political purposes may also dictate size and the inclusion of forms with a symbolic rather than practical origin.

Sociocultural analysis. Ingenuity and resourcefulness were often the key to the success of a settlement, especially in an environmentally marginal area. Irrigation techniques and the terracing of hillsides to provide additional farmland are reflections of local inventions based on geographic features. In addition, the degree of borrowed cultural ideas (clothing styles, religious practices, architectural styles) and the appearance and variety of trade goods may also testify to the economic ties with other regions and/or the political control extended over wide areas by ancient empires. The creation of social mechanisms to help shape behavior and cultural expression (hospitality customs, taboos, marriage customs) can often be found in written or artifactual evidence.

Diachronic and synchronic analysis. Effective geographic research is not possible unless it is a dual approach that attempts to determine the interaction of human activities within defined periods of time and between periods. Multigenerational projects, such as the temple complexes at Karnak in Egypt, as well as the revival of cultural ideas in later eras make for useful comparisons.

Onomastic analysis. Beginning with the early fourth-century Christian historian and theologian Eusebius, onomostics, as a subdiscipline of historical geography, has involved the attempt to establish a link between site names and the archaeological evidence uncovered in excavations. In Israel, for example, many ancient Hebrew names, such as *Beth-Shemesh,* were preserved in their Arabic and/or modern names—in this case, as ʿAin Shems. Sometimes a text excavated at a site helps with identification, as has been the case at Gezer, Lachish, and Dan. [*See* Gezer; Lachish; Dan.] However, because many city names, such as *Migdal* (Heb., "tower") or *Hazor* (Heb., "enclosure"), can apply to several sites, the name cannot always be utilized as a sole identifying factor. The danger of a site identification becoming prematurely "canonized" through scholarly consensus can distort subsequent research.

Archival research. In addition to relics and artifacts, ancient economic and administrative (government) records may contain crop-yield figures, tax rolls, census data, military conscriptment figures, construction projects, and climactic and geological information (see the mention of the earthquake in *Am.* 1:1), which are invaluable in helping to date or describe particular cultural periods.

Archaeological fieldwork. No geographic analysis is complete without the excavation and analysis of material culture: architecture (domestic and monumental), sacred sites (e.g., temples, sacred groves, high places), agricultural and pastoral installations (e.g., sheepfolds and camp sites), and industrial sites (mines, factories, refineries). These remains of former activity can be used to provide a broad picture of regional and local cultural expression. While specialization is necessary, given the huge amount of information in any one field, it is necessary for the geographer either to work with archaeologists or conduct his or her own surveys and excavations. [*See* Survey, Archaeological.]

Using a variety of disciplines to examine and analyze the historical geography of any area or time period, the researcher must then become familiar with the region to be studied and establish a plan of action. The broad perspective of a multidisciplinary, regional approach helps avoid distortions that can arise if an area is regarded as unique. It also makes tracing cultural and economic development through time much more reliable. Spatial as well as physical approaches to the diverse aspects of settlement locales and types will also give a fuller picture of ecological and cultural interrelationships.

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HISTORIOGRAPHY.

[*This entry provides a consideration of major historiographers and chronographers, including such factors as how they wrote history and what data was available to them. It is chronologically divided into two articles:* Historiography of the Hellenistic and Roman Periods *and* Historiography of the Byzantine and Islamic Periods.]

Historiography of the Hellenistic and Roman Periods

Starting with Ephorus of Cyme (405–330 BCE), and Theopompus (b. 378 BCE), Greek historians emancipated themselves from the kind of monographic writing done by Thucydides, Androtion, and Philochorus. The greatest historian of the third century BCE in the Greek West was Timaeus of Tauromenium (355–260 BCE), who wrote thirty-eight books on the history of Greece and Italy down to 264 BCE (the beginning of the First Punic War), of which we have only fragments preserved through later historians.

In the second century BCE, Polybius wrote a universal history of the inhabited world. His main theme was the phenomenon of Roman expansion in the Mediterranean. Polybius wrote a pragmatic history—a history from which, he believed, people would learn lessons in the future. His is a rationalistic writing of history that stresses cause and effect in the historical process. Polybius believed that only universal histories should be written, and that there is a certain force (Gk., *tyche*) directing the destinies of peoples. Polybius had an enormous influence on later historiography (from *2 Macc.* through Josephus to Zosimus), and his twelfth book, in which he analyzes the methods of writing history, is required reading for every historian. His history in forty books covers the period 222–146 BCE.

His successor in Greece was Posidonius of Apamea (first century BCE), who wrote a history in Greek that continues from where Polybius ends (146 BCE), through the first century BCE. Unfortunately, only fragments are preserved. However, because many later historians used Posidonius extensively, we know what his work was like.

Alongside these great historians who wrote world histories, there were, in the Greek West (including Magna Graecia), historians who composed local histories, some of which may be considered "tragic" histories. For instance, at the beginning of the third century BCE, Duris of Samos wrote a Samian chronicle (probably two volumes) alongside his *Histories* (in twenty-three volumes), and a history of Agathocles; in that same century, Phylarcus wrote a history of the world, parts of which dealt with Sparta. We also know of local histories that can be considered more as mythography, such as the *Aetoliaca, Thessaliaca,* and *Messeniaca.*

In the final three centuries of the last millennium BCE, we find, in the Hellenistic East, historians of Alexander the Great and his successors. Among those writing were Nearchus of Crete, Aristobulus, Ptolemy I, Hieronymus of Cardia, and, later, those, who created the "vulgate" of Alexander's history—people like Callisthenes. There were also many historians who in Greek wrote local histories of certain peoples *(ethnē),* such as Dius, Menander of Ephesus, and Laetus (all Phoenician histories); Manetho and Hecataeus of Abdera (Egyptian histories); Megasthenes (history of India); Apollodorus (Parthian history); and Eupolemus the son of John (Israelite history). Most of these histories are concerned with the nations' mythological and remote past. In the second century BCE, a Jew wrote a history (in Hebrew) of the Maccabean revolt and its aftermath (*1 Macc.*), and somewhat later a Jew in the Diaspora, Jason of Cyrene, wrote a history of the Maccabees in five volumes. This history was epitomized and is the form in which we have it now (*2 Macc.*). Even a world history was written in the first century BCE by Nicolaus of Damascus, a pagan who was friend and adviser to Herod the Great. This history is only partially preserved through later historians, however. There is no history of the ancient Near East available that includes a general, comprehensive report of the region in the Hellenistic period.

During that period (third–first century BCE) Italy also produced important historians, some of whose writings are only known through citations in the annalistic tradition and through fragments in works composed in the Greek West. These historians include Philinus of Acragas (a pro-Carthaginian who wrote about the First Punic War) and, in the third century BCE, Fabius Pictor, who composed in Greek a history of Rome from its foundation through the Second Punic War. In the Greek language there were also the histories of Cincius Alimentus, Postumius Albinus, and Gaius Acilius. In 123 BCE, the *annales maximi* were published in Rome, and they marked an important stage in the formation of the annalistic historiogaphic tradition in that city. Gnaeus Gellius, Valerius Antias, and Claudius Quadrigarius followed this line, which Livy and Tacitus pursued later. In about 100 BCE, Rome became an important center for various forms and styles of historiography. Rutilius Rufus and Aemilius Scaurus wrote autobiographies, and Sulla left his *hypomnemata* ("memoirs"), all of which are now lost. At about the same time, Nepos (100–25 BCE) wrote biographies in Latin, while Caesar wrote the *De Bello Gallico* and the *De Bello Civili.* Sallustius (86–35 BCE) composed several works

of importance in Latin. His *War of Jugurtha* is considered a fine specimen of the historiography of this age. It was at that time that Cicero was defining what Roman historiography should be.

At the end of the first century BCE, during the principate of Augustus, a number of great historians were active, only a few of whom can be mentioned here: Dionysius of Halicarnassus, whose *Roman Antiquities* began appearing in 7 BCE, wrote, in Greek, a history of Rome from its beginnings to the First Punic War. Only the first ten books survive; they are very important for those interested in the recycling of history during the early principate. Livy (59 BCE–17 CE) wrote his vast book *Ab Urbe Condita Libri* in 142 books, of which only parts survive. Livy wrote in Latin, in line with the annalistic tradition (proceeding according to years). He is one of our most important sources for the Hellenistic Near East because he mainly used Polybius's work for Eastern matters. Thus, in books 21–45 we are given considerable information about the third and second centuries in the East, information that would otherwise have been lost with much of Polybius's work. Somewhat earlier (60–30 BCE), under Caesar and Augustus, Diodorus Siculus wrote the *Bibliotheke*, a universal history from the creation through his own time (54 BCE), in forty books. This history attempted to combine the mythologies and histories of the whole universe in a single book. Diodorus's work (in Greek) is important inasmuch as he used a great many sources, most of which are no longer available to us (such as Ctesias, Hecataeus of Abdera, Dionysius Scytobrachion, Matris of Thebes, Posidonius, and Hieronymus of Cardia). Yet, like most historians of antiquity, he does not always say when he uses which source.

During the Augustan era, Pompeius Trogus wrote the *Historiae Philippicae*, an important and comprehensive history in forty-four books that is now lost. L. Cornelius, Vibius Maximus, and others followed suit, but their works are no longer available. We know about the nature of Trogus's work from Justinus, who used it extensively in the third century CE while writing his epitome. In the Augustan era, one of the greatest geographers of antiquity composed a *Geography;* this was Strabo of Amaseia, who wrote in Greek, describing the various regions of the empire and beyond. His geography is an indispensible source for historians because of the rich historical information he included. Strabo had access to many sources, most of which are not available to us today (such as Erathosthenes and Posidonius).

In the first century CE, Curtius Rufus wrote a history of Alexander the Great in Latin, and Valerius Maximus wrote a history (preserved only in two later epitomes). Velleius Paterculus wrote his *Historiae Romanae* during this time, an important source, particularly for the reigns of Augustus and Tiberius. In the middle of the century, Pliny the Elder wrote some important, now lost, works of history (*Bella Germaniae* and *A fine Aufidi Bassi*, for example). The end of the first century CE and the beginning of the second witnessed two great Latin historians, Suetonius and Tacitus. Suetonius wrote biographies of the emperors from Julius Caesar to Domitian, and Tacitus wrote some of the most significant works dealing with the history of the first century CE, the *Annals* and the *Histories*.

At the same time, there was impressive historiographic activity in the ancient Near East concerning the events in Palestine. We know that Justus of Tiberias probably wrote a history of the Jews from Moses to Agrippa II. Of the extant works, the most important are the histories of Josephus. He wrote his *Jewish War* (seven books) in the seventies of the first century CE; later, in the nineties, while in Rome, he completed his *Antiquities* (twenty books), the *Contra Apionem* (two books), and the *Vita* (his autobiography). Josephus was a prolific historian whose books, because they are preserved, are a unique phenomenon in ancient historiography. Although he deals mainly with Jewish history, he preserves much information about the surrounding world. At the time, the evangelists were writing the histories of Jesus and his followers in Greek. Their compositions appear in the historiographic part of the New Testament (*Matthew* through *John*, and the *Book of Acts*, written by Luke).

Between 50 and 120 CE, in Greece, there lived one of the greatest intellectuals of the period, Plutarch. In addition to his philosophical works, he wrote biographies of past heroes, Greek and Roman. He is one of our main sources for the zeitgeist in Greece in the first century CE. Plutarch wrote moralizing biographies in Greek, such as those of Solon, Tiberius Gracchus, and T. Q. Flamininus.

In the second and third centuries CE, Appian and Cassius Dio composed their important histories. The beginnings of Christian "historiography" are to be found in the writings of Clement of Alexandria.

In the second century CE, while Lucian of Samosata was writing a book called *How to Write History* (on the historians of the Parthian War), Arrian was a student of the philosopher Epictetus, which influenced his various books. His famous work, the *Anabasis*, a history of Alexander the Great, was based in particular on the histories of Alexander by Ptolemy I (king of Egypt), Aristobulus, and the Vulgate. He also wrote a *Parthica* (now lost), as well as a history of Alexander the Great's successors, based on Hieronymus of Cardia. Only fragments are preserved of the latter work. Arrian also wrote an *Indica*, taken mainly from Megasthenes and Nearchus. Appian of Alexandria wrote his *Romaika* under Antoninus Pius; it describes Roman conquests arranged according to the regions of the Roman Empire. The work, written in Greek, is dependent on some imperial annalistic tradition but also relies extensively on older historians, such as Polybius, Sallust, Livy, and Nicolaus of Damascus.

Early in the third century CE, Herodian wrote biographies of the emperors Marcus Aurelius through Gordian III (180–238 CE). Dio Cassius, another great historian, wrote some

important works in the first quarter of the third century, including his Roman history from the beginning to 229 CE. Only parts of this history (written in Greek) are preserved; other parts were epitomized in the Byzantine era by Xiphilinus and Zonaras. Dio Cassius's history is based on the republican annalistic tradition (Livy or his sources) and the imperial annalistic tradition, as well as on his own experiences as a politician—he was governor of Cilicia and Dalmatia as well as a praetor and *consul suffectus*). In the third century, Sextus Julius Africanus wrote his *Chronographies* in five books, attempting a synchronization of Jewish, Christian, and pagan histories from the creation to 221 CE. This work was an important source for Eusebius's *Chronicle.*

Eusebius wrote his *Ecclesiastical History* at the end of the third century and the beginning of the fourth century. It is the first church history combining biblical and pagan history alongside much else. Eusebius's history (in ten volumes) focuses on the history of the church, its apostolic succession, and its victory over heresies, Judaism, and paganism up to Eusebius's own time. Somewhat later in that century, Ammianus Marcelinus, in Latin, wrote his thirty-one books on the history of the years 96–378 CE (the extant narrative begins with the year 353). In that century we also find the epitomators, who made summaries of history, historians such as Eutropius, Justin, and Aurelius Victor.

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DORON MENDELS

Historiography of the Byzantine and Islamic Periods

Byzantine and Islamic historiography describe overlapping but not identical parts of the world, chronological spans, and dating systems. Several forms of Byzantine histories exist, whereas early Islamic historiography tended to be religious and legal in inspiration. The structures and stylistic rules for Byzantine secular history (Lat., *historia*) imitate pre-Byzantine—that is, classical Greek—historical models for history and rhetoric. This borrowing included style and vocabulary, or those of Greek historical writing within the Roman Empire—not those from Latin classical or medieval historiography or Islamic historiography. Although Byzantine historiography exhibited versatility and adaptability, it had no great innovators. Audiences tended to be well-educated elites, probably from the imperial and ecclesiastical administration, who were able to read and appreciate histories as literature in a venerable tradition. Some historians were mere compilers.

Byzantine secular historians often strove to produce new narratives of approximately contemporary events or reigns. Although their objective was the truth, many failed to give attention to sophisticated or profound historical explanation; to be precise in their use of numbers and geography; to consider chronology, rather than concentrate on individuals, moral issues, and teaching truths; and to identify or engage in source criticism or exercise critical judgment, as had the best earlier Greek historians. The critical acumen of a Procopius or a Niketas Choniates was exceptional. Political and military subjects prevail, together with an emphasis on rulers and elites, not on economic and social subjects. Encomiastic historiography existed because honest criticism and self-criticism were difficult to include in an unveiled fashion if it involved criticism or embarrassment of a reigning dynasty or dominant groups. Gradually, traditional conservative forms of history adjusted, by the end of the sixth and the beginning of the seventh centuries, to include Christian subject matter, frameworks of interpretation and explanation, and terminology, even though this process of adjustment took place long after the conversion of the vast majority to Christianity. Waning interest in topographic and geographic details contributed to a shrinking of horizons, which often became Constantinopleocentric. Many tended to relate foreign peoples to the schema and typing of earlier historical models and *topoi* (literary commonplaces). Among the best historians are Procopius, Michael Psellos, Michael Attaleiates, and Niketas Choniates. One distinguished, although admittedly biased (in favor of her father, Emperor Alexius I), woman historian is Anna Comnena (Komnenos).

Ecclesiastical historians restricted their subject matter in a broad sense to the history of the church and its doctrinal controversies, from the perspective of the established (i.e., usually Nicene and Chalcedonian) orthodoxies, churches, and related imperial and local topics of a political and dynastic kind. They normally selected and interpreted events to demonstrate their conjunction with established religious creeds and hierarchies and seldom investigated ethnic, social, or economic dimensions. Their audience was primarily, but not exclusively, ecclesiastical.

Another historical form is the universal or world chronicle (Gk., *chronikon, chronographia*), an annalistic narration commencing with the creation of the world and terminating with the chronicler's lifetime. Chroniclers were not necessarily monks. Chronicles often are more precise about dates and local events than secular histories and may provide insight into ordinary language and concerns. Some later narrative histories are entitled chronicles. Saints' lives preserved another highly selective part of the past, especially for the edification of monastic audiences.

Controversy surrounds the fate of Byzantine historiogra-

phy in the course of the seventh century. This break in classicizing historical writing after the 630s may be the result of a contraction in the numbers of the literary elite who could serve as a sophisticated audience: education and funding had collapsed and there was a lack of great victories to celebrate. A difficult subject for the Byzantine historians was the explanation of the Islamic conquest of the Holy Land, Egypt, Syria, and North Africa; hence, they usually tended to avoid it. Local provincial schools of historiography did not survive the end of antiquity. Historical writing reappeared in the late eighth century and persisted, in a more or less continuous sequence of narrative histories, to the fifteenth.

Islamic historiography developed from pre-Islamic oral history traditions, both of *akhbār* (plural, or *khabar,* singular), that is, a piece of information or reports or accounts about events) and early Islamic ones (of *ḥadīth,* "conversation or narrative," especially of the prophetic tradition, on religious doctrine and juridical subjects). *Ta'rīkh* originally meant assigning a date; hence, it first designated chronological narratives, but it came to mean any account of the past—that is, a history. Criticism of the *isnād,* or "tradition of transmission of authorities," developed into an elaborate form; however, the authenticity of apparently impressive *isnād* can neither be assumed nor easily ascertained. Materials ascribed to particular collectors of traditions do not display ideological uniformity or any homogeneous historical view. Islamic historians had their own criteria for ascertaining the creditworthiness of traditions, according to the reliability of the transmitter; this was not in itself wholly dissimilar from early criticism within Hellenic historiography, but it was not explicitly used by Byzantine historians.

The form, structure, and norms of Islamic historiography, which also started and reached its culmination later, differed from the Byzantine, as did their genesis. Arabic historical writing sifted and transmitted oral traditions concerning the genealogies and the prophet Muhammad. Early scholarly-religious histories often reflected a schema of the Islamic religious community. They were usually composed by those trained in Islamic jurisprudence who sought to make doctrinally correct statements reflecting the outlook of the mosque and religious school *(madrasah).*

Another form of later Islamic historiography, the court history, sought to glorify a ruler, or his dynasty, or to make and prove general statements about wisdom in statecraft. To an extent this genre drew on earlier Persian and even occasionally on Byzantine and Christian Oriental (especially Syriac) historical traditions, but in a limited fashion, and especially for models of writing court histories of reigns and dynasties. Collections of biographies (including scholarly, religious, tribal, and local ones), organized by classes *(ṭabaqāt),* are other important historiographic form.

Yet, for some subjects, such as the Islamic conquests, Byzantine and Islamic traditions are not completely divergent. At some early date, and to an extent that still cannot be fully determined, Oriental Christian chroniclers and historians preserved and transmitted information about the Islamic conquest that reappears in different forms in both Byzantine and Islamic historiography. The Islamic conquest's exposition may be confused by contamination with later issues such as land taxation and legal titles. Probably exaggerated was the nineteenth- and early twentieth-century critique of Islamic historians as divided into schools with competing self-serving interpretations and traditions (e.g., Syrian and Iraqi), with its excessive dependence on traditions of biblical scholarship and criticism. Islamic historians' critical sense also differed from that of the Byzantine historians, for unlike that of the Byzantines, it involved, as in the case of tradition about their religion, the criticism of the chain of transmission of traditions.

The process of recording, compiling, and editing Muslim historiography; collecting narratives; and selecting the most creditworthy flowered in the eighth and ninth centuries and matured by the late ninth and tenth centuries. Investigation of this process has not yet achieved a modern scholarly consensus. Presumably, independent traditions often possess common elements. Modern scholars disagree whether the entire corpus of early traditions should be rejected as hopelessly corrupt and fabricated, or whether there is an underlying truth behind some of the traditions—and if so, the proper methodology for achieving a sound critical evaluation. A majority probably agree that something of value survives but disagree concerning techniques for determining that genuine core. Islamic historiography's best specimens include al-Balādhurī (d. 892), al-Ṭabarī (from Tabaristan, d. 1058), al-Yaʿqūbī (d. 897), and other historians after the beginning of the tenth century. However, such later historians as the Egyptian al-Maqrīzī (d. 1447) and the Maghrebi Ibn Khaldūn (d. 1406) are of high quality. Local historians such as the Damascene Ibn ʿAsākir (d. 1176), Ibn al-ʿAdīm (b. Aleppo, d. Cairo, 1262), and al-Azdī (fl. early ninth century in Cairo and Jerusalem) composed another important form of Muslim historiography; the form started in the ninth century but developed more intensively after the eleventh century. Islamic historiography's second major burst of productivity and qualitative creativity in the later medieval era (thirteenth–early fifteenth centuries) culminated in the historical analyses and reflections of Ibn Khaldūn in his introduction to his history.

Archaeological objects and sites are seldom subjects of interest for Byzantine and Islamic historians, and archaeological proofs are not normally used to support Byzantine or Islamic historical reasoning. Archaeology can serve as an important (but not exclusive) control on both Islamic and Byzantine historiography, however. Actual measurements can enable modern researchers to check the veracity of historical reports about architecture, distances, and topography (subject to adjustment for alteration by erosion, and sedi-

mentation during the passage of time). Study of toponymics, terminology, and materials consistent with archaeology and epigraphy can add or diminish the credibility of specific historians' accounts, be they Byzantine or Islamic, for some of these may simply be using *topoi* or literary/rhetorical embellishment. The methodologies and limitations in such investigations are still being developed and require sensitivity.

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WALTER E. KAEGI

HISTORY OF THE FIELD. [*This entry surveys the history of archaeology in the Near East, including a discussion of major figures, discoveries, and excavations, seminal methodological and theoretical developments, and problems of definition, chronology, and comparative chronology. It comprises eleven articles:*

An Overview
Archaeology in Syria
Archaeology in Israel
Archaeology in Jordan
Archaeology in Mesopotamia
Archaeology in Persia
Archaeology in the Anatolian Plateau
Archaeology in Egypt
Archaeology in Cyprus
Archaeology in the Aegean Islands
Archaeology in the Arabian Peninsula

The first article provides the background of archaeological work in the entire Near East; the subsequent articles focus on a specific country or region. For related discussion, see the entries on each region, (e.g., Palestine; Transjordan; Mesopotamia; Anatolia).]

An Overview

Heightened interest in classical antiquity and the ancient Near East was one of the most important by-products of the Renaissance and its successor movement, the Enlightenment. Indeed, so great was the interest in ancient civilization in the sixteenth century that scholars and travelers regularly visited Greece and Italy and the countries that make up the Near East. Collectors of antiques were so numerous they were called *dilettanti*—those who delighted in the arts. In 1732 the Society of Dilettanti was founded in England. Until that time most scholars believed the world was only six thousand or so years old, calculating its origins based on the Hebrew Masoretic Bible (3740 BCE), the Catholic Vulgate Bible (5199 BCE), or simply accepting the Anglican Archbishop Usher's calculation of 4004 BCE. At the dawn of the modern period, in the seventeenth and eighteenth centuries, all of the ancient world was believed to have fit into this chronological scheme. The belief that the world was older than six thousand years was one of the major advances of nineteenth-century scholarship, which came about with the development of prehistoric, scientific archaeology (Trigger, 1989, pp. 73–109).

Late Eighteenth to Mid-Nineteenth Century. It is not surprising that in the late eighteenth century interest in Egyptian and Mesopotamian civilizations sparked a renewal of exploration and antiquarianism in both. With the christianization of the Roman Empire in the fourth century, Egyptian monuments and writing had either been desecrated or banned, though travelers began visiting the country again in the sixteenth century. Their focus, however, was primarily the pyramids and Great Sphinx of Giza, familiar already in ancient classical sources. [*See* Pyramids; Giza.] All of this changed dramatically in 1798, when Napoleon Bonaparte undertook his expedition to conquer Egypt. Because France was at war with Britain at the time, Napoleon no doubt hoped to use Egypt as a land base from which to disrupt British trade with India and the East. In addition to an army of thirty-five thousand, Napoleon took with him 175 savants, also known as donkeys, who constituted a Commission of Arts and Science; the commission included scientists, geographers, cartographers, architects, Oriental-

ists, artists, and historians (Stiebing, 1993, pp. 56–57; Daniel, 1981, p. 64). It was in 1799, in the Corps of Engineers, while preparing for a British attack, that the Rosetta Stone was discovered 64 km (40 mi.) east of Alexandria. [*See* Alexandria.] The surrender of the French forces in 1801 resulted in the Rosetta Stone's transfer to the British Museum. The commission's scientific results, however, were published by the French in twenty-one volumes. The two-volume English summary was published by D. V. Denon as *Travels in Upper and Lower Egypt during the Campaigns of General Bonaparte* (London, 1802). It is a watershed in Near Eastern scholarship. [*See the biography of Denon.*]

Those volumes and the subsequent decipherment of the Rosetta Stone in 1822 by Jean François Champollion demonstrated vividly to Europeans that Near Eastern culture and monuments were as impressive, or even more so, than the remains of classical Greece and Rome. [*See the biography of Champollion.*] In part as a result of the work of the adventurer and Italian explorer Giovanni Belzoni (who succeeded in bringing to the British Museum the colossal granite head of Rameses II from Thebes and who began the excavations at Abu Simbel), Europe soon became enamored of ancient Egyptian art and archaeology. [*See* Abu Simbel.] Despite the development later of a more refined methodology for excavation in Egypt by William Flinders Petrie, who spent virtually his entire career excavating there, the plundering and pillaging of sites continued unabated until 1882 and the establishment of the Egyptian Exploration Fund. [*See the biography of Petrie.*]

Napoleon's invasion of Egypt also extended to Palestine, which had the effect of bringing even more closely into Western consciousness areas that were familiar because they are mentioned in the Bible. In 1801 the English explorer and geographer Edward Daniel Clarke set out to identify the major sites in the Bible. His skeptical views regarding some of the holy sites proved a helpful corrective to most other visitors, who accepted late pilgrim traditions as completely reliable. One of Clarke's students at Cambridge was the Swiss Jean Louis Burckhardt; after learning medicine, Arabic, and other Oriental subjects, Burckhardt moved to Aleppo for three years, during which time he explored Palmyra and copied inscriptions at many Syrian sites. [*See* Aleppo; Palmyra.] Subsequently, in disguise as a Muslim sheikh, he explored Transjordan and Palestine, identifying and describing many of the sites not visited by his mentor, including Petra. [*See* Petra.] Burckhardt went on to Egypt to work at Abu Simbel. He died in Cairo in 1817, and his journals were published posthumously.

The Americans who came after Clarke and Burckhardt followed a much more literal line with respect to the accuracy of the Bible. Chief among them was Edward Robinson, professor of Old Testament at Andover Theological Seminary in Massachusetts, and later at Union Theological Seminary in New York. [*See the biography of Robinson.*] With a young missionary from Beirut, Eli Smith, he set out in 1838 to follow the route of the Exodus from Egypt, following the names and places in the Hebrew Bible and New Testament. Together they identified hundreds of places from the Bible as they made their way through Sinai, Transjordan, Judea (Judah), Samaria, and Galilee, and then back to Beirut. While they literally created the discipline of historical geography, which became the basis for all later fieldwork, they were unable to prove the accuracy of the Bible through their explorations. [*See* Historical Geography.] What they did, however, was to set the tone for later work, much of which was to be done in the twentieth century and was also to focus primarily on biblical sites. The publication of their journey in *Biblical Researches in Palestine, Mount Sinai, and Arabia Petraea,* (London, 1841) brought their pioneering work to the attention of the Christian world and transformed what had once been a field dominated by missionaries into the newly constituted field of biblical archaeology (Silberman, 1982, pp. 42–47).

Just as Napoleon's scientific expedition to Egypt had had an imperialist thrust and character to it, so too did British and subsequent French interest in Mesopotamia. It was in 1808 that Claudius James Rich, a linguist and a British resident of Turkish Arabia, was hired by the British East India Company in Baghdad. All of his free time was spent visiting Mesopotamian ruins and collecting artifacts. His publications on Babylon, Nineveh, and Persepolis, among other places, caught the attention of Western readers. [*See* Baghdad; Babylon; Nineveh; Persepolis.] They were made even more famous by Lord Byron when he recalled them in *Don Juan:*

> Claudius Rich, Esquire, some bricks has got
> And written lately two memoirs upon't.

Rich's personal antiquities collection was subsequently purchased by the British Museum and constituted the first major exhibition of Mesopotamian antiquities in a European museum. So great was the public interest in Rich's memoirs, which appeared posthumously in 1836, that French interest in the region greatly accelerated. As a result, a prominent scholar and antiquarian, Emile Botta, was appointed French consul in Mosul in 1842. [*See the biography of Botta.*] He immediately began excavations at Nineveh in 1842, across the Tigris River from Mosul, and in Khorsabad in 1843. [*See* Tigris; Khorsabad.] These were the first excavations ever in Mesopotamia (Daniel, 1981, pp. 72–75). Botta's work at Khorsabad revealed it to be the city of Sargon II (721–705 BCE), Dur Sharrukin. Botta and his artist, M. E. Flandin, published the results of their work at Nineveh in 1849–1850 in five volumes; in 1846 many of Khorsabad's finest sculptures arrived at the Louvre museum in Paris, where they are still displayed. [*See* Museums and Museology.]

Prior to Rich's explorations and Botta's excavations, a small number of individuals had been involved in the deci-

pherment of cuneiform, paralleling developments that had surrounded the decipherment of Egyptian hieroglyphics. [*See* Cuneiform; Hieroglyphs; Inscriptions.] In 1802 Georg Friedrich Grotefend, using copies of two short cuneiform inscriptions from Persia, announced his translation results to the Göttingen Academy of Sciences—which refused to publish them. Thirty-three years later, in 1835, Henry Creswicke Rawlinson, unmindful of Grotefend's research, duplicated those results when he was stationed some 35 km (22 mi.) from Bisitun in Persia as a cadet in the British East India Company. [*See* Bisitun; *and the biography of Rawlinson.*] By 1837 he had copied and translated half of the Bisitun inscriptions ordered in 516 BCE by Darius I Hystapes (521–485 BCE) and written in Old Persian and Elamite. [*See* Persian; Elamites.] In 1837 and in 1839, he presented his results to the Royal Asiatic Society. All four hundred lines of the inscriptions appeared in translation in the society's journal in 1846–1847 (Stiebing, 1993, pp. 94–95).

At about this time, a lasting friendship between the Frenchman, Botta, and an Englishman by the name of Austen Henry Layard had already been made. [*See the biography of Layard.*] The two had met in 1842 and maintained a close relationship throughout their lives, despite the fact that their respective nations saw their work as competitive. In 1845 Layard began his own excavations at Nimrud, where he discovered the palaces of the Assyrian kings Ashurnasirpal, Esarhaddon, and Shalmaneser III; the most famous of the artifacts Layard shipped to the British Museum included the Black Obelisk of Shalmaneser II and the sculptures of Ashurnasirpal. Layard's work was covered by a reporter for the *Morning Post* in 1847 and made him an instant celebrity. His popular account of his work, *Nineveh and its Remains* (New York, 1849), became Near Eastern archaeology's first bestseller (Daniel, 1981, p. 75). Though Botta and Layard disagreed as to which site was Nineveh—Botta thought Khorsabad was, Layard thought Nimrud was—their combined archaeological work, their extensive publications and popular readership, and the spectacular exhibits at the Louvre and British Museum presented Near Eastern archaeology in new ways to the public and to the scholarly community. What began as a friendly competition between the British and French archaeological missions, however, soon deteriorated into a "frantic scramble" between them, ending temporarily with the outbreak of the Crimean War in 1855 (Stiebing, 1993, pp. 106–109).

Defining Period. With the cessation of excavations at mid-century, the emphasis in Near Eastern scholarship shifted to linguistic study of the enormous array of cuneiform that had reached libraries in the West. One of the immediate results was the discovery of Sumerian. [*See* Sumerian.] Even more dramatic, perhaps, was the discovery by George Adam Smith in 1872 of the story of the Flood among the tablets found at Nineveh. [*See the biography of Smith.*] A missing section of the account led to the reexamination of the debris at Kuyunjik in 1873, where, on the fifth day, Smith discovered the missing seventeen lines of the Mesopotamian story. The expedition was funded and covered by the London *Daily Telegraph.* Given the remarkable similarity to the biblical story of the Flood in *Genesis,* public interest in Near Eastern archaeology was once again drawn to the Bible and the land of the Bible, even as further work in Mesopotamia and Egypt continued to prosper. Interest in the Sumerians inspired the work of the University of Pennsylvania at Nippur in 1888, begun rather unsuccessfully by John Prunnett Peters but culminated more successfully under the direction of Hermann Hilprecht in 1899–1900. [*See* Sumerians; Nippur; *and the biographies of Peters and Hilprecht.*] A similar interest was focused on the Hittites, in part because they were mentioned in the Bible as a great power (*2 Kgs.* 7:6), and in part because Assyrian and Egyptian documents confirmed it. [*See* Hittites; Assyrians.] The culmination of these efforts came in 1906, when the German Assyriologist Hugo Winkler began excavations at Boğazköy and discovered a cache of Hittite cuneiform tablets. [*See* Boğazköy.] This excavation and the decipherment of the tablets and identification of Hittite as an Indo-European language led to the certain knowledge that Boğazköy had been the capital of the Hittite Empire (Stiebing, 1993, pp. 113–114). [*See* Hittite; Indo-European Languages.]

From 1899 to 1917 the German Oriental Society excavated the ruins of Babylon, under the directorship of Robert Koldewey. [*See* Deutsche Orient-Gesellschaft; Babylon; *and the biography of Koldewey.*] Though others had explored and dug at the site, there had been no significant finds of basreliefs. Koldewey, who had excavated in Italy, Sicily, Syria, and in the Aegean, was an experienced field person who trained a core of workmen to excavate carefully and slowly. The results were astounding, as he soon uncovered the great city wall of Nebuchadrezzar II (605–562 BCE) and determined that Babylon's circumference was some 18 km (11 mi.), making it the largest city of its time. He also discovered the ziggurat, or stepped tower, on which a Temple of Marduk had once stood approximately 100 m high. [*See* Ziggurat.] Most spectacular, however, was the discovery of the Processional Way leading to the temple, a roadway lined with walls decorated with colorfully glazed bricks and featuring reliefs of bulls, lions, and sacred dragons. Where the Processional Way passed through a monumental gate decorated in glazed blue bricks he located and identified the Ishtar Gate, subsequently completely reconstructed and exhibited at the Pergamon Museum in Berlin—a feat equaling Koldewey's fieldwork.

During the time that such significant progress was being made in Near Eastern archaeology in the broadest sense, more and more interest was being directed to the heartland of that vast region, Syria-Palestine. Contributing to this were the colonial interests of the great powers and their specific interest in the lands of the Bible, which had only recently

been explored by the Americans Edward Robinson and Eli Smith. It is significant that Americans first focused on Palestine, and Europeans on Egypt and Mesopotamia. In due course, the scales would balance: in the second half of the nineteenth century, all nationalities would be firmly established in the region, and, by the end of the century, with major societies and institutes to guide them. [*See* Nationalism and Archaeology.] American colonial interest combined with an awareness of the area's biblical heritage inspired the first U.S. naval expedition to investigate the possibility of establishing a trade route in the Holy Land. In particular, the Americans chose to circumnavigate the Dead Sea, explore the biblical cities around it, and sail the Jordan River. William Francis Lynch conducted this mission in 1847–1848, setting sail from the Sea of Galilee in two metal ships, the *Fanny Mason* and *Fanny Skinner*. During the trip down the Jordan River, the expedition mapped its course and described its environment. Thirteen months after they had left the United States they completed their explorations. The results of the work were published in 1849 and 1852 (Silberman, 1982, pp. 51–62; King, 1983, p. 6). The proposal to open a trade route through the Holy Land was never accepted by the U.S. government, while the attendant publicity surrounding the Lynch expedition had the effect of arousing even greater interest in the Holy Land among Americans. Missionaries described their visits to the Holy Land, and even P. T. Barnum sent the director of his American Museum to Palestine to collect antiquities for display (Silberman, 1982, p. 62).

In 1842, just prior to the Lynch expedition, the American Oriental Society had been established to promote the study of Asian and African languages and interest in ancient Mesopotamia in particular. Edward Robinson, the explorer of Palestine and a Semitist, became president in 1846. In 1865 the British established the Palestine Exploration Fund to promote scientific exploration of the Holy Land, sending Charles W. Wilson to oversee the mapping of Jerusalem in 1867. [*See* Palestine Exploration Fund; *and the biography of Wilson.*] In 1872–1878 the British conducted the geographical survey of western Palestine, in which ten thousand sites were mapped; a limited survey of eastern Palestine followed in 1881. It was during this remarkable period of intense interest in the Holy Land that the ill-fated American Palestine Exploration Society was established (1870–1884). [*See* American Palestine Exploration Society.] A forerunner of the American School(s) of Oriental Research (ASOR), the purpose of the society was "the illustration and defense of the Bible" (King, 1983, p. 8). Because the British had concentrated their efforts on explorations west of the Jordan, the Americans focused their efforts on Transjordan. Those early explorations were led by Selah Merrill and published as *East of the Jordan* (London, 1881). [*See the biography of Merrill.*] As a result of lack of funds, internal bickering, and its limited purview, the society was dissolved in 1884. The Germans established their society for the exploration of Palestine (Deutscher Palästina-Verein) in 1877. [*See* Deutscher Palästina-Verein.] It too was modeled after the British society and, like its American predecessor, had a distinctively Lutheran and biblical orientation. In 1890 the French Dominicans established the École Biblique et Archéologique Française in Jerusalem, which resembled the British, German, and defunct American societies. [*See* École Biblique et Archéologique Française.]

It was in such a context that ASOR was established in 1900, its existence called forth by a series of pressures that had been building in America since the beginning of the nineteenth century. The three parent societies that were instrumental in its founding represented the diverse strands of American scholarship affecting Near Eastern scholarship at the time: The American Oriental Society, preoccupied with the linguistic and literary heritage of Mesopotamia; the Archaeological Institute of America, focused on the West and most closely allied to the schools in Rome and Athens; and the Society of Biblical Literature, preeminent in promoting biblical scholarship. [*See* Archaeological Institute of America; Society of Biblical Literature.] Given all that had preceded, the founding of ASOR was inevitable. Given its sponsors, it was clear from the outset that its home in the Near East would be in Jerusalem and that its ties to Transjordan, Mesopotamia, and Egypt would remain in place permanently. America's unique attachment to the Bible and its allied civilizations, therefore, has been the central motivating factor in ASOR's history since its founding (King, 1983, pp. 25–28). [*See* American Schools of Oriental Research.]

The centrality of biblical archaeology as a major stream in Near Eastern archaeology is thus very much a result of the Western preference for the languages, literatures, and cultures that illuminate aspects of its own tradition and culture. To some cultural critics this is the stuff of Orientalism at its worst: "To reconstruct a dead or lost Oriental language meant ultimately to reconstruct a dead or neglected Orient" (Said, 1978, p. 123). To be sure, Western interests in recovering the archaeological heritage of the Near East were tied to imperial, colonial, and Judaeo-Christian goals. Be that as it may, the emergence of a more detached scientific archaeology and advanced philology in more recent generations has only increased what is understood and appreciated of those cultures. What motivated the spiritual forebears of Near Eastern archaeology may no longer exist. However, it is important also to recognize that the founding fathers of a scientific archaeology in the twentieth century had other shortcomings and prejudices beside their commitment to bolster the Bible, just as their nineteenth-century counterparts had.

Twentieth Century. The founding of ASOR in 1900, just ten years after the French school and ten years after Petrie's excavations at Tell el-Hesi in Palestine, signaled the beginning of a new era in Near Eastern archaeology, one

that witnessed the growth of the overseas national institutes for Near Eastern research and related studies. [*See* Hesi, Tell el-.] Petrie's work in Egypt in behalf of the Egypt Exploration Fund prior to his excavations in Palestine had laid the groundwork for ceramic typology, seriation analysis, and comparative dating. Petrie even visited Mycenae to test his dating of his finds at Gurob and Kahun, establishing a synchronism between "proto-Greek" ware and Egypt's twelfth dynasty and identifying some of the foreign pottery from Egypt as Aegean and proto-Greek ware. He published the methods of digging and ceramic typology he developed as *Methods and Aims in Archaeology* (New York, 1904). The principles enunciated in that work resonate well even with today's exacting standards: conservation of monuments, meticulous recording and collecting of data, accurate recording and planning of all monuments and areas of excavation, and timely publication of all results. [*See* Conservation Archaeology; Recording Techniques; Excavation Strategy.] His criteria for analyzing ceramics are still used. His American counterpart in the early part of the twentieth century was George A. Reisner, whose excavations at Samaria were to become a showcase for American methods. [*See* Samaria; *and the biography of Reisner.*]

What has only emerged in recent scholarship, however, is that Petrie's interpretative scheme, by means of which he distinguished between periods of racial domination by groups of abler peoples, was based on contemporary theories of racial superiority. [*See* Eugenics Movement.] In evaluating the reasons for the rise and fall of civilizations, Petrie embraced such views. Building also upon historical ideas of the rise and fall of civilizations, he attributed the decline of certain populations to inbreeding among their subjects. In adopting such a scheme, Petrie was not alone. R. A. S. Macalister, the famed Irish archaeologist who excavated Tel Gezer, also adhered to such an interpretative scheme, claiming that the ancient Semites, Hebrews, Arabs, and other civilizations had absorbed all their most important elements of civilization from neighboring cultures (Bunimovitz, 1995, pp. 60–61). [*See* Gezer; *and the biography of Macalister.*] Looking back again at these old pioneers in field archaeology, it is difficult to dispute the accuracy of cultural critics like Edward Said (1978) who have questioned the motives of many of the first Orientalists committed to imposing Western rubrics of thought, values, and standards of superiority on the region's "primitive cultures."

It is not difficult to see how much improved the situation became when scholars such as William Foxwell Albright, George Ernest Wright, and Nelson Glueck dominated the field of Palestinian/biblical archaeology from about 1920 to 1970, especially in terms of recording and field methods. [*See* Biblical Archaeology; *and the biographies of Albright, Wright, and Glueck.*] Each of these scholars and others—Roland de Vaux, Kathleen M. Kenyon, and Yigael Yadin—introduced numerous refinements of method to the discipline, as well as new insights into long-standing problems and issues. [*See the biographies of Vaux, Kenyon, and Yadin.*] The fact remains, however, that all of them worked within the interpretative framework of biblical history and theology. To be sure, each no doubt gave greater credence to the archaeological data when there was a clash with biblical tradition or history. However, the Bible stood very much at the core of their work, just as it undergirded the quest of their nineteenth-century forbears for synchronicity between the Bible and contemporary scientific explanations of its history and culture. If anything, such a bibliocentrisim contributed to the growing perception that Westerners were more interested in tracing their roots than in exploring the full range of the region's cultures. In so doing it could be argued that the Americans, like the British, French, and Germans before them and alongside them, imposed something of themselves upon the Near East and were also very much in the Orientalist tradition. It must also be said, however, that as much as this might have been a shortcoming, especially in view of the Near East today being overwhelmingly Islamic, it also provided the money, enthusiasm, and determination to advance a complex subject and discipline (Cooper, 1992).

The 1970s inaugurated an era that saw the decline of biblical archaeology and the emergence of a multidisciplinary approach frequently called the New Archaeology. [*See* New Archaeology.] Many individual aspects of this new approach had been anticipated in the earlier research of American and other scholars. Regional studies had been conducted by Glueck in Transjordan, and Robert J. Braidwood had studied the origins of agriculture in Kurdistan in the 1940s. Surface surveys had been conducted by all the national schools in virtually all regions of the Near East. The introduction of new technologies in the 1970s and after, especially, for example, the computer, resistivitors, high-resolution photography, DNA analysis, and neutron activation analysis and all the other items that made digging more efficient, also moved the discipline toward maturation. [*See* Computer Mapping; Computer Recording, Analysis, and Interpretation; Photography; Neutron Activation Analysis; Ethics and Archaeology.] Similarly, the emergence of new subdisciplines, such as gender studies and cultural studies, makes the contemporary archaeologist more sensitive to nomenclature, to the categories assigned to artifacts, and to interpretative strategies for understanding diverse and complex groups of evidence. [*See* Ethnoarchaeology; Ethnobotany; Ethnozoology.] The archaeology of the ancient Near East is at last at home in the richness of the diversity of its cultures and traditions, having advanced beyond the narrower confines of its past.

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Archaeology in Syria

In the middle of the nineteenth century, when Europeans were beginning to take an active interest in excavating Near Eastern sites, especially ancient ruins dating to the Assyrian period, Henry Austen Layard made brief soundings at a site on the Khabur River in northeastern Syria, Tell Hajajah (Assyrian Shadikanni, called Araban in tenth-century Arabic sources). The imposing ruins of Tell Halaf (ancient Guzana) led Max von Oppenheim to excavate there in 1899, 1911–1914, and 1927–1929. Carchemish, which had been identified by the geographer George Adam Smith in 1876, was excavated by David G. Hogarth and C. Leonard Woolley in 1908–1911 and 1920. In 1902 German excavations were begun at Palmyra (continued in 1917 under Theodor Wiegand); although previous studies had been made there, this was the beginning of research on the city as a whole. In 1860 Ernest Renan made soundings at the coastal sites of Byblos, Tyre, and Sidon and on the island of Arwad for the French Mission to Phoenicia.

The impetus for these excavations was the discovery of original sources related to the Bible and biblical peoples. However, they were also driven by the recovery of the monumental architecture and large-scale reliefs decorating Assyrian and Neo-Hittite palaces. Cuneiform inscriptions written on these reliefs were deciphered by European scholars in the late nineteenth century. A lively interest in Europe for cuneiform texts had begun as early as 1625, when an Italian traveler, Pietro della Valle, brought back the first cuneiform inscriptions. In 1897 the French Assyriologist François Thureau-Dangin published a tablet from the area of Terqa on the Euphrates River; this was the first cuneiform tablet to be published from Syria, although it was not recognized as such at the time.

Between the two wars, large first-millennium BCE sites in northern and eastern Syria continued to interest excavators. In 1928 Thureau-Dangin, Maurice Dunand, and Georges Dossin began excavations at Arslan Tash (Hadatu). Previously, a group of Neo-Assyrian sculptures dating to the reign of Tiglath-Pileser III had been recovered there. Part of the provincial palace and ivories dating to the eighth century were discovered. Tell Ahmar (ancient Til Barsip, also called Kar Shalmaneser) was excavated in three campaigns (1929–1931) by the same team from the Louvre museum. They established that it had been an important city in the state of Bit Adini and that its palace had been decorated with Neo-Hittite sculpture (similar to those previously recorded at Carchemish). Rarely preserved Assyrian wall paintings dated near to the reign of Tiglath-Pileser III were also recovered, as well as a hypogeum dating to the third millennium. [*See* Wall Paintings.] In 1988 Guy Bunnens renewed those excavations. He has excavated two large Assyrian houses containing objects (including ivories) acquired through the city's international contacts.

Before the advent of satellite photos, Antoine Poidebard in 1927 utilized air photos of sites in eastern Syria in his research (Poidebard, 1934). This early use of air photos was followed at the Mari excavations by a photo of the palace when excavation was completed. Kite photos were taken by Robert Anderson at Dipsi Faraj and later at Terqa. Kite or balloon photos are by now standard on many excavations in Syria.

Prehistoric Sites. The surge of excavations at prehistoric Syrian sites has revolutionized what is known of the period's social and economic development. Multidisciplinary approaches to excavation have revealed more about the Paleolithic lithic technology and social interaction from sites with evidence of *Homo erectus* and eventually of *Homo sapiens sapiens*. Prehistoric sites are rich in the area of el-Kowm near Palmyra, particularly at Umm el-Tlel (Jacques Cauvin) and Nadawiyah I (Sultan Muhesen and Jean Marie Le Tensorer). Discoveries that profoundly altered what was known of later prehistory came from excavations on the Middle Euphrates River, where the evidence demonstrated that the establishment of permanent settlements and the transition from hunting and gathering to agriculture and animal domestication were separate stages. Settlement in permanent villages with a high economic and cultural standard developed without similar advances in agriculture and animal domestication. The Late Natufian village at Abu Hureyra I (Andrew Moore) engaged in specialized hunting practices (mostly gazelles) and gathered a wide variety of plants

(more than 150 species); this specialization presupposed permanancy. At Abu Hureyra 2, settled in about 9000 BCE, agriculture was practiced but wild-plant gathering continued; meat mostly came from wild gazelles. In about 8000 BCE this changed, and most of the population was engaged in cereal production and raising domesticated sheep and goats. [*See* Cereals; Sheep and Goats.] In the second half of the seventh millennium, new ecological zones were exploited, as in the village of Bouqras, in an arid zone along the Middle Euphrates. From there, substantial domestic architecture, in some cases decorated with painted plaster or painted reliefs, and small, but exceptionally fine, human figures and stone vessels were found.

Starting in the 1960s, interest was renewed in excavating Halaf sites, especially in the heartland of the Halaf culture along the Upper Khabur, the Balikh, and the Middle Euphrates Rivers. At Tell Sabi Abyad, in the Balikh, excavations directed by Peter M. M. G. Akkermans have shown that the earliest phases of the Halaf culture developed gradually out of the preceding local Neolithic culture (and not, as previously thought, imported from northern Iraq). During the Ubaid period the intensification of international contacts included North Syria, but thus far few sites from this period have been excavated. An exception is Tell 'Abr (Hamid Hammade); at Tell Bisnada, east of Latakia, Ubaid material has been found in limited soundings. [*See* Syria, *article on* Prehistoric Syria.]

Coastal and Central Syria. In 1928 a local farmer discovered a tomb in the area of Minet el-Beida that attracted the attention of the French archaeologist Claude F.-A. Schaeffer. In the following year he began excavations at this ancient port and at the nearby site of Ras Shamra, ancient Ugarit. Almost immediately the excavations at Ugarit produced a number of texts, the most startling of which are alphabetic cuneiform texts from the fourteenth–thirteenth centuries BCE. Other texts written in Akkadian, Hittite, and Hurrian attest to the international contacts of this coastal city. The Ugaritic texts are also important because of their relevance to studies in Hebrew Bible. [*See* Ugarit Inscriptions.] A large royal palace with its offices and workshops was excavated in addition to the temples of Baal and Dagan. Work continued at the site, with an interruption during the World War II, under Schaeffer's direction until the mid-1970s; the present French director is Marguerite Yon.

Of major importance for the history of Ugarit and coastal Syria are the recent Syrian-French excavations carried out under Adnan Bounni, Elizabeth Lagarce, and Jacques Lagarce at the site of Ras Ibn Hani, located a short distance from Ugarit, and situated directly on the coast. There, two thirteenth-century BCE residential palaces served as administrative centers; as a result of their ongoing research, a variety of Ugaritic texts—including letters and ritual and administrative texts—have been found. Tell Sukas, the ancient city called Shuksu in the Ugarit texts, had previously been excavated along the coast by P. J. Riis. Excavations at Tell al-Kazel (probably ancient Simira), initiated by Bounni and continuing under Leila Badre, have shed light on one of the most important Late Bronze sites on the coast (probably a New Kingdom Egyptian administrative center and then a major city of the kingdom of Ammuru). [*See* Amorites.] Important late third-millennium remains, also exhibiting Egyptian connections, are now being uncovered at Tell Sianu, in central Syria, by Bounni and Michel al-Maqdissi.

Bounni, the director of excavations in the Directorate General of Antiquities and Museums, is noted as an excavator for his historic work at Palmyra (begun in 1957) in the Valley of the Tombs, the Temple of Nabu, the main street, the agora, the theater, the nymphaea A and B, and the Street of Ba'al Shamin (Bounni, 1982). In addition he has excavated a large number of sites from the third millennium BCE to the Roman period. His colleague, Nassib Saliby, an authority on Palmyrene architecture and prominent Islamic architectural monuments, is excavating at the Damascus citadel and carrying out a number of salvage projects in the city.

Inner Syria has had a long history of archaeological work, starting with the activities of Maurice Pézard at Tell Nebi Mend in 1921. Recent excavations (Peter Parr) have found a Middle Bronze Age city wall and monumental Late Bronze Age buildings. Four seasons of excavations were conducted by Robert du Mesnil du Buisson at Mishrifeh/Qatna from 1926 to 1929. Qatna's MB and LB texts of temple inventories give a king list for the city during a portion of the fifteenth century BCE, before its destruction. He also worked at several sites north of Hama, including Tell Suran, Tell As, and Khan Sheikhun, which gave the first indication of the importance of this area for the third millennium. Excavations at Tell Qarqur are being conducted by the American Schools of Oriental Research (ASOR) under the direction of Rudolph H. Dornemann. The Hama excavations (1932–1939), directed by Harald Ingholt and Riis, established a stratified sequence of pottery that is linked to the sequence in the 'Amuq region, thus giving a firm ceramic chronology for this area.

The site that has most revolutionized what is known of the importance of northern Syria from the middle of the third to the middle of the second millennium (2400–1600 BCE) is the ancient city of Ebla, modern Tell Mardikh. Excavations began there under Paolo Matthiae in 1964; he specifically set out to test the hypothesis that third-millennium Syria had been a major urban civilization, parallel to contemporary civilizations in Egypt and Mesopotamia. It was only after ten years of excavation that the Ebla archive was discovered, confirming the city's ancient name. [*See* Ebla Texts.] Matthiae is almost single-handedly responsible for third-millennium urban Syria taking its place in the scholarly literature. The archive came from a palace complex that in addition yielded the remains of wood inlays, parts of ala-

baster and diorite vessels from pharaonic Egypt, gold and lapis objects, and a large amount of unworked lapis. The military campaigns of Sargon and his grandson Naram-Sin destroyed the city. It revived at the beginning of the second millennium BCE, when a large palace and several temples were constructed. The excavation of the royal tombs of the period from 1800 to 1650 BCE exhibit the city's immense wealth and the international contacts of its rulers in both Anatolia and Egypt. The excavations at Ebla transformed what was known of the importance of cities in Syria during the third millennium, highlighting their central role in the era's internationalism, which previously had been understood to have only begun in the Late Bronze Age (Matthiae, 1980).

Matthiae began excavating near Ebla, at the first-millennium site BCE of Tell Afis (ancient Apesh?); that work is now being directed by a member of the Ebla excavation team, Stefanie Mazzoni, who has published ceramics and jar sealings from Ebla (Mazzoni, 1985, 1992). Excavation at Tell Afis has uncovered an uninterrupted sequence of strata bridging the crucial period between the end of the Late Bronze and the beginning of the Iron Age. Recently, substantial Chalcolithic remains were also uncovered.

North of Aleppo, excavations at the site of 'Ain Dara', directed most recently by Ali Abou Assaf and Wahid Khayyata, have identified the city potentially as ancient Kinalua, often mentioned in Neo-Assyrian annals; the excavations have found a *ḫilani*-type palace and a large temple decorated with Neo-Hittite-style orthostats; two stone thresholds were decorated with three large footprints pointing toward the temple interior.

Salvage Projects. With Syrian independence in 1946 and the establishment of the Syrian Directorate General of Antiquities and Museums, the new administration of the cultural inheritance of the country concentrated on decentralizing Syria's museums by building a major museum in Aleppo to supplement the collections in Damascus. Smaller museums were established in Palmyra, Hama, Tartus, Homs, Latakia, ar-Raqqa, and Idlib; most recently a major new museum was constructed in Deir ez-Zor. The department's policy from the beginning has been to encourage foreign excavation—by European, American, and Japanese teams.

A phenomenon that has characterized Syrian archaeology of the last few decades is the prevalence of salvage operations. Starting in the 1960s the construction of large dams on the Euphrates and Khabur Rivers necessitated the rescue of ancient sites. The most important of these is the Tabqa dam, which formed a lake covering an area of 80 × 8 km (50 × 5 mi.) Answering a call issued by the Syrian government through UNESCO, an international team of archaeologists worked between 1967 and 1974 to excavate sites ranging in date from the ninth millennium BCE to the fifteenth century CE (Freedman, 1979). A sense of the opening up of a new archaeological frontier resulted from the expanded information about this region. Revolutionary discoveries were made for the fourth millennium, especially at Tell Kannas (André Finet) and Habuba Kabira (Ernst Heinrich and Eva Strommenger), where a large, important settlement, including niched temples whose architectural plan resembles contemporary Uruk period temples in southern Mesopotamia, were excavated; in addition, the ceramic and glyptic material is very close to the south. At Jebel 'Aruda (H. J. Franken and Sander E. van der Leeuw), similar Uruk IV remains were found. The significance of salt sources near these sites and the connection of the salt-refinement process with beveled-rim bowls was shown in part from the American excavations farther downstream at Qraya. New French excavations at Tell Mashnaqa and Ramadi, near Mari, are extending what is known of the Uruk connection. The revelation of a strong Uruk presence ("colonies") in the Euphrates bend region of Syria has entirely changed the view of fourth-millennium Uruk culture. In addition, it has confirmed the strength of the regional Syrian material culture that reasserted itself immediately after the cessation of the Uruk incursion. Sites with later occupation included Tell Hadidi, with a very well-documented ceramic sequence from the beginning of the third to the middle of the second millennia BCE. Tell Selenkahiyeh, a large third-millennium site, yielded twelve important private houses in the heart of the city that give a picture of its economic organization. At Tell Halawa, Winfried Orthmann uncovered important third-millennium strata, including a temple. Major second-millennium BCE levels were discovered at Meskene where an archive of approximately fifteen hundred cuneiform texts has identified the city as Emar. The excavator, Jean-Claude Margueron, uncovered a number of structures from the fourteenth- and thirteenth-centuries BCE, when this region was under Hittite domination. The structures included two long-room type temples and a governor's palace of the *ḫilani* type, characteristic of the first millennium BCE. Similar temples were also excavated at Tell Mumbaqat and Tell Fray.

Appeals by the Syrian government through UNESCO were also connected with the construction of a dam along the Euphrates near the Syro-Turkish border (the Tishrin dam) and two near Hassekeh, one south of the city and one to the west. South of Hassekeh, excavations concentrated on small sites along the course of the Khabur River. The excavation of one of them, Tell 'Atij, by Michel Fortin (1986–1988, 1992–1993), has illuminated the specialized economic importance of this area in the early third millennium. He was the first to uncover a series of granaries that could store large amounts for later shipment to other areas (e.g., to Tell Brak or areas to the south). Subsequent excavations at nearby Ziyada and Tell Raqa'i revealed similar facilities. [*See* Food Storage.] The excavations at Tell Tuneinir under Michael Fuller found an early church and an

Ayyubid bath. [*See* Baths.] A deep sounding confirmed the site's third-millennium occupation. Northwest of Hassekeh, Tell Kashkashuk III (Antoine Soleiman) had important remains from the mid-third millennium, including what probably is a temple and a tomb with the skeleton of a young woman with more than six thousand beads of various materials, including gold, lapis, and rock crystal. He is also excavating a Neo-Assyrian site (Tell Boueid) with a large administrative building and a number of jar burials. In the Tishrin dam area, the Late Bronze strata of el-Qitar (Thomas L. McClellan) reveal a city organized around upper and lower sections. The city was probably destroyed by a campaign of Thutmosis III. This area was important in the Pre-Pottery Neolithic B period as is being shown by the excavations at Tell Halula (M. Molist) and Ja'det al-Maghara (Danielle Stordeur).

Eastern Syria. The landscape of eastern Syria is dominated by numerous mounds along the Middle Euphrates River, with its main tributaries the Khabur and the Balikh. In the period between the two world wars, partly as a consequence of the discoveries at Ugarit, European archaeologists took a greater interest in excavations in Syria. In 1933 André Parrot began excavating at Tell Hariri, which William Foxwell Albright had proposed identifying with the ancient city of Mari, attested in the Sumerian king lists. The early years of excavation at Mari uncovered the Zimrilim palace, excellently preserved with a vast number of cuneiform texts relating to palace activities, including a diplomatic archive. The archaeological remains both for the third and early part of the second millennium BCE, until the destruction of the city in about 1760 BCE by Hammurabi of Babylon, attest to the importance of this urban center and to Mari's border position between the cities of southern Mesopotamia and the urban centers and fertile countryside of northern and western Syria. There too a large palace dating to the third millennium has been partly excavated along with a major temple dedicated to Ishtar.

The new program of research at Mari, under Margueron's direction, has concentrated on enlarging the area where excavations and soundings have been conducted, in order to study the urban plan. In addition, he has initiated a regional study to understand better the reasons for the placement of the city on this part of the river, as well as its geographic and ecological relationship with the surrounding countryside. This research has concluded that when the city was founded in the early part of the third millennium, a series of canals and an artificial lake were constructed in order to utilize the Euphrates River basin for agriculture. The most important of these canals (120 km long) connected Mari directly with the Khabur River. The width of this canal (11 m) allowed river craft to shorten the trip south and avoid the turbulent intersection of the Khabur with the Euphrates. The city therefore controlled both river traffic and probably also the overland caravan route. This new program of archaeological research, combined with new initiatives connected with the publication of the Mari texts (Jean-Marie Durand), is of profound importance for understanding all of Syria in the Mari period.

The narrowness of the Euphrates River valley in southeastern Syria permits the existence of only one major city at any given time. After the destruction of Mari, Terqa (about 60 km, or 37 mi., north of Mari, near the juncture of the Khabur and the Euphrates) became the major urban center. Excavations at Terqa, conducted by Giorgio Buccellati and Marilyn Kelly-Buccellati between 1976 and 1984, uncovered an administrative building from the Khana period (1760–1600 BCE), a complex of artifacts identified as the "office" of a scribe. From this same period a temple of Ninkarrak contained a hoard of 6,637 beads, including seven contemporary scarabs. In the burnt house of Puzurum, the excavators found a storage room with a number of sealed contracts; in this same house a pantry contained a jar with cloves inside. Before Roman times, cloves had to come from the Melakas (Moluccas, Spice Islands) in Indonesia. In the excavations of Olivier Rouault and Maria Grazia Masetti-Rouault, tablets dating to the Late Khana period and down into the Mitanni period have been discovered. [*See* Mitanni.]

Along the Khabur River south of Hassekeh, the site of Sheikh Ḥamad (ancient Dur Katlimmu) has been excavated since 1978 by Hartmut Kuhne, in collaboration with the Assyriologist Wolfgang Röllig. A Middle Assyrian palace on the highest part of the mound contained five hundred and fifty tablets dating to the reigns of Shalmaneser I and Tukulti-Ninurta I. In the Lower City, a building with a *ḫilani*-type reception area contained an archive of thirty-five tablets written in three languages: Assyrian, Babylonian, and Aramaic. Also in the Lower City (building G), cuneiform tablets dating to the reign of Nebuchadrezzar yielded the first evidence of a Neo-Babylonian presence in Syria. Kuhne's extensive excavations have provided the most complete understanding of the importance of the Assyrian period in eastern Syria. At the site of Tell Hajajah (ancient Shadikanni), excavations were begun by As'ad Mahmoud in 1982, who rediscovered Layard's excavation trenches and uncovered part of the ninth-century BCE governor's palace decorated with relief orthostats and glazed bricks.

To the north, in the Khabur triangle, pioneering excavations were carried out by M. E. L. Mallowan. The site of Chaghar Bazar (1934–1937) was significant in the Halaf period, as was all of the Wadi Dar'a region. The excavations discovered an archive of cuneiform documents from the early second millennium BCE onward. The stratified sequence of pottery from the third and the second millennia BCE, especially the sequence of painted Khabur ware, became the basis on which many of the other sites in the area were later dated. During this same period, Mallowan began excavations at one of the largest sites in eastern Syria, Tell Brak (Mallowan, 1947). Brak was an extensive city as early

as the Uruk period; its Eye Temple was built on a southern model with a high terrace and a tripartite plan with an elaborately decorated podium. The "palace" of Naram-Sin can more likely be identified as a royal storehouse that sustained his subsequent military activities in western Syria. Mallowan's example of the rapid publication of his primary excavation data (in *Iraq*) was followed by the present excavators of Brak, David and Joan Oates, who resumed excavations there in 1976. From the Akkadian period they have excavated a large ceremonial complex containing a temple (area SS); in this complex a beautiful statue of a reclining human-headed bull in one of the ritual objects found. Impressive architectural remains from the Mitanni period include a palace and a temple. The Brak excavations are one of the primary benchmarks of archaeology in Syria, with comprehensive stratigraphic and architectural interpretations and an equally secure analysis of the ceramic sequences.

The excavations at Tell Barri (ancient Kakhat), begun in 1980 under the direction of Paolo Emilio Pecorella, have uncovered thirteen periods dating from the Halaf to the thirteenth century CE, with few gaps (Pecorella and Anastasio, 1996). During the Mari and Mitanni eras, Kakhat was the major center for the worship of the storm god, Teššup. Assyrian inscriptions indicate that Tukulti-Ninurta II (890–884 BCE) constructed a palace at Kakhat. The long and very carefully documented Tell Barri ceramic sequence is now a basic tool for ceramic chronology in the Upper Khabur region. Just to the north of Tell Barri, at Tell Hamidiya, Markus Waefler began excavations in 1984 and has explored a palace built on three levels of such massive dimensions that it appears to occupy the whole of the acropolis, making it one of the most imposing buildings of the ancient Near East. This trilevel palace had supporting walls preserved up to 16 m high and 12 m wide and contained a large number of ivories dating to the reign of Shalmaneser III. [*See* Palace.]

The excavations of Shamshi-Adad's city of Shubat-Enlil at Tell Leilan were begun by Harvey Weiss in 1978; on the acropolis they have uncovered a long-room temple whose north and south facades were decorated with elaborate mud-brick relief columns. Soundings in the Lower City found many public buildings dating to the period of Shamshi-Adad and his successors that attest to the vastness of his administrative complex there. Two large buildings, identified as palaces, contained important tablets of the royal archive. During the third-millennium occupation (2600–2200 BCE) the city was called Shekhna; it had a city wall built in two phases around both the acropolis and the Lower City (Akkermans and Weiss, 1987; Akkermans et al., 1991; Parayre and Weiss, 1991). The excavations at Mohammad Diyab (ancient Azamhul), begun in 1987 (by Durand and Dominique Charpin) have recovered second-millennium BCE houses and tombs.

Urkeš/Tell Mozan, a large third-millennium site in the Wadi Dara region has been excavated since 1984 by Giorgio Buccellati and Marilyn Kelly-Buccellati (1984). They have uncovered a mid-third millennium temple (BA). The storehouse (AK) is characterized by a symmetrical plan that includes two small vaults; on a floor in front of one of these vaults more than six hundred Early Akkadian seal impressions were excavated along with cuneiform tablets containing some Hurrian names and words. The inscribed seal impressions have led to the identification of the site with the Hurrian city of Urkeš. In the Khabur area 144 Early Dynastic III tablets have been excavated at Tell Beydar, under the direction of Marc Lebeau (1991).

The Tell Chuera excavations of Anton Moortgat and Ursula Moortgat-Correns that began in 1958 are being continued by Orthmann. These excavations have revealed a large third-millennium urban center located between the Balikh and the Upper Khabur Rivers. A number of temples have been found, including what must have been a large temple placed on top of a significant stone platform (steinbau III) opposite a monumental entrance to the city. Two statues sculpted in the Early Dynastic II style are the northernmost examples of this type of sculpture. A late third-millennium palace (F) and a large Middle Assyrian building have also been excavated. The site is identified as Ḫarbe in the Middle Assyrian period.

In the north Balikh area, the site of Tell Hammam et-Turkman (ancient Zalpa?) was an important regional center with evidence of palaces from both the Middle and Late Bronze Ages. The excavators, Maurits N. van Loon and Diederik J. W. Meijer, have recovered a number of cuneiform tablets and cylinder seals; the seal impressions attest to a high level of administrative organization, including a scribal school. Van Loon has made substantial contributions to Syrian archaeology through his work at Tell Mureybet, Selenkhiye, and Hammam et-Turkman, in addition to training a whole generation of American and European archaeologists.

Tell Biʿa (ancient Tuttul), near the confluence of the Balikh and the Euphrates, has been excavated by Strommenger since 1980; she has uncovered a burnt palace from 2500 BCE containing many wood features, including pilasters. In a palace dated just prior to the reign of Shamshi-Adad I, one level contained a common grave with the remains of eighty skeletons showing evidence of violent death, probably during a battle.

Conclusions. In the early decades of the twentieth century, some exploration of major sites, such as Mari and Ugarit, came about through accidental discoveries. Many tells, however, were selected for excavation as a result of a well-planned research strategy: Ebla, where the research strategy posited a major third-millennium urban area in this part of inner Syria; Tell Hamidiya, where research revolves around the hypothesis that this site is the Mitanni capital of Taidu; the Khabur region, based on the reasoning that major third-

and second-millennium cities should exist there; and the el-Kowm region, east of Palmyra, in the Syrian steppe, where large-scale regional research deriving from specific research interests and research strategy has been undertaken. Salvage operations initiated by dam construction have given impetus to excavations in geographic areas that might otherwise have been overlooked. Research on these sites, especially for the sites connected with the Tabqa dam, often was connected at a second stage with a specific research strategy. In Syria more than seventy Syrian and foreign excavations are being conducted, researching the prehistoric through the Islamic period, from coastal Syria through the Khabur region; nine large survey projects are also being conducted (al-Maqdissi, 1993). For much of this intensive period of the excavation of archaeological sites in Syria during the last thirty years, Najah al-Attar has been the minister of culture. She has been responsible and directly involved in all phases of promoting the cause of archaeology within Syria itself and in bringing the results of this endeavor to the wider international audience. International exhibits of objects excavated in Syria have been bringing Syrian history and culture to a much wider public. Syria has been an area where the recovery of ancient culture through excavations by an international collaboration have resulted in a significantly changed historical picture.

[*See also the biographies of Albright, Dunand, Layard, Mallowan, Moortgat, Parrot, Poidebard, Renan, Schaeffer, Smith, Thureau-Dangin, and Woolley. In addition, many of the sites mentioned are the subject of independent entries.*]

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MARILYN KELLY-BUCCELLATI

Archaeology in Israel

Interest in local antiquities was first aroused among the Jewish settlers in the land of Israel, even among members of the Orthodox community, in the nineteenth and early twentieth centuries. A. M. Lunz, a prominent scholar in the nineteenth century, studied the country's historical geography. In 1914, the Jewish Palestine Exploration Society (later known as the Israel Exploration Society) was founded in Jerusalem. [*See* Israel Exploration Society.] It concerned itself with Jewish antiquities, first excavating at Hammath Tiberias (Nahum Slouschz, 1921–1922). The society has, ever since, been central to all archaeological activity in Israel and its journal the focal publication of the status of research on the country's antiquities.

One of the pioneers in archaeological research by Palestinian Jews was Eleazar L. Sukenik, the first professor of archaeology at the fledgling Hebrew University of Jerusalem, where in 1926 he founded the Department of Archaeology and the Museum for Jewish Antiquities. [*See the biography of Sukenik.*] His first important excavation was the synagogue at Beth Alpha (1929). His subsequent excavations included the Jewish burial caves in the vicinity of Jerusalem and, beginning in 1927, several seasons at Tel Gerisa, a multistrata mound of the Bronze and Iron Ages. Sukenik also participated in the expedition to Samaria led by John W. Crowfoot, where he and his assistant, Nahman Avigad, were exposed to British excavation methods. [*See the biographies of Crowfoot and Avigad.*] Another inspiring scholar in that period was Benjamin Mazar (Maisler). Trained as a historian and an Assyriologist, he was influenced by William Foxwell Albright to practice interdisciplinary research that would include history, philology, Bible, historical geography, and archaeology. [*See the biographies of Mazar and Albright.*] Following his excavation of the Jewish necropolis at Beth-She'arim, Mazar joined the faculty of the Hebrew University, where he trained a group of Israeli scholars who were to become prominent in the disciplines of ancient history and archaeology.

Other Jewish archaeologists worked for the Department of Antiquities organized by the British during their mandate in Palestine (1917–1948) or in the Jewish Palestine Exploration Society. Moshe Stekelis laid the foundations for research at the country's prehistoric sites; Emmanuel Ben-Dor

and Ruth Amiran conducted ceramics studies; Naphtali Hertz Torzcyner (Tur-Sinai) and others studied paleography and Semitic languages; Shmuel Yeivin and J. Leibovitch studied Egyptology; Mazar studied the ancient Near East; Michael Avi-Yonah, Avigad, and others studied classical art and archaeology; and Leo A. Mayer specialized in Islamic art and archaeology. [*See the biographies of Stekelis, Yeivin, and Avi-Yonah.*]

These Israeli historians and archaeologists combined two traditions: the broad knowledge and pedagogy involving classical and ancient Near East studies brought from European universities and the methodologies of archaeological fieldwork, particularly as applied to the large-scale expeditions, carried out in the country prior to 1948.

1948 to 1967. Following the foundation of the State of Israel, several factors determined the progress of archaeology in Israel: Israeli scholars were excluded from direct contact with their colleagues in other parts of the Near East; the state was encouraging the archaeological investigation of its heritage; and the country was developing rapidly. The newly established and rather small Department of Antiquities, directed by Yeivin, was conducting salvage excavations at many sites. Management of the country's antiquities followed the traditions of the British Mandatory Department of Antiquities. In 1949–1950, Mazar conducted the first systematic excavation at a biblical site, at Tell Qasile near Tel Aviv, under the auspices of the country's then only academic institution, the Hebrew University of Jerusalem. Mazar uncovered remains of a Philistine and Israelite town. Another consequential factor during the first years following independence was the discovery of the Dead Sea Scrolls, some of which Sukenik purchased for the Hebrew University. His son and student, Yigael Yadin, would later purchase additional scrolls. [*See* Dead Sea Scrolls.] The discovery of the scrolls opened new research vistas for philologists, historians, and Bible scholars. A number of Israeli archaeologists, including Sukenik, Avigad, and particularly Yadin, devoted years of study to translating them.

Yadin, a brilliant scholar and an engaging lecturer, gave a major impetus to Israeli archaeology. Following his service as chief of staff of the Israel Defense Forces, he joined the Hebrew University in 1954. [*See the biography of Yadin.*] From 1954 to 1958, and again in 1968, he conducted a large-scale excavation at Tel Hazor, which served as a field school for a generation of Israeli archaeologists and as a crucible for the discipline of biblical archaeology. Most of Israel's preeminent archaeologists in this field were senior members of the Hazor team: Aharoni, Amiran, Trude Dothan and Moshe Dothan, Claire Epstein, and others. An inspiring figure at the time was architect Immanuel Dunayevsky. [*See the biographies of Aharoni and Dunayevsky.*]

The search for the Dead Sea Scrolls in Jordan and the illegal looting of caves in the Israeli part of the Judean Desert prompted Israeli archaeologists to survey caves and conduct salvage excavations in that region. Following Aharoni's pioneering surveys, teams of archaeologists excavated in the desert's deep ravines and cliffs in 1961–1962. Documents and human remains from the time of the Bar Kokhba revolt in 135 CE discovered in this operation by the team led by Yadin have elucidated this period of Jewish history. [*See* Bar Kokhba Revolt.] Exploration in the Judean Desert reached its peak in 1963–1964, with Yadin's large-scale excavations at Masada, which various teams of Israeli archaeologists had previously explored and surveyed. To many in Israel and abroad, Masada had deep historical and emotional significance. Hundreds of volunteers from all over the world participated in its excavation, initiating a practice now common on both Israeli and foreign expeditions working in Israel. For the general public the extensive, well-publicized excavations at Masada became a virtual symbol of Israeli archaeology, as well as a tourist attraction.

During those same years, Aharoni initiated field surveys in the Galilee that demonstrated the significance of this method for studying settlement patterns. The result was a critical new methodology for interpreting historical data and writing history. In 1964, the Association for the Survey of Israel was founded, whose goal was a comprehensive archaeological survey of the country, an endeavor still underway, utilizing a methodology the association developed. [*See* Survey of Israel.]

In the late 1950s and early 1960s a generation of new Israeli archaeologists, most of whom had participated at Hazor, engaged in independent projects of their own. Important achievements were made in the study of the earliest agricultural communities of the Neolithic and Chalcolithic periods (Naḥal Oren cave of the Pre-Pottery Neolithic A period, the exploration of the Chalcolithic period in the Beersheba region, and the discoveries in the Judean Desert of the ʿEin-Gedi temple and Naḥal Mishmar treasure-cave, both revolutionary finds relating to the Chalcolithic period). The Bronze and Iron Ages were studied by Aharoni at Ramat Raḥel and Arad, by Amiran at Early Bronze Age Arad, by Moshe Dothan at Tel Mor and Ashdod, and by Benjamin Mazar at ʿEin-Gedi. Archaeologists interested in the Roman-Byzantine periods directed their efforts to excavating Nabatean and Byzantine cities in the Negev (Avdat, Mamshit [Mampsis], primarily by Avaham Negev), as well as Caesarea (Avi-Yonah and Negev), the synagogue at Hammath Tiberias (Dothan), the town and necropolis of Beth-Sheʿarim (Mazar and Avigad), the Roman theater at Beth-Shean, the Roman limes (Mordechai Gichon), and more.

The sole academic research and teaching institute at the time was the Department of Archaeology of the Hebrew University, later to become the Institute of Archaeology. In 1962, the newly founded Tel Aviv University established an

Institute of Archaeology and Ancient Near East Studies, headed first by Yeivin and subsequently by Aharoni, that soon became a viable center of research and teaching.

1967–1994. In the late 1960s, unprecedented economic opportunities and a new order of international cooperation made possible a flourishing of Israeli archaeological research, during which exploring Jerusalem became the major endeavor of Hebrew University archaeologists. Three main expeditions were conducted: south of the Temple Mount (Mazar, 1968–1978), the Jewish Quarter (Avigad, 1969–1983), and the City of David (Yigal Shiloh, 1978–1984). Additional archaeological projects in Jerusalem included the Valley of Hinnom (Gabriel Barkai); the Jaffa Gate area and the Mamilla area (Magen Broshi, Ronny Reich). The Damascus Gate area; the Third Wall; and the aqueducts. Also explored were the vast necropoli of both the First and Second Temple periods surrounding the city and its agricultural periphery, where numerous farmsteads and agricultural settlements belonging to various periods were studied, mostly in salvage excavations. This comprehensive undertaking in the archaeology of Jerusalem greatly expanded what is known of the city over millennia.

Excavations and surveys were conducted for all periods and subjects. In prehistory, excavations at Tell el-'Ubeidiya (Stekelis, Ofer Bar-Yosef, and others) revealed the earliest human culture in the ancient Near East. Various phases of the Stone Age were explored at such sites as Hayonim cave in the western Galilee, at Paleolithic sites in the Golan Heights, and at Neolithic sites in the Jordan Valley and in the Sinai Desert. Caves on the Carmel ridge that had been explored during the 1930s were reexcavated, utilizing more sophisticated methods (Kebara cave, el-Wad cave, and others). Prehistoric research in the Negev and Sinai deserts enabled the study of climatic changes and the history of indigenous Epipaleolithic and early Neolithic communities.

The field of biblical archaeology was enriched by wide-scale excavation projects and surveys that generated an ever-growing body of data and new interpretations. The major multistrata tells yielding important remains of the Bronze and Iron Ages, excavated by Israeli expeditions or by joint endeavors of Israeli and foreign archaeologists, are (from north to south): Dan (Avraham Biran), Hazor (Amnon Ben-Tor), Tel Hadar (Moshe Kochavi and Pirhiya Beck), Kabri (Aharon Kempinski and Hans G. Niemeyer); Akko (Dothan), Yoqne'am, Tel Qiri, and Tel Qashish (Ben-Tor), Jezreel (David Ussishkin and John Woodhead), Beth-Shean (Amihai Mazar), Tel Nami (Michal Artzy), Dor (Ephraim Stern), Tel Michal (Ze'ev Herzog and others), Tell Qasile (Amihai Mazar), Aphek (Kochavi and Beck), Jaffa (Jacob and Haya Kaplan), Tel Gerisa (Herzog and others), Shiloh (Israel Finkelstein), Beth-Shemesh (Shlomo Bunimovitz and Zvi Lederman), Tel Batash (Amihai Mazar and George L. Kelm), Tel Miqne/Ekron (Trude Dothan and Seymour Gitin), Lachish (Ussishkin), Tel Sera' and Tel Haror (Eliezer Oren), Deir el-Balaḥ (Trude Dothan), Tel Sheva (Aharoni), Tel 'Ira, (Itzhag Beit-Arieh and Biran), 'Aro'er (Biran), Tel Masos (Kempinski and Volkman Fritz), and Tel Malḥata (Kochavi, Beit-Arieh, and Bruce Cresson).

In addition, significant data have been collected from excavations at single-period sites, either salvage excavations or as part of regional or subject-oriented projects. Only a few can be mentioned here: the Chalcolithic sites in the Golan Heights (Epstein) and the megalithic monument of Rujm el-Hiri (Kochavi and Yonathan Mizrahi); the Early Bronze I villages at Yiftaḥel, Ḥorvat Ilin, and Palmaḥim (Eliot Braun) and Ḥartuv (Amihai Mazar and Pierre de Miroschedji); the Middle Bronze II Age sites in the vicinity of Jerusalem (Emmanuel Eisenberg, Gershon Edelstein); the Iron Age I sites on Mt. Ebal (Adam Zertal), at 'Izbet Ṣarṭah (Kochavi and Finkelstein), and at Giloh (Amihai Mazar); the exceptional Iron Age II site of Kuntillet 'Ajrud with its Hebrew inscriptions (Zeev Meshel), the Iron Age II sites along the shores of the Dead Sea (Pessah Bar-Adon), the Iron Age II citadels at Qadesh-Barnea (Rudolph Cohen) and Ḥorvat 'Uza (Beit-Arieh and Cresson), the Edomite temple at Ḥorvat Qitmit (Beit-Arieh) and the Negev highland sites (Cohen). This vast activity was supplemented by a multitude of salvage excavations at cemeteries and small sites carried out by archaeologists from the Israel Antiquities Authority.

Survey work also reached sites located throughout the country. The emergency survey conducted, in 1968 in Judah, Samaria, and the Golan Heights underscored the potential of this methodology. Subsequently, younger scholars, of the "third generation" of Israeli archaeologists (Yehudah Dagan, Finkelstein, Zvi Gal, Mordechai Heimann, Avi Ofer, Zertal), extensively surveyed geographic regions, employing modern methods to analyze their data. These regional studies opened new vistas in terms of the patterns and processes of settlement in various periods, enabling demographic studies and illuminating such central historical issues as the Israelite settlement of the hill country.

Numerous Hellenistic, Roman, Byzantine, Early Islamic, and medieval sites were explored during this period. Currently, the largest archaeological enterprise in Israel is the excavations at Beth-Shean, where Yoram Tsafrir, Gideon Foerster, Gabi Mazor and Rachel Bar Nathan have exposed the entire civic center of the Roman and Byzantine city. Large-scale research at Caesarea, both on land and underwater, has uncovered the harbor built by King Herod and large parts of the surrounding city (Avner Raban, Joseph Patrich, Josef Porath, and Ehud Netzer in collaboration with American scholars); at Sepphoris, American and Israeli expeditions have revealed a well-planned city with a plethora of ornate mosaic floors in elaborate dwellings (Eric Meyers, James Strange, Netzer, Zeev Weiss); in the Golan Heights

synagogues have been explored (Dan Urman and Zvi Uri Ma'oz), the Jewish town at Gamla that fell to the Romans in 67 CE has been excavated (Shmaryahu Gutman), the Roman city of Banias has been partially excavated (Maoz, Vassilios Tzaferis); at Shechem, Yitzhak Magen excavated the public buildings of Roman Neapolis, while on Mt. Gerizim, he uncovered the enclosure of the Samaritan temple and parts of the Hellenistic Samaritan city; at Jericho and Herodium, Netzer uncovered elaborately constructed Hasmonean and Herodian palaces; at Mareshah and Beth-Guvrin (Eleutheroplis) Amos Kloner revealed complex underground installations and cisterns, Hellenistic dwellings, and a Roman amphitheater; and work continues in the cities of the Negev (Mareshah, Avdat, Ḥalusah, Reḥovot, Shivtah and Nessana). In general, the forts, roads, and aqueducts of all these periods have been investigated, and numerous Byzantine churches, as well as Jewish and Samaritan synagogues, have been excavated throughout the country. This list is partial and by necessity omits the hundreds of salvage excavations and small-scale projects carried out at agricultural farmsteads and installations and in small villages. Desert and underwater archaeologies have defined themselves as distinct disciplines in the course of archaeological activity in Israel. This vast activity has turned Israel into one of the most intensively explored countries in the world.

Institutions. At the time of writing, five universities in Israel have institutes or departments of archaeology for teaching and research. Each has it own organization, approach, and emphasis, yet together they create the academic framework for archaeological exploration in the country. In 1989, the governmental Department of Antiquities, a relatively small division in the Ministry of Education, was transformed into the independent Israel Antiquities Authority (IAA). Headed by Amir Drori (from 1989), the IAA's budget supports an enlarged support network of inspectors, salvage excavation teams, archaeological surveys, conservation and preservation teams for sites and objects, and research and publication systems. Today, the IAA's more than two hundred archaeologists and hundreds of other workers make it an effective government agency. [*See* Israel Antiquities Authority.]

Other archaeological activity is carried out by museums (the Israel Museum and local museums), which sponsor archaeological exhibits and research. The Israel Exploration Society, directed since its inception by Joseph Aviram, is a voluntary body that aids in arranging and financing archaeological research, publishes it, and disseminates it by organizing local and international congresses. The Archaeological Council of Israel, which is elected according to the Antiquities Law of Israel by the Minister of Education is another voluntary public body. The council and its committees advise the director of the IAA on matters of archaeological policy.

Methodology. Archaeological research in Israel emerged from European pedagogic traditions and the fieldwork carried out in the Near East in the 1930s. In the universities, archaeology is taught in the framework of the faculty of humanities, and is closely allied to the fields of history, Bible, ancient Near East studies, classics, and art history. Field-excavation methods are rooted in the sweeping architectural approach of traditional Near Eastern archaeology, in which large architectural complexes are exposed and their stratigraphy is analyzed on the basis of the relationship between building remains and floor levels. The British method of analyzing debris layers in vertical sections developed by Mortimer Wheeler and Kathleen M. Kenyon has guided most Israeli excavators since the early 1960s, although the method was applied as a supplement to refine the architectural approach. [*See the biographies of Wheeler and Kenyon.*] The synthesis between these two approaches has characterized many excavations in Israel in the last decades.

Israeli archaeology has concentrated largely on fieldwork, its interpretation, and publication, complemented by the comparative study of classes of finds. The theoretical aspects of archaeological research never played an important role in local research (except in the field of prehistory) until recently. Israeli archaeologists were, for the most part, detached from the anthropological and social-studies approach that figured in the interpretation of data in western Europe and the United States. Today, new paths for research are being explored in the theoretical realm by some younger scholars who emphasize reconstructing ancient social structures and take an environmental approach to archaeological studies. Subjects such as nomadism and sedentarization, family structure, family and tribal structures, processes of urbanism and rural settlement distributions are being examined, settlement distribution and demography are studied alongside the more traditional emphasis on comparative architecture and art, glyptics, iconography, paleography, numismatics, and the interraction between finds and ancient texts. These subjects have transformed the discipline's scope to one that is panoramic in its research possibilities.

Another important development is the concentration by certain research centers in special subjects. Thus, Haifa University developed its Center for Maritime Studies and underwater archaeology, while Ben Gurion University is a center for desertic studies in the arid zones of the Negev and Sinai.

Publications. Archaeological subjects are published in both Hebrew and English in Israel. The Israel Exploration Society publishes the periodicals *Qadmoniot* (in Hebrew), *Eretz Israel* (in Hebrew with a section in European languages), and the *Israel Exploration Journal* (primarily in English), as well as final excavation reports and occasional collections of essays, congress volumes, and monographs (again, primarily in English). The Israel Antiquities Au-

thority publishes the periodicals *ʿAtiqot* and *Excavations and Surveys in Israel* (the English translation of *Hadashot Arkheologiot,* which includes short reports on all fieldwork carried in Israel). The Institute of Archaeology of the Hebrew University publishes the series *Qedem* (monographs and final reports), and the Institute of Archaeology of Tel Aviv University publishes the periodical *Tel Aviv,* as well as occasional monographs and final reports. Museum publications contribute to this list, as do the papers and books published outside Israel.

Impact on Society. The breadth and intensity of archaeological activity in Israel has kept the public's attention, in particular when it is engaged at sites and in subjects central to Jewish history, such as Jerusalem, Masada, Qumran and the Dead Sea Scrolls, Gamla, and ancient synagogues. Archaeological sites are well preserved, with upkeep the responsibility generally of the National Parks Authority and the IAA, and attract both local and foreign tourists. Archaeological museums exist in almost every city, providing educational activities for schoolchildren and adults. Archaeology is even taught in some Israeli high schools. The eminent role archaeology plays in Israeli society means that the issues that concern the discipline—limiting the antiquities trade, the difficulties created by rapid development and construction in those parts of the country in which there are antiquities, illicit digs, and the frequent demand by Orthodox Jews that ancient tombs and burials not be excavated, a conflict of interest that has often led to ideological clashes—also arouse the public debate. By meeting challenge and controversy, Israeli archaeology has matured and greatly extended the scope of its activities. It is today a rich and varied field of research that is also an integral component of modern life in Israel.

[*See also* Nationalism and Archaeology; Tourism and Archaeology. *In addition, most of the sites mentioned are the subject of independent entries.*]

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AMIHAI MAZAR

Archaeology in Jordan

The archaeological exploration of Jordan (Transjordan) is closely connected historically and physically with that of Cisjordan (western Palestine). Jerusalem, being the focal point of Judaism as well as one for Christianity and Islam, is surrounded by concentric circles of historical and religious interest that involve the entire region. Archaeological investigation of the land east of the Jordan River and of its past has emerged slowly but is revealing its distinct identity.

Only a few of the many pilgrims who visited the region in antiquity (e.g., the Bordeaux pilgrim in 333, and the monk Bernard in the late ninth century) extended their journeys beyond the Jordan. Usually, they were content to contemplate the holy sites of Jerusalem, Bethlehem, and Nazareth. Two exceptions from this early period were Paula of Rome (382 CE) and Silvia of Aquitaine (379–388 CE). Between the ninth and the fifteenth centuries, Arab and Persian geographers (e.g., Muqaddasi in 985, Yaqut in 1225, and Nasir-i-Khusrau in 1047) traveled widely in the region, making careful observations. Unfortunately, like the early pilgrims, they were not especially concerned with archaeological ruins.

When the Crusaders gained control of Jerusalem (1099–1187) and portions of Transjordan, it acted as a new impetus for Western travelers to explore the land—a trend that continued even after the Crusaders were routed. In the period after the Crusades, travelers to the Holy Land included Magister Thietmar (1217), who visited Petra without recognizing it as such; Burchard of Mt. Zion (1283), who thought that the site of Kerak (mod. Al Karak) was also the site of Petra and Montreal; and Rabbi Esthori Ben Mose Ha-Parchi, who spent seven years exploring eastern and western Palestine. There are many others, from the methodical Felix Fabri (1480–1483) to the more archaeologically motivated Cotovicus (Kootwyk, 1598–1599), De la Rocque (1688), and Richard Pococke (1738). Even in the reports of these scholars Transjordan was still of only minor interest.

Jordan Rediscovered: 1805–1918. During the period from 1805 to 1918, more and more Westerners traveled through Transjordan, recording relics and turning increasingly to intensive exploration and mapping. Among the most adventurous were the German explorer Ulrich Jasper Seetzen, who visited between 1805 and 1807, and the Swiss explorer Johann Ludwig Burckhardt, who visited between 1810 and 1812. During his extensive travels, Seetzen discovered Jerash/Gerasa and Amman/Philadelphia, while Burckhardt rediscovered Petra, whose location had been forgotten for six centuries (Seetzen had been there but could not identify the site.) [*See* Jerash; Amman; Petra.]

What was known of Transjordan was increased by the recorded observations of the British traveler James Silk Buckingham (in 1816, 1821) and navy officers Charles Leonard Irby and James Mangles (in 1817–1818). Irby and Mangles traveled with explorers William John Bankes and Thomas Legh from south of the Dead Sea to northern Transjordan, eventually discovering the temple and other ruins at ʿIraq el-Amir. [*See* ʿIraq el-Amir.] The travels of Léon de Laborde and Linant (in 1828) included Petra, where they made excellent drawings.

The emphasis on identifying place names and on mapping increased in the mid- and late nineteenth century. An especially extensive survey, with attempts to identify biblical sites from their modern Arabic names, was made by the Americans Edward Robinson and Eli Smith (1838, 1852). Their travels east of the Jordan included brief visits to Petra and Pella. [*See* Pella.]

Holy Land (historical) geography, which is intimately connected to archaeological research, progressed from the broad principles laid down by Robinson to their precise application by the German Titus Tobler, who visited the Holy Land in 1845–1846, 1857, and 1865, and the Frenchman Victor Honoré Guérin, who visited five times between 1852 and 1875. [*See* Historical Geography.] However, it was the Englishmen Claude Regnier Conder and Horatio Herbert Kitchener who carried out a detailed survey of western Palestine (1871–1878) for the PEF to produce maps using a scale of one inch to one mile. Conder attempted the same for eastern Palestine in 1881, but difficulties interposed and the work was left to be completed by Gottlieb Schumacher (see below) during the next twenty years. Work in the northern regions was supplemented by the American Archaeological Expedition to Syria led by Howard Crosby Butler (1899–1900). In 1904 Butler returned, leading a Princeton University team that made detailed observations at the sites of ʿIraq el-Amir and Rabbath-Ammon/Ammon.

Special interest in the Dead Sea area had already been awakened in 1848 by William F. Lynch, whose U.S. expedition traveled from the Sea of Galilee to the Dead Sea by means of two metal boats (Bliss, 1906). He spent three weeks in the Dead Sea region, including a side trip to Kerak. [*See* Kerak.] In 1863 and 1864, Henry Baker Tristram led a British expedition that investigated the regions of the Dead Sea and the Sea of Galilee. Duc de Luynes investigated the Dead Sea in 1864, along with Ammon, Moab, and the ʿArabah, down to the Gulf of ʿAqaba; and geologist Edward Hull, in 1883–1884, further explored the Dead Sea region and the ʿArabah for the PEF. [*See* Ammon; Moab; ʿAqaba.] The discovery of the Moabite stone (Mesha stela) by Anglican minister F. A. Klein in 1868 and the world's focus on the attempts to recover it, led to expectations of more rich discoveries there. [*See* Moabite Stone.] This victory monument was made by Mesha, a ninth-century BCE Moabite king. The stela was broken up by local bedouin who were confused and suspicious over Franco-German rivalry to obtain it, and in fear of intervention by the hated Turkish governor (see Horn, 1986). About two-thirds of the fragments were recovered by French diplomat and amateur archaeologist Charles S. Clermont-Ganneau and Charles Warren of the PEF and these were taken to the Louvre in Paris. There a reconstruction was made with the assistance of a rough paper squeeze. This discovery remains the longest (34 lines) ancient monumental inscription found anywhere in Palestine.

The American Selah Merrill collected considerable data on his expeditions to Jordan from 1870 to 1877, building a notable collection of Palestinian pottery. George L. Robinson (representing McCormack Theological Seminary and the American Schools of Oriental Research) spent considerable time investigating Petra between 1900 and 1928, having rediscovered the Great High Place in 1900 and realized its function. (The first to have recognized the site was an American editor, Edward L. Wilson, in 1882.) Several European scholars explored the Petra tombs and other structures, including Rudolf-Ernst Brünnow and Alfred von Domaszewski, between 1897 and 1898, and Gustaf Dalman several years later. Cooperation from the Turkish governor of Kerak made it possible for Frederick Jones Bliss in 1895 and Domaszewski in 1895, 1897, and 1898 to clarify many details of the Moab plateau, its ancient roads, and its fortifications.

A number of organizations were involved as sponsor or director of programs involving many of the foregoing contributions. Most had their headquarters in Jerusalem and worked primarily in western Palestine: the American Oriental Society, the forerunner of the American Schools of Oriental Research (ASOR); the British Palestine Exploration Fund (PEF), which supported the surveys of Conder and Kitchener (see above); the American Palestine Exploration Society (APES), an even more direct forerunner of ASOR; the Deutscher Palästina-Verein, which sponsored, with the PEF, Schumacher's mapping work; and the École Biblique et Archéologique Française, which sponsored the work of Brünnow and Domaszewski at Petra, in cooperation with Dalman of the Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes.

Excavations: 1918–1948. Political changes in the region at the close of World War I included the establishment of a British Mandate in Palestine. A Department of Antiquities was formed in 1920 under the leadership of John Garstang that made unauthorized digging illegal and adopted a liberal antiquities ordinance that remains in place today in Jordan with only some modifications. The special needs of the Transjordan region were soon recognized, and a Department of Antiquities was opened in Amman in 1923. At the same time, travel to and work at isolated sites became safer as a result of the establishment of the Arab Legion.

Perhaps of greatest significance for this period was the scientific use made of regional surveys alongside ceramic and other indicators of habitational patterns. The first expedition to use surface sherding was led by William Foxwell Albright in 1924 under the auspices of ASOR and Xenia Theological Seminary. His associates were Melvin Grove Kyle of Xenia, Alexis Mallon of the Pontifical Biblical Institute (PBI) in Jerusalem, and Eliezer Sukenik from ASOR in Jerusalem (King, 1983). The survey involved essentially the southern Ghor (Jordan Rift Valley), Kerak, and a portion of the plateau north of Kerak; it was also the first to discover the Early Bronze Age site of Bab edh-Dhra' (Mallon actually made the discovery). [*See* Bab edh-Dhra'.] Between 1932 and 1934, German Fritz Frank from Jerusalem surveyed areas south of the Dead Sea.

The most important and influential survey of this period was that by Nelson Glueck (1940, 1946). Between 1933 and 1947, he attempted to survey all of Jordan, with an emphasis on Ammon, Moab, and Edom. [*See* Edom.] This involved mapping, photographing, surveying (with sherding), and some aerial reconnaissance. The scope of this project was so vast that it is today thought to have been superficial in some areas. One of Glueck's conclusions was that the region from the modern capital of Amman to the Gulf of 'Aqaba had essentially been devoid of sedentary habitation during the Middle and Late Bronze Ages. This conclusion has required considerable correction and qualification as a result of subsequent surveys and excavations.

Some of the most important excavations carried out from 1918 to 1948 follow:

Amman. Initial excavations were commenced in 1927 in Amman/Philadelphia by an Italian Archaeological Mission team led by Giacomo Guidi and concluded in the 1930s by Renato Bartoccini. Their discoveries included several tombs and structures on top of the acropolis. Gerald Lankester Harding, director of the Department of Antiquities of Jordan from 1936 to 1956, was responsible for salvage operations in Amman at a time when rapid expansion of the city was leading to many accidental discoveries. In 1944, Harding cleared seven Iron Age tombs that yielded a wide range of pottery vessels and an inscribed ivory seal. [*See* Tombs; Seals.]

Gerasa/Jerash. Between 1925 and 1940 there were almost continuous projects underway to excavate and restore the ruins at Gerasa. Directors included George Horsfield, P. A. Ritchie, and A. G. Buchanan for the Transjordan Department of Antiquities (TDA); John W. Crowfoot for the British School of Archaeology and Yale University; Clarence S. Fisher and Glueck for ASOR; and Harding (TDA). The dramatic nature of the site's Roman and Byzantine structures as they emerged and were progressively reconstructed has made this one of the most impressive archaeological sites in the Near East. [*See* Restoration and Conservation.]

Petra. Some general excavations at Petra were begun by Agnes Conway and George Horsfield in 1929. They uncovered mainly Nabatean artifacts in some tombs and rubbish dumps. [*See* Nabateans.] Albright followed by clearing the Conway high place (an installation with a large sacred rock and surrounding processionway named after its discoverer Agnes Conway) in 1934; he was followed by Margaret Murray, who excavated two tombs in the central valley in 1937 under the auspices of the British School of Archaeology in Egypt. These various discoveries indicated habitation in the valley between about the fourth century BCE and the fourth century CE.

Teleilat el-Ghassul. Alexis Mallon and Robert Koeppel of the PBI in Jerusalem directed excavations at Teleilat el-Ghassul, a distinctive Chalcolithic site north of the Dead Sea, between 1929 and 1938. [*See* Teleilat el-Ghassul.] Following the discovery of the Balu' stela by R. G. Head (of the TDA) in 1930, Crowfoot (TDA and PEF) dug briefly at Balu' in 1932. [*See* Balu'.]

Ader. Albright and Head made exploratory excavations at the site of an ancient temple at Ader in 1933. Habitational clues indicated rather consistent use of the site from the Early Bronze to the Byzantine period.

Mt. Nebo/Khirbet el-Mukhayyat. The dual site of Mt. Nebo and nearby Khirbet el-Mukhayyat were dug by Sylvester J. Saller and Bellarmino Bagatti (for the Studium Biblicum Franciscanum) in an on-going program between 1933 and 1937, with the latter site extended to 1939 and 1948. Among the discoveries were Early Christian churches and a monastery/church complex. [*See* Nebo, Mount; Churches; Monasteries.]

Khirbet et-Tannur/Tell el-Kheleifeh. Glueck excavated two sites in quick succession: a Nabatean temple at Khirbet et-Tannur (1937–1938) and the fortified port/industrial site of Tell el-Kheleifeh (Ezion-Geber?) at the head of the Gulf of 'Aqaba (1938–1940). [*See* Kheleifeh, Tell el-, Tannur, Khirbet et-.]

Stratigraphic Excavations: 1948–1967. Jordan gained its national independence in 1946. Harding remained director of the Department of Antiquities until 1956, when he was succeeded by a series of Jordanian directors, including Awni Dajani, Yacub Quweis, Adnan Hadidi, Ghazi Bisheh, and Safwan Tell.

During this period the Jordanian Department of Antiq-

uities (JDA) was involved in excavations at Qumran, together with the Palestine Archaeological Museum (now the Rockefeller Museum) and the French École Biblique (École Biblique et Archéologique Française). Continuing excavations in the vicinity of Qumran (and with the additional support of ASOR) led to further Dead Sea Scroll discoveries during the 1950s. [*See* Dead Sea Scrolls; Qumran; Copper Scroll.]

A mosaic map of the Holy Land had been discovered on the floor of a sixth century church in Madaba in 1884 and publicized in 1897 by Deacon Cleopas Kikilidis (Koikylides). This map was restored by a German Mission in 1965 under the direction of H. Donner. In 1966 and 1967 Ute Lux of the German Evangelical Institute excavated two additional churches in Madaba. [*See* Madaba.]

A regional survey conducted for the Department of Antiquities from 1952 to 1953 investigated the Jordan Valley and included minor excavations. [*See* Jordan Valley.] The survey was led by James Mellaart and Henri de Contenson. Kathleen Kenyon excavated at Jericho from 1952 to 1958, using stratigraphic techniques that would influence future field methodology on both banks of the Jordan. The following sampling of the excavations conducted on the east bank between 1948 and 1967 illustrates the progress of the discipline in the field.

Dhiban/Dibon. Fred V. Winnett, William L. Reed, A. Douglas Tushingham, and William M. Morton (under ASOR auscpices) uncovered mainly Moabite and Nabatean structures at Dhiban from 1950 to 1956. [*See* Dibon.]

Jordan Valley. In 1953 Henri de Contenson and James Mellaart surveyed various sites in the Jordan Valley for the Department of Antiquities, and made some soundings at places like Tell es-Sa'idiyeh, which James B. Pritchard excavated from 1964 to 1967 for the University of Pennsylvania. [*See* Sa'idiyeh, Tell es-.]

Ghrubba/Gharuba. In 1953 James Mellaart surveyed and did some limited digging at Ghrubba. The site included an ash pit measuring 150 × 5 × 3 m that was thought to have been rapidly filled by successive occupation during a Pottery Neolithic period. It is considered to be one of the earliest indicators of a substantial population in Jordan for this period (see Geraty and Willis, 1986).

Pella. Robert W. Funk and H. Neil Richardson dug two exploratory trenches at Pella in 1958, finding evidence of considerable Iron Age use (in addition to other periods). In 1964 Sami Rashid of the Department of Antiquities cleared eleven tombs there.

Irbid. At Irbid/Arbela, Rafik W. Dajani excavated four LB–Iron Age tombs in 1958–1959. Most of the remains of Arbela lie beneath the modern city of Irbid. [*See* Irbid.]

Deir 'Alla. H. J. Franken led a Dutch expedition from the University of Leiden to Tell Deir 'Alla (1960–1964, 1967), where an Aramaic inscription on the plaster walls of a temple gave details of the biblical prophet Balaam (*Nm.* 22–24). [*See* Deir 'Alla, Tell; Deir 'Alla Inscriptions.]

Umm Qeis/Gadara. In 1966, Ute Lux (German Evangelical Institute) excavated in the Greco-Roman city of Umm Qeis/Gadara, uncovering a late classical bath with an intricate mosaic floor design. [*See* Umm Qeis; Baths; Mosaics.]

Khirbet Iskander. Peter J. Parr carried out some initial excavations (British School and Ashmolean Museum) at Khirbet Iskander, a Late Chalcolithic–Middle Bronze Age site, in 1955.

Petra. Between 1954 and 1968 teams led by Philip Hammond and Peter J. Parr and G. R. H. Wright worked on many of the main buildings and sites at Petra. This program was carried out by the British School with the Jordanian Department of Antiquities.

Teleilat el-Ghassul. Robert North (Pontifical Biblical Institute) in 1960 and J. Basil Hennessy (British School in Jerusalem) in 1967 continued the excavation work at Teleilat el-Ghassul. The latter attempted to establish a sequence of habitational levels.

'Iraq el-Amir. In 1961–1962 Paul W. Lapp (ASOR) excavated various features at 'Iraq el-Amir, including the *qaṣr* ("temple"). The impressive ruins and cliff-face caves—the latter with the name *Tobiah* carved in two places—appear to be the family heritage of the successors of "Tobiah the Ammonite" mentioned as an enemy in *Nehemiah* 2:10, 19, and elsewhere.

'Aro'er. From 1964 to 1966, Emilio Olávarri (for the Spanish Center in Jerusalem) excavated the fortress site of 'Aro'er on the north bank of Wadi Mujib (Arnon River). This strategic building guarded the King's Highway from the north bank of Wadi Mujib. It is mentioned eight times in the Hebrew scriptures (e.g., *Jos.* 12:2; *2 Kgs.* 10:33).

Bab edh-Dhra'. One of the most dramatic sites excavated was Bab edh-Dhra', by Lapp (1965–1967). He worked for two seasons in the huge cemetery and one in the town itself.

Interdisciplinary Excavations: 1967–1996. After the Six-Day War in 1967, the eastern sector of Jerusalem was no longer a part of Jordan; as a result, new research institutions were established in Amman. This benefited Jordan, which earlier had been only a part of a broader research context headquartered in Jerusalem. In addition to the Department of Antiquities of Jordan and the Department of Archaeology at the University of Jordan, the American Center of Oriental Research in Amman (ACOR) was founded in 1968. The British Institute in Amman soon followed, and, together, these institutions undertook surveys and excavations in various parts of the country, along with the Department of Antiquities, whose directors encouraged and cooperated with international projects. The archaeology of Jordan is seen today as a unique continuum running from prehistoric to modern times. Projects tend to be interdisciplinary in character, often with large teams and broad goals.

"Interdisciplinary" in this context means that a team does not consist only of archaeologists, and is not simply interested in reconstructing buildings or collecting artifacts. The entire team works toward reconstruction of the ancient human environment, life style, and food systems. Such an approach calls for a variety of support teams of specialists. These may include experts in geology who study the site, but who also determine which stone artifacts have been made from imported material. It may include specialists in ecology, botany, and zoology, who gather bones, seeds, and carbon specimens, but are also equipped to collect and examine microscopic paleobotany samples (ancient pollen grains, etc.). Since about 1967 there has been much more awareness of the need for this broader approach to archaeology and most excavations in Jordan have been involved, though in varying degrees.

The Madaba Plains Project. An example of interdisciplinary archaeology, the Madaba Plains Project grew out of the excavations at Tell Ḥesban/Heshbon, which began in 1968. [*See* Madaba; Ḥesban.] The expansion included surveys of the Madaba plain. Leadership passed from Siegfried Horn to Lawrence Thomas Geraty, and by the 1990s, the project incorporated three teams excavating and surveying simultaneously at Tell el-ʿUmeiri (Larry G. Herr), Tell Jalul (Randall Younker), and Tell Jawa (Michele Daviau). [*See* ʿUmeiri, Tell el-.]

Khirbet Iskander. Since 1981, a series of excavations has been sponsored by ASOR, with affiliates Drew University, Upsala College, and Seton Hall University. Directed by Suzanne Richard and Roger Boraas, work focused on clarifying the end of the Early Bronze period at Khirbet Iskander. Excavations have supported the view that agrarian settlement was an alternative to subsistence pastoralism in the closing phase of the Early Bronze age (c. 2350–2000 BCE) in this region.

ʿIraq el-Amir. At ʿIraq el-Amir, the French Institute of Archaeology in the Near East has been working on the reconstruction of the Hellenistic temple in collaboration with JDA. Work commenced in 1976 under the direction of Ernest Will.

Gadara. Work at Umm Qeis/Gadara was continued by Ute Lux directing an Amman branch of the German Evangelical Institute in Jerusalem. The emerging ruins of churches, theater, and city on this spur overlooking the Jordan and Yarmuk valleys and the Sea of Galiliee may eventually be as impressive as any of the other ancient sites in Jordan.

Deir ʿAlla. Franken (1976–1978) and Gerit van der Kooij (since 1979) continued work at Tell Deir ʿAlla, with Moawiyah M. Ibrahim as codirector, representing Yarmouk University and the Department of Antiquities.

Pella. Impressive work has been done at Pella, especially by Hennessey and Anthony Walter McNicholl (Univerity of Sydney, 1979–1991) and Robert Houston Smith (College of Wooster, 1967, 1979–1985) in uncovering churches, a cemetery, and a civic complex.

Edom. Crystal-M. Bennett of the British School of Archaeology in Jerusalem excavated at Tawilan (1968–1970) and at Iron Age II Buṣeirah (1971–1974). In 1979 the British Institute at Amman for Archaeology and History was founded, with Bennett as its first director. As a result, in 1980 another season was carried out at Buṣeirah and in 1982 another at Tawilan. [*See* Tawilan; Buṣeirah.]

Petra. Ongoing excavations at Petra throughout this period included Hammond's excavation of the Temple of the Winged Lions, which he discovered in 1974, and a marble-workers' establishment found in 1981; and Fawzi Zayadine's excavation of a potters' establishment there in 1982. Manfred Lindner of the Nuremberg Prehistoric Society also worked on various projects beginning in 1973. In the 1990s considerable activity and excitement surrounded work on the Winged Lion Temple (Phillip Hammond) and the Southern Temple (Martha Joukowsky of Brown University working with ACOR). A Byzantine church discovered by Kenneth Russell in 1990 has been excavated by Pierre Bikai of ACOR, with funding from USAID and support from JDA and the Ministry of Tourism. A quantity of burnt papyri found within the church needed special treatment to enable preservation and copying. Our knowledge of Petra in the Byzantine period has been considerably enhanced by these latter discoveries.

Bab edh-Dhraʿ, Numeira. Walter Rast and Thomas Schaub (ASOR), who had worked with Lapp at Bab edh-Dhraʿ, continued work at Bab edh-Dhraʿ and commenced work at Numeira, excavating there through the 1970s and 1980s.

Umm el-Jimal. Out on the desert fringe of Jordan, Bert De Vries (of Calvin College under ASOR auspices) surveyed and then excavated at Umm el-Jimal, beginning in 1973, in an ongoing project among the site's basalt ruins. [*See* Umm el-Jimal.]

International Outreach and Publications. As a result of the direct interest of Crown Prince Hassan, Jordan organized a series of international archaeological conferences, the first of which was held in Oxford, England, in 1980. Subsequent conferences were held in Amman, Jordan (1983); Tübingen, Germany (1986); Lyons, France (1989); Irbid, Jordan (1992); and Turin, Italy (1995). The results of the conferences have been published by volume in the series *Studies in the History and Archaeology of Jordan.* An organization known as the Friends of Archaeology sponsors lectures and trips to sites in Jordan and publishes a newsletter, now called *Ancient Jordan.*

In addition to ACOR, which is probably the largest archaeological entity in Jordan, the following international archaeological centers are now located in Jordan: the British Institute at Amman for Archaeology and History (BIAAH);

the Deutsches Evanglisches Institut für Altertumswissenschaft des Heiligen Landes; the Institut Français d'Archéologie du Proche-Orient (IFAPO); the Franciscan Institute on Mount Nebo; and the Italian-Jordanian Institute of Archaeological Sciences.

By 1986, Yarmuk University in Irbid had established an Institute of Archaeology and Anthropology. The institute has sponsored many projects, trained a good number of promising archaeological students, and published a newsletter. Mutah University near Kerak also has established an archaeology program. Notable archaeological museums have been established in Jordan that are constantly being expanded. The largest is on the citadel in Amman, adjacent to the reconstructions being pursued in the Roman temple; the others are at the University of Jordan in Amman, at Yarmouk University in Irbid, and in Madaba.

Future Programs. The number of archaeological projects in Jordan expanded in the 1990s, and the peace and normalized relations between Israel and Jordan promise an increase in substantial international research. At the same time, concerns created by utilization from increased tourism at archaeological sites are being balanced with restoration and conservation. [*See* Tourism and Archaeology.] Excavation and restoration programs are likely to continue into the twenty-first century at the country's three most dramatic sites—Amman, Petra, and Jerash—while other sites are being further developed. The potential number of sites for excavation continues to rise: the Jordanian Antiquities Database and Information System (JADIS), a computerized list of archaeological sites in Jordan, lists 8,680 sites (it is available in book form from the Department of Antiquities and ACOR). In addition, an ongoing project sponsored by the University of Western Australia has begun utilizing aerial photographs taken in 1953 with ground-verification fieldwork to build a more comprehensive list of Jordan's archaeological sites.

[*See also* American Center of Oriental Research; American Palestine Exploration Society; American Schools of Oriental Research; British Institute at Amman for Archaeology and History; British School of Archaeology in Jerusalem; Deutscher Palästina-Verein; Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes; École Biblique et Archéologique Française; Palestine Exploration Fund; *and the biographies of Albright, Bagatti, Bennett; Bliss, Clermont-Ganneau, Conder, Crowfoot, Dalman, Fisher, Garstang, Glueck, Guérin, Harding, Horsfield, Kenyon, Kitchener, Lapp, Mallon, Robinson, and Saller.*]

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JAMES A. SAUER and LLOYD A. WILLIS

Archaeology in Mesopotamia

The archaeology of Mesopotamia has followed an eventful path since its origins in the early nineteenth century CE. From an amateur pursuit, enjoyed by adventurers and intellectuals of the age, the study of ancient Mesopotamia has evolved over the decades into a rigorous scientific discipline employing a full range of modern analytical techniques. While these developments have led to a remarkable understanding of many aspects of ancient communities in Mesopotamia, there is still a great deal to learn, and future tech-

nical and analytical advances are likely substantially to expand the state of that knowledge.

The birth of Mesopotamian archaeology can be ascribed to the year 1807, when the young Claudius Rich arrived in Baghdad to assume the post of resident of the East India Company. During his nine years in Iraq, at that time the Ottoman Pashalik of Baghdad, Rich carried out a study of the ruins of Babylon, which he described in some detail, and produced accurate accounts of the ruins of Nineveh and Nimrud in northern Mesopotamia. After Rich's death in 1821, his collection of Mesopotamian artifacts was purchased by the British Museum. [*See* Babylon; Nineveh; Nimrud.] These objects, including many clay tablets in cuneiform script and inscribed bricks, formed the first substantial group of ancient Mesopotamian artifacts to arrive in Europe and aroused considerable interest. At about the same time, the first steps in deciphering some elements of the distinctive cuneiform script were being made by European scholars, particularly Georg Grotefend and Henry Creswicke Rawlinson, through their studies of the trilingual Bisitun inscription in Iran. [*See* Cuneiform; Bisitun; *and the biography of Rawlinson.*]

After Rich's death, more than twenty years passed before the first archaeological excavations were begun in Mesopotamia. It was a Frenchman, Paul-Émile Botta, who sank the first trenches into the mound of Kuyunjik, part of ancient Nineveh, in December 1842. Botta's appointment as French consul in Mosul, the modern town adjacent to Nineveh, had been stimulated by the publication of Rich's accounts of Babylon and Nineveh. Not enjoying great success at Kuyunjik, Botta transferred his operations in March 1843 to the site of Khorsabad, 23 km (14 mi.) to the northeast. There Botta immediately made the spectacular discovery of stone sculptures in bas-relief and monolithic human-headed winged bulls and lions belonging to the palace of the Assyrian king Sargon II of the late eighth century BCE. The stones of Assyria had begun to speak for the first time in more than twenty-five hundred years. [*See* Khorsabad; *and the biography of Botta.*]

Botta's discoveries at Khorsabad aroused the interest of an Englishman employed at the British Embassy in Constantinople, Austen Henry Layard. Layard was encouraged by the British ambassador, Stratford Canning, to open excavations on the mound of Nimrud, southeast of Nineveh, in late 1845. Within a short time, Layard had uncovered large stone slabs with cuneiform inscriptions and scenes in bas-relief from two Assyrian palaces of kings resident at Nimrud, ancient Kalḫu. Kalḫu had been the second great Assyrian capital after Aššur, but prior to Nineveh and Khorsabad. [*See* Aššur.] Layard continued work at Nimrud until 1847, during which time he excavated remains of several Assyrian palaces. Large quantities of sculptures and uniquely important artifacts, such as the Black Obelisk of Shalmaneser III, were transported to the British Museum, creating considerable public interest. Following the publication in 1849 of Layard's immensely popular book *Nineveh and Its Remains,* funds were provided for him to return to Mesopotamia for further excavation. While working at Nimrud, Layard conducted excavations at Nineveh, exposing the tremendous stone relief sculptures of the palace of Sennacherib, including scenes showing the siege of Lachish. The site's substantial depths of overlying deposits meant that Layard excavated by the dangerous method of tunneling along buried wall faces. By this means he uncovered a total of almost 3 km (2 mi.) of wall faces with sculpted reliefs.

Apart from the sculptures, another major class of finds was cuneiform texts. In Sennacherib's palace at Nineveh, Layard found a massive collection of inscribed tablets (some twenty-four thousand), belonging to the royal library of Ashurbanipal. Decipherment of these documents was to bring a rich reward to historians of ancient Assyria. At the time, major developments, principally by the English scholars Henry Creswicke Rawlinson and Edward Hincks, were being made in the decipherment of cuneiform script. In 1857 four scholars—Rawlinson, Hincks, William Henry Fox Talbot, and Jules Oppert—independently produced translations of a cuneiform document found at Aššur, thus convincing sceptics of their new-found understanding of the Assyrian script and language.

After Layard's departure from Mesopotamia in 1851, there was an increase in the pace and intensity of excavation throughout Mesopotamia. Standards, however, were low, and fieldwork took the form of small soundings at a large number of sites in the hope of recovering important artifacts to adorn museum collections with a minimum investment of money and labor. In particular, lack of familiarity with the excavation of mud-brick architecture meant that whole buildings were removed without being recorded or even noticed, especially in southern Mesopotamia, or Babylonia, where attention had then shifted. During the 1850s, British excavations were conducted by Rawlinson at Borsippa; by William Kennett Loftus at Warka; and by J. E. Taylor at Ur and Eridu. Loftus, the first to conduct excavations in southern Mesopotamia, also initiated soundings at Senkereh, now known as ancient Larsa, and at Tell Sifr. French archaeologists working at Kish and Babylon were disappointed, like Loftus, in not finding any of the spectacular stone sculptures which had so amply rewarded the first excavators in northern Mesopotamia. For the time being, the lack of immediate returns from Babylonia encouraged a return to the north, to the great cities of Assyria, where the first discoveries had caused such excitement. [*See* Assyrians; Uruk-Warka; Ur; Eridu; *and the biography of Layard.*]

Excavations at Nineveh had been continued by Hormuzd Rassam, once Layard's assistant, and work at Khorsabad, and also at Nineveh, was conducted by Botta's successor, Victor Place, who had traced the plans of all the Assyrian

royal buildings on the summit of Khorsabad. At Nineveh, beginning in 1852, Rassam recovered more spectacular wall reliefs, including the famous lion-hunt scenes, and informative tablets from the newly revealed palace of Ashurbanipal. He also explored the mounds at Nimrud and Aššur, among many others in the region. Tragically, many of the objects so hastily removed from the Assyrian cities of Nineveh and Khorsabad were permanently lost in a disaster on the Shatt al-Arab at Qurna in 1855, when three hundred packing cases full of priceless sculptures and other antiquities were sent to the bottom of the river by marauders. The commencement of the Crimean War in the same year put an end to European investigations in Mesopotamia for almost two decades.

In 1873 George Smith led a British Museum expedition back to Nineveh in search of a missing portion of a cuneiform tablet that clearly provided an account of the Flood, now known as part of the Epic of Gilgamesh. Smith's early death in 1876 led the British Museum to reassign Rassam to the task of excavating Nineveh. With Layard's help, Rassam in fact obtained a capacious permit to excavate in all areas of the Ottoman Pashaliks of Baghdad, Aleppo, and Van, which he proceeded to do between 1878 and 1882. In a thoroughly unsatisfactory arrangement, Rassam left gangs of workmen in the charge of local supervisors at widely separated points all over Assyria and Babylonia. As well as reopening excavations at Nineveh and Nimrud, Rassam dug at Balawat to the east of Mosul, where he recovered the great bronze gates of Shalmaneser II, now in the British Museum. In Babylonia, Rassam sank trenches into many mounds, including Babylon, Borsippa, Cutha, and Telloh, yielding results commensurate with his archaeological skills. To the southwest of Baghdad, at Abu Habbah (ancient Sippar and biblical Sepharvaim), Rassam recovered a vast number of tablets from a large Neo-Babylonian religious precinct adjacent to the ziggurat. [*See* Balawat; Sippar; *and the biography of Smith.*]

In the last quarter of the nineteenth century, archaeology in Mesopotamia began to take on something of its modern shape, with long-term excavations at sites and the emergence of scientific interest in Babylonia and Assyria. Ernest de Sarzec, the French vice-consul at Basra in southern Iraq, conducted excavations at Telloh (ancient Girsu of Lagash state) from 1877 to 1881 and 1888 to 1900. [*See* Girsu and Lagash.] These were the first-ever substantial excavations at a Sumerian site, and the objects recovered, especially the diorite statues of rulers of Lagash and the Stela of the Vultures, aroused immense excitement in France, ensuring a long-term commitment to Telloh that lasted until 1933. Study of the thousands of Sumerian tablets from Telloh still provides the basis of much of what is understood of Sumerian society. Nevertheless, de Sarzec's methods were still primitive, particularly in regard to the tracing of the mud-brick walls used in almost all buildings in southern Mesopotamia. Telloh also suffered greatly from illicit excavations during de Sarzec's absences. At the same time as de Sarzec was beginning his excavations at Telloh, the appointment of Hamdi Bey as first director of the Imperial Ottoman Museum in Istanbul saw both an increase in the control exercised by the Ottoman authorities over foreign expeditions in Mesopotamia and the creation of an extremely important museum in Istanbul.

The first American involvement in fieldwork in Mesopotamia came with an expedition in 1884; it was followed by the start, in 1887, of a long-term program of excavations at the southern site of Nippur, a connection that lasted until modern times. The early work was directed by Hermann V. Hilprecht, John P. Peters, and J. H. Haynes, who, after a difficult start, recovered thousands of clay tablets, mainly Sumerian, which, to this day, provide the bulk of what is known concerning Sumerian literary compositions. [*See* American School of Oriental Research in Baghdad; Sumerian; *and the biographies of Hilprecht and Peters.*]

In the dying years of the nineteenth century CE, archaeology in Mesopotamia at last took on its modern form with the first appearance of German scholars in the field. The foundation of the German Oriental Society in 1898 and its excavations at Babylon in March 1899 under the direction of Robert Koldewey mark a genuine development in the discipline. The work was characterized by a concern to investigate the architectural and social context of the Mesopotamian artifacts which had attracted so much attention in Europe. During an intensive program of excavations up to 1913, Koldewey uncovered and recorded in commendable detail a remarkable series of temples, palaces, houses, and other structures of the Neo-Babylonian town of the time of Nebuchadrezzar, including the Ishtar Gate and the Processional Way. During this work, his staff acquired and exercised new skills in tracing and recording mud-brick walls—precious skills soon put to use elsewhere in Mesopotamia. [*See* Deutsche Orient-Gesellshaft; *and the biography of Koldewey.*]

From 1901 to 1903 Koldewey excavated at Borsippa and at the Sumerian city of Fara, ancient Shuruppak. [*See* Fara.] More significantly, from 1903 to 1914 a superb program of excavations at the early Assyrian capital of Aššur was carried out by Walter Andrae, an assistant of Koldewey's at Babylon. As at Babylon, the Germans meticulously recovered a plan of the city and many of its important buildings and residential areas. Of major new importance, however, was their excavation of a deep stratigraphic trench down through the Ishtar temple at Aššur. For the first time in Mesopotamian archaeology, a sequence of buildings was revealed that was securely related through careful stratigraphic observation. Thus, at Babylon and Aššur, German archaeologists set standards in architectural and stratigraphic investigation and observation which formed the basis of Mesopotamian archaeology. [*See the biography of Andrae.*]

During these early years of the twentieth century, archaeologists other than Germans were conducting excavations very much in the old mold. The Sumerian city of Bismaya, (ancient Adab) was rudely treated by the American Edgar James Banks, while French excavations at Kish and British excavations at Nineveh produced little in the way of scientific results. The first surveys of Islamic remains in Mesopotamia were also being conducted by L. Massignon, Conrad Preusser, Ernst Herzfeld, and others. With the outbreak of World War I in 1914, all archaeological work in Mesopotamia came to a halt. [*See* Kish.]

The modern state of Iraq, created after World War I, included virtually all of ancient Mesopotamia within its boundaries. It was fortunate that the antiquities of Iraq found a talented and considerate protector in Gertrude Bell, an official of the British administration who became director of antiquities. Under her guidance, foreign excavations in Iraq were carefully monitored and new laws ensured that much of Iraq's heritage remained in Iraq, largely housed in the uniquely important Iraq Museum, of which she was founder. Not surprisingly, much fieldwork was subsequently conducted by British expeditions, culminating in the foundation in 1932 of the British School of Archaeology in Iraq. Initial soundings at Ur and Eridu were made by R. Campbell Thompson in 1918, while H. R. Hall excavated again at Ur and at nearby Tell al-Ubaid in 1919. [*See* British School of Archaeology in Iraq; Ubaid.]

Those tentative postwar steps set the scene for the arrival of C. Leonard Woolley, whose excavations at Ur from 1922 to 1934 recovered a wealth of material which receives scientific study to this day. Woolley's excavations in all quarters of the city provided a broadly informative picture of life, and death, at Ur during several phases of its occupation. In particular, his excavation of the Sumerian royal cemetery, which yielded the most spectacular objects of gold and other materials, captured the public's imagination to an extent that had been unknown since Layard's day. A deep sounding probed levels of prehistoric occupation, similar to those encountered by Woolley in new work at Tell al-Ubaid in 1923–1924. This work provided the first detailed information concerning the prehistory of southern Mesopotamia. [*See* Ur; and *the biography of Woolley.*]

Elsewhere during the 1920s, a wide range of foreign teams could be found exploring sites in southern Mesopotamia. The French had returned to Telloh, a British-American team worked at Kish and Jemdet Nasr, and an American team at Fara. [*See* Jemdet Nasr.] At the huge site of Warka (biblical Erech), the Germans, from 1928 onward recovered detailed plans of late-fourth-millennium temples, as well as thousands of clay tablets inscribed in the protocuneiform signs now known to represent the earliest form of writing anywhere in the world. A major new development was the arrival in Mesopotamia of teams from the Oriental Institute of the University of Chicago in the late 1920s, initially continuing the work of Botta and Place at Khorsabad and then, in the 1930s, excavating four sites in the Diyala region east of Baghdad. [*See* Diyala.] From these Sumerian sites came a fine series of sculptures. More significantly, however, the excavations at Khafajeh, Tell Asmar, and Tell Agrab provided the basis upon which the Early Dynastic period in Mesopotamia is still understood. [*See* Khafajeh.] In northern Mesopotamia, American work at Tepe Gawra and British work, under Max Mallowan, at Nineveh, Tell Brak, and Arpachiyah, gave remarkable new information on the prehistory and early history of this region. The first traces of Paleolithic occupation in Mesopotamia were recovered in the 1920s by Dorothy Garrod in the Kurdish mountains. [*See* Tepe Gawra; Brak, Tell; *and the biographies of Mallowan and Garrod.*]

Conferences in Baghdad in 1929 and Leiden in 1931 attempted to make some sense of the ever-increasing amount of archaeological information being recovered from the soil of Mesopotamia. The naming of periods in southern Mesopotamian prehistory and early history was agreed upon, giving the sequence Ubaid, Uruk, Jemdet Nasr, and Early Dynastic I–III. Subsequent work in northern and central Mesopotamia established the existence of the Hassuna, Samarra, and Halaf cultures, existing prior to the Ubaid. [*See* Hassuna; Samarra, *article on* Chalcolithic Period; Ḥalaf, Tell.] Of particular significance was Iraqi work with Seton Lloyd during World War II at Tell Uqair and Hassuna, and at Eridu from 1947 to 1949. [*See the biography of Lloyd.*] Iraqi investigations at ʿAqar Quf and Hatra shed new light on the later historic periods. [*See* ʿAqar Quf; Hatra.] The chronological framework established in 1929 and 1931 remains in place, although with many minor modifications.

The 1950s and 1960s saw a resurgence of fieldwork in Iraq, led by a return of the British, under Mallowan and David Oates, to Nimrud and the Americans to Nippur. A new concern with the ancient economy and environment underlay the large-scale American project, led by Robert J. Braidwood, to investigate sites in the Fertile Crescent connected with the origins of agriculture. [*See* Agriculture.] Excavations at Jarmo, in northeastern Iraq, were especially successful in this regard. [*See* Jarmo.] At the same time, excavations by Ralph and Rose Solecki at Shanidar cave demonstrated the existence of Neanderthal communities in northern Mesopotamia. [*See* Shanidar Cave.]

A new development in the late 1970s was the start of rescue archaeology in Iraq, stimulated by programs of dam building and irrigation undertaken by the Iraqi government. Multinational programs of survey, excavation, and research have been conducted in the Hamrin, Haditha, and Eski Mosul regions, yielding extremely detailed results still being studied. [*See* Hamrin Dam Salvage Project; Eski Mosul Dam Salvage Project.] In the late 1980s, a return to research excavation at major Mesopotamian sites, such as Nimrud, Nineveh, Kish, Jemdet Nasr, Hatra, and Seleucia amongst

many others, reinforced ideas of the uniquely important archaeological heritage of the modern state of Iraq. [*See* Seleucia on the Tigris.] Spectacular discoveries of Assyrian royal tombs containing magnificent goldwork and other items were made by Iraqi archaeologists working at Nimrud. These modern excavations in Iraq have generally employed the full range of techniques available to archaeology, many borrowed from other disciplines—such as the earth sciences—to enable the recovery of information about many aspects of ancient life. In addition, the renewed study of material excavated earlier in the century has enabled some refinements in the chronology and distribution of the various cultures of Mesopotamia. Foreign excavation in Iraq came to a halt in 1990, although the study of Mesopotamian material continues to be undertaken in universities and museums across the world and publication of previously excavated sites is proceeding. The many unexcavated, or only partially excavated, sites remaining in Iraq ensure that a future return to fieldwork in Mesopotamia would be richly rewarded.

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Archaeology in Persia

From 1800 onward, with the arrival of foreign missions in Persia, an interest in the identification of places mentioned in the Bible and by classical authors (e.g., Shushan and Ecbatana, Pasargadae, and Persepolis, respectively) grew. [*See* Ecbatana; Pasargadae; Persepolis.] In the first half of the nineteenth century, an effort was made to provide written descriptions and hand-drawn illustrations of visible monuments. Systematic excavations were begun later in the century. At the same time, general surveys aimed at the history of ancient Persian art and architecture were prepared (Flandin and Coste, 1843–; Dieulafoy, 1884–1889; Perrot and Chipiez, 1892). This work was followed in 1938–1939 by the six-volume *A Survey of Persian Art* (Pope, 1967). These volumes, and the organization of the International Congress of Iranian Art and Archaeology, did much to promote an interest in Persian art and archaeology in the West.

Achaemenid Archaeology. Work on Persian inscriptions began in 1802 with George F. Grotefend's identification of the inscriptions at Persepolis as belonging to the Achaemenid kings (Hoeck, 1818). Real progress, however, awaited Henry C. Rawlinson's study of the trilingual cuneiform texts of Darius the Great (522–486 BCE) at the site of Bisitun, east of Kermanshah (Rawlinson, 1846–1849). [*See* Bisitun.] This publication initiated the decipherment of Old Persian cuneiform and set the stage for later studies of Bisitun (Cameron, 1951, pp. 47–54) and Persepolis (Kent, 1953). Persepolis, the capital of the Achaemenid kings (521–330 BCE), was first illustrated in watercolor by Robert Kerr Porter in 1821. Such workmanship was superseded in 1872 by Franz Stolze's pioneering photographic records of Persian sites (Stolze, 1882). The new technique further revolutionized field recording with the aerial photographs taken in 1936 by Erich F. Schmidt (1940).

Systematic excavations were begun at Persepolis in 1931 by the Oriental Institute of the University of Chicago, which remained in the field until 1939. The excavations were originally directed by Ernst Herzfeld (1931–1934) and then by Schmidt (1934–1939). After 1939, the work was continued by the Archaeological Service of Iran under André Godard, Mohammad T. Mustafavi, and Ali Sami. From 1968 to 1974, a program of exploration and restoration was undertaken by Giuseppe and Ann B. Tilia from the Istituto Italiano per il Medio ed Estremo Oriente (IsMEO), Rome. [*See* Istituto Italiano per il Medio ed Estremo Oriente.]

The nearby site of Pasargadae, capital of Cyrus the Great (559–530 BCE), also attracted the attention of early travelers such as Robert Ker Porter and Marcel Dieulafoy. Herzfeld visited the site in 1905 and undertook the first excavations there in 1928. Further studies were made in 1955 by Sami. A definitive excavation was carried out between 1961 and 1963 by David Stronach, director of the newly established (1960) British Institute of Persian Studies (Stronach, 1978). [*See* British Institute of Persian Studies.]

A third major Achaemenid site, Ecbatana (modern Hamadan), began to be formally excavated in 1974 by Masoud Azarnoush (Iranian Archaeological Services) although many clandestine finds have been made there previously (Muscarella, 1980, pp. 31–35). [*See* Ecbatana.] Susa, the Achaemenid capital of southwestern Iran, also contains extensive Achaemenid remains. [*See* Susa.] Between 1884 and 1886, Dieulafoy exposed parts of Darius's palace (521–485

BCE) there. The French Mission Archéologique en Iran (MAI), originally called the Délégation Archéologique en Perse, worked at Susa from 1897 to 1978. [*See* Palace.] From 1900 to 1939 the main plan was exposed by Jacques de Morgan and Roland de Mecquenem. In the 1970s, Apadana was resurveyed by Jean Perrot (MAI) using a magnetometer. Perrot revised and completed the city plan. [Perrot, 1977, 1978.] A new palace belonging to Darius across the Chaour River joined a "Persian village" Roman Ghirshman found in the 1950s in the quarter known as the Ville des Artisans (dated to the seventh–fifth centuries BCE) as two important new aspects of Achaemenid Susa. In the 1960s another important Achaemenid site was cleared by Umberto Scerrato for IsMEO (1966) in Sistan at Dahan-i Ghulaiman.

Elamite and Pre-Elamite Archaeology. Between 1850 and 1852, William K. Loftus's excavations at Susa, while serving on a British boundary commission, uncovered the first evidence for the Elamites under extensive Achaemenid remains. [*See* Elamites.] In 1897 de Morgan was made director of France's newly established Délégation en Perse. Subsequent directors were de Mecquenem (1908–1946), Ghirshman (1946–1967), and Perrot (1967–1990), the first prehistorian at the site. From 1900 to 1930 the directors enjoyed a French monopoly on archaeology in Iran.

The excavations at Susa and of the ziggurat in the nearby Elamite city of Chogha Zanbil by Ghirshman from 1951 to 1962 established the outlines of Elamite civilization in southwestern Iran from about 2500 BCE to its destruction by the Assyrians in the seventh century BCE. [*See* Chogha Zanbil; Ziggurat; Assyrians.]

By 1908 the prehistoric sequence, established on the acropolis at Susa by the French mission, and which began in 4000 BCE, was unique in the Near East. It provided the reference point for prehistoric remains in southern Mesopotamia until 1930. During the 1930s this sequence was revised by de Mecquenem's additional cuts into the acropolis and at smaller nearby sites. Under Perrot, a new and detailed stratigraphic excavation was undertaken by Alain Le Brun, augmented by the reexcavation of nearby small sites by Genevieve Dollfus (MAI). This revised sequence (Perrot, 1978) put in developmental order the numerical and textual Proto-Elamite tablets from about 3000 BCE, products of one of the earliest writing systems. [*See* Writing and Writing Systems.]

Prehistory on the Iranian Plateau. Excavations at prehistoric sites were initiated on the Iranian plateau for the first time in the 1930s at Tepe Giyan by Ghirshman and George Contineau (1931–1932, for the Louvre Museum); Tepe Hissar (1931–1932) and Rayy (1934–1936) by Schmidt; and Tureng Tepe by Frederick R. Wulsin (1931–1932), all three for the University of Pennsylvania Museum; and Tepe Sialk by Ghirshman (1933–1934 and 1937 for the Louvre). Sialk became the reference point for the prehistoric plateau until the period of excavation that followed World War II. Hissar and Sialk were the models at the time for the stratigraphic recovery of regional prehistoric sequences.

After the interregnum of World War II, excavations resumed with a new university-trained generation of prehistorians who introduced interdisciplinary specialists and new methods. Computers became available for laboratory analysis (although portable models appeared only after 1980). This influx of new people, methods, and interests greatly enhanced the study of prehistory. Carleton S. Coon (University Museum; 1949, 1951) initiated the first excavations in Paleolithic and Epipaleolithic archaeology. By 1986 it was possible to outline the Stone Age in Iran (Smith, 1986).

Interest in the transition from the Paleolithic to the farming cultures of the following Neolithic period led in 1960 to the Oriental Institute of Chicago's Iranian Prehistoric Project, led by Robert J. Braidwood. Survey work for this project in turn led to the exploration of the Deh Luran Plain beginning in 1961 by Frank Hole and Kent Flannery for the University of Michigan (1969). Subsequent excavations and surveys, espeically by Michigan's Henry Wright, produced a sequence from about 7500 BCE to about 3000 BCE with the help of the first computer analyses (Hole, 1987). These results were further augmented in Susiana by extensive settlement surveys by Robert Adams, Henry Wright, and others interested in problems surrounding the rise of the state in antiquity (Hole, ed., 1987). Following this approach, the use of surveys thereafter became standard in the field.

An interest in stratigraphically based chronology and cultural history led to the University of Pennsylvania Museum's Hasanlu Project, directed by Robert H. Dyson, Jr., from 1959 to 1977. The project was modeled along the lines of Hissar and Sialk but with refined methods of excavation, recording, and analysis that led to a six-thousand-year sequence of material culture. The unexpected discovery of a rich burned ninth-century BCE level focused the work on the Iron Age (Dyson and Voight, eds., 1989).

In 1969, to the north of Hasanlu, the German Archaeological Institute of Tehran (established in 1968) brought its architectural expertise to bear on the study of the kingdom of ancient Urartu. [*See* Hasanlu; Urartu.] Excavations at the site of Bastam by Wolfram Kleiss and extensive surveys carried out for the institute combined, in the 1970s, to provide a detailed outline of the ninth–fifth centuries BCE there. Another important Iron Age excavation was carried out by Stronach (British Institute of Persian Studies) at Nush-i Jan from 1967 to 1975; it was the first site to yield monumental Median architecture (Stronach, 1985). [*See* Medes.]

The Hasanlu Project preceded a number of similar regional projects initiated in the 1960s and 1970s: the Godin Project of the Royal Ontario Museum under T. C. Young, Jr., from 1965 to 1974; the Tepe Yahya Project of Harvard University's Peabody Museum under C. C. Lamberg-Karlovsky from 1967 to 1975); the Italian IsMEO Shahr-i Sokhta Expedition under Maurizio Tosi from 1967 to 1978;

the Baba Jan Expedition of the Institute of Archaeology, London, under Claire Goff from 1967 to 1972; the University of Manchester's Haftavan Project under Charles Burney from 1968 to 1978; the Qazvin Project of the University of Tehran under Ezat O. Negahban since 1970; and the University of Pennsylvania's Malyan Project under William M. Sumner from 1971 to 1978. [*See* Godin Tepe; Tepe Yahya; Malyan.] Each of these projects produced a regional sequence several thousand years long, associated with ceramics, artifacts, architecture, animal bones, and plant remains. Godin Tepe produced an important fortified residence from the Median period and an "enclave" containing tablets and ceramics from the lowland from about 3200 BCE; Tepe Yahya produced a similar concentration of lowland ceramics and blank tablets. The two sites suggest political or economic contacts among the plateau, Mesopotamia, and Elam in about 3000 BCE. The Qazvin Project's excavations at Saqzabad, Gabristan, and Zaghe produced an important sequence of early painted pottery linked to Sialk and Hissar. Baba Jan, in addition to its earlier levels, yielded important Median structures (sixth century BCE), and Shahr-i Sokhta in Sistan provided links to both western Iran and Central Asia in the late fourth and third millennia BCE. Malyan provided Proto-Elamite pictographic tablets (c. 3000 BCE) and Middle Elamite inscribed brick fragments identifying it as ancient Anshan, the upland capital of Elam. Haftavan provided pottery connecting northern Iran to the Caucasus.

Later Historical Periods. The excavation of sites from the Seleucid (330–250 BCE), Parthian (249 BCE–224 CE), and Sasanian (224–650 CE) periods also dates largely to the period after World War II. [*See* Seleucids; Parthians; Sasanians.] Royal cities and temples were the focus of attention for excavations that were carried out generally using traditional methods. Work on the Seleucid period was begun by Ghirshman at Susa in 1947–1948 in the Ville des Artisans and was followed in 1961–1963 by Stronach's discoveries at Pasargadae. Akbar Tadjvidi (Iranian Archaeological Service) worked at Persepolis from 1969 to 1972, and John Hansman and Stronach worked at Shahr-i Qumis from 1968 to 1978.

Only about a dozen sites from the Parthian period have been systematically explored. These have included cemeteries at Kangavar by Seyfollah Kambaksh-Fard (Iranian Archaeological Service) since 1968 and at Ecbatana/Hamadan by Masoud Azarnoush (Iranian Center for Archaeological Research) since 1975; several sites in the Dailaman area of Gilan by Namio Egami and Shinji Fukai (Tokyo University) from 1960 to 1964; ruined temples at Bard-i Nishandeh and Masjid-i Suleiman by Ghirshman from 1964 to 1966 and 1961 to 1971; settlement remains at Susa by Ghirshman from 1946 to 1950; Bisitun by Heinz Luschey (German Archaeological Institute) from 1965 to 1967; Qal'eh Yazdigird by Edward Keall (Royal Ontario Museum) from 1967 to 1978; Nush-i Jan by Stronach from 1967 to 1974; Shahr-i Qumis by Hansman and Stronach from 1968 to 1978; Yahya by Lamberg-Karlovsky from 1967 to 1975; and Kuh-i Khwaja by Giorgio Guillini (Italian Archaeological Mission) in 1964. The minor Parthian remains found at Takht-i Suleiman by H. H. von der Osten and Rudolf Naumann (German Institute) from 1959 to 1978 have made the identification of that site as Parthian Phraaspa now untenable.

Excavations of substantial Sasanian remains began in the 1930s at the sites of Hissar by Schmidt (for the University Museum) from 1931 to 1932; Qasr-i Abu Nasr by Walter Hauser and J. M. Upton (Metropolitan Museum of Art, New York) from 1932 to 1935; Istakhr by Schmidt (for the Oriental Institute, Chicago) from 1934 to 1939; and Bishapur by Ghirshman from 1935 to 1941. A new cycle of systematic work on the Sasanian period began in 1959 at Takht-i Suleiman by von der Osten and Naumann. In 1968, excavations were undertaken by the Iranian Archaeological Service at Kangavar, directed by Kambaksh-Fard, that proved to be the remains of a Sasanian palace rather than a Parthian temple. In the 1970s, excavations were carried out at Sasanian settlements at Tureng Tepe by Jean Deshayes (French Ministry of Foreign Affairs) from 1971 to 1978; Shahr-i Qumis by Hansman and Stronach from 1968 to 1978; Tepe Yahya by Lamberg-Karlovsky from 1967 to 1975; Siraf by David Whitehouse (British Institute of Persian Studies) from 1966 to 1972; Firuzabad/Qal'eh-i Dukhtar by Darrell Huff and Kleiss from 1975 to 1978; and Qal'eh-i Yazdegird by Keall from 1975 to 1978. Smaller excavations were also carried out at such sites as Ivan-i Karkha by Ghirshman in 1950 and at Jundi Shapur by Adams and Hansen in 1963 in the Susa area; Malyan by Sumner in 1974 in Fars; and on Kharg Island in the Persian Gulf by Ghirshman in 1959. The revolution of 1978–1979 ended all ongoing foreign projects in Iran.

[*See also* Persia; *and the biographies of Ghirshman and Rawlinson.*]

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ROBERT H. DYSON, JR.

Archaeology in the Anatolian Plateau

As early as 1764, the Greco-Roman and Byzantine ruins in Mysia, Ionia, and Caria attracted the attention of the London-based Dilettante Society. In the early nineteenth century, some government-sponsored European institutions began to divert resources for research in eastern Anatolia. In 1827 the French government, interested in the inscribed rock-monuments in Van, commissioned Friedrich E. Schulz, a young German scholar, to investigate the nature and content of those cuneiform inscriptions. He was killed by local bandits two years after starting the project, but not before he copied the inscriptions. Although his work drew the attention of fellow Orientalists in Europe, it was not until the end of the nineteenth century that it was finally realized that the inscriptions were Urartian, not Assyrian, texts. [*See* Cuneiform; Urartu.]

During the nineteenth century, numerous archaeological

discoveries were made on the Anatolian plateau by foreign scholars, among whom the most prominent was the French archaeologist and architect Charles Texier. In 1834 he discovered Boğazköy/Ḫattuša and Yazılıkaya although he was not aware of their Hittite origins. [*See* Boğazköy; Hittites.] In 1936 William J. Hamilton, a British geologist and researcher, discovered Alaca Höyük and a year later Eflatun Pinar. He, too, failed to grasp the true identity and date of these sites. Nevertheless, his book *Researches in Asia Minor, Pontus and Armenia* (London, 1842), three years after the publication of Texier's book *Description de l'Asie Mineure,* inspired other scholars and major European museums. The latter, spurred by the publicity given to dramatic archaeological discoveries, started to organize and finance large expeditions. However, those expeditions were not immediately sent to the central Anatolian plateau, but rather to areas on the periphery of Syro-Mesopotamia where the potential of finding historical monuments seemed greater. Long after having completed three seasons of excavation at Carchemish (1878–1881), the British Museum finally initiated archaeological excavations in eastern Anatolia. [*See* Carchemish.] These were undertaken for them by Hormuzd Rassam at Toprakkale in Van in 1897. Despite his controversial personal motives and unprofessional approach, Heinrich Schliemann's excavations at Troy, begun in 1870, were the first attempt to investigate the previously unknown preclassical civilization of Anatolia. [*See the biography of Schliemann.*]

In the closing years of the nineteenth century, exploration of the Anatolian plateau was undertaken on a large scale by Ernest Chantre, David G. Hogarth, K. Humann, J. G. Anderson, and William M. Ramsay, who published the results of their investigations at short intervals. Discoveries included sites with monumental art and architecture, rock-carved monuments, and the first cuneiform texts from Kültepe and Boğazköy. [*See* Kültepe Texts.] In 1882, Humann, a German archaeologist, inspected the ruins of Boğazköy and Yazılıkaya on behalf of the Preussischen Akademie der Wissenschaften in Berlin, making copies of some of the reliefs at the latter site. Later, in 1890, Humann and his colleague Otto Puchstein published their findings and observations in *Reisen in Kleinasien und Nordsyrien* (Berlin). In 1893–1984, Chantre, a French anthropologist and prehistorian, carried out probes at Boğazköy and discovered the first Hittite tablets. He also made several soundings at Alaca Höyük in areas were Hittite sculptures were visible. His book *Mission en Cappadoce* (Paris, 1898) provided additional encouragement to continue with archaeological research on the Anatolian plateau.

At about that time, it was already suspected that the roots of the North Syrian Late Hittite civilization might well lie on the central Anatolian plateau. Gordion, in the Sakarya valley, was the first scientific excavation project undertaken by Gustav and Alfred Koerte in 1889 on behalf of the Kaiserlich Deutschen Archäologischen Instituts in Berlin. Its purpose, however, was solely to investigate Phrygian remains. [*See* Gordion.] Chantre's discovery of tablets at Boğazköy changed the attitude of European scholars toward the archaeology of the Anatolian plateau. The German Oriental Institute took the initiative and sponsored archaeological excavations at Boğazköy in 1906, under the direction of Hugo Winckler. [*See* Deutsche Orient-Gesellschaft.] After briefly investigating the large temple complex (temple I), Winckler correctly shifted his attention to the palace complex at Büyükkale, where he recovered ten thousand tablets. In the same year he tried to locate the source of the Kültepe tablets, but without success. Winckler collaborated with the Turkish archaeologist Makridi Bey in subsequent campaigns, until 1912. Although World War I put a temporary stop to archaeological fieldwork, the evaluation and interpretation of the linguistic data led to considerable advances in Hittitology. For instance, as early as 1915, the first edition of a Hittite grammar was published by Bedrich Hrozny, and by 1918 a tentative list of Hittite kings had been assembled by emerging Hittitologists.

In 1925 a Czechoslovakian expedition led by Hrozny went to Kültepe, suspected of being the source of Cappadocian tablets being sold by local farmers. He eventually succeeded in collecting more than one thousand tablets from the terrace mound (the *kārum* Kaneš). It was at about this time that the Oriental Institute, founded by John D. Rockefeller at the University of Chicago, began to take an active part in field archaeology. James H. Breasted, its director, organized large-scale excavations in several Near Eastern countries, including Anatolia, in 1926. [*See the biography of Breasted.*] This was in fact the beginning of pioneering work in systematic and stratigraphic excavations on the Anatolian plateau by Hans H. von der Osten and his colleagues. [*See the biography of Osten.*] In his extensive surveys he concentrated mainly on recording mounds, hilltop forts, and ancient roads, with a particular emphasis on preclassical sites. In 1927, after a preliminary survey of archaeological sites in and near the bend in the Halys River (see below), and a tentative sounding at Gavur Kalesi, the Oriental Institute selected Alişar Höyük, 80 km (50 mi.) southeast of Boğazköy, for excavation as the key regional site. The excavators hoped that this site too would reveal rich remains of Hittite settlement and in particular Hittite tablets like those being found at Boğazköy. To their great disappointment, this was not the case. Instead, the site revealed a long and previously unknown pre-Hittite cultural sequence described as Neolithic, Chalcolithic, Copper Age, and Early Bronze Age. This stratified sequence produced one of the cornerstones of a relative pre-Hittite Anatolian chronology and cultural terminology. Furthermore, the excavation and recording methods used by the excavators set the basic standards for archaeological digs in Anatolia.

In the 1930s, numerous foreign and Turkish expeditions

became involved in archaeological research on the Anatolian plateau and its periphery, including the Cilician and 'Amuq plains. [*See* Cilicia; 'Amuq.] During the decade between 1931 and 1941, Turkish research institutions became organized, taking a more active part in archaeological research. The establishment of the Turkish Historical Society in 1931 by Kemal Atatürk was the main guiding force behind Turkish archaeological enterprises. Hamit Koşay was the most prominent archaeologist working on the Anatolian plateau, at Ahlatlıbel (1931); Alaca Höyük, initiated by Remzi O. Arik (1935); Pazarlı (1937); Etiyokuşu, with Şeuket A. Kansu (1937); and Karaoğlan, with Arik (1937–1941). The main purpose of these excavations was to investigate the pre-Hittite material culture record on the Anatolian plateau. While probing the pre-Hittite levels at Alaca Höyük in 1936, Koşay discovered the much publicized EB "royal tombs", a turning point in Anatolian archaeological research. The typology of the tombs and the technology of the metal finds led to questions of the possible origins of the Hittites and their civilization. [*See the biography of Koşay.*]

There also were small-scale excavations in the outlying parts of the Anatolian plateau, in an attempt to estimate the extent and possible origins of EB culture. The investigations by Tahsin Özgüç and Koşay at Dündartepe, Tekeköy, and Kavak south of Samsun and by Seton Lloyd and Nuri Gökçe at Polatlı produced not only a clearly stratified pottery typology covering most of the Early to Middle Bronze periods, but also regional ceramic repertoires for the Anatolian plateau. [*See the biography of Lloyd.*]

The nature and duration of EB II on the Anatolian plateau, defined at the time as the Copper Age, was initially recorded only at Alişar Höyük. The sophisticated metal objects from the royal tombs at Alaca Höyük made scholars aware that the so-called Copper Age and the following EB III on the Anatolian plateau were more complex and regionally varied than previously thought. The early 1930s saw not only the beginning of numerous new archaeological projects, but also the reactivation of earlier major excavations. In 1931 Kurt Bittel reopened the excavation at Boğazköy. During the eight years prior to the outbreak of World War II, he exposed the remains of many Hittite buildings both in the city itself and at Yazılıkaya. In 1932 the University of Cincinnati developed a long-term plan to reexcavate Troy under the direction of Carl Blegen. Since the conclusion of the architect Wilhelm Dorpfeld's collaboration with Schliemann in 1892, knowledge of preclassical civilization in the eastern Mediterranean had greatly advanced. New discoveries on Crete, Cyprus, and the Greek mainland and in Macedonia and the Cyclades had yielded enough archaeological data to make the establishment of a comparative chronology for the various Aegean cultures possible. [*See* Crete; Cyprus.] For this purpose Trojan analogies were important, but the stratigraphic confusion caused by the earlier excavations made reexamination through controlled excavations mandatory. In reopening the excavation, Carl Blegen's policy was to approach Troy's stratigraphic problems unprejudiced by his predecessors' complicated and often conflicting inferences. While Blegen's excavation was in progress, new information on cultural interaction between the Aegean world and the Anatolian plateau surfaced in Winifred Lamb's excavations at Kusura, near Afyon Karahisar, and at Demircihöyük, west of Eskişehir, excavated by Bittel and Heinz Otto. Among the major field projects carried out between the two world wars, the excavations of L. Delaporte at Arslantepe, near Malatya, in 1932 is the most outstanding. [*See* Arslantepe.] This site, already visited by von der Osten in 1926, revealed a rich collection of Neo-Hittite sculptures unmatched on the Anatolian plateau.

By the outbreak of World War II, Anatolian archaeology had become the subject of systematic study relying on records from stratigraphic excavations. The earlier study pattern, based on chance finds on which the preclassical history of Anatolia had rested, was abandoned. Improvements in excavation techniques made archaeological records more reliable sources of information. During World War II, only Turkish archaeologists were able to advance archaeological research on the Anatolian plateau, largely because Turkey was not involved in the war. The war prevented the German, Italian, French, and British archaeologists from continuing their work since Turkey's neutrality prevented them access. While work was in progress at Alaca Höyük, additional projects were carried out: on the mound of Bitik, excavated by Arik (1941); at Karaz Höyük in Erzurum, excavated by Koşay (1942, 1945); and at Has Höyük, dug by Halet Çambel (1943). In 1941 the provinces of Ankara, Konya, and Eskişehir were partly surveyed by Arik. His survey records, which included descriptions of a number of settlements, were published by Özgüç in 1956. However, despite new excavations, not all problems concerning chronology, ethnicity, continuity, or origins were entirely solved in the early 1940s. For instance, the meaning and origin of Hittite hieroglyphs, which had previously defied all attempts at decipherment, was partially solved at Karatepe beginning in 1945 by a team of archaeologists led by Helmuth Th. Bossert and Çambel and joined later by U. Bahadir Alkim. [*See* Hittite.] Another important Turkish enterprise in the postwar period was organized by the Turkish Historical Society in 1948: to resume excavations at Kültepe under the direction of Tahsin and Nimet Özgüç. This major decision led, in fact, toward exposing one of the most interesting historical chapters in early Anatolian civilization. At about this time, the Koşay and Mahmut Akok's team excavated another pre-Hittite site, at Büyük Güllücek.

Other enterprises included the excavation of Old Smyrna by a joint team headed by Ekrem Akurgal and John Cook (1949–1952); the excavations by the French Institute in Istanbul at the Midas city site (Yazılıkaya) in 1937–1939; and the resumption of excavations at the Phrygian city of Gor-

dion by the University Museum of the University of Pennsylvania (1949).

The 1950s and 1960s opened a new era of intense preclassical archaeological investigation in Anatolia, including extensive field surveys aimed at recording the geographic and chronological distribution of preclassical settlements in different regions. In the 1950s, excavations at Horoztepe by Özgüç and Akok, Mahmatlar by Koşay and Akok, and Kayapinar by Raci Temizer added new dimensions to the regional EB archaeology and relative chronology on the northern half of the Anatolian plateau. One of the major field projects of the 1950s was the survey carried out by Charles Burney (1954–1955) in the northern provinces. While the Boğazköy excavations were reactivated in 1952 by Bittel, Sedat Alp started excavating the large EB–MB mound of Karahöyük near Konya in 1953.

Following his extensive field surveys on the southern Anatolian plateau and in southwestern Anatolia, in 1954 James Mellaart formed a team with Lloyd to excavate Beycesultan, the key Bronze Age site on the southwestern plateau. While this project was in progress, Mellaart initiated the Hacılar excavation project (1957–1960). [*See* Hacılar.] At the time, this was the most important prehistoric project being carried out in Anatolia. In fact, interest in the central Anatolian Neolithic and Chalcolithic period grew particularly strong following the Hacılar excavations. In 1961, while Mellaart initiated a new project at Neolithic Çatal Höyük, David French initiated the excavation of the prehistoric settlement of Can Hasan in Karaman. In 1963, Çayönü Tepesi, with its well-recorded aceramic remains, provided the first clues concerning the question of an incipient farming stage in Anatolia. [*See* Agriculture; Çayönü.]

Not only prehistoric sites, but also major second-millennium BCE sites were investigated in the 1960s. Nimat Özgüç undertook the excavation of Acemhöyük in 1963, trying, among other things, to shed some light on the identity of that MB city. In 1965 Burhan Tezcan investigated Koçumbeli and R. Temizer concentrated on the Hittite settlements at Inandık in 1966 and later at Eskiyapar.

Excavation in the eastern provinces intensified in the late 1950s and early 1960s. Burney's field survey in eastern Anatolia was followed by a growing interest in east Anatolian archaeology. Pulur and Güzelova, key sites of EB east Anatolia were excavated by Koşay and Hermann Vary (1960, 1961). Major Urartian sites were also targeted for exploration: Altin Tepe by Tahsin Özgüç and Çavuştepe (which was begun by A. Erzen in 1959); Patnos by Temizer and Kemal Balkan (1960–1963); Adilcevaz by Emin Bilgiç (1964); and Malatya, resumed by the Italians under Salvatore M. Pugilisi and Piero Meriggi (1961).

In the 1960s, the preclassical sites of western Anatolia, including the area of Iznik in the Marmara region, were investigated by French, who proposed regional pottery sequences for the hinterland east of the Aegean coast (see his articles in *Anatolian Studies* 17 [1967]: 165–178; 19 [1969]: 41–98).

From the late 1960s and early 1970s onward, Anatolian archaeology advanced considerably. Most expeditions adopted the Western multidisciplinary approach to field investigation, using palynological, environmental, ethnographic, and nonartifactual data studies to reconstruct the interaction between environment, subsistence economies, and social organization in ancient communities. The rescue excavations in the Keban in the late 1960s and early 1970s and in the Lower Euphrates River basin in the late 1970s and 1980s gave Anatolian archaeology an unprecedented boost—not only in terms of a dramatic increase in the number of excavations and the volume of finds, but also in the use of newly developed excavation and recording techniques. Beginning in the early 1970s, intensive field surveys in northern Turkey by Jak Yakar and Ali Dinçol and the subsequent excavations at Ikiztepe under the direction of Alkim in Bafra emphasized the cultural links of the Black Sea zone both with the Balkans and inner Anatolia. In the 1970s two major excavations further enriched the archaeological record of Bronze Age Anatolia: Maşat Höyük, excavated by Tahsin Özgüç, proved to be an important source for Hittite archaeology and history, and the environmental studies carried out at Demircihöyük, reexcavated by Manfred Korfmann, illustrated the importance of estimating the carrying capacity of the land surrounding ancient settlements in reconstructing socioeconomic structures. In recent years, Japanese archaeologists have also taken an interest in Anatolian archaeology. The excavations of Tsugio Mikami and Sachihiro Omura at the multiperiod site of Kaman-Kalehöyük and their systematic field surveys at the bend of the Halys River are producing results bearing on the character and distribution of preclassical sites on the Anatolian plateau. Renewed excavation of such major sites as Troy, Gordion, Alişar, Mersin, and Tarsus/Gözlü Kule reflects the new problem-oriented archaeological approach of the present generation of scholars.

[*See also* American Research Institute in Turkey; Anatolia; British Institute of Archaeology at Ankara; Deutsches Archäologisches Institut, Abteilung Istanbul; *and* Institut Français d'Études Anatoliennes d'Istanbul.]

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JAK YAKAR

Archaeology in Egypt

The history of archaeological work in Egypt may conveniently be divided into five rather arbitrary periods of unequal length, each of very different character. The first phase consists of ancient interest in Egypt's past. The second stage did not transpire until the seventeenth century CE. The third era took place in the nineteenth century. Both the fourth and fifth periods unfolded in the twentieth century.

Phase One: From Antiquity to the Seventeenth Century. More than four thousand years ago, ancient Egyptians themselves excavated parts of their archaeological patrimony. Most of the work was motivated by practical concerns: a pharaoh could show his love of the gods and respect for their priests by restoring temples. He could demonstrate his own legitimacy by preserving the monuments of his ancestors. In the twelfth dynasty, for example, Senwosret (Sesostris) III removed two sarcophagi from beneath the third-dynasty Step Pyramid and placed them in the foundation deposits of his own pyramid complex as a means of demonstrating a historical affinity with Egypt's more ancient kings. In the nineteenth dynasty, Khaemwese, a son of Rameses II, carefully explored necropoleis from Saqqara north to Giza, cleaning and restoring many ancient monuments. He considered his actions to be both pious and historically important. Greeks and Romans, too (Egypt was under their control from 332 BCE to 337 CE), took an antiquarian interest in Egyptian monuments and restored or rebuilt those that played significant roles in their own religious ritual.

These early ventures into Egypt's past were harmless; some even protected the monuments. By the end of the Roman period, however, the treatment of Egyptian antiquities had become much more brutal. Perhaps it was because they no longer had meaning or cultural relevance: by the fifth century CE, the last Egyptian temples had closed, the last priests had died, and knowledge of the Egyptian language had died out. It was also because of two new and jealous religions, Christianity and Islam, which dominated Egypt in turn from the third century CE onward. Egyptian monuments were now seen as threats to man's relationship with the True God, best used only as convenient sources of building material. Local villagers plowed artifacts into the mud, burned papyri as fuel for bread ovens, hacked out pagan images on temple walls, and tore out stone blocks for new construction. The ancient Egyptians had sometimes abandoned or dismantled monuments; the Romans had carted several obelisks back to Rome, but there had not been destruction of this magnitude before.

Such destruction has continued into recent times. European travelers, who had begun visiting Egypt in numbers in the sixteenth century, were not concerned with archaeological preservation. Early pilgrims carried off Christian objects, anxious to acquire relics that would confirm their religious beliefs and offer proof of biblical history. They too destroyed figures that they could no longer understand or that seemed threatening. Medieval travelers picked over ancient sites, collecting mementos of their visit and carving their names on temple walls. Renaissance entrepreneurs dug for mummies that could be shipped to Europe and ground into what many believed were efficacious medicines. In all these instances, the digging was primitive and random, the record-keeping nonexistent, and the destruction of what we today would consider essential information nearly total.

Until the nineteenth century Europeans derived most of their knowledge about ancient Egypt from classical sources (especially Herodotus, Diodorus Siculus, Horapollo, and Pliny the Elder), biblical texts and exegesis, and the often fraudulent writings of travel writers such as John Mandeville (who, in fact, had never visited Egypt). Rarely accurate, these descriptions of Egypt and its monuments conspired to convince European scholars that Egypt was a truly exceptional country whose culture and history followed none of the rules that had governed the rest of human development. For example, both Pliny and Mandeville claimed that Egypt was a country inhabited by one-legged human beings who hopped about cultivated fields so fertile that frogs spontaneously generated in the mud, whose people drank from a Nile so potent it instantly made women pregnant, a people who built temples and pyramids with the direct assistance of God and the angels. Egypt was said to be the site of the garden of Eden, the earthly model of paradise. Surely, Europeans argued, the usual rules could not be applied here. Egypt was a unique country that had appeared suddenly, fully developed, with no predecessors, survived for three thousand years, and disappeared, leaving no obvious descendants.

Gradually, this view was expanded as tales about Egypt assumed an ever greater role in European myth and art. That the ancient Egyptians possessed knowledge far greater than modern humans was a popular opinion. This belief was regularly confirmed by the misinformation published in Europe about the magical powers of Egyptian objects, the potency of Egyptian symbols, and the special relationship between Egypt and the supernatural. For example, Europeans had long believed that the bodies of Christian saints, unlike those of ordinary mortals, were incorruptible. If their corpses were exhumed, it was claimed, they would be as perfectly whole and sweet-smelling as a living person's. How saintly, then, must the ancient Egyptians have been because thousands of perfectly preserved bodies (mummies) were found there every year! The whole population must have sat at the right hand of God!

Phase Two: Seventeenth- and Eighteenth-Century Collecting. By the late seventeenth century, Egyptian artifacts were to be seen throughout Europe. At this time museums were first established, and *cabinets des curiosités* could be found in the homes of the well-to-do. These Egyptian collections exerted a profound influence on Europe's views and on its own decorative arts and architecture. People wanted to possess Egyptian "things," the older, the more mysterious, the better. From the late 1600s onward, European collectors enthusiastically sought after Egyptian *objêts,* and agents happily ran an antiquities trade to satisfy them. In a short time, not only were small amulets, statuettes and mummies being shipped abroad, but even monumental sculptures, obelisks, whole tombs and temple walls. The peculiar features of Egyptian art that these collections displayed—human figures with animal heads, elaborate pieces of golden jewelry, and fascinating but unreadable texts—only confirmed the Egyptians' special status.

Phase Three: Nineteenth-Century Exploration. The distorted European picture of ancient Egypt did not begin to change until early in the nineteenth century. The first step toward a more accurate representation resulted from the Napoleonic expedition of 1798–1802. Bonaparte had brought 175 savants with his army, a committee of artists and scholars, whose task was to prepare as complete a record of the country as possible. The result was the *Description de l'Égypte* (1809–1828), a stunning record of Egypt's archaeological monuments, natural history, and local cultures, published in twenty-one volumes of text, maps, and plates. The *Description*'s elaborate illustrations gave Europeans their first accurate view of the country and its monuments. For almost the first time, Europeans could see the real Egypt, not the fanciful country that earlier sources had described.

In 1799 Napoleon's men found what was later to be called the Rosetta Stone while digging coastal defenses near the Rosetta branch of the Nile. It was immediately recognized as a possible source for the decipherment of Egyptian hieroglyphic script. Although the Rosetta Stone was confiscated by the British (it is now in the British Museum), copies had been made, and, working from them, Jean-François Champollion declared in 1822 that the key to ancient Egyptian had been found. With that announcement, it became possible for the first time in fourteen hundred years to read ancient texts and to learn about Egypt from the ancients themselves. Almost overnight, a vast new source of information was available, and there was a scramble to acquire inscribed materials to study. [*See* French Archaeological Missions; *and the biography of Champollion.*]

This desire for texts, either the originals or copies, led to numerous expeditions to the Nile Valley. Champollion himself visited Egypt in 1828 to copy texts, and a dozen other scholars from throughout Europe came as well. The most important was Richard Lepsius (1810–1884), whose thirteen-volume *Denkmäler aus Aegypten und Aethiopien* (1849–1859) included hundreds of folio plates of ancient texts, relief scenes, and temple plans. Today, Lepsius's work is still a rich source of information for Egyptologists; then, it and the *Description* were the most reliable and comprehensive sources available. So too were the superb watercolors of David Roberts (1796–1864), and the works of Sir John Gardner Wilkinson, whose brilliant three-volume *Manners and Customs of the Ancient Egyptians* (1837) provided descriptions and explanations of nearly every aspect of the ancient culture.

As positive as the contributions made by these descriptive publications may have been, they had unintended negative impact too. Although in the nineteenth century, in other parts of the world, archaeology was rapidly developing new techniques of excavation, dating, and interpretation, in Egypt it was being pushed into the background of scholarship. Egyptologists, most of them philologists by training, considered archaeological data merely footnotes to the story told by the written word. Archaeology's goal, it was argued, should simply be to find more texts. Archaeological context was ignored, and objects were saved only if they were deserving of display in museums. Excavators felt perfectly justified in plowing through sites (not habitation sites, but cemeteries or temples for they were the ones known to contain the treasures), saving only inscribed objects and pieces of aesthetic appeal and tossing the rest into the Nile. Not only would the texts reveal all that one needed to know, scholars claimed, but also there would be more to dig. Egypt was an archaeological cornucopia that could never be exhausted. By the late nineteenth century, dozens of expeditions were at work on sites from the Mediterranean to Aswan. It was an exciting time: excavators plundered tombs, dynamited temples, committed piracy, and shot their competitors in order to assemble great collections. Enactment of antiquities laws (the first in 1835), the founding of the Egyptian Antiquities Service, and the establishment of a national museum (1863) did little to reduce the scale of pillaging.

Phase Four: Early Twentieth-Century Excavation. Indeed, it was not until the beginning of the twentieth century that properly controlled excavations could be seen in Egypt. These rare early projects, in which careful digging was accompanied by proper recording procedures and contextual analyses, were the work of William Matthew Flinders Petrie (1853–1942) and George Andrew Reisner (1867–1942). Petrie's work on artifact typologies, seriation, and sequence dating demonstrated that even without associated texts, archaeological material could provide important information and not just pretty objects. His numerous publications, particularly of predynastic materials, helped set a new standard for the analysis of archaeological data. Similarly, Reisner's meticulous excavations of cemeteries at Giza

and at Naga ed-Deir established new chronological guidelines for Early Dynastic and Old Kingdom artifacts. [*See also* Giza; *and the biographies of Petrie and Reisner.*]

Unfortunately, Petrie's and Reisner's emphases and methods were slow to influence other excavators' techniques. What we today would consider "proper" excavations remained the exception. The first half of this century was a time of spectacular archaeological discoveries in Egypt, including the tomb of Tutankhamun (excavated by Howard Carter), the treasures of Illahun and Thebes (the Metropolitan Museum of Art); the Early Dynastic cemeteries at Saqqara (Walter B. Emery); the Giza cemeteries (Reisner and Hermann Junker). Yet, important and well-executed as these projects were, they indicate that Egyptologists still preferred clearing tombs and stone temples to sifting through habitation debris or working with mud brick, still preferred well-preserved sites along the desert edge to the complex remains in the Nile Valley and Delta. The excavations of the necropolis at Tanis (a Delta site dug by Pierre Montet) and the long-term projects at Tell el-Amarna and Deir el-Medineh (both townsites) were among the few exceptions. Thus, there were few attempts in the early twentieth century to work at sites being threatened by new irrigation schemes, growing towns, new roads, or expanding agriculture, and many of these sites simply disappeared. This bias in favor of desert and stone continues to be an increasingly serious problem even today. [*See* Saqqara; Amarna, Tell el-; *and the biographies of Carter and Montet.*]

Phase Five: Modern Analysis. One of the most significant changes in the character of Egyptian archaeology occurred during the Nubian Salvage Campaign in the 1960s. Deeply concerned about the hundreds of sites that would be destroyed by rising Nile waters when the new Aswan High Dam was completed, Egypt and UNESCO issued a joint appeal to archaeologists from around the world to conduct salvage archaeological projects in the area south of Aswan. Although in ancient times this area, which was part of Nubia, did not belong to Egypt politically or culturally, excavations there had traditionally been conducted by Egyptologists (among them, Reisner, Junker, and Emery). Now, dozens of archaeologists, many of them trained in fields very different from Egyptology, came to work. With backgrounds in European prehistory and North American archaeology, they brought with them more rigorous approaches to excavation and analysis than Egyptian archaeology had ever developed. Lithics and ceramics were subjected to detailed study; typologies were created; chronological schemes were expanded and refined; and such disciplines as palynology, botany, zoology, chemistry, and statistics were used to reveal changing patterns of climate, describe minute details of lifestyle, and track changes in culture.

When the Nubian campaign ended, many of these archaeologists turned their attention farther north to Egyptian sites, bringing a whole new approach to Egyptian materials. They took an interest in urban sites. These archaeologists gave emphasis to finds that earlier generations of Egyptological excavators had considered worthless: for example, animal bones, vegetation, stone tools, potsherds, soils, and mud-brick architecture. They were eager to work in areas formerly though to be impossible, in the Delta, the Nile alluvium, and the oases. They gave to archaeological data an interpretive emphasis formerly reserved only for textual evidence. They also asked new questions about subjects as diverse as health and disease, social stratification, the influence of climatic change on agriculture and trade, the development of ceramic technology, and the origins of complex society.

Today, archaeological work in Egypt is increasingly more anthropological rather than object or text oriented. Not surprisingly, many of its practitioners have as much social science in their backgrounds as traditional Egyptology. Karl Butzer, for example, is a geographer and anthropologist who has examined the impact of the environment on Egyptian culture and on the development of irrigation in the Nile Valley. [*See* Environmental Archaeology.] Bruce Trigger is an anthropologist interested in the origins of civilization and its dynamics. Fekri Hassan is a prehistorian with a long-standing interest in the origins of Egyptian society and the theoretical framework for its study. William Y. Adams is a prehistorian by training whose Nubian ceramic studies are benchmarks that have put Nubian chronology on a solid footing. Barry Kemp is an Egyptologist and archaeologist who has studied the dynamics of Egyptian society as revealed by the archaeological record. His work at Tell el-Amarna and his processual approach to dynastic culture have had major impact. The activities of these and other scholars provide examples of archaeological analysis and interpretation as good as any in the world today. Furthermore, excavations—the long-term work at Hierakonpolis; Mark Lehner's studies of the Giza plateau; Robert Wenke's surveys and excavations in the Faiyum and the Delta; Manfred Bietak's superb studies of the site of Tell ed-Dab'a (ancient Avaris); and those of the Germans and Swiss at Elephantine, to name a few examples—are truly state-of-the-art projects. [*See* Faiyum; Dab'a, Tell ed-; Elephantine.] No longer is the emphasis on pretty objects or simple description. There is a deep committment to problem-oriented excavations and to the utilization of new techniques and cross-cultural comparisons to extract the maximum amount of information from Egyptian sites.

It has taken several centuries, but Egyptologists today recognize that ancient Egyptian culture is not a unique phenomenon that can only be explained by suspending the rules and invoking the gods. Egyptian culture *is* very special and very impressive. By acknowledging that it *is* the work of hu-

mans, however, that it can best be understood by being studied like other civilizations, we have finally come to give ancient Egypt relevance to our own history and to an understanding of human development.

This newfound relevance has come at a critical time. Without carefully planned archaeological work coupled with meticulous conservation and recording, Egypt's cultural patrimony will not survive. Egypt's archaeological sites are being seriously threatened today, from pollution, agriculture, growing population, theft, and other insidious forces. These threats make it even more crucial that we treat Egypt's archaeological remains not as inexhaustible curiosities we once thought they were, but as fragile and finite resources. It would be mankind's loss if they were to vanish. It certainly will be mankind's gain if we can insure that ancient Egyptian monuments will survive for future generations. The modern approaches to Egyptian archaeological sites significantly contribute to this goal.

[*See also* American Research Center in Egypt; British School of Archaeology in Egypt; *and* Institut Français d'Archéologie Orientale.]

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KENT R. WEEKS

Archaeology in Cyprus

To the extent that all Near Eastern archaeology has been a reflection of Western preoccupations and interests, the history of archaeology in Cyprus may best be understood in terms of its involvement with Western scholarship. Because for most of this history Western ethnocentric concerns focused on Greece as the birthplace of democracy, Palestine as the home of the Bible, and Egypt and Mesopotamia as the centers of the oldest civilizations, Cyprus remained somewhat of a Cinderella in the wider picture of Near Eastern archaeology. A more significant attitude that shaped this history was the view that Cyprus was neither Oriental nor Greek, but a hybrid unworthy of study by scholars of the "great traditions." This status had and continues to have serious funding implications for archaeological research. Ambivalent western perceptions are manifested in many ways: the only foreign archaeological institute in Cyprus is established under the aegis of the American Schools of *Oriental* Research, the annual report of all discoveries appears in the *Bulletin de Correspondance Hellènique.* The list of paradoxes is endless. Because of the island's particular history, its archaeological development was closely synchronized with its political fortunes. This development may, therefore, be divided into three stages: precolonial, British colonial, and independence.

Precolonial Period, to 1878. In Cyprus, as elsewhere in the Near East, this period is characterized mainly by antiquarians who collected objects from cemeteries. Already in 1576, Poracchi mentions ancient tombs "in which have been found many wonderful things" at Kouklia, Paphos, and Salamis (C. D. Cobham, *Excerpta Cypria: Materials for a History of Cyprus,* Cambridge, 1908, p. 164). By the middle of the nineteenth century, foreign officials on the island vied with each other in amassing collections to enhance their prestige, for general edification and personal profit: the motives were not considered incompatible. Chief amongst these entrepreneurs were Sir Robert Hamilton Lang and the infamous General Luigi Palma di Cesnola. Cesnola's exports of innumerable antiquities helped to found the Metropolitan Museum of Art in New York City. He became its first director. Of Cesnola, D. G. Hogarth wrote in 1888: "It is much to be regretted that his want of all archaeological qualifications, coupled with his desire that that want should not be apparent to the world, has introduced such confusion into his results" (E. Gardner, D. Hogarth, M. James, R. Elsey Smith, "Excavations in Cyprus, 1887–8," *Journal of Hellenic Studies* 9 [1888]: 150). So many sites were rifled and so much exported during this and the start of the next

period that it is hard to underestimate its significance for later fieldwork developments. [*See the biographies of di Cesnola and Hogarth.*]

British Colonial Period, 1878–1960. Although the British administration enacted new antiquities laws, engaged antiquarians to excavate, established the Government Collections Museum (1883), and encouraged the foundation of the Cyprus Exploration Fund (1887) which worked on a large scale at major sites, the pervasive collecting mentality was not modified until the 1920s. Only John L. Myres fearlessly criticized the government and attempted to bring order into chaos. [*See the biography of Myres.*] However, Cyprus lacked a Flinders Petrie to apply systematic typological and stratigraphic methods; therefore, fieldwork lagged behind standards of some excavations in Egypt and Palestine. The situation improved when a young Swedish scholar, Einar Gjerstad, came to the island in 1923, published his seminal *Studies on Prehistoric Cyprus* (Uppsala, 1926), and gained funding for an ambulatory excavation program (1927–1931) that was breathtaking in scope. Its aim was no less than the elucidation of the entire cultural history of Cyprus from the Stone Age to the Roman period. To understand this turn of events, it should be remembered that in 1927 the old antiquities law was modified to permit the export of antiquities, thus enabling Gjerstad to obtain funding more easily. His research strategy emphasized two other aspects: the role of Cyprus as intermediary between the Orient and the Occident and its own indigenous civilization. These perceptions formed the *leitmotif* of archaeological activity on the island for much of this century. [*See the biography of Gjerstad.*]

Results of Gjerstad's and his colleagues' excavations have been published in the *Swedish Cyprus Expedition* I–IV (Stockholm, 1934–1972), an indispensable research tool. They demonstrate conscientious achievement. Their discoveries and sites are among the most important in Cyprus. To name but a few of their successes, Gjerstad and his associates revealed the Bronze and Iron Age cemeteries at Lapithos; the spectacular Late Bronze Age tombs at Enkomi; the hilltop palace at Vouni with its elegant *kore* and Persian treasure; the rural shrine at Ayia Irini with two thousand statuettes (some life-size, found undisturbed round its altar), the Archaic sanctuary at Idalion, capital of an Iron Age kingdom, where they found an entire coat of mail; the temple of Heracles-Melqart at Kition, so evocative of the syncretic beliefs of Iron Age Cyprus; and the Roman theatre at Soli.

Because Cyprus lacks tells (mounds), greater emphasis was placed on art history and artifact-based analysis than stratigraphy as the basis for the sequential reconstruction of Cypriot antiquity. Gjerstad, E. Sjöqvist, and others provided meticulous artifact studies in which artistic connoisseurship often passed for theory. Ceramic types established by Max Ohnefalsch-Richter and Myres were refined and put into a chronological sequence. Although modified since then, the Swedes' Bronze and Iron Ages typologies and dates are still commonly used. Their formulations are influential beyond Cyprus since distinctive Cypriot pottery was widely exported, and by crossdates, it provided undue precision for chronological schemes in Palestine and elsewhere.

As in Near Eastern archaeology generally, the Swedes and other archaeologists neglected Gordon Childe's culture concept (V. G. Childe, *The Dawn of European Civilization,* London, 1925) in favor of the traditional Three-Age techno-evolutionary model. In keeping with their views about the arrival of the Greeks on Cyprus by the beginning of the Iron Age, Gjerstad and his colleagues divided the period according to the Greek mainland chronological framework: Cypro-Geometric, Cypro-Archaic, and Cypro-Classical.

During the 1930s three archaeologists rose to prominence and helped to define the archaeology of the island for many years to come. The first was Porphyrios Dikaios, pioneer of Cypriot prehistory, who excavated the key sites of Khirokitia, Sotira, and Erimi, and documented the Neolithic and Chalcolithic periods for the first time. The second was C. F. A. Schaeffer, who in 1934 discovered the city of Enkomi. Because previous excavators were so intent on recovering "Mycenaean" tombs there, they failed to recognize that the tombs were inside the houses of the city. Schaeffer's objective was to obtain Late Bronze Age comparanda for material from his established excavations at Ras Shamra/Ugarit. The third was A. H. S. Megaw, who became director of the newly founded Department of Antiquities in 1936, developed a model organization during his tenure of office until 1960, and investigated classical and later remains such as Kourion and the Forty Columns castle at Paphos. During the 1930s, a long and productive project at Kourion was also initiated by George McFadden. For many years, classical archaeology in Cyprus was synonymous with discoveries by his University Museum, Philadelphia, team. [*See the biographies of Dikaios, Schaeffer, and McFadden.*]

Such was the perceived importance of Enkomi that in 1948 Dikaios was sidetracked from his prehistoric researchers to direct Cypriot excavations there. His painstaking, monumental report of ten-years' work demonstrates the influence of the Swedes, and it can be contrasted with Schaeffer's volumes in which only choice historical problems are treated or the most spectacular finds studied with panache. The subjective retrieval policies and incomplete publication of Schaeffer's Enkomi excavations are a continued source of regret. While Dikaios was engaged at Enkomi in 1957 he also rescued an extraordinary, half-looted tomb in a neighboring Iron Age cemetery, and so discovered the Royal Cemetery of Salamis.

Two quite different events mark the archaeological history of the island during the last decade of British administration. One was the excavation by J. Iliffe and T. Mitford

of the Persian siege mound at Palaipaphos, which unexpectedly yielded destroyed statuary, including what is arguably the finest Archaic sculpture from the island, and remarkable details of counter-siegeworks. The other was the creation in 1955 of a Survey Branch under H. W. Catling. This led to the first systematic surveys, the production of invaluable studies by Catling and an accessible reference collection for scholars.

The colonial power, intentionally or otherwise, had sought to deflect the Hellenization of Cypriot archaeology by emphasizing the island's cultural diversity. However, it was not possible to divorce archaeology from the struggles for independence and Enosis. With the founding of the new state in 1960, the issue of the earliest Greek presence on the island, never low on the agenda of earlier, classically trained archaeologists, came to the fore.

Independence, Since 1960. In the first flush of their independence, emerging modern states often produce outstanding figures. Independent Cyprus was fortunate in having first Dikaios (until 1963), then Vassos Karageorghis (until 1989), as directors of the Department of Antiquities. Karageorghis's astute policy of promoting international interest in the role of ancient Cyprus, while pursuing his own very active program of excavations, ensured a balanced yet lively development of the subject. Another stimulating policy, that of withholding licences to excavate until applicants' previous fieldwork was published, a policy now widely emulated, thrust Cypriot discoveries more forcefully into the mainstream of Near Eastern and Mediterranean archaeology.

During the 1960s major excavations were carried out by the French at the city of Salamis; by Karageorghis at its necropolis and at Kition; and by Kyriakos Nicolaou at Nea-Paphos, the Roman capital of Cyprus and a treasure house of mosaics. [*See the biography of Nicolaou.*] The immensely rich royal tombs of Salamis raised issues concerning the late expression of Homeric funerary rites. The role of the early Greeks on the island was being continually redefined, not only by excavations but also by publications such as H. W. Catling's provocatively titled *Cypriot Bronzework in the Mycenaean World* (Oxford, 1964) and conferences like the seminal *The Mycenaeans in the Eastern Mediterranean* (Nicosia, 1972). Although this topic also embraced the larger themes of the Sea Peoples and Philistines, debates paradoxically grew ever narrower as scholars vied to identify the foreign perpetrators of Late Bronze Age destructions. It is only recently that this empirical positivism was questioned and the whole basis of old theories of interpretation was reappraised.

One of the benefits of 1960s New Archaeology was the application of explicit models and a closer association between archaeology, science, and social science. Prehistorians were the first to respond. Dikaios already made use of radiocarbon dates in 1962 to radically revise upward the date of the Khirokitia culture, then regarded as the first evidence for humans on the island. Radiometric evidence from Ayios Epiktitos-Vrysi contradicted the prevailing sequence of "Neolithic I–II" and introduced compelling evidence for strong regional variation on the island. During the 1970s, self-critical concerns began to be voiced about theoretical concepts, research designs, and epistemological goals.

Meanwhile, fieldwork projects multiplied. Some of the more important included the Americans at Idalion, Toumba tou Skourou, Phlamoudhi, and Kourion; the French at Salamis and Cape Andreas; the British at Philia and Ayios Epikititios; the Poles at Paphos; the Germans at Tamassos; the Swiss at Palaipaphos; and, not least, the Cypriots at Kition. The last, in particular, yielded exciting results with the discovery of a Late Bronze Age holy precinct and the largest-known Phoenician temple, both associated with copper-working, anchors, and depictions of ships.

Armed conflict between Greeks and Turks in 1974 led to the cessation of excavations in the archaeologically rich northern part of the island. Major projects nonetheless ensued in the south and continue in the mid-1990s. The French worked at Amathus, at Kition where classical slipways were recently uncovered, and at Khirokitia where Dikaios's famed roadway was reinterpreted as a town wall. The Americans excavated in the Vasilikos Valley, where an urban center associated with the Kalavassos mines provides new impetus to thriving studies on the rise of complex society in Cyprus and its relationship with copper exploitation, and at Aetokremnos, where there is evidence for pre-Khirokitia pygmy-hippopotamus hunters. The British continue to work at Lemba and Kissmenga, where the lengthy Chalcolithic period is finally being investigated, and at the Bronze Age manor at Maroni. Rescue excavations at Kouklia-Skales revolutionized understanding of the eleventh–tenth century BCE "Dark Age." Other projects, like that of the Swedes at Hala Sultan Tekke, the Canadian survey in the west, and those of the Cypriots themselves at a variety of sites, emphasize the intensity of current fieldwork. Equally important was the introduction of influential theories for explanations in archaeology.

These anthropological theories came about as a result of western dissatisfaction with neo-evolutionary approaches. Labeled as processual, structural, postprocessual and other kinds of archaeology, they exhibit the influence of neo-Marxism and emphasize the social context of past changes. This new intellectual climate is fostering innovatory proposals such as the replacement of the traditional period labels and the application of explicit models, like secondary state formation to explain the relationship between the emergence of the Salamis royal tombs and the Phoenicians.

The archaeological policies of independent Cyprus averted the excesses of nationalist archaeology characteristic of new states. As the impact of new directions indicates, however, this decision was at the price of continuing to accept western goals and methodologies for the interpretation

of a polyethnic past. Thus, the current geopolitical context of Cyprus remains inseparable from interpretations of its past.

[*See also* Cyprus. *In addition, many of the sites mentioned are the subject of independent entries.*]

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EDGAR PELTENBURG

Archaeology in the Aegean Islands

The history of archaeology in the Aegean islands begins in the late nineteenth century. Very little archaeological or scholarly research was carried out in Greece during the centuries of Turkish rule, and work on the islands only began some fifty years after independence was won. The main period of Turkish rule, usually given as 1460–1821, is far more complicated for the islands: Thasos came under Turkish rule in 1455, Lesbos in 1462, Naxos in 1566, and Melos in 1580, but Rhodes was not conquered by the Turks until 1522, Crete did not become part of the Ottoman empire until 1669 and Aigina not until 1718.

The end of Turkish rule on the islands presents an equally complex picture. The islands of the Cyclades became part of Greece in 1832. The Ionian islands, governed as a British protectorate since 1815, were ceded to Greece in 1864. The islands of Ionia, such as Chios and Samos, and those of the North Aegean, including Thasos, Samothrace, Lemnos, and Lesbos, along with the northernmost part of the country including the Chalkidiki, all became part of Greece in 1913 (the latter as a consequence of the successful Balkan wars that Greece and her Balkan allies fought against the Ottomans in 1912–1913). In 1912, however, the islands of the Dodecanese—principally Rhodes, Kalymnos, Karpathos, and Kos—were given to Italy. Italian rule in the Dodecanese lasted until 1947. This variegated pattern in the recent history of the Aegean islands is reflected in the nature of the archaeological work carried out in the islands.

European knowledge of the Aegean islands was minimal prior to the late nineteenth century. The piles of rubble that had once been the Colossos of Rhodes, toppled by the earthquake of 226 BCE, were finally hauled away by the Arabs, in 653 CE and sold to a Jew from Edessa who needed nine hundred camels to transport all the bronze. In 1103 the Anglo-Saxon merchant Saewulf, on his return from pilgrimage to the recently liberated Holy Land, refers to the islands of Scio (Chios), Meteline (for Mytilene, the chief city of Lesbos), and Tenit (Tenedos) before going on to "the very ancient and famous city of Troy . . ." (Easton, 1991). In 1445, Cyriacus of Ancona visited Mykonos and Delos, giving his impression of the colossal statue of Apollo of the Naxians. Not content simply to describe ancient sculpture, Kenelm Digby, in the seventeenth century, carried off pieces of marble sculpture from Delos for the royal collection of Charles I.

Travelers to Crete in the seventeenth century were given a tour of the labyrinth of Daedalos, actually the remains of the stone quarry of Roman Gortyn/Gortyna. A more serious exploration of the Idaean Cave, the legendary birthplace of the god Zeus, had been carried out by Joseph Goedenhuize in 1590 or 1591, who remarked on the large quantity of broken lamps (of Roman date) in the cave. [*See* Lamps.] In the late 1830s, the German traveler Ludwig Ross toured the islands of the Aegean. His observations, published in three volumes (1850–1852) provide an account of the islands in the premodern era that is matched in English only by the work of James Theodore Bent, published in 1885. Bent also excavated some forty Early Cycladic graves on the island of Antiparos in 1884, but this does not represent the beginning of archaeological work in the Cyclades. In 1869 the French geologist F. Fouqué discovered remains of a prehistoric town on the southern coast of the island of Thera (actually

that part of the island known as Therasia). The vases found at that time are still in the collection of the French School at Athens. What Fouqué had discovered was the Minoan settlement at Akrotiri, buried by the eruption that took place in about 1600 BCE. It was excavated by Spyridon Marinatos from 1967 until his death in 1974.

In 1811 the Temple of Aphaia on the island of Aigina was "explored," and seventeen pieces of sculpture from it were subsequently sold to Ludwig I, king of Bavaria. The Venus di Milo (a first-century BCE copy of a fourth-century original), now in the Louvre museum, was found in fragments on Melos in 1820 and bought by the French ambassador to Constantinople as a gift for Louis XVIII. In 1854–1855 the Englishman Charles Thomas Newton, looking for more treasure to add to the collections of the British Museum, "excavated" the Temple of Apollo on Kalymnos. In 1863 the French consul Champoiseau discovered the Winged Victory of Samothrace. The statue, actually a Rhodian work of 187 BCE, is one of the treasures of the Louvre. In 1873 and 1875 an Austrian expedition under Alexander Conze worked at the Ptolemaion on Samothrace. In 1873 the French School began work on the island of Delos and these excavations, which are still in progress, can be said to mark the real beginning of official archaeological work on the Aegean islands (although large-scale excavation on Delos only took place between 1902 and 1914).

In 1878 the Archaeological Museum of Herakleion was founded and in that same year Minos Kalokairinos began work at what he called Kephala, a site now known as Knossos. In 1880 the newly established (1879) Archaeological Institute of America sent William J. Stillman to investigate the possibilities of archaeological work at Knossos and Gortyn, an enterprise strengthened by the establishment of the American School of Classical Studies in Athens in 1881. Although troubles between Greeks and Turks on Crete made work impossible, the American School maintained its interest in Crete into the 1890s, employing the Italian scholars Federico Halbherr and Antonio Taramelli in survey work and in the exploration of the Kamares cave, the latter soon to be made famous by Arthur Evans. After an ill-fated attempt to gain permission to excavate at Delphi, the American School finally settled upon the site of Corinth in 1896, which remains the official school excavation to this day.

Halbherr, on the other hand, remained on Crete. In 1884 he discovered the monumental stone inscription known as the Gortyn Law Code (mid-fifth century BCE). This remarkable discovery encouraged the Italians to remain in the vicinity of Gortyn and the plain of the Mesara. In 1885 they began work at the Temple of Pythian Apollo at Gortyn and, intermittently, continued to work in different areas of Gortyn into the 1960s. Halbherr also spent August 1885 excavating rich votive deposits from the Idaean cave (eighth and seventh centuries BCE), especially a series of important but poorly preserved bronze "shields," for which influence (and even provenience) has been sought in lands as far distant as Urartu. [*See* Grave Goods; Urartu.] In 1894 Halbherr began work at Prinias, a site covering a period from about 1300 to 300 BCE. The excavation of Prinias was continued by Luigi Pernier (1906–1908) and, more recently, by Giovanni Rizza (1969–1978). Work at the Idaean cave was reopened by Yiannis Sakellarakis in 1982.

In 1898 Turkish rule over Crete came to an end. An independent Crete was governed as a European protectorate under the leadership of Prince George of Denmark (until 1913, when Crete became part of Greece). In that same year Halbherr founded the Italian Mission to Crete, which, after 1937, became the Italian Archaeological School of Athens. In 1900 the main excavation of the Italian Mission was the Minoan palace at Phaistos. Work at Phaistos, directed by Pernier continued from 1900 to 1909 and then from 1928 to 1932 (Pernier and Banti, 1947). In 1950 the Italians reopened excavations at Phaistos, under the direction of Doro Levi. Levi dug there for seventeen seasons (1950–1966), publishing his results in a series of final excavation reports.

Work at Ayia Triadha, an adjacent site in some way related to Phaistos, began in 1902. The major excavations at Ayia Triadha (1903–1905, 1910–1914), directed by Halbherr and E. Stephani, were finally edited for publication by Luisa Banti in 1977. The famous well-known sarcophagus of Ayia Triadha, now securely dated to the fourteenth century BCE (LM IIIA), was discovered by R. Paribeni in 1903. [*See* Sarcophagus.] The current excavations at Ayia Triadha, under the direction of Vincenza La Rosa, began in 1977. A Pre-Palatial quarter at Ayia Triadha was discovered by chance in 1970 and excavated in 1973 and 1977. A Minoan pottery kiln (at first identified as a copper-smelting furnace) was excavated in 1976 and 1977. In 1959 Doro Levi excavated a remarkable Middle Minoan tholos tomb outside the village of Kamilari, near Phaistos. The Italians also worked on Crete during their period. (Di Vita and La Regina 1984). [*See* Tombs.]

In 1900, the year the Italians began work at Phaistos, Arthur Evans began his excavation of the palace of Minos at Knossos. He dug for six seasons (1900–1905) and published the results of his work in a series of five volumes (four volumes of text plus an index), *The Palace of Minos* (1921–1936), surely the best-known publication in the history of Minoan archaeology. By the time the last volume appeared, written with his half-sister Joan Evans (who also wrote a very informative biography of her brother), Evans was eighty-five years old. In 1905, during the last season of excavation at Knossos, Evans presented a paper at an international congress in Athens outlining the basic chronological framework of Minoan civilization. His basic sequence of Early, Middle, and Late Minoan, with each period having three subdivisions, is still used (MacEnroe, 1995). Carl Blegen, in 1921,

used this basic tripartite structure to work out a similar sequence for the Greek mainland, designating the basic periods as Helladic, in place of Minoan. This, too, is still the sequence used.

Evans was really a gifted amateur, with no experience in field archaeology, much like Heinrich Schliemann. As Schliemann had made use of the expertise of Wilhelm Dörpfeld, so Evans employed Duncan Mackenzie. Mackenzie was a skilled field archaeologist who had just spent four years (1896–1899) excavating the site of Phylakopi on the island of Melos (Momigliano, 1995). This was the first major excavation sponsored by the British School of Archaeology at Athens and the first long-range excavation in the Aegean islands. The results of this work were published in 1904. After only a brief season there in 1911, the British returned to Phylakopi in 1974, under the direction of Colin Renfrew. This time fieldwork (1974–1977) was combined with an extensive regional and ecological survey of the island.

After World War II and the German occupation of Crete (during which the Germans conducted some excavations, notably those of Frederich Matz at the site of Monastiraki), the excavation of Knossos was resumed by the British School, under the direction of Sinclair Hood (1951–1961). Hood is best known for his extensive excavations in the vicinity of the Royal Road, which remain unpublished. Since then the British School has excavated in many different areas at the site, under the direction of Peter Warren, Mervyn Popham, J. N. Coldstream, and Colin Macdonald.

Joseph Hazzidakis, director of the Syllogos of the Friends of the Herakleion Museum, and an important figure in the early years of Cretan archaeology, excavated at a complex of three Minoan villas at the site of Tylissos (1909–1913), finding, among other things, three huge bronze cauldrons. [*See* Villa.] These excavations were published by the French School (in their series Études Crétoises) in 1934. In 1915 Hazzidakis discovered the Minoan palace at Mallia. He conducted some exploratory work, in 1915 and 1919, and then turned the site over to the French School. The French opened excavations at Mallia in 1921 and are still there. Work before World War II was directed by Fernand Chapouthier (among others) and, after the war, by Micheline and Henri van Effenterre. Mallia, or Malia as it is known to its present excavators, remains the Minoan palace most appreciated by the modern visitor to Crete (for French work on Crete see Tiré and van Effenterre, 1978).

In 1901 the American scholar Harriet Boyd (later Hawes) began work at Kavousi, in the Bay of Mirabello. She soon shifted to the Minoan town of Gournia, where she remained through 1904. Gournia, excavated on behalf of the American Exploration Society of Philadelphia, an organization affiliated with the University of Pennsylvania, remains the only Minoan town ever excavated. Her final excavation report, published in 1908, was a model for its day and remains an indispensable publication for the study of Minoan archaeology. The new Gournia Project, currently conducting a regional survey, is directed by L. Vance Watrous (1994).

At Gournia, Boyd Hawes was assisted by Richard Berry Seager, who went on to conduct excavations at Vasiliki (1903–1906), Pseira (1906–1907), and Mochlos (1908). On the tiny island of Pseira, Seager excavated more than forty houses and thirty-three graves, but little of this material was ever published. From 1985 to 1991, Pseira was reexcavated, under the direction of Philip Betancourt and Costis Davaras. The first volume on the new Pseira Project appeared in 1995. At Mochlos, Seager found a spectacular series of Early Minoan tombs, with stone bowls and much gold jewelry, but publication was again quite sketchy. In 1989, Jeffrey Soles reopened excavations at Mochlos, working primarily in levels dating to Late Minoan times (Shaw, 1990).

The Greek Archaeological Service has also worked extensively on the island of Crete, especially under the direction of Marinatos (see above), Nikolaos Platon, and Stylianos Alexiou. At the beginning of this century the Greek archaeologist Stephanos Xanthoudides excavated a series of Early and Middle Minoan vaulted tombs on the plain of the Mesara, beginning with Koumasa, in 1904. His final report, published in 1924, raised many problems of chronology and interpretation that may be solved when the related tombs excavated by Alexiou at Lebena (1958–1960), the ancient port of Gortyn, are published. Xanthoudides also excavated a Late Minoan villa at Nirou Khani in 1918–1919. In 1912, Xanthoudides called attention to the importance of the site of Arkhanes. Some work was done at the site by Evans (1922), Marinatos (1935, 1956), and Platon (1948, 1957), but it was only in 1964 that Sakellarakis began large-scale work there. From 1965 to 1972 he excavated five very rich tholos tombs at Phourni and in 1979 discovered a structure identified as a Minoan shrine at Anemospilia, with evidence for human sacrifice.

In 1899–1900, the British School, under the direction of David Hogarth, excavated at the Cave of Psychro, usually identified with the Diktaean cave. Most of the finds from this excavation ended up in the Ashmolean Museum, Oxford, and were eventually published by John Boardman in 1962. In 1901, Hogarth moved to the site of Zakros, on the east coast of Crete, where he excavated a series of Late Minoan houses. It is now known that he came very close to finding the remains of the Late Minoan palace at Zakros that Platon only discovered in 1961 (although it had been known for some time to looters in the district). In 1962, Platon opened excavations at Zakros on behalf of the Greek Archaeological Society. Zakros is thus the fourth great Minoan palace to be excavated, and the results of Platon's work at the site (1961–1980) have been spectacular. Although he did publish a popular book on his excavations (Platon,

1971), the final excavation report will be published by his son, Eleftherios Platon, who, since 1981, has been excavating at the site, including the surrounding caves, houses and tombs.

In recent years large, possibly palatial complexes have been excavated at Khania, in western Crete (by a joint Greek-Swedish team directed by Yannis Tzedakis and Eric Hallager), at Kommos (by an American School team directed by Joseph Shaw), and at Palaikastro (by a British School team directed by J. A. MacGillivray, returning to a site the British School excavated from 1902 to 1906). George Rethemiotakis is also excavating a new Minoan palace site at Galatas, near Herakleion, on behalf of the Greek Archaeological Service. In addition to its Minoan remains Kommos has produced a series of Iron Age Greek temples (tenth century BCE) and even a structure identified as a Phoenician tripartite shrine. [*See* Phoenicians.] From Palaikastro a remarkable ivory and stone figurine has been identified by the excavators as a representation of the young Zeus.

On Naxos the physical anthropologist Klon Stefanos excavated some four hundred Early Cycladic graves in eighteen cemeteries (1903–1905), on behalf of the Greek Archaeological Society. This material was finally published by George Papathanasopoulos in 1963. Serious archaeological work on Naxos began in 1949 with the excavations by Nikolaos Kontoleon at the settlement of Grotta (in the town of Naxos) and the cemetery of Aplomata. In 1985 Kostas Zachos began work at the Zas cave, uncovering evidence for continuous occupation from Neolithic times to an early phase of Early Cycladic.

On Syros, the Greek archaeologist Christos Tsountas excavated, in the 1890s, some six hundred Early Cycladic graves at the cemetery of Chalandriani as well as a fortified Early Cycladic settlement at the site on Kastri. Tsountas published some of this material in two lengthy articles, in 1898 and 1899. The Kastri site was reexcavated by Eva-Marie Bossert in 1962. Another site named Kastri, a Middle and Late Minoan settlement on the island of Kythera, was excavated by the British School, under the direction of George Huxley, from 1963 to 1965. On Kea (also known as Keos), important excavations were conducted by the American School, under the direction of Jack Caskey, who dug, from 1960 to 1974, at the small Final Neolithic site of Kephala and at the large Bronze Age site of Ayia Irini. John Coleman published Kephala in 1977; Ayia Irini is being published in many volumes by multiple authors.

On Delos the prehistoric (Early Cycladic II and IIIA) settlement on Mt. Kythnos was explored in 1916. Beside the prehistoric circular, hut-shaped shelters of the third millennium BCE, the excavators found remains of an Archaic temple dedicated to Zeus Kythnios and Athena Kythnia. Prehistoric Paros (especially the Early Cycladic period) was explored by the German Institute under the direction of Otto Rubensohn, whose report appeared in 1917. Important evidence for understanding the end of the Bronze Age on Paros has come from recent excavations at the site of Koukounaries, conducted by Demetrius Schilardi on behalf of the Greek Archaeological Society. At the site of Skarkos, on the Island of Ios, Marisa Marthari is excavating a very well-preserved Early Cycladic settlement, on behalf of the Greek Archaeological Service. On the island of Saliagos, between Paros and Antiparos, the British School (1964–1965) excavated an important Middle Neolithic settlement, under the direction of John Evans and Renfrew, the first evidence for human occupation in the Cyclades in the Neolithic period.

From 1896 to 1903, the German Institute excavated the ancient Greek city of Thera, under the direction of Hiller von Gärtringen, finding many important Early Greek inscriptions. [*See* Greek; Inscription Sites.] The cemeteries of ancient Thera (Geometric, Archaic, and Classical) were excavated by Nikos Zapheiropoulos who, while ephor of the Cyclades in the 1950s–1970s, built local museums on many of the islands, including the one on Mykonos. Following the death of Marinatos in 1974, Christos Doumas continued work in the Minoan town of Akrotiri, where a great controversy developed over the date of the volcanic eruption that blew apart the island and buried Akrotiri under meters of ash and pumice. Various dates have been proposed, ranging from 1648 to about 1450 BCE; no resolution is in sight.

On Chios, an island noted for its production of mastic (a resin of the lentisk tree used in making a liqueur and in chewing gum) and as the traditional birthplace of Homer, "the blind man of Chios," the most important archaeological work has been that carried out by the British School at Emporio (1951–1955), a site covering the Late Neolithic and the entire Bronze Age, under the direction of Sinclair Hood and John Boardman. In the North Aegean, the most important prehistoric excavations have been those of the Italian School at Poliochni (1931–1936), on the island of Lemnos, directed by Alessandro della Seta, and of the British School at Thermi (1929–1933) on the island of Lesbos, directed by Winifred Lamb. Both are Early Bronze Age sites, covering roughly the period of Troy I–II. The exploration of prehistoric Samothrace began in 1984 with the excavations of Dimitris Matsas at the site of Mikro Vouni. The discovery there of clay sealings of Minoan type added a new chapter to the history of an island known mainly for its Hellenistic Sanctuary of the Great Gods, under investigation by the Institute of Fine Arts, New York University, since 1938. [*See* Seals.] The current excavations at this site are being directed by James McCredie.

In the islands of the Dodecanese the important work in prehistoric or Bronze Age archaeology has been done on Rhodes and Kos, mainly during the period when the islands belonged to Italy. Rhodes, in particular, was published in the periodical *Clara Rhodos* (published from 1928 to 1941). At Trianda on Rhodes, a habitation site under strong Minoan influence, if not an actual Minoan colony, was exca-

vated by G. Monaco from 1935 to 1936. The Mycenaean cemeteries on Rhodes, located at Moschou Vounara and Makria Vounara, near Trianda, were excavated by G. Jacopi from 1924 to 1928. The Italian interpretation of Late Bronze Age Rhodes was revised by Arne Furumark, in a classic article published in 1950. On Kos two large Mycenaean cemeteries, at Langadha and Eleona, were excavated by Luigi Morricone, in 1935 and 1940–1941. On both islands a great deal of recent work has been carried out by members of the Greek Archaeological Service, especially by T. Marketou at Trianda.

Descriptions of the antiquities of Samos go back almost 150 years. The tunneled aqueduct built by Eupalinos for the tyrant Polycrates (Herodotus 3.60) was described by Victor Honoré Guérin in 1856. [*See* Aqueducts.] The earliest map of the island was made by Tournefort in 1777 and the first plan of the city walls was drawn by Bishop Pococke in 1792. For those interested in the Near East, especially the Near East of the first half of the first millennium BCE, the most important excavations are unquestionably those conducted by the German Institute at the Sanctuary of Hera, the Heraion, on the island of Samos. The excavations there (1910–1914, 1925–1939, 1952 to the present), under a number of field directors, but especially Ernst Buschor and then Hans Walter, have uncovered a spectacular array of imported bronze votives. These bronzes, dedicated to the goddess Hera, came from Egypt, Cyprus, Phrygia, North Syria, Assyria, Babylonia, Luristan (or Iran), Urartu, and the Caucasus (Jantzen, 1972). No other Greek sanctuary and no other Greek site has such a quantity of imported Oriental objects. Only Olympia, Delphi, and now the Idaean cave have produced anything remotely comparable.

[*See also* Aegean Islands; Crete; *and the biographies of Evans, Guérin, Hogarth, Mackenzie, and Schliemann.*]

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Archaeology in the Arabian Peninsula

No history of archaeological research in the Arabian Peninsula can proceed as a smooth, uninterrupted narrative for the reason that explorations and excavations in northwestern Arabia, southwestern Arabia, inner Arabia, and the Gulf region (including Oman) followed separate, if not always unrelated, trajectories. Arabian scholars working in one area may have been aware of developments in other regions, but the scholarly traditions to which they belonged were quite distinct. Thus, because of its proximity to the Holy Land, the Hijaz (northwestern Arabia) always attracted the vast

majority of its students from the ranks of Palestinian archaeology. South Arabian scholars, overwhelmingly philologists until the 1950s, had wider interests in Semitic philology but tended to be a highly specialized band until quite recently. (Today, archaeologists with backgrounds in Syrian, Mesopotamian, and Iranian archaeology are on the scene.) Finally, the Gulf region attracted a mixture of scholars whose interests originally lay, for the most part, in the prehistory of Iran, the Indus Valley, Mesopotamia, and, in the case of the Danish expedition (see below), Scandinavia.

Political conditions have directed archaeological developments in many parts of the world, and the Arabian Peninsula is no exception. Many commentators on the history of archaeological research on the Arabian Peninsula have noted that political instability, the xenophobic tenets of Wahhabism, and the belligerence of bedouin tribes hampered the growth and development of archaeology in this region during the nineteenth century to an extent unknown in neighboring areas of western Asia. In this state of affairs, therefore, and given the very life-threatening situations encountered by early explorers, it is striking just how many archaeological observations were made prior to the inception of excavation in 1879. Much of this achievement must be ascribed to a heroic desire to explore a hostile corner of the globe generally regarded as inaccessible to those who valued their life; to record inscriptions in as yet undeciphered tongues; and to join what was, until quite recently, a very exclusive club of intrepid explorers. The history of Arabian exploration has been reviewed on several occasions by scholars such as David G. Hogarth, Fritz Hommel, Detlef Nielsen, and Adolph Grohmann. Only those discoveries of relevance to the archaeology of the peninsula will be discussed here. For the sake of continuity, each major subarea of the Arabian Peninsula will be dealt with in turn.

South Arabia. The German teacher Ulrich Jasper Seetzen became the first Western scholar to copy a South Arabian inscription as a result of his visit to the Ḥimyarite capital Ẓafar in 1810–1811. [*See* Ẓafar.] Other significant texts were copied in 1834–1835 and in 1838 by the British military adventurers James R. Wellsted and Charles J. Cruttenden. In 1843 Thomas Joseph Arnaud, a French pharmacist attached to an Egyptian regiment, became the first European to visit the Sabaean capital Marib and to describe its famous dam, as well as to collect more inscriptions. [*See* Marib.] The French Orientalist Joseph Halévy traveled to Yemen in 1869 on behalf of the Académie des Inscriptions et Belles Lettres, copying almost seven hundred inscriptions and thereby laying the foundations of the systematic study of epigraphic South Arabian. [*See* South Arabian.]

It was the great Austrian scholar Eduard Glaser, however, whose four expeditions to Yemen (1882–1884, 1885–1886, 1887–1888, 1892–1894) were to have the most profound impact on the early course of South Arabian studies. The initial results of Glaser's work were published in the *Corpus Inscriptionum Semiticarum*, but the inscriptions he copied continue to be edited in the Austrian Academy of Science's series Sammlung Eduard Glaser. The last great South Arabian expedition of the nineteenth century was the Vienna Academy's unsuccessful attempt, in 1898, to reach Shabwa, capital of the Ḥadhramaut, under the direction of Carlo Landberg and the Orientalist David Heinrich Müller [See Ḥadhramaut; Shabwa.]

In 1928 the German scholars Carl Rathjens and Hermann von Wissmann, working at the site of al-Huqqa, became the first scholars to undertake archaeological excavations in Yemen. A decade later, in 1937–1938, Gertrude Caton-Thompson worked at Ḥureidha, and R. A. B. Hamilton excavated at Shabwa. [*See* Ḥureidha.] Archaeological activity in Yemen was interrupted by World War II, but in 1950 Wendell Phillips, with the help of such renowned scholars as William Foxwell Albright, led the first of his American Foundation for the Study of Man (AFSM) expeditions to South Arabia, working at a series of important sites including Timnaʿ, the capital of Qataban; Hajar Bin Ḥumeid, a stratified mound in the Wadi Beiḥan; the Sabaean capital Marib, where the Awwam temple was excavated; and Khor Rori, a Ḥadhrami foundation on the coast of Dhofar. In 1968 the American scholar Gus W. Van Beek, a veteran of the Hajar Bin Ḥumeid excavation, surveyed Najran, the northernmost of the great South Arabian cities. [*See* Hajar Bin Ḥumeid; Najran; Qataban; Timnaʿ (Arabia); *and the biographies of Caton-Thompson, Phillips, and Albright.*]

Excavations at Shabwa, capital of the Ḥadhramaut, were begun in 1974 by a French mission led by the late Jacqueline Pirenne and Jean-François Breton; such other scholars as Walter W. Müller of Marburg, Jacques Ryckmans of Louvain, and Christian Robin of Aix-en-Provence universities continued carrying out epigraphic surveys in Yemen during the 1970s and 1980s. The establishment of a station of the German Archaeological Institute at Sanʿa in the 1970s resulted in much new work at Marib and other sites, under the direction of Jürgen Schmidt. In the early 1980s, an important Italian expedition led by Alessandro de Maigret began, for the first time, locating and excavating Bronze Age sites in Yemen; in 1982 the AFSM initiated new work in Wadi al-Jubah, under the direction of James Sauer. [*See* Jubah, Wadi al-.] Meanwhile, a Soviet-Yemeni expedition, working both at Raybun in the Ḥadhramaut and at Qana' on the coast, in the mid- and late 1980s, added considerably to what is known of South Yemen. More recently, a French expedition directed by Serge Cleuziou began investigating the later prehistory of Yemen. [*See* Yemen.]

Eastern Arabia and the Gulf Region. Foreign political advisers and military officers were the first active pursuants of the archaeological record of eastern Arabia and the Gulf. Lewis Pelly, Her Majesty's political resident in the Persian Gulf, described the ruins at Thaj in northeastern Arabia in the diary of his 1865 journey to Riyadh. In 1879 Edward L.

Durand conducted the first archaeological excavations ever undertaken on the Arabian Peninsula at the site of Aali, on the island of Bahrain. In 1899 an unidentified Ottoman official wrote an account of archaeological sites in the Hofuf oasis area of northeastern Arabia, that was published posthumously in 1917. William Henry Irvine Shakespear, the British political officer at Kuwait, visited Thaj in 1911, at which time he copied several Hasaitic inscriptions. Excavations were resumed on Bahrain in 1889 by Mr. and Mrs. Theodore Bent; in 1903 by the Belgian scholar Arnold Jouannin; in 1906 by Francis B. Prideaux; from 1921 to 1926 by Clive Kirkpatrick Daly; and in 1925 by Ernest J. H. Mackay. [*See* Bahrain; Thaj.]

The renowned British Arabist Harry St. John B. Philby collected stone tools in eastern Saudi Arabia, near the border with Qatar, in 1931, just as the British political agent at Kuwait, Harold Richard Patrick Dickson did in the Wadi al-Batin of western Kuwait in 1935. [*See* Kuwait; Qatar.]

In 1933 an agreement was signed by Standard Oil of California and the Saudi Arabian Ministry of Finance that initiated the search for oil in Saudi Arabia. With this act, thousands of Americans gained access to what had formerly been the province of but a few intrepid explorers, and information on archaeological finds began to accumulate. In 1940–1941, in collaboration with Standard Oil, Peter Bruce Cornwall, then a graduate student in history at Harvard University, conducted test excavations at several sites in the Eastern Province of Saudi Arabia. In 1947 Richard LeBaron Bowen, Jr., an engineer working for ARAMCO (Arabian American Oil Company), collected pottery and described 'Ain Jawan, the site of a limestone quarry worked during World War II. This led to an important publication that was long the main point of reference for the late pre-Islamic past of eastern Saudi Arabia.

It was also oil that brought T. Geoffrey Bibby, on behalf of the Iraq Petroleum Corporation, to Bahrain and led to the inception, in 1953, of the Danish expedition to the Arabian Gulf (University of Aarhus), led by the eminent Danish prehistorian Peter Vilhelm Glob. Soon after establishing themselves on Bahrain, the Danish Gulf expedition began working in Qatar (1957), Kuwait (1958), and the Trucial States (1958), all of which had been, archaeologically speaking, terra incognita. In 1968 the Danes conducted a season of survey and excavation in the Eastern Province of Saudi Arabia. In 1972 Abdullah H. Masry, a Saudi Arabian educated at the University of California at Berkeley and at the University of Chicago, began excavations at a number of important Ubaid-related sites in eastern Saudi Arabia. He was followed shortly thereafter by Constance Maria Piesinger at the third-millennium BCE sites of Umm ar-Ramad and Umm an-Nussi. Surveys of the region between Hofuf and the Kuwaiti border were conducted in 1976 and 1977 by American scholars from the University of Chicago and Harvard working for the Saudi Arabian Department of Antiquities. Between 1982 and 1985 excavations were carried out at Thaj and in the Dhahran tomb field.

New excavations on Bahrain were undertaken by several Arab missions in the late 1970s, when it became clear that the construction of the causeway that now links Saudi Arabi and Bahrain was going to destroy thousands of burial mounds. An Australian team led by Anthony McNicoll worked briefly on Bahrain in the early 1980s. The French scholar Monique Kervran resumed excavations at Qal'at al-Bahrain during the late 1970s since continued by Pierre Lombard. [*See* Qal'at al-Bahrain.] A British expedition has been excavating the early second millennium BCE settlement of Saar since 1990. Between 1983 and 1990 a French mission to Failaka (in Kuwait), under the direction of Jean-François Salles, carried out extensive excavations at both Bronze Age and Hellenistic sites. [*See* Failaka.]

Northwestern Arabia. Apart from surreptitious visits to Mecca and Medina by the likes of Richard Burton and others, northwestern Arabia was not explored until 1876–1878, when the great English Orientalist Charles M. Doughty visited the southerly Nabatean site of Meda'in Saleh and the earlier Iron Age metropolis of Tayma', where the sixth century BCE Babylonian monarch Nabonidus spent a decade of his reign. [*See* Meda'in Saleh; Tayma'.] The visit yielded an important harvest of Nabatean, Lihyanite, Thamudic, Aramaic, and Minean inscriptions. [*See* Nabatean Inscriptions; Safaitic-Thamudic Inscriptions.] The year 1884 witnessed the important expedition by the Alsatian scholars Julius Euting and Charles Huber to Tayma' and al-'Ula (Dedan). [*See* Dedan.]

From 1907 to 1910 two French Dominican fathers, Antonin J. Jaussen and Raphael Savignac, conducted extensive surface investigations at Meda'in Saleh, al-'Ula, Tabuk, and briefly at Tayma'. Between 1908 and 1915 the Austrian Orientalist Alois Musil made a series of journeys through northern Arabia, reaching Hail, al-'Ula, al-Jawf, and Wadi es-Sirḥan which, although not intended to serve an archaeological purpose, gathered an enormous amount of topographic data scholars working on the archaeology and early history of this area continue to mine.

Thereafter, it was not until 1962 that two Canadian scholars, Fred V. Winnett and William L. Reed, returned to northern Arabia, where they visited most of the important, known sites (e.g., Tayma', al-'Ula, and Mada'in Saleh), recording dozens of Thamudic, Taymanite, Minean, Dedanite, Lihyanite, Nabatean, Palmyrene, and Hebrew inscriptions. [*See the biography of Winnett.*] In 1968 the English archaeologist Peter J. Parr led a team that returned to Meda'in Saleh, al-'Ula, Tayma', and other North Arabian sites of importance but was still not entitled to conduct sondages. During the late 1970s and early 1980s, archaeologists working on behalf of the Saudi Arabian Department of Antiquities conducted surveys and sondages throughout northwestern Arabia, but particularly at Khuraybah and Tayma'.

Oman Peninsula. In the early nineteenth century, the interior of Oman was almost as inaccessible as Yemen. The coasts, however, were visited frequently by the navies and merchant vessels of many European countries, as well as of America. On one such visit in 1844, Henry John Carter, an assistant surgeon aboard the British East India Company's brig *Palinurus,* noted the presence of early traces of copper metallurgy on the island of Masira off the southern coast of Oman. Copper metallurgy was to remain an important area of research in Omani archaeology. The year 1924 saw the establishment of a committee "to report on probable sources of the copper used by the Sumerians" by the British Association for the Advancement of Science. This research project, which lasted until 1936, involved the analysis by the English metallurgist Charles H. Desch of, among other things, copper ore samples from Oman acquired in 1925 by the British geologist G. M. Lees.

Actual excavations in Oman, however, were not initiated until 1958, when Ray Cleveland, a junior colleague on Phillips's AFSM team, conducted brief soundings at Sohar, on the Batinah coast of Oman. [*See* Sohar.] Meanwhile, in the same year, Glob and Bibby were shown a group of burial mounds on the island of Umm an-Nar, in Abu Dhabi, and shortly thereafter in the Buraimi/al-ʿAin area oasis (divided between Abu Dhabi and Oman). It was there that the Danes were to uncover the first traces of the third-millennium Umm an-Nar culture that dominated most of the Oman peninsula.

In 1968 the British archaeologist Beatrice de Cardi, accompanied by Brian Doe, conducted her first survey in the emirate of Ras al-Khaimah, and the Danish archaeologist Karen Frifelt began work at sites such as Hili, Qarn Bint Saud, and Rumeilah. It was the accession of Sultan Qaboos in Oman in 1970 and the formation of the United Arab Emirates (UAE) in 1971, however, that paved the way for the subsequent systematic archaeological exploration of the Oman peninsula. Beginning with the appointment in 1973 of the British scholar Andrew Williamson (d. 1975) as archaeological adviser in Oman, foreign expeditions from Britain, the United States, Italy, France, and Germany have carried out a great deal of work in Oman, investigating a wide range of sites of all periods. For the first time such neglected problem areas as copper metallurgy, oasis agriculture, irrigation, paleopathology, and ceramic technology were addressed, rather than concentrating exclusively on site sequences and chronological questions. In this they were greatly aided for many years by Williamson's successor, Italian archaeologist Paolo M. Costa. [*See* Oman.]

The surveys and sondages carried out by an Iraqi expedition to the UAE in 1973 led to the discovery of many important sites, a number of which were subsequently investigated. Teams from France, Germany, Belgium, Denmark, the United Kingdom, Switzerland, Japan, and Australia have worked at a wide range of sites, including Hili 8, Rumeilah, Shimal, ed-Dur, Bithna, Rafaq, Julfar, and Tell Abraq; the departments of antiquities and museums in al-ʿAin (Abu Dhabi), Ras al-Khaimah, and Sharjah have been particularly active.

Inner Arabia. Apart from several crossings made by Philby, the "Heart of Arabia" remained largely unknown to Western scholars until 1951 when, at the invitation of King Abdul Aziz Ibn Saud, the Belgian scholars Gonzague Ryckmans and Jacques Ryckmans, together with Philippe Lippens and Philby, surveyed the territory between Jiddah, Najran, and Riyadh, recording more than ten thousand rock-cut inscriptions.

In 1972 Abdul Rahman al-Ansary of Riyadh (now King Saud) University initiated excavations at the important central Arabian metropolis of Qaryat al-Fau, which the Philby-Ryckmans-Lippens expedition had visited. [*See* Qaryat al-Fau.] This project, in which a generation of Saudi Arabian archaeologists was trained, continues under al-Ansary's direction. In 1976 Masry, as newly appointed director of antiquities, launched the long-term Comprehensive Survey of the Kingdom of Saudi Arabia. The project ran into the mid-1980s and recorded thousands of archaeological sites scattered throughout the interior of Saudi Arabia. Excavations at al-Rabadah, a caravan stop on the Darb Zubaydah, or Pilgrim Road, between Baghdad and Mecca, began in 1979 under the direction of Sa'ad al-Rashid of King Saud University. [*See* Darb Zubaydah.]

The establishment of Arabian archaeology as a recognized subfield within Near Eastern archaeology is attested to not only by the large number of excavations in the region during the last few decades, but by the number of journals now devoted to it: *Arabian Archaeology & Epigraphy* (Copenhagen), *Atlal* (Riyadh), *Dilmun* (Bahrain), and the *Journal of Oman Studies* (Muscat). In addition, the first academic post in the West devoted exclusively to Arabian archaeology was established at the Institute of Archaeology, University College London, in the late 1980s.

[*See also* Arabian Peninsula.]

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HITTITE. The language called Hittite belongs to a family of languages spoken in Asia Minor during the second pre-Christian millennium. These languages, which constituted the old Anatolian branch of the Indo-European family, included Hittite, Luwian, and Palaic. Hittite is by far the best attested of all these languages, represented by thousands of clay tablets inscribed in cuneiform writing stemming from the capital of the great Hittite Empire the city Ḫattuša, whose ruins lie adjacent to the modern Turkish town of Boğazkale. [*See* Boğazköy.] Excavations there have been conducted on behalf of the German Oriental Society and the German Archaeological Institute, almost continuously since 1906, under the direction of Hugo Winckler, Kurt Bittel, and Peter Neve. Well over ten thousand tablets were found in several locations: on the acropolis, in the large temple in the Lower City, in the House-on-the-Slope, and, in recent years, in the smaller temples in the Upper City. Tablets from Ḫattuša include a small number of Old Hittite (c. 1650–1500) and many more from the succeeding Middle Hittite (c. 1500–1380) and New Hittite periods (c. 1380–1180). [*See* Deutsche Orient-Gesellschaft; Deutsches Archäologisches Institut, Abteilung Istanbul.]

Writing System. The Hittites adopted a form of the Sumero-Akkadian cuneiform writing system. The sign forms resemble those in contemporary inscriptions from Syria and Egypt (Alalakh, Ugarit, Amarna). The phonetic values of the signs are also largely the same as in these other areas of western peripheral cuneiform, with the exception of a few values coined on the acrophonic principle: for example, the value *wi* for the GEŠTIN ("wine") sign, whose Hittite equivalent was *wiyanaš*. Hittite cuneiform writing consisted of signs for syllables (e.g., *ba, ug, par*) together with others which represent entire words, represented in transcription by their Sumerian value (e.g., LUGAL "king"). [*See* Cuneiform; Sumerian.]

Phonology. Because Hittite is a dead language, its phonology can be judged today only on the basis of variations in writing. Although the cuneiform writing system was capable of representing the distinction between voiced and voiceless stops, Hittite scribes did not employ this method. The same words were written with *t*- and *d*-containing signs, *g* and *k*, and *b* and *p*. Instead of employing separate signs for voiced and voiceless consonants, wherever the stop in question occurred intervocalically, the voiceless variant was written doubled: a-ap-pa for pronounced /apa/, and *a-pa-a-aš* for /abas/. [*See* Scribes and Scribal Techniques; Writing and Writing Systems.]

Hittite seems to have distinguished at least the following consonants: *b, d, g, g^w, ḫ, k, k^w, l, m, n, p, r, š, t,* and *z*. Although the graph *z* may occasionally represent a sibilant distinct from *š*, it usually represents the cluster *t* and *š* (e.g., *aniyaz* for *aniyat-* + nominative case ending *š*).

The vowels are *a, e, i,* and *u*, which can be long or short in quantity. A minimal contrasting triad illustrates three distinct vowels: *ḫarkan,* "destruction"; *ḫarkin,* "white"; and *ḫarkun,* "I held." Next to nothing is known today of the quality of these vowels. Vowel length was often indicated by plene spellings (e.g., *a-pa-a-aš* for /abās/; *a-pu-u-uš* for /abūs/). But because such spellings were sometimes necessary to disambiguate vowel quality in cuneiform writing (e.g., *p^e/i-e-da-an,* "place," to indicate /pedan/ versus */pidan/), the presence of vowel quantity cannot always be concluded through their presence. Two glides, *y* and *w*, existed.

Nouns, Adjectives, Pronouns, and Numbers. Nouns show two genders, animate (or common) and inanimate (or neuter). There is no formal distinction between masculine and feminine gender. In number, nouns and adjectives distinguish singular and plural, but no dual. Animate and inanimate nouns and adjectives have identical endings in the genitive (sg., *-aš;* pl., *-aš*), dative-locative (sg., *-i;* pl., *-aš*), allative (*-a*), instrumental (*-it*), ablative (*-az*), and vocative (*-e, -i,* or zero). In the nominative and accusative cases, animate and neuter nouns and adjectives employ different case endings (see table 1).

Pronouns can be independent words or clitics. Examples of the former are *uk,* "I"; *ammuk,* "me"; *ammel,* "my"; *zik,* "thou"; *tuk,* "thee"; and *tuel,* "thy." Sample clitics are *-mu,* "me," and *-naš,* "us"; *-ta,* "thou," and *-šmaš* "you (pl.)"; *-še,* "to him/her/it," and the third-person nominative and accusative forms (*-aš,* "he"; *-an,* "him"; *-at,* "it"). Demonstratives are *ka-,* "this," and *apa-,* "that." Relative and interrogative pronouns share the stem *k^wi-* "who, which."

Hittite numbers are almost always written with number signs (1-*aš,* 3-*eš*) and share some of the distinctive endings of the pronouns: 2-*el,* "of two." The full forms of only a few are known, such as *teriyaš,* "three," and *meyawaš,* "four." Numerical expressions employing derivational suffixes are 2-*anki,* "twice" (*-anki*) and the ordinal 2-*anna* "second."

Verbs. Verbs show root and thematic stems. Two conjugations exist in the active voice, whose endings differ only in the singular (see table 2). The present plural is formed

TABLE 1. *Animate and Inanimate Nouns and Adjectives*

	Animate	Inanimate
sg. nom.	*-š*	zero or *-n*
sg. acc.	*-n*	zero or *-n*
pl. nom.	*-eš, -uš* (NH)	zero, *-i, -a*
pl. acc.	*-uš, -eš* (NH), *-aš* (NH)	zero, *-i, -a*

TABLE 2. *Verb Conjugations*

	-mi conjugation	*-ḫi* conjugation
Pres. 1	*-mi*	*-ḫi*
2	*-ši*	*-ti*
3	*-zi* (<*-*ti*)	*-i*
Pret. 1	*-un, -nun*	*-ḫun*
2	*-š*	*-š*
3	*-t*	*-š*

with *-weni, -teni, -anzi* (from *-*anti*); and the preterite plural is formed with *-wen, -ten, -er*. There is no difference in meaning between the *-mi* and *-ḫi* conjugations. Verbs can be in either the active or middle voice. A participle (ending in *-ant-*) serves intransitive verbs and as a passive of transitives. Verbal substantives end either in *-war* (gen. *-waš*), or *-atar* (gen. *-annaš*). Infinitives end either in *-wanzi* or *-anna*. Two tenses exist: a present-future and a preterite. The perfect is expressed analytically, by means of the neuter form of the participle with a form of the verbs *ḫar(k)-*, "to have," or *eš-*, "to be."

Negation and Questions. Four words are specialized for negating different modes: *natta,* "not," and *nawi,* "not yet," negate statements; *lē* negates commands; and *nūman* negates wishes or statements about others' wishes. Questions were undoubtedly marked in speech with an intonation pattern and stress. Many interrogative sentences contain question words: *kuiš,* "who?"; *kuwat,* "why?"; *kuwabi,* "where?"; and *maḫḫan,* "how?/when?."

Vocabulary. Hittite vocabulary consists of a core of inherited Indo-European words (*wadar,* "water"; *nebeš,* "sky"; *padaš,* "foot"; *genu,* "knee"; *ed-,* "to eat") enlarged by a significant number of words borrowed from neighboring cultures (*tuppi,* "tabletcharacter."; *šankunniš,* "priest"; *nitri,* "natron"). [*See* Indo-European Languages.]

Literary Genres. The archives of ancient Ḫattuša contained texts in a variety of literary genres: historiographic, administrative, legal, and literary. In addition, tablets on which scribes wrote their training exercises have been recovered.

Historiographic texts. Texts relating events either of the reign of a particular king (royal annals) or of a period of time (prologues to state treaties) or relating the (mis)behavior of a particular civil servant (anecdotal texts from the Old Kingdom) are known as historiographic. No claim is made that they follow the same standards of objectivity and accuracy that might be claimed for modern historiography.

Procedure handbooks. The largest single category of tablets represented in the archives which describe the course of religious ceremonies. More than two hundred compositions describe festivals in the cultic calendar. The archives contained, in addition, many tablets representing around twenty distinct hymns or prayers to be employed in the cult.

Outside the cult proper procedures were often prescribed to invoke deities through magical means. More than one hundred such texts describe private rituals performed to free a client (sometimes specifically the king or queen) from various problems, ranging from a physical illness, sexual impotence, or insomnia to being haunted by the ghost of a deceased relative. In many cases the underlying cause of the ailment is said to be "impurity," which can be removed by manipulating symbolic materials and reciting incantations. A small group of texts is called medical, but its procedures are less physical therapy than ritual manipulation.

A special category of procedural handbook is represented by hippological treatises. The best-known one is authored by a certain Kikkuli, who has a Hurrian background. The Kikkuli manual shows clear traces of having arisen in a society of chariot-drawn warrior-aristocrats with a linguistic and cultural background in the lands to the east of Mesopotamia. These texts describe a daily training regime that extends for more than a year and includes instructions for the feeding, exercise, and stabling of horses. The procedures seem to be aimed at producing horses capable of sustained exertion rather than short bursts of speed, and for chariot drawing rather than horseback riding.

Legal literature. Although the king was the supreme judge and administrator of the law, he was himself subject to its strictures and could, in rare cases, be removed for its violation. Law was defined by the collection of precedent cases known to scholars as the Hittite laws, the earliest manuscripts of which date from the Old Kingdom. Later copies from the New Kingdom show a modernization both of language and of the law itself. In addition to these late copies of the Old Hittite law collection, a New Hittite collection is also attested, whose changes in the law are more substantial. The individual cases are described, using the formulation that had become standard in Mesopotamia centuries earlier: "If a person does such-and-such, he shall pay such-and-such a fine." The penalty clauses are almost all payments of various kinds, with a very small number requiring bodily injury or death. The cases covered involve homicide, bodily injury, damage to or theft of property, prices for livestock, agricultural and artisan products, and obligations to the crown by persons holding land.

The laws deal with marriage, divorce, and sexual crimes; inheritance, contracts, loans, debts, and business are largely untouched. Laws concerned with royal succession were occasionally promulgated by royal edict rather than in the collection of laws. Such edicts include the so-called Political Testament of Ḫattušili I (c. 1650), regarding his choice of Muršili I as his successor; the Telipinu Proclamation (c. 1550), to stabilize royal succession after a period of regicide

and anarchy; and the Apology of Ḫattušili III (c. 1250), intended to legitimize his seizure of the throne from his nephew Muršili III.

Unlike the cuneiform tablet archives at other major political centers in the Near East, the archives of ancient Ḫattuša contain no substantial collection of deeds, contracts, wills, and other legal records. There is, however, a small collection of records that could be either minutes of court proceedings or depositions of testimony taken elsewhere but intended to be presented in court. The texts contain testimony offered by various civil servants regarding charges of misconduct against a particular member of their group. The defendant himself also gives testimony. There is no mention of responses made by any judge hearing the case. These documents all date from the second half of the New Hittite period—the last two centuries of the Hittite capital's existence.

Archival or administrative texts. Texts intended to keep records for bureaucratic purposes include censuses, inventories of materials in the palace or temple storerooms, catalogs (or possibly shelf lists) of tablets in the palace library, and records of land grants. Also belonging to this general category are records of questions put to various kinds of oracles regarding formations on the liver of sacrificed animals, observation of the flight of birds, the behavior of sacrificial animals just prior to slaughter, or the movements of snakes observed in a controlled environment.

Scribal training. Some tablets were part of the curriculum for training scribes. The principal genre in this category is the Sumero-Akkadian lexical text. Texts devised in Mesopotamia for training Akkadian-speaking scribes in the use of Sumerian were further annotated in the Hittite capital by the addition of Hittite translations. In some cases there were only two columns: an Akkadian one and a Hittite translation. Most texts, however, included at least Sumerian, Akkadian, and Hittite, and some added a column indicating syllabically the pronunciation of the Sumerian word-signs. Seven of the principal lexical series known from Mesopotamia are well attested: Syllabary A, Diri, Erim-ḫuš, ḪAR-ra = ḫubullu, Izi, and Proto-LÚ. Scribes also practiced by copying Mesopotamian literary compositions, such as the great hymns to the sun god Shamash and the storm god Adad. In fact, Hittite translations of some of these hymns are known. Other Mesopotamian literary works, both copied in their Akkadian form and translated into Hittite, include the Gilgamesh and the Atraḫasis epics. A Canaanite mythological text translated into Hittite concerns the storm god Baal, the elderly god El, and his consort the goddess Asherah.

Native literature. Anatolian narrative literary works included myths about the deities of the old Hattian stratum, and others about the newer wave of Hurrian deities. Among the former are the stories about the battles of the storm god with a great serpent and the stories of retrieving runaway gods whose disappearance brought on famines, droughts, and infertility. Among the latter is the cycle of tales concerning the Hurrian gods Kumarbi and Teššub.

[*See also* Hittites.]

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HARRY A. HOFFNER, JR.

HITTITES. Long before the Hittites, about whom we know so much today from excavations in central Turkey, were known, every serious reader of the Bible knew the name. According to the *Book of Genesis* Hittites sold a field and a burial cave to Abraham (*Gn.* 24), the ancestor of the people of Israel. Abraham's grandson Esau displeased his parents by taking Hittite wives from the neighboring peoples of Canaan (*Gn.* 26:34). Hittites are mentioned with other ethnic groups inhabiting the land of Canaan on the eve of the invasion under Joshua (*Jos.* 1:4, 3:10). These people had been at home in southern Palestine for centuries before the time of the Israelite monarchy and show no traces of foreign origin. Their names are linguistically Canaanite. Their customs and way of life were no different from those of other semitic groups in Palestine at that time. If they originated in the north among the stock of the Late Bronze Age Anatolian Hittites, they have lost all trace of their origin. In fact, the genealogical "Table of Nations" in *Genesis* 10 includes their eponymous ancestor, Heth, among the sons of Canaan. All this suggests that the "Hittites" of the earlier parts of the Hebrew Bible were Canaanite aborigines, with no Anatolian roots.

On the other hand, the historical records of the Davidic and post-Davidic period in Israel clearly attest contacts with the "Hittite" kingdoms of northern Syria. The Hittites spoken of here are clearly foreigners. Their Syrian states represent the continuation of the Syrian vassal states of the great Hittite Empire of the Late Bronze Age.

In the final decades of the nineteenth century, large stone blocks inscribed in a previously unknown hieroglyphic script were found built into mosques in Syria. Scholars correctly suspected that these inscriptions were the work of the ancient Hittite kingdoms of Syria. As the search for more of these inscriptions widened into Anatolia, attention was drawn to the remarkable hieroglyphic inscriptions on living rock in the vicinity of the small village of Boğazköy, about 160 km (100 mi.) east of Ankara, in central Turkey.

Boğazköy. Excavations were begun on the large mound in 1906, under the joint directorship of Hugo Winckler and Theodore Makridi. What was found forever changed our concept of the Hittites [*see* Boğazköy]. More than ten thousand clay tablets were concentrated in two places on the large city mound: the first area was the palace administration complex on the acropolis; the second was the large temple library in the Lower City. Excavators found that several of the rooms in which the tablets from the acropolis were found had been libraries. Wooden shelving around the walls allowed the tablets to be systematically arranged. Small clay shelf labels identified the locations of important tablet collections. Several tablets contained what we would today call shelf lists, or catalogs, of the collection.

Most of the tablets were in fragments, having fallen from their shelves in the conflagration that destroyed the city in about 1180 BCE. Some were so badly overheated through direct, sustained contact with burning roof beams, that the clay blistered and became badly disfigured. But many tablets whose fragments were fairly large could be reconstituted by the epigraphers.

The city itself, as revealed by the archaeologists, was large by the standards of its day. The acropolis, on which the king's residential quarters and the palace administration were located, was entered by a gateway at its southwestern corner. At that point, it was connected by a large bridge or viaduct to the Upper City, to the south. This large area accommodated more than thirty temples and temple precincts for the "Thousand Gods" of the Hittite pantheon. Some of the city's most impressive reliefs were found in this area: depictions of the kingdom's major deities and several of its last kings.

Three impressive gateways punctuate the city's southern wall. The easternmost gateway is called the King's Gate because on its inner side stood a large relief depicting a heroic male figure, originally assumed to be a king, but possibly a god. A great festival procession exited the city through this gate and wound its way south and west to the Sphinx Gate at the central point in the southern wall. Farther west is the Lion Gate, so named from the relief of a large lion on the outside, easily observed by processions reentering the city at this point. The centrally located Sphinx Gate is equidistant from the Lion Gate and King's Gate.

To the northwest of the Upper City and directly west of the Acropolis area lies the Lower City. Its most conspicuous monument is the largest temple of ancient Ḫattuša. This temple has a twin cella, indicating that the primary deities worshipped here were the storm god of Hatti and the sun goddess of Arinna. The temple proper was built around a central courtyard. This complex in turn was surrounded, like the smaller temples in the Upper City, by a temenos wall. Southward, across a street from the main temple complex, a large building housed workshops for the temple personnel: priests, musicians, weavers, potters, smiths, carpenters, stonecutters, and others serving the needs of the temple. Huge pottery storage vessels containing grain and other commodities stood in the western rooms of the temple.

A road leading from the city gate in the extreme north-

western corner of the city wound to the northeast for 1.5 km, where it reached the impressive sanctuary of Yazılıkaya, which means "inscribed rock" in Turkish. Here the Hittites had constructed temple buildings to guard access to a pair of natural rock galleries. Carved into the faces of these galleries in low relief are the figures of most of the gods and goddesses. The main chamber shows two processions of deities converging from the left and the right on a central point, where the chief male and female deities face each other. The left-hand procession shows male deities, the right-hand one, female. Across from the central panel on which the processions met stands a rock on which is carved the figure of King Tudḫaliya IV, under whom this sanctuary was finished. The second, smaller chamber contains reliefs depicting this same king in the protective embrace of his patron deity, the god Sharruma, and other reliefs that suggest this second chamber was mortuary in character.

History. The earliest sure evidence for the presence in Anatolia of the Indo-European groups associated with the Hittites is the occurrence of Hittite or Luwian names in the commercial documents from the Old Assyrian Colony Period (c. 1850–1700). It has been surmised that these groups entered Anatolia in about 2300, and that after approximately five hundred years of settled life there, at least three large groups were speaking three distinct languages developed from a common Proto-Anatolian branch of the earlier Proto-Indo-European language family. These distinct languages are today known as Hittite (or Nešite), Luwian, and Palaic. Other ethno-linguistic groups had been in central Anatolia before the arrival of the Indo-Europeans. The best known of these are the Hattians, whose language we call Hattic.

During the Old Assyrian Colony period, there were Hittite groups. The king of one of these, whose name is Anitta, left behind a royal inscription, an Old Hittite copy of which was found at Ḫattuša. The inscription commemorates the stages of his military expansion from control of a small area around the city of Kaneš to control of most of central Anatolia, stretching from Ḫattuša, in the north, to Purušanda, in the south.

Hittite history begins in the Old Kingdom period (c. 1680–1420), with the establishment of a Hittite-speaking group on the site of the city of Ḫattuša. The dynasty founder bears the name *Labarna,* which later becomes a Caesarlike title for Hittite kings. His immediate successor, Ḫattušili I, was the first Hittite king to expand militarily into northern Syria, into an area that included Aleppo and Alalakh.

Ḫattušili's successor, Muršili I, led a spectacular, but short-lived, raid far to the east, where his army sacked the city of Babylon in about 1590 and brought to an end the city's first dynasty. After Muršili's death, a period of internal strife, regicides, and usurpations weakened the state. The area of its effective military control shrank drastically.

Around 1420 a new line of kings, bearing traditional Hittite throne names, but also identified on their seals by Hurrian names, came to power in Ḫattuša. The first of this line bore the name Tudḫaliya. Because a list of Hittite kings identifies a Tudḫaliya in the Old Kingdom, we traditionally call this new king Tudḫaliya II. The new line of kings with a Hurrian background cultivated political connections to the southeast, in Syria.

The fortunes of the new line rose dramatically around 1345, under the rule of a new king, Šuppiluliuma I, who led his armies into Syria and reduced the previously highly successful dynasty of Mitannian kings to the status of vassal kings. Šuppiluliuma I was a contemporary of the Egyptian pharaohs of the Amarna period. In fact, he just missed an opportunity to establish one of his sons on the throne of Egypt. But if Šuppiluliuma failed to gain a foothold in Egypt itself, he did not fail to secure Syria as a Hittite province. Kings of Aleppo, Carchemish, Ugarit, Nuḫašše, and Amurru entered into treaties with the Hittite Empire, making Šuppiluliuma's successors "great kings"—big players in the game of international politics of the ancient Near East. The Kingdom of Ḫatti became a super power. Armed competition, if not open conflict, with Egypt continued from Šuppiluliuma I to Ḫattušili III, when a treaty with Egypt formally ended the period of struggle and conflict. Ḫattušili III visited Egypt, where his daughter was married to the pharaoh Rameses II.

The final century after Ḫattušili III saw the flowering of the capital city with the building of the Upper City area, which shows Egyptian architectural influence so strikingly in the Sphinx Gate. Militarily, a new force was building in the east, Assyria. Ḫattušili's successor, Tudḫaliya IV, the finisher of Yazılıkaya and the Upper City, was much occupied militarily with staving off Assyrian advances. At one point, the central government was so weak that a prince named Kurunta from a parallel line, who was king of the small state of Tarḫuntašša, was able to dethrone Tudḫaliya IV and to leave his own royal seal on documents found in the Upper City. During the reigns of Tudḫaliya IV and his two successors, the Hittites extended their control to a part of the island of Cyprus. Local Cypriot representatives contracted by treaty to render vassal's tribute to the Hittite king.

During the Last Days of Ḫattuša (c. 1205–1180), a complex alignment of enemies, which may have included groups of "Sea Peoples" from the Aegean, finally reduced the capital city to flames. Not all urban centers of the Hittite Empire fell when the capital city Ḫattuša did. Carchemish in the east and Tarḫuntašša in the south survived to carry the tradition of descent from the line of kings from Ḫattuša into the first millennium.

Hittite Royalty. Like other nation states of the ancient Near East, the Hittites were ruled by kings. A once-popular theory, according to which the Old Kingdom kings were chosen by members of a primitive senate, has been abandoned. Hittite kingship from the first was hereditary and

dynastic. Royal succession passed from father to son, although the reigning king could designate any son he wished. He was not bound by law to choose the oldest.

The Hittite king controlled all areas of life. As the chief priest, he presided at the principal religious festivals and made offerings to the gods on behalf of his people. As the chief judge and lawgiver, he was responsible for the collection and distribution of the laws in the official corpus and served as the judge in the highest court in the land. Cases of particular gravity or difficulty were referred to this court. In addition, the king was head of the armed forces and as such usually accompanied the troops into the field. Only an aged king would be exempt from traveling on a military campaign. The king conducted all foreign policy, writing letters to the kings and high officials of foreign lands, contracting alliances, arranging marriages that tied his own royal line with the ruling families of other states, and occasionally even visiting other courts in person.

The king's dress conformed to the occasion. He is shown on rock reliefs in two forms of attire. In both he wears earrings and shoes with toes that turn up in a point. His priestly garb consisted of a long robe with sleeves, open in front, a skull cap, and a crook with its curved end pointing downward and to the rear. His military attire was a short, belted tunic, with a short sword or dagger hanging from the belt. He carried a bow over his shoulder and a spear in his hand. His headgear was conical, perhaps a kind of helmet.

The king's person was sacred. It was important to guard him from sources of impurity that might damage his sacred powers. Contact with the general public was therefore restricted. His food and clothing were prepared under strict conditions of purity control. If the king was ever threatened by an evil omen, a procedure known from Assyria was followed: a man was chosen as a royal stand-in until the death predicted by the omen occurred, at which time the true king returned to his post. All that we know about the Hittite ritual of enthronement, such as the anointing of the king with oil, we learned from the Hittite texts describing this substitute king procedure.

Hittite queens were more than sexual partners to their royal husbands. They had real powers of their own. Queens had their own personal royal seals and shared a royal seal with their husbands. Queens seem to have had the right to conduct official correspondence with foreign courts. When the king died, his primary wife remained queen as long as she lived, serving as her son's consort, although she did not become his sexual partner. If her son was young and inexperienced, she often assumed some duties normally reserved for the king, such as making legal decisions or issuing decrees. Queens in the Empire period seem to have had control over many aspects of the religious cult and over vast amounts of resources and temple property. As a result, queens who fell from favor were occasionally accused of misappropriation of temple funds.

Hittite laws distinguish two social classes: free and slave. Slaves were not without independent means, for the laws indicate that a slave could pay a free husband to marry his daughter. However, in addition to these two classes there were foreigners taken captive in battle and used to work crown lands. According to the law code, their rights differed from those of freemen or slaves: they could not sell their fields or their children. While texts mention kings emancipating slaves of the crown, we have no knowledge of the practice at the level of the common citizen. Because census lists of small estates do not indicate the presence of slaves, it is possible that only the very rich owned them.

Economy. The Hittite heartland was the central high plateau of Turkey, where broad valleys and rivers encouraged agriculture. Rainfall is seasonal but ample. Winters are hard with heavy snowfall, and summers are hot and very dry. The rains come in the spring, which is a short but lush season.

According to the Hittite texts, the principal domestic animals were oxen, sheep, goats, horses, mules, asses, pigs, and dogs. Of these, the first three were also used as sacrificial animals. Plowing was done with oxen, never with horses. Horses were used to draw chariots. Mules were used for carrying loads over long distances and were the most expensive of the equids, both because of their sure-footedness and the fact that they do not reproduce. Sheep were exploited for their wool, milk, and meat. The milk of the sheep and goat were also made into cheese. Some wild animals were hunted, principally deer and boars.

The many bird names in the texts attest the richness of the variety of the aviary, although most named birds are unidentified as to type. They include predatory birds, such as the eagle and the buzzard, and water birds, such as ducks. Although there is a generic term for fish, no species names are used.

Specific tree and bush names exist, both coniferous and deciduous. The dense forests of central Anatolia in Hittite times were harvested for timber, which was used for construction and fuel. Aromatic trees were highly prized for the sweet fragrance of their leaves and wood shavings.

Several grain types are known both from textual and archaeological evidence: *Triticum aestivum* (common bread wheat), emmer wheat, and several types of barley. It is not clear if the Hittites knew oats, although the use of a particular type of grain in the feeding of horses suggests that they did. The grains were used to make a large number of different types of named breads, cakes, and pulpy dishes like porridge.

A wide variety of fruits is attested, among them apples, pears, plums, and figs. The grapevine was cultivated for its fruit, which was dried into raisins, and for wine. Nuts are also mentioned, although the type has not been determined. Vegetables are also known from the texts. The appearance of one particularly popular bulbous plant of the onion family was celebrated with an annual religious festival.

Among the crafts and tradesmen were potters, leather workers, weavers, blacksmiths, bakers, beekeepers, carpenters, and physicians. Some crafts would only have been of interest to the wealthy: sculptors, gold- and silversmiths, glassmakers, divination specialists, and scribes. Physicians were not highly skilled; they used folk remedies and charms. Hittite royalty who were seriously ill secured highly trained physicians from Egypt and Mesopotamia.

The widespread notion that Hittite military supremacy was the result of a monopoly of iron production for weaponry is a myth. Although the Hittites could produce limited quantities of iron, but it was not used for weapons.

People who sold or traded their own products in small local markets are not referred to in texts. The "merchants" that are mentioned were grand entrepreneurs operating under royal patronage and engaging in international trade. For this reason, the penalty for killing a merchant was much higher than that for killing an ordinary free man.

Law. The Hittites already possessed a written collection of two hundred laws in the Old Kingdom. Their laws resembled, in form and phraseology, the better-known collections of Mesopotamia and of the Hebrew Bible. All relevant topics of ancient law are covered: homicide, theft, assault and battery, marriage, sexual conduct, land tenure, and taxation. Like some Mesopotamian law collections, a tariff of ideal prices is included.

Hittite treaties with foreign countries show the outlines of what may be called the international law of the era. Treaties with states of equal power and prestige express obligations as reciprocal and those with inferior states as unequal. Concerns of the former are mutual guarantees of dynastic stability against overthrow by insiders or outsiders, mutual defense against foreign attacks, mutual extradition of fugitives, and the stabilization of international boundaries. Concerns of the latter include these as well as the vassal's obligations to pay annual tribute.

Religion. Hittite religion reflects the diversity of ethnic groups comprising the population. Hattians, Hurrians, Luwians, and Hittites—as well as smaller numbers of immigrant Syrians, Palestinians, or Assyrians—worshiped their own deities according to their traditional rites. The totality of the pantheon was called the Thousand Gods. Indeed, the number of attested divine names in the texts approximates one thousand. All but the smallest towns had many temples. Each town had local traditions about the cultic calendar that Hittite regional governors were instructed to honor and preserve.

The official archives in the capital, which are our almost exclusive source of information, are understandably limited in their concerns. Local cults and the domestic cult are almost totally ignored. The official state cult included seasonal festivals, celebrated in the spring and fall, and a monthly festival. The king, queen, or a royal prince represented the royal family at such festivals. There were two types of male priest and one female type. In addition, the religious texts reveal that musicians playing various stringed and percussion instruments accompanied cultic liturgy.

HITTITES. *Stone relief from Yazılıkaya depicting the sword god.* (Courtesy J. S. Jorgensen)

The center of the cult was the serving of the statue of the deity. The image was given food and drink, a change of clothing, and entertainment in the form of music, acrobatics (including sword swallowing), and athletic contests. Prayers were offered for the removal of drought or plague, for the defeat of enemy armies, and for the welfare of the community and its king.

Divination was energetically pursued both at home and on trips. Omens were sought to determine the likely success of all sorts of ventures, from marriages to business to military campaigns. Oracles were questioned to determine the causes for divine anger manifested by catastrophes such as disease, drought, or military defeat. The most popular form of divination was the inspection of the internal organs of a sacrificed sheep, but several other kinds were practiced, including bird omens.

Language and Literature. The Hittite language shows its Indo-European character primarily by its grammatical structure, but also by a minimal stock of primary vocabulary (*padas,* "foot"; *watar,* "water"; *ed-* "to eat"). It represents the earliest attested form of an Indo-European language.

Hittite texts include historical narratives (military annals), legal texts (law code, treaties, land grants, edicts), letters, myths and epics, hymns and prayers to deities, descriptions of religious festivals, prescriptions for the performance of magical rituals, and records of divination.

[*See also* Anatolia, *article on* Ancient Anatolia; Hittite; *and* Luwians.]

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HOGARTH, DAVID GEORGE (1862–1927), eminent British archaeologist of the Aegean and the ancient Near East. Hogarth's greatest contributions were made in investigations of Anatolia and ancient Hittite civilization and in illuminating relationships between Anatolia and its neighbors. His early career in Greece and the Greek islands included excavations in Cyprus, Melos, and Crete. Hogarth also worked briefly at Asyut in Egypt for the British Museum before turning to Anatolia, the region that was to hold his interest throughout his life. Hogarth proposed that Anatolia was the source of inspiration for early Greek art and religion. As an archaeologist, he is best known as the excavator of the Artemision at Ephesus and as the first excavator of the ancient city at Carchemish.

Hogarth belonged to a generation for which Arabic-language skills qualified a small number of scholars to serve Britain as diplomatic and military intelligence officers. During World War I, he headed the Arab Bureau in Cairo, where he found T. E. Lawrence (the so-called Lawrence of Arabia), his former Oxford protégé, a position in intelligence. Hogarth had also brought Lawrence to Carchemish. [*See the biography of Lawrence.*] After the war, Hogarth returned to Oxford to direct the Ashmolean Museum and to hold numerous public positions. His scholarly interests refocused on Anatolia, and in 1920 he published a seminal work on Hittite seals.

Hogarth published over thirty books and numerous articles. He wrote on Anatolia and the Hittites for the first edition of the *Cambridge Ancient History.* He also wrote travel books, which are captivating and are considered among the best of their genre.

[*See also* Carchemish; *and* Ephesus.]

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KATHRYN E. SLANSKI

HOMS, site located in central Syria, on the road between Damascus, 162 km (100 mi.) to the south, and Hama, 47 km (29 mi.) to the north (34°42′ N, 36°48′ E). It is situated between two of the oldest archaeological sites in the area: Qadesh (Tell Nebi Mend), about 15 km (9 mi.) to the southwest, and Qatna (Mishrifeh), about 18 km (11 mi.) to the northeast. The plain around Homs is quite flat and fertile and is partially irrigated by water from the al-ʿAsi (Orontes) River, which flows from the south to the northwest of Homs.

The identification of Homs with Emesa does not require discussion as the name did not disappear. The historian Pliny the Elder was the first to mention Emesa. Other Roman historians spelled the name *Emessa.* The Arabic scholar Mahmud Al-Dimashqi (d. AH 259) wrote (*Tabaqat Ahil Homs* ["The Categories of the Inhabitants of Homs"], p. 202) that the old name of Homs was *Souriya.* The Crusaders did not settle in the city, but they named it La Chamelle.

There is insufficient evidence that the city existed before the Roman period. Scholars believe that it was erected by Seleucus Nicator, who gave it the Greek name *Emesa.* During the Seleucid period Arabic tribes were settled in the area all along the Orontes, from Homs to Hama. [*See* Hama.] In 96 BCE an Arab dynasty known as Samsigram rose against the Seleucids and established an independent small kingdom in the city of Homs. The names of ten kings of this dynasty are known who reigned from 96 BCE to 79 CE. When the dynasty disappeared, in 79 CE, Homs was annexed to the Provincia Arabia. The city flourished again, but the turning point in its history occurred with the visit of the Roman general Septimius Severus (193–211), who married Julia Domena, the daughter of the priest of the Temple of the Sun God. After his inauguration in Rome as emperor, Septimius was very friendly to Syria. Caracalla and Elagabalus reigned after him as Syrian emperors when Homs was the capital of Syrian Phoenicia. [*See* Phoenicia.]

The city again flourished in the Byzantine period, when the archbishop converted its Roman temples into churches. In the Islamic period, Homs was a capital of the Agnad province, along with Palestine, Jordan, and Damascus. In the Hamadanite period (944–1019) Homs became the center of the state of Wilayah (Tell el-Wilayah), a position it subsequently retained. The city became the center of a province in modern Syria. During the wars between the Arabs and the Byzantines and between the Umayyads and ʿAbbasids, as well as between the small Arab kingdoms in Syria and Egypt in the ninth–fifteenth centuries, the city suffered the destruction of many historical monuments.

Seleucid Period. There is no archaeological evidence for the Hellenistic period. Several scholars believe that its plan was similar to the contemporary cities of Damascus, Antioch, and Laodicea. Its two main streets, the *decumanus* and *cardo,* may have crossed where the modern city hall is located.

Roman Period. Nothing is preserved of the monuments of the Roman period or the epoch of the Samsigram dynasty. A Greek inscription indicates that King Samsigram erected a mausoleum to the west of the city in 78 BCE. This single monument of the Roman period was destroyed in 1911. A cemetery discovered by peasants in 1936 belongs to this period. It was situated near the mausoleum in Djurt Abu Sabun. The objects the peasants found are now in the National Museum of Damascus. The most important pieces were two helmets. One of them consists of the helmet itself and a mask: the helmet is hollow cast iron with silver decoration; the mask, which represents a human face, is also made of iron and is covered with a layer of silver. The other mask is made of gold. Both date to the first century CE.

According to many written sources there was a Sun Temple at Homs within which a black stone stood that was taken to Rome in 217, during the reign of Emperor Elagabalus. The temple was situated at the site of the present Nuri mosque. It is believed that the city was enclosed by a fortification wall in this period.

Byzantine Period. When Christianity replaced polytheism, a number of churches were built in Homs, such as the Church of St. Helena (326) and the great church in which the head of John was buried. This church was the largest in Syria during the Byzantine period. In addition to these churches there was the Monastery of Mar Maron (451) and the Monastery of Mar Tommy. [*See* Churches; Monasteries.] These monuments were destroyed either by earthquake or enemy attack. Many of them were rebuilt, such as the Orthodox Church of Mar Lian in Bab Dreb and the Syrian Church of al-Arabiʿan (the forty). All of these churches were in the *hay* ("quarter") of Jamal ed-Din.

In 1923, 1940, and 1957, several below-ground Byzantine tombs were discovered by chance—no superstructure marked the site. One of the tombs is a huge cave with a number of small chambers for burials. Its inner walls were plastered and partially decorated with figural and geometric designs; the roof was supported in places by a series of arches and pillars. Among the many objects found were glass, jewelry, and bronze bracelets and earrings.

Islamic Period. Between 636 and 1919 (the Umayyad, ʿAbbasid, Ayyubid, Mamluk, and Ottoman periods) Homs suffered numerous changes of rulers and continuing depredatations. No monuments from the Umayyad and the ʿAbbasid periods are preserved: the existing historical monuments in Homs were restored and indeed rebuilt under several Ayyubid, Mamluk, and Ottoman monarchs. Many old mosques in Homs have been renovated several times.

The most famous is the Khaled ibn al-Walid mosque, which was built at the beginning of twentieth century on the site of a Mamluk mosque with the same name.

The fortification wall and towers were pulled down during the Ottoman period (their remains are visible in the eastern and northern parts of the city). They belonged to the Ayyubid period and were constructed of basalt stones. The city had seven gates, but the remains of only two are preserved: Bab al-Masdud in the west and Bab Tadmur in the northeast. In order to strengthen Homs's defenses, the Ayyubid sultans built a citadel opposite the southwest corner of the city wall on a high (32 m) mound. This citadel resembles many others in Syria, such as the citadels at Aleppo, Hama, and Shazar, which belong to the twelfth–thirteenth centuries.

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ALI ABOU ASSAF

HORSES. *See* Equids.

HORSFIELD, GEORGE (1882–?), British excavator of Petra and the first chief British officer of the Department of Antiquities of Transjordan (1928). Born in the north of England, Horsfield trained as an architect, working first in New York City and then, following World War I, with the British Army in India. In the early 1920s he was one of John Garstang's students at the British School of Archaeology in Jerusalem. In 1924 Garstang gave Horsfield responsibility for the Antiquities of Mandate Transjordan. Much of the work he performed in this role was directed to clearing and restoring the antiquities of Jerash. He began repair and conservation work on the South and North Theaters, Nymphaeum, and the propylaeum of the Temple of Artemis and cleared one of the vaults under the temple's temenos to house the inscriptions he was finding. By 1930 Horsfield's pioneering enterprise was being supplemented by American and British excavations at Jerash. Few published reports of Horsfield's work are available, but his notes survive at the Department of Antiquities in Jordan.

Horsfield's notebooks, later elaborated by G. Lankester Harding, form the basis of the sites and monuments archive of the Department of Antiquities of Jordan. Horsfield recorded entries for most of the major sites in Transjordan and their condition and the periods represented; his text is accompanied by clear photographs.

In 1929 Horsfield undertook the first archaeological excavations at Petra, which he later published in some detail. It was there that he met and worked with Agnes Conway, whom he married in 1932 and who gave her name to that site's Conway Tower. Their publications, which are well illustrated, offer details regarding provenance; those works also include photographs of painted houses that no longer exist and provide a comprehensive account of the topography of Petra and of the finds from their excavations on the city walls and at the high place (Jabal Madbah). They also cleared the Palace Tomb, al-Khazneh, the Urn Tomb, and the Tomb of the Roman Soldier.

Horsfield's work is significant as the first concentrated investigation of two of the major sites in Jordan, Jerash, and Petra. He left careful records, still in use, not only of those sites but also of others he explored.

[*See also* British School of Archaeology in Jerusalem; Jerash; Petra; *and the biographies of Garstang and Harding.*]

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ALISON MCQUITTY

HOUSE. [*To provide a general typology and morphology of houses, this entry comprises three articles:*

Mesopotamian Houses

Syro-Palestinian Houses

Egyptian Houses

Each article surveys the historical development, forms, and functions of houses in the region specified.]

Mesopotamian Houses

Plans of domestic architecture are sensitive indicators of social organization and household composition because houses form the framework within which people live out their social lives. It is houses that provide the spaces needed

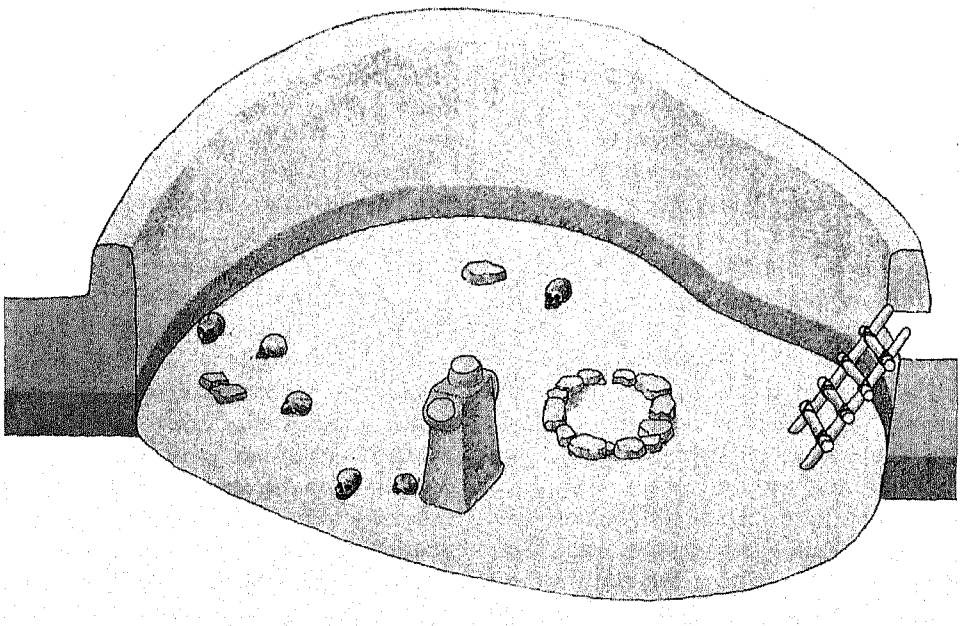
for privacy and task differentiation. However, intervening millennia interfere with the ability to read Mesopotamian social structure from architectural remains. Two approaches can be used to bridge this gap. First, where cuneiform documents that pertain to household composition are found within domestic architecture, they can be used to infer the relationship between houses and households. Where such textual sources are absent, ethnographic and ethnoarchaeological studies of modern Near Eastern settlements can sometimes be used as models; however, because most such studies are village studies, they are probably more relevant to the study of the small sites characteristic of the Neolithic period than of the large urban sites that are almost all that has been excavated for the later periods. [*See* Ethnoarchaeology.]

The earliest Mesopotamian houses date to the eighth millennium, and there is a long, complex development of domestic architecture from that time until the rise of the first cities in the fourth millennium. With the establishment of urban centers in Mesopotamia, house forms seem to have stabilized around a limited number of different types, all adhering to the same principle. This does not mean, however, that more variety might not have existed in the nonnucleated village sites, virtually none of which have been excavated.

Neolithic Houses. The earliest Mesopotamian houses are found only in northern Mesopotamia (see Aurenche, 1981). Two sites, Qermez Dere and Nemrik, date to the eighth millennium, when the inhabitants seem to have practiced intensive hunting and plant-food collection but not agriculture; the architecture at the two sites seems quite similar: the houses were round, single-room, subterranean or semisubterranean structures, 4–6 m in diameter, with a bowl-shaped floor thickly coated with plaster, as were the walls, and with access only through the roof. The Qermez Dere houses are characterized by two–four nonfunctional pillars (see figure 1), but the Nemrik houses used four posts to support the roof. In general, the houses at Nemrik and Qermez Dere are reminiscent of the Pre-Pottery Neolithic (PPN) A houses from the Levant (e.g., Jericho), and the material culture and special treatment of skulls at burial also suggest such associations.

Two other sites, dated nearly as early, present a somewhat different picture: Jarmo, located in the western Zagros Mountains and traditionally dated to 6750 BCE, and the more or less contemporary Tell Maghzaliyeh, located very close to Qermez Dere; both demonstrate evidence for a mixed agricultural and hunter-gatherer economy. [*See* Jarmo.] In spite of the closeness in date and location between Qermez Dere and Maghzaliyeh, both their material culture and architecture are quite different.

The architecture at Jarmo and Maghzaliyeh is characterized by multiroomed houses built at ground level, sometimes using quite substantial stone foundations. As such, they depart distinctly from Qermez Dere and Nemrik and seem to represent a break with the more Levantine traditions those



HOUSE: Mesopotamian Houses. Figure 1. *Reconstructed drawing of house interior at Qermez Dere.* (Courtesy Andromeda Oxford, Ltd.)

sites represent, perhaps presaging the development of truly Mesopotamian domestic architecture. At Jarmo, where the house remains are more plentiful, a typical house had an entrance into a main living/sleeping room that in turn led into both a passageway to a rear courtyard and to more living quarters and some small storage areas. Grinding equipment was found in the rear courtyard, where an oven was often built into one of the walls. The probable roofed area of the Jarmo houses was within the upper size limit of the Nemrik and Qermez Dere examples, except that at Jarmo the space was divided into four or more different spaces. Some of the Maghzaliyeh houses may have been larger, with one reported to be 85 sq m in area.

By and large, the somewhat later Hassunan houses are similar to those from Jarmo and Maghzaliyeh in their multiroomed rectilinear construction and lime plastered floors and walls. [*See* Hassuna.] The major difference is that the stone foundations are replaced by large potsherds or matting. Built-in features are typical of these houses: sunken storage vessels, hearths, large ovens, and benches.

Major changes in architecture are seen in the Samarran and Halaf periods that followed: the Halaf is found toward the north and northwest of Mesopotamia and the Samarran farther south. [*See* Halaf, Tell; Samarra, *article on* Chalcolithic Period.] Halaf architecture is typified by the so-called tholos, a round house, usually some 3–4 m in diameter—although structures as large as 7–9 m in diameter have been excavated at Tell Arpachiyah. These houses generally had stone foundations and were, like the earlier Hassunan houses, built of tauf or pressed mud. Most, especially at Yarim II, had only one room, which rose to a domed roof; some, however, especially at Tell Arpachiyah, had a rectangular room added to one side. In some cases internal buttresses, or even partitions, subdivided the large rooms, but round houses are usually single-roomed structures, quite different from the multiroomed houses typical of the preceding Hassunan period.

This is not to say that rectangular architecture did not exist in the Halaf period, it did—not only in the form of the rectangular annexes, but also as stand-alone, multiroomed structures. Rectangular architecture was not, however, dominant at the Halaf sites, although it is typical of the Samarran sites located farther south.

The most important Samarran sites are Chogha Mami and Tell es-Sawwan, both of which exhibit much more nucleated architecture—and buildings whose use of very long mud bricks allowed much more regular construction. At the minimum (more typical of Chogha Mami), the houses were tripartite in organization, with three parallel ranges of rooms. At the maximum (especially at Tell es-Sawwan), they could be much larger and more complex. Although many of these houses were T-shaped, their plans were markedly asymmetrical. The tripartite plan of Samarran houses and their use of buttresses not only continued into the Ubaid period in southern Mesopotamia, but also became key features of later Mesopotamian temples. [*See* Ubaid.]

The discovery of Ubaid 0 remains at Tell el-'Oueili in southern Mesopotamia has made clear the degree of continuity between the Samarran and the earliest Ubaid remains. [*See* 'Oueili, Tell el-.] Thus, now the development of the complex Samarran into the more symmetrical Ubaid houses with their central halls seems unremarkable. The best-preserved Ubaid houses were excavated in the Hamrin area, at Tell Abada and Madhhur (Henrickson and Thuesen, 1989), but similar structures have been found both earlier (at Tell el-'Oueili) and later and farther north (at Tepe Gawra, where many were originally interpreted as temples). [*See* Hamrin Dam Salvage Project; Tepe Gawra.] These houses have a large T-shaped, or cruciform, central room with additional ranges of rooms on each side. On occasion, as in the case of building A at Tell Abada, more than one of these units is combined into a single large building. The large central room with its hearth was at the heart of these houses; the smaller of the side rooms must have served the important role of food storage, while the larger were loci for food preparation, toolmaking, and other such activities.

Two trends can be identified, then, in the evolution of house forms during the Neolithic. One, beginning with the Aceramic Neolithic sites of Jarmo and Maghzaliyeh, sees the development of increasingly complex, multiroomed rectangular architecture—perhaps designed to house extended families—that eventually developed into the tripartite Ubaid house. The second trend is less easy to follow. The circular houses of Qermez Dere and Nemrik can be associated with similar structures found much farther west, and the same may be argued for the later Halaf round houses as well. Certainly both the PPNA and Halaf manifestations suggest cultural continuity between northern Iraq and Syria in ways that do not exist for the Hassunan, Samarran, and Ubaid cultures.

Mesopotamian Urban Housing. There are several basic functional distinctions between the houses built in Neolithic villages and those associated with later Mesopotamian cities. The former generally included considerable amounts of unroofed communal space. In the later urban centers, areas set aside for outdoor activities (because for much of the year it is cooler and pleasanter to be outside, so long as there is shade) had to be incorporated within the houses themselves—either in the form of courtyards or flat roofs. Thus, most, but not all, archaeologists interpret the central spaces within Mesopotamian houses as courtyards, and do not necessarily assume that all stairways lead to a second story because they could also have been designed to provide access to the roof (Veenhof, forthcoming).

Private-house areas are not distributed evenly over time and space. Protoliterate houses have not been excavated in Mesopotamia proper; the only extensive remains are at Habuba Kabira, an Uruk site on the Upper Euphrates River.

[*See* Habuba Kabira.] There, many of the houses resemble their Ubaid predecessors, although the addition of partitions within the large central hall may indicate the development of the courtyard house. By the third millennium, there are good examples of domestic areas that have been recorded in the south at Abu Salabikh, at the various Diyala and Hamrin sites (including the only truly rural settlements), and in the north, at Tell Taya. [*See* Abu Salabikh; Diyala; Taya, Tell.] The largest areas of domestic housing date to the early second millennium BCE at Ur, Nippur, Sippar, and at the small sites of Haradum and Tell Harmal (Woolley and Mallowan, 1976; Stone, 1987). [*See* Ur; Nippur; Sippar.] Associated private documents found in these houses provide additional information about their inhabitants. Farther north, and a little later, is the extensive domestic area at Nuzi, which includes some rural villas. [*See* Nuzi.] For the first millennium BCE, Ur and Babylon have some domestic areas, and there are Neo-Assyrian domestic structures at Nimrud, Khorsabad, and Aššur (Preusser, 1954). [*See* Babylon; Nimrud; Khorsabad; Aššur.]

All of the houses in Mesopotamia's urban centers were built in solid blocks, with neighboring houses sharing party walls. All Mesopotamian houses were built around an enclosed courtyard, which provided light, air, and a shady place to be during the long hot summers. This is not to say that the arrangement of rooms was the same. Houses could have rooms on one, two, three, or four sides of the courtyard, and in some cases had extra banks of rooms added onto one or more sides. The largest houses had more than one court and appear to have been composite structures. It is possible that some of the very smallest structures were commercial establishments; there is also evidence for workshops located in parts of some of the houses. Houses varied greatly in size at each site, and every house area excavated has included both large and small houses, houses using more relatively expensive materials (baked brick in the south, stone in the north), and houses using the bare minimum—an indication that there was little segregation of the population according to wealth or status. Not all of these differences reflected wealth distinctions, however. Where textual data can be brought to bear, it appears that the houses with rooms on all sides may have served extended families, whereas those with rooms on three or fewer sides were occupied only by nuclear families (Stone, 1981).

Most Mesopotamian houses included entrance chambers with the doorways offset, so that the courtyard was not visible from the street. It seems likely that nonfamily members did not generally penetrate beyond the entrance chamber. Where the entrance was directly into the courtyard, the space that was most probably used for living does not connect directly with the courtyard; instead, it is preceded by a subsidiary room that may have served the same function as the entrance chamber.

The smallest houses have only one or two rooms at the back of the courtyard. Where there are two rooms, it seems probable that one was for living space and the other—generally accessible only through the first—for storage. Small houses do not generally have any special-purpose rooms like kitchens or bathrooms, which are most often found only in composite houses or in those with rooms on all sides of the courtyard.

In most instances kitchens are marked by the presence of bread ovens, but on occasion larger stoves with built-in grills have been found. Bread baking might take place either in a room or in a courtyard, but true kitchens with stoves are generally in one corner of the house.

Bathrooms present a more difficult problem. While some bathrooms have been found—especially in the Old Babylonian houses at Ur—they are not common; it is a moot question whether they were merely used for washing or if they represent toilets. One indubitable toilet, virtually identical to those in use today in the Arab world, was found at Ur (Woolley and Mallowan, 1976); in general, however, cess pits, which are archaeologically unmistakable, are rare, and in most instances the ceramic drains beneath these rooms are designed for seepage rather than the disposal of solid waste. At Ur, bathrooms were generally located beneath the stairway; at other sites, while they were always small and tucked away, this association cannot be demonstrated. Baked-brick paving and drains were not only found in these apparently special-purpose rooms, but were encountered frequently in courtyards, and sometimes in other rooms, especially kitchens.

Staircases are far from ubiquitous and are generally quite small, either built into courtyards or tucked into tiny square rooms or into long narrow ones. In the south, where walls tended to be thin and available wood for construction rare, most scholars, but not all, interpret staircases as giving access to the roof. Farther north there is more evidence suggesting the presence of second stories, including textual references from Sippar referring to the lease of second-story property.

In addition to the normal domestic offices, some of the larger houses have evidence of rooms set aside for religious purposes. These were especially common in the second-millennium BCE houses at Ur, where they are found at the back of the house. They can be identified by the presence of altars and niches and may have the tombs of family members beneath them. [*See* Tombs.]

In summary, Mesopotamian cities were characterized by dense blocks of houses that focused on a central court. The larger the house, the more likely it was to have special-purpose rooms like bathrooms, kitchens, and chapels. In all probability the same functions were carried out in the smaller houses, but without the characteristic built-in features.

Although most house remains from the historical period in Mesopotamia come from urban centers, there are some

data from smaller sites. For the Early Dynastic period, several small sites, generally not much more than 1 hectare (2.5 acres) in size, were excavated as part of the Hamrin rescue project. At Tells Razuk, Gubba, and Madhhur, the sites were dominated by circular buildings where a series of rooms surround a round, central courtyard; the entire arrangement is generally about 30 m in diameter. Although these sites also include the remains of more rectilinear architecture, they seem to have been dominated by a single round structure. Farther south, on the west mound at Abu Salabikh, an initial rural occupation had rectilinear architecture surrounded by curvilinear compound walls incorporating significant amounts of open space.

For the second millennium BCE, two single-hectare sites have been excavated, Haradum and Tell Harmal (Kempinski-Lecomte, 1992); both seem to be miniature versions of the large cities: densely packed courtyard houses. At the slightly later and more northern city of Nuzi, large rural villas housed some of its most prominent citizens (while those structures were somewhat larger than those in the center of town, they did not differ in plan in any significant ways; see Starr, 1939).

What is not clear from these data is whether they indicate that by the second millennium BCE there was no longer any difference either in organization or in sophistication between large and small settlements (i.e., Tell Harmal and Haradum were as rich in cuneiform tablets as any other Old Babylonian cities); or if only those for which this is the case have been sampled. Certainly there is a suggestion that at least in the Diyala basin in the third millennium there were significant differences between rural settlements and urban centers.

Conclusion. After a lengthy period of experimentation in house forms during the Neolithic, the urban dwellers of Mesopotamia took the Late Neolithic house form as the basis for their religious structures; they developed the courtyard house, which was more suited to the crowded conditions inherent in urban life. Once invented, the courtyard house remained in use in all parts of Mesopotamia for as long as the civilization continued; indeed, it is found in many parts of the Near East to this day. There is some evidence for experimentation in rural architecture in the third millennium, but the limited evidence from the second millennium BCE suggests that by that time the courtyard house dominated the form of both rural and urban dwellings.

[*See also* Mesopotamia; Syria, *article on* Prehistoric Syria; *and* Temples, *article on* Mesopotamian Temples.]

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ELIZABETH C. STONE

Syro-Palestinian Houses

This treatment of a large and difficult topic begins with the Early Bronze age, c. 3300 BCE, and ends with the end of Iron II, c. 580 BCE. Earlier materials have been addressed by Edward B. Banning (1996); later materials remain to be analyzed. [*For some discussion of the later periods, see* Syria, *articles on* Syria in the Persian through Roman Periods *and* Syria in the Byzantine Period; *and* Palestine, *articles on* Palestine in the Persian through Roman Periods *and* Palestine in the Byzantine Period.]

Following an introduction to the difficulties of interpreting three dimensional, and probably mostly multi-storied, remains from their (often incomplete) ground plans, we turn to a brief overview of key architectural aspects of archaeo-ethnographically documented peasant households in the modern Middle East. [*See* Ethnoarchaeology.] From this perspective, we develop a working model of a functional peasant's house, as this might be witnessed in Syria-Palestine. Following this, we briefly visit the social anthropology of "round" versus "rectangular" houses, and the possible socio-economic implications of "exotic" or atypical architecture in a Levantine setting, before working our way—hopefully in an empirical, transparent fashion—through key aspects of what can be seen of the history of domestic architecture in Syria-Palestine.

Because archaeologists typically deal with fractional remains, sound models for reconstruction and interpretation are paramount to their work. Houses are the most common architectural form encountered and one of the most neglected, whether in terms of fieldwork, reporting, or interpretation. Despite frequent indications of a second story (e.g., stairways, two distinct levels of cultural deposits within a particular room or building, evidence for second-floor surfacing, lack of suitable living quarters on the ground floor), archaeologists seldom recover more than the ground-floor plan of any building. It thus becomes important to explore

other avenues of knowledge to determine, for model building, the spatial and functional requirements or potentials of a "typical house." These will vary depending upon a household's economic pursuits. Traders, weavers, and members of the ruling elite would have different spatial needs, and their needs would differ from those of a farmer or herder. During the Syro-Palestinian Bronze and Iron Ages (c. 3300–580 BCE), most people were farmers. Therefore, most houses should have belonged to farmers, with atypical houses possibly belonging to people with other livelihoods (how this applies to urban settings might be problematic). During these periods, the dominant modes of production were intensive plow-assisted dry farming, horticulture (principally vines and fruit trees), and pastoralism, with each household typically practicing two or three modes of agriculture as a way of managing the risks inherent in the subsistence agriculture of marginal areas (Hopkins, 1985, pp. 245–250; Holladay, 1992a, p. 315; 1995, pp. 386–393). Similar constraints and risks still determine life in traditional farming communities in the region. Near Eastern ethnoarchaeological research has proven to be of great value for modeling "constants" (see, e.g., Watson, 1979; Kramer, 1979, 1982; Hall et al., 1973).

Settled Agriculturalists: Basic House Model. Typically, the architectural requirements of Near Eastern peasants are living space; kitchen space; storage space for household goods and foods; quarters for their donkey(s), cow/ox/bullock(s), and sheep/goat herd; seasonally adjustable storage space for fuel (dung, dung cakes, brush), straw (chaff), fodder, grain and legume reserves (including seed reserves); agricultural implements; young animals; spare beams or posts; and, in olive-oil producing, non-Islamic communities, large wine and oil jars. Courtyards are considered essential, although in tightly packed, fortified villages many of their functions can be taken over by the roof (Jacobs, 1979, p. 179). In such settings, strongly built flat roofs are used for a wide variety of outdoor activities, especially by women and children. Holes through the roof allow for communication between living rooms and rooftop activities. Windows often are extremely primitive, with mere holes (blocked in winter) sometimes sufficing.

Each nuclear family requires its own living room, in which it lives, works, eats, entertains, and sleeps. Larger houses may have more than one living room, the second used for entertaining or for rental, if not required for the extended family. Living rooms are characterized by a central hearth (necessary for winter heating, though supplemental portable braziers are also used). Where there are kitchens, the hearths may be leveled with mud plaster for the summer. Living rooms are often whitewashed and have better flooring than the mud plaster or packed earth that characterizes utility and storerooms. Even in nonurban settings, second-floor living rooms are considered more desirable, as they catch the summer breezes. Where there is a second story, it is invariably used as living room (Kramer, 1982, p. 102). In the restricted space of the fortified Iranian village of Tel-i Num, forty-eight of the fifty-nine compounds (81 percent) were two storied: the lower used for animals, and the upper for humans (Jacobs, 1979, p. 179). In addition to the living room, there is often a second-story utility room for storing light goods (foods and household goods) and, in some areas, a kitchen (Hall et al., 1973, fig. 7).

Stables and storerooms for heavy or bulky storage are invariably found on the ground floor. Grains and legumes may be stored in bins or in above-ground silos, grain pits, sacks, or jars. Storerooms are typically mud plastered, including the floors. High thresholds may serve as (inadequate) barriers to rodents and animals. Wealthy families tend to have relatively more storage space, and absentee landlords may have their own storehouse (and a well set-up agent) in the village for collecting in-kind land rent. From the archaeologist's perspective, such a storehouse—and the prosperous agent's house—should be archaeologically visible (Watson, 1979, pp. 40, 48, 241, fig. 5.29). Stables should be identifiable by their built-in mangers. As opposed to the typically paved Israelite stables, traditional village stable floors are unfinished and covered with decaying fodder and animal waste. Subterranean stables for housing sheep and goats at night and during winter storms, typical in western Iran (e.g., Watson, 1979, pp. 160–161, 204–205, 208), are not found in Syria-Palestine in the periods considered here (unless the cave under the northwest tower at Tell Beit Mirsim is such a stable), and some roofed folding space should be reckoned into any defensible space equation. [*See* Beit Mirsim, Tell.] Two underground stables illustrated for Patty Jo Watson's "Hasanabad," were, respectively, about 64 and 80 sq meters in site (1979, pp. 154, 160).

Exterior surfaces (including courtyards) are uneven, littered, develop damp spots, and may have piles of dirt, rocks, or other materials in corners or elsewhere. Archaeologically, streets and alleyways are generally hardened against the winter rains by potsherds and small stones. "Public areas" and major streets near important structures are generally much better hardened (suggesting governmental behest) than cul-de-sacs, alleyways, and peripheral streets. Because it is eroded by winter rains and summer sun and wind, the mud-and-chaff plaster of roofs and exterior walls is renewed annually. A portion of this annual increment, plus litter and garbage, forms a significant part of street and alleyway buildup, which seems to average between .5 and 1.0 m per century. Some streets, such as those running through gateways or near important buildings, may be cleared out periodically and reestablished at lower levels, particularly during renovations or rebuilding programs.

Kitchens at "Aliabad" had 1-meter-deep ovens, which restricted them to the ground floor (Kramer, 1982, pp. 99–100). Originally whitewashed, they then became progressively sooty. Vertical looms at Aliabad were generally set up

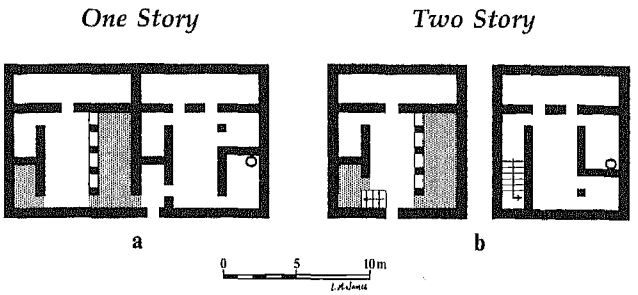
in the kitchen. Kitchens are not necessarily synonymous with oven locations, however, because ovens are frequently located outside the house, in a spot sheltered from the wind. Inside the house they may be sited in some sheltered corner of the ground floor, with no trace of hearth. Communities without kitchens, such as Watson's "Hasanabad" (1979), cook (and bake bread on flat metal pans) on the living room hearth. In some communities, a kitchen may be shared with other members of the extended family. Sometimes dependent family (e.g., a widow) will live and entertain in a kitchen, which then will be kept ash free, with suitable floor coverings (Kramer, 1979, p. 104). Archaeologically, such a room might be distinguished by its relative cleanliness. Living rooms and kitchens used for living are not entered through other rooms, aside from entry halls, although rooms used by children may be entered from the main living room.

Ethnographically documented Iranian living rooms averaged from 15 to 18 sq m, possibly depending on whether there is a kitchen. The archaeological data from one-story structures (see table 1) suggest "needs averaging" at 19–22 sq m. In addition, the typical family will have one or two stables (averaging about 12 sq m each), one or two storerooms (about 12 sq m each), an entrance hall, and a kitchen. Carol Kramer's average size for kitchens (18 sq m) includes wall thickness, which makes the data unusable for this discussion. (Kramer, 1982, table 4.2, p. 122). The average size of five illustrated kitchens was 11.5 (sq) m with a standard deviation (SD) of 3.5 sq m (Kramer, 1982, figs. 4.18, 4.6, 4.7, 4.12). A fairly minimal folding space (20–25 sq m) may be arbitrarily assigned for the sheep/goat herd. These and other dimensions, such as room width (averages for three modern villages were 2.8, 2.9, and 3 m) and ceiling height, are fundamental to the suitability of the house and must be considered carefully in interpreting remains. These distributions are positively skewed (there are no stables or storerooms that are 2 sq m or living rooms that are 5 sq m), and most have relatively large standard deviations. In general, it is assumed that free spans of about 4 m or less could have been achieved with generally available timbers (see below). Finally, with respect to the applicability of the full model to every situation, it should suffice to note that, for example, plans specifically developed for warm, dry climates such as the lower Jordan Valley or the Negev desert might differ with respect to roofed nighttime facilities for animals (e.g., in most of the Early Bronze and Middle Bronze I plans illustrated below; see figures 1, 2.c). However, this caveat might not apply when the normative house style was carried over from areas with severe weather conditions such as the Galilee, the central hill country, and most of Syria and Lebanon.

The relevance of the preceding model for interpreting imperfectly preserved, complex domestic structures may be seen in figure 1.a, which shows the foundation plan of a hypothetical one-story house, based on a slightly enlarged version of the Iron II house 1727 at Shechem (Wright, 1965,

TABLE 1. *Comparative sizes of "large" and "small" rooms in representative domestic structures of EB and MB I towns and campsites.* Breaks occurred in the large room sizes at Tel Yarmut and Nabi Salah, Chuera B, Gebel Gunna, and Be'er Resisim. The most economical explanations seem to be first, that living rooms were no longer located on the ground floor in the rectilinear Chuera B structures. That probably holds true for many of the complex Palestinian EB III houses as well (e.g., Tell el-Far'ah [North] and Tel Yarmut), which, characteristically, no longer exhibited features or floor surfaces characteristic of EB II one-story houses (exceptions help prove the rule: e.g., the benches in Tell el-Far'ah [North] room 609, [de Vaux 1961, pl. 34]). Second, that, in contrast to Yiftaḥel and Jawa, the curvilinear Nabi Salaḥ, Gebel Gunna, and Be'er Resisim, structures were no longer designed to "accommodate *families*" (cf. Flannery, 1972, p. 39).

Period: Site (Figure)	Large Rooms (sq m)	Small Rooms (sq m)
Chalcolithic: Meṣar (3.a *solid*)	35	10
EB I: Yiftaḥel (2.a)	34.1	$\bar{x}$ = 5.75 (n = 2)
EB I: Jawa (2.b)	$\bar{x}$ = 22.2 (n = 5)	$\bar{x}$ = 51.1 (n = 5)
EB II: Meṣar (3.a *open*)	22.4	13
EB II: Arad (3.c)	$\bar{x}$ = 19 (n = 8)	$\bar{x}$ = 6.2 (n = 8)
Syrian EB: Chuera A (3.b)	19.6	$\bar{x}$ = 4.2 (n = 4)
EB III: Tell el-Far'ah (North) and Tel Yarmut (3.e)	$\bar{x}$ = 16.5	3.78 (Yarmut, n= 1)
EB II: Nabi Salaḥ (2.c)	$\bar{x}$ = 14.1 (n = 5)	$\bar{x}$ = 7.1 (n = 14)
EB II–III: Gunna 25 100 (2.d)	$\bar{x}$ = 10 (n = 11)	$\bar{x}$ = 1.4 (n = 3)
Syrian EB: Chuera B (3.d)	—	$\bar{x}$ = 6.7 (n = 11)
MB I: Be'er Resisim (2.e)	9.4 to 12.6	—



HOUSE: SYRO-PALESTINIAN. Figure 1. *Hypothetical House Plans.* (a) Ground plan when built as a one-story structure; (b) Ground plan of the same house, built as a two-story structure. (Courtesy J. S. Holladay)

pp. 158–163, figs. 76–77; Campbell, 1994). [*See* Shechem.] It is comprised of one stable area (14.6 sq m), a roofed folding area (28.5 sq m), one heavy- and two light-storage rooms (16 sq m, 16 sq m, and 4.5 sq m, respectively), one living room (25.5 sq m) with an entry hall (4.5 sq m), and a kitchen (8.1 sq m). The left hand portion of figure 1.b shows what would be seen in a typical excavation report for exactly the same house built with two stories. Nothing of the family's domestic space is seen, although all of their economic domain is clearly visible. If all of the family's activities were interpreted solely on the evidence of the ground plan (perhaps still the reigning mode), half of the picture would be missed (i.e., righthand portion of figure 1.b).

Round Houses and Rectilinear Houses. Our understanding of the relationships obtaining between house shapes and sizes and settlement patterns and dominant modes of production have been vastly advanced by recent anthropological research (Hunter-Anderson, 1977, building on earlier work by Robbins, 1966; Whiting and Ayres, 1968; Flannery, 1972). Kent V. Flannery summarizes: "rectangular houses . . . are associated . . . with full-time sedentism, large community size, and intensive agriculture . . . [and] round houses [in compounds], . . . [while they may be] associated with permanent settlement, . . . [regularly] are 'designed to house only one, or at most two, persons' . . . [while] the rectangular houses of the village are 'designed to accommodate families.' . . . [Various facilities] are attached to or within rectangular houses [cf. the Arad kitchens, below]. In contrast, the few facilities found in the compounds are separate, round structures located in the open between the huts [cf. the subsidiary structures of the Sinai encampments, below]" (1972, as cited by Hunter-Anderson, 1977, p. 314).

Design Stability and Foreign Traits. Both cuneiform records and ethnographic parallels indicate that house building in Near Eastern societies was a craft profession (Stone, 1981, p. 27, for "municipal housing"; Chicago Assyrian Dictionary, vol. 17, s.v. *Šitimgallu;* Watson, 1979, pp. 121–122, cf. Kramer, 1982, p. 94), although people often did their own construction work (Watson, 1979, p. 121; cf. Kramer, 1982, p. 94). It seems equally clear that various ethnic groups preferred certain architectural configurations. These twin observations go a long way toward explaining similarities, differences, and eccentricities in house form across large cultural areas and through long stretches of time that are punctuated in a variety of instances:

1. *Population relocation, cultural innovation, or stress.* The evolution—or local introduction—of new (or new to the region) house forms, presumably reflects either new arrivals or altered social organization and changing modes of production. Examples include Babylonian insula-style houses at Megiddo strata III–II (see below), Israelite three- and four-room houses in the central hill country in the latter part of the Late Bronze II, and round EB IV/MB I shelters in the central Negev. [*See* Megiddo.]

2. *Cultural dominance or acculturation.* The four-room house spread to the Shephelah, coastal plain, Esdraelon, Negev (and perhaps into Transjordan) the Early Iron II period.

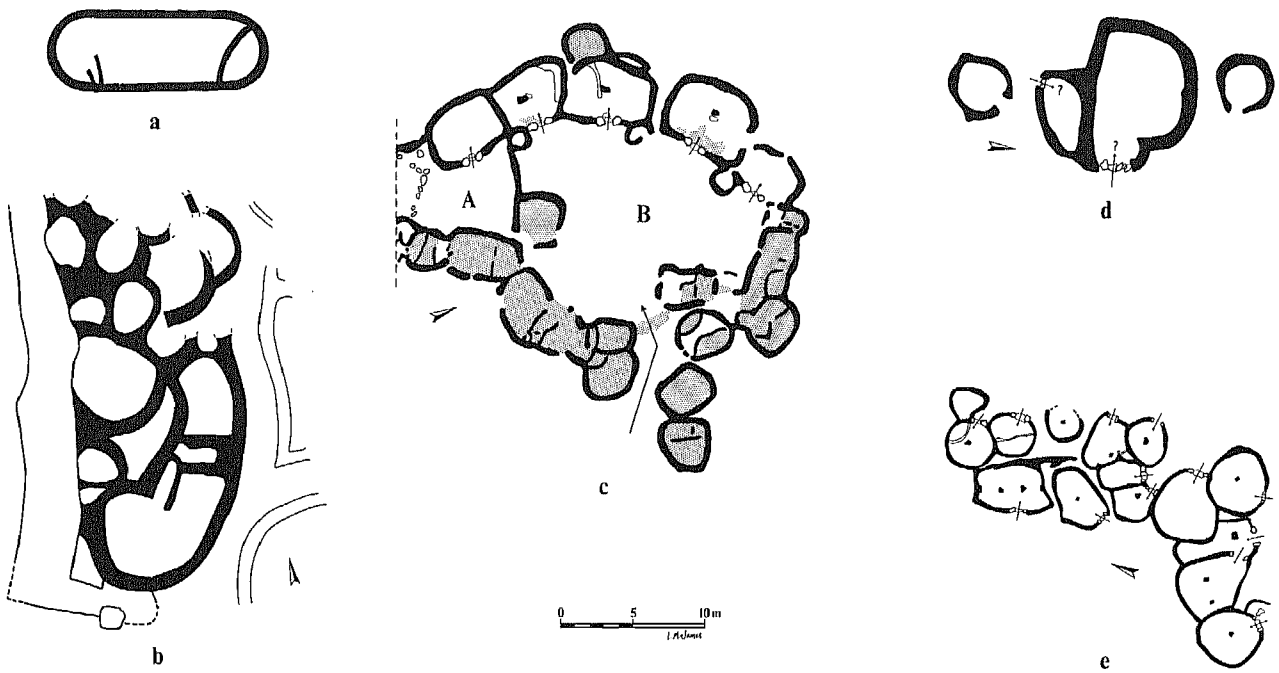
3. *Resident aliens or mercenaries.* Phoenicianlike (?) benches and the rear cult room in the atypical Hazor house 14 (see figure 7.e). [*See* Phoenicians; Hazor.]

4. *(Some) trade diasporas.* The Hittite diaspora (see below; see figures 6.c–f), and Egyptian agents abroad, who also may have functioned as part of a trade diaspora (?). The latter were responsible, possibly under royal patronage, for buildings or such groups of buildings as the Egyptian villas at Tananir, at the Amman Airport, and possibly at Tell Selenkahiye in Syria, (see figure 10.b; Herr, 1983; see figure 10.c). [*See* Hittites; Amman.] In contrast, members of the Old Assyrian Karum Kaneš lived in local Hittite-style houses (see figure 6.a). [*See* Assyrians; Kaneš.]

5. *Symbols of imperial power and legitimacy.* Egyptian officers' houses and egyptianized temples appear at Beth-Shean; an Egyptian temple appears at Lachish (James, 1966, pp. 8–13; James and McGovern, 1993, vol. 1, pp. 4–5, 27–56; Rowe, 1940; Ussishkin, 1978, pp. 10–25); Egyptian residencies appear throughout southern Palestine (Oren, 1984); and Assyrian palace-forts (see, e.g., figure 9.c) appear at Megiddo, Hazor (Yadin et al., 1958, pl. 177), and Beidha(?) (Bennett, 1977, pp. 1–3, figs. 1-A, 2). [*See* Beth-Shean; Lachish; Palace; Beidha.]

Early Bronze Age. For northeastern Jordan, Syria, Palestine, and the Sinai at least five distinct types of houses are found. The first two types and the last are curvilinear structures seemingly associated with particular ethnic groups. The first type is associated with the invasive EB I Esdraelon culture (gray-burnished ware) and was formerly taken, based on inadequate data, to be apsidal. In the light of better analysis and new finds, this type (see table 1) is now seen to have an elongated oval plan (see figure 2a). This example has a central enclosed area of about 35.5 sq m and walled-off end spaces (for storage?) of 4.5 and 7 sq m (total = 11.5 sq m, mean [$\bar{x}$] = 5.75 sq m) (Braun, 1989). At the transi-

Palestine

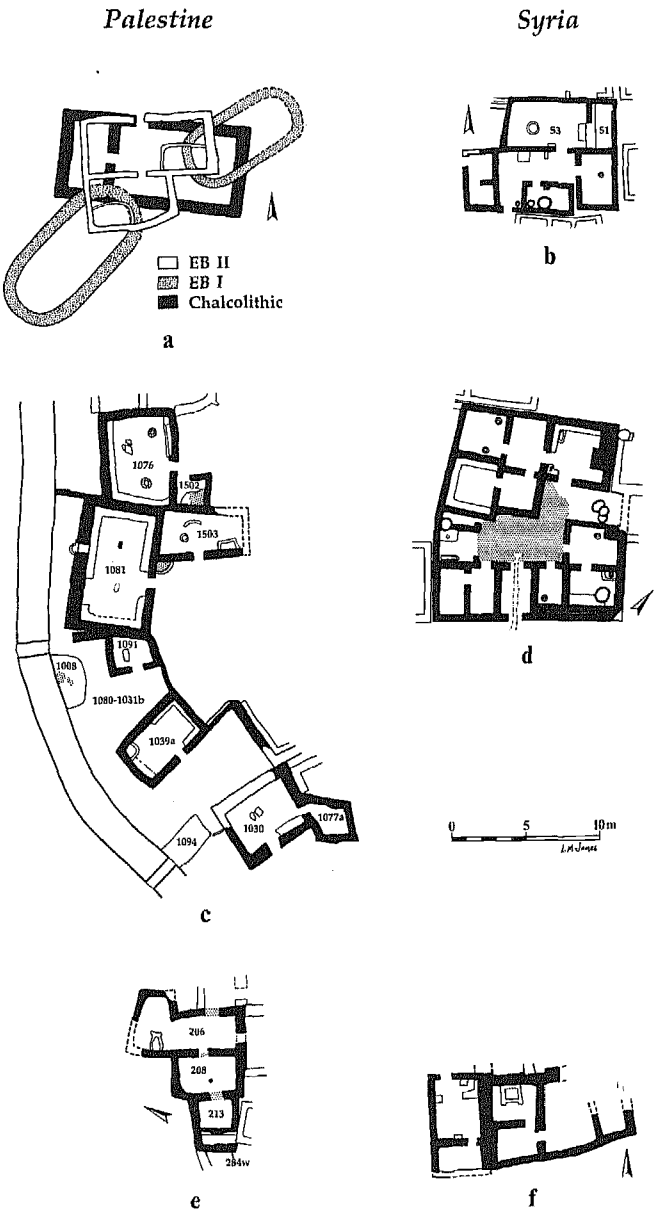


HOUSE: SYRO-PALESTINIAN. Figure 2. *Curvilinear Houses, EB to MB I.* (a) Oval EB I building from Yiftaḥel (after Ben-Tor, 1992); (b) houses and store facilities at EB I Jawa (after Helms, 1981, pp. 123–125); (c) EB II houses and store facilities at Nabi Salaḥ in the southern Sinai (after Beit-Arieh, 1981); (d) EB II or EB III sleeping chambers and enclosure at Gebel Gunna, in the Sinai (Gunna 100), presumably of a local non-sedentary group (after Bar-Yosef et al., 1986); (e) MB I shelters at Be'er Resisim (after Cohen and Dever, 1981). (Courtesy J. S. Holladay)

tional site of Meṣar (see figure 3.a), oval houses appear stratigraphically sandwiched between a rectilinear Chalcolithic house (large room = 34.1 sq m, small room = 10 sq m)—perhaps housing an extended family group and a typical EB II broad-room house (with a kitchen?) similar to those at Arad (see figure 3.c; Dothan, 1959). [*See* Arad, *article on* Early Bronze Age Period.] The larger unit is 22.4 sq m and the smaller about 13 sq m (see table 1). The second type of curvilinear house, at EB I Jawa (Helms, 1981, pp. 123–125, figs. 57–58), is cell-like (see figure 2.b). It was partially dug into the ground, and—according to the excavator—new houses were successively added on to existing semiround houses and smaller facilities in an agglutinative manner. [*See* Jawa.] Spaces between the adjacent expanding clusters—which presumably housed different extended family groups—eventually became streets. Each living room had access, through a small doorway, to a smaller rounded space, perhaps a beehive-shaped silo. [*See* Granaries and Silos.] An average of five large cells yielded a mean living room size of 22.2 sq m (SD = 8.3 sq m), while an average of five small (storage?) cells yielded a mean of 5.1 sq m (SD = 1.7 sq m) (see table 1).

The third example, from EB II Arad, in the Negev, is a strongly typed rectilinear sunken broad-room house (Amiran et al., 1978, pp. 14–17; see figure 3.c). The type is reasonably similar to an EB house near the small anten temple at Tell Chuera (Chuera A, see figure 3.b; table 1), in northeastern Syria (Moortgat and Moortgat-Correns, 1978, plans 2–5). [*See* Chuera, Tell.] Room 53, with alcove 51, totals 20 sq m, which compares well with the mean of 19 sq m from eight houses at Arad (see below). The Arad houses are, however, not like other EB complexes at Tell Chuera (Chuera B, phase 3; cf. figures 3.c–d; table 1). Given the size of the individual cells (about 3.7–11 sq m, $\bar{x}$ = 6.6 sq m, SD = 2.2 sq m, number [n] = 11); see table 1), the plan appears to represent the ground floors of three (?) two-storied buildings—presumably around a family courtyard—with living quarters to be reconstructed upon their second floors (fully realized, in the 15–40 sq m range, with a mean of about 25 sq m). In their respective settings, these fully rectilinear structures, with their incorporated kitchens/oven rooms (see above), may be taken as typical early and quite sophisticated—particularly at Tell Chuera—regional responses to the demands of intensive plow-assisted agriculture within a common larger culture area. [*See* Agriculture.]

As at Chuera, the Arad houses are grouped in what would



HOUSE: SYRO-PALESTINIAN. Figure 3. *Early Bronze Age rectilinear houses.* (a) Megar, oval EB I structures sandwiched between a rectilinear Chalcolithic house and a typical EB II broadroom house (with attached kitchen?) (after Dothan, 1959); (b) an EB house near the "Small Anten-Temple" at Tell Chuera, in northeastern Syria (after Moortgat and Moortgat-Correns, 1978, plans 2–5); (c) EB II complex at Arad, in the Negev, including four living rooms, three kitchens, one storeroom, compound walls, a fortification wall, and two rectangular stone platforms (for silos?) (after Amiran et al., 1978, pl. 178); (d) more common type of EB complex at Tell Chuera (after Moortgat and Moortgat-Correns, 1978; plans 2–5); (e) EB III development at Tel Yarmut of the EB II broadroom house, with forecourt(?), pillared room (with living room over?), subsidiary room, and an additional rear wall (see text) (after Miroschedji, 1988, pl. 9); (f) Late EB houses at Halawa with a long-room with rear chamber on the left, and seemingly part of a courtyard house more typical of the MB II on the right (after Meyer and Orthmann, 1989). (Courtesy J. S. Holladay)

appear to be family compounds, or "farm compounds" (Edward B. Banning, personal communication). At Arad, the individual house is a single living room opening off of an irregularly walled courtyard. The house and wall are built of blocks of soft Eocene chalk, laid without attention to bedding planes; the easily available chert is reserved for use in pyrotechnical installations, such as cooking hearths. Party walls are common. Typically, the living room is furnished with benches around its periphery (see figure 3.c). Some houses also have a platform, silo, clay or mud-brick bins (some holding carbonized grain), a stone mortar embedded in the floor, a plastered floor pit (for accumulating flour?). Some small hearths were planned, but not in every house. Depending on the size of the house, one or more stone column bases may appear along the long axis, deeper houses being more likely to have column bases. There may be more than one step down from the threshold to the floor. The inner walls, benches, and often the floors were surfaced with a "limey clay plaster" (Amiran et al., 1978, p. 16). Smaller rooms (usually at surface level), most of which served as kitchens or kitchen-storerooms, lack these features (at least one, room 1077a, which opened directly into the house, served another function: a storeroom?). Some of these rooms also have mortars embedded in the floors, built-up silos or stone-lined pits, slab-built ash bins, flagstone platforms, or raised stone [chert] hearths (see Arad rooms 1502, 1503). They are usually attached to the house, often directly outside the doorway, but may also be variously arranged around the courtyard. Larger houses may have larger kitchen-storerooms (e.g., room 1503). There are many raised round (sometimes half- or quarter-circles) and rectangular stone platforms (e.g., platform 1008), but not near every house. These are best interpreted as foundations for the collective (mud brick) granaries of extended families. Of the eight houses in area H, stratum II (Amiran et al., 1978, pp. 26–29, pl. 178), the mean width was 5.4 m with an SD of 1.1 m. The mean depth (front to back) was 3.5 m (SD = 0.5 m). Because only house 1039a lacked probable pillar bases (depth = 2.8 m), the mean depth (plus bearing lengths at each end) cannot be taken as a function of the lengths of locally available beams. Living rooms ranged from 12.8 to 30.4 sq m, ($\bar{x}$ = 19 sq m, SD = 6.2 sq m) (see table 1). From the same excavation area, the mean dimensions of the three kitchen-storerooms and one other small room were width $\bar{x}$ = 2.9 m (SD = 1.3 m), depth $\bar{x}$ = 2 m (SD = 3 m); interior areas ranged from 0.3 to 13.1 sq m ($\bar{x}$ = 6.2 sq m, SD = 4.6 sq m) (see table 1). The enclosed open area (area H, loci 1080–1031b) of one walled-in two-house compound is about 90 sq m. A house model confirms initial assumptions that the houses were one story, flat-roofed, and apparently plastered and painted on the outside (Amiran, 1978, p. 52, pl. 66, 115). The roofs were of reeds overlaid with clay (Amiran, 1978, p. 26).

The fourth type but closely related to the foregoing type) was excavated by Itzhak Beit-Arieh (1981) in a number of

small EB II settlements in southern Sinai and the Negev highlands that appear, for a variety of reasons, to be encampments of peoples closely affiliated with the Arad culture (see below). In these camps, subcircular to subrectangular stone foundations characterize both houses (living rooms)—mostly pillared, many with benches, and sometimes even with a door socket—and smaller subsidiary structures. The houses are cut into the earth in a fashion similar to the Arad houses, but, as at Arad, most of the subsidiary structures seem to be at surface level (Beit-Arieh, 1981, p. 38, fig. 7). Where structures are not contiguous, short stretches of connector wall fill the gap. The units are strung like beads in a necklace: houses are regularly connected to other houses, with the subsidiary structures (Flannery's "facilities," see above) being "located elsewhere around the courtyard" (Beit-Arieh, 1981, p. 37). The whole forms a roughly circular corral-like encampment, often with a smaller—perhaps one of Beit-Arieh's "pens" (1981, p. 42)—and a larger "enclosure" area. The enclosure has only one (less often two) entrance(s). As published (the drawing is cut off to the left), Nabi Salah, one of the settlements Beit-Arieh excavated, lacks its southernmost subsidiary structures, but is otherwise well preserved and may be taken as typical (see figure 2.c: Beit-Arieh, 1981, pp. 37–38, fig. 8). The interior areas of the five houses (living rooms) range from 9.7 to 18.75 sq m, with a mean of 14.1 sq m (SD = 3.7 sq m), on average 4.9 sq m smaller than the Arad living rooms, but larger than the MB I shelters, and much larger than the sleeping chambers near Gebel Gunna (see table 1).

The fourteen subsidiary structures range from 2 to 11.7 sq m, with $\bar{x}$ being 7.1 sq m (SD = 2.6 sq m), on average a probably insignificant 1.1 sq m larger than the Arad kitchen-storerooms. A larger corral area is about 150 sq m (area B), and a smaller one (area A) is about 27 sq m. On a per living room basis, this equates well with the free compound area in area H at Arad (44.25 sq m vs. 45 sq m), suggesting that one of the primary determining factors for each enclosed space might be the overnight folding area required for the group's donkeys, sheep, and goats. [*See* Sheep and Goats.] The entrance typically has a certain depth, which makes for easy blockage with brush and camel thorn. While it is not impossible that this setting belonged to some family groups, there is a stronger possibility, compatible with the reduced living-room size, relatively low head space, and small doorways, which are (55–60 cm wide × 70 cm high (Beit-Arieh, 1981, p. 34), that these were seasonal encampments. The outer walls are preserved maximally to 1.6 m, and two monolithic central pillars are 1.85 and 2.2 m high, respectively (Beit-Arieh 1981, p. 47). The encampments likely belong to specialized pastoralist resource-gathering groups proceeding from and domiciled at permanent settlements such as Arad (see below). [*See* Pastoral Nomadism.] The resources gathered or traded included copper; semiprecious stones; mother of pearl, other shells, and other Red Sea commodities; and even temper for the stratum III–I cooking pots found, and presumably manufactured, at Arad (Amiran, 1978, p. 50). Six (75 percent) of the eight published EB II pendants from Arad were of mother of pearl, as were 341 (64 percent) of the 531 published beads (Amiran et al., 1978, pls. 68–69).

The fifth type of structure is represented by oval structures near Gebel Gunna (sites 25, 50, and 100), investigated by Ofer Bar-Yosef and others in Sinai (see figure 2.d), which also appear to be EB II (or III?) in date and which the investigators propose may derive from the indigenous population of Sinai (Bar-Yosef et al., 1986, pp. 164–165). In general, these structures take the pattern of subrectangular to oval to subrounded courtyards—distinguished by ashes and quantities of animal dung (?)—with one or two small attached oval sleeping chambers (?). Usually, there were other unattached small, rounded to subrounded sleeping chambers in the vicinity. Even smaller circular installations ($\bar{x}$ = 1.4 sq m, SD = 0.6 sq m, n. = 3) were considered storage facilities (see table 1), sometimes clustered within a larger oval structure (Bar-Yosef et al., 1986, figs. 4–6). The enclosures ranged from about 35 sq m to about 129 sq m ($\bar{x}$ = 62 sq m, SD = 40 sq m), while the sleeping chambers ranged from 5.6 sq m to 16.6 sq m ($\bar{x}$ = 10 sq m, SD = 3.4 sq m, n = 11).

In the later EB II and the ensuing EB III periods, it appears that an additional room or rooms were frequently added to the plan, often secondarily. Houses are not sunken at sites like Tell el-Farʿah(North) and Tel Yarmut and are typically much more closely packed and forced into irregular spaces. [*See* Farʿah, Tell el- (North); Yarmut, Tel.] Often they make up sprawling insulae, although, where details are clearer, the individual houses seem to remain discrete, allowing the inference that the nuclear family was still the basic unit of society. Internal courtyards are recognizable, off of which living rooms may open (e.g., Loud, 1948, fig. 302; Miroschedji, 1988). One variant (EB II, rooms 622–612, 629-623–624, de Vaux, 1961, pl. 34; EB III, rooms 206, 208, 213, Miroschedji, 1988, pl. 9) has a centrally columned room or rooms (rooms 612, 623, and 208 are 24.5 sq m, 17.1 sq m, and 8.4 sq m, respectively; $\bar{x}$ = 16.7 sq m, SD = 8.1 sq m, n = 3; see table 1) directly behind a front broad room or courtyard (see figure 3.e). Room 206 could easily have been roofed over, although it is very shallow and has too many entrances to be considered a living room. While it is possible that these were living rooms, it is more probable that the living room was then on the second story, much as in the later Syrian house models (e.g., figure 5.f), which feature a second story on the rear half to third of the house length—the best dated examples are all Late Bronze (Margueron, 1976, pp. 213–227). At 8.4 sq m, the posited Tel Yarmut second floor seems too small to serve its expected living-room function, unless the rearmost wall, 284, is taken as the expanded house's back wall (making the room about 15 sq

m). Presumably, the invasive and ill-published Khirbet Kerak culture brought its own exotic architectural traditions with it, as is evidenced in the great granary at Khirbet Kerak/Beth-Yerah (Hestrin, 1975, p. 258), but these remain obscure. [*See* Beth-Yerah.]

MB I/EB IV. With the collapse of nucleated occupation in Palestine and much of Syria, caves and, presumably, tents or other impermanent structures became the norm. Beginning early in EB IV and lasting throughout the later EB IV/MB I (henceforth MB I), in winter encampments scattered across the Negev, small, round stone huts, plastered on the interior and almost certainly on the exterior, with stone-and-plaster roofs, were the norm (see figure 2.e). The roofing was ingenious and suited to the windswept nature of the locale: locally abundant, flat chalk slabs were held together with marly clay plaster and set on a low-pitched frame of locally available tamarisk roofing beams radiating out from one or more central pillars. The pillars were often constructed of more than one stone; composite pillars were held in place by compression from the weight of the roofing stones and plaster (Cohen and Dever, 1981, fig. 7). It seems likely that these utilitarian structures were smaller and rounder simplifications of the curvilinear EB II hut. There was earlier EB II occupation at Be'er Resisim and at nearby site 126 (Cohen and Dever, 1981, pp. 64, 72–73). [*See* Be'er Resisim.] MB I structures at Be'er Resisim were not arranged around large open spaces, but in short ragged rows and clumps. The rows mostly face northeast, east, and southeast (fifteen out of 20 appear in Cohen and Dever, 1979, fig. 6; they are partly illustrated in figure 2.e), and south (four examples), away from the prevailing westerly winds (one example does face west). With diameters between 3 and 4 m (9.4–12.6 sq m), a maximum interior height of about 1.8 m (Cohen and Dever 1981, p. 61, figs. 4–5, 7–8), sloping downward to 1.5 m or less at the exterior walls, and with the only intact doorway being .4 m wide and .55 m high, they were too small and cramped to be more than shepherds' camps or sleeping chambers (Cohen and Dever, 1979, p. 51; Dever, 1985, p. 19). Presumably, the inhabitants were, as in some contemporary pastoralist societies, young boys and older men, rather than family groups (Dever, 1985, p. 21; n. 14 interprets the evidence to reflect polygynous family groupings).

The dimorphic forms of EB II houses, both round and rectilinear, versus the totally opposite characteristics of EB II–III town sites (all rectilinear) and MB I campsites (all curvilinear), may help to understand the early EB IV and MB I. Against the vast majority of round-chambered shaft tombs characteristics of the developed Palestinian MB I, the earliest northern culture's shaft tombs at Megiddo (Dever, 1980, fig. 1) were strictly rectilinear, an architectural statement somewhat more weakly echoed by the same cultural group in the Northern Cemetery at Beth-Shean (Oren, 1973a, n. 13; 1973b, p. 16 [tomb 227], fig. 7; p. 24). At Har Yeroham, in the central Negev highlands, a densely built settlement bounded by a relatively inconsequential rectilinear stone fence contained "various workshops—square structures built up against the stone fence . . . and a [lightly built, rectilinear] public building with large rooms. . . . The numerous grindstones and querns, flint scrapers, and sickles found on the site indicate that seasonal agriculture was practiced nearby, probably in the adjacent Yeroham basin, which has a high water table. Two animal figurines, unique for this period, one of clay and one of stone, were found near a pottery kiln which still had a Middle Bronze Age I vessel inside it" (Kochavi, 1978, p. 1219). This settlement was succeeded by one with round structures and animal pens. Little can be said for the affinities of the plans, but the sequence should be noted: from early multiroom rectilinear structures with workshops, animal figurines, and agricultural implements, to later round structures with large animal pens. Also, while animal figurines may be rare in MB I contexts, they abound in Chalcolithic, EB, and Iron Age contexts, all periods dominated by sedentarized horticulture and/or intensive agriculture—in each case significantly buffered from risk by the individual ownership of small household flocks.

Late in MB I, a reverse movement can be seen: straggling rectilinear mud-brick buildings with small, irregular rooms and walls only one brick thick reappeared at Jericho (Kenyon, 1970, pp. 153–154, fig. 29), after an extended period in which the site was occupied by people using typical late MB I pottery but who left no visible structures. [*See* Jericho.] Such an oscillation from substantial rectilinear houses (with family and work-group values reflected in the multiple burial tombs of the EB I–III) to easily built round and impermanent habitation (with family and work-group values reflected in the single and, rarely, double-burial MB I shaft tombs) and back to permanent rectilinear architecture (with renewed family vaults in MB II) may reasonably be correlated with an oscillation from sedentary family-based agriculture (EB I–III) to pastoralism (MB I) and back again (MB IIA) to a renewed emphasis upon sedentism, intensive agriculture, and the family (LaBianca, 1990, pp. 33–49). At Jericho, the new movement may involve late "Jerichoan MB I" elements returning to sedentary agriculturalism under the influence of incoming MB IIA agriculturalists.

On the basis of data normally consulted, MB I would seem to represent the last gasp of a long period of curvilinear houses stretching back through the early Beersheba culture to the Pre-Pottery Neolithic. However, farther afield other data are discovered, such as the one-room round, "temporary" structures and the one- to several-room rectilinear "farmhouses" found in the Negev from the Byzantine and Early Islamic periods (Haiman, 1995). There are averages of room sizes for the excavator's two farm groups: the mean for group 1 being 21 sq m (n = 19) and for group 2, 22 sq m (n = 25); the standard deviation cannot be calculated

from the data (Haiman, 1995, tables 1, 2). While the notion of independent invention may be posited for each new manifestation of the circular form, following intervals characterized by rectangular houses, it seems better to hypothesize that groups of people using round structures, perhaps often in less durable materials, persisted throughout the prehistoric and historic periods at the margins of "civilized" sedentary societies and served as a reservoir for the various technologies required for survival during periods of societal collapse (Tainter, 1988).

Middle Bronze II: Palestine. Despite restored plans from Tell Beit Mirsim (see figures 4.b, d, g, h) and elite houses at Megiddo (see figures 4.e, f), relatively little was known about housing in the Middle Bronze and Late Bronze Ages prior to Michèle Daviau's pioneering study of domestic activity areas (Davian, 1993). Most Palestinian specialists seem to agree that the standard MB–LB house form is based on a courtyard with single-story rooms on one or two sides. This is not true for two of the three Tell Beit Mirsim examples, however. Largely on the basis of debris analysis, William Foxwell Albright maintained from the start that the palatial mud-brick stratum D house (MB IIC), with its 6-meter-wide courtyard (see figure 4.g), was two storied (Albright, 1938, pp. 35–39). If the second story was confined to just the nearly square western block, in the pattern of the (mostly—or all?—LB) Syrian model houses, that floor would have had an enclosed area of some 42.5 sq m, without its internal walls—enough for a living room, a small kitchen, and an upper storeroom. It seems more plausible that the entire building, without the courtyard, was two-storied (Daviau, 1993, p. 157). The MB IIA stratum G house (see figure 4.b) had a columned room (room 1, probably without a porticoed courtyard) about 37 sq m in area. However, the lack of an entry hall, and the twin facts that the side rooms are all under 12 sq m and all face into room 1, speak against the ground floor being the family's living space. The line of column bases reduces the overall free span of room 1 from 4.5 m to free spans of less than 2.5 m—well under the free-span widths of the three small rooms (2.9, 3.1, and 3.2 m, respectively). The peculiar broken wall line near the northern end of room 1—if not a digging or planning mistake—may be construed as part of the foundation for the staircase. Given the ethnographic data, the small rooms most reasonably can be seen as storerooms (and as an excellent basis for a second story), with the large room serving for daytime work space and overnight and storm shelter for the sheep and goat herd. Having proposed this, it is significant that in the entire body of MB II–LB II housing Daviau reviewed, no formal facilities for housing large animals (horses, donkeys, cows) could be identified (Daviau, 1993, pp. 455–456—except for the LB Tablet Building at Tell Hadidi (see below). [*See* Hadidi, Tell.] A second story, erected only over the smaller rooms, could have had an overall area of some 40 sq m, without the internal walls—more than enough for a living room and kitchen, or even for a living room, small kitchen, and small storeroom, with a means of exiting to the expansive roof over the pillared hall. This is, however, not the only possible reconstruction and is probably less desirable than a full second story.

The pillared stratum E buildings (SE2–12, SE3–13) at Tell Beit Mirsim (see figure 4.d; Albright, 1938, paragraphs 39, 46–47, pls. 50–51) appear to be entirely two-storied (for staircases, see below). Albright, however, cites persuasive evidence for a radical change in plan from stratum E (MB IIB) to stratum D (MB IIC): from a previously wholly roofed structure (figure 4.d) to one only partially roofed—a courtyard building (see figure 4.h). Accepting this interpretation for Tell Beit Mirsim (at Megiddo, this change seems to have happened early in MB IIB; see below), in stratum D a relatively large courtyard bounded by two small rooms to the west and one large room (about 7.14 × 3.33 = 23.8 sq m) to the south are seen for the first time. Given the density of building in this area and the thickness of the walls, it is probable that at least the north end of the eastern house, and perhaps the south end as well, was two-storied. Stairways in both periods seem to be concentrated at the northwest corner of the eastern building: there is a descending staircase in the western house shown on the stratum E plan (see figure 4.d) in S.1D (Albright, 1938, pl. 50). This is a strong argument for the roofed character of this space. The overly thick ascending western "wall" exterior to the building shown in figure 4.h is also probably a staircase (locus 2, on the stratum D plan (Albright, 1938, pl. 51).

At urbanized Jericho, the density and small room size of the MB II (=MB IIB–C) houses (Kenyon, 1960, pp. 187–188, fig. 45) supports Kathleen M. Kenyon's early judgment that the ground floor was given over to the economic domain—whether storage or shops—with the "upper storey rooms . . . as today, provid[ing] the living accommodation" (1960, p. 187). As given, the plans do allow for buildings with 4-× -4–5-meter corner rooms, which may or may not be courtyards, with a double range of rooms on one or two sides (see Daviau's extended analysis in favor of roofed space: 1993, pp. 213–218, and LB II Ugarit, below). Megiddo, area BB, stratum XII (Loud, 1948, fig. 398, N14-O14; see figure 4.f) appears similar to the less-complete Jericho plans. Two houses, each with four rooms on two sides of a larger space, seem fairly secure. Anything else on the plan is problematic, although the pattern seems to repeat itself with variations. The eight small rooms average 1.9 m of free span across their narrow dimension (SD = 0.4 m), and the two larger rooms/courtyards average just a little under 4 m in their narrow dimensions (see LB II Ugaritic below). The largest small rooms in each house are about 5.1 sq m and 7.6 sq m, and the two large rooms/courtyards are about 15 sq m and 20 sq m, respectively. As at Jericho, adequate living rooms and a kitchen could be fitted in, utilizing the space above just the small rooms, without roofing the

HOUSE: SYRO-PALESTINIAN. Figure 4. *Middle Bronze Age II houses.* (a) Tell Bi'a, courtyard house with rooms on three sides of the courtyard (after Herbordt et al., 1982); (b) Tell Beit Mirsim stratum G, MB IIA house with rooms to one (?) side of a large hall (after Albright, 1938, pl. 56); (c) Halawa, a MB II insula of two and three-room houses of Hittite style (cf. figure 6) (after Meyer and Orthmann, 1989); (d) Tell Beit Mirsim stratum E, MB IIB houses with pillared halls (after Albright, 1938 pl. 50); (e) Megiddo statum XII, MB IIB buildings in area AA (after Loud, 1948, fig. 378b); (f) Megiddo area BB, stratum XII, MB IIB houses with rooms on two adjacent sides of a courtyard (after Loud, 1948, fig. 398); (g) Tell Beit Mirsim stratum D, MB IIC multistoried building with courtyard to one side (after Albright, 1938, pl 55); (h) Tell Beit Mirsim stratum D, MB IIC version of one of the houses in (c) above, with rooms on three sides of a courtyard (after Albright, 1938, pl. 51); (i) Hazor MB IIC house 6205, from Hazor area C, stratum 3 (after Yadin et al., 1960, pl. 207). (Courtesy J. S. Holladay)

larger spaces. A more satisfactory plan would have involved a complete second story.

Aside from the fact that the buildings are a complex insula in style, it is difficult to make much out of the Tell Nagila plans (Amiran and Eitan, 1965, fig. 3; cf. Amiran and Eitan, 1977, p. 895). Because "in some cases a flight of several steps leads down to the house from the street" (Amiran and Eitan, 1977, p. 895) without a mention of drains, fully roofed construction (and a raised threshold) must be argued. The broadest free spans shown are consistently under 4 m. Using the excavators' evaluation, the typical house consisted of "one or two small rooms (averaging 2 by 3 meters), opening onto a courtyard (averaging 3 by 5 meters)" Amiran and Eitan, 1977, p. 895). Pillar bases are mentioned, as are paved floors. One large silo, in its own space, is shown. Because the "rooms" are said to average 6 sq m—small even for storerooms or stables—only the "courtyard" (or the space above it) would have been sufficiently large for anything even approaching the average ethnographically documented living room. Given the compact insula plan, and the evidence for pillars, the buildings were probably two-storied, with the usual low first story, despite the relative thinness of the walls. (See Netzer, 1992, pp. 20–21.) Similar considerations govern any ethnographically aware interpretation of the three large, ill-preserved buildings in area AA, stratum XII (MB IIB) at Megiddo (cf. Ben-Dov, 1992, p. 101, and Loud, 1948, p. 13, fig. 23; see figure 4.e; and see Loud, 1948, fig. 378b), and a same-period building at Beth-Shemesh (Grant and Wright, 1939, p. 28, fig. 2). [*See* Beth-Shemesh.] What does seem common to all these units is that the ground floor, and presumably the second story, was regularly fronted by a large room, with one to three or more smaller rooms arrayed behind it.

MB IIC house 6205 from Hazor, area C, stratum 3 (see figure 4.i) illustrates a variant well attested in LB Syria—although, on this evidence, originating in the Middle Bronze Age (Yadin et al., 1960, pl. 207). The house has rooms on either side of a "courtyard," and the parallelism is complete even to the detail of entering through a small entry room (cf. figure 5.d). The small rooms range from just over 4 to about 9.3 sq m ($\bar{x}$ = 6.5 sq m, SD = 2.4 sq m); the "courtyard" is 28 sq m. Suitable space for a living room can only be attained by positing a two-story plan. If the "courtyard" space were left open (about 4 m of free span), the two resulting spaces would be about 15.5 sq m and 22 sq m, without the internal walls. Considering the problems inherent in having two separate second stories in one house, it seems better to posit a complete second story, with a wooden staircase probably ascending along the northeastern side of the southwest room.

Middle Bronze II: Syria. The many two- and three-roomed houses in MB II stratum 2 at Tell Halawa (see figure 4.c; Meyer and Orthmann, 1989, pp. 20–33), are treated below (see section "Hittite houses"). Other MB II houses are poorly attested in Syria, but the next to the latest MB II building phase on mound E at Tel Bi'a (Herbordt et al. 1982) yielded one example of a strongly built house all of whose walls are more than 1 m wide (see figure 4.a). This is already in the mode of later Syrian houses, albeit of a variant posited for, but not yet attested in LB Syria: the courtyard house with "rooms on three . . . sides" (see below; Herbordt et al., 1982, fig. 8). Entry appears to be through a relatively large room with the usual bent axis and staircase near at hand in what most surely is an open courtyard (free span = 5.5–5.75 m). The shortest free spans for the various rooms are 3.5, 2.6, and 2.6 m. Room 6 would be wider but probably utilizes a wide, slightly off-center pilaster for a compound bearing beam (of costly cedar), which would reduce the resultant north–south free spans to less than 2 m. The respective room sizes are 17.2, 18.4, 21.4, and 15.2 sq m ($\bar{x}$ = 18.1 sq m, SD = 2.6 sq m, on average larger than any other house in the present study).

Late Bronze Age. Despite data from Megiddo, Hazor, and Tell el-ʿAjjul (Daviau, 1993, 219–299) and an apparently unique, for Palestine, LB IIA house at Tel Batash/Timnah (Kelm and Mazar, 1982, figs. 8–10; see figure 5.n), firm conclusions about house form are hard to reach. [*See* ʿAjjul, Tell el-; Batash, Tel.] It will help, therefore, first to examine the extensive data from Syria, which show a broad diversity of forms. Figure 5.a illustrates just one portion of a complex insula from Ras Shamra, ancient Ugarit: three closely intertwined, but functionally separate houses (A–C) (Yon et al., 1987). [*See* Ugarit.] Marguerite Yon comments on the processes that yielded this particular configuration: "The city blocks [insulae] . . . are divided into living units (houses) closely linked with one another and imbricated, so that not one of them alone constitutes an autonomous architectural unit. That is why the interior partitions have changed over the course of the history of each block [insula], according to inheritances and sales: it was sufficient to pierce a hole or board up a doorway to modify the size or the orientation of a house" (Yon, 1992, p. 704). Yon summarizes the organization of the typical house: "In the ground plan, access to the street is from a vestibule whence the interior traffic patterns branch out, horizontally by the doorways and vertically by a staircase, the first flight of which is of stone. One area is reserved for domestic activities, recognizable from culinary utensils (stone, ceramic, bone), another perhaps for the treatment of textiles, and another area for storage, with jars and sunken silos. The living quarters on the next floor up must be reconstructed. Fairly frequently, a separate area, with its own entrance but linked to the rest of the house, housed a family tomb. These private homes abutted industrial establishments [e.g., oil presses, jewelry, or figurine workshops]" (Yon, 1992, p. 705). Their eighteen rooms range from 1.6 to 23.7 sq m, with a mean of 11.2 sq

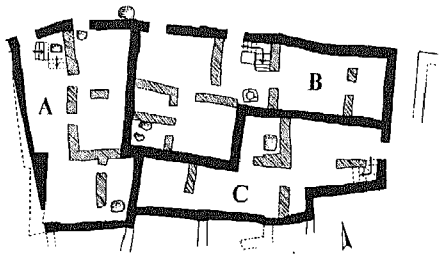
m (SD = 6.3 sq m). The free spans on the narrowest axes range from 1 to 3.6 m ($\bar{x}$ = 2.7 m, SD = .9 m), with nine of them grouped between 3 and 3.6 m. Only the widest free span—a space of 4 × 4.2 m—seems to belong to an open court (piece 1265, see Yon, 1992, pl. I). Given that these are relatively rich households in a region where cedar should have been easily obtained, it is notable that the covered free spans seem to peak in the range of 3.5–3.6 m (four out of the top eight widths). This seems to constitute relatively strong—though not absolute—grounds for ruling out free spans approaching or exceeding 4 m in areas such as ancient Palestine. On the other hand, many large spaces in MB and LB Palestinian houses seem to be governed by a 4-meter standard, suggesting that spans of this length were possible, but not ones of, say, 4.25 m or more.

Two points need emphasizing: in the densely packed, long-lived urban environment, most houses have a functional plan, but not necessarily a fixed architectural form; and LB (and presumably earlier) urban houses are typically multistoried, with no living quarters on their ground floors. The differential deposition of fine objects in the debris of collapse strongly indicates that domestic quarters were on the second (or higher) floors. These insights help to understand not only ill-defined plans from, say, Alalakh, but also from such urban Palestinian sites as Hazor, Megiddo, and Tell el-'Ajjul. [*See* Alalakh.]

Standard MB–LB house type. In the less urbanized setting of the Middle Euphrates River, a variety of house forms can be distinguished (see esp. Meijer, 1989). [*See* Euphrates.] As already noted, versions of what can be termed standard already appear in the Middle Bronze Age in both Syria and Palestine and will also appear in the Palestinian Iron I and II. Its fullest expression can be seen in the more broadly excavated LB strata of the Middle Euphrates, particularly at the long-standing excavations at Tell Munbaqat (Machule et al., 1992, fig. 14; 1993, fig. 12). The most common variants of this type are characterized by rooms on one side of a large hall (see figure 5.b,c; cf. figure 4.b,g) or rooms on two opposing sides of such a hall (see figure 5.d; cf. figures 4.i, 7.c) A third alternative has rooms along one long side and an adjacent short side (see figure 5.e; cf. figure 4.f). A fourth variety has rooms on three or even four sides (cf. figures 4.a; 7.a, b, d; 8.a, b). In LB, Syrian, the partition walls defining these rooms are simple: they are either straight segments, L-shaped, or T-shaped. Short doorjams, probably associated with bars to lock the exterior door appear at the house entrance, occasionally at the entrance to the central court, and only rarely elsewhere (Watson, 1979, pl. 5.4). As in the Israelite three- and four-room houses, these large areas/courts/halls are almost surely roofed, as the stairs make clear. In smaller, simpler houses, the entrance leads directly into the large hall; in larger, more complex houses, the entrance characteristically lets into a small entry hall that, in turn, leads into the large hall. In enough examples to establish the general pattern, stairways are directly at hand upon entering the larger hall (figures 5:a–c, e, h–j). Examples without stone stairways undoubtedly had wooden stairways (Margueron, 1980, p. 293). It is historically, socially, and economically significant that these buildings have unmistakable descendants in Iron II Philistia and Israel (Holladay, 1995, pp. 382–385).

Palestinian houses. If the Tell Beit Mirsim LB house selected for publication (Albright, 1938, pl. 56, cf. pl. 52) is correctly reconstructed, house forms current in Megiddo stratum XII (MB IIB, cf. figure 4.f) persisted into late LB II Palestine, as they did in Syria (see figure 5.e). This assessment would be in keeping with contemporary scholarly views of the relationship of the Late Bronze to the Middle Bronze Age (cultural continuity, not discontinuity). Some curious materials from Hazor, area C, stratum 1B, reflect a foreign presence and are treated below (see section "Hittite houses"). The plan of area F, stratum 1B, at Hazor resembles a rabbit warren, with entrances at both the northern and southern ends and multiple branching entrances from the south (see figure 5.k; Yadin et al. 1960, pl. 210). In part, different construction may have been conflated into a single-phase plan. At least one, and perhaps two staircases may be posited, but no discrete house emerges without violence to the plans as published. Viewed as a whole, these remains may represent a version of complex multigenerational inheritance and sale parcels on the order of Yon's interpretation of the Ugaritic insula shown in figure 5.a—the whole being ultimately based upon three or four instances of the standard house variant having rooms on three sides.

An incomplete LB II insula house from Ashdod, area B (figure 5.1), not yet fully published (Dothan, 1975, p. 108), bears a surprising resemblance to what was published as a late Iron II house from area D at Ashdod (cf. figures 5.m and 5.1) (Dothan, 1971, plan 8, building 1). [*See* Ashdod.] Given that intrusive (!) Late Iron II materials (mostly burials from locus 1114) form the bulk of the local stratum 3b publication from the building, it seems more than possible that building 1 (and probably buildings 2 and 3 as well) should also be dated to LB II. In area B, building 1 covers an area of about 167 m and may have had two courtyards. Even those were probably covered, the greatest free span being on the order of 3.8 m. Overall, the narrowest dimension ranged from 1.6–3.8 m, averaging 2 m (SD = 0.6 m). Not including the paved entry hall(?), which is 2.5 m wide, or the largest space, the other measurable rooms (n = 7) ranged from 4.8 to 14.9 sq m, averaging 8.2 sq m (SD = 4.5 sq m). The large courtyard(?) 1107 and 1108, without the reconstructed entry hall and stairs, has only 27.2 sq m of free space, while the next largest room (or smaller courtyard), 1156, is only 14.9 sq m (Dothan, 1971, p. 89a). In other words, for a house of this size, the assumed two living



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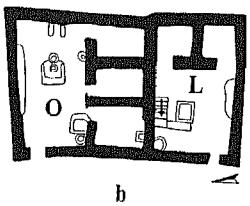

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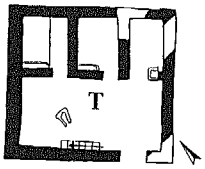

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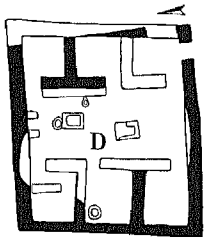

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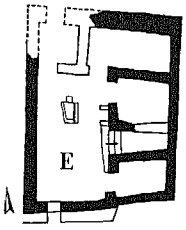

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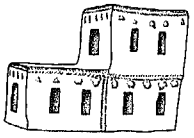

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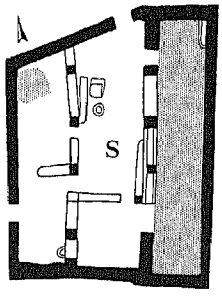

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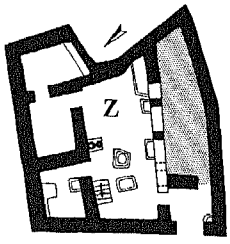

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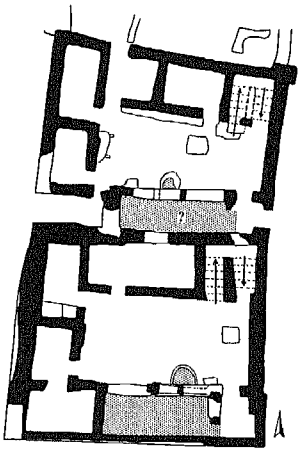

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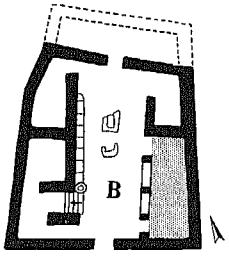

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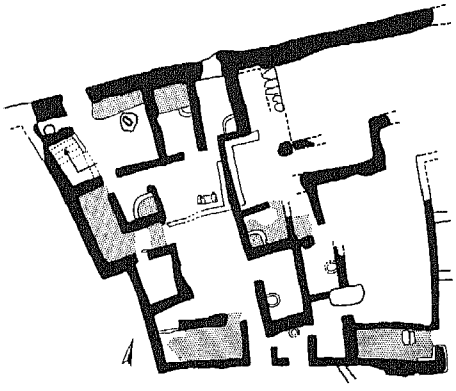

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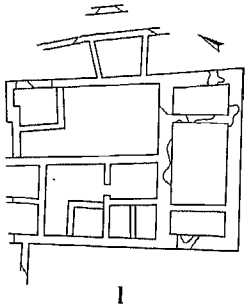

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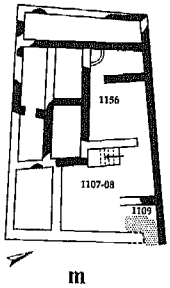

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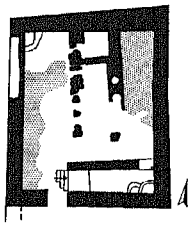

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rooms will have to be looked for above the ground floor—at least for one, and most probably for both.

Ancestors of the Israelite four-room house? A second major style, derivative of the LB house series, is clearly ancestral to the typical Israelite four-room house. Typologically, spatially, and temporally removed from any known Israelite houses, it seems to have gone largely unrecognized to date. It is a variant on the standard Palestinian/Syrian MB II–LB II type with a center hall and opposing sets of smaller rooms. In the new type, an extra room may be added at the end opposite the entryway and stairs, but, more significantly, one of the long side rooms is converted to a stable through the use of pillars, the flagging or cobbling of floors, and the addition of bench-style mangers (see figures 5.g–i). The hypothetical reconstruction of figure 5.j shows a standard house similar to figure 5.d similarly modified, with a central exterior doorway (as in figure 5.g) and an added shallow broad room at the far end. The latter illustrates the one small step required for full conformity with the later standard Israelite house form. This stabled dwelling is uncommon at Tell Munbaqat, and it probably was equally uncommon at Tell Hadidi. However, its double presence at two separate sites points to its integrity as a distinct type, probably economically, ethnically, or socially determined. Because, contrary to those in the typical Israelite house, all the stables so far discovered are deep enough for horses (i.e., they range from 3.4 to 3.2 m at Tell Hadidi [figure 5.i] to 3.7–4.0 m [figure 5.g] and 3.3–3.6 m [figure 5.h] at Munbaqat). The average depth for thirteen ancient horse stables is 3.18 m [± 0.31]. The houses may be those of *maryanū* (Akk., "charioteers"). [*See* Chariots.] The plan may, however, also suit a trader (housing pack donkeys—although the stalls are much deeper than would be necessary). Generic agriculturalists (housing traction animals) seem ruled out on the grounds that most of the residents of Munbaqat and similar sites probably were agriculturalists and managed without stables in their houses. [*See* Stables.]

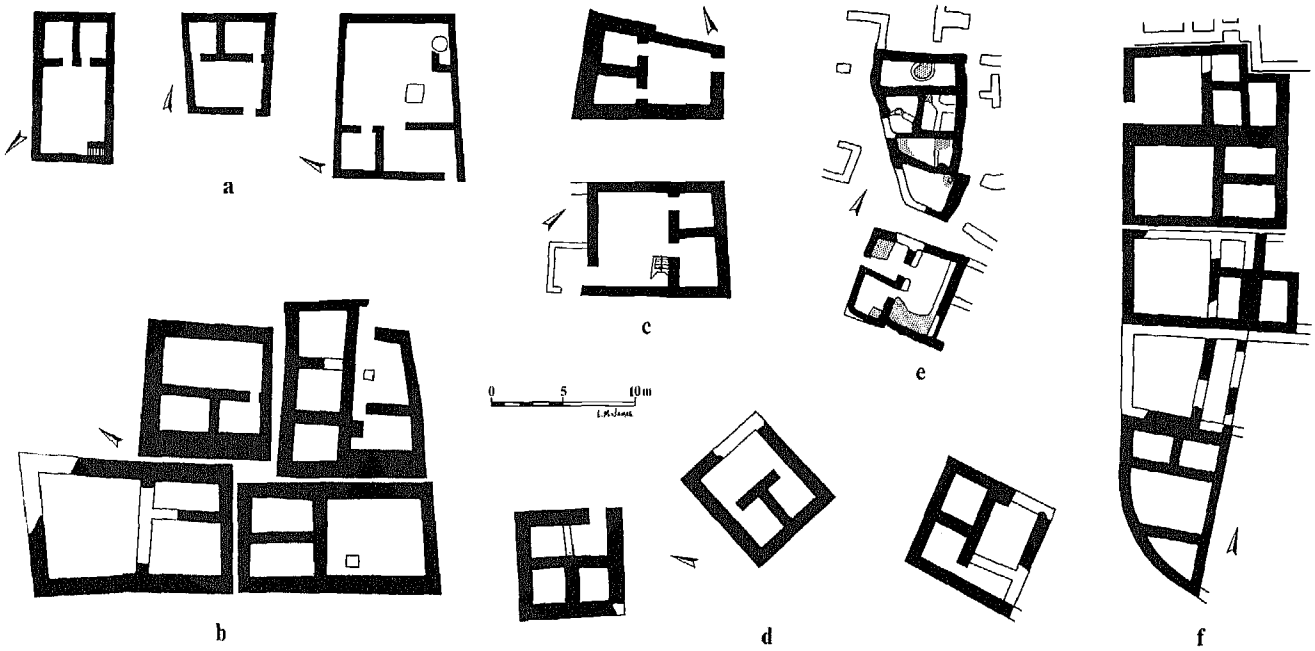
Building 314 at Tel Batash/Timnah belongs to the late fourteenth century BCE (see figure 5.n), based on finds that include Mycenaean and Base-Ring II wares (Kelm and Mazar, 1982, pp. 9–13, figs. 8–10, 12). It appears to be roughly contemporary with the Syrian buildings listed above and is characterized by standings hardened with flagstones and mangers, partly made of wood, toward the northern end of the eastern aisle at about 2.75 m deep. The depth of the standings is below ancient means for horse stables but is equal to Edwin Gunn's minimal specifications (Gunn, 1935). The pillars were of wood, set on flagstone bases. The upper part of the stairs were also made of wood. The excavators describe center and western aisles as floored with thick lime plaster (Kelm and Mazar, 1982, pp. 9, 11). The semicircular floor-level manger presumably provided for the sheep and goats confined at night. The staircase, immediately before the outer doorway, and the debris from the second-floor collapse mark the second floor as the residence of a wealthy important individual with widespread connections, as evidenced by five cylinder seals of widely diverse origins, including Mitanni and Cyprus, and two Egyptian scarabs. Inclusive of interior walls and the stairway, the lower floor covered 98 sq m, and, with thinner walls, the upper floor would have added up to more than 100 sq m—again inclusive of interior walls and the stairway area. Only two small storerooms were located on the lower floor—seemingly not enough to support an agriculturalist interpretation of the owner's livelihood. In itself, this building, which may well have belonged to a trader or to a *maryanū* warrior (a curated arrowhead and javelin head[s?] as well as bronze mace heads and spearheads were recovered), goes far toward establishing close connections between inland Syria and southern Palestine during the period of Egyptian imperialism in Palestine (Kelm and Mazar, 1982, fig. 1, p. 12). [*See* Weapons and Warfare.] The Tell Munbaqat and Tell Hadidi exemplars (figures 5.g–i), though considerably different, lessen the singularity of this Palestinian example.

◀ HOUSE: SYRO-PALESTINIAN. Figure 5. *Late Bronze Age houses.* (a) Part of a complex insula from Ras Shamra-Ugarit, with three distinct "houses," A-C (after Yon et al., 1987, pl. 1); (b–c) Tell Munbaqat, houses with small rooms on one side of a large roofed hall, cf. the location of the staircase in (c) (after Machule et al., 1993, figs. 12 and 18, houses L, O, and T); (d) Tell Munbaqat, house with rooms on opposite sides of a large hall (after Machule et al., 1993; fig. 18, house D); (e) Tell Munbaqat, house with rooms on two adjacent sides of a large hall (after Machule et al., 1993), fig. 18, house E); (f) Tell ʿAṭchana-Alalakh, model house (after Woolley, 1955, pl. 9b; cf. Margueron, 1976, pp. 213–227); (g–h) Syrian houses incorporating pillared stables with hardened standings (= "Proto-Israelite"?) (after Machule et al., 1992, fig. 14, house S, and 1993, fig. 12, house Z); (i) as (g–h) above, Tell Hadidi, "Tablet Building" and its northern counterpart (after Dornemann, 1981, fig. 2); (j) hypothetical alteration of a LB II house plan from Tell Munbaqat (after Machule et al. 1992, fig. 14, house B), incorporating a pillared, hardened stable area and a transverse "rear room" (top), to illustrate the very slight distance between some LB II houses at Tell Munbaqat and the typical Israelite four-room house; (k) Hazor, LB II, an ill-defined, multi-accessed building complex of area F, stratum 1B (after Yadin et al., 1960, pl. 210), possibly witnessing to long-term multiple hereditary/sale ownership resulting in a "common" first story with various living rooms on the second story (see text); (l) Ashdod insula-type house (after Dothan, 1975, p. 108); (m) Ashdod insula-type house attributed to the late Iron II period, but probably to be dated to the Late Bronze II period (see text; after Dothan, 1971, plan 8, building 1); (n) Tell Batash-Timnah, LB IIA pillared house 341, with hardened standings and probable mangers (cf. (g) above; after Kelm and Mazar, 1982, figs. 8–10). (Courtesy J. S. Holladay)

Hittite houses. As Jean-Claude Margueron (1980) has shown, the typical LB house form (see figures 6.c, f) at ancient Emar/Meskene, a site on the Middle Euphrates near Munbaqat and Tell Hadidi, is similar to the (local style) houses of the Old Assyrian colony at Kültepe/Kaneš (see figure 6.a) and virtually identical to those (see figure 6.b) from contemporary (fourteenth–thirteenth centuries BCE) Boğazköy (Margueron, 1980, figs. 4 and 5). [*See* Emar; Kaneš; Boğazköy.] It is also, with a two-room variant, the principal house form found at MB II Tell Halawa (Meyer and Orthmann, 1989, pp. 20–33, fig. 6; see figure 4.c). Although it appears at many sites, the highly standardized plan is not that of Emar's immediate neighbors (Meijer, 1989, pp. 227–229). Margueron (1980) concludes that Emar was a Hittite colony but it is probably better understood as an entrepôt of a widespread and well-connected Hittite trade diaspora (Curtin, 1984, esp. pp. 1–14). This is not altogether unexpected, considering the role of the Hittites in the Levant in the late fourteenth–thirteenth centuries BCE (Roaf, 1990, pp. 137–139) and the perduring role of the Middle Euphrates in interarea trade (e.g., Dion, 1995, pp. 70–71). More significantly, it opens up vistas with respect to other Hittite *karum*like settlements (Akk., "community of merchants") in the suburbs of some major Hittite cities (Larsen, 1976; Veenhof, 1972; Eidem, 1991).

Significant with respect to this trade and its international significance are three clay *Räucherbecken* from Tell Halawa (Meyer and Orthmann, 1989, pp. 32–33, fig. 14) and the fifteen caskets and three troughs from Emar (Margueron, 1982), that resemble Late Iron II and Persian-period limestone and pottery cuboidal incense altars from North and South Arabia, Babylonia, Palestine, and Tell el-Maskhuta in the eastern Nile Delta (Stern, 1973). [*See* Altars; Delta; Maskhuta, Tell el-.] Because these altars virtually define the course of the incense trade during the Iron II through Hellenistic periods, it seems highly probable that their MB and LB ceramic parallels stand in the same relationship to the Middle Euphrates trade in South Arabian aromatics during the second millennium BCE.

Following the lead of Margueron (1980, figs. 6a–b, 7, 8), these Hittite settlements would include a large predecessor colony in stratum 2 at MB II Tell Halawa, isolated LB houses at Alalakh (stratum IV) and Hama (stratum G I), an LB II quarter at Hazor (area C, stratum 1A–B; see below), and probably the port of Tell Abu Hawam stratum IV (see figure 6.d, e). [*See* Hama; Abu Hawam, Tell.] To these may



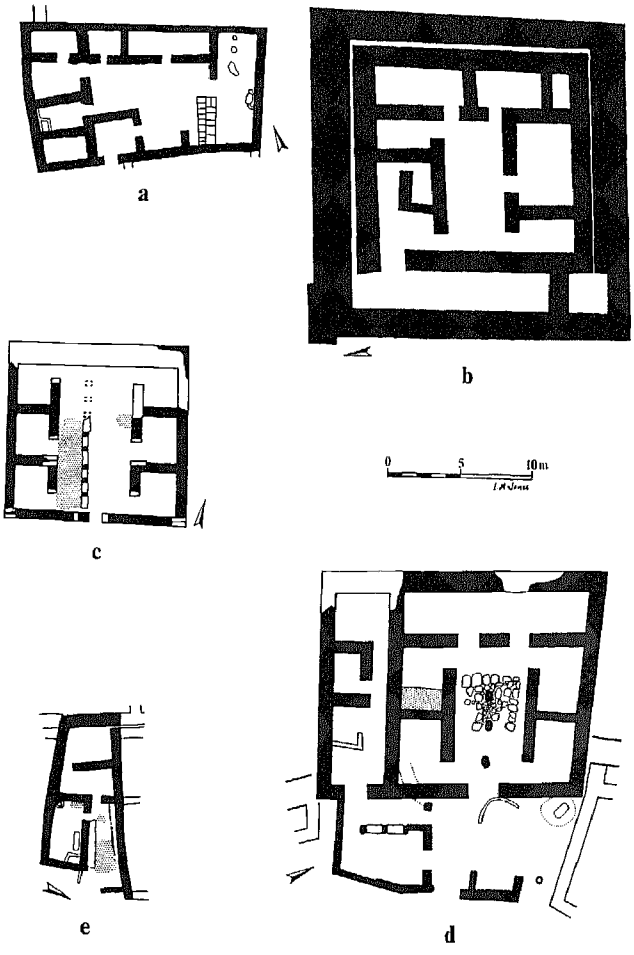
HOUSE: SYRO-PALESTINIAN. Figure 6. *Hittite MB II and LB II houses, with similar Syrian and Palestinian LB II exemplars (see also figure 4.c).* (a) Typically Hittite MB IIA houses from the Old Assyrian *karum Kaneš* at Kültepe (after Margueron, 1980, fig. 5); (b) "deconstructed" LB II Hittite houses from Boğazköy (after Margueron, 1980, fig. 5); (c) LB II houses from Meskene-Emar (after Margueron, 1980, fig. 1); (d) Tell Abu Hawam stratum IV houses (after Margueron, 1980, fig. 8); (e) LB II houses from area C, stratum 1A–B at Hazor (after Yadin et al., 1960 pl. 208, cf. (f) below); (f) a "deconstructed" block of houses from Meskene-Emar (after Margueron, 1980, fig. 2b). (Courtesy J. S. Holladay)

be added a possible example from LB Tell Keisan (Niveau 9, squares J11–K11: Briend and Humbert, 1980, pl. 3). It would not be surprising to find a few at Tell ed-Dab'a/ancient Avaris (cf. Holladay, n.d.; Holladay et al., forthcoming). [*See* Dab'a, Tell ed-.] A close study of Margueron's lone Hazor exemplar in its surroundings (1980; see figure 6.e) reveals other links with the architecture of Emar (figure 6.f), suggesting that this entire quarter, with its outlandish stele shrine, may be a substantive Hittite *karum,* complete with Hittite architecture and its own shrine.

Egyptian houses. Recognition of Egyptian Amarnalike villas—which can be traced back to the twelfth dynasty—in the Levant must begin with houses 1500 (see figure 10.a) and 1700 at Beth-Shean (James, 1966, pp. 8–13), together with their center-hall predecessors (James and McGovern, 1993, vol. 1, pp. 4–5, 27–56). [*See* Amarna, Tell el-; Villa.] Unquestionably "domestic," they provide the lens through which the Tananir villas (Boling, 1975; see figure 10.b), the Amman Airport Temple (Herr, 1983), and the LB Egyptian governors' residencies (see Daviau, 1993, pp. 403–434) can be reassessed. [*See* Amman Airport Temple.] None betrays any significant body of cult trappings (charred human bones are not proof of cult performances). It seems likely that the anomalous "mansion" (figure 10.c) at Tell Selenkahiye, on the Middle Euphrates, also fits this pattern, rather than that of the nascent *bit-ḫilani.* The mansion is dated to the twenty-second and twenty-first centuries BCE (Meijer, 1989, pp. 226–227), but dates assigned to materials in northern Syria do not necessarily correlate with those in either Egypt, Palestine, or Transjordan.

Iron Age: "Canaanite" and Phoenician Plans. Aside from the early four- and three-room houses known from the central hill country and Galilee, very little is known about Iron I houses. At Tel Qiri, later walls left in place and digging into the spaces between them leaves too much responsibility to the restorer (Ben-Tor et al., 1987, pp. 98–99, photo 44). [*See* Qiri, Tel.] During the Early Iron II period, in addition to large, somewhat unusual versions of typically Israelite houses, at Tel Masos a clearly trade-related version of the standard Syrian LB house (stratum II, area H, house 314) was found (Fritz and Kempinski, 1983; Fritz and Wittstock, in Fritz and Kempinski, 1983, pp. 39–43, plan 14). In this case there are rooms on all four sides (cf. figures 5.e and 7.a). Entrance was through a hall, as in the larger houses at Munbaqat (see above). A similar house (house 96)—probably belonging to a coppersmith—was found in area A, stratum II (Kempinski et al., in Fritz and Kempinski, 1983, pp. 20–21, plans 3, 6). In both cases, the ground floor was given over to storerooms and work areas, probably in addition to providing overnight shelter to domestic animals.

The plan of the Phoenician fort at Ḥorvat Rosh Zayit (Gal, 1992; see figure 7.b), more plausibly a fortified Phoenician trader's residence, is essentially the same as the fore-



HOUSE: SYRO-PALESTINIAN. Figure 7. *"Canaanite" or "Phoenician" houses with Late Bronze Age antecedents in Iron Age II Israel/Judah.* (a) Tell Masos area H, stratum II house 314 (after Fritz and Wittstock, 1983, pp. 39–43, plan 14); (b) "Phoenician Fort" or fortified trader's residence at Ḥorvat Rosh Zayit (after Gal, 1992); (c) elite residence at Hazor (after Yadin et al., 1960, pl. 204); (d) "Northwest Tower" or governmental residence at Tell Beit Mirsim, from a late component of stratum A (after Albright, 1943, pl. 6); (e) Hazor stratum V, house 14, distinguished by a phoenicianizing cultic assemblage (after Yadin et al., 1960, pl. 203). (Courtesy J. S. Holladay)

going example, and, in view of the Phoenician contents of Tel Masos house 314, probably affords a view of a typical tenth-century BCE Phoenician house plan. Somewhat later, three examples of a large version of the standard Syrian LB house with storerooms on two opposing sides of a hall are found in the elite quarter at Hazor, stratum VIII, area B. Two of the houses also included a stable area. The stables' pillars served to support the spanning timbers (cf. figures 4.b, d and 6.c). The respective free spans without the pillars are 4.5 m (house 3100) and 5 m (house 3067/3235); with the pillars, the longest free spans are 2 m and 2.9 m. In the

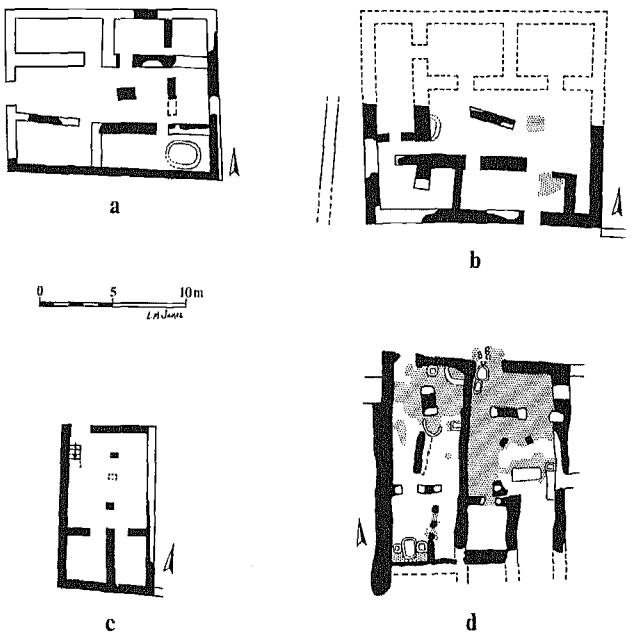
absence of clear evidence, it is best to assume that the buildings were always pillared. While pillars and mangers are not shown in the featureless strata VIII–VI "courtyard" plans, some of the pillars and manger elements in each house are in fact founded below the claimed earlier—and unnaturally constant—floor levels, while others are higher. Over the 130-year-plus life of these buildings, some rebuilding must have occurred. House 3208 lacked the stables and had a free span of about 3.3 m. The much later northwest tower at Tell Beit Mirsim has a similar plan (see figure 7.d), although with a rear room, an added side hall (both features modeled after late four-room houses), and the stable relocated to the house's forecourt. Free spans in the northwest tower's central hall ranged from 4.7–5 m, but a centered line of three large stones probably indicates a row of wooden pillars, reducing the required free spans to less than 2.5 m.

A Phoenician probably lived in house 14 at Hazor in stratum V (figure 7.e)—inferred by the anomalous benches and cult materials found in its innermost room (Yadin et al., 1960, pls. 57:22, 60:10). [*See* Cult.] The plan differs in several respects from that of the preceding wineshops (buildings 14a and 111), so it may contain "Phoenician" elements. In the absence of better information about Phoenician houses of the late eighth century BCE, it is difficult to be certain.

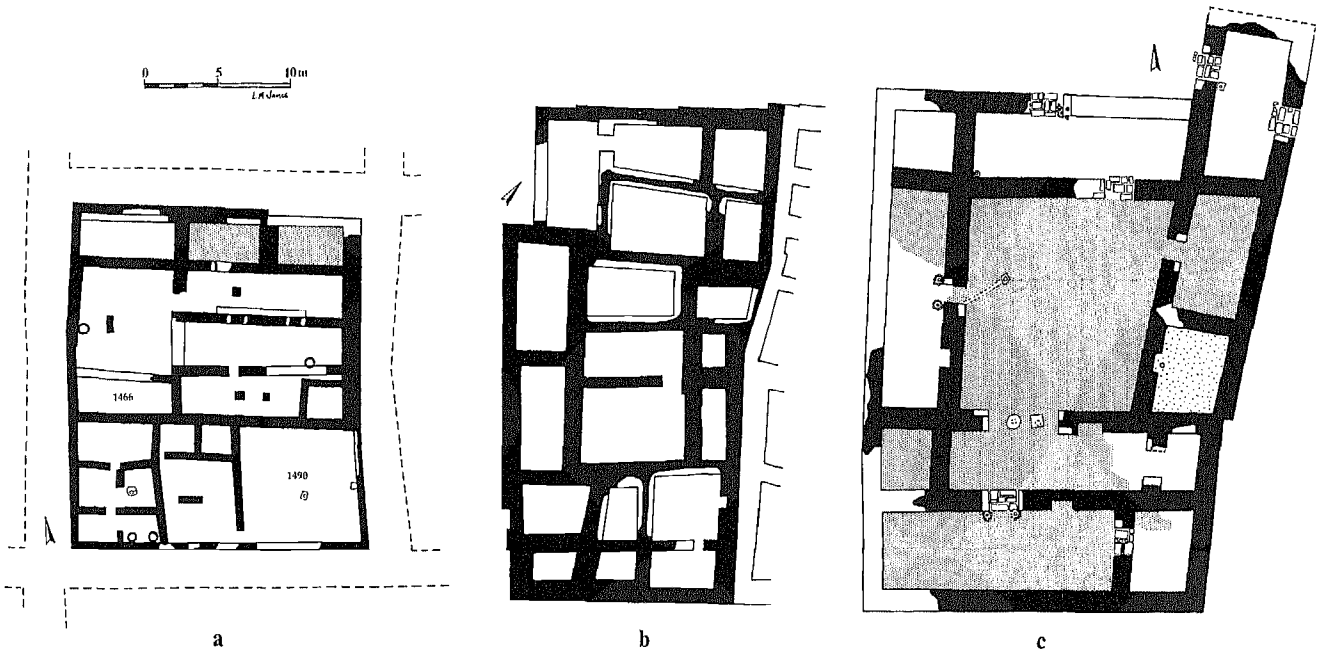
Philistine houses. Two large stratum 5C–A houses (Iron I, c. 1125–1050 BCE) at Gezer may be Philistine (see figures 8.a–b), but they share the common Syro-Palestinian plan of the standard MB–LB house with rooms on three sides (Dever et al., 1986). [*See* Gezer.] During the Late Iron II period, Tel Batash/Timnah presents a plan somewhat like an Israelite three-room house (see figure 8.c). However, the proportions—in particular the depth of the rear rooms—fall outside the ranges seen in Israelite and Judean houses. The plans of two late seventh-century BCE houses from Tel Miqne/Ekron further help to define this uniquely Philistine plan (figure 8.d). [*See* Miqne, Tel.]

Babylonian (?) houses. Following the incorporation of Megiddo into the Assyrian provincial system, a new style of insula housing (figure 9.a), apparently opaque to the sorts of nuclear-family analyses afforded by the local Canaanite, Israelite (Stager 1985; Holladay, 1995, pp. 386–389), Syrian, Hittite, Phoenician, and (some) Philistine house forms, was introduced in strata III–II (Lamon and Shipton, 1939, pp. 62–74). A logical inference might be that these are some form of dwelling place based on social norms involving co-residence, presumably of the extended family—but, by virtue of multiple lines of inheritance and sales or through, perhaps, temple housing projects (in the case of Megiddo, governmental housing projects) or an approximation of modern apartments or "cooperative" residences and condominiums (Yon, 1992, p. 704; Stone, 1987, p. 76). Biblical materials (*2 Kgs.* 17:24), the presence of Babylonian-styled grater bowls (Zertal, 1989), and a direct comparison of plans with Babylonian house plans (figure 9.b) all produce converging lines of evidence pointing to a wholesale replacement of native "Israelite" populations and forms of architecture with Babylonian and Assyrian (figure 9.c) forms. One of the smaller and best-preserved insulae is shown in figure 9.a. Locus 1490 and the large area north of locus 1466 were much larger than any other spaces and must be considered courtyards (roughly 61 and 44 sq m, respectively). Also, ignoring the three smallest areas, the average room size was 17.7 sq m (SD = 6.5 sq m, n = 11), and the average length of the beams required (free span, not including bearing lengths) was 2.53 m (SD = 0.27 m). Given virtually no information about the small finds or features other than bins (mangers), drains, ovens, and paved areas, it is difficult to arrive at useful conclusions about room usage or the need for a second story. There are some plan indications of possible staircases, however, and wall widths throughout appear adequate to the demands of a second story. Given the prevalence of required second stories in other periods and areas, it is reasonable to reconstruct these buildings as largely two-storied as well.

Conclusions. There was considerable uniformity in domestic architecture in antiquity across both Syria and Pal-

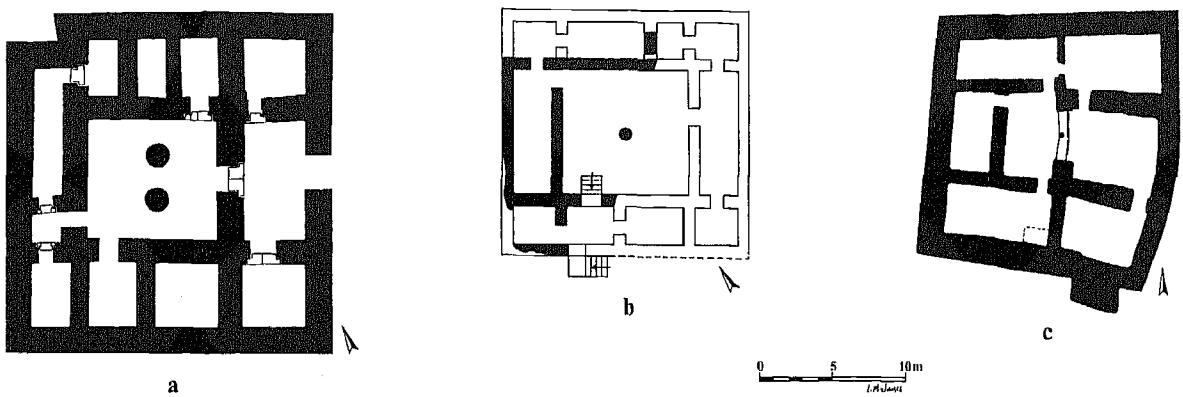


HOUSE: SYRO-PALESTINIAN. Figure 8. *Philistine houses, Iron Age I to II.* (a–b) Two large stratum 5C–A houses (Iron I, c. 1125–1050 BCE) at Gezer (after Dever et al., 1986) adapted from the typical Syro-Palestinian plan of the "standard" MB–LB house with rooms on three sides; (c) Tel Batash/Timnah, late Iron II, strata III–II, house 743, note location of stairway (after Kelm and Mazar, 1982, fig. 27); (d) Miqne-Ekron, two late seventh century BCE buildings, presumably houses with living quarters above and olive presses on the ground floor (after Gitin, 1989, fig. 2.3). (Courtesy J. S. Holladay)



HOUSE: SYRO-PALESTINIAN. Figure 9. *Assyrian and Babylonian buildings in Israel/Judah, Iron Age II.* (a) Megiddo stratum III, small insula house, probably Babylonian, with two courtyards (after Lamon and Shipton, 1939, pp. 62–74, fig. 72); (b) part of a Neo-Babylonian insula from Ur (after Castel, 1992, pl. 4); (c) Megiddo stratum III, Neo-Assyrian palace-fort 1369 (after Lamon and Shipton, 1939, fig. 89). The average free span is 4.2 m (SD = 0.3), that of the throne-room (bottom) is 5.4 m, perhaps nearing the practical limit of unsupported Cedar of Lebanon beams. (Courtesy J. S. Holladay)

estine, where a reasonably large body of data exists, as well as some diversity. The uniformity is particularly evident in the second millennium BCE, which has a great deal to say about shared perceptions and common cultural conventions. Differences exhibited by foreign styles are equally evident. For the first time a network is seen along which a Hittite trade diaspora operated and, later, traces of Phoenicians operative within Israel and Judah. We also are given tantalizing glimpses into the ancestory of Israel's distinctive houses. Given the nature of sites uniformly selected for archaeological investigation (city mounds), it is not surprising that to find the space required for a suitable living room, probably averaging nearer 25 sq m than 20 sq m for most of the second and first millennia BCE, attention must system-



HOUSE: SYRO-PALESTINIAN. Figure 10. *Egyptian or egyptianizing villas, EB to Iron Age I.* (a) Beth-Shean, Iron I, stratum VI house 1500 (after James, 1966 p. 9); (b) Tananir, MB IIC building A (after Boling, 1975, fig. 2); (c) Tell Selenkahiya, late EB "Mansion" (after Meijer, 1977, p. 121) (Courtesy of J. S. Holladay)

atically turn to the now-vanished second story. This points up one of the chief benefits of working out the present model. In effect, we have created a series of hypotheses for testing in future fieldwork. To date we have almost completely ignored the evidence for mud-brick buildings' superstructures. In particular, the practice of systematically shattering collapsed brickwork (originally pieces of floors, walls, ceilings, and roofs, all, one way or another, different in composition and conformation, and all with distinctive faces to their fragments) to powder in the process of "clearing" stone foundations has resulted in the loss of information we can obtain in no other way. Perhaps soon, surely later, all practicing archaeologists will recognize that a clump of mud-bricky material is potentially as informative as a carved stone architectural fragment, and then we will begin patiently to piece together what has been regarded as lost beyond recall. While sufficient information is still lacking with which to reconstruct the domestic structures of Iron Age Syria and Lebanon, within the small territory of Israel, Judah, and the Philistine coast there is considerable diversity, seemingly following ethnic (Philistines, Israelites) and socioeconomic lines (elite housing at Hazor, the northwest tower at Tell Beit Mirsim; the probable Canaanite/Phoenician houses at Tel Masos, Ḥorvat Rosh Zayit, Hazor house 14). This may be a reflection of political boundaries and ethnic/nationalist differentiation on the one hand, and trade, professional expertise, and international commerce on the other. Finally, when we begin to see and understand where people—families—of the distant past ate, slept, and stored their treasures and the work of their hands, we will also begin, however imperfectly, to recognize the bonds of common humanity that link their generations with ours.

[*See also* Four-room House.]

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JOHN S. HOLLADAY, JR.

Egyptian Houses

Conforming to Near Eastern custom, the Egyptian house was traditionally oriented inward, excluding the outer world and thus creating a climatic and social microcosm. The appearance of the exterior of the house was consequently of less concern to the Egyptian than the design of the interior. The furnishing of inner spaces had a greater representational value than the facade of the house, which was normally left undecorated. A minimum of openings (for example, doors and windows) guaranteed the privacy of the inhabitants and protected the microclimate of the house from outside influences. Usually the house was completely enclosed by walls; only a single door or gate provided access to the interior. Entrance areas and corridors with frequent changes of direction often served to isolate farther sections of the house. Rooms were generally organized around central elements, either halls or interior courtyards. Such nuclei may—in the widest sense—be regarded as places of gathering and the setting for communal activities. The number of central elements and their relationship to each other indicate the social status and behavior of the inhabitants. Most rooms of the house were multifunctional; few spaces were exclusively dedicated to a specific defined purpose. The larger and the more architecturally organized a house was, however, the more functionally defined the spaces became. Apart from the various social, functional, and historical factors to be discussed below, the design of houses was influenced by two environmental factors: building materials and climate.

Building Materials. In ancient Egypt, domestic buildings were traditionally made of sun-dried mud brick. More than the conceptual significance of the perishable material, mud bricks were valued for thermodynamic properties that make them well suited to the Egyptian climate. Mud bricks were an economical choice because of the abundance of the raw material and the simple production methods. Stone was employed only for special architectural elements such as door frames and column bases; roofing beams, window frames, and grills, door wings, and column shafts were usually made of wood.

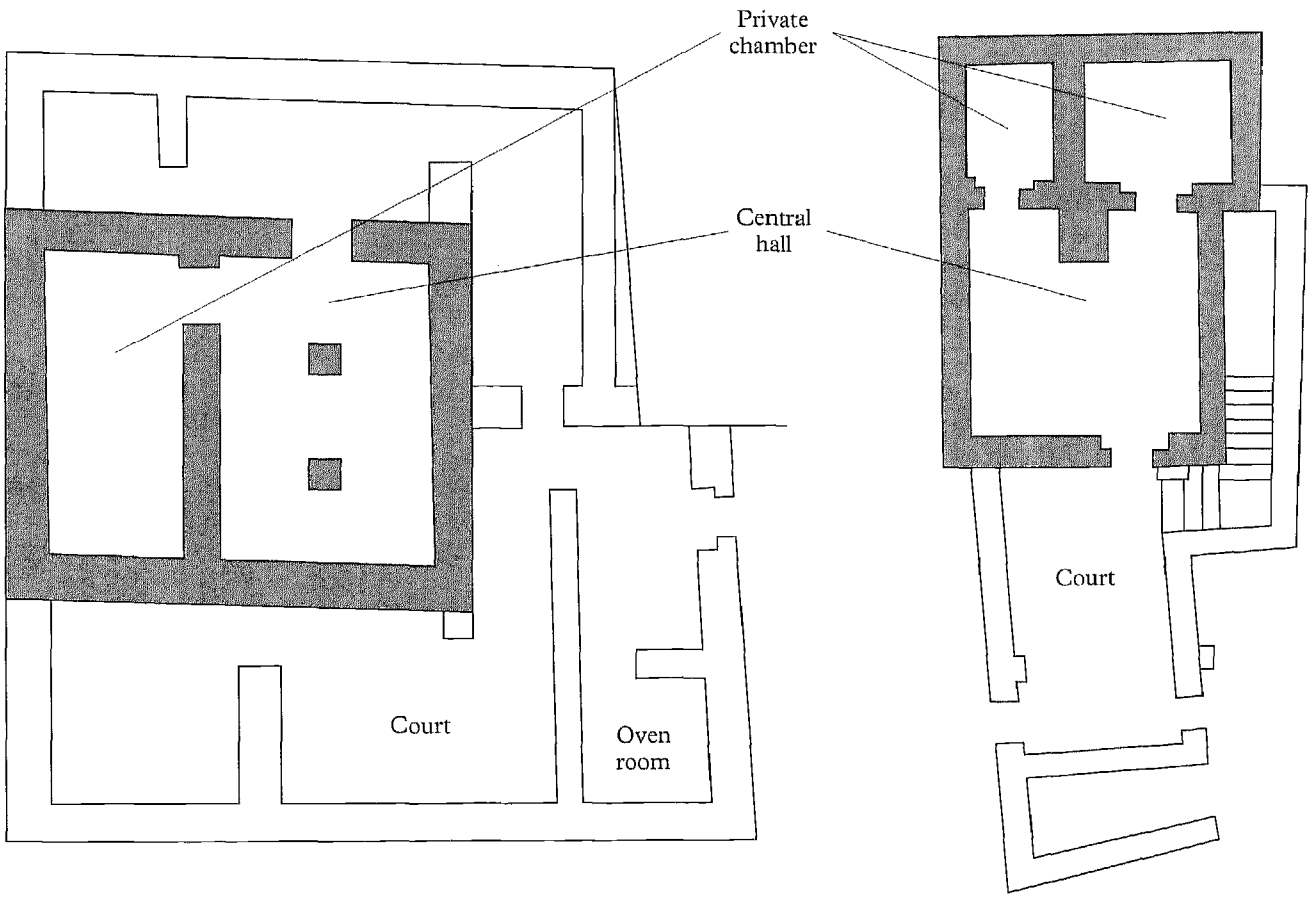
Climate. The orientation and design of Egyptian houses generally incorporated two climatic factors—the sun and the cool north wind. The main rooms of the house were shielded from the direct rays of the sun by means of thick outer walls and the arrangement of the surrounding rooms. Windows and doorways were generally placed in positions that facilitated the circulation of air into the house and between the rooms. The entrance to the private apartments, for example, was usually located to the north in order to allow the cool north wind to enter the house. On the roof above the bedroom, a funnel-shaped wind trap directed the fresh air directly into the bed niche. A portico frequently shaded the doorway from the rays of the sun.

House types varied according to era, social class, and location. The principal distinction was the number of halls in the house. More complex designs were reserved for the palaces of the New Kingdom and the multistory town houses.

Houses without Halls. The simplest houses did not have developed halls; small multifunctional chambers were more or less randomly clustered around open spaces or courts that primarily functioned as service areas. The basic design of these houses reflects simple, undifferentiated living arrangements. Houses of this type have been found at several prehistoric settlement sites including Merimde, Maadi, and Hierakonpolis. The typical farmhouse of the fourth millennium BCE appears to have contained several isolated single room structures—either semisubterranean, oval mud constructions or rectangular wattle-and-daub huts—loosely ar-

ranged around yards enclosed by reed fences. In dynastic times, only members of the lowest social groups, such as unskilled laborers who were completely dependent on state institutions for their basic necessities, were sheltered in houses without developed halls. Consequently houses lacking halls may be observed most frequently in orthogonally planned settlements. In Kahun, the pyramid city of Senusert II (twelfth dynasty), for example, more than half of the population was accommodated in standardized houses occupying less than 75 sq m (807 sq. ft.). These houses were composed of small courts surrounded by several chambers. Small oven rooms next to the entrance appear to have been statutory at Kahun. Similar houses with an area of only 30 sq m are also found in the orthogonally planned settlement of the early Middle Kingdom at Tell ed-Dab'a. A special type of house lacking a developed hall is found in the military fortresses of the Middle Kingdom, mainly in Nubia. A broad courtyard, used primarily as a service area, gives access to several adjoining, individual, long chambers. Examples have been found with two (Shalfak, Semna, Uronarti), four (Mirgissa) and five (Qaṣr el-Sagha) chambers. In the New Kingdom, the appearance of increasing luxurious houses leads to the general decline of dwellings without halls.

Single-hall Houses. A hall, the meeting place of the domestic community and a reception area for guests, was a fundamental requirement for economically and socially semi-independent households—that is, families headed by lower-ranking officials, priests, artisans, and other skilled workers employed by state institutions, as well as independent farmers. The hall was the nucleus of the private life of the household and as such served as a status symbol. Access to all other private rooms of the house, usually small, multifunctional chambers was provided by the hall. Large houses inhabited by extended households had several private apartments, each with their own hall as the nucleus of a distinct unit. Apart from the private apartments, houses sometimes contained one or more entrance rooms or corridors, service areas, and various other additional chambers. The design of the house proper, comprising the hall and the



HOUSE: Egyptian Houses. Figure 1. *Single-hall houses at Lisht North.* Left: Middle Kingdom house A 1.3; Right: New Kingdom house B 4.2. (Courtesy F. Arnold)

surrounding private chambers, underwent a gradual development during Egypt's long history.

Single-hall houses of the Old Kingdom. Because the evidence for domestic buildings is particularly scarce in the Old Kingdom, it is not possible to define the characteristics of the single-hall house during this period. In the funerary complex of Queen Khentkaues at Giza, houses have been found with halls distinguished by a niche at one end, an area possibly occupied by the chair of the master of the house. The private chambers surrounded the hall on all sides.

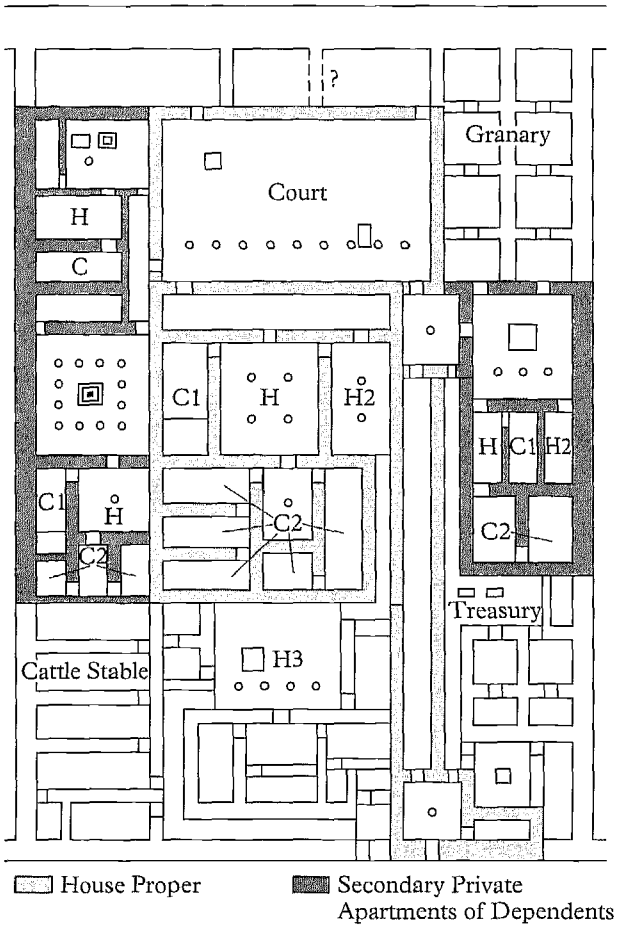
Single-hall houses of the Middle Kingdom. In the Middle Kingdom, the house proper had a characteristic bipartite layout that has become known as the "snail house" (see figure 1a). Typically, the hall was a long or nearly square chamber, sometimes with one or more columns. The walls were frequently painted, the upper portion in yellow, the lower in black, and the area between them in stripes of various colors. A door at one end of the side wall provided access to a single long chamber, a multifunctional private room. Additional smaller private chambers were sometimes accessible from the hall. The "snail house" was usually entered from a courtyard, often partially roofed over, which was almost certainly considered part of the private apartment and was the setting for various private and public activities. In most Middle Kingdom houses, a small oven room was placed next to the entrance of the house. Although this room has been interpreted by some scholars as a household shrine, no confirmation exists.

Single-hall houses of the New Kingdom. In houses of the New Kingdom, well preserved at Amarna and Deir el-Medineh, the hall was generally broad or nearly square (see figure 1b). The walls, if painted, were usually white; a decoration of garlands is sometimes found near the roof. A dais for the chair of the master of the house is frequently built against the back wall of the hall. Emplacements for the evaporation of water during the summer and fireplaces for warmth during the winter were common. The main private chambers were located behind the back wall; other rooms could be situated along the sides of the hall. Additional chambers were frequently located on a second story, accessible by means of a staircase located next to the hall. Small shrines for household gods were sometimes found in the front portion of the house near the entrance.

Multiple-hall Houses. Higher officials of the state including the king not only had larger spatial needs, but also required rooms with more differentiated functions. Halls and private chambers with more specifically defined functions have been distinguished, reflecting the higher social status of the occupants. In Kahun, for example, about 2.5 percent of the population—economically independent officials—inhabited houses with two or more multifunctional halls.

Houses of the Middle Kingdom with two halls. The hall of the bipartite "snail house" was divided into two separate, interconnected rooms, thus creating a tripartite private apartment (see figure 2). The central hall (H), usually the largest element of the tripartite unit, appears to have served as a private hall, the nucleus of the private apartment. The second hall (H2), accessible both from the central (private) hall and through a separate outside entrance, seems to have had a more public function. A dais for the chair of the master of the house and table stands have been found in such halls, indicating that guests were received and banquets held there. In houses of this size, the third element of the tripartite unit, the private chamber, was frequently furnished with a niche in the back wall for the bed of the master, defining the chamber as a bedroom (C1). Additional chambers were usually accessible from the central private hall, some serving primarily as storerooms for private possessions, others designated as bathrooms by their installations (C2).

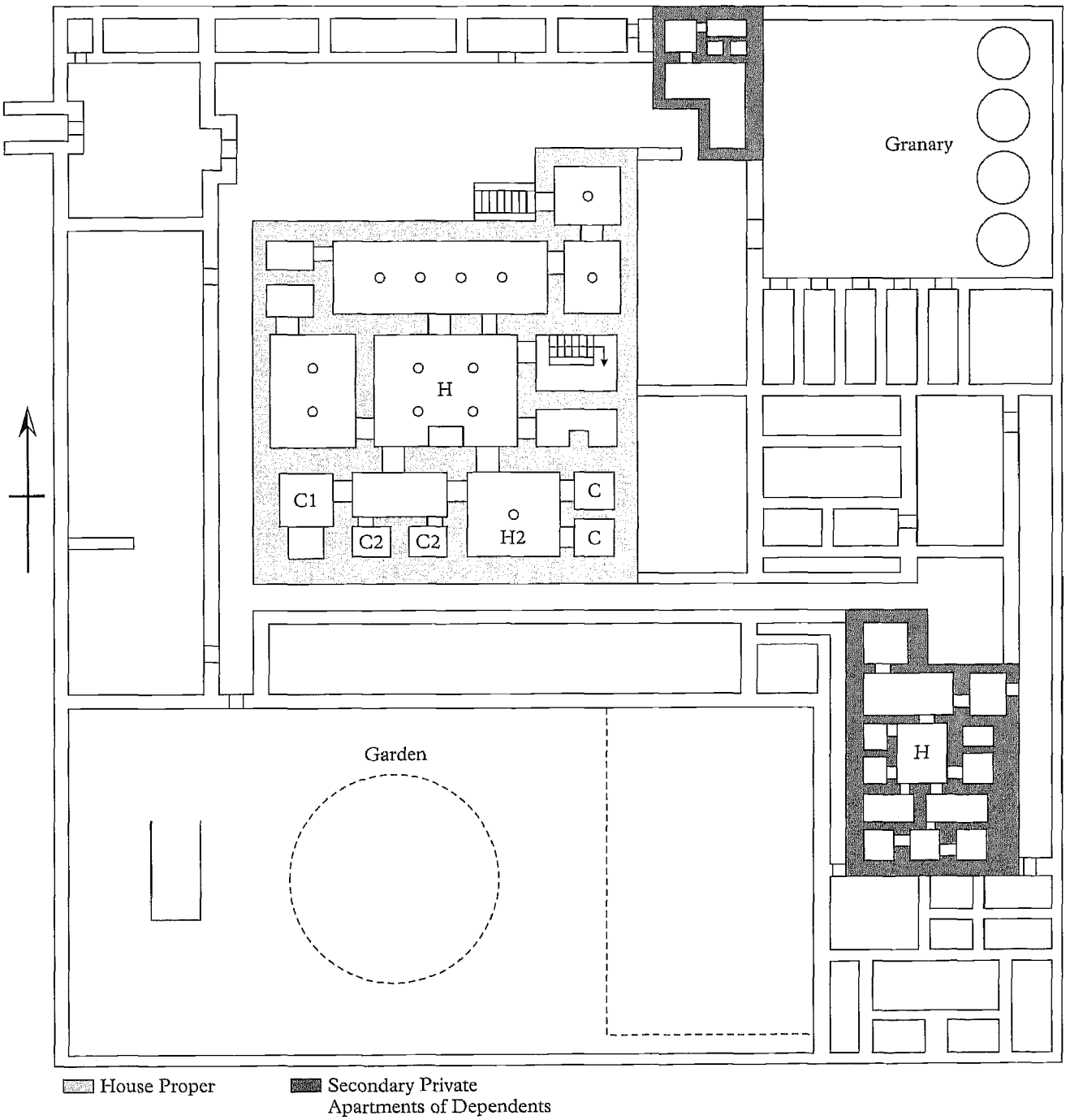
Houses of the Middle Kingdom with three halls (official residences). Some of the largest domestic buildings found in Egypt (the mansions at Kahun [see figure 2] and the official military residences in the fortresses of Buhen and Mirgissa in Nubia) have a third hall (H3), sometimes con-



HOUSE: Egyptian Houses. Figure 2. *House of an official at Kahun.* (Courtesy F. Arnold)

structed as a courtyard surrounded by various chambers. The third hall is usually accessible both from the private apartments—either through the second hall or from the front of the court—and directly from the outside of the house, from the street or from service areas. Evidence suggests that the third hall served as an office for the master of the house, where business was transacted and official audiences were held.

Houses of the New Kingdom with two halls (the "Amarna villa"). The functional requirements of the upper class appear to have been different in the New Kingdom (see figure 3). The central hall (H) with its high ceiling car-



HOUSE: Egyptian Houses. Figure 3. *House of the general Ramose at Amarna* (P 47.19). (Courtesy F. Arnold)

ried by tall wooden columns rose above the rest of the building. The step created by the different ceiling levels was used for the accommodation of windows. A second smaller hall (H2) was added to the private chambers surrounding the main hall (H). Like the central hall, the second hall was usually nearly square in shape, supplied with a column, and often surrounded by small multifunctional chambers. A dais for the chair of the master of the house is found both in the central hall and in the second hall. Although the central hall was used for public functions, the second hall was a more intimate private hall for the household. The second hall was accessible both from the central hall and from the major chambers, but not from the outside. A separate connection between the second hall and the outside has been found only in the king's house at Amarna, the so-called window of appearances. As in the Middle Kingdom, houses with two halls usually have private chambers with specifically defined functions, including a bedroom with a narrow bed niche, a bathroom and storerooms. Bathrooms, separated from the toilet by a screen wall, were equipped with two basins, one for washing and another for drainage. The villa was surrounded by a large court filled with trees and plants; a water shaft was accessible by means of a spiral staircase. The complex included groups of huge, beehive-shaped granaries, stables, workshops, and smaller buildings for family members and servants. A common feature at Amarna was a private open air shrine in a corner of the enclosure.

Representational palaces of the New Kingdom. The representational royal palace forms a distinct category of domestic buildings that were designed to meet special functional requirements; these are known from the mortuary complexes of western Thebes and Memphis as well as from Amarna and Malkata. The palaces were characterized by their axial organization. A large outer hall, corresponding to the central hall of the private house, is distinguished from the more intimate interior hall by a dais for the royal throne. Private chambers, including the royal bedroom and bathroom, were accessible only from the interior hall, not from the central outer hall. None of the palaces of this type served the king in his role as secular ruler of the country; the interior hall was therefore not an office, but a representational audience hall.

Multistory town houses. Clay models of the Middle Kingdom, wall paintings in Theban tombs of the New Kingdom, and stone models of the Ptolemaic period represent houses with three, perhaps even four stories. These structures were apparently town houses that expanded upwards because of the limited building space in crowded cities. As in modern Eastern buildings, the ground floor was used for artisans' installations and the high-roofed upper floors for residential purposes; the servants' quarters faced the street. The roof was surrounded by a parapet wall and served as another cooking and storage area. Higher floors were reached by steep staircases. Few traces of actual buildings have survived from pharaonic times (for example a three-story house at Lisht). However, numerous town houses are exceptionally well preserved in Ptolemaic to Late Roman towns such as Karanis (Kom Aushim), Bacchias (Kom el-Qatl), and Soknopaiou Nesos (Dime), located in the Faiyum, and in Alexandria. Evidence from these settlements establish that four-story houses (including the vaulted cellar rooms) were quite common in cities of Egypt. Such huge, fortresslike buildings required extra thick walls, reinforced by cross beams and corners strengthened by stone masonry. The ten–twelve-meter-high houses occasionally resembled dwelling towers and were equipped with kitchens, toilets, and the necessary drainage systems; the rooms often contained numerous, sometimes decorated wall cabinets. Doors and windows were framed with sophisticated woodwork. The cellars, staircases, and sometimes more important rooms of the main floor were vaulted. Dovecotes and animal pens are also preserved, as well as multiroomed military barracks and huge public granaries.

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FELIX ARNOLD

HOUSE CHURCHES. As a movement within Judaism of the Second Temple period, the Christian sect originated with no distinct institutions, including church buildings. Following the death of Jesus, the disciples reportedly continued in Jewish temple piety and table fellowship "from house to house" (*Acts* 2:46, 5:42). There are also references in *Acts* to household conversions (*Acts* 16:15, 34; 18:8) in which the earliest preaching was conducted in the homes of individuals, who offered hospitality to Paul (or others). This basic picture is substantiated by the letters of Paul, the earliest writings of the New Testament (50–60 CE). Paul refers to entire households forming churches (*1 Cor.* 1:16, 16:15), and he regularly addresses greetings in the letters to churches in the house of so-and-so (*1 Cor.* 16:19; *Rom.* 16:5; *Phlm.* 2; *Col.* 4:15). These references suggest that existing households served as a nucleus of organization with cellular communities formed around them. In some of Paul's communities—in large urban centers—it appears that there were several such house-church cells, often identified by the

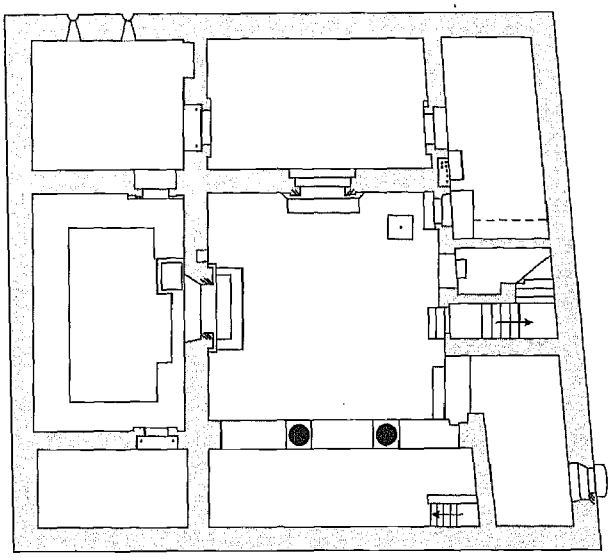
home of the patron. For example, in Corinth there were as many as five or six known groups during the 50s, and Paul seems to address eight distinct cells in Rome in his final salutations of the Roman letter (*Rom.* 16:3–16). The existence of several such cells organized around individual household social ties contributed to diversity in the worship, organization, and social life of early Christian groups.

The extended-household structure typical of the Hellenistic-Roman world included not only immediate family members, but also other relatives, domestic slaves, and a larger coterie of freedmen, hired workers, business associates, and other clients or dependents. The head of the household (Lat., *pater familias*) served as patron and host to the group that met in the home, reflecting similar patterns of patron-client social relations to that of the household structure. Paul regularly stayed in the homes of the house-church patron on his visits, who provided him with financial support (*Rom.* 16:23; *Phlm.* 18–22; *Phil.* 4:10–20). Increasingly in the Roman period, women were able to retain functional control of personal estates and manage their own households *(mater familias).* A number of Paul's house-church communities were under such patronesses (Nympha, *Col.* 4:15; Chloe, *1 Cor.* 1:11; Lydia, *Acts* 16:14–16; Euodia and/or Syntyche, *Phil.* 4:2). The best example is Phoebe (*Rom.* 16:2), who is clearly called the patroness (Gk., *prostatis*) of a house church at Kenchreai (a port of Corinth) and was Paul's host and supporter. Her wealth and social standing are attested by the fact that she was the one who actually carried Paul's letter to the Christians of Rome; she was sent, at least in part, to pave the way for Paul's arrival among Rome's diverse house churches and to raise financial support for his planned mission to Spain. In other cases, the wife seems to be the predominant member of a couple who hosted the church in their house (cf. Prisca, *Rom.* 16:3). The case of Prisca and Aquila indicates further that some of these individuals had substantial means: they were able to travel and set up house churches in Corinth, Ephesus, and Rome (*Acts* 18:2–4; *1 Cor.* 16:19; *Rom.* 16:3–5).

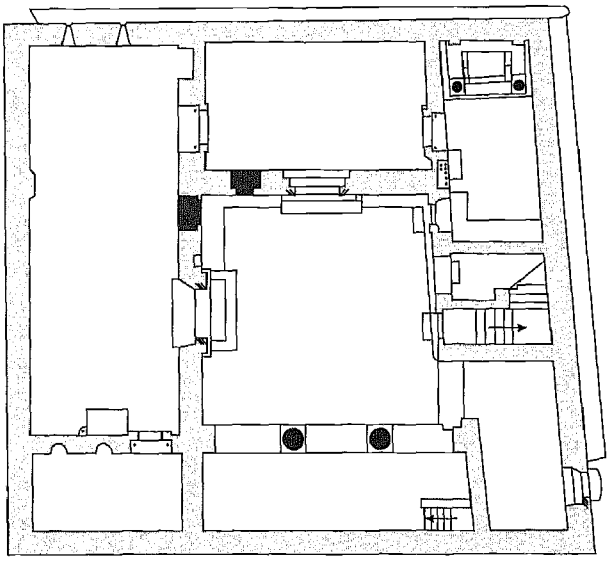
The most common reference for the place of Christian meetings in the New Testament is simply to houses, but with little or no description of the actual type of edifice or particular area of activity. Other references in Paul's letters suggest that the communal worship met in the dining room of the house and around a common table, where the meal proper served as a focal point for the activities of worship. Other places used for meetings included a domestic "upper room" (*Acts* 20:7) and a commercial hall (Gk., *scholē*) of indeterminate plan (*Acts* 19:9). The apocryphal *Acts of Paul* (late second century) further suggests that Christians in Rome met in large warehouses (Lat., *horrea;* cf. *Passio Pauli* 1). That such private or semiprivate architecture was used by Christian groups is not in itself unique. Many other small or newly arrived religious groups and collegial associations in the fluid and mobile social environment of the Roman Empire regularly adapted houses or other private edifices as places of assembly or cultic activity. All six of the synagogue buildings of the Diaspora (second century BCE–fourth century CE) known from archaeological remains were adapted from existing edifices, and five of the six were originally houses or apartment buildings (Lat., *insulae*). Often, the adaptation of these structures progressed gradually through multiple stages of renovation and remodeling to accommodate specific religious or social functions. The cult of Mithras is similarly predominantly found to have adapted existing edifices for its purposes. Of more than sixty excavated Mithraic sanctuaries (Lat., *mithraea*) from across the Roman Empire, only ten were constructed de novo for the cult; the remainder were found in renovated houses, apartments, shops, warehouses, basement cryptoportici, and the like. This includes all the excavated mithraea in Ostia and Rome, as well as the one at Caesarea Maritima (Israel). [*See* Caesarea.] At Dura-Europos (Roman Syria/Mesopotamia), there are three such adapted houses on the same street: a synagogue, a mithraeum, and a Christian building (see figure 1). [*See* Dura-Europos; Synagogues.]

In archaeological terms, a distinction needs to be made between a house or other edifice that might be used for religious purposes on a casual basis and an edifice actually renovated architecturally to meet specific spatial or iconographic needs. While it is clear that in Paul's day (and through much of the second century) Christians met in the homes of members, it does not appear that significant renovations occurred. These cases are properly termed house churches, and they continued in primarily domestic or other nonreligious functions. Yet, it is not likely that any archaeological evidence can be discerned for them because they lack distinguishing architectural, spatial, or artistic features. Archaeological evidence arises only with physical adaptation of the edifice. While the terminology has been inconsistent, it is preferable to use the term *domus ecclesiae* ("house of the church") to denote renovated Christian edifices on their way to becoming more formal church buildings. This terminology is reflected in some third-century Christian writers, where further expansion and remodeling are indicated. Such edifices are referred to by Eusebius (*Hist. Eccl.* 7.30.19, 8.1.5) in Greek as *oikos ekklesias* (= Lat., *domus ecclesiae*) or *oikos kyriakou* ("house of the Lord").

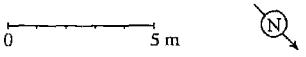
The earliest and most clearly attested archaeological evidence of a house renovated architecturally into a place of Christian assembly and worship is from Dura-Europos. It was buried substantially intact in 256 CE, when the city was destroyed. It was a typical domestic edifice by local standards, with rooms grouped around a central court. While Christians might have been in Dura earlier, no other direct archaeological evidence exists of their activity or assembly. There is no direct evidence that the Dura building was used as a house church prior to its renovation (in c. 241 CE),



a. Before renovation



b. After renovation



HOUSE CHURCHES. Figure 1. *Reconstruction of the Christian Building at Dura-Europos, before and after it was renovated into a house church.* (After White, 1990, p. 108)

though it is possible. When it was renovated all domestic functions ceased, and the building was given over completely to the spatial needs of religious (or cultic) activities. Even though the building retained its exterior domestic form and plan, it had become a "church building." Such features can be detected archaeologically from the nature of the renovation and other surviving epigraphic and artistic decoration. On the south side of the court, a partition wall was removed in order to open up two rooms to form a rectangular hall for assembly. A small dais was then installed at the east end of the room. A small adjoining room seems to have been used for storage. A single fragmentary inscription preserved from the room likely refers to ecclesiastical personnel. In the northwest corner of the house another room had a small font pool with an arched canopy installed to serve as a baptistery. [*See* Baptisteries.] This room also shows clear Christian usage in its artistic program, which depicts scenes from the life of Jesus on the walls. Other memorial inscriptions from the walls of this room clearly reflect a Christian identity.

Several other sites from across the Roman world provide further archaeological evidence for the adaptation and renovation of existing buildings prior to the implementation of formal basilical church architecture under Constantine (c. 314–319). [*See* Basilicas; Churches.] The evidence suggests that partial adaptation occurred as an intermediate stage, and that subsequent enlargements or rebuilding overlaid earlier phases of the renovation of domestic or private architecture. One site, at the Lullingstone Villa, near Eynsford, England, has only part of the house given over for renovation as a kind of "chapel wing"; the site is important also for its relatively late date (c. 350–410), which shows that the process of gradual adaptation continued well after the empire had become officially Christian and public Christian architecture had begun. The continued renovation and reuse of sites over centuries has often made the archaeological evidence difficult to read. For example, in Rome, a large apartment building with shops on the ground floor and domestic quarters above seems to have been partially renovated for use as a Christian hall in the third century. This basic plan may have continued until the beginning of the fifth century before being fully rebuilt in basilical form; however, some of the earlier structure was preserved in the foundation levels below the basilica, now called the Church of Saints John and Paul (Ss. Giovanni e Paolo). Similarly, the Church of St. Clement (San Clemente) near the Colosseum was originally built in basilical form in about 400, over a large third century hall that may have been used by Christians. In turn, this hall stood over a large warehouse complex dating to the first century that Christian tradition associates with the name of Clement of Rome (d. about 96) and a church ostensibly located on his property. No direct archaeological evidence indicates such usage in the lower layers, even though the adjacent house clearly had a mithraeum installed in a lower level cortile. Similarly, there is no evidence that the so-called House of St. Peter at Capernaum was actually used as a house church, or *domus ecclesiae,* prior to the construction of a quadrilateral enclosure in the fourth century, later rebuilt on an octagonal plan in the fifth and sixth centuries. [*See* Capernaum.] In this case it is better to view the building in the context of the beginning of memorial architecture stimulated by Constantine to commem-

orate Christian holy sites, rather than its being in direct continuity with the older pattern of house church and *domus ecclesiae.*

Other archaeological evidence suggests that by the mid-third century Christians were beginning to enlarge spaces on a rectangular hall plan, but well before the beginning of formal basilical church architecture. Such buildings may be called *aula ecclesiae,* or "hall churches." At least one case, from Parentium (Roman Istria, modern Parenzo or Porec), shows a private house first renovated as a *domus ecclesiae* (third century) and subsequently renovated to form a large hall (fourth century), before it was converted to the basilical plan (fifth–sixth centuries; now known as the Basilica Eufrasiana). A hall was also installed in a block of private houses in the early fourth century at Umm el-Jimal (in Roman Arabia, modern Jordan). [*See* Umm el-Jimal.] Other examples can be found in the first levels below the Church of San Chrysogono in Rome (c. 310), the double halls below the church at Aquileia (c. 317–319), a small plane hall from Qirk Bize in Syria (c. 320–333), and the first hall below the Octagonal Church of St. Paul at Philippi, Greece (c. 343). Each of these cases was transformed, by subsequent phases of renovation and construction, into more formal or recognizable church architecture (either basilical or octagonal in plan).

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L. MICHAEL WHITE

HUMEIMA (Ar., Ḥumaima, Ḥomeima, Ḥumayma), ancient Auara (Gk.; Lat., Hauara, Ḥauarra), major Nabatean, Roman, Byzantine, and early Islamic center in the Ḥisma, Jordan's southern desert (29°57′00″ N, 35°20′38″ E). The ruins of the settlement, approximately 10 ha (25 acres) in area, are at an elevation of 955 m above sea level, in sandstone hills between the Jebel Qalkha and Jebel Ḥumeima, 3 km (2 mi.) east of Wadi ʿArabah. Precipitation averages only 80 mm per year. The plain east of the site is watered by runoff from a roughly triangular catchment area of 240 sq km (149 sq. mi.). Petra is 44 km (27 mi.) to the north, the modern settlement of Ma'an 50 km (31 mi.) to the northeast, ʿAqaba (ancient Aila) 55 km (34 mi.) to the south, and Meda'in Saleh (ancient Hegra) 250 km (155 mi.) to the southeast.

Although Alois Musil identified the ruins of Ḥumeima as ancient Ammatha, the Peutinger Table establishes that the site is Auara: it places Havarra 23 Roman miles (36 km, or 22 mi.) north of Praesidio (Khirbet el-Khalde) and 20 Roman miles (30 km, or 19 mi.) south of Zadagatta (Sadaqa), which is Ḥumeima's exact location. According to Ouranios's *Arabika* (F. Jacoby, *Fragmente der griechischen Historiker,* Leiden, 1923–, 675 frag. A.1.b), Auara was founded by the Nabatean king Aretas III (87–62 BCE), in response to an oracle. Nothing is known of the settlement's early history, but an extensive water-supply system was built in the first century BCE to attract settlers, caravans, and a market. A Nabatean north–south road, rebuilt as Trajan's Via Nova, passed through, or very close to, the settlement. The archaeological and literary evidence reveals that Auara flourished in the Late Roman, Byzantine, and Umayyad periods. Ptolemy includes Auara in his list of towns in Arabia Petraea (*Geography* 5.16.4), and Stephanus Byzantinus provides the alternate name Auatha. The *Notitia Dignitatum* (*Oriens* 34.25) records the presence of a unit of *equites sagittarii indigenae* at Hauare (Havarra). At the same time, the Beersheba Edict records that the governor of Palaestina Tertia assessed Auara the second highest sum of any of the settlements in Transjordan. A military camp was built at the north edge of the site in the Late Roman or Early Byzantine period. Auara continued to flourish in the Early Islamic period, and soon after 687/88, ʿAli ibn ʿAbd Allah ibn al-ʿAbbas purchased the town, which became a center for the ʿAbbasid family's revolt against the Umayyad dynasty. Ceramic evidence shows a marked decline in habitation after the mid-eighth century.

The Department of Antiquities of Jordan cleared part of the lower church and one Early Islamic house in the settlement in 1965, but the results were not published. David Graf initiated a survey of the site in 1979 and was later joined by John W. Eadie (1980–1983) and John P. Oleson (1981–1983). In 1986–1987 Oleson surveyed the region around Ḥumeima for structures related to Auara's water-supply system and in 1989 began the excavation of the settlement center.

Soon after Auara was founded, an aqueduct of traditional Nabatean design (a ground-level, roofed conduit of stone

gutter blocks) was built to carry water for 26.5 km (16 mi.)—from ʿAin Ghana, ʿAin Jamam, and ʿAin Shara—to an open reservoir at the north end of the site. The habitation center was also served by a pair of large, rectangular, roofed reservoirs fed by runoff water from a catchment to the north of the settlement area. More than fifty ancient rock-cut and built cisterns, several wadi barriers, a dam, and carefully modified runoff fields have been identified in the catchment area north, east, and south of Auara. Rock-cut tombs of Nabatean through Byzantine date occupy the ridges west of the site.

The habitation area of Auara is occupied by heaps of tumbled building blocks from approximately thirty structures, probably domestic, whose plans are clearly visible in aerial photographs. They consist for the most part of square or rectangular complexes of small rooms arranged on two or three sides of a courtyard. Ceramic scatter and the excavation of one of the houses (Oleson Field F102, Oleson et al., 1992, 1993a–b, 1994) indicate that the structures on the surface are Umayyad/ʿAbbasid in date, but that at least some of them are built on earlier walls of the Nabatean and Roman periods. There is a typical Roman *castrum* at the northeast edge of the site, with its own reservoir and located close to the Nabatean reservoir fed by the aqueduct. There is a door in each of the four walls, and twenty-four projecting corner and curtain wall towers. Excavation indicates the fort was built in the later second century and probably abandoned in the fourth century (Oleson et al., 1994).

Four structures had been excavated by 1993: a late Roman bath building probably associated with the fort (Oleson no. 77; Oleson, 1990), a three-apsed Byzantine Church with intramural burials (Oleson Field C101; Oleson et al., 1992, 1993a–b, 1994), a one-apsed Byzantine church with traces of painted plaster and marble architectural elements (Oleson Field C119; Oleson et al., 1994), an Umayyad/early ʿAbbasid house or market complex built on top of a Byzantine church (Oleson Field B100; Oleson et al., 1992, 1993a–b, 1994), and an Umayyad house built on top of a Nabatean or Roman structure adjacent to a Nabatean-type cistern (Oleson Field F102; Oleson et al., 1992, 1993a–b, 1994). A large structure (Oleson Field F103; Oleson et al., 1994) earlier assumed to be a Roman *castellum* (rectangular fortress) or Nabatean caravanserai was identified after excavation in 1993 as the *qaṣr* (fortified house), garden, and mosque reported in historical sources to have been built by the ʿAbbasid family after they purchased the site. One room contained the remains of carved ivory furniture and colourful frescoes with floral motifs, all dating to the mid-eighth century. A substantial Nabatean structure lies beneath the Roman bath, and it seems likely that other early structures are now covered by Byzantine and early Islamic rebuilding or by the deep layer of water-deposited silt in the settlement center.

[*See also* Nabateans.]

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JOHN PETER OLESON

HUNTING. Little is known about the prehistoric hunter-gatherer of the Near East who created the Natufian and similar cultures. With the development of civilization, people who lived by hunting (Esau) were sometimes represented in a less favorable light than builders of cities (Gilgamesh) or pastoralists (Jacob). The story of David, however, who "slew both the lion and the bear," foreshadows his future greatness (*1 Sm.* 17:36).

The introduction of the horse-drawn chariot into Egypt before the middle of the second millennium enabled kings to display themselves spectacularly in the hunt. Tutankhamen (c. 1348–1339 BCE) is represented on a painted box shooting with bow and arrow as his chariot team gallops in pursuit of game; and the pylons at Medinet Habu show Rameses III (c. 1190–1158 BCE) stepping onto the pole of his chariot in order to transfix a wild bull with a gigantic lance. These representations are not realistic, for in real life a charioteer would have accompanied the king; and the Ramesside reliefs combine the originally separate motifs of the royal chariot and of the Pharaoh striding forward to smite

his enemies. Most probably the game—which included lions, antelopes, and ostriches—was shot with the bow from a stationary chariot, which was driven up to it by spearmen and archers. These are shown at Medinet Habu below the king and on a smaller scale. Military training was thus combined with sport.

The royal hunt appears frequently in the palace reliefs of the Assyrian New Kingdom (see figure 1). Ashurnasirpal (885–860 BCE) hunts lions and bulls from a four-horse chariot in which he is accompanied by a driver and weapon bearers. Ashurbanipal (669–627 BCE) hunts with a spear and bow both in a chariot and on horseback. His skill as a mounted archer may reflect the influence of the Scythians, to whose kings the Assyrian royal house had allied itself by marriage. Ashurbanipal also killed lions on foot, and inscriptions accompanying his monuments refer contemptuously to the terror of subject kings compelled to share this royal sport. Lions are sometimes released from traveling cages to be destroyed by the king; and the monuments also show large-scale drives leading to the wholesale slaughter of lions, wild asses, and gazelles, which may be driven into long nets or toward a pit in which the king, holding a bow and arrow, is concealed. Sometimes these hunts are represented as taking place in parks to which the populace, including women, is admitted to witness the royal prowess.

The theme of Assyrian official art is the brutal crushing of the king's enemies; but the major monuments of Achaemenid Persia (c. 550–330 BCE) represent "all the kingdoms of the earth" (*Ezr.* 1:2) as the peaceful subjects of the Great King, who is portrayed on reliefs in Persepolis destroying imaginary monsters, allegories of evil, rather than hunting real animals. Herodotus shows that to hunt on horseback with bow or spear was for the Persian nobility the epitome of manly virtue—and excellent training for leaders of armies whose strength lay in their cavalry. Game parks, or "paradises," are frequently mentioned as a feature of courtly life. Xenophon, in his romance *Cyropaedia,* tells how, as a boy, Cyrus the Great (c. 550–527 BCE) rode after boar, first in his grandfather's park and then in open country. More historical is the account in Xenophon's *Anabasis* of how Cyrus the Younger (fl. 401 BCE) killed a bear that had clawed him down from his horse.

In the provincial art of the Achaemenid Empire, hunting is often represented—notably on the marble sarcophagi created by Greek sculptors for the kings of Sidon and now in the Archaeological Museum at Istanbul. The Satrap sarcophagus portrays the perils of hunting big game on horseback; a less realistic hunt, on the Lycian sarcophagus, allegorises the virtue of a dead prince; and the Alexander sarcophagus may show, from the point of view of an Asiatic

HUNTING. Figure 1. *Relief from the Palace of Ashurnasirpal II in Nimrud, Mesopotamia.* King Ashurnasirpal hunting lions, a lion leaping at the king's chariot. British Museum, London. (Erich Lessing/ Art Resource, NY)

ruler, an incident of a historical lion-hunt in which Alexander the Great (336–323 BCE) took part with his generals. Engraved gems often show hunting on horseback or on foot, with bow or spear. The hunters are generally Persian nobles, but Darius I (522–486 BCE) is himself conventionally portrayed on an official seal, in the Assyrian manner, hunting lions from a chariot. The hunt is the symbol of the ruler's personal qualities and of the protection he affords his people.

In Asia Alexander the Great and his generals practiced, on an unprecedented scale, sports that the Macedonian kings had traditionally enjoyed in Europe. Under the successor kings, notably Ptolemy Philadelphus of Egypt (283–247 BCE) and Antiochus IV of Syria (175–164 BCE), big-game hunts and displays of exotic beasts were staged as popular spectacles, comparable to the later *venationes* (hunting shows) in the Roman amphitheater. The Roman conquerors of the Mediterranean basin at first availed themselves of the captured apparatus of the royal hunt, but in general, even under the emperors, Roman hunting (as distinct from collecting beasts for the amphitheater) seems to have been on a scale suitable to the fiction that the emperor was first citizen (princeps). Thus, Hadrian (117–138 CE) hunted a bear in Mysia and lions in Egypt on horseback, in the company of intimate friends.

Marble sarcophagi decorated with hunting scenes, many of them carved in Asia Minor, were used throughout the Roman Empire from the second century CE onward. The hunt as an allegory of virtue is splendidly represented in mosaics of the fifth-sixth centuries CE, notably at Apamea in North Syria and Antioch on the Orontes, where Magnanimity (Megalopsychia) appears personified.

From Sasanian Persia (224–651 CE) come silver-gilt plates, on which kings are shown hunting, usually on horseback, with bow or sword. Rock-cut reliefs at Taq-i Bostan (ascribed to Khusrau II, 591–628 CE) show royal hunts on a gigantic scale. Elephant riders drive wild boar into a swamp where the king, seated in a barge, shoots them with his bow; and herds of driven gazelles are pursued on horseback. Female musicians are in attendance, recalling the story of Bahram Gur (420–438 CE) and the Greek singing girl Azada, which is portrayed on some of the hunting plates.

After the Islamic conquest in the seventh century, hunting retained its interest as a sport and its value in military training.

[*See also* Lions; Mosaics; Pigs; *and* Wall Paintings.]

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HUREIDHA, site located in Wadi ʿAmd, about 39 km (24 mi.) south-southwest of its junction with the Ḥadhramaut in southern Yemen (15°36′ N, 48°11′ E). Situated in the bed of the wadi, the site has been badly eroded by flash floods that cut through the 4-meter-high tell, stratigraphically isolating the buildings and leaving mounds of debris spread over an area of about 17 acres. Three inscriptions recovered indicate that the name of the ancient town was Maḍabum.

The site was discovered and excavated by the archaeologist Gertrude Caton-Thompson; Elinor Gardner, a geologist; and Freya Stark, a writer, from December 1937 to March 1938. The focus of the excavation was a small, rectangular temple dedicated to the moon god Sin. Although it had been destroyed to floor level, three phases of construction were distinguished: the first consisted of the original temple, and the second and third were limited to repairs and additions to the former. These phases spanned the period from the sixth to the second century BCE. Outside the temple, several shrines with altars were constructed during the third phase, with material reused from the temple. A farmhouse built of mud brick, located near the temple, was also excavated. Two circular cave tombs, which had been dug in the scree slope of the cliff along the west side of the wadi, were also cleared; these yielded the first skeletons of ancient South Arabs.

The small corpus of pottery recovered from these excavations proved that the temple, farmhouse, and tombs belonged to the same period. Dated by other artifacts, especially beads and Achaemenid seals, the pottery provided the beginnings of a chronology for these four centuries. It also served as an independent source for dating inscriptions, which previously could only be assigned dates on the basis of paleography and filiation.

Gardner, at Ḥureidha, was the first to investigate a flash-flood irrigation system in southern Arabia. With a deflection

dam to channel run-off water into the primary canal, 16 km (c. 10 mi.) upstream, and a distribution network of secondary canals and tertiary earthen ditches, water was moved quickly and efficiently to already plowed fields downstream and surrounding the town.

Gardner also studied the geology of the region as opportunities occurred, commenting on the geologic history during the Quaternary era. Paleolithic flakes and Levallois-type cores appear everywhere, on the plateau above Wadi 'Amd and on its terraces, providing the earliest evidence of human occupation of the region.

Ḥureidha is of considerable importance in the archaeology of pre-Islamic southern Arabia because it was the first site excavated by a professional archaeologist. Caton-Thompson's work set a high standard for archaeological methodology by its scope: geological investigations and prehistory, superior research on artifacts, reasoned interpretation, and comprehensive publication.

[*See also the biography of Caton-Thompson.*]

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GUS W. VAN BEEK

HURRIAN. The Hurrian language is associated with an ethnic group that first appears in areas in the northern and eastern parts of Mesopotamia (i.e., Assyria) in the Ur III period (the last centuries of the second millennium BCE). From Assyria through northern Syria to Ugarit to Ḫattuša (Boğazköy), and in the Amarna archives, the group leaves textual and onomastic evidence of its presence for about one thousand years and then vanishes abruptly. The language is a close relative of, but not a direct ancestor of, Urartian, attested somewhat farther north and east in the first half of the first millennium BCE. It has been suggested, although it is not widely accepted, that Hurrian may be related to the Dagestanian languages spoken today in the northeastern Caucasus. Except for the Dagestanian reference, Hurrian and Urartian constitute a linguistic isolate among the languages of the world.

The corpus of Hurrian texts begins with a single, short "Old Hurrian" monumental inscription of uncertain provenance, probably the upper Khabur or Tigris, in northern Syria or Mesopotamia, at about the end of the Ur III dynasty. The Old Babylonian period yields only a small number of poorly understood fragments from Mari and elsewhere, some of which seem to be incantatory in nature. The bulk of Hurrian texts come from four mid- and late second-millennium sites: Ugarit—bi- and quadrilingual vocabularies (Akkadian, Sumerian, Hurrian, and Ugaritic), literary and religious fragments, and a unique small corpus of musical texts; Boğazköy—a large, and still poorly understood, corpus of ritual texts and religious literature, usually with a Hittite version; Emar (Syria)—a small, still unpublished corpus of lexical, medical, and omen texts; and Amarna (Egypt)—a long, carefully written and perfectly preserved Hurrian letter from the Mitanni ruler Tušratta to Amenhotep III. The latter is the best-understood Hurrian text and the basis for almost all that is known of Hurrian grammar.

With the exception of a few texts (perhaps offering lists) written in the Ugaritic alphabetic script, Hurrian is written in cuneiform. It is possible that the Hurrians formed part of the chain of transmission by which the cuneiform writing system reached the Hittites. By the time of the Tušratta letter, it is clear that the Mitanni chancellery had developed a set of very consistent and systematic orthographic conventions for representing Hurrian in cuneiform. These conventions include systematic use of single and double writing to convey consonantal distinctions that did not exist in the languages—very different from Hurrian—of the Sumerian originators or Akkadian adaptors of the system.

Morphologically, the Hurrian noun and, especially, its verb are typically constructed out of complex chains of suffixes and enclitics. The noun, for example, distinguishes eight possible suffix/enclitic positions after the root, according to the pattern:

0:*ROOT* + 1:*Derivational suffix* + 2:*Possessive* + 3:*Article* + 4:*Plural* + 5:*Case* + 6:*Enclitic Obj* + 7:*Agreement* + 8:*Enclitic Conj/Adv*

An example, from the Mitanni letter (4, l. 39), is *šen+iff+da+lla+an:* "0:brother + 2:my + 5:to (directive case) + 6:them + 8:and"—that is, "and them to my brother." The verbal pattern, which distinguishes thirteen positions, is

0:*Root* + 1:*Derivational suffix* + 2:*Tense* + 3:*Derivational suffix* + 4:*Plural* + 5:*Transitivity* + 6:*Neg-1* + 7:*Subject* + 8:*Neg-2* + 9:*Relative* + 10:*Plural* + 11:*Enclitic Obj* + 12:*Agreement* + 13:*Enclitic Conj/Adv*

An example, again from the Mitanni letter (4, l. 31), is *kad+oš+a+šše+na:* "0:ask + 2:past + 7:third-singular-ergative + 9:relative + 10:plural"—that is, "which (pl.) he has asked."

In syntax, Hurrian belongs to the ergative language type (that is, like Sumerian, it has a special case for subjects of transitive verbs, whereas subjects of intransitive verbs have the same case as objects of transitive verbs). As can be seen from the above formulae, Hurrian makes extensive use of enclitics for pronominal, conjunctival, and adverbial elements.

[*See also* Boğazköy; Emar Texts; Hurrians; Mitanni; Ugarit; *and* Ugaritic.]

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GENE GRAGG

HURRIANS. The term *Hurrian* may be derived from *hur,* a stem denoting war. Although the name appears to be related to the biblical *ḥōrî(m),* it is not. The Hurrians were a people identified by their non-Semitic, non-Indo-European language, Hurrian. Their origin northeast of Mesopotamia, in Caucasia or beyond, is inferred from an indirect link between Hurrian and Urartian, both descendents of a common "root language" (Proto-Hurrian-Urartian) and connected to northeast Caucasian languages. Textual attestations of Hurrian proper names indicate a gradual migration from east of the Tigris River in the late third millennium across northern Mesopotamia to the Mediterranean coast in the late second millennium BCE, although isolated linguistic associations suggest a Hurrian presence in northern Syria and Anatolia as early as 2000 BCE.

Based on records mainly from Mari, Ugarit, Alalakh, Emar, Nuzi, and Kurruḫanni, the Hurrians are divided historically and geographically into two cultural spheres. [*See* Mari Texts; Ugarit; Alalakh Texts; Emar Texts; Nuzi.] The older eastern sphere encompasses the Hurrian heartland, stretching from the region of Lake Van and Lake Urmia in the north to Kirkuk in the south. The later western sphere centers on southeastern Anatolia and North Syria. They each absorbed Sumero-Akkadian traditions and were briefly united under the Mitannian hegemony in the mid-second millennium BCE. Records of their religious and literary heritage were presumably compiled in Waššukanni, the still-undiscovered capital of Mitanni in northern Syria. Records were thence passed on via Kizzuwatna to the Hittite capital, Ḫattuša/Boğazköy where they were found much altered and adapted, mostly in Hittite translation. Based largely on the archives from Ḫattuša, what is known of Hurrian religion, culture, and literature is biased toward the western traditions. [*See* Mitanni; Boğazköy.]

History of Research. The focus of early Hurrian scholarship was on language. Philological research began in the late nineteenth century with studies on the "Mitanni letter" found in the diplomatic archives at Tell el-Amarna, Egypt, in 1887. [*See* Amarna Tablets.] The unknown language of the letter from Tušratta, king of Mitanni, to Amenophis III was first called Mitanni after the sender's country of origin. Its decipherment was aided by contemporary letters in Akkadian containing the same subject matter and style. [*See* Akkadian.] Similarities between words in the Mitanni letter and words marked with the gloss *su(-bir*$_4^{ki}$*)* in Old Akkadian texts led to the designation *Subarian,* after the vague regional name of *Subartu* found in Akkadian and Babylonian records. This term was ultimately replaced by *Hurrian,* following the self-descriptive term used by the Hittites to characterize a related language on tablets from Ḫattuša.

Initial attempts to trace the origin of Hurrian and its speakers were influenced by the Indo-Aryan throne names of second-millennium Mitannian kings and certain gods invoked in their treaties found in Ḫattuša. While this association has long been discredited, the presence of Indo-Aryan proper names, loanwords, and technical terms in Hurrian texts indicates some interaction between the two language groups either before or after they entered the Mesopotamian scene (see below). The proposed equation between Hurrians and Subarians was dismissed on the grounds that textual evidence for the latter antedates references to the former (Gelb, 1944; and for the theory that Subartu represents an imaginary "literary" land, see Michalowski, 1986).

Interest in the Hurrians was rekindled during the 1930s by new discoveries of texts at Nuzi, Ugarit, Alalakh, and Mari. With the publication of texts from Ḫattuša, the basis for philological and historical research was broadened. Prewar analyses of the Hurrian language and grammar, summarized by Ephraim Speiser (1941), have been emended and updated by several scholars. Its characteristics include an ergative sentence structure and the use of suffixes.

The east Hurrian sphere is represented by the fifteenth- and fourteenth-century BCE texts from sites in and around Kirkuk, particularly Nuzi, whose Hurro-Akkadian archives provide key information on the sociolegal institutions, customs, and practices of its predominantly Hurrian population. The publication of these texts, begun in the 1930s and now nearing completion, has given rise to a wide range of studies on these subjects. This material is balanced for the west by the archives from Alalakh and Ugarit. Research into the Hurrian tradition from Ḫattuša is well underway, with the aid of Hittite-Hurrian bilinguals discovered in 1983 and the systematic publication of Hurrian texts.

Material evidence of the Hurrians has long been sought by archaeologists. In keeping with theories of cultural change current in the 1930s and 1940s, the Hurrians were linked with the appearance of novel ceramic types and glyptic styles. Khirbet Kerak ware, Khabur ware, Bichrome

ware, Nuzi ware, and Nuzi/Kirkuk/Mitannian glyptic are among many supposed hallmarks of the Hurrians. These have since been discarded on the grounds of their different origin, chronology, or distribution (Barrelet, 1977). Indeed, recent studies have left little hope of ever identifying a distinctive culture of the Hurrians, whose main contribution, after more than a millennium of assimilation, lies in the transmission of traditions they encountered before and during their migration across northern Mesopotamia to Syria and Asia Minor.

History. The earliest (Akkadian period) evidence of the Hurrians is in the form of personal names on a tablet dated to Naram-Sin, tablets from Gasur (later Nuzi), and a marble inscription from Nippur concerning a gift of garments. [*See* Nippur.] According to these, the Hurrians controlled minor states to the north and northeast of Akkade, and they formed a minority of the population at Gasur east of the Tigris, near Kirkuk. [*See* Akkade.] The oldest known Hurrian ruler from this area is Talpuš-atili of Nagar, whose Late Akkadian seal was found at Tell Brak (perhaps ancient Nagar/Nawar or Taide). Atal-šen, king of Urkeš (possibly Tell Mozan) and Nawar, is known from an inscribed bronze foundation tablet that, though dated to the Late Gutian (2090–2048 BCE) or Early Ur III (2047–1940 BCE) period, adopts older Akkadian period curse formulas. [*See* Brak, Tell; Mozan, Tell.]

Repeated campaigns conducted against Hurrian populations during the Ur III period brought large numbers of Hurrian prisoners to Sumer from regions north, northeast, and east of the Tigris, above the Diyala. Toward the end of this period (c. 1970), the northern Tigris region appears to be ruled by the Hurrian Tiš-atal, "man of Ninua" (Nineveh), probably also known as Tiš-atal, *endan* ("ruler" or "god") of Urkeš, who left a foundation inscription—the oldest known Hurrian text adopting the widespread cuneiform syllabary. [*See* Nineveh.] His title suggests that he was deified in the tradition of the Ur III kings, like his namesake, Tiš-atal, king of Karahar (Harhar), and other contemporary Hurrian rulers east of the Tigris.

A letter to the king of Kaneš from Anumhirbi, prince of Mama, may indicate that the region around Maraş was populated by Hurrians in the early eighteenth century BCE. [*See* Kaneš.] Their expansion from the Zagros foothills to the Middle Euphrates River and northern Syria is documented in the late eighteenth–mid-sixteenth century BCE archives of Mari and Alalakh VII; by the seventeenth century BCE they had filtered into Palestine. In the wake of Shamshi-Adad I's death and the disintegration of his empire, numerous Hurrian dynasties sprang up between the Zagros and the Euphrates, and rulers with possible Hurrian names are attested west of the Euphrates at Urshum and Hashshum. While the proposed identification between the Hurrians and the seventeenth-century BCE Hyksos dynasty in the Nile Delta has been refuted, it is possible that the Hyksos infiltration resulted from the expansion of the Hurrians and the gradual collapse of the urban system of Palestine at this time. [*See* Delta; Hyksos.]

This latest Hurrian incursion into northern Mesopotamia following the collapse of the Old Assyrian kingdom was accompanied by the arrival of Indo-Aryan immigrants. Little of those immigrants survives other than a few loanwords—the names of deities and personal names that distinguish the ruling dynasty of Mitanni, a Hurrian kingdom probably already founded in the sixteenth century BCE, although it is first mentioned in an inscription dated to Thutmose I (1494–1482 BCE). At this time, in about 1560 BCE (short chronology), the Hurrians posed a threat and eventually contributed to the downfall of the Old Hittite kingdom, whose frontier had reached the Euphrates. In about 1470 BCE, Parrattarna, king of the Hurrians, extended the borders of Mitanni to the Mediterranean. The archives of Alalakh IV show a dramatic increase in the Hurrian population, which is thought to have also penetrated central and southern Syria. The kingdom of Mitanni (Hurri, Naharina, Ḫanigalbat) reached its zenith under Sauštatar, whose realm embraced the entire Hurrian-speaking area from the Zagros to the Mediterranean and Cilicia. [*See* Cilicia.]

Thereafter, during the fourteenth and thirteenth centuries BCE, as the kingdom was reduced to the Upper Khabur basin, the Hurrians of Cilicia and northern Syria fell under Hittite supremacy, while those in northern Mesopotamia were subjugated by the Assyrians, who vied against Kassite Babylonia for control of Arrapḫa east of the Tigris. [*See* Khabur; Kassites.] The Mitannian decline, which began in about 1400 BCE with the defection of Kizzuwatna to the Hittites under Sauštatar's successor, Artatama I, was hastened by internal power struggles during the reign of Tušratta, which led to the formation of a rival regime under Aratatama II, an ally of the Hittites and the Assyrians. Following Tušratta's death, sometime between 1340 and 1330 BCE, Mitanni survived as a vassal state first of the Hittite Empire and then of the Assyrian Empire. By the end of Shalmaneser I's reign (1263–1234 BCE), the Assyrians had established direct rule over the former territory of Ḫanigalbat (an Akkadian term for Mitanni first attested in an Old Babylonian text). Thereafter, the title "king of Ḫanigalbat," is connected with two high-ranking Assyrian dignitaries but may have survived as a formality. Sporadic references to Hurrian rulers in the Upper Tigris region continued into the twelfth century BCE, and Hurrian proper names were still attested in the mid-first millennium BCE in the region south of Lake Van. However, the survival of the Hurrian language, which in the fourteenth century BCE had spread at least as far as central Syria, is uncertain.

Religion and Mythology. The impact of the Hurrians and their traditions extended far beyond the shrinking boundaries of Mitanni. This is evident in the Hurrian throne names adopted by Hittite viceroys at Carchemish and by the Hittite veneration of Hurrian deities, notably the weather

god, Teššup, whose cult was imported to Kizzuwatna from Ḫalab (Aleppo), probably by Tudḫaliya I, in the late fifteenth century BCE. [*See* Carchemish.] The introduction of west Hurrian cults to Ḫattuša may date back to the Old Hittite period, when Muršili I presumably removed the local deities from the Hurrian towns he besieged following his conquest of Ḫalab. The major influx of Hurrian-Kizzuwatnean rituals and incantations began in the reign of Arnuwanda I and climaxed during the empire period, when the state religion reflects strong Hurrian influence.

Pantheon. Foremost among the oldest Hurrian deities is the weather god, Teššup, whose rise to the head of the pantheon, in the early second millennium BCE, coincided with his identification with Syro-Mesopotamian counterparts of similar standing. His consort/sister in most areas is Šawuška, the goddess of war and sex, who was identified with the Mesopotamian Ishtar and the Syrian Išara. Supreme goddess of Mitanni, she also headed the local pantheons of many eastern towns, where she was worshipped under numerous guises. The most famous of these was Ishtar of Nineveh, whose healing powers were famed as far as Egypt and whose cult survived at least to the reign of Sargon II (721–705 BCE). The grain god Kumarbi—counterpart of Enlil, Dagan, and El—features at the center of several Hurrian myths on divine succession. Among these, the "Song of the Kingship and Heaven," itself influenced by Babylonian prototypes, foreshadows the theogony of Hesiod (700 BCE). The related theme of the Ḫedammu myth and the "Song of Ullikummi," in which Kumarbi challenges his succession by the weather god, is also paralleled in Greek mythology. The dethroned Kumarbi becomes one of the "ancient gods"—a group of underworld deities attested only in Hittite myths, rituals, state treaties, and art—derived from Hurrian theology but who may be pre-Hurrian and pre-Semitic. Their depiction at Yazılıkaya is connected with the cult of the dead king Tudḫaliya IV.

The adoption of Sumero-Akkadian deities goes back to Akkadian times, when Nergal, and probably also Ea, was incorporated into the Hurrian pantheon. Others, such as the moon goddess Ningal, were absorbed later in the second millennium BCE via Syria, where the native cults of Aštabi, Adamma, Išhara, Allani, and Hepat also influenced the west Hurrian tradition. Information on this tradition comes from Hittite-Hurrian bilinguals from Kizzuwatna and from the rock sanctuary at Yazılıkaya, where Hepat, identified with the Hittite sun goddess of Arinna, replaces Šawuška as Teššup's consort in the representation of the Hurrian pantheon based on Kizzuwatnean lines.

Rituals and cult. What little is known of Hurrian ritual and cult comes almost entirely from texts. Their anthropomorphic deities were anointed, clothed, and provided with food and drink. The abundance of composite creatures in the earliest seal impressions from Nuzi suggests that east Hurrian rituals included a demonic component, also apparent in early Middle Assyrian glyptic. [*See* Seals.]

The temple was the main place of worship. The *hamri,* a place of worship associated with the worship of Teššup, is widely attested also in Babylonia. [*See* Babylon.] Nuzi texts mention a sacred grove, and part of the Hittite-Hurrian rock sanctuary at Yazılıkaya may have been used for cathartic rites.

Cathartic rites are central to Hurrian magical practice, based as it is on monistic thought. Rites of homeopathic and contagious magic were accompanied by incantations. The oldest Hurrian incantations from Mari and southern Babylonia date to the Old Babylonian period, but may derive from Ur III period penetrations into Hurrian territories in the north. The practice of extispicy (the examination of entire entrails to receive divine messages) and omen inquiries was adopted entirely from Babylonian traditions.

Settlement Pattern and Social Structure. Apart from slaves exported to southern Mesopotamia, the Hurrians settled the northern Fertile Crescent above the 200-mm isohyet, where animal husbandry and dry farming were possible without irrigation. This situation favored the formation of self-sufficient villages founded partly on kin relationships, implying the inalienability of land. In time, these villages fell under the jurisdiction of numerous Hurrian dynasties, which exacted taxes and military services. The military was headed by an elite known as *rākib narkabti* ("chariot drivers") in the east and *marianni-na* in Syria and Palestine, who were skilled in the use of horse-drawn light war chariots. [*See* Chariots.]

The primary source for Hurrian socioeconomic and legal practices are the mid-second millennium BCE archives at Nuzi. Recent studies have shown, however, that many of these practices, once considered the antecedents of biblical conventions and narratives, are Mesopotamian in origin.

Material Culture and Technology. No trend in monumental or minor art, style, or iconography has the life span and distribution of the Hurrians. Their penchant for assimilation is evident in their art and architecture, which reflect long-established local traditions that vary from one end of the Hurrian-speaking realm to the other. The temple, palace, painted pottery, and cylinder seals of Alalakh IV are marked by Syrian and Aegean influences, while at Nuzi, in the east, Mesopotamian and Elamite traditions predominate. The stylized frontality of certain mid-second-millennium BCE sculptures from Aššur, Alalakh, and Tell Brak was perceived as Hurrian until the recent discovery of precursors in Mesopotamia and Syria. The synthesis of Hurrian and foreign concepts and style is apparent in later reliefs and statues of the Late Hittite Empire period and from minor Neo-Hittite states in southern Anatolia and northern Syria of the first millennium BCE. Foremost among these is the monumental rock relief at Yazılıkaya, which represents the west Hurrian pantheon in local Hittite attire and composi-

tion. Both an older rock relief near Imamkulu and a later libation scene from Malatya also focus on the Hittite/Hurrian storm god, Teššup, whose stance and attendants recall scenes on seals of Mitannian date. Certain seals of this period may portray the death of Humbaba, as described in the Sumero-Akkadian Epic of Gilgamesh, of which Hurrian copies have been found. Scenes related to myths introduced by the east Hurrians occur on seal impressions from Nuzi (Ḫedammu myth) and on the ninth-century BCE gold bowl from Hasanlu IV in Iran (Kumarbi epic). [*See* Hasanlu.]

The Hurrians have been linked to a number of trades and technological innovations. The oldest of these is the trade of the copper worker, *ta/ibira,* based on an Old Sumerian term of Hurrian derivation (Wilhelm, 1988). Less compelling is the evidence linking Hurrians with the introduction of the light horse-drawn war chariot, the composite bow, the "Hurrian ram," and scale armor for men and horses, most of which existed well before they were adapted to military use by a military elite. The supposed Hurrian origin of technical terms relating to glass- and glazed-ware production is doubtful. Glassmaking reaches back to the third millennium. [*See* Glass.] The sudden surge in the scale and range of glass objects produced from the fourteenth century BCE onward reflects the economic and political climate during the Amarna period, when palace patronage of specialists crafts is widespread.

[*See also* Hurrian.]

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DIANA L. STEIN

HYDRAULICS. The absence of artificial waterworks at Stone Age sites discovered so far leads to the assumption that human activity then centered around natural water sources, such as rivers and springs. In some instances permanent dwellings were established near a natural water source, while in others nomads wandered in its environs. The earliest evidence of a built water installation in Israel is from the end of the Stone Age, in the Pottery Neolithic (PN) period. At the site of ʿAtlit, a well, dated to the sixth millennium, was dug to the water table. The earliest concept of a well probably developed when a river ran dry and people began digging to reach the point in the riverbed where access to the retreating water level would be reached. In this manner, the world's first water installation, the well, was invented. The well at ʿAtlit is lined with stone; because the Mediterranean's water level has risen, the well-head is today situated about 10 m below where it was in the sixth millennium (Galili and Nir, 1993).

The second earliest well in Israel was discovered in the Beersheba region and dates to the fourth millennium, to the Chalcolithic period. Irrigation channels from this period exist on the Beersheba plain, which testifies to the use of water for irrigation farming. There are also early signs of water storage at Beersheba and Meṣar. [*See* Beersheba; Irrigation; Cisterns; Reservoirs.]

A concomitant of the appearance of the earliest planned walled cities, from the Early Bronze period on, was a new type of waterwork: a tunnel quarried to reach underground water (Khirbet ez-Zeraqun, Jordan) and a central water installation for collecting runoff water (Arad and Ai in Israel and Jawa in Jordan). [*See* Zeraqun, Khirbet ez-; Arad, *article on* Iron Age Period; Ai; Jawa.] These waterworks formed part of the urban plan. City planners incorporated waterworks within the city wall, to serve them in times of siege. At small, unfortified sites, cisterns were cut into soft, impermeable, chalky rock to store water. In mountainous regions, such as the Samaria hill country, where the inhabitants were familiar with the composition of the rock, natural springs were adapted for use as water sources for the nearby settlements.

The earliest use of partially plastered water cisterns is attested at Hazor from the Middle Bronze Age onward. [*See* Hazor.] In that same period, a brilliant innovation was implemented at several planned, fortified cities: a spring with an abundant yield of water was encompassed within the city walls. The method was employed at Tel Dan, where one of the Dan springs was enclosed within the walls; at Tel Kabri, where the city ramparts encircle ʿEin-Shepaʿ, and at Jericho, where the Elisha Spring is included within the perimeter of the walls. [*See* Dan; Kabri, Tel.] At Qatna, in Syria, too, the city wall encompasses a natural water source. This method signals a return to the Neolithic exploitation of a natural water source, but in a more technically sophisticated manner. At Tel Gerisa, near Tel Aviv, the uppermost section of the waterworks, situated within the city walls, reaches as far down as the water table. [*See* Gerisa, Tel.] It is a round pit, hewn into the half hard limestone (kurkar), with a diameter of 5.5 m. A flight of steps leading to the water is cut into the wall of the pit. Wells that descend vertically to the water table have also been found at Lachish, Tel Nami, and Tel Haror. [*See* Lachish; Nami, Tel; Haror, Tel.] The various types of MB water installations reveal a high level of engineering and technological expertise.

In the Late Bronze Age, the use of similar installations continued while new ones were developed: a well at Beth-Shean; a huge, well-plastered cistern, 150 cu m in volume, at Hazor, beneath the Canaanite palace; and many cisterns at Beth-Shemesh. [*See* Beth-Shean; Beth-Shemesh.] The waterworks at Gezer may also date to this period. [*See* Gezer.] Mycenaean waterworks, designed in this period to provide a regular water supply, are found in the large fortified Mycenaean cities of Mycenae, Tiryns, and Athens.

From the Early Iron Age onward, only a few cisterns and wells are known: at Beersheba, Dor, and Gerisa. [*See* Dor.] It would seem that during this period water was obtained for the most part from natural springs, so that no water installations have been found within the perimeters of settlements. The absence of such installations accords with what is known of the simple way of life of this period, which overlaps with the period of the Israelite settlement. The only known cities in Israel at the time were inhabited by the Sea Peoples, and, indeed, at Dor a well built of hewn stones dating from the eleventh century BCE was discovered.

During the Iron II period, large water installations were constructed at Hazor, Gezer, Megiddo, Gibeon, Jerusalem, Yoqneʿam, Yableam, and elsewhere. [*See* Megiddo; Gibeon; Jerusalem; Yoqneʿam.] Characteristic of these projects is the quarrying of huge pits out of the bedrock on which the city was founded, in order to reach the water table and secure a constant supply of water, even in times of siege. These waterworks are monumental in scope and size: the depth of the shafts at Hazor and Megiddo is 36 m, and the length of the excavated tunnel at Megiddo is about 50 m. [*See* Water Tunnels.] The volume of the tunnel space is that great in order to allow better ventilation (oil lamps were used for lighting, which diminished the air supply). These waterworks fell into disuse at the end of the Iron Age and were buried beneath millions of cubic meters of dirt and rubble.

They were only discovered through archaeological exploration.

In light of these finds, it is reasonable to conclude that every fortified city of this era included a water installation for times of siege. The magnitude of these projects and their appearance at the most important sites in the kingdoms of Judah and Israel testify to a high level of engineering and geological expertise, as well as to the economic and administrative capability of the state bureaucracy. In Jerusalem, at the end of this period, Hezekiah's tunnel was dug, the longest of all Iron Age tunnels, to convey the water of the Gihon Spring into the city. In that period, King Sennacherib of Assyria built the world's longest aqueduct to bring water from a distance of 55 km (34 mi.) to Nineveh, his capital. [*See* Aqueducts; Nineveh.] The use of cisterns also increased then. They have been discovered at many sites, but especially noteworthy are those unearthed at Tell en-Naṣbeh. [*See* Naṣbeh, Tell en-.] At several locations in Phrygia, subterranean water systems have been found that in structure closely resemble those in Israel: a vertical shaft cut into the rock to reach the water table.

From the Persian period, only two wells have been discovered, cut into the limestone on the coastal plain. The first, unearthed in the Tell Qasile excavations, is quadrangular, and the second, excavated at Tel Mikhmoret, is round. [*See* Qasile, Tell.] Some of the cisterns found at Tell en-Naṣbeh also date to this period, which witnessed a decline in the technology of waterworks.

In the Hellenistic period, cisterns continued to be used and the first aqueducts appear at desert sites in Israel that are closely connected to the activities of the Hasmonean kings. Some of those aqueducts were designed to trap and collect water from flash floods; others conveyed water from natural springs. At Jericho, a ceramic pipe was discovered that operated as an inverted siphon (see below) to bring water up to one of the Hasmonean palaces. [*See* Jericho.] The first urban aqueduct was engineered at Akko; it conducted water underground to the city from a distance of about 14 km (9 mi.). [*See* Akko.] In this period there is a marked influence of Greek culture on the development of water installations, especially aqueducts, which increased continually into the Roman period.

The Roman period signals the apex of aqueduct construction. Most cities in the Roman Empire at large, and in the Near East in particular, including desert cities such as Petra and Palmyra, had a system of aqueducts that brought water from afar. [*See* Petra; Palmyra.] Only the southern coastal cities, such as Ashkelon and Lod, lacked aqueducts because there were no natural springs in their vicinity. The city of Antipatris (Aphek), which lies near a water source, had no need of waterworks. In Jerusalem and at Caesarea, the chief cities of Israel in that period, a high level of engineering overcame various topological obstacles (e.g., use of an inverted siphon in Jerusalem, arched aqueduct in Caesarea). [*See* Ashkelon; Aphek; Caesarea.] In many places pools and reservoirs were hewn and constructed. [*See* Pools.] Settlements each had many water cisterns and various irrigation installations. At three locations, inverted siphons were built of stone: Jerusalem, Hippos/Susita (see figure 1), and Beth-Yeraḥ. [*See* Beth-Yeraḥ.]

In the Byzantine period, the existing aqueducts continued to be used and additional ones were built. Elaborate water systems were constructed as a basic element of the foundation of monasteries in the Judean Desert. Every village and settlement had numerous cisterns, as many as one per household. Some aqueduct water was directed into the bathhouses originally built in the Roman period. [*See* Baths.]

During the Early Arab period, the main centers of the Umayyad caliphate were Jericho and Ramla, to which aqueducts were built. [*See* Ramla.] In desert areas, water systems in the form of chains of wells (Ar., *qanat, fuqarot*) were developed to irrigate agricultural estates. These can be seen along the Syro-African Rift Valley from Faṣael in the north to 'Ein-'Evrona in the south. The end of the Umayyad period witnessed severe crises, both politically with changes

HYDRAULICS. Figure 1. *Holes for cleaning in the stone pipe of the inverted syphon.* Under the pavement of the main street (cardo) at Susita. (Courtesy Tsvika Tsuk)

under the 'Abbasids and physically with a large earthquake, and water systems fell into disuse, except for the Ramla aqueduct, which continued to be used into the reign of the 'Abbasid Caliphs.

In the Crusader period considerable use was made of water systems designed to gather runoff into the large cisterns of fortresses. Most noteworthy are those at Belvoir (Kokhav ha-Yarden) and Qal'at Nimrod.

The use of the lower aqueduct to Jerusalem was renewed in the Mamluk period to convey drinking water to the inhabitants of the city. Several *sabils* ("drinking troughs"/ "fountains") were erected alongside it. In the Ottoman period the same aqueduct was used, but a clay pipe was inserted in it. An impressive aqueduct was built leading to the city of Akko in the days of Gizar Pasha that was later destroyed. A new aqueduct was built by Süleiman in its stead. This aqueduct, borne on arches, operated from 1814 to 1948. As it approached the city it entered an inverted siphon made of interlocking stone rings, which were incorporated into towers *(suterazi),* to release the water pressure.

At the time of the British Mandate (1917–1948), the Akko aqueduct and a Roman-built aqueduct outside Jerusalem, the Biyyar aqueduct, operated. The latter led water to Solomon's Pools, from which the water was then pumped and conveyed in pipes to Jerusalem. Although this aqueduct has been abandoned, water still flows in it.

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TSVIKA TSUK

Translated from Hebrew by Ilana Goldberg

HYDROLOGY. Water economy in the Syria-Palestine region is subject to the influence of the Mediterranean climate on the one hand, and the desert climate on the other. The rainy season extends from October to May, with most of that rain falling between December and February. During the rest of the year (June–September), the amount of rainfall is negligible. Annual rainfall on the coastal strip is 500–600 mm; in the central hill country 600–800 mm; in the semiarid regions approximately 100–200 mm; and in the desert only 25–100 mm.

Because the region does not have any large rivers whose sources lie outside of it (such as Egypt's Nile River), its primary source of water is precipitation. Rainfall replenishes the water table and sometimes creates powerful streams of runoff water. The region has a great number of natural springs, mostly in the hill country and on the periphery of the coastal region. Most of the springs have a small flow, ranging from 10,000 to 350,000 cu m per year, with a considerable decrease in summer and fall. The few large springs, with flows ranging between several million cubic meters to 250 million cu m, depend on long-term rainfall patterns. Consequently, they yield a consistently strong flow of water through the summer and fall and until the following rainy season. In northern Israel and in the western Levant, such springs are large enough to create rivers. The largest sources, at the foot of Mt. Hermon, feed the tributaries of the Jordan River. The Yarkon River springs are the most important water source for the coastal region (220 million cu m per year).

Throughout history, humans have exploited these water sources in various ways. In the coastal region, most commonly, wells were dug or hewn to reach the water table. In the hill country, inhabitants enjoyed natural springs. In addition, cisterns were hewn to collect runoff. In desert areas, some water was obtained from springs at oases, but mostly from collection in cisterns.

Streams and springs served as the prime water source. Running streams attracted human settlement, especially in the Stone Age period. Material remains of human activity in the biblical period have been discovered along stream and riverbanks. Water that is both clean and of high quality is found in springs, which led humans to establish dwellings as close to their source as possible. In the classical period, aqueducts were built to bring water to cities, invariably from natural springs. Even the city of Tiberias, on Lake Kinneret (Sea of Galilee), obtained water from a source 15 km (9 mi.) away via an aqueduct, rather than from the lake. [*See* Tiberias.]

Wells were a second best water source, providing clean water from an aquifer. In contrast to a natural spring, an artificial well could be located in accordance with a settlement's needs. Its major drawbacks were its great depth; the labor required to dig, hew, and construct it; and the possibility that water would not be found. Wells were used as early as the sixth millennium BCE, as was found in the underwater excavation near 'Atlit.

Water cisterns were tertiary sources, although in many areas they were the only solution for collecting and storing water. Cisterns first appear in the third or second millennium BCE. To ensure the quality of cistern water, cisterns were cleaned annually, the channels leading water to them were maintained, and the top of the cistern was covered to prevent the growth of algae and to keep out dirt as well as to enable the cistern to be sealed and to prevent people from falling into it. In this way, it was often possible to preserve

good drinking water in a cistern from the end of spring until fall. Domestic animals such as dogs and cats were kept away from the house to prevent them from soiling the courtyard or roof where rainwater was collected. In Pergamon, Turkey, city statutes were discovered that warn of strict measures against citizens who do not keep their cisterns clean. [*See* Pergamon.] In addition to cisterns, water was stored in reservoirs of various types: huge underground cisterns and open-air reservoirs such as dams and pools. These were all designed to store runoff or spring water conducted via an aqueduct to an open or closed reservoir. Drinking water did not generally come from open reservoirs because of the possibility of pollution. It was kept in the closed reservoirs and retrieved with pails or conducted into the city either by aqueduct or on beasts of burden.

In the course of time, the region has experienced both wet and dry climatic periods, which have dictated settlement patterns. Because the Chalcolithic period is known to have been wet, settlement proliferated in the Beersheba valley, which had many more water sources then than at present. [*See* Beersheba.] In the hill country, however, the climate was much colder than today, which explains the scarcity of settlement in that region. [*See* Judah.] There seems not to have been considerable climatic change between the Chalcolithic period and the present. As a result, today's hydrological data can serve as a basis for investigating the limitations of water use and seasonal differences with a margin of error of only about 20 percent. Climatic change is not to be confused with years of meager rainfall, when drought presented a threat to the inhabitants of the land, as is mentioned occasionally in the Hebrew Bible (*Jer.* 14). Nevertheless, some researchers have sought to attribute the proliferation of settlement in the Negev both in the Early Bronze Age and in the Roman period to wet periods.

[*See also* Aqueducts; Cisterns; Dams; Hydraulics; Irrigation; Pools; *and* Reservoirs.]

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TSVIKA TSUK

Translated from Hebrew by Ilana Goldberg

HYKSOS. In the reign of Ptolemy II (282–246 BCE), the Egyptian priest-historian Manetho used the Greek name *Hyksos* to identify his fifteenth dynasty, an Asiatic line of kings who ruled northern Egypt. The word itself is derived from an Egyptian term, *Ḥḳ3(w) ḫ3swt*, meaning "ruler(s) of foreign countries." On linguistic grounds, a West Semitic background can be inferred for these Asiatics; the archaeological data point to a more southern, Palestinian origin, although a few scholars prefer a Syrian background.

Rise of the Hyksos. Asiatics migrated down into northern Egypt in increasing numbers during the twelfth (1963–1786 BCE) and early thirteenth (c. 1786–1700 BCE) dynasties. Their principal focus of settlement activity appears to have been the eastern Delta. Initially, they lived peacefully alongside the Egyptians; some were even in their employ (e.g., at the town of Kahun in the Faiyum region).

The Asiatic population in the eastern Delta expanded simultaneously with the deterioration of Egypt's central authority in the late Middle Kingdom (mid- to late thirteenth dynasty [c. 1700–1633 BCE]). This development is reflected in an increase in the number of Delta sites containing Levantine materials whose Middle Bronze II character is especially evident in the area east of the ancient Pelusiac branch of the Nile River, in the region of Khatana-Qantir. Commercial relations between Egypt and Palestine were expanding at the same time. Eventually, the Asiatics may well have taken control of parts of the eastern Delta. In 1648 BCE, the Asiatics captured the old administrative capital at Memphis, the event that inaugurates Manetho's fifteenth dynasty. Whether the takeover of Memphis and northern Egypt was quick and violent, as described in the epitomes of Manetho and in some pharaonic documents, or the control the Asiatics assumed was more gradual—taking advantage of Egypt's weakness to fill a power vacuum—remains under discussion. The former explanation seems more likely, however.

Hyksos Period in Egypt. The Turin king list reports a total of six Hyksos kings who ruled for 108 years (c. 1648–1540 BCE). The name of only the last of those rulers, Khamudy, is preserved on the Turin papyrus. There is considerable debate regarding the identification and order of reign of Khamudy's five predecessors. Donald B. Redford (*Egypt, Canaan, and Israel in Ancient Times*, Princeton, 1992) suggests a dynastic sequence starting with Maaibre Sheshi, followed by Merwoerre Yaqobher, Seweserenre Khyan, Yannass, Apophis, and Khamudy. Many other Asiatic royal names are attested on scarabs from the time of the fifteenth dynasty; some may belong to minor Asiatic princes who held a vassal status to the great Hyksos rulers.

Attempts to reconstruct the internal history and governmental organization of the Hyksos remain largely speculative. The adoption of the Egyptian royal titulary by the Hyksos kings, their dating of events to regnal years in the same manner as the Egyptians (e.g., the dating of the Rhind Mathematical Papyrus to regnal year 33 of Apophis), and the frequent use of the Egyptian administrative title *treasurer* by their officials suggest that the Hyksos government at least partially imitated that of the Egyptians. At the same time, however, the apparent Hyksos practice of ruling through local vassals (both Asiatic and Egyptian) reflects a more Near Eastern tradition.

Archaeology of the Hyksos Period. As an archaeological term, *Hyksos* is often employed to refer to the material remains associated with the Asiatics living in Egypt during the Second Intermediate period, especially at their eastern Delta capital. Avaris (a Greek name derived from the Egyptian term *Ḥwt-wʿrt,* "mansion of the desert plateau") was the site of the Hyksos capital; it later became the royal residence of the nineteenth–twentieth-dynasty pharaohs (1295–1069 BCE), at which time it was known as Piramesse. The largest surviving portion of Avaris is at Tell ed-Dabʿa, which the Austrian archaeologist Manfred Bietak has been excavating since 1966. This is the only site in Egypt where uninterrupted Asiatic occupation during the Second Intermediate period can be traced—and the only Hyksos urban center discovered so far in Egypt.

Archaeological evidence of Asiatic activity in Egypt in the Second Intermediate period appears at several other sites east of the former Pelusiac branch of the Nile. These include Ghita, Inshas, Tell Basta, Tell Farasha, Tell el-Maskhuta (situated along the Wadi Tumilat), Tell es-Sahaba, and Tell el-Yahudiyeh. Tell el-Maskhuta has produced a small, seasonal Asiatic village and burials, while a cemetery and perhaps a large defensive enclosure were found at Tell el-Yahudiyeh. Only cemetery materials are attested at the other sites.

The material goods, cultic architecture, and religious practices of the Asiatics in the Delta during the Hyksos period reflect an amalgam of Syro-Palestinian and Egyptian features. This is evident in the burials at Tell ed-Dabʿa and Tell el-Maskhuta. The principal grave type at Tell ed-Dabʿa during most of the Second Intermediate period was the vaulted mud-brick chamber tomb. Donkey sacrifices were found outside some of these tombs. Similar tombs with donkey sacrifices are attested at Tell el-Maskhuta and at Inshas, while tombs with brick vaulting but without donkey burials have been found at Tell el-Yahudiyeh. Vaulted Middle Bronze II–III tombs have also been reported from Tell Basta, Ghita, and Tell es-Sahaba, while the equine burials are paralleled at several sites in southern Palestine.

Funerary offerings in these Delta tombs and in the Wadi Tumilat include scarabs, jewelry, pottery (of both Egyptian and Levantine types), and alabaster vessels. Tombs in the later phases at Tell ed-Dabʿa sometimes contain Cypriot pottery and follow Egyptian rather than Asiatic funerary practices (the Asiatics having become highly Egyptianized in late Hyksos times). No royal burials have been excavated at Tell ed-Dabʿa. A rich collection of funerary offerings, possibly from a Hyksos royal tomb, is said to come from es-Salhiya, located about 10 km (7 mi.) southeast of Tell ed-Dabʿa (though this hoard may in fact come from Tell ed-Dabʿa).

An important, though controversial, source of information for the history and chronology of the fifteenth dynasty consists of scarabs inscribed with royal names and private names and titles. Because so few texts survive from that era, our knowledge of most Hyksos rulers and officials derives from the appearance of their names on scarabs and such related items as cylinder seals and seal impressions. The Hyksos adopted the Egyptian hieroglyphic script for writing their documents and transcribing their personal names. Through typological analysis of Hyksos royal-name scarabs, Egyptologists have been able to arrange many of the Hyksos rulers in a relative sequence and to link a few of the royal names to the bleak historical record. A concentration of royal-name scarabs in southern Palestine suggests a connection between this region and the eastern Delta, although the exact nature of this relationship is in dispute. Finally, numerous scarabs inscribed with the names and/or titles of officials who may have been Hyksos officials (e.g., the treasurer, Har) have been found, but the common practice among the Asiatics of using Egyptian names makes it difficult to distinguish scarabs of Hyksos officials who adopted Egyptian names from scarabs belonging to contemporary Egyptian bureaucrats.

Data on Hyksos fortifications in Egypt are limited. The high water table and the activities of local peasants searching for mud brick and lime to use as fertilizer have combined to remove any traces of a defensive system surrounding most of the mound at Tell ed-Dabʿa; however, a fortification wall has been uncovered at the village of Ezbet Helmi, situated at the western end of the site. (In the debris above a garden adjacent to the wall hundreds of fragments were found of Aegean-style frescoes from the seventeenth–sixteenth centuries BCE.) Large square earthwork enclosures with brick facing and rounded corners have been found at Tell el-Yahudiyeh and Heliopolis. The similarity between these two structures and those constructed in the Levant in the Middle Bronze Age has led many archaeologists to identify the Delta embankments as Hyksos defense systems. Other archaeologists, however, believe that these embankments are retaining walls for Egyptian temple foundations.

Monuments associated with the Hyksos are rare in the Nile valley, and there is no evidence for Asiatic settlements in that area. The southernmost occurrence of inscriptions, mentioning Hyksos rulers is at Gebelein, located just upriver from Thebes, where a granite block naming Khyan and a lintel containing the name of Apophis were found. It is unclear whether the Hyksos ever controlled Egypt that far south, however. Near the end of the seventeenth dynasty, the border between Theban and Hyksos territory was at Cusae (on the west bank of the Nile, just south of el-Amarna), but it is doubtful that the Hyksos continuously occupied the Nile valley that far south. Instead, they probably maintained authority in Middle and Upper Egypt through local vassals such as Teti, son of Pepi (a local Egyptian ruler at Nefrusy, who is mentioned on the Carnarvon Tablet of the late seventeenth dynasty), and through garrisons positioned at strategic points in the valley. In any event, the history

of Hyksos expansion and rule in Egypt cannot be traced in any detail.

The Asiatics in the eastern Delta maintained an active commercial relationship with Cyprus, the Levant, and Nubia. International trade was an important factor in the development of their wealth and power. The seventeenth-dynasty Theban ruler Kamose reports on a historical stela erected at Karnak that he seized several hundred ships in the harbor at Avaris. The goods aboard these ships included numerous Asiatic materials and substances: gold, silver, bronze, lapis lazuli, turquoise, oil, incense, fat, honey, and precious woods. Stone and faience vessels, jewelry, amulets, scarabs, and other Egyptian merchandise were exported to the southern Levant in exchange for such raw materials and finished products. Egyptian objects from this period have been found in considerable numbers at Tell el-ʿAjjul, Gezer, Tell el-Farʿah (South), Jericho, Megiddo, and elsewhere in Palestine. The distinctive Tell el-Yahudiyeh ware, produced both in Egypt and the Levant and widely distributed from Nubia in the south to Syria and Cyprus in the north, demonstrates the far-reaching nature of this trade network. The presence of Middle Kingdom statuary in Middle Bronze II–III contexts in Palestine, as well as in a few contemporaneous deposits in the Aegean and Nubia, suggests that some trade in the Hyksos period consisted of items plundered from Egyptian cemeteries belonging to the early second millennium BCE. As for the small number of monuments containing Hyksos royal names found at Knossos, Baghdad, and the Hittite capital of Ḫattuša (modern Boğazköy), efforts to see in these items evidence for a Hyksos "empire" have long since been abandoned by all but a small minority of academics. The absence of archaeological materials of the Second Intermediate period in the northern Sinai indicates that Egyptian-Levantine trade went by sea rather than over land.

End of the Hyksos Period. The first effort to dislodge the Hyksos from the Nile valley appears to have taken place in the reign of the seventeenth-dynasty Theban king Seqenenre Tao, a contemporary of Apophis; wounds consistent with those made by an Asiatic battle axe were found in the skull of his mummy, suggesting that he met his death in battle. Seqenenre's successor, Kamose, was perhaps initially a vassal of the Hyksos, but he continued the war of liberation. According to a pair of stelae he erected at Karnak (the text of the first of which is partially preserved on two stela fragments and a writing board known as the Carnarvon Tablet), Kamose recaptured much of the Nile valley and besieged, though did not take, Avaris itself. He was followed by his younger brother, Ahmose, the first king of the eighteenth dynasty, who captured Memphis, thereby completing the reconquest of the Nile valley.

The autobiographical inscription of one of Ahmose's naval officers reports that the king subsequently besieged and plundered Avaris. Occupation in the latest Hyksos-period stratum at Tell ed-Dabʿa appears to have ended abruptly, and the tombs of this phase were looted. After taking Avaris, Ahmose besieged and plundered Sharuhen. That town probably should be identified with Tell el-ʿAjjul in Gaza (although Tell Abu Hureirah [Tel Harar] has also been proposed as the site of Sharuhen), which has produced a large number of Hyksos royal-name scarabs and considerable gold jewelry. It may have served as a Hyksos stronghold and commercial emporium. Numerous other towns in ancient Palestine were destroyed and/or abandoned in the second half of the sixteenth century BCE. Whether most of this devastation should be attributed to the Egyptian army has yet to be resolved.

[*See also* ʿAjjul, Tell el-; Dabʿa, Tell ed-; Farʿah, Tell el- (South); Maskhuta, Tell el-; *and* Yahudiyeh, Tell el-.]

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JAMES M. WEINSTEIN

I

IDALION, ancient city-kingdom on Cyprus, located at the modern village of Dhali, twelve miles south of Nicosia, (35°7′ N, 33°25′ E). In 1850 the French antiquarian Honoré d'Albert, the Duc de Luynes, purchased a bronze tablet found on the western acropolis of Idalion, and inscribed in Phoenician and Cypro-syllabic scripts. From 1867 through 1875 Luigi Palma di Cesnola dug at the site, claiming to empty fifteen thousand tombs. He uncovered the remains of an edifice on the summit of the east acropolis, the hill known as "Mouti tou Arvili," said to be a temple to the mother goddess, which had already been cleared by previous treasure hunters. The British banker and consul to the Ottoman Empire in Cyprus, R. Hamilton Lang, in 1868 excavated a "temple" to a god (Apollo Amyklos in Greek; Resheph Mikal in Phoenician). In 1883 and 1885 German newspaper correspondent turned antiquarian Max Ohnefalsch-Richter became superintendent of works for replating under the British Mandate. As such, he excavated there and investigated antiquities in Dhali for several years thereafter.

From 1927 to 1931 the Swedish Cyprus Expedition established the modern chronology for the site. On the western acropolis of Idalion, the hill known as "Ambelliri," Einar Gjerstad and his team excavated all of the structures visible on the highest peak. They dated the fortified "settlement and cult place" they believed they found there to the Late Cypriot III period (1200–1050 BCE). The Swedish publication of the supposed Bronze Age levels shows photographs of whole vessels on "floors" (*SCE,* vol. 2, p. 593, figs. 240–241). Because the area is dotted with tombs, the floor from which the bull rhyton and other Bronze Age artifacts were recovered was perhaps a tomb underlying the Iron Age occupation strata. They believed there was pottery, but no architecture, from the subsequent Cypro-Geometric I–II periods (1050–850), but the area was refortified, they felt, in Cypro-Geometric III (850–700). At that time, they reported construction of a new temenos and altar, court, and sanctuary dedicated to the Phoenician goddess Anat (Greek Athena), the complex continuing to around 475 (*SCE,* vol. 2, pp. 516–532). Gjerstad's team also uncovered tombs of the Late Iron Age and Hellenistic period outside the ramparts of the Lower City.

From 1971 to 1980 the Joint American Expedition to Idalion (Lawrence E. Stager and Anita M. Walker, directors) dug and conducted site-catchment analysis, examining the surrounding agricultural, mining, and settlement areas by surface survey and periodic sounding. They found Hellenistic structures on the east acropolis dating from the fourth through the third centuries BCE. In the lower-city domestic precinct below the west acropolis, they found a street with houses dating to the Cypro-Classical period (sixth–fourth century) overlying Archaic pits (c. 700–475). On the west acropolis they found monumental structures including a fortification wall 11 m (36 ft.) thick founded around 500 BCE. Structures in this area, including metalworking, continued into the Hellenistic period. A small Roman bath installation was found at the foot of the east acropolis, and a Neolithic refuse deposit was dug on the banks of the Yialias River to the north.

In the 1990s the Department of Antiquities of Cyprus (Maria Hadjicosti, director) continued excavation of the monumental buildings on the west acropolis. It has demonstrated that the fortified area was destroyed twice, around 450 and abandoned about 300. In the Hellenistic period the only elite structures are on the east acropolis. During their 1995 excavating season the Department of Antiquities located apparent workshop installations dating to the eleventh–eighth centuries BCE in a field below the west acropolis.

American excavations (Pamela Gaber, director) continue in the lower-city domestic areas, extending their dates down through the Hellenistic and early Roman periods. Lang's "temple" was rediscovered on the east acropolis in 1992 (the latest strata are Hellenistic and Roman). It appears to have been an outdoor temenos approximately six acres in extent with structures of various sizes and functions. The city *per se* had ceased to exist by the time Pliny wrote his *Historia Naturalis* in the first century CE. He lists Idalium among the "former cities" (5.129–139). There is evidence of medieval domestic occupation to the north of the Roman houses in the lower city.

The cult of the Magna Mater (Aphrodite to the Greeks; Venus to the Romans) was the basis of the city's fame. Poets, from Theocritos (*Idylls* 15.100–103) through Vergil (*Aeneid* 1.681, 694; 5.760; 10.48–53) to Catullus (36.11–17; 61.16–19; 64.94–96) and others extol the beauties of Idal-

ium, site of the worship of the goddess. The Venus and Adonis myth is sited at Idalion (e.g., Propertius, *Elegies* 2.13.51). (For a full list of ancient citations see Oberhummer, 1914.)

[*See also the biographies of di Cesnola, Gjerstad, and Ohnefalsch-Richter.*]

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PAMELA GABER

IDEOLOGY AND ARCHAEOLOGY. There is a profound connection between archaeological research and the nonmaterial belief systems of both the ancient cultures and the modern societies in which archaeology is itself supported and pursued. Any discussion of the complex interplay of ideology and archaeological interpretation must take into account the essentially dual nature of the issue: the study of the belief systems of ancient cultures through the "reading" of material artifacts for their symbolic, ritual, or ideological meaning; and the conscious or subconscious imposition of elements of modern belief systems (e.g., perceptions of gender, ethnicity, economics) onto the interpretation of ancient cultures in both scholarly and popular literature.

In most cases, the penetration of modern ideologies into archaeological interpretation is subtle and unwitting. In a few cases, particularly where political or cultural institutions exploit readings of the past as the basis of their legitimacy or power, some scholars may enthusiastically cooperate in the dissemination of ideologically inspired interpretation in public forums. They may also feel constrained in their choice of acceptable research subjects, when funding or professional status is at stake. Such was certainly the case regarding racial theories in ancient Near Eastern history by German scholars during the Nazi era (1933–1945), and by the scholars of many nations who have found themselves entangled in the religious and territorial conflicts of the modern Near East. Yet, whether their ideological basis is subtle or overt, archaeological interpretations, like other scholarly understandings of society and culture, are necessarily formulated in contemporary contexts. As such, they can be seen as modern social behavior and cannot help but embody contemporary ideologies and social ideals.

The seemingly logical assumptions by which an archaeologist connects an excavated destruction level with a historically attested event; how he or she attributes a particular distribution of seeds or ratio of animal bones to the consumption patterns of certain ancient ethnic groups; or how an excavator identifies the function of a certain room or building are all derived from the scholar's most basic perceptions of how the world works. Such perceptions are, however, subject to dramatic transformation. Recent studies of the origin of modern concepts of race, progress, nationalism, labor specialization, gender roles, and even the idea of the autonomous "individual" have shown them to be closely linked to the social dislocations and reorganizations of the industrial age.

Ideologies, as systems of cultural logic—not merely explicit religious or political doctrines—are a natural part of human thought. Thus, it could be argued that archaeologists' interpretations can reveal as much about the societies in which they are members and political actors as about the ancient societies whose cultures they attempt to explain. Artifacts, architecture, and settlement patterns, however well documented and dated, possess meaning only within a culture. They cannot be interpreted without fitting them into a larger conceptual framework. As a result, the problem of reconstructing ancient ideologies is compounded by coming to terms with the outlines of modern ideologies as well.

Because excavated artifacts and preserved archaeological sites can be seen as part of the material world of the society that discovers and studies them, as well as of the society that produced them, they possess—as museum pieces and tourist attractions—a social significance quite distinct from the function for which they were originally designed. A cuneiform tablet, fertility figurine, or offering vessel, for example, would each have quite a different place in the world view of an ancient Near Eastern priest and a late twentieth-century archaeologist. The relationship between material culture and ideology in the Near East should therefore be seen as a complex process of reinterpretation. Any serious study of this process must come to recognize that the intellectual challenge is not to attempt to strip archaeology of its modern ideological perspectives, but to document and analyze the

function—and interplay—of both ancient and modern ideologies.

Ideology: A Changing Concept. The definition of ideology itself underwent a radical reformulation after it first appeared in the late eighteenth century. First used by the French social philosopher Destutt de Tracy (1754–1836) to designate the scientific study of human thought and ideational systems, the earliest conception of "ideology" contained within it the Enlightenment belief that human ideas were closely linked to bodily sensations and were thus ultimately part of the material world. The assumption that human belief systems are finite, structured, and closely connected material conditions has always been central to the concept of ideology. As such, it has been opposed by religious conservatives who believe that (at least some) human belief systems cannot be so easily analyzed and dissected, that they are unconnected to social conditions and are essentially expressions of a transcendent spiritual truth. In the course of time, the term *ideology* has taken on additional meanings, contributed by both supporters and detractors of its validity. Thus, some use the term in archaeological contexts to refer to an active study of a material-based belief system, while others use it essentially as a synonym for religion or philosophy, generally denying explicit functional connections to social or economic reality.

The study of antiquity was connected with the concept of ideology from the very beginning. With the eighteenth-century European discovery of the monumental ancient remains and language systems of India and China, the French Encyclopedists attempted to distinguish structural similarities in those ancient societies' grammar and symbolism—similarities that transcended the specifics of regional culture and might reveal the essential character of human thought. The civilizations of ancient Greece, Rome, and Egypt were eventually included in this comparison. The guiding principle was that all human ideas and beliefs could be neatly categorized according to types and arranged in ascending orders of complexity. Like plants and animals, there was a logical structure that could be apprehended by human reason, and that like botany and zoology, ideology should be considered a respectable academic discipline.

Ideology, however, did not long remain a passive intellectual exercise. In the decades following the American and French Revolutions, visionary schemes for social change through the application of Reason arose on both sides of the Atlantic Ocean. The confidence that scholars could identify and delineate human belief systems, and demonstrate their direct connection to material conditions, led some French social philosophers (later derisively called *ideologues*) to see the study of ideology as a springboard for action. Like physiology, biology, and psychology, ideology might serve as an instrument for improving the material world. If human thought could be understood, it might be manipulated to end hatred, greed, jealousy, and aggression among social groups. This visionary social project proved to be a failure. As a result, the term acquired the negative connotation it still possesses.

Bitter conservative criticism of the *ideologues* and their liberal social programs, spearheaded by the outspoken attacks against ideology by the emperor Napoleon, transformed the common meaning of the term to refer to a mistaken, shallow, or deceptive body of beliefs. This more general usage was further refined by Karl Marx in the 1850s. Marx came to see ideology as the ruling ideas and symbolic systems of every society, in which the domination of the ruling class is made to seem natural, inevitable, and uncontestable to everyone. This conception of ideology, in which the social logic of a society is linked in a functional way to the preservation of the power of a small group within that society, went beyond earlier structural understandings to provide a dynamic motive for the creation and overthrow of ideologies.

In the early twentieth century, the group of German philosophers known as the Frankfurt school further developed Marx's conception of ideology in what has come to be called critical theory. The theory asserts that all ideologies are essentially coercive and suggests that the study of belief systems is inherently emancipatory. In trying to uncover what they defined as the conscious and subconscious control systems established by both ancient and modern elites, the Frankfurt school and later critical theorists, such as Louis Althusser and Michel Foucault, established a socially engaged and politically activist dimension to the study of ideology. Although based on historical analysis, its effects were directed to the present and future. In attempting to expose the hidden self-interest that directed every belief system, the critical theorists specifically sought to analyze and deconstruct contemporary capitalist ideology.

Ideology in Near Eastern Archaeology. Through most of the history of Near Eastern archaeology, the concept of ideology has been restricted to that of ancient religion and other nonmaterial belief systems. Although certainly not valid as transcendent truths (they could be described as rather primitive superstitions), they were nonetheless entirely spiritual. Thus, during the early archaeological exploration of Egypt and Mesopotamia, the discovery of temples, tombs, remains of sacrifices, and ritual implements were studied in an attempt to understand the "religions" of ancient Egypt and Mesopotamia as if there were a coherent body of religious beliefs and practices that could be studied in isolation from those societies' technological, economic, military, or governmental practices. In time, progressivist and social evolutionary theories suggested that the religions of the ancient Near East were in a process of transformation, moving ever onward toward a biblical ideal.

In this respect, William Foxwell Albright in Palestine,

James Breasted in Egypt, and Henri Frankfort in Mesopotamia can be seen as originators of an archaeological approach to the nonmaterial belief systems of the ancient Near East. In it the elements of greatest prominence in modern religions—monotheism, standardized rituals and religious architecture, and religious texts and law codes—were interpreted as the primary bearers of ancient ideologies. For Albright, in particular, details of religious practices and cult places recorded in the Bible became the base line for distinguishing their counterparts in the material record. The literalism of this correspondence between material artifact and text, however, prevented many scholars from ever going beyond mere illustration of conventional modern conceptions of the role of prayer, sacred spaces, and ritual sacrifice. [*See the biographies of Albright, Breasted, and Frankfort.*]

Similarly, the early archaeological study of tombs and tomb architecture in Egypt, Syro-Palestine, Anatolia, and Mesopotamia was concerned with the presumed, direct relationship between material forms of tombs and burial with the society's beliefs about the afterlife as recorded in religious texts. [*See* Tombs; Grave Goods.] This was also true of the excavation and study of later forms of religious expression such as the temples, synagogues, and churches of the Roman and Byzantine period. [*See* Synagogues; Churches.] Details of material culture (orientation, special-use chambers, decoration) were also linked to changes in specific religious practices. Few attempts were made by scholars of the late classical periods to go beyond conventional historical definitions of Hellenistic paganism, Judaism, and Christianity, to formulate a cross-cultural functional theory of ideology.

Only in the realm of Near Eastern prehistory, far beyond the chronological limits of direct connection with the historically attested religions of Egypt, Canaan, and Mesopotamia, did archaeologists attempt to link nonmaterial belief systems with stages of social development. Thus, in the discovery of apparent funerary offerings connected with Natufian burials and the excavation of anthropomorphic figurines and plastered skulls beneath the dwelling floors in the Neolithic levels at Çatal Höyük, Jericho, 'Ain Ghazal, Tel Ramad, and Tell Abu Hureyra, archaeologists connected a certain form of religious ideology (i.e., ancestor worship) to the beginnings of sedentary settlement. [*See* Çatal Höyük, Jericho, 'Ain Ghazal.]

With the expansion of material forms of religious expression in the Chalcolithic period at sites like Teleilat el-Ghassul, 'Ein-Gedi, and Tell Halaf; at predynastic sites in Egypt; and at Ubaid and Early Uruk sites in Mesopotamia, the geographic dispersion of decorative motifs and burial customs prompted some scholars to link the spread of religious ideology with population movements or less precisely defined "cultural influence." [*See* Teleilat el-Ghassul; 'Ein-Gedi; Ḥalaf, Tell; Ubaid; Uruk-Warka.] More recently, the differentiation in the size and elaborateness of Chalcolithic burials in the Beersheba valley, when added to the evidence of settlement patterns, has prompted Thomas Levy to characterize the nonmaterial belief system of the period as representing the "chiefdom" stage of social organization (Levy, 1995). Similarly, Early Bronze Age religious specialization has been linked by some scholars to the rise of urbanism. At least in the earliest archaeologically attested periods, religious ideologies have been typologically analyzed, even though their function is seen as basically reflective, not transformative, of the material reality.

While some attempts have been made to utilize structural anthropology to "read" the cultural grammar of ancient Near Eastern societies through symbolic inside/outside, left/right, male/female oppositions expressed in material culture, other recent approaches have studied ideology not as a neutral cultural grammar, but as the calculated misrepresentations of powerful elites. The political significance of exaggeration and even chauvinistic fantasy has long been recognized in studies of the ancient reliefs of Egypt and in the material culture of the Neo-Assyrian Empire. A few studies have attempted to distinguish nonverbal, nongraphic expressions of ideology. In recent examinations of the significance of the impressive encircling ramparts of many Syro-Palestinian cities of the Middle Bronze Age, Shlomo Bunimovitz and Israel Finkelstein have suggested that the defensive significance of these massive structures was less important than the psychological impact they would have had on both local inhabitants and potential foes (Bunimovitz, 1992; Finkelstein, 1992).

Ancient and Modern Ideologies: An Interplay. In all archaeological attempts to reconstruct ancient ideologies—be they of specific cult, transcendent beliefs, systems of cultural logic, or calculated political misrepresentations—scholars run the risk of unwittingly imposing their own ideological or religious values on material remains. To a certain extent, the scholar's understanding of the nature of ideology itself will determine how much danger from this direction he or she perceives. For those scholars who see ideology as explicit, yet highly circumscribed sets of beliefs about religious or political systems, there has long been a reluctance to believe that a fair-minded scholar's modern religious or political beliefs (also tightly circumscribed and therefore presumably separable) would necessarily prevent an "objective" study and assessment of archaeological remains.

It is becoming increasingly clear, however, that role of modern ideologies in the conduct and direction of Near Eastern archaeology is far more fluid and pervasive than traditionally believed. In the nineteenth century, basic theological disputes between Protestant and Catholic scholars in Europe gave rise to the first systematic explorations of Palestine; competing European national interests and imperial expansion into the region served as the background of much of the later nineteenth-century exploration and excavations in Egypt, Mesopotamia, Asia Minor, Cyprus, Palestine, and

Syria. The close connection between archaeology and the post–World War II nationalisms of the region has also been observed in the governmental utilization of archaeological sites as national monuments and, in some cases, shrines. Debates over the ethnicity of ancient groups and their possible genetic relationship to modern Near Eastern peoples have also been motivated in large measure by modern territorial, religious, or political conflicts. [*See* Biblical Archaeology.]

Beyond the influence of explicit belief systems, however, there may be a more pervasive modern belief system that makes the separation of modern ideology from archaeological interpretation virtually impossible. Mark Leone (1982) and Michael Shanks and Christopher Tilley (1987) have argued for the widest possible definition of ideology. They see it as a society's takens-for-granted—that is, not so much an expressed set of governing ideals, but an unexpressed, yet artificial and often self-serving construction of reality. In line with the assertions of critical theory, they see ideology as a system through which the power of elites is maintained: not so much by memorized catechisms or pledges of allegiance, but through the incessant training of all of the society's members about the "natural order of things."

In the field of historical archaeology in North America and Europe, a number of scholars have attempted to delineate the rise of the modern industrial consciousness and its material manifestations through changes in uniformity and regimentation (city planning, landscape alteration, house forms, and interior room arrangement); changes in the role of the individual in society (through the increasing numbers of artifacts linked to the individual for personal hygiene, grooming, and status differentiation); and through conspicuous public use of symbols of order (neoclassical facades, formal gardens, radiating street plans) to counteract the elites' fear of disorder—imagined or real. These elements of modern cultural logic about work, self, reason, and efficiency, they argue, are still potent and affect deeply how modern archaeologists see the cultures of antiquity.

Thus, despite the calls to introduce processual and anthropological approaches in Near Eastern archaeology as a means of making the discipline more objective or "scientific," some critics suggest that this merely represents the imposition of a modern ideology. Indeed, as Thomas Patterson (1995) has noted, the prominence of systems theory, resource exploitation, and measures of labor efficiency in some processualist interpretations of ancient societies merely retrojects the modern ideology of transnational industrial development on the past. [*See* New Archaeology.]

Is an ideology-free archaeology possible? The material world is always mediated through ideological symbols. To a certain extent, the visual and intellectual impact of archaeological finds often provides raw material for the crafting or apparent substantiation of modern ideologies, as well—whether of the conscious, overt types (church history, nationalism, racialism) or more pervasive relations (gender, work, the individual). It might therefore be said that it is impossible to strip archaeological interpretation of its modern ideological components. It is, after all, the cultural logic of modern society—its ideology in the broadest sense—that is precisely the conceptual framework with which scholars make sense of the ancient world.

In this respect, Near Eastern archaeology is, and always has been, a powerful social, religious, and political activity. It is fully involved with the illustration, or, alternatively, the challenge, to modern social, religious, and political ideologies. It is therefore to be hoped, in light of the growing awareness of the role of ideology in both ancient and modern societies, that archaeologists in the Near East will come to recognize the wider ideological implications of their interpretations and recognize the constructive role they can play in the ongoing debates and discussions about the region's present and future, as well as its past.

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NEIL ASHER SILBERMAN

IDUMEANS. The origin of the name *Idumean* (also *Idumaean;* Aram., **'dwmy*) is derived from *Edom* (Heb., *'dwm, 'ĕdôm,* "red"; cf. Heb., *'dmh,* "earth" or "field"). *Edom* refers to the kingdom in southern Transjordan during the Iron Age, but substantial emigration of Edomites westward

across the Wadi ʿArabah into the southern Judean hill country began in the late seventh and early sixth centuries BCE (as suggested in *2 Kgs* 24.2 and *Ez.* 35.6 and in Arad inscription no. 24). Finds of Edomite pottery, inscriptions, ostraca, and seals of this period have appeared in the eastern Negev at ʿAroʿer, Ḥorvat ʿUza, Tel Malḥata, and Ḥorvat Qitmit. By the late sixth and fifth centuries BCE, an Edomite presence is attested in the western part of this southern Shephelah region, extending toward the Mediterranean coast, by finds that include a cuboid incense altar from Lachish inscribed in Aramaic. In the fourth century BCE, Aramaic ostraca bearing Edomite and Arab names appear at Arad, Beersheba, and Tell el-Farʿah, presumably the location of Persian garrisons of mercenary troops. The Idumean region constituted the southern frontier for Persia after Egypt became independent (404–343 BCE), explaining why a fortress system was created in the region. Idumea is still called both an eparchy and a satrapy by Diodorus (19.95.2 and 98.1) in the Hellenistic era, suggesting that it was a former administrative district of the Persian Achaemenid Empire.

Hellenistic Period. Under the Ptolemaic kingdom (third century BCE), the area comprised a toparchy, one of the external administrative districts of the Egyptian kingdom. The most important recent discovery from this period is the Aramaic ostraca from Khirbet el-Qom (north of Hebron), the remains of the archive of an Idumean moneylender or "shopkeeper" (Gk., *kapēlos*) that include a Greek-Edomite bilingual ostracon dated to 277 BCE. The Zenon papyri also attest official Ptolemaic journeys in 259 BCE from Gaza on the coast to the Idumean settlements of Mareshah (Marisa, modern Tell Ṣandaḥanna) and Adora (modern Dur, 8 km, or 5 mi., southwest of Hebron) in the Negev (*PCZ* I.59006, ll. 64–66), where slaves were purchased (*PCZ* 59015, verso 16, 29; cf. 4. 59537/4). Within Egypt, third-century BCE papyri mention Idumean mercenary soldiers stationed along the Nile (*P. Tebt.* 815 fr. 5/29; *P. Bat.* 20.18/3 = *SB* 8 9797). The latter text includes an Idumean with the patronym *Apollodotos,* an early occurrence of a theophoric name composed with Apollo. The name is common afterward among the Idumeans, who evidently identified the Greek god with Qos, the chief god of their pantheon. It appears that the Greek god was especially honored at Adora (Josephus, *Apion* 2.9 [112–116]), and at the Sidonian military colony at Marisa/Mareshah founded under Ptolemy II Philadelphus in about 257 BCE. By the second century BCE, with the decline of Greek emigration into Ptolemaic Egypt, Idumeans formed sizable military colonies at Memphis and Hermopolis Magna in the Upper Nile region. The *politeuma* of Idumeans at Memphis included both soldiers and nonmilitary settlers who shared a quarter of the city.

Idumean relations with the Seleucids were also intimate. In 163 BCE, Idumea was administered by the experienced Seleucid general (Gk., *stratēgos*) Gorgias, a member of the "King's Friends," who reorganized the territory and enlarged it, perhaps to include Ashdod. During the Maccabean Revolt, Marisa was a base of operations for the Seleucid regime and the center of the conflict in southern Judea. Idumeans probably constituted auxiliary military forces in the Seleucid army at the time. In 138 BCE, the general Diodotus Trypho, a contestant for the Seleucid throne, marched through Adora toward Jerusalem before his defeat and death. Afterward, Antiochus VII Sidetes regained control of the "numerous cities" of Idumea, including Mareshah and Adora. After Antiochus's death in a Parthian campaign in 129 BCE, John Hyrcanus captured the Idumean cities of Adora and Mareshah and forced the Idumeans to accept circumcision and the Jewish law or be expelled from the land. U. Rappaport connects this action with the influx of Idumeans into Egypt, but there are indications the emigration began earlier. Subsequently, the "judaizing" Idumeans were incorporated into the Hasmonean state but never fully integrated into the Jewish population. As an Idumean, Herod the Great was regarded as a "half-Jew" and inferior to the Jewish aristocracy. His mother was a notable Arab named Cypros, perhaps a Nabatean.

Roman Period. Under Pompey's reorganization of the East, Marisa and Adora were detached from Judea and assigned to the Roman governor of Syria as an annex. Afterward, the Roman proconsul Gabinius partitioned Judea and its Hasmonean-Palestine conquests into five "districts" (Gk., *synodoi*) with separate aristocratic "councils." As a result, Idumea was apparently divided, with Mareshah forming the administrative center for the west and Adora for the east. Both of the capitals were rebuilt by Gabinius. The known native governors of Idumea were all from or related to the Herodian family. Both Herod's grandfather, Antipas I, and father, Antipas II, served as "governors" (Gk., *stratēgoi*) under the Hasmoneans, followed by Herod in the same capacity for Rome. After Herod became the Roman overseer (Gk., *epitropos*) of Judea, both his brother Joseph and son-in-law Kostobar governed Idumea, which Herod still used as his retreat and refuge. After the Parthians destroyed Marisa in 40 BCE, Herod transfered the administrative center for western Idumea several miles north to Beth-Guvrih and moved the center of eastern Idumea from Adora to ʿEin-Gedi. After Herod's death, Augustus charged his son Archelaus with the job of ethnarch for Idumea; from 6 to 41 CE, it was administered by the governors of Syria. Agrippa I briefly inherited the region from 41 to 44 CE, before it reverted again to the Syrian procurators. Josephus's list of the toparchies of Judea includes "Idumea and Engeddi" (*War* 3.3.5 [55]), but Pliny omits them (*Nat. Hist.* 5.14 [70]), probably because they constituted an annex rather than an integral part of the Jewish state. Other designations for the same toparchies appear to be "upper Idumaea" (*War* 4.9.9 [552]) and perhaps "eastern Idumaea."

Military and Social Organization. The Idumeans formed the basic core of Herod's army and were extremely loyal to the dynasty. As a militia, they were well equipped and organized and could be speedily mobilized. Herod once

settled more than three thousand Idumeans in Trachonitis to quell the brigandage in the region, which signified their commitment and sturdiness in difficult situations. A sizable number of foreigners were also employed in the Herodian army, including Thracians, Germans, and Gauls. Mordechai Gichon has characterized the rural militia of the Idumeans as a frontier force comparable to the *limitanei,* the soldiers in frontier areas in the Late Roman Empire. This emphasis on a Herodian *limes,* a fortified frontier, and the military nature of the region remains disputed. Marisa appears to have been an important agricultural center. Kostobar, Herod's "governor of all Idumea and Gaza," a descendant of priests of Qos, owned estates in Idumea, as probably did the Herodians and other aristocratic families. The Idumeans last appear in the Jewish Revolt against Rome (66–70) as confederates of the Zealots and in defiance of Rome. During the conflict, Vespasian devastated the region and decimated the population; Jewish partisans later further ravaged the region. Idumea later became part of the province of Judea and was administered by Beth-Guvrin, which incorporated most of the region as part of its extensive *chōra.* The city continued to prosper and was honored in 200 CE by Septimius Severus with the name of Eleutheropolis and issued its own coinage. Mosaic floors from a villa and a Byzantine chapel are now in the Israel Museum, but by this time Idumea as a toponymn and ethnic term had faded from existence.

Language and Material Culture. Edomite texts from Transjordan are mainly concentrated in the capital city at Buseireh and at Tell el-Kheleifeh at ʿAqaba. Within Idumea, they are distributed over a wide area but are still few and laconic. This limited attestation provides only a few distinctive paleographic and grammatical aspects of the language. The script shows a similarity to Moabite, with distinctive forms for *dalet* (probably to avoid confusion with *resh*), *he,* and *mem* (e.g., the Ḥorvat ʿUza ostraca). Specific linguistic features are more difficult to isolate because the corpus mainly shares affinities with Hebrew, Phoenician, Ammonite, and Moabite. The basic means of determining Edomite remains the theophoric names formed with the "Qos" element that appear throughout the Near East from Egypt to Persia (see Maurice Sartre, *Inscriptions Grecque et Latines de la Syrie* 13 [1982]: no. 9003, with a discussion). Identification of Idumean material culture also remains vexed because the architecture and other material remains reflect few, if any, distinctive characteristics. Partially, this is the result of the culture's mixed population, consisting of Sidonians, Arabs, Edomites, and Greeks. The late Iron Age Edomite shrine at Ḥorvat Qitmit and the ruins of the Hellenistic city at Marisa afford rare insights into Idumean culture.

[*See also* Mareshah.]

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IKTANU, TELL, site located at the edge of the foothills in the southeast Jordan Valley, 12 km (7 mi.) northeast of the Dead Sea, at approximately the −150 m contour below Mediterranean Sea level (31°49′ N, 35°40′ E; map reference 215 × 136). The occupation covers the tops of two natural spurs south of the perennial Wadi Ḥesban. The area receives a low annual rainfall (modern average 164 mm), but the site overlooks alluvial soils responsive to irrigation cultivation as well as to dry farming. It has a strategic position in relation to routes, water, and arable and grazing land.

The history of discovery of the site reflects changing perspectives in archaeology. In the nineteenth century the principal interest in the site was biblical. The first recorded visitor to the site was Selah Merrill, in 1876, for the American Palestine Exploration Society. He described the ruins on the north tell and proposed an identification with one of the Cities of the Plain, specifically Zoar. Claude R. Conder visited the site in 1881 for the Palestine Exploration Fund and rejected the identification. In 1926, William Foxwell Albright, then at the American School of Oriental Research in Jerusalem, proposed an identification with the Gadite settlement at Beth-Ḥaram.

Alexis Mallon, of the Pontifical Biblical Institute in Jerusalem, made the first modern assessment of the site between 1929 and 1934. He published a sketched plan of the ruin of "Beth-Haram" on the north tell and identified the pottery found there. He was the first to describe the remains of a

large settlement which lacked defensive walls on the south tell and correctly dated the associated material (Mallon, 1929, pp. 230–232; Mallon et al., 1934, p. 151). Nelson Glueck appears not to have known of Mallon's work when he paid a brief visit to the site in 1943.

A survey and a small excavation concentrated mainly on the south hill were carried out in 1965–1966 by Kay Wright (Prag), for the British School of Archaeology in Jerusalem. The site was included in the East Jordan Valley Survey of Moawiyah Ibrahim, James Sauer, and Khair Yassine of Jordan University, ACOR, and the Jordan Department of Antiquities, respectively, in 1976. Prag returned to the site in 1987, 1989, and 1990 under the auspices of the British Institute at Amman for Archaeology and History. In 1987 and 1990 the project was extended to Tell Ḥammam, 3 km (2 mi.) north on the south side of the Wadi Kafrain. The project, to develop a regional archaeology, includes environmental studies, with analysis of the ancient and modern flora and fauna, investigation of the local vernacular architecture, and ethnographic work.

The current analysis of occupation at Iktanu resulting from the work of this project indicates that it was first occupied in the Early Bronze Age I. The evidence suggests a small settlement supported by a mixed farming regime, in which the principal cereal crop was wheat. The site was then abandoned.

The most extensive occupation of the site was during EB IV. On the south hill a well-planned village of rectangular structures, with courtyards separated by unpaved lanes, was built over an area of 22 hectares (54 acres). A minimum population estimate suggests that 2,000–2,500 people occupied the settlement. They practiced mixed farming, with goat and barley as the dominant food resources, but with cattle, sheep, wheat, legumes, pulses, and tree crops. The food production, storage, and processing systems are very well documented. Though relatively short-lived, the settlement is one of the largest and most important known for the period. Its stratigraphy provides the basis for the current division of EB IV into two or more phases. At least two other large settlements and several small sites also existed in the region. The excavation adds considerably to the evidence recovered from the work of Kathleen M. Kenyon at Jericho, only 20 km (12 mi.) to the west. The village was abandoned as suddenly as it was established.

There is no evidence of Middle Bronze Age sherds or settlement on the site. Some sherds dating to the Late Bronze Age and Iron Age I were found in survey. The excavations on the north tell indicate with certainty that a substantial fort was constructed in Iron II, and possibly earlier. It commanded a strategic view in all directions, was built in brick on a platform supported by stone foundations which extended the hill's natural narrow rocky crest, and had a defended lower enclosure. Its use continued into the Persian period. Scattered sherds of later dates, but no occupation, are attested. The final use of the site, in the late Ottoman to the modern period, was strategic and for burials, a pattern observed on most prominent tells in the region.

[*See also the biographies of Mallon and Merrill.*]

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IMPERIAL ARAMAIC. The English counterpart of the German term *Reichsaramäisch,* the term *Imperial Aramaic* was originally applied in 1927 (by its coiner, Joseph Markwart), to the administrative language of the Achaemenid empire and to the Aramaic of the books of *Ezra* and *Daniel.* Although Biblical Aramaic has strong affinities with the standard administrative language of the Persian period, the Aramaic of *Ezra* is not identical with that administrative language. The Aramaic of *Daniel* is even further removed. Thus, the inclusion of Biblical Aramaic immediately attenuates the term.

The ambiguity of the term is deepened by its extension in the other direction to include even earlier Aramaic inscriptions. It is often inferred from the incident (c. 701 BCE) in *2 Kings* 18:26–28 (cf. *Is.* 36:11–13) that Aramaic was normally the language used in the Neo-Assyrian empire for diplomacy and administration—at least in its western sphere of influence. This supposition is confirmed by both iconographic and epigraphic evidence (*KAI* 233; Fales, 1986). Assyrian palace reliefs show an Aramaic scribe with pen and ink exercising official functions alongside an Akkadian scribe with reed stylus and clay tablet (e.g., *ANEP* 367; Driver, 1976, pls. 23, 24). [*See* Palace; Scribes and Scribal Techniques; Writing Materials; Writing and Writing Systems; Akkadians; Tablet.] However, the presumption that the Aramaic sponsored by the Neo-Assyrian empire in the west was in essential continuity with the standard Aramaic sponsored by the Neo-Babylonian and Persian empires several centuries later is too facile. If, thus, the label *Imperial Aramaic* is to be applied to a genuinely linguistic entity, which empire and which texts must be specified. Of course, *Imperial,* or *Official, Aramaic* can be defined in purely chronological terms (e.g., of the period c. 700–200 BCE), following the influential division proposed by Joseph A. Fitzmyer (1979, pp. 60, 61). The problem is that the term together with its historical usage connotes more than mere chronology and is therefore misleading.

It is best to define Imperial, or Official, Aramaic first in its narrow sense as the ideal standard language in which

scribes in the Persian period (probably from Darius I to Darius III [522–330 BCE]) would draft official documents. Then the relationship of other texts and periods can be defined in relation to that standard. Official Aramaic in this more restricted sense is strikingly homogeneous in orthography and grammar, which can be reconstructed fairly comprehensively on the basis of three corpora: the Elephantine legal papyri (fifth century BCE) from Egypt; the Arsames correspondence (fifth century BCE) from Egypt; and the Samaria papyri from Wadi ed-Daliyeh (fourth century BCE) in ancient Palestine. [*See* Elephantine; Samaria; Papyrus; Daliyeh, Wadi ed-.] It is this level of homogeneity that had a real functional existence for scribes in the Persian period; it is missed, however, when the term is used in a quasi-chronological sense. A fuller appreciation of this homogeneity allows finer judgments to be formed about the language of texts from a wider period.

Within the Persian period, genre correlates more closely with language than either geographic, temporal, or ethnic provenience. Thus, Official Aramaic applies to legal documents, administrative correspondence, literary (e.g., the Ahiqar narrative, Hor bar Pawenesh) and monumental texts (e.g., the Bisitun inscription). [*See* Bisitun.] On the other hand, the language of private letters, including the Hermopolis papyri, deviates from the standard and represents a complex compromise between the conventions of Official Aramaic and the vernacular of the writers. The relatively few Aramaic texts that fall after the period of Old Aramaic (inscriptions of the ninth and eighth centuries BCE) but before the Persian period—whether in the Neo-Assyrian or Neo-Babylonian sphere—tend to show a transition in grammatical forms toward the Official Aramaic of the Persian period.

The coming of Alexander and the collapse of the Persian empire (330 BCE) form a watershed for the history of Aramaic. The homogeneous standard language was broken up, but then quickly reconsolidated locally into forms of standard literary Aramaic: Nabatean, Palmyrene, Hatran, Old Syriac (in inscriptions from Edessa), and texts in the tradition of Jewish literary Aramaic. [*See* Nabatean Inscriptions; Palmyrene Inscriptions; Hatra Inscriptions; Syriac.] These forms show strong continuity with Official Aramaic but are colored to varying degrees by local vernaculars. The Aramaic of *Ezra* is especially close to Official Aramaic but shows significant modernization of grammar as well as of spelling. The Aramaic of *Daniel* is typologically more advanced and approaches the literary forms of Aramaic exemplified by various texts from Qumran. [*See* Qumran.] The Aramaic of Targums Onkelos and Jonathan, as well as the Bar Kokhba letters and Megillat *Ta'anit* represents the end point of this literary tradition before the emergence of a new literary tradition based on the Jewish Palestinian vernacular. [*See* Bar Kokhba Revolt.]

Unlike the Old Aramaic of the group of inscriptions from the eighth century BCE described by Rainer Degen (1969), Official Aramaic seems to be based on a dialect stock whose origins must be located farther to the east. Whereas the Old Aramaic inscriptions from Syria anticipate (in a few respects) features of the later Aramaic dialects of Jewish Palestinian, Christian Palestinian, and Samaritan Aramaic, a number of features of Official Aramaic are already anticipated by the ninth-century BCE Tell Fakhariyah inscriptions from Sikan on the Khabur River in Syria. [*See* Fakhariyah Aramaic Inscription.] At the other end, the fact that there is no radical break in the literary tradition at Edessa from the literary successor to Official Aramaic throughout the whole period of Classical Syriac may be construed as an argument that the original home of Official Aramaic lies not too far from Edessa. Official Aramaic (in the restricted sense) has several distinctive features in phonology and orthography, morphology, syntax, and its lexicon.

Phonology and Orthography. Official Aramaic exhibits a number of phonological mergers for which there is no evidence in Old Aramaic. The consistent spelling of etymological /ḏ/, /ṯ/, and /ẓ/ with *dalet, taw,* and *tet*—with the regular exception of a more conservative spelling for the demonstratives and relative with *zayin* (*znh, z', zk(y),* and *zy*)—shows that these consonants had merged with /d/, /t/, and /ṭ/. The mergers are to be correlated with the development of the fricative variants of the nonemphatic stops /b, d, g, k, p, t/ (a process that eventually found its way into the reading traditions of Hebrew). Occasional spellings of etymological /ḏ/ (perhaps originally an emphatic fricative lateral) with *'ayin* shows that it had merged with /ʿ/. Still, the preferred spelling of this consonant is with *qop,* as in Old Aramaic (perhaps for [ɣ]). Etymological /ś/ may have merged with /s/), even though the spelling with *sin* is retained fairly consistently. Also in contradistinction to Old Aramaic, syllable-closing /ʾ/ quiesced, although the scribes consistently maintained the distinction between the determined state [-ā] spelled with a final *'alep* and the phonetically identical absolutive feminine-singular ending on adjectives and participles spelled with *he.* The negative /lā/ is spelled with a final *'alep* and written as a separated word (in contrast to *l-* in Old Aramaic). As in Old Aramaic the diphthongs /ay/ and /aw/ are retained, but they were already contracted in the Hermopolis letters (see above). At the same time, /n/ is not assimilated before a following consonant (regarded as secondary nasalization by many); similarly, /l/ is unassimilated in prefixal and infinitive forms of the root √*lqḥ.* Assimilation is consistent in these forms in Old Aramaic (outside of the Tell Fakhariyah bilingual), the Hermopolis letters, and most later Aramaic dialects. The formative element *h-* is consistently retained in word-initial position in particles and in the causative stem; however, it already is changing to *'-* in the Hermopolis letters and then in many later dialects of Aramaic. Official Aramaic increases the use of medial matres lectionis (for stem syllables), while preferring the defective spelling of the absolutive masculine plural ending in [-īn]. Final unaccented syllables ending in [-ā]

tend to be spelled without a final *mater* (e.g., the first-person plural inflectional and pronominal suffix *-nā,* and the second-person masculine-singular independent pronoun *'antā,* spelled *'nt*). On the other hand, a final unaccented *-ī* (as in the third-person masculine-singular suffix *-why* on a plural base (cf. also the second-person feminine-singular forms *'nty, ktbty, -ky*) is now spelled with a final *mater,* in contrast to Old Aramaic (which has *-wh* for the corresponding third-person masculine-singular suffixal form).

Morphology. The internal passive is progressively lost in competition with *-'it-* forms. It is first lost in prefixal verb forms but is retained for a while in the perfect and participle; eventually, it is retained only in the participle of the basic and factitive stems in the later dialects. The formative element serves to mediate object suffixes on the imperfect. Several I-*yod* verbs are treated like I-*nun* in the imperfect and infinitive (as in the later dialects). The infinitive of the basic stem is formed with *mem*-preformative (as at Tell Fakhariyah but not in other Old Aramaic inscriptions), in contrast to derived stems without *mem*-preformative. The *mem*-preformative had already spread to the derived stems in the Hermopolis letters and in the Proverbs of Ahiqar (as in later Syriac and Western Aramaic). The determined masculine-plural ending on masculine-plural nouns is still *-ayyā* (in contrast to later eastern dialects, whose *-ē,* nevertheless, first makes its appearance in the Persian period). The consonantal contrast between masculine and feminine plural prenominal suffixes (*-hm, -km* :: *-hn, -kn*) is maintained in Official Aramaic, whereas the emergence of the later masculine-plural forms (masculine-plural -hōn, -kōn) is attested in private letters from the same period.

Syntax. *l-* serves as a facultative direct-object marker for definite direct objects (especially personal), corresponding to *'yt* in Old Aramaic and *yāṯ* in the later western dialects. The use of *zy* in genitive constructions is increased greatly over the few instances found in Old Aramaic. The new construction of noun + proleptic suffix before *zy* + noun for close genitive relation also begins to appear. The paradigmatic distinction between imperfect and jussive, well established in Old Aramaic and maintained in private letters and to some extent in later dialects, tends to be lost in Official Aramaic (where an occasionally unambiguous jussive form will be used as a jussive but more commonly is replaced in this usage by an imperfect form). In contrast to Old Aramaic, where the participle is used only as a substantive, the participle increasingly becomes part of the verbal system alongside the perfect and imperfect (as already in the Nerab inscriptions). [*See* Nerab Inscriptions.] In addition, the periphrastic use of the participle with a form of the verb *həwā* ("to be") begins in this period and continues in the later dialects. In the Old Aramaic of the ninth and eighth centuries BCE (with the notable exception of the Tell Fakhariyah bilingual), the finite verb seems to be restricted to the first and second position in its clause, with VSO (verb-subject-object), being the most unmarked word order. In Official Aramaic, apparently under the influence of Late Babylonian and Persian, the position of the verb is not so restricted. [*See* Persian.] Especially under Persian influence there is a strong tendency to place the object before the verb.

Lexicon. Among the distinctive elements in the lexicon of Official Aramaic are the new formation *brt-* for "daughter" (only rarely attested before the Persian period) replacing the earlier **bint-*; the preposition *'l* encroaching on *'l*; the quasi-pronoun *mnd 'm* ("something, anything"); the proform *tnh* ("here"; in opposition to *tmh,* "there"); an increasing number of Akkadian loanwords; and the presence of Persian loanwords and calques.

[*See also* Aramaic Language and Literature.]

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INCENSE. Odoriferous plants of various origins and species growing in various parts of the ancient Near East became important elements in the religious, political, and economic life of the region beginning in the third and second millennia BCE and increased in importance in the first millennium BCE. The sap, wood, bark, roots, and fruit of the plants were used both as incense and as ingredients in perfume and medicine. Trees and shrubs growing in East Africa and South Arabia, such as *Boswellia papyrifera* and *Boswellia sacra,* yielded frankincense; *Commiphora myrra* yielded myrrh. Both of these incense substances were already important trade commodities from the region called Punt in southern Egypt and from South Arabia to cultures in the Fertile Crescent in the second millennium BCE (cf. the reliefs at Deir el-Baḥari in Egypt representing Queen Hatshepsut's expedition to Punt, and Tell el-Amarna letter 269, l. 16). Other incense-producing trees grew in what are today Turkey, Lebanon, Syria, and Iraq. They include *Astragalus gummifera,* which yields gum tragacanth; *Cistus laurifolius,* which yields ladanum; *Commiphora balsamodendron* and *gileadensis,* which yield the balm used in various medicinal ointments; *Liquidambar orientalis,* which yields storax; *Pistacia lentiscus,* which yields mastic; and, finally, *Pinus brutia,* which yields an oleoresin, used by the Sumerians for medical purposes.

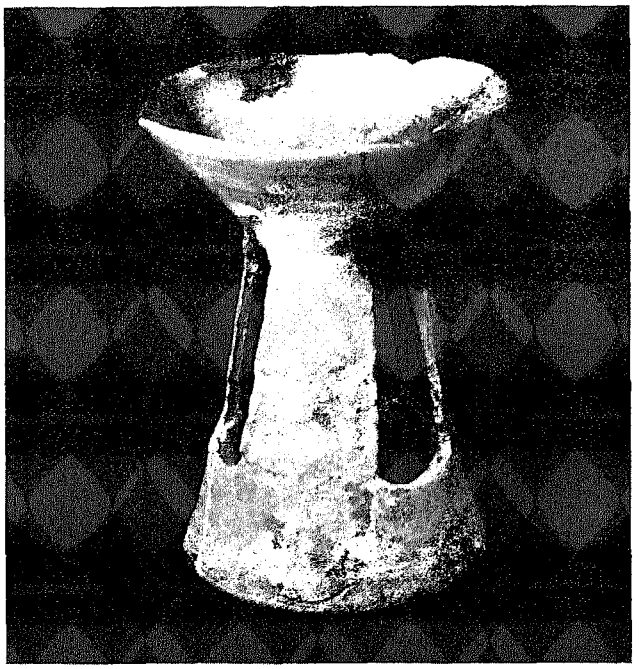
Although the use of incense is considered a symbolic expression of a mythic reality in the ancient Near East, there are hardly any traces of etiological myths explaining the origin or beginning of the use of specific incense materials. This is surprising in a world permeated by mythology because myth legitimizes the use of specific materials for specific purposes. The only complete myth of origin of a specific incense material is found in Ovid's *Metamorphoses* (10:298–518). It deals with the origin of myrrh and legitimizes its use in connection with death and funerals. The Hebrew Bible testifies to various uses of incense, but has no myth of origin; it only informs us that God likes the smell of offerings, including or excluding incense (cf. *Gn.* 8:21; *Lv.* 1:9, 2:2). The gods of ancient Assyria-Babylonia also appreciated the fragrance of incense offerings (cf. the Gilgamesh epic, 11:158). Even in Egypt, where so much incense was burned, there is no myth of origin, although there is the Egyptian word for incense, *sntr,* "that which makes divine." In the linguistic metaphors and images connected with incense there are hybrid expressions of exalted feelings that allow for the use of mythological images in connection with incense. For instance, incense is called the Eye of Horus, although it does not play any major role in the myths connected with Horus and Osiris. The term is, therefore, a symbolic expression at best. In the pyramid texts, which describe the funeral and the worship of the dead ruler, it is said of the dead king about to become a god that his "sweat is the sweat of Horus," his "odor is the odor of Horus," referring to the incense fumigation in the cult of the dead king. Incense makes divinity.

Incense and the Human Body. Although there is no myth of origin for the use of incense in the ancient Near East, it can still be maintained that its use is legitimized by myth—by the gods—simply because its use is supposed to be appreciated by the gods. This appreciation has far-reaching consequences for the way it is used. It seems that the earliest use of incense is connected with death, funerals, and the worship of the dead. In Egypt the pyramid texts relate the funeral of the dead king. The mythic idea of the ceremonies associated with the funeral and the cult of the dead king is to make him a god who lives forever. It is for that purpose the incense is being burned. Incense enables the king to obtain the stated purpose because it possesses divine qualities: it purifies from putrefaction and evil odor, it protects against evil, and it bestows upon the king the odor of the divine world, from where incense mythically derives. Incense furthermore facilitates the physical transference of the king to heaven: the smoke forms a staircase from earth to heaven. Incense is able to make the dead live again because death in the ancient Near East was never considered a natural necessity but, rather, a mythic accident.

Incense material was also used in embalming the dead body. It was thought to preserve it and keep it alive. Incense has the same function in the cult of the dead. In the tombs statues representing the dead were erected in inaccessible rooms that the Arabs call serdab, "basement." These rooms have one or two small openings in one of the walls through which the cult of the dead person could take place. The serdab statues were fumigated with incense to assure that the dead stay alive. The same belief can be found behind the Phoenician sarcophagus inscription from Byblos that tells its reader that the dead person lies in myrrh and bdellium.

In the Bible there is only slight evidence of the use of incense at funerals: for example, Joseph's body may have been prepared according to Egyptian standards (*Gn.* 50:26). *2 Chronicles* 16:14 describes the funeral of King Asa. His bier is said to be filled with all kinds of spices prepared by the perfumer's art. Incense may have been among those spices, but Israel did not share the same profound belief in the divinity of afterlife as the Egyptians. Thus, the Israelites used less incense at funerals and in the cult of the dead. The same is true for Assyria-Babylonia; like Israel, it had a more somber view of life after death.

The belief that incense ultimately derives from the gods is also responsible for its use as medicine. Medicinal use is amply testified in Egyptian and Assyro-Babylonian medical texts and in the Bible. *Jeremiah* 8:22 seems to indicate that *ṣŏrî* ("storax"?) could be used to cure diseases and wounds. It is also a mythic idea that incense used as a perfume is able to make an individual divinely beautiful. Perfume is thought to transfer a person to another, more elevated sphere of life (cf. the Egyptian queen Hatshepsut, who perfumes herself in myrrh oil or stacte, a sweet spice used in preparing incense; cf. *Sg.* 5:5).



INCENSE. *Chalcolithic incense burner, c. 3500 BCE.* (Courtesy Pictorial Archive)

Incense in Divine Worship and in Trade. The use of incense in divine worship was widespread throughout the ancient Near East in pre-Christian times. At Medinet Habu, the temple of Rameses III, the priest fumigated the statue of Amun to pave the way for the god who, in the morning, would enter his image. Fumigation with incense meant purification and offering in a single act, an offering intended to attract and soothe the deity at one and the same time. Ashurbanipal gave an excellent reason for using incense in divine worship: he maintained in a prayer that the "gods inhale incense." The Hebrew Bible relates that there were daily incense offerings in the Temple in Jerusalem in front of the Holy of Holies. This so-called *tāmîd* ritual was enacted to purify the room, to attract and please the deity, and to protect the priests in the Temple area.

The ritual use of incense required altars and such incense tools as censers, shovels, and containers, which, in variant forms, have been unearthed at various locations and identified in reliefs and paintings. Among them is the incense burner in the shape of an arm and hand, which is especially characteristic in the reliefs and paintings of Egyptian culture. The horned incense altar belongs to the Canaanites and Hebrews (cf. *Ex.* 30:2), as examples excavated at Megiddo from the tenth–ninth centuries BCE testify. The small South Arabian cubic burner inscribed with the names of incense materials is well known from many sites in South Arabia. One was recently found at Baraqish, in Yemen, in a fourth-century BCE context. The same type of burner has also appeared at Beersheba, Lachish, and elsewhere in Israel in eighth–fifth-century BCE contexts. Incense shovels have been found at Tel Dan in Israel (eighth century BCE) and may be the same type of utensil as the tool described in *Levitcus* 16 as used by the high priest on Yom Kippur in the Temple in Jerusalem. The incense shovel is later depicted in synagogue art. It appears, for example, in the mosaic floor of the synagogue of Severus at Hammath Tiberias (250–300 CE), where it seems to depict a symbol of Jewish worship in the Jerusalem Temple. Numerous ceramic incense shovels of this kind have also been found in the excavations at Sepphoris in Israel. [*See* Dan; Hammath Tiberias; Sepphoris.]

The use of incense created vivid trade relations between South Arabia and the Fertile Crescent (cf. the potsherds with South Arabian inscriptions found in Jerusalem from the seventh to sixth centuries BCE), between Egypt and Syria-Lebanon (cf. *Gn.* 37:25 and many Egyptian literary sources), and between Egypt and Punt. That trade, which included many other commodities, created vast riches and therefore had political consequences: as early as the beginning of the first millennium BCE, the Neo-Assyrians and Babylonians expanded toward the south and west to capture the incense trade. This same trade, in a later period, with the Ptolemies in Egypt and their dominions (cf. the Zenon papyri), became one of the foundations of the kingdoms of Petra and Palmyra. [*See* Petra; Palmyra.]

The New Testament relates that Jesus was buried with myrrh and aloe used as ointments (cf. *Jn.* 19:38–42). In ancient Greece and Rome, fumigations at funerals and in divine worship were common. It seems that the non-Jewish Christians continued the habit of fumigating at funerals but, wanting to distance their liturgy from pagan cults, were reluctant to use incense in divine worship in the first three centuries of the common era. During the fourth century, however, the literary and archaeological evidence suggests that a change took place. In the Syrian church, the Testament of St. Ephraim recommends the use of incense in wor-

INCENSE. *Iron Age II stone incense spoon, c. 800 BCE.* (Courtesy Pictorial Archive)

ship. The Western church also begins to use incense in the fourth century, and Christian censers begin to appear in strata from that time. The idea behind the use of incense in the Christian church is to honor God, to exorcise evil, and to symbolize prayer (cf. *Ps.* 141:2).

The Jews abandoned the use of incense with the destruction of the Jerusalem Temple. Only in the Havdalah ceremony, which marks the end of the holy Sabbath and the beginning of the profane week, do the Jews continue the use of fragrant spices. A benediction was and still is uttered over the box containing the spices, a symbolic act that utilizes the fragrance of the aromatic plants as a device to comfort the Jewish soul saddened by the end of the Sabbath.

[*See also* Burial Techniques; Grave Goods; Medicine.]

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INDO-EUROPEAN LANGUAGES. An extensive linguistic family, the Indo-European (IE) languages are spoken in the western half of Eurasia, stretching from Europe through Central Asia to the Indian subcontinent, across the northern Near East from Anatolia to Iran and Afghanistan, and at one time as far east as western China and Siberia. They are now also the dominant languages in the Americas, Australia, and southern Africa.

The close linguistic relationship of the IE languages is most immediately evident by comparing lexical cognates. The word for *daughter* may serve as an example: among the modern languages, one finds *Tochter* in German, *duktẽ* in Lithuanian, *doč'* in Russian, *thugatéra* in Greek, *dustr* in Armenian, and *dokhtar* in Persian. [*See* Greek; Persian.] The word was *tkācer* in Tocharian, written between the fifth and sixth centuries CE in western China. It is first documented as *duatra* in thirteenth-century BCE Anatolia.

Recognition of the genetic relationship among IE languages began with occasional observations, mainly of lexical similarities between two or three member languages throughout recorded history, but became especially vivid and more comprehensive in the seventeenth and eighteenth centuries. A decisive event was an observation in a speech made by William Jones in 1796, then chief justice in British India, as well as a Persianist and Sanskritist. He postulated that not only Persian and Sanskrit, but also Greek, Latin, Germanic, and Celtic must go back to a common root and must therefore be members of the same family. [*See* Latin.]

The first major breakthroughs in the systematic establishment of the relationships among Indo-European languages were made in the early nineteenth century. This led to the development of linguistic science—that is, the study of language in its comparative, historical, and synchronic aspects, conjoined with the study of cultural history. The methodologies developed by Indo-Europeanists soon began to be applied also to the research of other language families and provided the foundations of general linguistics. Overall, there are eleven well-attested dialect groups, or dialects, that can be distinguished.

The Anatolian languages were first recognized as Indo-European in 1902, and their discovery resulted in a fundamental reassessment of the diachrony and structure of IE. These languages were spoken in large parts of Anatolia and the northern Levant during the second and first millennia BCE. They include Hittite, Palaic, Luwian, Lydian, and Lycian and a few other less well-attested dialects. [*See* Hittite; Luwian.] Best documented in Cuneiform Hittite. [*See* Cuneiform.] Beside personal names and a few Hittite loanwords in Assyrian tablets found in Kaneš/Kültepe in Cappadocia (eastern Turkey), dated to the nineteenth century BCE, it is most abundantly documented on some twenty-five thousand tablets found in the archives of the Hittite capital, Ḫattuša/Boğazköy, now Boğazkale, in central Turkey. [*See* Assyrians; Tablet; Kaneš; Kültepe Texts; Libraries and Archives; Boğazköy.] Its three stages are Old Hittite (c. 1700–1500 BCE), Middle Hittite (c. 1500–1350 BCE), and Neo-Hittite (1350–1200 BCE). Palaic, spoken to the north of the Old Hittite empire, is found in a small number of texts from the same archives.

Luwian was spoken throughout the southern parts of Anatolia. It is documented from about 1400 to 200 BCE in three periods, which also reflect dialect variants: Cuneiform Luwian is found in the archives of the Hittite New Empire (c. 1400–1200). [*See* Hittites.] Eastern Luwian is represented by Hieroglyphic Luwian (formerly called Hieroglyphic Hittite) from the period of the Neo-Hittite states (c. 1200–700 BCE) in northern Syria. Western Luwian is represented by Lycian, documented by some 150 inscriptions (c. 400–200 BCE), and Lydian, with some seventy inscriptions, mostly from the capital city of Sardis in northwestern Turkey, dated to the sixth–fourth centuries BCE. [*See* Sardis.] These were written in eastern and western types of the Greek alphabet, respectively.

The Indo-Iranian, or Aryan, languages consist of three groups: Iranian, Indic (also called Indo-Aryan), and Nuristani. The earliest attestation of these languages is an early

form of Indo-Aryan. It is reflected in royal and divine names and technical terms related to horse training and racing in Hurrian texts of the Mitanni period (fifteenth century BCE onward) and found in the Hittite archives. [*See* Hurrian; Mitanni.] Thereafter, Indo-Aryan emerges first in the northwest of the Indian subcontinent. The vast literature begins with the religious texts, the Vedas, whose earliest parts may date to the middle of the second millennium BCE. The classical language, Sanskrit, was codified in a quasi-algebraic code in about 400 BCE by the grammarian Panini in the Panjab and has remained the standard learned language. Middle Indic begins in about the third century BCE, notably Buddhist Pali and the vernaculars, the Prakrits. The modern Indic languages have been attested since the end of the first millennium CE and are spoken in the northern half of the subcontinent, but also in Sri Lanka and the island groups; they include such languages as Kashmiri, Panjabi, Gujarati, Marathi, Nepali, Sinhalese of Sri Lanka, and Hindi/Urdu (in Devanagari/Arabic script, respectively), which is lexically replete with Persian (with the latter's Arabic and Turkish components), and finally Romany, the language of the Gypsies. [*See* Arabic.]

The Iranian languages were once spoken from the southern Ukraine across Central Asia into western China and western Siberia. They are divided, geographically, into a northern (traditionally called eastern) and a southern group and, historically, into old, middle (c. third century BCE–eighth century CE), and modern stages. Speakers of the southern group, notably the Medes and Persians, entered the plateau of Iran during the first centuries of the first millennium BCE. [*See* Medes.] Iranian is first documented in the Old Persian cuneiform inscriptions of the Achaemenids (559–330 BCE). Little is known about the language of the Medes, who preceded the Achaemenids. Linguistically older are the texts in Avestan, probably spoken in northeastern Iran, which include Gathic Avestan, the language of Zarathushtra (c. 1000 BCE), and so-called Younger Avestan texts, some of which may date in part to the middle of the second millennium BCE. Middle Persian is well attested, and to a lesser degree (Middle) Parthian, spoken in northeastern Iran. The old and middle northern Iranian languages include Scythian, once found from the Black Sea to Siberia and best documented in extensive texts in the Saka dialect from Chinese Turkistan (late first millennium CE); Sogdian, in Central Asia, documented in extensive texts (first millennium BCE); Khwarazmian, documented south of the Aral Sea and known mainly from glosses in early medieval Arabic texts; and Bactrian (first millennium CE), known from inscriptions. Today, the southern Iranian languages include such widely spread languages as Persian, spoken in Iran, Afghanistan, and Tajikistan; Kurdish, spoken in eastern Turkey, northern Iraq, and northwestern Iran; and Baluchi, spoken in southeastern Iran, southern Afghanistan, and southwest Pakistan. The modern northern languages are confined to the east and include Yaghnobi in Tajikistan; the so-called Pamir dialects; and, foremost, Pashto in Afghanistan and Pakistan. Ossetic is spoken in the central Caucasus as their sole representative in the west, continuing the language of the Alans.

The Nuristani languages are attested only from modern times and are spoken in a few villages in the mountainous Hindukush area on the borders of Afghanistan, Pakistan, and India; they may have branched off from Early Indo-Aryan, rather than constitute an independent branch of Indo-Iranian.

Greek, also called Hellenic as a language group, is first attested in its most archaic form, called Mycenaean, in the thirteenth century BCE. It was written on more than thirty thousand tablets, in the so-called Minoan B syllabary script, that were found at Knossos on Crete and at Mycenae and Pylos on the Greek mainland and deciphered in 1952. [*See* Crete.] This culture collapsed by the twelfth century BCE. Later epigraphic records of Greek appear from the seventh century BCE. Four main dialect groups are distinguished: Arcadic, Aeolic, Doric, and Ionic, with a complex distribution pattern; they were spoken on the mainland and on the islands and in western Anatolia and in Greek colonies around the Mediterranean and Black Seas. The dialect of the Homeric epics, dated to about 800 BCE, combines both Aeolic and Ionic features. Beginning in the fifth century BCE Attic Greek increasingly overlaid the dialectal diversity in Greece, Anatolia, and elsewhere, and as the koine "common" dialect, gradually replaced it. This happened most significantly after Alexander's conquests in the late third century BCE, which led to the Greco-Bactrian culture in northern Afghanistan, the Gandhara culture in northwest Pakistan (until the seventh century CE), Ptolemaic culture in Egypt, and the hellenization of Anatolia and the Levant (where the New Testament was composed in Hellenistic Greek). [*See* Ptolemies; Biblical Literature, *article on* New Testament.] Medieval Greek was the language of the Byzantine empire (since 330 CE). Modern Greek (since c. 1200 CE) developed out of this koine, which led, by the end of the nineteenth century, to the contest between atticizing *kathareúousa* ("purist") and *dēmotikḗ* ("popular") literary styles, the latter becoming dominant.

Italic languages comprise Latin, spoken originally in the small region of Latium and Rome; Faliscan, in a tiny area north of Latium; Oscan and Umbrian, found over the entire area of central to southern Italy; and Venetian, between the Po River, the Carnic Alps, and Istria. The earliest documents in Latin come from Latium and are dated to the sixth century BCE. Oscan-Umbrian and Venetian documents, mainly tablets and inscriptions, date to the last centuries BCE. By 100 CE at the latest, Latin had erased the other languages and dialects from Sicily to the Alps, with the exception of the southern Greek colonies. Similarly, the expansion of the Roman empire brought about the emergence of the Romance languages, including (beside Italian), Sardinian,

Spanish, Portuguese, French, Rhaeto-Romanian, and Rumanian. [*See* Sardinia.]

The Celtic languages had their widest distribution, across Europe, between the fifth century BCE and the third or fourth century CE. Known from inscriptions beginning in the second century BCE and from glosses, Continental Celtic includes Ibero-Celtic in central Spain, Gaulish in France up to the Low Countries (Belgae), and Italo-Celtic in northern Italy, all of which were erased by the evolving Romance languages by the fourth century CE, while the Celtic of Germany succumbed to Germanic. Celts, called Galatians, moved into Anatolia in the third century BCE and appear to have retained their language amid Phrygians in central Anatolia until the fifth century CE (according to St. Jerome). Celts appear to have reached the British Isles in the fifth century BCE. Insular Celtic is found in two branches. Goidelic, or Gaelic, the old name for Irish, has three branches, Irish, Scottish Gaelic, and the Gaelic of the island of Manx (extinct since the late nineteenth century). The earliest Irish-Gaelic texts were written in the stroke-and-notch ogham alphabet between the fourth and eighth centuries CE, followed in the late seventh century by Old Irish texts in Roman characters. Brittonic, or Brythonic, includes Welsh, which is first known from texts dating to about 800 CE, as well as Cornish (extinct since the late eighteenth century) and Breton, imported to Brittany before 800 CE, both first known from glosses between 800 and 1100 CE.

The Germanic languages originated in southern Scandinavia and initially spread to the coastal areas of the North Sea and the Baltic Ocean from the Netherlands to the Vistula River. They are first mentioned in Roman records in the late second century BCE and are first documented in third-century CE runic script from southern Scandinavia. There is much debate about the early groupings. They include North Germanic in southern Scandinavia; North Sea Germanic, along the North Sea; Rhine-Weser Germanic, along the middle Rhine and Weser Rivers; Elbe Germanic, along the Middle Elbe River; and East Germanic, between the middle Oder and Vistula Rivers. By 250 CE, Elbe Germanic is found in the south at the Danube River and East Germanic in the area of the Carparthian Mountains. Many of these groups began their great tribal migrations toward the end of the fourth century CE, to the west (the Low Countries, England), south into Celtic-speaking areas, and east. The East Germanic Goths appear to have moved to the Vistula area as early as the second century CE. Farther south, they subjected the Iranian-speaking Sarmatians in the southern Ukraine in about the middle of the fourth century. The Gothic Bible translation by Bishop Ulfilas at about that time represents the earliest and most extensive documentation of early Germanic. While the tribal federations of the Visigoths and Ostrogoths migrated farther west to Gaul, Spain, and Italy, Gothic appears to have lasted in the Crimea into the sixteenth century CE. The other Germanic languages (texts in the various dialects are found from about 750 CE onward) are roughly grouped into two divisions: Old Low German (including Saxon and Lower Franconian) and Old High German (represented by the remainder, including Upper Franconian, Alemannic, Bavarian, and Langobardic in northern Italy). The middle period leads to the modern period by about 1400 CE, including such languages as Modern German; English; the languages of the Lower Countries, Scandinavia, Iceland; and Afrikaans in South Africa.

The Slavic, or Slavonic, languages probably originated in the northern Balkans. They are first alluded to in the first two centuries of the common era. Their vast and rapid expansion in all directions began in the fifth century, especially after the disintegration of Hunnic power in the east, and lasted until the tenth century. They expanded into Baltic and Finnic areas (Novgorod, c. ninth century CE) and, farther east, toward the Ural Mountains, reached the Dnjepr River and established the Ukraine "borderland" (Kiev was founded in c. 600 CE). In the west, they expanded into formerly Germanic-speaking territory to the Elbe and Saale Rivers, south into Moravia and Bohemia up to the Austrian Danube valley, farther east to the Great Central European plains into Hungary, to Slovenia, and, from there, together with the Turkish-Iranian Avars, into the Balkans, Serbia, and Croatia. They reached Greece and even the Aegean islands and Crete, and good numbers of Slavic-speaking people settled and were absorbed in northwestern Anatolia. This coherent Slavic-speaking area was split by the reassertion of German in the Austrian Danube valley and of Rumanian and by the incursion of the Finne-Ugric Magyars, or Hungarians, in 896 CE. Written Slavic began with Old Church Slavonic, or Old Bulgarian. It is based on the Macedonian-Bulgarian Slavic dialect of the city and hinterland of Salonika, which the Greek brothers Cyril and Methodius employed for translating Christian texts from Greek, beginning in 863 CE. This church language considerably affected the subsequent developing literary languages, including Russian.

The Baltic languages probably originated in the present Polish-Russian border area and, as suggested by place and river names, once reached as far east as Moscow. Except for the Baltic coastal areas, they were superseded by the expanding Slavic languages beginning in the middle of the first millennium CE. Both Lithuanian and Latvian, or Lettish, are first documented by texts dated to the sixteenth century, while Prussian, spoken in the coastal areas from the Vistula to the Nemen, or Memel, River, is first recorded in the fourteenth century but was absorbed by German by 1700. Baltic is often joined with Slavic into a single dialect group of IE called Balto-Slavic. However, they are so different they must be considered to have originally been separate groups that converged considerably. It is probable that the origins of Slavic are to be partially sought in the Iranian languages of the Ukraine and southern Russia.

In addition to these IE dialects, there are a number of poorly attested examples in the Balkans. These include Dacio-Thracian in Romania and Bulgaria (some twenty-five words are from the fourth or fifth century BCE), which may have survived sporadically into the sixth century CE. Phrygian, spoken in northwest Anatolia, where the capital was Gordion, is documented in two stages: Old Phrygian is found in some twenty-five inscriptions from the eighth to sixth centuries BCE, and New Phrygian is found in some one hundred inscriptions from the first three centuries CE, written in an archaic and common Greek alphabet, respectively. [*See* Gordion; Writing and Writing Systems.]

Armenian, spoken in the southwestern Caucasus mountains, is an original member of the East Balkan group of IE dialects and may have originated in Moesia, the province just south of the lower Danube River separating Dacia from Thracia. [*See* Armenian.] The name is also found as Mysia in northwestern Anatolia and may be reflected in the Muski, who, in cuneiform records, are located on the Upper Euphrates River early in the twelfth century BCE. [*See* Euphrates.] Their self-designation *Hay* (pl., *Hayk'*) may continue the term *Hatti/Hittite*. Armenians would thus be the easternmost reflex of the expansion of the East Balkan group of IE that swept into and through Anatolia in the twelfth century BCE and destroyed the Hittite empire.

Linguistically, Armenian appears to have emerged out of the convergence of the immigrant language with the local Urartean, Hurrian, and Caucasian languages. [*See* Urartu.] It was under heavy Iranian influence from the eighth century BCE through the first half of the first millennium CE, under the Medes, Achaemenids, Parthians, and Sasanians, during which time Armenian lost much of its inherited lexicon. [*See* Parthians; Sasanians.] Old, or Classical, Armenian began to be written in the early fifth century CE in a Greek-based alphabet, with similarities to early Middle-Persian Aramaic-based alphabets invented by Bishop St. Mesrob. [*See* Aramaic Language and Literature.] Western Armenian developed with the Armenian colonization of Cilicia and the establishment of the kingdom of Cilicia (1198–1375 CE). [*See* Cilicia.] The modern period began in the fifteenth century. During the nineteenth century, two main literary variants evolved, a western one in the Armenian colony of Constantinople/Istanbul and an eastern one in Armenia, based on the dialect of Yerevan and the Ararat (cf. ancient Urartu) valley.

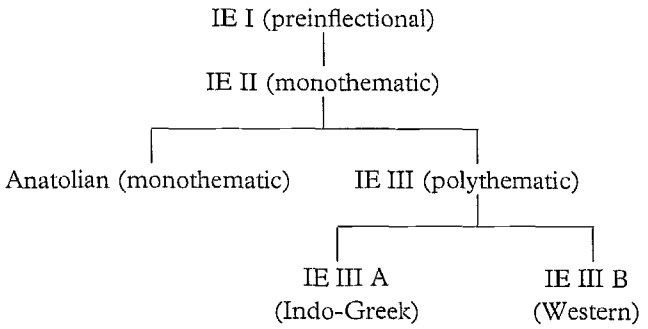
Albanian is an isolated IE language on the eastern Adriatic coast, with two main dialects, Gheg in the north and Tosk in the south, the official language since 1950. Albanians are first mentioned by Ptolomy about 150 CE, and have withstood early celtization, then romanization and slavization. The first written records begin only in the late fifteenth century CE with a brief religious text. Linguistically, Albanian appears to have closest affinities with Thracian, about which little is known, rather than with Illyrian, which was once spoken in the western half of the Balkans.

Tocharian is only known since 1908. It is an isolated IE language once spoken in the Tarim Basin in western China. There are two distinct languages, labelled Tocharian A and Tocharian B, or Eastern and Western Tocharian, respectively. Linguistically, Tocharian is strikingly different from the neighboring Iranian languages, and closer to the European dialects of IE, so that it has been suggested that the Tocharians may have migrated east as early as the end of the third millennium BCE prior to the Iranian expansions. The discovery of Tocharian in the far east forced the rethinking of the traditional groupings of the IE dialects, in particular, it proved to be a centum-language with plain velar stops like the European languages where the eastern satem-languages Indo-Iranian and Slavic have developed sibilants (see discussion of velars below).

Finally, it is only recently (1987) that Bangani, a language in the Garhwal district of the Indian Himalayas, has become known. It has proven to have an archaic centum-layer overlaid by Indic; a similar layer was found in Baltic and Slavic areas.

Grammatical Features. The grammar reconstructed for common IE is an abstraction—the result of systemic comparison. The evidence of the attested dialects was retraced to common denominators, from which, in turn, all features can be derived. Before the Anatolian languages became known early in the twentieth century, the reconstruct was essentially the common denominator of Indo-Iranian and Greek, the two best-known and most highly developed systems, so that the other dialects appeared as reductive. This system of the so-called Neogrammarians continues to be held by a few scholars, albeit with substantial adjustments (e.g., Szemerényi, 1990). With the discovery of Anatolian, the question of common IE became a major issue—in particular whether Anatolian and the rest of the IE languages derive from a yet earlier Hittite-IE ancestor called Indo-Hittite, or Anatolian split off from common IE, as is now generally held.

"Common" is generally understood to be the last stage before dispersal and major dialectal differentiation. At the other end is the notion of the earliest stage that can be reconstructed. In effect, staging is essentially based on the degree of complexity in inflection. Accordingly, the earliest stage of IE is assumed to have had no inflection—leading to the stage shared by Anatolian and the remainder of the dialects and to a stage where major groupings have already occurred. Given the known geographic areas of the dialects relative to each other, the diachronic scheme is correlated with approximate location. A prominent model is the so-called space-time model (Meid, 1975). For example, Francisco Adrados (1992) proposes the following diagram:



For a summary of the features thought to have characterized the stage common to Anatolian and the other dialects, see Mayrhofer (in *Indogermanische Grammatik* 1.2, 1986) on phonology and Szemerényi (1990) on morphology.

The focus on phonology and inflection has resulted in the relative neglect of larger syntactic issues, and the syntactic studies that have been done have not attracted general attention. A notable early example is the monumental study by Berthold Delbrück (1871–1888), who established IE as a S O V (subject-object-verb) language. With the renewed attention to linguistic universals and typology, syntactic issues are increasingly the focus in comparative historical reconstruction. The basic systems of nominal and verbal inflections are described below.

Nouns. The nominal inflection in IE is based on stems, which are either the plain root or derived by suffixes. They are grouped morphologically into stem classes: consonantal, diphthongal, resonantal-vocalic *i-*, *u-* stems, and vocalic "thematic" *o*-stems, which are relatively more recent than the others. For example, **ped-*, "foot"; **gwow-*, "cow"; **pót-i-*, "master"; **suAn-ú-*, "son"; **kwékwl-o-*, "wheel, wagon."

The basic gender distinction is that between animate and nonanimate, which is morphologically marked by the formal identity of the nominative and accusative in neuters. This basic gender distinction corresponds to the distinction between genus commune and genus neuter in Anatolian. In the other dialects is found the further distinction between masculine and feminine gender, the latter marked by the long stem endings **-ā, *-ī, *-ū* (**-eA, *-iA, *-uA*), and the feminine **-o*. The origin of this triple distinction remains unclear. It may have originated partially in the pronominal system (but cf. the female kinship terms below). The three diachronic layers are still reflected in such languages as Latin: no distinction in m./f./n. *fēlix*, "frugal, happy" (consonantal stems); binary distinction in m./f. *facilis*, n. *facile*, "easily done"; and triple distinction in m. *bonus*, f. *bona*, n. *bonum*, "good."

The nominal endings distinguish the three numbers—singular, plural, and dual—and inflectional cases, which are grouped as follows: three "grammatical" cases—nominative, accusative, and genitive; four "adverbial" cases—ablative, dative, locative, and instrumental; and the vocative. Morphologically, the cases are most differentiated in the singular and least in the dual. In the singular, genitive = ablative; in the plural, dative = ablative; in the dual, dative = ablative = instrumental and nominative = accusative. In these two numbers, vocative = nominative. Table 1 shows the pattern in the singular of consonantal stems (vocative omitted).

The case endings of the thematic *o*-declension differ to some degree. Thus in the singular the endings are: nom. **-os*, acc. **-om*, gen. **-os-yo*, abl. **-ōd*, dat. **-ōi*, loc. **-ei/oi*, instr. **-ē/ō*; voc. **-e*; the neuter has **-om* in both nominative and accusative.

This system overlayed an archaic inflectional pattern, the so-called heteroclisis. The latter is marked by the opposition of continuants (**s, *H*, resonants) in the nominative-accusative vs **-n* in the genitive. Hittite has preserved some of this inflection, e.g., Hittite nom.-acc./pahur/, gen./pahwenas/ < **peAwr, *pAwen-*. In the other dialects, either stem was generalized and fitted into the new inflectional patterns. For example, **-r* is generalized in English *fire*, but **n* in Gothic *fōn*, "fire." A particularly archaic example may be animate **mar-/*man-u*, "human." The *r*-stem is found in Anatolian-Aryan *mar-ya-nnu*, "charioteer, young nobleman"; Indic *már-ya*, "young man"; Greek *meîrax*, "girl"; Lith. *mar-tì*, "bride, virgin." The *n*-stem is found in Indic *mánu-ṣ*, "man, human"; Russian *mu-ž* "man"; German *Mann, Men-sch.*

While in nouns the basic pattern is nominative-accusative

TABLE 1. *IE case endings*

SING.	Indic	Greek	Latin	Hittite	IE
Nom	s	s	s	s	*s
Acc.	am	a	em	an	*m
Gen.	as	os	is	as	*es/os/s
Abl.	as (at)		(od)	az	= Gen. or*-d
Dat.	e	i	i	i	*ei
Loc.	i	i	e	a	*i/*Ø
Instr.	a	e	e	it	*eH/oH, bhi/mi

TABLE 2. *Basic case forms*

	Indic	Greek	Slavic	Hittite	IE
1s nom.	ahám	egṓ	azu	ug/amug	*eg′ (h)-
acc.	mām	emé	mene	amug	*me-
2s nom.	tvam	su	tu	tsig	*tu
acc.	tvām	se	tebe	tug	*t(w)e-
1p nom.	vayám	hemeīs	mu	wes	*wei/*n̥smés
acc.	nas	heméas	nasu	nas	*nes/*nos
2p nom.	yūyám	humeīs	vy	sumes	*yūs/*usmés
acc.	vas	huméas	vasu	smas	*wes/*wos

vs. genitive, the personal pronouns have the basic binary opposition nominative versus accusative-genitive. The adverbial case endings, which are more archaic than the nominal ones, are added to the latter. Table 2 shows the two basic case forms in the singular and plural of the first and second persons.

Common IE therefore distinguished between three types of declension. If these are considered as a system, they reveal a scale of animacy and an intersecting pattern of morphological, syntactic, and semantic case distinctions that are shown as in Table 3.

Verb system. The typical finite verb form of IE distinguishes the following categories: aspect-mood-person-number-voice-tense, in that order. Within these categories, the following basic distinctions are made: aspect—imperfective versus perfective (i.e., incomplete versus complete action), mood—indicative, subjunctive, optative, and imperative; person and number—first, second, and third person in singular, plural, and dual; voice (also called verbal gender, or diathesis)—active versus mediopassive, or middle (i.e., person as agent versus person affected by action or situation); and tense—present versus past (also called preterit). Anatolian lacks the subjunctive and optative, as well as the dual.

Morphologically, aspect is distinguished in the stem (root, or root + suffix, with ablaut). The other categories are indicated by suffixes and endings. For example, Avestan *bar-a-t-i* ("bears, carries") has the imperfective stem *bar-a-* ("present" stem **bher-* + thematic **-e-*); the mood is indicative (absence of the subjunctive **-e-* or optative **-yeE-*/**-iE-*); the person is third singular **-t*; the voice is active (absence of the mediopassive suffix **-o-*); and the tense is present, which is indicated by **-i*. Finite verbs do not show gender distinctions that correspond to masculine, feminine, and neuter in the nominal inflection. There is no original verbal prefixation. There are various other differentiations, attested as early as Hittite: suffixes and infixes that originally specified incomplete action as to the kind of action (called *aktionsart*), such as intensive, iterative **-s-k'-*, and **-n-* (reflected in pairs such as the Latin *jug-are,* "yoke," and *ju-n-g-ere,* "join").

Comparative reconstruction suggests that, underlying this developed system, is the yet more fundamental distinction between activum and perfectum. These can be described as the marking of agency and action as opposed to a situation, state, and result. This distinction differs from that between the active and mediopassive voice). The perfectum is exemplified by the root **weid-* ("see"), whose perfect has developed into a so-called perfectopresent, "have seen" > "come to know." This is reflected, for example, in Indic *véd-a, vét-tha, véd-a;* Greek *(u)oid-a, (u)ois-tha, (u)oid-e;* Gothic *wait, waist, wait*—all meaning "I know, you know, he/she/it knows." This is comparable to the English *put on* ("activum") versus *wear* ("perfectum").

Indo-European Homeland. The IE homeland has been

TABLE 3. *Basic semantic case distinctions*

SEMANTIC SYNTACTIC MORPHOL.	Agent Subject Nominative	Patient Object Accusative	Other Other Genitive	
Pronoun	*eg′(h)-	*me-	*me-	"I"
Animate	mā́tēr *wl̥kwo-s	*mātér-m̥ *wl̥kwo-m	*mātr-ós *wl̥kwo-s-yo	"mother" "wolf"
Inanimate (neuter)	*peAwr *yugó-m	*peAwr *yugó-m	*pAwen-s *yugó-s-yo	"fire" "yoke"

located anywhere between western Europe and northern Central Asia, in Anatolia, and in the southern Caucasus region. A consensus is emerging that the formative area was the northern Pontic (Black Sea), from the Dniepr River to the Caspian Sea. The period suggested for the formative phase is the Late Neolithic/Eneolithic (4500–3500 BCE). The common phase may have ended by 2500 BCE. The main lines of the arguments here largely follow James Mallory (1989).

The earliest attestation of IE is Hittite, in approximately 2000 BCE. Also found in Anatolia, by about 1500 BCE, is Indo-Aryan, which is already clearly differentiated from Iranian. Accordingly, even though there are no yardsticks for the rate of linguistic change, the latest date for the breakup of the IE unity could be set by 2500 BCE. (The earliest known IE term may date to about 3000 BCE, if the Sumerian *gigir* and Semitic **gagal* derive from IE **kwé-kwl-o-*, "wagon wheel".)

The lexicon shared by all IE dialects reflects the first revolution and the secondary-products revolution in economy and technology—including the domestication of animals, agriculture, and vehicular technology—and, finally, the innovative coinage of vocabulary (nouns and verbs) to reflect the technology of the equine revolution, which is dated to the early fourth millennium or earlier.

One approach to locating the homeland of IE is to identify its so-called center of gravity. By taking the distribution of the dialects in use by about 100 BCE, when most of the known IE dialects had emerged (the Iberian Peninsula to western China and India) and considering the area of highest variety (Central-Eastern Europe), the center of the belt can be located at between 20 and 30° East—the Pontic region. The region is compatible with the common IE lexical material relating to the physical environment, fauna, and flora. This is supported by observations concerning naming. For example, the referential meanings of IE tree names are best preserved in the Baltic-Slavic regions but are shifted considerably in Greek (Friedrich, 1970). Similarly, the domestication of the horse, which is recognized as a determining factor in the IE expansion, appears to have occurred between the northeastern Pontic-Caspian region and the southern Ural Mountains.

The next line of arguments considers linguistic contacts. There are no known transitional languages between reconstructed IE and other language families. However, contact is clearly evident with the Uralic language family, in particular Finno-Ugric. There are two distinct layers. The younger layer are loans from Indo-Iranian, and specifically Iranian; for example, **pork'-o-* ("pig"), Iranian **parsa*, Finnish *porsas*, ("pork"), and Votyak, *pars;* Iranian *satam* ("one hundred"), Finnish *sata.*

None of the other language families has the same degree of similarities with IE as Uralic, although Semitic continues to be seriously discussed. A large number of Semitic-IE lexical pairs have been suggested, but the systematic sound correspondences are difficult to ascertain. The Semitic laryngeals have been compared with the IE laryngeals, but again there are few convincing correspondences, and the phonological features of the IE laryngeals are quite uncertain.

There may nevertheless be a truly archaic connection between these families. It has been argued that the six language families—Afro-Asiatic (Hamito-Semitic), Kartvelian, Indo-European, Uralic, Altaic, and Dravidian—belong to a single phylum, for which Holger Pedersen (in 1903) coined the term *Nostratic* (from Lat., *nostras,* "one of ours"). Nostratic studies were propelled in the 1960s by Illič-Svityč but have found strong opposition, largely because of the difficulties in indentifying sound rules as exacting as those that are customary in IE studies. Part of the difficulty in evaluating these efforts may be that it is not always realized that Nostratic cognates are established via common Nostratic, not between two families—for example, IE and Kartvelian, directly—and that not all items identified as Nostratic can be expected to be found in IE (see Manaster-Ramer, 1993).

The next step toward identifying the area of common IE combines linguistics with archaeology and correlates the layers of the dialectological configurations of IE with major archaeologically identified cultural layers and patterns of diffusion. Two such major patterns are known. The first is the spread of agriculture from eastern Anatolia into Europe; the second is the much later spread of numerous distinct cultural features from the Pontic-Caspian regions into Europe and into Asia. [*See* Agriculture.]

The spread of agriculture from Anatolia into Europe, called the wave of advance, begins in the Early Neolithic period, about 7000 BCE (Renfrew, 1987). It first reaches Greece and the Balkans and from there spreads into the remainder of western and northern Europe. This wave swings around the northwestern corner of the Pontic region and, from there, farther east, where steppe pastoralism becomes the main feature. This wave is followed by the progress of the secondary-products revolution. Moving east, the wave reached Iran and the Indian subcontinent, as well as Central Asia.

Colin Renfrew (1987) advocates the correlation of this wave with the spread of IE, which would make Anatolia the IE homeland. However, it has become obvious that the pattern of its progress does not agree at all with the internal dialectal structuring of the IE dialects: it would require the move of the original speakers of IE out of Anatolia and the return of such groups as the speakers of the Anatolian languages back into it. The original group would also have to become entirely extinct because the Anatolian languages as well as Armenian are entirely superimposed on non-IE, such as Hattic and Hurrian-Caucasian. Moreover, those languages are typological, and lexically they are completely different from IE—they lack any discernible trace of earlier contact with IE. It has also been noted that an early spread

across Europe would have resulted in much greater differentiation of IE than is found in the attested dialects. Equally crucial is that the source area of IE must have known not only vehicular technology, but also the technology of the equine revolution, which excludes seventh-millennium Anatolia. The source of the second differentiation is the Pontic-Caspian region. It fits well both geographically and temporally with the technoeconomy and with the internally reconstructed dialectology and its phases of IE. This conclusion was forcefully drawn in the 1960s by Marija Gimbutas (1965) and has been argued convincingly by Mallory (1989).

Indo-European Kinship Terminology and Social Structure. The kinship terminology of IE is the only cognitive system, beside the decimal system of numbers, that has remained so remarkably intact it can by and large be linguistically reconstructed, at least phonologically (e.g., Szemerényi, 1977; Mayrhofer, in *Indogermanische Grammatik,* 1986); however, its etymology has remained obscure. Delbrück (1889) pioneered the first major survey and study of the topic but rejected much of the speculation of his time, both in terms of etymology and of the societal systems derived from it. The most recent study focuses on etymology, much of which has been subjected to strong criticism (Szemerényi, 1977). There appears to be little agreement, except that the system overall seems to have been patriarchal, patrilineal, and patrilocal. A large number of kinship terms can be reconstructed for common IE. The dialects vary greatly—from Anatolian, with very few, to Slavic, whose inherited linguistic network is virtually intact in a modern setting and should serve as the guideline for reconstructions.

Reconstruction and Reality. In the late twentieth century a renewed and vigorous debate occurred about the emergence of languages, the principles of reconstruction and their underlying assumptions, and the reality of the reconstruct. Most, if not all, of the issues and points appear to be commonsensical and to have already been made during the two hundred years of Indo-European study. However, a new degree of consensus appears to have been reached. First, it is commonly agreed that IE is not the Ursprache of humankind, and that it did not evolve out of naught, but that its nucleus emerged out of non-IE. There is agreement that the development of diversified forms is the result of multiple mergers. Three main models have been isolated. For the initial emergence of IE the model is the creole, which typically develops out of the pidgin, inflectionless amalgam of the languages of a *colluvies gentium* (including cossack-type mercenaries returning from the Near East), into a functioning natural language within one of two generations. However, pidgins and creoles always reflect one major donor language (note Pidgin English), which is still unidentified for earliest IE. Another model is the *Sprachbund,* in which genetically unrelated languages develop not only lexical, but also phonological and grammatical, similarities (according to the wave theory of language diffusion). The third model is that of the koine, in which a dominant dialect erases most others. These three models are not mutually exclusive, nor do they exclude the participation of already diversified dialects anywhere at any stage with others and with non-IE dialects. In each case, one of the dominant speech groups continued IE in the form into which it had changed, which may be incompletely learned IE.

As to the real time it might have taken for the initial consolidation and the subsequent diversifications, there are only guesses. Both Romance and Slavic developments are documented, but they cannot be generalized and projected backward into entirely different conditions. No method yet exists for measuring the rate of linguistic change similar to DNA sequencing. Glottochronology, by calculating the rate of loss of a set of assumed basic lexical items, has not proven convincing.

Recent attempts by archaeologists to correlate archaeological trajectories with the expansion of IE are part of the reason for the epistemological debate in IE studies. There is either common ground or agreement in many respects, including the recognition that genetic-linguistic relationships are not the same as ethnic or as biological relationships. However, linguistic expansion involves the initial move of people, and more people have to find it advantageous to adopt a language—there must be motivation, such as the new technology of rapid transit (the horse, e.g., would have made it cost efficient to move). Beside economic motivation, social mobility is made easier in hierarchically structured societies. The IE social structure must have made it easier for others to adopt that language. What is known of early recorded IE is based on the dialects of dominant elites, whose mobility must have played a major role in the spread of IE. Important information on expansive warrior elites, alliances, peoples, localities, and gods is found in the profuse, but confusing, references in epic and mythology.

It is also agreed, however, that linguistics and archaeology operate with different data within different epistemologies: "Picture and text each require separate specialists in their reconstruction" (Yoffee, 1990). Neither ceramic patterns nor reconstructed rituals or cultures, or their particular assembly, allow for the reconstruction of the language, or languages, that was part of them. Language disappears and can only be reconstructed; artifacts are remains. Language change is not synchronized with cultural change. Locating the emergence of IE in the Pontic-Caspian area assumes that the relative location in time and space of the attested dialects and their immediately preceding stages is sufficiently close to project by triangulation their source backward into the empty linguistic slot. It is here, however, that archaeological data appear to confound linguistic projections, as there does not seem to be a direct link between the Pontic-Caspian cultures to northern central Europe.

Finally, a topic widely debated, but unrelated to the interdisciplinary one, is the ontological status of the linguistic reconstruct, whether identified as common IE, as a preceding stage with less inflection, or as a stage without any inflection. Opinions range from near reality to mere algebraic abstract. A case cited for the former is the verification of the algebraically postulated laryngeals in Hittite. Such discoveries, however, are not seen by many as sufficient for the recognition that any reconstruct by itself is unanchored in time and space. Reconstruction is reductive, ending with a single common source of sound, structure, or lexical item. It cannot recover those that left no traces. The majority opinion seems to hold that while it is possible to identify relative chronologies and tentative areas, it is impossible to reconstruct IE as a natural, synchronically functioning language—which always is an unpredictably mixed one.

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GERNOT WINDFUHR

INK. *See* Writing Materials.

INSCRIPTIONS.

[To provide a broad survey of the inscriptional material that has been recovered from the Near East, this entry comprises four articles:

Ancient Inscriptions
Inscriptions of the Classical Period
Inscriptions of the Hellenistic and Roman Periods
Inscriptions of the Islamic Period

Each article treats the material supports on which inscriptions are found; the languages, literary genres, and chronological and geographical distribution of the inscriptions; and the role of inscriptional materials in reconstructing ancient Near Eastern history.]

Ancient Inscriptions

An overview of Near Eastern inscriptions down to the Persian period is, in effect, an account of the origins of modern literate society. It must take into account virtually all extant written documents from the dawn of writing to the rise of Classical Greek civilization. These documents stand alongside noninscriptional artifacts as the two principal types of archaeological data available for reconstructing the history of these periods. The two types of data must be correlated in a history intended to include the political, economic, social, and intellectual aspects of ancient civilization.

The history of decipherment of the various inscriptions discovered constitutes an important part of the history of modern archaeology. During the heroic period of Egyptian and Mesopotamian archaeology (late eighteenth and early nineteenth centuries CE), for example, the decipherment of inscriptions contributed greatly to understanding the place in history both of artifacts and of those who had produced them.

The texts from these early periods are more exclusively archaeological artifacts than are those from later periods. The cultures they represent have not provided a chain of tradition down to the modern era, such as has been preserved in, for example, the Hebrew Bible, the Qur'an, the Syriac Christian corpus, or the principal literary texts from Classical Greece. There is evidence for an ancient chain of tradition for some literary texts (e.g., the Gilgamesh story), and some genres show evolution and accretion over centuries (e.g., Mesopotamian divinatory and lexical texts). The majority of ancient inscriptional material, however, represents primary documents—the documents as they came from the first writer's hand, often intended for one-time use, as in the case of letters and accounts.

For such primary documents to have been preserved, they need to have been written on materials capable of preservation across millennia. This means that, with the exception of Egypt, where the dry climate has preserved papyri back to the earliest stages of writing, most extant documents are inscribed either on stone or on clay tablets. [*See* Papyrus; Tablet.]

Origins of Writing. The prehistory of writing—the steps that led up to the well-attested writing systems of Mesopotamia and Egypt—is a subject of debate, but actual texts are attested by the last quarter of the fourth millennium. The scripts of both civilizations originally had a strong pictographic character, but the Mesopotamian version rapidly developed into a syllabary. Egyptian hieroglyphics retained, at least in formal inscriptions, their pictographic form, even though they became representations of consonantal phonemes (the system was not proto-alphabetic, however, for each sign could represent one, two, or three consonants). [*See* Writing and Writing Systems; Hieroglyphs.] Both systems used certain signs as semantic determinatives (e.g., GIŠ, "wood," in Sumerian, is written before names of objects made of wood). Another pictographic-syllabic system came into use in Anatolia in the late second millennium BCE—the so-called Hittite hieroglyphic system, used to write the Luwian language. [*See* Hittite; Luwians.] The invention of the consonantal alphabet ("abjad") probably did not occur until about the middle of the second millennium BCE, somewhere in the Levantine area; its earliest tokens are the Proto-Sinaitic and Proto-Canaanite inscriptions. [*See* Proto-

Sinaitic; Proto-Canaanite; Alphabet.] The true alphabet, wherein both consonants and vowels are noted, was the contribution of the Greeks after they had borrowed the consonantal alphabet from the West Semites in the early first millennium BCE. [*See* Greek.]

Writing Materials. There were, in the ancient world, three primary systems for recording a text: producing signs by transferring a colored substance onto a relatively flat surface (e.g., ink on papyrus or on an ostracon) by means of a penlike instrument; gouging signs into a soft material (e.g., clay or wax) by means of an instrument with an angular tip; and carving signs into a hard surface (e.g., wood or stone) by means of a chisel-like instrument. [*See* Writing Materials; Ostracon.]

As is still the case, the last system was used for texts with permanent value (e.g., funerary inscriptions), and they were often placed where they would be generally visible (e.g., royal proclamations in Assyrian palaces or on Egyptian obelisks). Few inscriptions in wood are preserved—both because wood was probably used less frequently for this purpose than was stone and because wood is more perishable than stone. Inscriptions on stone are attested from all parts of the Near East, in many of its languages. They range in size from tiny (e.g., seal inscriptions) to gigantic (e.g., Egyptian obelisks). [*See* Seals.] They appear on all types of stone (e.g., semiprecious stones for seal inscriptions, carved limestone or basalt for royal inscriptions) and in various contexts (e.g., in tombs, on architectural elements, and even on cliff faces). [*See* Inscription Sites.]

Though using ink and gouging signs into soft material are also attested everywhere, there was certainly a predilection in Mesopotamia for stone. In Egypt the ready availability of papyrus made it a common surface for writing (texts on papyrus are attested from the Old Kingdom onward). In Mesopotamia the invention of writing is attested as impressions on clay. The system was the primary one used there until the end of classical Mesopotamian civilization. However, with the increased use of Aramaic in the Late Assyrian and Babylonian periods, writing on wax-covered wooden tablets and on parchment became more common. [*See* Aramaic Language and Literature; Parchment.]

It is possible that the relative dearth of documents from the Levant in general (Palestine, Transjordan, Phoenicia, southern Syria) is owing to the extensive use there of papyrus and other soft materials for writing the local languages. In any case, the Ugaritic novelty (a West Semitic language written in cuneiform on clay tablets) has provided a corpus of texts, ranging from the great myths to mundane lists, unparalleled at any other Levantine site. [*See* Ugarit; Cuneiform.]

Languages/Areas. With few exceptions (e.g., Amorite), if the existence of an ancient Near Eastern language is known, inscriptions exist in that language. [*See* Amorites.] The numbers of texts in a given language range from only a few (Hurrian, mainland Phoenician) to thousands or even hundreds of thousands (Akkadian, Egyptian). [*See* Hurrian; Phoenician-Punic; Akkadian; Egyptian.] Because the area is the homeland of the Semites, most inscriptions are in various Semitic languages or, in the case of Egyptian, in a language closer to the origins of Semitic: the Afro-Asiatic (or Hamito-Semitic) group. The Semitic languages attested during these periods are classified geographically as Eastern (Akkadian) and Western (specifically Northwestern: Ugaritic, Phoenician/Hebrew, and Aramaic). [*See* Ugaritic; Hebrew Language and Literature.]

The principal Indo-European languages attested are the various languages of Anatolia (principally Hittite and Luwian) from early in the second millennium BCE—and almost to the end of the period covered here in the case of Luwian. [*See* Indo-European Languages.] The first Indo-Aryan inscriptions are those in Old Persian; there are no native-language inscriptions from the Mitannians or Kassites. [*See* Mitanni; Kassites.]

Mesopotamian writing was invented for a language that was neither Semitic nor Indo-European—that is, Sumerian—and this writing system, as well as Sumerian thought and literature, exercised a major influence on Akkadian throughout its existence. [*See* Sumerian.] Other important non-Semitic languages, attested primarily to the east and to the north of Mesopotamia proper, are Hurrian, Urartian, and Elamite. [*See* Hurrians; Elamites; Urartu.] The latter two languages are written with Mesopotamian cuneiform. Hurrian is poorly attested, but texts have been discovered written in both Mesopotamian cuneiform and Ugaritic alphabetic cuneiform.

Important aspects of the correlation of languages and areas are the related phenomena of bilingualism or multilingualism, of prestige languages, and of linguae francae. Because writing was invented in Mesopotamia to express the Sumerian language, that language remained the principal means of written expression for hundreds of years, even for Semitic speakers. By the Old Akkadian period (c. 2400 BCE), this was, however, principally a graphic phenomenon: the use of Semitic words and phonetic indicators shows that the use of Sumerian could be logographic—that is, that a text written principally or even entirely in Sumerian could be read in the local Semitic language (e.g., Akkadian in Akkad or Eblite at Ebla). [*See* Akkade; Ebla; Ebla Texts.] Learning Sumerian remained an important part of the curriculum of Mesopotamian scribes long after the language had disappeared from daily use. [*See* Scribes and Scribal Techniques.] In any case, the use of Sumerian logograms became a permanent part of Akkadian; in certain genres (e.g., divinatory texts) logograms constituted a major form of the expression. Sumerian logograms were also important in Hittite, so much so that the Hittite form of many words is still unknown, for the word was always written logographically.

From about 2000 BCE until the rise of Aramaic in the Persian Empire, Akkadian (with its usual Sumerian underpinnings) was both the prestige language of Mesopotamia, An-

atolia, and Syria/Palestine and the international lingua franca, much like Latin in medieval Europe. As is clear from the Amarna letters, Akkadian was used for the correspondence between the New Kingdom pharaohs and their Levantine client rulers. [*See* Amarna Tablets.] This required, of course, an Egyptian scribal class that was bilingual.

When a lingua franca is used, the command of the language may vary considerably from one area to another—whence the modern Romance languages, to cite the European model. This is clear from the use of Akkadian in the Syro-Palestinian area in the second millennium BCE, where, depending on whether a text was from Mari, Alalakh, Ugarit, or the Phoenician and Palestinian city states, the purity of the language varied considerably. [*See* Mari; Alalakh.]

That Akkadian was not only a practical lingua franca, but also the prestige language representing the prestige culture during this time, is clear from the relatively large numbers of texts representing Mesopotamian culture discovered in the West. This is clearest from Ugarit, where hundreds of lexical texts and a significant number of literary texts have been discovered. The numbers go beyond those expected of simple schools for learning the language; they represent an attempt at mastering Mesopotamian literary culture. Ugaritic scribes also seem to have prided themselves on their ability to manipulate the Akkadian language (Arnaud, 1982). In other instances, genres that seem likely to have originated in Mesopotamia have been thoroughly assimilated into the local language: this is true of "scientific" texts at Ugarit (hippiatric texts, various ominological texts), written in pure Ugaritic with few Akkadianisms.

The extent of bilingualism in a given culture depended on the degree of isolation and self-sufficiency: Egypt constituted one extreme, its geographic isolation often translating into cultural isolation; the Levantine states, which dealt regularly with people from all over the Near East, were at the other extreme. This is best illustrated by Ras Shamra (Ugarit), the Levantine site that has produced the largest number of texts, in eight different languages/scripts. [*See* Ugarit Inscriptions.]

Types of Texts. The mundane will usually hold pride of place in a collection of primary documents for, to varying degrees, such texts reflect everyday activities. In most archaeological text discoveries, literary and explicitly historical texts will be in a very small minority or entirely absent. During the first century of the study of ancient Near Eastern texts, such texts were nevertheless considered the most important, and they received the lion's share of attention. In the last few decades, a reaction has set in to this preponderance of energy expended on a minority production of the elite: more attention is now being paid to documents that permit a broader reconstruction of socioeconomic history.

The content of a group of texts discovered in an archaeological excavation can vary considerably, depending on various factors:

1. The social status of whoever (in antiquity) assembled the collection (i.e., whether the individual(s) was private or royal)
2. Whether the texts constitute an archive, a random assemblage, or even discards
3. If the texts come from an administrative archive, the place in the administration occupied by whomever collected the archive (e.g., many of the texts from Mari represent royal correspondence, whereas almost all the Ebla texts are account tablets)
4. The time period covered (from a few decades in the case of the Ebla archives to centuries in the case of the library of Ashurbanipal)
5. The interests and aptitudes of the collector or collectors (e.g., a high percentage of Ugaritic mythological texts were the work of a single scribe)
6. Whether the texts represent a working archive or scribal training (e.g., "the classics" were part of the scribal curriculum, and in Egypt extracts from these were found written in ink on ostraca)
7. The origin of the archaeological deposit (with an instantaneous destruction more likely to contain a cohesive archive than a stratum, which reflects either continuous habitation or the gradual abandonment of a site)

In addition to these and other definable factors, there is also the simple fortune of discovery: only a fraction of a site is usually excavated and because only a fraction of the available sites have been touched, only a fraction of the potentially available texts, themselves only a fraction of the texts actually produced in antiquity, are known.

To some degree, the material selected for inscription will reflect the genre of the text: precious materials or unwieldy objects (such as large stones) will be used for texts upon which a certain value is placed. On the other hand, everything from account texts to the highest literature will be written with the primary media of the culture (clay tablets in Mesopotamia and Anatolia, papyrus in Egypt). Priorities were different from one culture to another: Egypt is well known for monumental inscriptions, particularly in tombs and temples, whereas these are relatively rare in the rest of the ancient Near East. In this case the iconic value of the hieroglyphic script and the accompanying artistic representations were important: only a very small percentage of the population would have been capable of actually reading the texts in any ancient culture. In Mesopotamia, the cuneiform script lacked the iconic value of hieroglyphs. The linking of text and pictorial representations achieved major importance only relatively late, at the time of the Neo-Assyrian Empire. [*See* Assyrians.]

It is possible to classify ancient Near Eastern texts into a representative list of a number of categories, depending on the criteria chosen:

Administrative texts—accounts of all sorts; legal texts, including treaties

Epistolary texts—letters between individuals
Ritual texts—prescriptions or descriptions of liturgy
Scientific texts—astronomy, mathematics, medicine, lexicography, ominology
Historical texts—royal inscriptions and preambles to legal documents; some annals and, toward the end of the period covered here, chronicles
Belletristic works—myths, legends, and stories, often characterized by poetic composition; however, "poetry" may have been expressed in ancient languages

As with any such categorization, there are overlapping subgenres (e.g., a business letter or one recounting an observation of the stars). This list is meant consciously to exclude the very transitory writing (few graffiti are known from the early periods; school texts can reflect any genre) and historiography (the relatively few historical documents tend to be strongly apologetic; the dates of the nascent historiographic documents in the Hebrew Bible are debated).

Religious texts belong to several literary types, for religion so infused ancient society that it is reflected in several genres (e.g., temple accounts, celestial omens, temple histories, myths). Prose ritual texts, however, constitute a formal type concentrated in the sphere of religion, for no other aspect of life generated sets of prescribed acts couched in writing to the same extent as religious rites. Furthermore, poetry was used almost exclusively in these early periods when topics were treated that touched on the divine.

Administrative texts and letters constitute the backbone of many archives, for they represent the day-to-day and summary aspects of accounting, the legal basis for the ownership or use of various sorts of property, and the communication across space of all sorts of matters relating to households or larger social entities. [*See* Libraries and Archives.] Such texts provide the principal basis for reconstructing ancient societies and economies; having been produced by a literate elite, they do tend to represent the concerns of the upper levels of society, making it difficult to reconstruct a true cross section of society.

Science was, of course, the science of the day, but much of modern science has nonetheless developed from it, particularly mathematics, astronomy, and medicine. Divinatory texts are classified as scientific because they are formally similar to medical texts and were plausibly considered by the ancients to be equivalent in nature: both are characterized by the protasis-apodosis structure ("if such-and-such an omen is observed, such-and-such an event will occur," "if such-and-such a symptom is observed, give such-and-such a remedy"). Most of the explicitly scientific texts are from Mesopotamia, though certain types are attested in Anatolia and in Syria-Palestine. The Egyptians are known to have developed mathematics, geometry, and astronomy, but they left few writings dealing with the topics. The classification of the world, natural and human, was an important part of Mesopotamian science, expressed in lexical terms: long lists of words organized into broad semantic categories, usually based on the Sumerian term and with or without the corresponding Akkadian term. The concept developed into virtual polyglot dictionaries in the West (tablets are attested at Ugarit with columns for Sumerian, Akkadian, Hurrian, and Ugaritic).

It is the belletristic works that have most potently captured the imagination of modern readers, for their combination of elevated expression and metaphysical topics seems to reveal aesthetic and religious aspirations similar to modern sensibilities. Indeed, these texts were first seen as important in comparison with the Hebrew Bible, a document at least partially from this early period and that has endured. The Ugaritic mythological texts have provided a particularly meaningful background to the Bible, while those from Mesopotamia, Anatolia, and Egypt have done so less directly. These texts are now being studied as witnesses to their own cultures and have thus, to some extent, been liberated from a Bible-centered perspective.

Inscriptions and History. The virtual absence of historiographic texts from this early period means that the ancient sources provide only the narrowest of viewpoints on ancient Near Eastern history—and then it often is the personal account of a monarch or a courtier. The modern historian must, therefore, work extensively from the ephemera of the time. Modern historians of the ancient Near East can be characterized broadly as belonging to two categories: archaeologists with few, if any, documents who reconstruct the history of a site on the basis of its material remains, and specialists in texts, who, perforce, work only on areas and periods for which texts are extant. The two types work in cooperation. Anyone working on the long-term history of a region or of a site works of course with both artifactual and textual evidence according to availability. Certain types of data—for example, names and the specifics of many events—are only available from textual sources, whereas many realia are best known from archaeological sources; the correlation between the two types of data is improving as cooperation between archaeologists and text specialists builds a databank.

Because of the importance of ephemera, epistolary documents constitute one of the most important types of text for reconstructing political history, while other administrative documents provide the main basis of economic history. The texts from Old Babylonian Mari illustrate this well: thousands of letters from that site permit the reconstruction of a quite-detailed history of Upper Mesopotamia and of Babylonian interests there; many administrative texts have provided a great number of data on the contemporary economy—at least from the perspective of the royal administration. The Amarna letters, on the other hand, with their disparate origins and without the contribution of administrative texts, contain primarily political data. Only Ugarit has provided texts of both types, both in Akkadian and in the local language, allowing a unique perspective on the organization

and international dealings of a royal city-state at the end of the Late Bronze Age.

Intellectual history and the history of religious beliefs and practices are most plausibly pursued where a wealth of documents gives several perspectives on these topics—principally, therefore, in Egypt and Mesopotamia and to a lesser extent in Anatolia and Syria. Considerably more is thus known about the beliefs and practices of New Kingdom Egypt or of Mesopotamia in the eighteenth century BCE than is known about those of the pre-Exilic "Hebrews," simply because most information about Israelite religion comes from a single source, the Hebrew Bible, the precise origins of which are still debated. Indeed, most of the light cast on the Hebrew Bible has been either from nontextual archaeological discoveries or from non-Hebrew texts. (In the Northwest Semitic languages alone, inscriptions in Ugaritic, Phoenician, and Aramaic far outnumber those in Hebrew.) There is nothing ungrateful in this description of the current status of affairs, for great progress has been made since the beginning of modern archaeology. It is nonetheless true that additional written sources from South Canaan must be discovered—preferably in the local languages, though any archive would be welcome—in order for a more precise description of the intellectual and religious history of the peoples of the area to be possible. [*See* Literacy.]

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DENNIS PARDEE

Inscriptions of the Classical Period

For the classical period inscriptions are found in Old Persian, Elamite, Akkadian, Hebrew, Phoenician, Aramaic, the Anatolian languages, Greek, and Egyptian. They were inscribed on almost all materials that are inscribable—ceramics, stone, marble, or bronze—and on a range of objects—ostraca, seals, jar handles.

Old Persian. Inscriptions are the primary source for the language of Old Persian and for accounts of the Persian Empire from the point of view of the Persians. (The historian Herodotus had excellent sources for the history of Persia, but he was Greek and he viewed the East from a Greek perspective.) The premier inscription in Old Persian from the classical period is the Bisitun monument. [*See* Bisitun.] The declaration of Darius (521–486 BCE) was cut into the native rock of a cliff face and inscribed in three languages (Persian, Elamite, Akkadian) in cuneiform. Darius gives his lineage, the organization of his empire, his dedication to Ahuramazda, his justification for the seizure of the throne (that Bardiya, the supposed brother of Cambyses, his predecessor, was an imposter), his quelling of rebellion, and advice to his successors. The inscription was composed on clay tablets and parchment first, then inscribed, read to Darius, and finally sent in translation to the satrapies. An Aramaic version survives that was discovered in Egypt. A Babylonian text known as the Cyrus cylinder, the officially approved

declaration of the accomplishments and lineage of Cyrus, has survived only in a very fragmentary Old Persian version. A comparison of the Cyrus cylinder and the Bisitun monument suggests that Darius may have invented a common ancestor, "Achaemenes," to link his ancestry to Cyrus's. An equally well-known inscription of Darius's son and successor, Xerxes, records his pious (as an adherent of Ahuramazda) destruction of "the demons." Other Persian inscriptions record the building programs of the kings.

Languages of Syria-Palestine. Syria and Palestine provide few epigraphic remains that allow a prosopographical study to determine the area's ethnic composition in antiquity.

Hebrew. Inscriptions provide information about the development of the Hebrew language, alphabet, and morphology; about the background of the Hebrew Bible; and about local history and social organization. By and large, however, few Hebrew inscriptions exist from the period following Nebuchadrezzar's destruction of the Temple in Jerusalem (586 BCE). The few earlier inscriptions give an idea of the measures of defense taken against Nebuchadrezzar, present some religious opposition to the rule, and mention Greek mercenaries.

Phoenician. Inscriptions in this period are found in Old Phoenician at Byblos and Sidon, in the form of tomb curses and dedications. One of the best-known is the tomb inscription of King Eshmunazar, which gives some historical information. [*See* Byblos; Sidon; Eshmunazar Inscription.] Other inscriptions in the Phoenician language are found on Cyprus (sometimes bilingual, in Phoenician and Greek) and also are predominantly dedications or grave markers. Inscriptions in Phoenician are found on Rhodes, and in other places where Phoenicians traded. Although the inscriptions themselves contribute little historical information, their provenance attests to the activity of the Phoenicians.

Aramaic. Beginning in the second millenium BCE the Arameans, whose original language was Aramaic, began to infiltrate and in some places dominate Mesopotamia and Syria. Because the Arameans were merchants, their trading expeditions spread their language throughout the Near East. Aramaic alphabetic script appears to have been used along with cuneiform by the Assyrians. [*See* Cuneiform.] Monuments depict Aramaic scribes alongside cuneiform scribes, and some cuneiform tablets have filing notations in Aramaic. [*See* Scribes and Scribal Techniques.] During the siege of Jerusalem by the Assyrians in 701 BCE, negotiations were carried on in Aramaic. By the classical period, Aramaic was the international language of diplomacy, displacing Hebrew (it is the principal language also of the books of *Daniel* and *Ezra*). The first recorded reference to the house of David outside the Bible is in an Aramaic inscription discovered in 1993 at Dan, in Israel (Biran and Naveh, 1993). [*See* Dan.] Some scholars have argued that the Greek alphabet derived partly or largely from Aramaic and not from Phoenician. Persian officials used it among themselves throughout the Persian Empire. (Correspondence was dispatched in leather bags sealed with the name of the official in Aramaic.) As the common official language, inscriptions in Aramaic are found throughout the Persian Empire, although they are relatively rare. Dedicatory inscriptions are found in Cilicia, Lydia, and Lycia, though in Anatolia Aramaic was supplanted by Greek.

Anatolian Languages. Inscriptions establish the languages used in Anatolia in the classical period. They show relationships between languages and the spread of Greek.

Phrygian. The inscriptions in Phyrgian (the principle source for knowledge of the language) date from 750 BCE (rare) to the fifth century BCE and beyond and establish Phrygian as Indo-European. If the suggestion that Phrygian is somehow related to Latin could be established, scholars would have to reassess the ancient legends of the settlement of Italy from central Anatolia.

Lydian. Inscriptions in Lydian are all on stone and date from the sixth to the fourth centuries BCE. Bilingual inscriptions exist in Lydian-Aramaic and Lydian-Greek. They suggest that Lydian belongs to the Hittite-Luwian branch of Indo-European. Seal inscriptions show the spread of Persian influence in Sardis and throughout Lydia. [*See* Hittite; Luwians; Sardis.]

Lycian. A trilingual Lycian-Greek-Aramaic stela from Xanthos in year 1 of Artaxerxes (either 358 or 337 BCE) and a few funerary inscriptions survive. These inscriptions give enough information to identify the Lycian language as Indo-European, but not to assign it within the family of Indo-European languages. [*See* Lycia.]

Carian. Inscriptions of the seventh–sixth centuries BCE, including a few fragmentary bilingual texts using a Grecian-style alphabet, do not provide enough information to identify even the family to which Carian belongs. The names (from graffiti) of a group of mercenaries in Egypt in 591 BCE can be recognized as Carian. Carian gave way to Greek.

Greek. Hundreds of inscriptions from the Greek settlements in Asia Minor and the islands off its coast survive. They were public inscriptions, meant to inform citizens of their rights or obligations; they thus reveal the internal affairs of the separate cities, their relations with each other, and their relations with Persia and, finally, with Alexander. For instance, one of the earliest constitutions known, from Chios, from about 600 BCE, recognizes the rights of the people while allowing for some aristocratic privileges; another (early fourth century BCE) fixes the exchange rate between Mytilene and Phocea for the purpose of easing commerce. A letter from Darius (521–486 BCE) to his satrap on a marble stela in Magnesia on the Meander stressed his commitment to protect local religion and to the "greening" of the empire. An inscription on limestone from Xanthos (late fifth century BCE) shows a Lycian dynast to have been a member of the

Athenian Empire. In 391–388 BCE the cities of Miletus and Myus referred a boundary dispute to the arbitration of the Persian king. In the mid-fourth century BCE, Strato, the king of Sidon, vassal of the Persian Empire, developed a relationship with Athens. Inscriptions show how local, non-Greek rulers adopted Greek names, made Greek cities their capital, and employed Greek mercenaries, often against the Persian king. They also reveal the difficulties the Persian king had in controlling his far-flung subject (and satraps). Inscriptions also delineate Alexander's policy toward the Greek cities, restoring exiles, settling property disputes, and giving grants of freedom and land. [*See* Miletus.]

Egyptian. The classical period in Egypt is best known through the accounts of Herodotus (and other lesser writers), as Greeks began to visit Egypt not only as mercenaries and merchants, but also as tourists and students. Psammetichus II's campaign against Nubia in 593 BCE (or 591) is recorded in Egyptian and Greek inscriptions. The Greek inscription furnishes details of the organization of the Egyptian army (there were separate commands for Egyptians and foreigners) and together with the Egyptian inscriptions defines the extent of the expedition. Greeks were employed as mercenaries until the Persian conquest, and Greek merchants were settled at Naukratis. [*See* Naukratis.] An inscription of Nectanebo I (378–360 BCE) describes the financial arrangements: a 10 percent tax on silver, gold, and manufactured items. Inscriptions support the suggestion that the Egyptians learned about the specialized Greek warship, the trireme, from Greeks and employed these triremes with Greek and Carian crews.

A reconstruction of the chronology of the Saite pharoahs, the line of pharoahs from the mid-seventh century to the Persian conquest in 525 BCE, is based on epigraphy. Inscriptions allow the account of Herodotus of the Persian conquest of Egypt (in which an "insane" king Cambyses slew the sacred bull Apis; 3.27–30.1) to be corrected. According to inscriptions, the sacred bull lived through the turmoil and conquest unharmed by the Persians; and Cambyses did reduce the income and expenditures of the temples, which turned the priestly caste against him. Darius I allowed the Egyptians to undertake building projects. The assimilation of the ruling classes can be traced through a Persian noble with the name *Tachos,* an Egyptian noble who was a general in the Persian army. Midway through the Persian occupation historical inscriptions largely end; they reappear, in significant numbers, only after Alexander's conquest.

Besides inscriptions in Egyptian, several corpora of inscriptions in Aramaic have been discovered in Egypt. These have provided information on Semites and Persians in Egypt, particularly on aspects of everyday life (marriage contracts, real-estate transactions, the workings of the Persian bureaucracy in Egypt). [*See* Egyptian Aramaic Texts.]

Without the inscriptions of the classical period, nothing would be known of the Old Persian language, of the kings' official records, or of the organization of the Persian empire. Inscriptions are the only sources for some ancient languages, and they allow origins and movements (e.g, of the Anatolian peoples) to be traced. Inscriptions are a means of tracing the increasing influence of Greeks in the Near East before Alexander and the chronology, organization, and society of the Egyptians before and during the Persian domination.

[*See also* Akkadian; Aramaic Language and Literature; Egyptian; Greek; Hebrew Language and Literature; Persian; *and* Phoenician-Punic.]

INSCRIPTIONS: Classical Period. *Limestone grave stela from Abu Sir.* The subjects here appear Greek from the prothesis (laying out) depicted, but the style and the winged disk above are Egyptian. The assumption may be that this is a scene of Greeks in Egypt, except that the inscription (which we cannot read) is in Carian. Dated to 500 BCE. Height 27 cm. Berlin Staatliche Museum #19553. (Courtesy Pamela Lenck Bradford)

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ALFRED S. BRADFORD

Inscriptions of the Hellenistic and Roman Periods

Inscriptions for the period that begins with the death of Alexander the Great in 323 BCE and ends with the Muslim conquest of the Near East and northeast Africa after Muhammad's death in 632 CE have been found in large quantities. They occur on official buildings and houses, on temples and altars, synagogues and churches, on and in tombs, on ex-votos and potsherds, on rocks and mountains, on temple and church utensils—in short, on any surface suitable for writing. With this diversity, it is not surprising that epigraphic techniques vary according to the material used: marble, limestone, metal, wood, or pottery. Inscriptions are engraved on marble, whereas they are usually written with ink on wood or pottery. Inscriptions supply firsthand, direct sources of information, for they comment on all religious and secular aspects of tribes, nations, and empires, as well as on their different social levels.

When Alexander and his successors, the Seleucid and Ptolemaic dynasties, ruled the Near East, koine Greek became the official administrative language. [*See* Seleucids; Ptolemies; Greek.] However, Official Aramaic, the language of the Achaemenid chancelleries, also remained in use, especially in Mesopotamia and farther east. [*See* Aramaic Language and Literature.] Yet, even before Alexander's arrival, Greek was circulating—as the trilingual inscription in Aramaic, Lycian, and Greek from Xanthos in Lycia (337/36 BCE) attests. [*See* Lycia.] Many copies of royal edicts in Greek have been found inscribed on marble stelae or on the walls of temples (Welles, 1974). The Near East, including Anatolia and Egypt, has yielded an enormous number of Greek inscriptions continuing far into the Islamic period. The most famous example from Egypt is the Rosetta stone, a decree of the Egyptian priesthood passed in 196 BCE and written in Greek, hieroglyphic Egyptian, and Demotic—a combination that enabled the decipherment of hieroglyphic Egyptian by Champollion in 1820. [*See* Egyptian; Hieroglyphs; *and the biography of Champollion.*] The use of Greek also spread eastward to present-day Afghanistan, where two Greek inscriptions of the Indian king Aśoka were found in Kandahar. These are the only two Buddhist documents in Greek, and while the first has a parallel Aramaic text, they testify to the cultural prestige of Greek in those distant regions. Alongside Greek, the indigenous languages remained in use particularly for private purposes during the period of the Hellenistic dynasties until the arrival of the Romans in the person of Pompey in 63 BCE. Few of these inscriptions have survived from the period because of the relative scarcity of contemporary evidence (Millar, 1987).

The use of Greek alongside various indigenous, mainly Semitic, languages typified the basic bilingualism that characterized Near Eastern cultures in the Hellenistic and Roman periods and later. Many inscriptions are bilingual, mostly Greek and Aramaic, with the Greek often representing the official version and the Aramaic providing a translation of the text. Hence, Aramaic became, to a certain extent, hellenized through the adoption of Greek words and idiom, a phenomenon that particularly manifests itself in official public inscriptions (e.g., at Palmyra). [*See* Palmyra.] The beginning of the Roman period saw a resurgence of inscriptions and papyri written in the various local languages. [*See* Papyrus.] Jewish inscriptions in Palestine were written in Greek, Hebrew, and Aramaic. [*See* Hebrew Language and Literature.] The Jews in Edessa used Hebrew and Greek for their tomb inscriptions. By contrast the inscriptions from the synagogue at Aphrodisias are only in Greek. [Synagogue Inscriptions; Aphrodisias.] Other synagogues in Asia Minor also yielded mainly Greek inscriptions and very few in Hebrew.

The use of a certain language cannot be interpreted as indicative of a particular culture or religion. Language in these periods and in these areas does not function as an impermeable cultural barrier. Coastal areas have yielded Phoenician and Punic inscriptions alongside Greek ones. [*See* Phoenician-Punic.] Punic and Neo-Punic inscriptions also come from North Africa and Tripolitania. The Nabateans living in Petra, their capital (in modern Jordan), wrote their inscriptions in Nabatean, a form of Aramaic, but also used Greek. [*See* Nabateans; Nabatean Inscriptions.] A host of Nabatean graffiti has also been found along caravan routes in the Sinai and Negev deserts and on the Arabian Peninsula. The desert areas in modern Jordan, in Syria and in northern Arabia have also yielded Safaitic, Thamudic, Taymanite, Lihyanite, Dedanite, and Minaean inscriptions, as well as graffiti mainly consisting of Arab proper names of the various tribes and clans. [*See* Safaitic-Thamudic Inscriptions; Tayma'; Dedan.]

Northern Mesopotamia is the area of Old Syriac inscriptions, but Greek and Hebrew examples are also attested that date mainly from the second and third centuries CE. [*See* Syriac.] From that period, Aramaic inscriptions from Aššur and Hatra are known. [*See* Aššur; Hatra.] Palmyra, the caravan city in the middle of the Syrian desert, has supplied by far the largest number of Aramaic inscriptions, including many bilingual ones (Greek, Palmyrene) and even trilingual ones (Greek, Palmyrene, Latin). Dura-Europos, the fortress

INSCRIPTIONS: Hellenistic and Roman Periods. *The Pontius Pilate inscription.* (Courtesy ASOR Archives)

on the Euphrates River, has yielded texts in Greek, Latin, Palmyrene, and in Iranian languages, attesting the various cultures and powers that manifested themselves in that border area. [*See* Dura-Europos; Latin.] Despite the fact that the Romans ruled large parts of the Near East until the Muslim conquests, there are relatively few Latin inscriptions. Greek remained the official language of administration, while Latin inscriptions are mainly found on milestones along Roman roads or pertaining to the Roman army and other Roman officials. When the Romans over the centuries terminated the independence or quasi-independence of many cities and nations and incorporated them into the provinces into which the Near East was divided, inscriptions were basically no longer written in indigenous languages and local scripts. Greek remained dominant and Latin texts are very rare after Constantine the Great founded Constantinople in 330 CE, which became the seat of Roman government. Apart from Greek, only Syriac inscriptions are attested, but they are mainly concentrated in the eastern regions, where Syriac essentially became the language of Near Eastern Christianity. Greek was also used in the Iranian empires of the Parthians and Sasanians. [*See* Parthians; Sasanians.] The res gestae of the Sasanian king Shapur I (241–272 CE) are carved on a stone wall at Naqsh-i Rustam near ancient Persepolis in three languages: Middle Persian, Parthian, and Greek. [*See* Naqsh-i Rustam; Persian.] Other Aramaic languages—Mandaic and Talmudic Aramaic—alongside Syriac were used for incantation texts written on unglazed pottery bowls and lead strips that have been found in large quantities in modern Iraq, particularly at the site of ancient Nippur. [*See* Mandaic; Nippur.]

The thousands of inscriptions covering a wide range of languages and periods deal with all aspects of history and culture and consequently present a variety of literary genres. There are official documents and edicts issued by the Hellenistic rulers and city councils and also Greek versions of official Roman documents (Sherk, 1969). Legal texts are attested in a great variety, ranging from the so-called sacred laws that regulate behavior in temple areas to tax laws. An example of the last category is the bilingual tax law of Palmyra, written in Greek and Aramaic on four large stelae, that was passed in 137 CE. The entire inscription is preserved in the Hermitage at St. Petersburg, Russia, to which it was transported after its discovery in 1881. Building inscriptions commemorating founders, dates, and the functions of public and private buildings are essential to the archaeology of towns and villages, supplying the main structural elements of the historical chronology of urban development. Honorific inscriptions for meritorious citizens and public officials, as well as for emperors and priests, usually accompanied statues erected in the main colonnades of towns or within the sacred areas of temples. These give insight into the organization of the body social and into the public deeds of its important members.

A special category of inscriptions is the caravan texts honoring caravan leaders, the great entrepreneurs of Near Eastern antiquity, which often refer to their brave activities bringing the caravans home through the desert, where they were threatened by robbers and other dangers. The large majority of these inscriptions belong to the mercantile network of Palmyra and have been instrumental in reconstructing ancient trade routes and economies. Another significant group is tomb inscriptions commemorating the dead and cursing grave robbers. Such inscriptions provide the means for reconstructing families and clans, especially the wealthy, for whom the monumental tombs were built. [*See* Tombs.] The most impressive examples are again found at Palmyra, where wealthy citizens had hypogea and tower-tombs constructed that sometimes contained several hundred dead. Most tomb inscriptions are rather stereotyped, but the Edessene area in northern Mesopotamia offers a wide range of interesting texts on walls and inlaid in mosaics that covered the floor of the cave tombs. [*See* Mosaics.]

Because literary texts regarding the various cults of the Near East in Hellenistic and Roman times are rare (presumably Egyptian and Mesopotamian religious practices based on the ancient myths continued, but proper religious texts do not exist for Syria and Phoenicia), inscriptions on altars

INSCRIPTIONS: Hellenistic and Roman Periods. *Columnal monument.* Commemorating honors given Tiberius by the people of Sardis. (Courtesy ASOR Archives)

and ex-votos and dedications in temples, often combined with sculptures and reliefs, are the only sources of information about Near Eastern cults in this period. This dearth applies to the religion of the Nabateans, to the cities of Palmyra and Hatra and of the rest of the Levant, and to the important religious centers of Heliopolis/Baalbek, and Emesa/Homs. [*See* Baalbek; Homs.] On the other hand, the important religious center of Hierapolis/Mabbug has yielded Greek inscriptions and Aramaic texts on coins. The often enigmatic *De Dea Syria* of Lucian of Samosata, describing the history of the temple and its cult, is the only literary description of a Syrian cult that has been preserved. The religious practices of seminomadic desert dwellers can only be reconstructed from their inscriptions, graffiti, and petroglyphs.

Inscriptions differ in many aspects from literary texts in grammar as well as in idiom and lexicology. While the language of the public inscriptions is usually highly stylized and sometimes pompous, the private ones reveal the language of everyday life, local dialects, and variants of official languages. Inscriptions, therefore, are invaluable for studying the grammar, orthography, vocalization, pronunciation, and lexicology of Greek and the various Near Eastern languages. Some, like Palmyrene Aramaic and the languages of the Nabateans and Phoenicians, are only known through inscriptional evidence. Inscriptions are also the main source for studying the onomastics and prosopography of the Near East. Proper names often occur in Semitic texts as well as in Greek transcription; in this way, inscriptions provide insight into the pronunciation of the names, which are unvocalized in Semitic script. Many individuals in Mesopotamia and elsewhere also took a Greek name, which often contains a clue to the meaning of their Semitic name. Related to this practice is the so-called Greco-Babyloniaca, a group of clay tablets dating to the second century BCE or later. [*See* Tablet.] They transcribe cuneiform and Aramaic texts in Greek script. [*See* Cuneiform.] In this way they provide insight into the contemporary pronunciation of the languages transcribed.

The Greco-Roman world, including the Near East, produced copious amounts of inscriptions during the Hellenistic and Roman periods. Writing, often in public form, was a distinctive characteristic of Greco-Roman civilization in the west and east, and therefore was an almost incomparable cultural phenomenon. Consequently, inscriptions refer to vast provinces of life, social structures, and the thought and values of the ancient world; they contain vast amounts of information, but there is much they do not divulge. Their perspective is limited to what was deemed fit for the contemporary reader, and they present certain stylized conventions and practices. The primary challenge in using inscriptions as a source of history and culture is constructing an intelligible context within which the inscriptions can be interpreted. The problem is exacerbated when inscriptions are badly damaged or only partially preserved; it becomes chronic when the original context is lost. Without supporting archaeological evidence, inscriptions run the high risk of becoming stray texts whose meaning is elusive or enigmatic. Moreover, even when inscriptions can be read and interpreted easily, they often contradict other sources of information, such as histories or archaeological finds, although sometimes the information is complementary. Despite these difficulties, the publication of a single inscription can bring a new dimension to and totally change an established scholarly opinion. As such, inscriptions remain the main and

most direct source of historical information on life and society in the Greco-Roman Near East. Indeed, as a result of the paucity of literary sources, inscriptions (and papyri) are the main instrument for writing the history of the Hellenistic and Roman Near East. Their value is recognized increasingly by scholars, who are combining inscriptions with archaeological and scanty literary evidence (Sherwin-White and Kuhrt, 1993; Millar, 1993).

The rapid spread of Christianity (one of the major changes in the Roman Empire) asserted by ecclesiastical authors is also challenged by inscriptional evidence, which suggests that it was, rather, a protracted and prolonged process. [*See* Church Inscriptions.] While the center of early East Roman Christianity can be traced to Antioch in northern Syria, the countryside remained for the greater part pagan until far into the fifth century (Liebeschuetz, 1977). A comparable situation prevailed at Edessa, capital of Osrhoene in northern Mesopotamia, and allegedly the center of Early Syriac Christianity, which became the first Christian kingdom in the world. All Syriac inscriptions from the first four centuries are pagan and provide conclusive proof that the process of christianization developed in the opposite way to what Christian writers have asserted. Inscriptions can therefore be a vital corrective to traditional views of the history of the Greco-Roman Near East—which are, moreover, sometimes steeped in scholarly prejudices. Inscriptional finds add new information to the scholarly file and are imperative for augmenting and embellishing the history of the Near East. Moreover, only finds of Greek and bilingual inscriptions can alleviate the problem—or at least supply a better understanding of Hellenism, the expression of Greek civilization that emerged in the Hellenistic and Roman period and about which there is still much vigorous debate.

[*See also* Writing and Writing Systems; *and* Writing Materials.]

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H. J. W. DRIJVERS

Inscriptions of the Islamic Period

Thousands of inscriptions of the Islamic period are found in Arabia and in neighboring Arab and Islamic countries. Archaeological research has shown that the Arabic script used by Arabs and Muslims developed from Nabatean script, which was closely linked to Aramaic script. [*See* Aramaic.] The evolution of Arabic script from Aramaic is evident in the extensive texts and inscriptions found in Syria and dated to the early seventh century CE. In this period in Jerusalem and Mecca, those who were literate seem to have had knowledge of Aramaic. The alphabet of the Kufic Arabic of the Islamic period has similarities to alphabets found in some inscriptions of the pre-Islamic period, such as those at Umm el-Jimal I (250 CE), Umm el-Jimal II (sixth century CE), Harran (568 CE), Osays (423 CE), and in the an-Namarah (512 CE) and Zabad texts (328 CE). [*See* Umm el-Jimal.]

The basic sources of the Arabic inscriptions are the revelations about the emergence of Islam made to the prophet

Muhammad and the Qur'an, which were written in Arabic script. Other sources were the Prophet's correspondence and peace treaties. The revelations were memorized and then inscribed on different materials—on palm leaves and tree stumps, camel bones, hides, thin stone slabs, silk and other cloth, and woven bast. The inscriptions were primarily incised or engraved; some were embossed. After the Islamic conquest of Egypt, linen and papyrus were adopted for writing inscriptions.

Islamic inscriptions from the first century AH onward are found on tombstones, coins, mosques, palaces, and forts and are religious and civil in nature. Inscriptions generally have Qur'anic verses and supplications and furnish historical, biographical, or administrative details, depending on the place and purpose for which they were intended. They also furnish funerary details—for example, the name of the deceased, his or her ancestry, and date of death. These details contribute to the development of a demographic profile of a particular place. Some inscriptions are decorative. Tombstone inscriptions in particular are an important source for studying the evolution of Arabic script. Genealogical details on tombstones—for example, titles and positions held—are sources for studying regional history. The tombstones were engraved by Arab calligraphers, the most renown of whom was Mubarak al-Makki. His inscriptions, dated to AH 243/857 CE, are characterized by unusually long texts.

Inscriptions of paramount importance are those found in the Prophet's mosque at Medina, the al-Ḥaram mosque in Mecca, the Dome of the Rock and al-Aqṣa mosque in Jerusalem, the mosque of Ibn Tulun (Cairo); and the mosques at Qayrawan (Tunisia), and Cordoba and Gharnaṭah (Spain). [*See* Medina; Mecca; Jerusalem.] The largest group of tombstones (more than four thousand) and the earliest (dated to 31/651) come from Aswan and Cairo (Egypt). Registered and studied by Gaston Wiet (1936–1942; 1971) in 1932, they are preserved in the Islamic Art Museum, Cairo. [*See* Cairo.] Other studies have been carried out by Abdur Rahman Abd at-Tawwab and Solange Ory. Bernard Roy Paule Poinsset conducted the first studies of Islamic inscriptions from Qarawan in 1950–1958.

A large collection of inscriptions was found at the Gorjani cemetery in Tunisia. The collection of inscriptions on tombstones found in the Dhalak Islands in the Red Sea (Eritrea) is another important source for studying Arabic script. These have been published by Giovanni Oman (1976) and Madeleine Schneider (1983). Scores of tombstone inscriptions have been found at other locations, such as in Yemen, Oman, Syria, and Spain. Adolf Grohmann (1934–1955) listed forty-five inscriptions, dated to between 22/643 and 129/746. They include inscriptions not only from tombstones, but also from buildings, as well as supplications written on rocks, cloth, and papyrus. In addition to these early inscriptions, Grohmann cites examples of inscribed Early Islamic coins. [*See* Yemen; Oman; Syria, *article on* Syria in the Islamic Period.] Most of the inscriptions found are on religious and civic buildings in Syria, Egypt, and Iraq. In Arabia a very important inscription was found at the Saysad dam in Ṭa'if, built by Muawiyah ibn Abi Sufiyan in 58/677. It was published by George C. Miles in 1948.

Archaeological survey and research conducted in Saudi Arabia have brought to light scores of Islamic inscriptions. Inscriptions on rocks have been found in the Hijaz, Asir, Tihama, Ṭa'if, Mecca, and Medina. The inscription on Jabal Sal in the heart of al-Medina al-Munawarrah is considered to be the earliest in the Muslim world. Among the richest areas of early Islamic inscriptions (first–third century AH) in Arabia are Hanakiya, Suwaydra, Khybar, Ruwawa (near Medina; see figure 1), Jabal Hisma (west Tabuk), and Dawmat al-Jandal. A larger number of inscriptions have been found along the different pilgrim routes in Saudi Arabia.

A prominent corpus of inscribed tombstones was found in the region of Ashm and as-Sirrayn, along the coast of Tihama, south of Mecca. They are dated to between the third and seventh centuries AH/ninth–thirteenth centuries CE, and constitute an important source of regional history. Their inscriptions also reflect the development of Arabic script and its decorative aspects.

Examples of the earliest dated rock inscriptions in Saudi Arabia and their provenance follow. (The figures named are either those who wrote the inscriptions or those on whose behalf [or in whose name] the inscriptions were written.)

Khalid Ibn al-ʿAs, AH 40/660 CE (Darb Zubaydah)
Abdullah ibn Diram, AH 46/666 CE (Wadi Sabeel, Najran)
Jahm ibn ʿAli ibn Hubayrah, AH 56/676 CE (Darb Zubaydah)
Muawiyah ibn Abi Sufiyan, AH 58/677 CE (Saysad, dam, Ṭa'if)
Rabah ibn Hafs ibn Asim ibn ʿUmar ibn al-Khattab, AH 76/694 CE (Ruwawa, Medina)
Two inscriptions referring to Uthman ibn Wahran, AH 80/700 CE (Wadi Al Usaylah, Mecca)
Maymun Mawla abi Mariam Mawla Rabah, AH 80/700 CE (Syrian pilgrim route)
Ufayr ibn Al Mudarib, AH 83/703 CE (Syrian pilgrim route)
Abdullah ibn Amarah, AH 84/704 CE (Arafat area, Mecca)
Mukhlid ibn Abi Mukhlid Mawla ʿAli ibn Abi Ṭalib, AH 91/710 CE (Syrian pilgrim route)
Abu Jaʿfar ibn Hasan al-Hashimi, AH 98/716 CE (Arafat Region, Mecca)
Abu Salmah ibn Abdullah ibn Abdullah ibn ʿUmar ibn Uthman ibn Hafs, AH 100/718 CE (Ruwawa, Medina)
Muhammad ibn Yahya ibn al Tufayl, AH 112/731 CE (western Tabuk)
Al Hakam ibn ʿUmar ibn Farwah, AH 113/732 CE (southern Hijaz)
Uthman ibn Hafs, AH 120/738 CE (Ruwawa, Medina)

INSCRIPTIONS: Islamic Period. Figure 1. *Two inscriptions from Ruwawa, near Medina.* The top three lines are dated AH 140/750 CE. The bottom text is undated. (Courtesy S. Al-Rashid)

Abdullah ibn ʿUmar ibn Hafs, AH 121/739 CE (Ruwawa, Medina)
Asim ibn ʿUmar ibn Hafs, AH 124/740 CE (Ruwawa, Medina)
Harith ibn Ṣāghir, AH 121/739 CE (al-Jawf region)

There are several unpublished inscriptions dated to the Umayyad period in the region of Hijaz and Asir. Their eventual publication will add to the corpus of Early Islamic inscriptions and writings found outside the Arabian Peninsula and will be a fertile field for the study of the development of Arabic script.

Numerous ʿAbbasid inscriptions and writings are dated. The most important locations follow:

Restored Sanʿa mosque (Yemen), AH 136/754 CE
Masjid al-Bayʿah, AH 144/761 CE (Mina, Mecca)
Al-Ḥaram mosque (Mecca), from the time of Caliph al-Mahdi (one inscription is dated to AH 167/783 CE)
Carved milestone with the names *Khalifa al-Mahdi* and *Yaqteen ibn Mosa,* a minister (Darb Zubaydah)
Restored pilgrim road inscribed with the names *Khalifa al-Muqtadir Billah al-ʿAbbāsi* and *ʿAli ibn ʿIsa,* a minister, AH 304/916 CE (from Iraq to Mecca)

Several other dated ʿAbbasid inscriptions on rocks, buildings, and tombstones from different periods in the ʿAbbasid era have also been found. Ottoman foundation inscriptions are found in the fortresses scattered along pilgrim roads in Syria and Egypt and on some irrigation works.

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Sa'ad Abdul Aziz al-Rashid

INSCRIPTION SITES. Sites that yield inscriptions but do not have a history of permanent settlements are known throughout the ancient Near East from nearly every chronological period. The inscriptions they display can be classified into two distinct types: private inscriptions or graffiti on rough, unmodified rock surfaces and official proclamations often inscribed on a smoothed or otherwise modified surface, specifically for the purpose of public viewing. Inscription sites are best attested in Egypt and Syria-Palestine and on the Anatolian and Iranian plateaus. The paucity of examples from Mesopotamia is no doubt related to the character of its physical geography: Mesopotamia is a low-profile, alluvial plain with few outcroppings; the remainder of the Near East is generally more rugged and mountainous with ample rock surfaces suitable for inscriptions.

The first category of inscription sites is comprised mostly of graffiti. Thousands of private inscriptions have been cataloged throughout the Syro-Arabian desert and the Sinai Peninsula. As its name attests, Wadi Mukatteb ("wadi of the inscriptions") in the Sinai is particularly rich in inscriptions, among them, Nabatean, Arabic, Aramaic, Greek, Armenian, and occasionally Latin texts. [*See* Nabatean Inscriptions; Arabic; Aramaic Language and Literature; Greek; Armenian; Latin.] Sometimes the inscription is merely a name with a patronymic, but often a prayer or memorial is included. Earlier hieroglyphic Egyptian inscriptions are also attested in the Sinai, in the vicinity of ancient mines. [*See* Hieroglyphs.] Throughout the Syro-Arabian desert fringe hundreds of private inscriptions in Thamudic and Safaitic script have been found dating from the first through fourth centuries CE. [*See* Safaitic-Thamudic Inscriptions.] Most of these, consisting of names and prayers, are also in the form of graffiti.

The second category of inscription sites, official proclamations, is better attested outside Palestine, in Egypt and Lebanon and on the Anatolian and Iranian plateaus. These inscriptions are also commemorative in nature. Numerous Egyptian inscriptions recording mining expeditions and military exploits are known from Wadi el-Mughara, in the ancient mining region of western Sinai, and from Wadi Hammamat and Wadi el-Hudi in the eastern desert. All date to as early as the Old Kingdom. The inscription of Henu, steward of Mentuhotep I, for example, describes an expedition to the Red Sea and to Punt, as well as quarrying activity carried out in the wadi. A rock stela of Mentuhotep III describes miraculous events that accompanied the quarrying of a sarcophagus.

In Lebanon, at Nahr el-Kalb, three hieroglyphic inscriptions of Rameses II and adjacent cuneiform inscriptions of Tiglath-Pileser I, Shalmaneser III, and Esarhaddon overlook the sea on the road leading north from Beirut. They commemorate successful military campaigns into this area. [*See* Beirut.] Each inscription is accompanied by a figural relief of the victorious ruler. Other Greek, Latin, and Arabic inscriptions are attested as well at this strategically important site.

In the central and southern portions of the Anatolian plateau, late second- and early first-millennium hieroglyphic Luwian inscriptions dot the landscape. [*See* Luwians.] Many of them are associated with a particular population center, while others seem to function as boundary markers or, less frequently, as proclamation inscriptions. One of the most striking from the Hittite imperial period is the rock relief and hieroglyphic inscription of Ḫattušili found at Firaktin (perhaps beside what was a road in antiquity) depicting the Hittite king pouring a libation. [*See* Hittite; Hittites.] A more dramatic inscription site is that of Akpinar near Manisa in western Anatolia. The relief with accompanying inscriptions is cut into a niche high on an outcrop. These and others from the imperial period are perhaps primarily art sites and only secondarily inscriptions sites. The inscriptions are mostly names—labels accompanying the figural relief. Similar inscription sites are known from the postimperial period. Many inscriptions ostensibly removed from settlements are concentrated in the Halys River basin, along what may have been transportation routes near, for instance, Asarjik, Sausa (near ancient Karaburna), and Bulgarmaden.

One of the best-known inscriptions sites from antiquity is that of Bisitun in western Iran. [*See* Bisitun.] Its inscriptions and accompanying relief, cut high above the main east–west road connecting the Iranian plateau and the Mesopotamian

alluvium near ancient Kermanshah, commemorate the accession and reign of Darius I. Like other inscription sites in this category, Bisitun can also be considered an art site.

Sites with graffiti are often found along roads or pilgrim routes (e.g., Darb el-Hajj, Darb Zubaydah) and memorialize an individual's participation in a holy journey. [*See* Darb Zubaydah.] The inscriptions are generally short and only occasionally have a figural representation (perhaps a cross or menorah). Proclamation inscriptions, while often isolated, are also generally found along traveled routes—be they major highways or a road to a mine. Their often dramatic location (at times high on a cliff or rock outcrop that required scaffolding) bespeaks a greater expenditure of resources than was possible for the average individual. They acknowledge the presence of a ruler and boast of his exploits or military prowess. The two types of inscription sites, while exhibiting marked differences in quality and content, bear much the same intent and message: they attest to humankind's desire for immortality and memorial.

[*See also* Art Sites; *and* Inscriptions.]

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JOHN S. JORGENSEN

INSTITUTE OF HOLY LAND STUDIES.

Founded in 1957 by G. Douglas Young, the Institute of Holy Land Studies had as its initial purpose providing graduate-level training in Israel in the archaeological, historical, geographic, linguistic, and cultural background of the Bible from a conservative Christian perspective. The institute first offered classes in 1959; in 1967 it moved to its present location on Mt. Zion, overlooking the Hinnom Valley. Sidney DeWaal was appointed as the institute's seventh president in 1993.

Currently, the institute offers both short- and long-term programs of study on undergraduate and graduate levels. The short-term program operates primarily in January and throughout the summer. The sessions are two to three weeks long and involve extensive field trips to major archaeological sites and the study of biblical background, modern Israel, or field archaeology. The long-term program has two major facets. The institute offers two-year Master of Arts degrees in biblical history, Hebrew language, and Middle Eastern studies; students enrolled in other undergraduate or graduate programs may spend a semester or a year at the institute. Through the long-term program, students may also take courses at the Hebrew University of Jerusalem. Nondegree study on the graduate level may lead to certificates in Middle-Eastern studies or biblical exegesis.

Prominent Israeli scholars and expatriate American scholars comprise the institute's faculty. Together, the faculty provide coursework in archaeology, historical geography, modern Hebrew, history of Judaism, Middle Eastern history, biblical and ancient Near Eastern languages, and biblical studies.

The institute is loosely associated with more than one hundred graduate and undergraduate institutions in the United States and Canada. More than nine thousand students from twenty-five countries have attended the institute since 1959, most in the short-term program.

CHARLES E. CARTER

INSTITUT FRANÇAIS D'ARCHÉOLOGIE DU PROCHE ORIENT.

The French Institute of Archaeology in Beirut was founded in 1946 by Henri Seyrig, the former director of antiquities of Syria and Lebanon under the French Mandate. Seyrig envisaged a center in which resident scholars and students from the East and West could openly interact. He chose an impressive nineteenth-century mansion that had belonged to the Beyhum family to house the institute. For it, he established one of the most complete libraries of Near Eastern archaeology and related subjects in the region.

Following Syria's independence from France, Seyrig continued his close cooperation with the Syrian Department of Antiquities and was granted a concession to continue archaeological work begun in 1936. The Mission de Haute Syrie, one of the institute's major archaeological projects, set out to map, study, document, and publish the seven hundred Roman-period and paleo-Christian villages and monuments in northern Syria, between Antioch and Aleppo. From the beginning, and until 1975, under the direction of the Russian architect Georges Tchalenko, the mission compiled a unique and comprehensive architectural and historical record and produced two major publications: a classic and fundamental reference work on the area (Tchalenko, 1953–1958) and another on the village churches (Tchalenko and Baccache, 1979–1990). Among the institute's other main projects were excavations at Palmyra, Baalbek, and the Crac des Chevaliers. From 1967 to 1972, the institute was directed by Daniel Schlumberger. He was followed by Ernest Will (1973–1980), who began the excavations at Tell 'Arqa in northern Lebanon and published the institute's contribution to the study of the desert city of Palmyra in

Syria (Seyrig, Amy, and Will, 1968–1975). The institute edits its two periodicals: *Syria* (1920ff.), an annual journal of oriental art and archaeology; and *Bibliothèque Archéologique et Historique (BAH),* a monograph series that covers subjects from prehistory to the nineteenth century.

The institute was renamed Institut Français d'Archéologie du Proche Orient (IFAPO) in 1977, two years after the outbreak of hostilities in Lebanon. Two new centers were opened, in Amman, Jordan, and in Damascus, Syria, providing a base for the institute's archaeological projects in those countries. Between 1981 and 1992, the war in Lebanon precluded serious fieldwork there.

IFAPO's current program comprises survey, excavation, and restoration work in Syria and Jordan for the prehistoric through the Islamic period. The institute's 1989 exhibition in Damascus, "The French Contribution to Syrian Archaeology, 1969–1989," presented an overview of its work. The institute's last director, Georges Tate (1980–1990), and the present one, François Villeneuve, are involved in the rural archaeology of the periods preceding Islam in northern Syria (Tate, 1992), southern Syria (Dentzer, 1985), and Jordan. Two international colloquia held in Damascus under the institute's auspices discussed traditional water management in irrigated lands (Geyer, 1990) and houses in ancient Syria from the third millennium BCE to the beginnings of Islam (held in 1992).

IFAPO continues to record and preserve local architecture, such as the Hellenistic residence of a local potentate at 'Iraq el-Amir in Jordan (Will et al., 1991). The institute's historic contribution, particularly to architectural studies, continues to be exemplified in the work of Jacques Seigne at Jerash (Gerasa), in Jordan, and Palmyra. Interdisciplinary teamwork and close cooperation with the regional departments of antiquities and between Western and Middle Eastern professionals and institutions characterize the IFAPO's work as a foreign research center.

[*See also the biographies of Seyrig and Schlumberger.*]

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HELGA SEEDEN

INSTITUT FRANÇAIS D'ARCHÉOLOGIE ORIENTALE. The oldest foreign archaeological organization in Egypt, the Institut Français d'Archéologie Orientale du Caire (IFAO) was founded in December, 1880, as the École Française du Caire. Its mission was to study Egyptian antiquities, history, and philology, as well as "oriental" antiquities (those of other Near Eastern cultures). Gaston Maspero, its first director, drafted a plan of organization and divided the staff between *pensionnaires,* newly graduated scholars with specific research projects, and *chargés de mission,* who work for various excavations and research projects. During the early years, members focused their attention on the copying of ancient Egyptian texts and monuments, and began publication of their research in 1883.

In 1898, under the directorship of Émile Chassinat, the name was changed to the Institut Français d'Archéologie Orientale du Caire. Chassinat inaugurated a vast program of excavations all over Egypt and founded the institute press which to date has published more than seven hundred volumes in twenty-five series.

The IFAO is one of the largest foreign archaeological institutes in Cairo. Its established position in Egypt has enabled it to carry out large long-term excavations and restoration projects at major sites ranging in date from prehistoric to Islamic times, supported by a permanent staff and a network of expedition headquarters throughout Egypt. IFAO excavations and documentation projects have included the complete temples of Edfu and Dendera, the tombs and workmen's village at Deir el-Medineh, the early Christian site at Kellia, the tomb of Seti I in the Valley of the Kings, the tomb of Ti at Saqqara, the treasury of Thutmose I at Karnak North, and sites in the oases of the Western Desert. During the 1960s, the IFAO participated in the UNESCO campaign for the salvage of the Nubian monuments, excavating at the temple of Rameses II at Wadi es-Sebua. It has also collaborated with the Egyptian Department of Antiquities and with other French and foreign institutions.

[*See also the biography of Maspero.*]

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SUSAN J. ALLEN

INSTITUT FRANÇAIS D'ÉTUDES ANATOLIENNES D'ISTANBUL. Founded in 1930, and called the Institut Français d'Archéologie, the Institut Français d'Études Anatoliennes was created to promote studies in Islamic and Anatolian antiquities. The institute took its current name in 1975, in order to reflect its interest in Anatolia's civilizations through the modern period.

The institute's staff consists of a director, a scientific assistant, a student, and five researchers on stipends. Several of them are archaeologists who specialize in a wide range of periods, from the Prehistoric to the Byzantine.

The institute facilitates work and provides a logistical base for the various French expeditions working in Turkey, in which the institute's researchers frequently participate. The institute handles administrative matters, provides storage space for excavation equipment, and makes its vehicles available to expeditions. The institute also develops its own field projects, often in collaboration with Turkish archaeologists and other institutions such as the Centre National de la Recherche Scientifique (CNRS) and universities. For example, a major project in the Black Sea area is being carried out in partnership with the Groupement de Recherche 1056 of the CNRS.

The Institut Français d'Études Anatoliennes is an active partner in a wide range of other scientific activities being undertaken in Turkey, around which it organizes museum exhibits, colloquia, and discussions on such study topics as defensive systems in Anatolia and amphoras from the Black Sea. Its research appears in the journal *Anatolia Antiqua* and in volumes of the collection Varia Anatolica.

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CATHERINE ABADIE-REYNAL

Translated from French by Melissa Kaprelian

INSTITUT FRANÇAIS D'ÉTUDES ARABES. Founded in 1922, the Institut Français d'Études Arabes de Damas (IFEAD) has as its focus Muslim archaeology and art as well as Arab and Islamic studies in the Bilad ash-Sham (Syria). Its works are published in the *Bulletin des Études Orientales (BEO),* created in 1931 and now published annually (vol. 46 in 1994), and in nonperiodical publications, currently 150 in number.

From its creation, the institute, under the direction of established directors and researchers, has maintained an interest in Syrian territory through urban studies, research involving the steppe and its inhabitants, and archaeological surveys conducted by Eustache de Lorey, Henri Seyrig, Jean Sauvaget, Jean Lassus, Robert Montagne, Michel Écochard, Albert de Boucheman, and Jacques Weulersse. Since the 1950s, historical research has been carried out on a wide variety of subjects, all with the same goal: to understand the country and its inhabitants in different periods.

The town has remained a recurring topic of research with, among others, the establishment of the Vieux Damas Extramuros (extramural Old Damascus) program. Work on the waqfs, Ottoman fiscal registers, and economic and dynastic texts has enhanced the approach to studying Islamic society (carried out by Sauvaget, Janine Sourdel-Thomine, Dominique Sourdel, Sami Dahan, Nikita Elisséeff, André Miquel, Khaled Moaz and Solange Ory, Jean-Claude David, J.-P. Pascual, Sarab Attassi, Robert Mantran, André Raymond, Henri Laoust, and Thierry Bianquis). Research on the contemporary period also constitutes a part of this study. Between 1970 and 1980, the institute devoted its attention to the archaeological areas in those towns that had served as rest stops for travelers along the right bank of the Euphrates River. Under the direction of Jean-Claude Golvin and Raymond, five salvage excavations were undertaken before the construction of the Assad dam at the site of Balis. De Lorey, G. Salles, and L. Cavro had conducted, but not completed, an excavation there in 1929–1931. Gilles Hennequin and Abd al-Faraj al-'Ush published the coins from the excavation (IFEAD, 1978). A Franco-Syrian team at Rahba-Ma-

yadin, on a site 350 km (217 mi.) from Balis, excavated a town from the 'Abbasid and Mamluk periods in six seasons, under the direction of Bianquis. Arlette Nègre published the coins from this site (*BEO* 32–33 [1980–1981]). Marie-Odile Rousset has published an inventory of Islamic archaeological sites in Iraq with the institute (1992). A catalog of the pottery from Mayadin is in preparation.

Since 1983, the institute has devoted equal attention to archaeological research in rural Syria. Sophie Berthier has studied the Middle Euphrates in close collaboration with the anthropologist Olivier D'Hont, gathering information on the different types of human settlement along the banks of the river. The anthropological results appear in *Vie quotidienne des 'Agedat* (IFEAD, 1994). Alexandrine Guérin excavated the village site of Msayke in the Léjà, in southern Syria, in 1993 that followed numerous regional explorations conducted since 1991 (*BEO* 45 [1993]). This multidisciplinary study, involving archaeology, architecture, historical geography, and anthropology, followed the work of a team headed by Jean-Marie Dentzer (CNRS, Equipe de recherche associée 20) studying the Hauran in the pre-Islamic periods.

The institute's library is open to all researchers. With 950 periodicals, 400 of which are current subscriptions, and 50,000 volumes, it is one of the best French libraries for Arabic studies. The institute cooperates with Syrian researchers and local institutions such as the Académie de Langue Arabe, the University of Damascus, the Direction des Antiquités, and the al-Assad Library (national library). It also cooperates with the Syrian Antiquities Authority in joint ventures.

[*See also the biographies of Sauvaget and Seyrig.*]

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ALEXANDRINE GUÉRIN and JACQUES LANGHADE

Translated from French by Melissa Kaprelian

'IRA, TEL (Ar., Khirbet Ghara) a Negev desert site located in the Beersheba valley, 18 km (11 mi.) east of the city of Beersheba (31°14′00″ N, 34°59′20″ E, map reference 1487 × 0713). The tell, slightly more than 6 acres in area, covers the entire plateau of an isolated hill (514 m above sea level) surrounded by precipitous slopes.

The possibility that the site is referred to in the Bible remains debated. Yohanan Aharoni (1957) suggested identifying it with Qabse'el, which heads the list of Judahite cities in the Negev (*Jos.* 15:21) and is equivalent to Yeqqabse'el (*Neh.* 11:25). Eighteen years later, following Crüsemann (1973, p. 212 ff.), he suggested identifying Tel 'Ira with Zephath in *Judges* 1:17 (Aharoni, 1975, p. 119). F.-M. Abel (1938, p. 353), suggested Jagur in *Joshua* 15:21, and Yigael Yadin (1961, p. 110) Mmšt of *lmlk* seal impressions. Benjamin Mazar suggested that the site is Elto'lad (*Jos.* 15:30; see Avigad, 1990, p. 263). In consideration of Tel 'Ira's altitude, at 514 m above sea level, André Lemaire (1973, p. 361 ff.), Nadav Na'aman (1980, p. 146), and Anson F. Rainey suggested Ramat Negev (Heb., "height" of the Negev; *Jos.* 19:8). Remains from the Hellenistic to the Byzantine periods have so far shed no light on the site's ancient name.

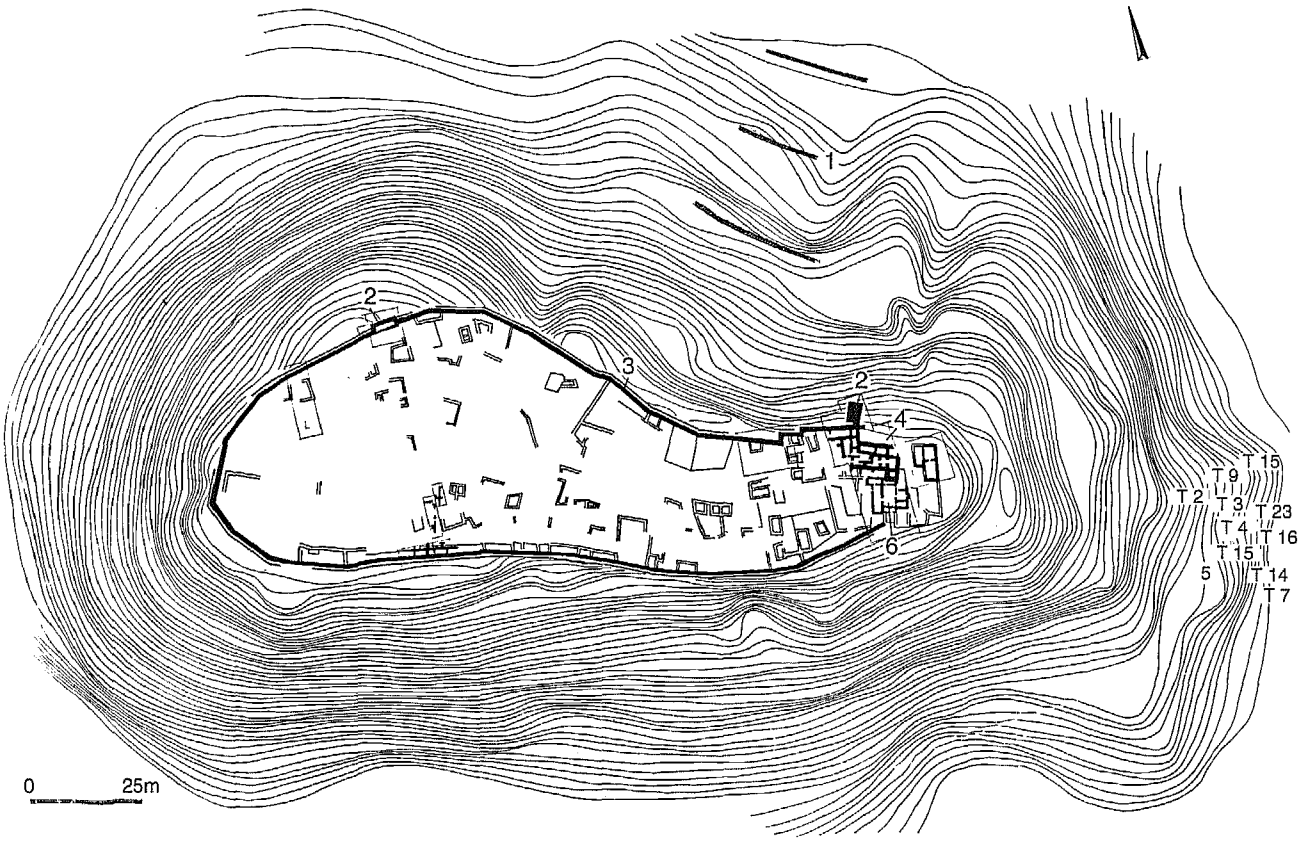
David Alon surveyed the site under auspices of the Israel Department of Antiquities in the early 1950s. Aharoni's extensive 1956 survey on behalf of the Hebrew University of Jerusalem led him to conclude that Tel 'Ira had been the capital of the Negev in the Iron II period (Aharoni, 1957). The Institute of Archaeology at Tel Aviv University conducted excavations there between 1979 and 1987, most of them directed by Itzhaq Beit-Arieh. Avraham Biran and Rudolf Cohen directed an expedition from the Nelson Glueck School of Biblical Archaeology of the Hebrew Union College of Jerusalem, participating for one season in 1979.

The earliest settlement at Tel 'Ira dates from the Early Bronze III (stratum IX). From this period excavations exposed several floors, with clay vessels found in situ, and isolated segments of walls. The most common finds were pottery sherds scattered over the bedrock. Although the exact nature and extent of this earliest settlement could not be clarified, it appears that it was unwalled and fairly extensive, the southernmost settlement in Palestine during the period.

After a prolonged hiatus in occupation, an Israelite population settled at some undetermined time between the tenth and ninth centuries BCE. During that period a small, temporary settlement was established at the site, of which no architectural remains are preserved (stratum VIII).

Stratum VII is dated to the first half of the seventh century BCE. The Israelite city, whose remains are plainly visible today, covered the area. Most of this city was surrounded by a solid wall about 1.60 m thick and about 600 m long. A four-entryway gate structure and two towers (17 × 18 m) were erected at its eastern end. The gate belongs to the so-called Solomonic gate type known from Megiddo, Hazor, and Gezer. Some public buildings were also exposed in this area, including one with five rooms and a storehouse. To the north and east this area was surrounded by a casemate wall, which demonstrates that the two types of city wall existed side by side in stratum VII. The steep approach to the gate was protected by a large tower (6 × 9 m) that projected outward from the wall.

The storage building, evidently an official (royal) storehouse, contained a large quantity of pottery vessels, including some twenty-five large pythoi capable of holding large amounts of food. A conflagration destroyed stratum VII, shortly after which, in the second half of the seventh century BCE, the city was rebuilt and reinhabited (stratum VI). The



'IRA, TEL. *Plan of the site.* (Courtesy I. Beit-Arieh)

final destruction of the Iron Age city took place at the beginning of the sixth century BCE.

The cemetery of the Israelite city was discovered on the eastern slope. It comprises some twenty-five rock-cut bench tombs, then common in Judea (Judah). [*See* Burial Techniques.] The settlement's water supply relied on large cisterns also cut in the rock. Beyond the site, the groundwater was exploited by digging wells, a method still practiced by bedouin. [*See* Cisterns.]

According to the archaeological data, the city's economy was based on agriculture and sheep and goat herding. However, it can be assumed that in this semiarid region the central government, which was vitally interested in the city's continued existence, took the primary responsibility for its economic well-being.

In the strata of the Israelite settlement, large and varied amounts of typical Judean small finds were recovered—figurines, shekel weights, and jewelry. The written finds were scant—short inscriptions on jars; the opening phrase of a letter written in cursive Hebrew, *'bdk '[mr]* ("your servant sa[id]" or "sa[ys]"); and an ostracon inscribed *mpqd brkyhw gbḥ mwqr šlmyhw*—a list of personal names.

As was the case elsewhere in the Negev, this site was resettled by the exiles returning from Babylon (Persian period, stratum V). The resettlement, however, was smaller than that of stratum VI. The site is represented in the Hellenistic period (stratum IV) by a large fortified city using the Iron Age city wall, whose remains extend to most of the excavated areas. The residences generally followed the plan of the Iron Age houses over which they were built, with some abutting of the Iron Age city wall. A smaller, but still fortified settlement appeared in the Early Roman Period (stratum III) that may have served as part of the Herodian limes.

The population of Tel 'Ira again grew in the Byzantine period (stratum II), inhabiting an area as larger—or larger—than the Iron Age city. A fairly well-preserved large monastery with a church was discovered on its east side. An eight-line inscription, still intact, indicates that the church complex was dedicated to St. Peter. The last occupation of Tel 'Ira took place in the Early Arab period (stratum I).

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ITZHAQ BEIT-ARIEH

IRAN. *See* Persia.

IRAQ. *See* Mesopotamia.

'IRAQ EL-AMIR (ancient Tyros), site located in the luxurious valley of Wadi es-Sir, 24 km (15 mi.) west of Amman, Jordan. To the northwest rise towering, rocky cliffs, in which two tiers of caves are hewn. To the east, in the modern village, the settlement that dates to the Early Bronze period (3,200–3,000 BCE) was excavated. To the southwest, on the old track to Jerusalem, are the ruins of the palace, the Qaṣr el-'Abd.

The site was first brought to the attention of scholars by the two British commanders, C. L. Irby and J. Mangles, in 1823 and by the French explorers Melchior de Vogüé and Felicien de Saulcy in 1864 and 1865, respectively. Charles H. Butler published the first reconstruction of Qaṣr el-'Abd in 1919, but it was not until 1961–1962 that the first excavations were conducted there by Paul W. Lapp, on behalf of the American Schools of Oriental Research. From 1976 to 1986, the Department of Antiquities of Jordan and the French Institute of Archaeology for the Near East (IFAPO) have sponsored a program of excavation and restoration of the *qaṣr,* made soundings at its main gate, and surveyed the irrigation system and environs of 'Iraq el-Amir (Villeneuve, 1988). [*See the biographies of Vogüé, Saulcy, Butler, and Lapp.*]

Historical Background. On two of the carved facades in the lower tier of caves, the name *Tobyah* is deeply engraved in Aramaic characters of the late fourth or early third century BCE. These are dwelling caves, originally a troglodite village, and would have been reused as shelters in times of danger. In the upper tier, silos and cisterns and a large cave (28 m deep × 6 m in width) with about eighty horse troughs carved along its inner straight side, suggest the presence of a stable for cavalry.

The name *Tobyah,* which means "Yahweh is my well-being," left as a signature on the two caves, may date to the period of the First Temple in Jerusalem (first millennium BCE). Under the Persian Achaemenids (sixth century BCE), "Tobyah the Ammonite servant," (*'abd* in West Semitic languages), is mentioned in the *Book of Nehemiah* 2:1 as one of the governors of "beyond the river." He, with Sanballat the Horonite, governor of Samaria, and Geshem, king of the Arabs in Idumea, yielded his authority to prevent the rebuilding of Solomon's Temple and the walls of Jerusalem (*Neh.* 2:19; 3:35). Nevertheless, Nehemiah, a cupbearer of King Artaxerxes I, who returned from exile in about 445 BCE, was appointed governor of Judea (Judah) and was able, with the king's support, to rebuild the walls of the city. He expelled Tobyah, a dignitary, from a spacious chamber in the Temple he had acquired through the complicity of the high priest Eliashib. Ezra, a scribe and priest who arrived after Nehemiah, in about 398 BCE, was commissioned by the king to restore the law of Moses and officially promulgated it in the Temple (*Neh.* 8:1–12). He excluded the Tobiads from the high priesthood because they were unable to trace their genealogy to a pure Israelite origin (*Es.* 2:60).

Little material culture has been discovered at 'Iraq el-Amir from the Persian period. In his report Lapp mentions a few objects shown to him from the village and dated to the period (Lapp, 1963, p. 30), and a lion protome was discovered in 1978 in a modern fence, in the northern part of the village. Its open mouth and menacing fangs are typical of the Babylonian and Achaemenid style.

In the Early Hellenistic period, under the reign of Ptolemy II Philadelphus (285–246 BCE), according to the Zenon papyri discovered at Gerza in the Faiyum of Upper Egypt, Tobias appears as a leading authority in Transjordan and one who commands a garrison of cavalry. He entertained friendly relations with Ptolemy II and his minister of finance, Apollonios. In papyrus 59005, Sourabitt, listed among the localities of Palestine and Transjordan, is usually identified with Ṣur of the *'abd,* "servant" (*Neh.* 2:1) or Ṣur of the Birtha (manor)—that is, Rabbath Ammon (Mittmann, 1970).

Flavius Josephus recounts in *Antiquities* 12.154–236 the tales of the Tobiads in the Hellenistic period with legendary episodes and several anachronisms. Yet, his is the only available account and its historicity cannot be denied completely (Wellhausen, 1897, pp. 245ff.). According to this report, Joseph the Tobiad, whose mother was a sister of the high priest of Solomon's Temple Onias II, leased the collection of taxes of Coele-Syria (Transjordan?), Samaria, Judea, and Phoenicia. He held this lucrative office for twenty-two years, probably from the end of Ptolemy's III reign (246–221 BCE) to the time of Ptolemy VI Philometor (c.177/76 BCE).

During one of several official journeys to Alexandria, Jo-

seph the Tobiad fell in love with an Egyptian dancer whom he wished to marry. But his brother, who had accompanied Joseph, gave his daughter over to him one night while he was drunk. He fathered a son with her, Hyrcanus, who distinguished himself from childhood with precocious intelligence, whom he favored. As a young man, Hyrcanus, probably through bribery, had the king of Egypt appoint him to the office of his aging father (*Antiq.* 12.220). His half-brothers, colluding with their father, resolved to kill Hyrcanus on his return from Egypt. Hyrcanus escaped their ambush, killed two of his brothers, and sought refuge east of the Jordan River, at the family's ancestral estate of Tyros/'Iraq el-Amir, in Wadi es-Sir (see below). He made his home there, levying tribute on the local inhabitants and making war on them. With the support of the high priest, he probably had deposited his fortune in the Temple of Jerusalem, as is attested by the episode of Heliodorus in *2 Maccabees* 3:1–40. Hyrcanus is described in 3:11 as "a man of great dignity," a reflection of just how influential he was at that time.

In fact, it was political conflicts that forced Hyrcanus to withdraw to Transjordan: in 200 BCE, Antiochus III, the Seleucid monarch of Syria, conquered Palestine, Phoenicia, and Transjordan from the Ptolemies. [*See* Seleucids.] The pro-Seleucid party in Jerusalem, headed by the high priest Simon and supported by Hyrcanus's older brothers, persecuted Hyrcanus, a partisan of the Ptolemies. It was then that he was obliged to withdraw to Tyros. He and his father continued to collect taxes for the Ptolemies, in accordance with the dowry agreement made with the king of Egypt: Antiochus III gave his daughter Cleopatra I Syra in marriage to Ptolemy V (193 BCE) and presented the royal couple with the tribute of the countries he conquered. This was certainly the occasion for a new auction of the taxes and Joseph the Tobiad won the bid for the second time by doubling the sum of 800 talents proposed by the other Syrian tax-farmers (*Antiq.* 12.145–155).

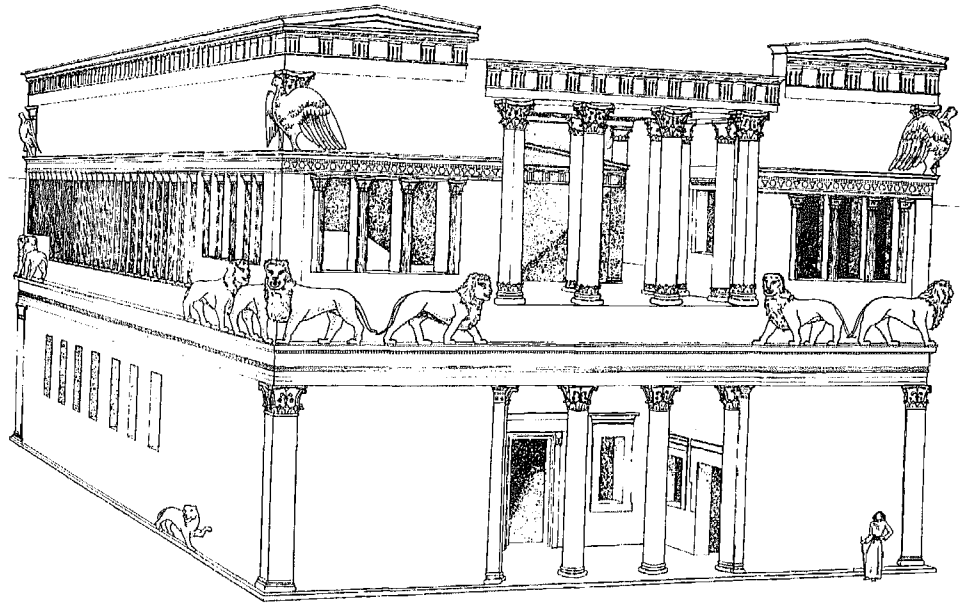
After the death of Joseph the Tobiad, factional strife arose in Jerusalem and the pro-Seleucid party, supported by Hyrcanus's older brothers and the high priest Simon, declared war on Hyrcanus, who was banished and swore never to return to Jerusalem. His final retreat can be estimated toward the end of Seleucus IV's reign, in about 177 BCE.

Archaeological Remains. In describing Hyrcanus's estate, Josephus was topographically accurate: "The place is between Arabia [the Nabatean kingdom] and Judea [Peraea] not far from Esbonistis" (*Antiq.* 12.233–34). The name *Tyros* given to the estate by Hyrcanus is the Aramaic transcription of *Ṣor,* meaning "rock" and preserved in modern Wadi eṣ-Ṣir; 'Iraq, in the local dialect is "rock," "cliff," or "cave." El-Amir ("the prince") is significant evidence of the persistence of local traditions attached to an ancient site in the East. Josephus describes the main monument built by Hyrcanus as a *baris uschura,* a "mighty manor." The term *baris* is borrowed from the Greek used in fourth-century BCE Asia Minor, in which it meant "domain," "fortified residence," or "manor" (Will et al., 1991, pp. 31–35). The description of the domain in *Antiquities* 12.233–34 is complex and incomplete for it omits the village that was the main settlement of the Tobiads, several important buildings, such as the Plaster Building (Lapp, 1963, pp. 8–39), the monumental gateway, and the defensive walls (Villeneuve, 1986, pp. 157–165). The other buildings mentioned by Josephus are *aulai,* probably "small villas," and *paradeisoi,* meaning "parks," rather than "hunting reserves." However, the outstanding structure was the *baris,* the actual Qaṣr el-'Abd, or "palace of the steward."

This two-storied rectangular monument (37 m north–south × 18.5 m east–west) was erected on an artificial terrace southwest of the village (see figure 1). Its lower level contained four storage rooms, pierced with seven windows, that opened on a long corridor on the east and west sides. A monumental entrance distyle in antis on the northern and southern facades gave access to the building. Two water basins at the northeastern and northwestern corners released the overflow of water through feline fountains. The upper story, which was originally designed as the owner's residence, was never completed. It included four corner towers, accessible through the northeastern stairway, two galleries with twenty-one fluted Corinthian columns on the east and west sides, and a central festival hall. There was, in addition, a balcony on each of the corner towers that was supported by a frieze of lions being followed by a lioness with her cubs. The frieze on the southern balcony (see figure 2) was unfinished and the water basins were unplastered—evidence that Qaṣr el-'Abd had been abruptly abandoned.

There are pre-Hellenistic antecedents for the Qaṣr el-'Abd: the two-storied Ammonite towers at Rujm el-Malfulf, North and South; the Umm Sweiwineh towers south of Amman; the Khilda towers to the west; and several other megalithic towers near Rabbat Ammon that date to the seventh century BCE but that were reoccupied from the Early Hellenistic to the Roman-Byzantine periods. Good parallels of fortified residences can be found in Iran at Shar-i Qumis near Hamadan and in northern Iraq at Jaddala, both dated to the Late Hellenistic period (Will et al., 1991, pp. 276–77). [*See* Hamadan.] An Aramaic inscription at Jaddala recounts that the residence was designed as a *birtha* or manor. The antecedent of these residences is the Neo-Hittite *bit-ḫilani,* which is characterized by a columned entrance usually flanked by two towers. Nevertheless, the architectural decoration of the *qaṣr,* with its Corinthian floral capitals, applied half columns, acroteria, and row of acanthus leaves on the base of the shafts are Alexandrian in origin. Later developments of this architecture are the Khazneh ed-Deir and especially the Palace Tomb at Petra, in southern Jordan. [*See* Petra.]

The date of the Qaṣr el-'Abd has been the subject of speculation. De Saulcy (1865) related the monument to the Am-



ʿIRAQ EL-AMIR. Figure 1. *Reconstruction of Qaṣr el-ʿAbd.* (After F. Larché)

monite period. No significant evidence was discovered in excavating the monument because it was never finished and therefore was not occupied in the Hellenistic period. However, the excavation of the main gateway revealed pottery sherds and coins of chronological importance: six bronze coins, dated to the end of Antiochus III's reign (c. 208–200 BCE), were associated with floor 1, which is not related to the architectural level of the gateway but to a later entrance system "prepared in haste" (Dentzer et al., 1982, p. 320; 1983, p. 141). Jean-Marie Dentzer and his colleagues conclude that construction of the *qaṣr* was begun "at the end of the reign of Seleucus IV (187–175 BCE) but was interrupted in 175 BCE. Their interpretation is not fully convincing, however: on the one hand, the assumption that Hyrcanus ended

ʿIRAQ EL-AMIR. Figure 2. *Unfinished lion relief in the sourthwestern balcony of Qaṣr el-ʿAbd.* (Courtesy F. Zayadine)

his life in 175 BCE does not rest on historical ground. Several authors date his suicide to the first campaign of Antiochus IV (169 BCE) and Antiochus's looting of the Jerusalem Temple treasure (Will et al., 1991, p. 21). On the other hand, if floor 1 of the gateway was a reuse, a reasonable conclusion would be that the gateway itself, and especially the *qaṣr*, are earlier than 200 BCE. With this evidence it is not possible to accept Momigliano's hypothesis that the *qaṣr* was standing in 259 BCE (Momigliano, 1931–1932; Gera, 1990, p. 25), but it is likely that Hyrcanus began building his fortified residence when he first fled east in about 209 BCE.

The later occupation of the *qaṣr* belongs to two phases: the first dates to the Late Roman period (third–fourth centuries CE), ending with the 363 earthquake, and the second from the fifth to the mid-seventh centuries. The latter is attested by both coins and pottery lamps. Byzantine and Umayyad iconoclasm was probably responsible for the destruction of the animal reliefs still standing in the eighth century.

There is no reason to accept Josephus's chronology and date Hyrcanus's end to the accession year of Antiochus IV in 175 BCE. The new king of Syria had to busy himself at first with consolidating his power, for he was opposed by his nephew Demetrius. He began to meddle directly in Jewish affairs in 174 BCE, when Joshua (Jason) offered a high price to buy the priesthood and with the arrival of Menelaus in the position 172 BCE. At the end of his first campaign in Egypt in 169 BCE, Antiochus was directly confronted with the factions fighting in Jerusalem. By pillaging the Temple treasure, and collecting Hyrcanus's fortune, he realized the role of that independent "princelet," but east of the Jordan. Hyrcanus had been fighting the Nabatean Arabs, who joined the Seleucid party after Antiochus III's campaign in 218 BCE. The dramatic end of Hyrcanus's adventure is recounted in *Antiquities* 12.236: "seeing how great the power which Antiochus had, and fearing that he might be captured by him and punished for what he had done to the Arabs, he ended his life by his own hand." This may refer to the capture of Jerusalem by the Seleucid king in 169 BCE and the execution of the enemies of the high priest Menelaus. Hyrcanus was most probably directly threatened by Antiochus IV and his army before his suicide. The revolt of the Maccabees in 167 BCE brought an end to Tobiad hegemony east and west of the Jordan.

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FAWZI ZAYADINE

IRBID, site located in northwestern Transjordan (map reference 674 × 062) and identified with biblical Beth Arbel (*Hos.* 10:14), classical Arbela, and Islamic Arbad. The site's name prior to the eighth century BCE remains unknown. In 1890, Gottlieb Schumacher recorded the site's classical remains, and in 1929, William Foxwell Albright noted its importance between the fourteenth and the tenth centuries BCE. Although considerable obfuscation of the remains has occurred in the last century, systematic excavations, survey, and the integration of textual ethnohistorical, and recently taken oral historical data have begun to clarify the occupational history of the tell and the surrounding area.

The site consists of an eliptically shaped tell (about 500 m × 400 m) and surroundings that encompass modern Irbid and Barha. Following an intensive survey of the tell and its vicinity in 1983–1984, systematic excavations were begun in 1984 that are still underway. Stratified occupational data are most secure for the period from about 3500 to about 700 BCE; however, there is also some stratified evidence for the first–ninth centuries CE, which are attested to textually as well. Excavations of the surrounding area, conducted by the Jordanian Department of Antiquities, and analysis of the survey data have helped to confirm the sequence of occupation attested to on the tell.

Evidence for the Late Chalcolithic and Early Bronze periods has been found on the southwest and western sides of the tell. Cisterns were cut into the bedrock near small-scale, probably domestic, structures. No city wall was found.

In the Middle Bronze Age (c. eighteenth–nineteenth centuries BCE), the tell was encircled by a boulder wall of basalt, which is indigenous to the region. To the east, part of a glacis was excavated. Structures relating to this period were badly disturbed by later occupation. However, the domestic nature of the pottery implies private dwellings, rather than public.

The Late Bronze and Early Iron Age occupation (c. 1300–1000 BCE) is the clearest to date. Domestic structures on the west reused or partially destroyed the Middle Bronze structures. On the northwest side of the tell and farther to the east was part of the necropolis, as shown by R. Dajani. The city wall was extended in the south by the addition of a chert and limestone hewn block wall. On the southwest, a public complex dating to the end of the Late Bronze Age, supported by carbon-14 dates, has been excavated. The structures were multistoried and enclosed by a perimeter wall. Cultic objects—an incense burner, goblets, cups and saucers, lamps, and a basalt libation stand—were found on storage shelves at the rear of the complex. One room contained large storage vessels that held lentils, olives, grains, and probably oil. A fire destroyed the complex, during which the wooden beam supports burned, causing the mud-brick superstructure to collapse into the randomly sized stone substructure. The destruction debris extended for about 100 m and was 4 m deep. The fire and destruction were caused by natural means.

Following the destruction, the debris was leveled but not removed. The stones were reused to build minor industrial and domestic structures and new construction techniques altered the area. Although other areas on the tell attest to the change in constructional techniques from the Late Bronze to the Iron Age, only the complex in the southwest was destroyed. The pottery corpus indicates a gradual change in typology, rather than a distinctive and fundamental change based on historical periodization.

As at other sites, the tell was incorporated into the plan of the Roman city. The site's function as the center for municipal structures continues to the present. Although its size surpassed that of Beit Ras/Capitolias, located 5 km (3 mi.) to the north, Irbid/Arbela's status was lower. That the sites were interconnected seems clear; accommodations must have been made regarding the surrounding arable land. Irbid's fame in early Islamic history emanates from Caliph Yazid II, who lived at Beit Ras and died at Irbid, probably at Barha, to the west, which then was probably a district of Irbid, as it is today.

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IRRIGATION. The history and extent of irrigation in the ancient Near East are difficult to trace because the phys-

ical evidence in many instances is located away from settled sites in the open countryside. It is only recently that regional surveys have been initiated to determine the extent of occupation beyond well-defined sites and the use made of natural resources. To help in this endeavor, space-age technology, using information gained through the LANDSAT system, is now being utilized to trace ancient waterworks (Adams, 1981, p. 33). Because many known waterworks were in use for more than just one period, however, determining their original date is complicated. These limitations in studying the history of irrigation, render the results incomplete.

Very soon after the domestication of plants in the Neolithic period, people realized that in certain regions cultivation required supplementing rainfall with water from other sources. Thus, in the Ubaid–Early Dynastic I periods in the valleys of the great rivers of Mesopotamia (Adams, 1981, pp. 52–129) and in predynastic Egypt (Hodges, 1970, p. 61), dense settlement was undertaken and flourished to the point of developing unique cultures. The nature of the floods in the Nile River valley and in Mesopotamia differed and required different responses. The Nile inundation occurs in early spring and recedes, after only a few days, after depositing a new, rejuvenating layer of soil in which sowing can take place immediately; the Tigris and Euphrates Rivers flood in the early summer, when it is too late for sowing. Thus, sowing in Mesopotamia took place before the flooding, and the fields had to be protected with dikes against the crops being washed away. In Egypt, canals were dug to irrigate the fields after the floodwaters had receded (Hodges, 1970, p. 60); this undertaking, which required a strong central authority because it involved more than just one community, probably led to the unification of Egypt.

In other regions, different existing water sources, such as springs and brooks, had to be tapped and wells and cisterns had to be built. Jericho, founded in the Neolithic period, is considered to be the earliest urban site; its settlement was made possible by a perennial spring nearby. Its earliest settlement was surrounded by a defense wall with a tower protecting the approach to the spring (Kenyon, 1979, p. 25), whose water was used for drinking, watering animals, and irrigating land.

Some of the earliest preserved waterworks are those at Jawa, the short-lived Early Bronze Age (late fourth millennium BCE) site in Jordan's Black Desert. While irrigation in the river valleys of the Nile and the Tigris and Euphrates relied on flooding, at Jawa water for irrigation became available from catchment basins created to collect runoff water that was in turn diverted into dams and gravity canals (Helms, 1981, pp. 135–198). The remains of these waterworks and those of the town and its fortifications suggest that they were designed and constructed by a highly organized population. [*See* Jawa.] Irrigation with runoff water was also practiced in other arid zones, such as the Negev desert, but in later periods. Remains of water-collection and distribution facilities dated to the Iron II period have been found at Ramat Matred and Mishor ha-Ruah (tenth–ninth centuries BCE) in the central Negev, and in the Buqei'a (seventh century BCE), west of the northern tip of the Dead Sea (for bibliography, see Borowski, 1987 pp. 1–20). It seems that settlements throughout this period were initiated, or at least supported, by the central Judean government for economic as well as political and military reasons. During the Roman–Byzantine and Early Arab periods, agriculture in the Negev continued to rely on the same method of diverting water to terraced fields, cisterns, and pools. [*See* Cisterns.]

Throughout history, Mesopotamian agriculture relied on irrigation by canals that took their water from its great rivers. The great canal networks and their use and maintenance dictated strong, central political units first centering on city-states and later on territorial empires. The use and care of canal irrigation was state controlled and demanded a highly organized social system that relied on detailed recordkeeping (Adams, 1981, p. 165). In Girsu, Eanatum (c. 2500 BCE) and Entemenak (c. 2400 BCE) constructed weirs of baked bricks laid in bitumen (Jacobsen, 1982, p. 62); similar activities were carried out at Lagash (Hruška, 1988). Ur-Nammu, king of Ur, devoted his energies to many projects, among them a substantial program of irrigation works that assured the city's prosperity (Hallo and Simpson, 1971, p. 78). Gungunum of Larsa, as well as other kings of the Mesopotamian city-states of the first half of the second millennium BCE (Renger, 1990), was also occupied with the building and maintenance of canals for bringing fresh water to the south (Hallo and Simpson, 1971, p. 92). Mathematical texts from the Old Babylonian period (c. 2000–1600 BCE) suggest that the ancients were preoccupied with the volumes of water from different sources that were necessary to irrigate fields to a certain depth (Powell, 1988). [*See* Girsu and Lagash; Ur; Larsa.]

The subject of irrigation plays a prominent role in the earliest agricultural manual, known as the Sumerian "Georgica," composed in about 2100 BCE and still in vogue in about 1700 BCE (Jacobsen, 1982, p. 57). According to this manual, fields were irrigated in the summer (June–July) in preparation for weeding (July–August). After the ground was prepared (August–October) and sown (September–October), four irrigations were recommended during particular stages of crop development—the final one when the crop (barley) was ripening, to ensure an extra good yield (Jacobsen, 1982, pp. 59, 61).

The Mari (Syria) archives are another source of information about irrigation in this region of the Euphrates (Kupper, 1988). Included in the correspondence of the governors of the districts of Mari, Terqa, and Sagaratum are reports pertaining to new canals built under their supervi-

sion; information related to water control; irrigation terminology; and the enumeration of personnel involved in irrigation and canal maintenance. The amount of information available demonstrates the importance of irrigation to the kingdom's economy. Archaeological surveys and excavations show that the Mari region was already being cultivated and irrigated in the Early Bronze Age, at the beginning of the third millennium BCE (Margueron, 1988). [*See* Mari; Terqa.]

Unfortunately, the intensive irrigation of certain soils leads to salinization. In southern Mesopotamia, the soil is alluvial in origin, of fine-textured clays with a high salt content. In addition, irrigation with river water and capillary action from a shallow and saline water table add salt to the soil. High salt content affects germination and makes the soil impermeable (Jacobsen, 1982, pp. 5–7). Soil salinization in Mesopotamia led to the abandonment of wheat cultivation in favor of the more resistant barley. [*See* Cereals.]

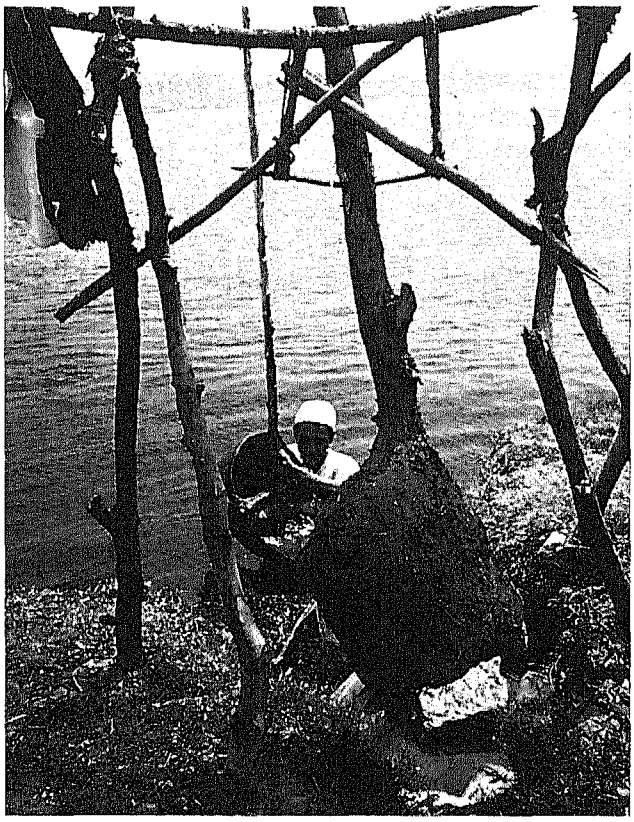
Gradual salinity through irrigation in Mesopotamia's Diyala region slowly rendered the area unusable for normal cultivation and forced the abandonment of the region (Jacobsen, 1982, p. 71). The earliest occupation of the region occurred in about 4200 BCE, and it was very fertile and prosperous until much of it was abandoned during the Islamic period. Throughout its history, however, the Diyala region suffered several abandonments, the result primarily of the collapse of the political system in charge of the irrigation network. With the collapse of central authority, waterworks could not be maintained and the entire agricultural system collapsed, forcing the population to abandon it. [*See* Diyala.]

Since prehistoric times in the Iranian plateau, a water-transport system known as *qanat,* was developed (Olmstead, 1948, pp. 16–68). It consisted of a horizontal tunnel with vertical shafts that allowed entrance for maintenance and the release of air pressure (Landels, 1978, pp. 38–40). The water carried by these systems originated in the mountains as melted snow (Olmstead, 1948, p. 165). Early traditions concerning this system found their way into the Avesta (Olmstead, 1948, pp. 16, 20). Titles to plots watered by *qanats* were owned in fee simple (Olmstead, 1948, p. 68). During the time of Darius, the Persians introduced (c. 490 BCE) the *qanat* system into Egypt, where it was used at the Oasis of the South (Olmstead, 1948, p. 224).

The first pharaoh, the legendary Menes, is credited not only with uniting Upper and Lower Egypt, but also with being the first to try to control the Nile by building dikes and apportioning the water used for agricultural purposes (Hodges, 1970, p. 91). The centrality of government control of water continued throughout Egyptian history into the Hellenistic, Roman, and Byzantine periods (Bonneau, 1986). During certain periods, installations known as Nilometers were used to measure the level of floodwaters in order to compute the tax rate for the year; the higher the water level, the more abundant the crop, and thus the higher the tax rate. Nilometers were built along the river, mostly near temples. In addition to the archaeological recovery of remains of these installations, Nilometers are depicted on mosaics, such as those uncovered in Israel at Sepphoris and Beth-Shean and at Tabgha (Netzer and Weiss, 1992, p. 38). [*See* Sepphoris; Beth-Shean; Tabgha.] The annual flooding of the Nile required repeated land surveying, which taught the Egyptians how to lay out a right-angle triangle and solve other mathematical and geometric problems (Hodges, 1970, p. 132).

Gardening is a branch of agriculture that also requires controlled irrigation. In ancient Palestine it was practiced on a limited scope because of irrigation difficulties (including the terrain and minimal water sources). In Jerusalem in the First Temple period (c. 950–586), there were gardens in the Kidron Valley that were watered by an open canal, the Siloam channel, which originated at the Gihon Spring. [*See* Jerusalem.] It is known from Egyptian textual and artistic evidence, and from the Bible (*Dt.* 12:10–11) that gardening was well developed in Egypt. To be able to water gardens year-round, water had to be brought from the river to the fields (Endesfelder, 1982, p. 142). Initially, this was accomplished by hand, but later with an implement called *shaduf* in Arabic (see figure 1). A *shaduf* is a long horizontal beam on an upright pole; it has a vessel attached at one end and a weight at the other. When the vessel is immersed, water is drawn into a canal leading to the agricultural plot or into a large receptacle from where it can be carried by hand to other destinations. The *shaduf* is known from a Mesopotamian cylinder seal (c. 2000 BCE) and from Egyptian tomb painting (c. 1500 BCE; (Hodges, 1970, pp. 118–119). This method, although still in use, was later partially replaced, probably in the Roman period, by the screw pump invented by Archimedes. Another technical improvement for irrigation, which probably reached the region in the Early Roman period, is the waterwheel (or bucket) powered by draft animals (or humans). The waterwheel raises water from a low source, such as a river, to higher ground, where it can be distributed through canals. However, the height to which water could be raised was limited by the size of the wheel, a problem that was resolved with the invention of the bucket chain. This installation was made of an endless chain with buckets attached at set intervals. The chain was draped over the axle of a wheel that was operated in a manner similar to that of the waterwheel. The difference in elevations between the water source and the higher destination depended on the length of the chain (Landels, 1978, pp. 71–74).

Roman technological influence was strong in ancient Palestine beginning in the time of Herod the Great, who introduced new ways of transporting water from distant sources. In and around Jerusalem, for example, water was brought from "Solomon's Pools" at Artas, south of Bethlehem. Wa-



IRRIGATION. Figure 1. *A shaduf, a type of primitive irrigation pump on the river bank of the Nile.* (Erich Lessing/Art Resource, NY)

ter for urban and agricultural uses was brought by aqueducts utilizing arch-supported canals, bridges, tunnels, and siphons. [*See* Aqueducts.] Large irrigation projects were carried out around Jericho, Samaria, and Caesarea. The Romans utilized similar water systems in the second century CE in North Africa to bring vast areas under cultivation to grow high-quality wheat. Where cereals could not be cultivated, olive trees were planted.

In Roman Palestine, water rights for agricultural use were included in property deeds, as is seen in the documents belonging to Babatha's archive found in a cave near 'Ein-Gedi. These rights were enumerated according to days of the week, number of hours, and water sources for irrigation (Yadin, 1971, pp. 235–237).

Irrigation has always been a labor-intensive branch of agriculture that cannot survive without tight control by a central authority. When a political system was weakened, water management often disintegrated, the economy collapsed, and periods of disorder and scarcity took over.

[*See also* Agriculture; Hydraulics; *and* Hydrology.]

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ISFAHAN, site located in modern Iraq, on the banks of the Zayandeh-Rud, some 17,160 m (5,200 ft.) above sea

level, midway between Damascus and Aleppo in the west and Bukhara and Samarkand in the east (32°40′ N, 51°38′ E). Isfahan is an oasis surrounded by desert and semidesert. It boasts the most abundant water supply on the land-locked Iranian plateau, a condition that led to the early development of agriculture and urban growth there. Isfahan was a center for the exchange of goods and ideas perhaps as early as Achaemenid times.

Identified as ancient Gabae, Isfahan was cited by Strabo (15.3.3) as one of the Achaemenid royal residences. As an administrative center, it appears as the Parthian *G'b* and Middle Persian *Gdy/Gay* in the third-century CE inscription of the Sasanian king Shapur I at Naqsh-i Rustam (inscription on the Ka'bah of Zoroaster, *KZ* ll. 27, 33). [*See* Naqsh-i Rustam.] These names, in turn, have been equated with *Aspahan/Asfahan/Isfahan* in late classical and later Arab sources; the abbreviation *ASP,* for Aspahan, occurs on Sasanian coins from the fourth century onward, while *Spahan* is found on Sasanian administrative seals as a province of the Sasanian Empire.

Spahan was the site of one of the many sacred fires established throughout the Sasanian Empire by the chief priest of the Zoroastrian state church, Kirder, in the third century. In Nestorian Christian accounts from the Sasanian period, Asfahan/Isfahan is mentioned as an episcopal seat.

The foundation of the present city appears to date to early in the Sasanian period, when it was centered on the town of Jayy (Gay), now Shahristan, a suburb 8 km (5 mi.) to the east. Jayy served as a citadel and place of refuge for the surrounding villages in times of war, as well as an archival and administrative center. According to later Arab and Persian sources, it was protected by a wall with one hundred towers and four gates aligned according to the seasonal positions of the sun. Outside one of the gates, a special open space, or *maidān,* served as a marketplace.

Three kilometers (2 mi.) to the west was Yahudiyya, where, according to one tradition, Jews had been settled in the sixth century BCE by the Babylonian king Nebuchadrezzar or, according to another, by the Sasanian ruler Yazdigird I (399–420 CE), at the request of his Jewish wife. With the Arab conquest of Iran in the middle of the seventh century, Jayy became the seat of an Arab governor and site of the first Friday Mosque in the region. Jayy declined after 767 (AH 150), when the 'Abbasid governor shifted his administration and the mosque to Khusinan, a village closer to Yahudiyya. Shortly thereafter, Khusinan was absorbed by Yahudiyya, which is now the center of modern Isfahan and, since 773 (AH 156), the location of the third and present-day Friday Mosque.

The city continued to develop under the Buyids in the tenth century; it was walled and ovoid in shape, with twelve gates and a citadel. Within it, the Friday Mosque was fronted on the *maidān* and associated bazaar area—the religious, administrative, commercial, and intellectual center of the city. Another major period of construction was under the Seljuks in the eleventh and twelfth centuries. The me-

ISFAHAN. Figure 1. *The Sasanian bridge at Shahristan.* (Courtesy J. Lerner)

dieval history of Isfahan ended with the elevation of the city as the capital of Persia in 1598 (AH 1006) under the Safavid Shah 'Abbas, who was responsible for a grand architectural program.

No archaeological work has been done in Isfahan to document its pre-Islamic past. A ten-arched bridge spans the Zayandeh-Rud at Shahristan (see figure 1), the former Jayy; its stone piers are probably a Sasanian construction. Two Sasanian capitals, both bearing royal and divine busts in relief, have been known since at least the nineteenth century, when they were observed at the entrance to the Safavid pavilion on the Maidan-i Shah. By analogy with similar capitals from other sites in Iran, these date to the time of Khusrau II (591–628 CE) and attest to some unknown palatial structure. The capitals are unexcavated and were most likely moved from their original findspot. On a hill to the west of the city are the mud-brick ruins of what may be an *āteshgāh*, or Zoroastrian fire temple. Shah Diz, a mountaintop stronghold south of the city, may or may not date to the Sasanian period.

Other than the Friday Mosque, the minarets of Isfahan and the twelfth-century Sha'ya Mosque, none of Isfahan's pre-Safavid Islamic monuments have been published from an archaeological point of view. While restoration work in the Friday Mosque yielded no definitive pre-Islamic levels, the history of this major building is now better understood.

[*See also* Mosque; Persia, *articles on* Persia from Alexander to the Rise of Islam *and* Persia in the Islamic Period; *and* Sasanians.]

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JUDITH LERNER

ISIN, ancient capital of the first dynasty of Isin, situated about 200 km (124 mi.) south-southeast of Baghdad, Iraq, about 20 km (12 mi.) south of Nippur (31° 51′ N, 45° 17′ E). The ruins of Isin cover about 1.5 sq km and are 8 m high. The site's modern name is Išān al-Baḥrīyāt. (J. N. Postgate [1930] has proposed that during the third millennium the site was known as IN^{ki}.) The identification with the ancient city was made by K. Stevenson in 1923. The first brief excavation was carried out in 1924 by the excavators of Kish, A. T. Clay and Stephen Langdon (see P. R. S. Moorey, *Kish Excavations, 1923–1933,* Oxford, 1978). Their trench north of the highest point was rediscovered by a German expedition in 1986, working on behalf of the University of Munich and the Bavarian Academy of Science and supported financially by the German Research Council. From 1973 to 1989, before the Gulf War, eleven seasons of excavation had taken place.

The first king of the first dynasty of Isin, Ishbi-Erra (2017–1985/1953–1921 BCE; middle, or short, chronology) may also have been the founder of the city of Isin. During the first season of excavations by the German team, however, traces of an older occupation were found, especially from the Akkadian period, and quality objects recovered, the oldest of which belong to the Ubaid period (fourth millennium). Ishbi-Erra was a general during the reign of the last ruler of the Ur III dynasty, Ibbi-Sin, prior to becoming king of Isin. According to the Bible, he belonged to the tribe of the so-called Amorites. [*See* Amorites.] These people spoke a West-Semitic dialect as did the later Arameans, Hebrews, and Arabs. Nomads, they invaded southern Mesopotamia from Northern Syria at the end of the third millennium. King Shu-Sin of Ur III built a wall against the Amorites between the Euphrates and Tigris Rivers north of Baghdad, where the distance between the rivers is narrowest. [*See* Ur.] The ruins of this wall, constructed of earth and clay, can still be seen. One of the best-known subtribes of the Amorites (which means "west" in West-Semitic languages), or MAR.TU. (Sum., "west"), were the Benjaminites ("the sons of the south"), mentioned in the Bible with Abraham from Ur in Chaldea. [*See* Chaldeans.] From the Bible, and now also from cuneiform inscriptions, it is known that the home of the Benjaminites was both in the south near Ur and in the north near Harran (*Gn.* 35:18, 24; 42:4, 36; 43:14–16, 29; 34; 44:12; 45:12, 14, 22; 46:27; *Dt.* 33:12; *Jos.*18:20, 28; *Jgs.* 2:21). West-Semitic tribes may have migrated from there into Canaan at the same time the Amorites invaded Mesopotamia. As a result of the biblical name *Canaan,* West-Semitic people in this area were called Canaanites. [*See* Canaanites.]

The best-known of the Amorite kings in Mesopotamia was Hammurabi of the first dynasty of Babylon (1792–1750/1728–1686 BCE). Unfortunately, that level in the city of Babylon has not yet been excavated because the level of ground-

water is still too high. [*See* Babylon.] In the sixteenth century BCE, Babylon was conquered by the Hittites under King Muršili I. [*See* Hittites.] The real winners, however, were the Kassites, who may have come from the east (the names of some of their gods resemble those in India in the second millennium BCE), although in Mesopotamia cuneiform letters were used for the Babylonian/Akkadian as well as the Sumerian languages. [*See* Kassites; Cuneiform; Akkadian; Sumerian.] Just before 1000 BCE another West-Semitic people came to Mesopotamia, the so-called Arameans, who established the second dynasty of Isin and whose principal capital was Babylon, rather than Isin. [*See* Arameans.] The Arameans ruled over Babylonia for a long period, until the invasion of the Achaemenids under King Cyrus the Great in 538 BCE.

The primary god of Isin was the goddess Gula, the main goddess of medicine in the Near East and specially favored by the Kassites in the second millennium BCE. [*See* Medicine.] Her temple (60 × 90 m) was discovered at the highest point on the tell. The temple contained two chapels, one of Gula and the other of her husband, Ninurta. The main period of use was during the Kassite period. One of the temple's courtyards was covered with burned clay slabs and had stamp inscriptions of a Kurigalzu of the fourteenth century BCE. The walls were built mainly of sun-dried bricks. This temple was probably founded in the Early Dynastic period (c. 2700 BCE) because at some places below the walls of the Kassite and the Old Babylonian levels burnt and sun-dried bricks, whose shape is plano-convex, were discovered. Clay and St. Langdon had found them in their trench in 1924, as well. The building's most important feature, however, was a large (4 × 3 m) staircase in front of the temple leading to the main entrance. Excavated in the last two seasons (1986, 1989), the staircase is composed of nineteen steps of sun-dried bricks paved with clay. Curiously, the steps showed no traces of use. In front of the staircase an altar or pedestal was built up with reused bricks inscribed with the names of kings of the first dynasty of Isin, such as Bur-Sin (1895–1874/1831–1810 BCE). This staircase was in place from the beginning of the second millennium BCE until the sixth century BCE, when Nebuchadrezzar II (604–562 BCE) restored the Temple of Gula for the last time.

The staircase suggested the existence of a temple tower, the so-called ziggurat, but according to cuneiform texts there was no ziggurat at Isin. [*See* Ziggurat.] The sacred building was also surrounded by a great wall, a temenos, founded by Ishme-Dagan of Isin (1953–1935/1889–1871 BCE) and rebuilt in the Kassite period. The 1986 expedition searched for the second-millennium BCE palace at several locations in the ruins. In the southeast an official building was found from that period with very well made and plastered walls. The buildings ground plan could be compared to that of one of the southern buildings at Tell Asmar, also a structure with official features and significance. At Isin an archive of about eighty tablets was found, mentioning some deliveries to King Enlil-bani (1860–1837/1796–1773 BCE). [*See* Libraries and Archives; Tablet.]

West of the Temple of Gula two larger buildings were excavated during the last two seasons, also with some hints of being a palace. Two inscriptions on seal-impressions mention the king's scribe and brewer. South of the temple, occupation levels from the beginning of the third millennium BCE were discovered just below the surface, with circular offering tables like those at Uruk and Ur from the same period. [*See* Uruk-Warka.]

Outside the city of Isin were several Early Islamic buildings that were in use until the Mongol invasion in the thirteenth century. One of the buildings seems to have been a caravanserai.

The site's small finds were numerous, and some are of very fine quality, especially the cylinder seal from the Akkadian period. [*See* Seals.] In the Temple of Gula a mace head of the Akkadian king Šar-kali-šarri (2223–2198 BCE) was found, dedicated to Gula, the Lady of Isin, an indication of the importance of Isin/IN^{ki} then. The terra-cotta reliefs of the Old Babylonian period found at Isin show new motifs (e.g., representations of ostriches). A curious find from the temple area is a figurine of a kneeling man with his left hand on his back, perhaps either pointing to where he has pain or to where he was healed. The excavation's anthropologist discovered some traces of arteriosclerosis in examining skeletons at Isin. Other corpses showed a blow to the head or stroke injuries. One skull had small artificial openings in the area of the right parietal bone, indicating that a Babylonian doctor had performed a trepanation, but probably only in a postmortem, for cult purposes.

Until the beginning of the twentieth century, the ruins at Isin were surrounded by water, like a marsh *(ḫōr)*, as the modern name shows: Išān al-Baḥrīyāt "monument *(išān)*, which was nearly covered by the sea (baḥrīyāt)." The bones of deer and razorback hogs found at Isin suggest that the region was also a swamp in the past, with brushwood and trees, as those animals could only have existed in such a biotope. Among the animal bones was also a whale bone, an intimation of the legend of the prophet Jonah, who was spewn out of the mouth of such an animal, although farther north, near the Assyrian capital of Nineveh. [*See* Nineveh.] A mosque bearing his name, *Nebi Yunus,* is a reminder of the event.

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BARTHEL HROUDA

ISKANDER, KHIRBET, 7.5-acre site on the northern bank of Wadi el-Wala, in modern Jordan, strategically located on the ancient King's Highway, approximately 24 km (15 mi.) south of Madaba, in what was once northern Moab.

In surveys (Glueck, 1939) and excavations (Parr, 1960) important remains from the Early Bronze IV period (c. 2350–2000 BCE) had been noted at the site. In 1981, 1982, 1984, and 1987, the American Schools of Oriental Research sponsored an excavation at Khirbet Iskander directed by Suzanne Richard, with Drew University, Upsala College, and Seton Hall University as affiliates. Roger Boraas served as associate director in 1982 and 1984. The project's primary research objective was to test the hypothesis that sedentism was an alternative subsistence choice to pastoralism in the Early Bronze Age. Excavation affirmed the hypothesis, even expanding the parameters of sedentism in this alleged "nomadic interlude" to include small fortified towns.

The stratigraphic profile that emerged is tentative and awaits additional excavation and final publication. The best stratigraphic sequence (seven phases thus far) comes from area B at the northwest corner of the site. The earliest, phase G, represented by fragmentary house walls, dates to EB I. Phase F house walls represent the basal EB IV settlement. Phases E–B constitute the EB IV settlement within fortifications. Phase A, therefore, is the final, postfortification EB IV settlement, after which the site was abandoned.

Four distinct phases of the site's fortifications are currently discernible: an inner wall (E), outer wall (D), and two domestic use phases (C–B). The inner wall, of stone and mud brick, was found in a collapsed state. The phase D rebuilding included the inner wall, a new outer wall, a rubble fill, and a square tower with steps, creating a 2.5-meter defense system. Excavation has revealed two interior-use phases thus far, a building complex in phase B and a limited sounding into an earlier domestic level (C). Two contiguous broadrooms formed part of a larger building complex in phase B. In one of the rooms benches line the walls and in the other a stone-lined bin (possibly a *favissa,* or repository for discarded cultic objects) is associated with a fire pit, hearth, decorated offering plate (with the foot of a bovine incised inside), and miniature vessels. These remains as well as the quality and quantity of vessels uncovered in situ suggest a public, possibly cultic function. Also discovered was a range of vessels, including large storejars containing grain, a vat, amphoriskoi, teapots, cups, and jugs.

Destruction debris encased the vessels in phase B, but the reuse of walls in phase A suggests an immediate recovery for the site. The settlement pattern changes from a fortified public complex to a domestic complex of interconnected long- and broadroom houses.

Several houses had blocked pillar walls that were once freestanding. Such pillar construction ties Khirbet Iskander to Negev desert sites such as Har Yeroḥam and Be'er Resisim. [*See* Be'er Resisim.] The style revives in the Iron Age I period. A study of three *tabuns,* querns, grinders, a mortar, and stone tables/benches within these buildings should provide insight into the still enigmatic domestic activities in EB IV.

In Area C, three phases (A–C) of the Gateway were investigated at the southeastern crest. After the destruction of the fortifications, settlement patterning changed here as well, but the transformation was from domestic to public. The excavation exposed twelve squares in the latest phase (C), which comprised monumental, well-constructed guardrooms on either side of a 2.25-meter-wide bench-lined entryway. There were two rows of steps at each end of the plaster-coated passage. This passage was the only access point into the interior of the town, which was discovered when the wall lines were traced that connect this area with the domestic quarter uncovered in area A to the west. The northern steps led to a courtyard and partially paved storage bin. Connected to the guardrooms on both sides is a series of rooms, one of which contained three stone platforms and extensive flint *débitage,* indicative of a specialized work area. Broadroom houses below, in phases B and A, testify to the area's previous domestic nature.

All of the EB IV tombs excavated were of the typical single-shaft, round or square chamber variety, and all contained secondary burials. The surprise discovery was a two-chambered EB I tomb containing thirteen skulls and a variety of pottery (e.g., false-spouted jars, dipper juglets, and duck-handled vessels). When combined with the omphalos base and band-slipped fragments found in phase G in area B, this new and tantalizing tell and tomb data serve to underscore the gap in occupation at Khirbet Iskander during the urban EB II–III periods.

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SUZANNE RICHARD

ISRAEL. *See* Palestine.

ISRAEL ANTIQUITIES AUTHORITY. Since the Antiquities Authority Law was passed in 1989, the Israel Antiquities Authority (IAA) has been empowered by the government of Israel to administer the nation's Antiquities Law (1978). The IAA assumed the duties of the former Israel Department of Antiquities (IDA) and bears responsibility for all archaeological matters. The IDA was founded in 1948, shortly after the establishment of the State of Israel, and initially was attached to the Ministry of Labor and Construction. It was subsequently transferred to the Ministry of Education and Culture. Under the British Mandate (1917–1948) all archaeological documentation (files, collections, maps, photographs, plans) belonging to the Department of Antiquities had been located in the Jordanian sector of Jerusalem, as was the Palestine Archaeological Museum and its research library. Starting from scratch, the IDA set up six departments responsible for inspection, conservation excavations and surveys, museums, archives and library, and research and publications. It enlisted the assistance of archaeology enthusiasts throughout the country in reporting discoveries of remains, increasing the department's ability to record sites and antiquities and enhance awareness of the need for antiquities protection.

In its formative years, IDA staff included Shmuel Yeivin, director; Immanuel Ben-Dor, deputy director; P.L.O. Guy, director of excavations and surveys; Jacob Pinkerfeld, conservator of monuments and acting chief inspector of antiquities; Michael Avi-Yonah, scientific secretary and acting inspector of antiquities in Jerusalem; Penuel Kahane, inspector of regional museums; Ya'aqov Ory, inspector of antiquities in the southern district; Ruth Amiran, inspector of antiquities in the northern district; and Milka Cassuto, head library clerk. Through 1989, the IDA directors were Avraham Biran (1961–1974), Avraham Eitan (1974–1988), and Amir Drori (1988–1989). Technical support staff in the form of surveyors, photographers, illustrators, and restorers was brought into the department, as were physical anthropologists and lab personnel. In the 1980s a special team was assembled to prevent the robbery of antiquities from known and previously unknown sites.

Among the largest excavations in which the department was involved were those at Tel Dan, Tel Ashdod, 'Ein-Gedi, Ḥammath-Gader, Beth-Shean, and Beth-Guvrin. A large survey project, the Negev Rescue Survey, was in operation from 1978 to 1988, overseeing rescue excavations and surveys conducted as a result of the peace treaty with Egypt and the subsequent redeployment of the Israel Defense Forces in the Negev desert. Large rescue excavation projects were undertaken at Biq'at 'Uvdah, Ramat Maṭred, and in the Tel Malḥata area during the survey.

The IDA had been involved in hundreds of rescue excavations, as well as in joint excavations with the Hebrew University and the Israel Exploration Society in Jerusalem and in other parts of the country. The Archaeological Survey of Israel began its work in 1964, and, since 1967, the office of the staff officer for archaeology for Judea and Samaria has also conducted numerous rescue excavations and surveys.

The Antiquities Authority Law enumerates the functions of the IAA as follows:

- *Custodianship of archaeological sites.* Some fifteen thousand sites are currently known as the result of large-scale archaeological surveys. The country is divided into four regional districts, each overseen by a district archaeologist and a team of archaeological assistants.
- *Excavations.* Land excavations, salvage excavations, underwater excavations, surveys, and the issuing of excavation permits for local and foreign expeditions are the jurisdiction of the IAA. In the eighteen months preceeding July 1993, the IAA was involved in more than two hundred salvage excavations, employing a staff of more than two hundred and fifty archaeologists. Large rescue excavations were conducted where housing was being prepared for Russian and other immigrants in Jerusalem, Beersheba, Ashkelon, and Beth-Shemesh. Long-term archaeological excavations directed by the IAA were conducted for purposes of tourism at Banias, Beth-Shean, Caesarea, Beth-Guvrin, Mareshah (Marisa), and 'Ein-Ḥaṣeva. Many important archaeological excavations have also recently been conducted by the archaeological institutes at Israeli universities (The Hebrew University of Jerusalem at Tel Dor and Tel Hazor; Tel Aviv University at sites in the Golan; Ben-Gurion University of the Negev at Tel Haror; and the University of Haifa at Ḥatula, Caesarea, and Tabun) as well as by academic institutions from the United States (the Harvard University expedition at Ashkelon), France (at Tel Yarmut), Japan (at 'Ein-Gev), and other countries. IAA staff includes experts in the fields of prehistory, physical anthropology, paleobotany, paleozoology, petrography, and carbon-14 dating.
- *Theft.* Preventing the theft of antiquities and monitoring antiquities dealers is the responsibility of a special IAA unit. There are regular patrols and inspection of all sites and regions as well as periodic visits to dealers.

- *Laboratories.* The IAA operates scientific laboratories for preservation and restoration. Metal, glass, and ceramic artifacts are preserved and restored as well as photographed and drawn for purposes of documentation.
- *Curatorship.* The curating, documentation, and storage of more than one million artifacts produced by excavations or by chance have been carried out by the IAA and tens of thousands have been lent to museums for permanent or temporary display. The Dead Sea Scrolls are part of this patrimony.
- *Documentation and recording.* Archaeological information is recorded and documented by site, including data from the period of the British Mandate. All archaeological material from IAA endeavors is organized, consolidated, and classified in a national database.
- *Public education.* The IAA is responsible for the initiation and management of projects designed to promote public awareness and care for antiquities both in the society at large and throughout the educational system.
- *Publications.* Major archaeological reports, articles, and notices are regularly published. Excavation reports were first published in *'Atiqot* in 1955; in the original format there were separate English and Hebrew volumes—nineteen English and ten Hebrew volumes were published through 1990. Seven volumes have appeared in the new combined English/Hebrew format. *Hadashot Arkheologiyot* has appeared in Hebrew since 1961 and the equivalent *Excavations and Surveys in Israel* (English translations) has appeared since 1982. Maps from the Archaeological Survey of Israel and the Negev Emergency Survey (six maps from areas in northern Israel, including 'Atlit, Haifa, and Ma'anit; four maps from Judea (Judah) and the central part of the country, including Herodium and the hill country of Benjamin; and eight Negev maps that include the Sede Boqer and Mispe Ramon areas) have also been published. Guidebooks to sites such as Tiberias, Chorazin, and Ma'ale Adumin and a book called *Highlights of Recent Excavations* have also been published.
- *Library.* A scientific library for the discipline of archaeology and related subjects is presently housed at the Rockefeller Museum in Jerusalem.
- *Preservation, restoration, and site development.* Several teams of restorers, architects, and engineers form the department responsible for preservation and restoration. Site development involves preparing the site for visitors and includes reconstruction activities as well as the preparation of explanatory signs and promotional material on the history of the site, and so forth.

The IAA's annual budget includes a $9-million base granted by Israel's Treasury Department through the Ministry of Education. A similar sum is generated by various excavations and projects through the Ministry of Tourism and by regional authorities for local development projects. The conservation and restoration of Israel's archaeological heritage has assumed primary importance among the IAA's tasks and has thus enjoyed a considerable portion of its resources. Some fifty sites throughout the country are currently under the care of IAA preservation teams, among them Tel Dan; Banias; Mt. Berenice in Tiberias; Caesarea; Beth-Guvrin, Mareshah (Marisa); an aqueduct on the Hebron Road, Malha (the new site of the Biblical Zoo), and Mamilla near the Jaffa Gate in Jerusalem; the synagogue at 'Ein-Gedi; Yeroham; 'Ein-'Evrona; and Timna'. In managing and developing archaeological sites that will attract the general public and show visitors tangible evidence of Israel's past, the IAA attempts to minimize reconstruction and preserve site integrity. A new IAA project is the 'Ein-Ya'el Living Museum in the Jerusalem hills. The museum uses an archaeological site as the setting for educational seminars and workshops in ancient crafts. The IAA is involved in incorporating the many archaeological sites uncovered as a result of the rapid growth of new Jerusalem suburban neighborhoods into area parks.

[*Most of the sites mentioned are the subject of independent entries. See also* Israel Exploration Society; Survey of Israel; *and the biographies of Avi-Yonah, Guy, and Yeivin.*]

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See *Sefer HaChukkim* 885 (10 February 1978): 76–83, for the Antiquities Law, 5738–1978; and *Sefer HaChukkim* 1283 (3 August 1989): 88–94, for the Antiquities Authority Law, 5749–1989, both passed by the Israeli parliament.

RUDOLPH COHEN

ISRAEL EXPLORATION SOCIETY.

On 7 November 1913, the first general meeting of the Jewish Palestine Exploration Society (which became the Israel Exploration Society in 1948) was convened by a group of Jewish intellectuals living in Ottoman Palestine. Until that time investigation of the ancient land of Israel had been the monopoly of foreign scholars and expeditions. In addition to a lecture that evening by Isaiah Press on "The History of Research in the Land of Israel," the program included an address by the society's chairman, the educator David Yellin, who stressed to the audience that the responsibility of a reborn people in the land of the Patriarchs was to recover its material past and to leave behind "for the generations to come" evidence of the "holy books," which are "the inheritance of the whole world."

Although the outbreak of World War I brought a halt to the society's activities, it was reestablished in 1920 under the direction of Nahum Slouschz, an archaeologist, historian, and scholar of Hebrew literature. The society's statutes proclaimed that it would hold lectures and seminars (many geared to the general public), establish a library and a museum in Jerusalem that would be the basis of an institute for

the exploration of Palestine, organize tours, carry out scientific excavations, and publish a scientific periodical, books, and pamphlets.

To meet the society's most urgent need, the raising of funds, committees of philanthropic Jews were formed in the United States, London, Paris, The Hague, and Egypt. By 1923, the society could report to the American committee that three excavations were underway and that the ruins of the ancient synagogue at Hammath Tiberias had been cleared. The first ancient menorah discovered in Palestine was found at Hammath Tiberias (the Israel Exploration Society subsequently chose it for its logo). A museum with a specialized library that had been built in 1922 housed the finds from these first excavations, including the menorah and a fine collection of ancient Palestinian coins. This collection eventually formed the nucleus of the archaeology section of the country's national museum in Jerusalem, The Israel Museum. In 1926, the library was moved to the newly formed Department of Archaeology at the Hebrew University of Jerusalem.

In a story published on 6 March 1924, *The London Times Weekly Edition* gave international recognition to Slouschz's work in Absalom's Tomb and adjacent sepulchral monuments in Jerusalem's Kidron Valley. In 1925, also under the society's auspices, Eleazar Lipa Sukenik and L. A. Mayer began an excavation of the Third Wall in Jerusalem, a project critical to determining Jerusalem's boundaries in the first centuries BCE and CE.

Arab insurrections between 1929 and 1931 resulted in a temporary suspension of activity, but it was renewed in full force in the 1930s with excavations by Benjamin Maisler (Mazar) and Moshe Stekelis at Ramat Raḥel, and by Maisler at Beth-She'arim, in addition to other, smaller projects. In 1934 the society opened the Institute for the Exploration of the Land of Israel in Tel Aviv, but renewed hostilities in 1936 made convening its classes unfeasible.

Within a decade of its foundation and despite shortages of funds, the society had issued five important publications, including two volumes of its *Qobetz* series and E. Brandenburg's comprehensive study on 160 caves in the Jerusalem area. What began with the *Qobetz* series was continued in 1933 by *Yediot: Bulletin of the Jewish Palestine Exploration Society,* the society's first attempt to publish a quarterly devoted entirely to studies of the Land of Israel. In 1968 it was replaced by a new quarterly, *Qadmoniot: Quarterly for the Antiquities of Eretz-Israel and Bible Lands.*

In the 1940s, lectures, conferences, and excavations were held without interruption, in spite of the world war and the hostilities that surrounded the founding of the State of Israel in May 1948. Scholars and the general public attended the society's first annual conference in Jerusalem in 1943; its fifth annual conference was held in war-scarred Jerusalem in 1948. With independence, the society became the Israel Exploration Society (IES), under the direction of Maisler (Mazar). For the IES, Maisler carried out the first excavation under the new state at Tell Qasile, near Tel Aviv. To communicate to foreign scholars the results of Israeli scientific investigations in the field, in 1951 the first volume of the English-language quarterly, the *Israel Exploration Journal (IEJ),* was published. In that same year, the IES initiated a Hebrew (with English summaries) festschrift series, *Eretz-Israel: Archaeological, Historical and Geographical Studies.* The names of many of the society's founding members, whose work was fundamental to research into the land of Israel, appear as editors and contributors on the covers of the issues.

In 1955 the IES mounted the first large-scale archaeological expedition carried out by local archaeologists at Hazor, under the direction of Yigael Yadin of the Hebrew University of Jerusalem. It was Israeli archaeology's first "field school" and its staff members now rank among the country's leading archaeologists. In 1960 the IES organized another large-scale expedition, this time to the Judean Desert Caves. Staffed by Yadin, Yohanan Aharoni, Pessah Bar-Adon, and Nahman Avigad; coordinated by the IES director, Joseph Aviram; and assisted by the Israeli army, the expedition was an organizational feat. Its purpose was to probe caves plundered by bedouins searching for ancient manuscripts. The IES subsequently played a central role in the excavation of the Israelite citadel and Early Bronze Age city of Arad, the Herodian palace-fortress at Masada, the Temple Mount and Upper City in Jerusalem, Beth-Shean, Aphek, Herodium, Lachish, Dor, Elusa, and other sites. Forty-seven years after it was issued a license to excavate the City of David, the ancient kernal of Jerusalem, on its southeastern hill, the IES sponsored Yigal Shiloh's archaeological expedition there. [*See* Jerusalem.]

In a country where numerous institutions deal with the study of the land, the publications of the IES represent authoritatively the fields of Palestinian archaeology and related studies. In addition to its periodicals (see above), the IES publishes excavation reports (Hazor, Masada, and the Judean Desert expeditions) and special studies both in Hebrew and English.

The IES's annual conferences are intended for the general public, and another annual meeting, during which the latest discoveries are reported, caters to the country's archaeologists. The IES has sponsored two international congresses on biblical archaeology (1984, 1990) in which the state of the art was reviewed and debated by the international scholarly community.

In 1989, seventy-six years after it was established and forty-one years after the creation of the State of Israel, the IES and its director, Joseph Aviram, received the prestigious Israel Prize. It acknowledged the IES as the country's principal and most effective institution for furthering knowledge of its archaeology and history both at home and abroad.

[*See also* History of the Field, *article on* Archaeology in

Israel; *and the biographies of Aharoni, Avigad, Mazar, Shiloh, Stekelis, Sukenik, and Yadin. In addition, most of the sites mentioned are the subject of independent entries.*]

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JANET AMITAI

ISRAELITES. The name *Israel* is used to designate the entirety of the people as well as the political entity formed by this people. In every instance what the term embraces is subject to historically determined variations.

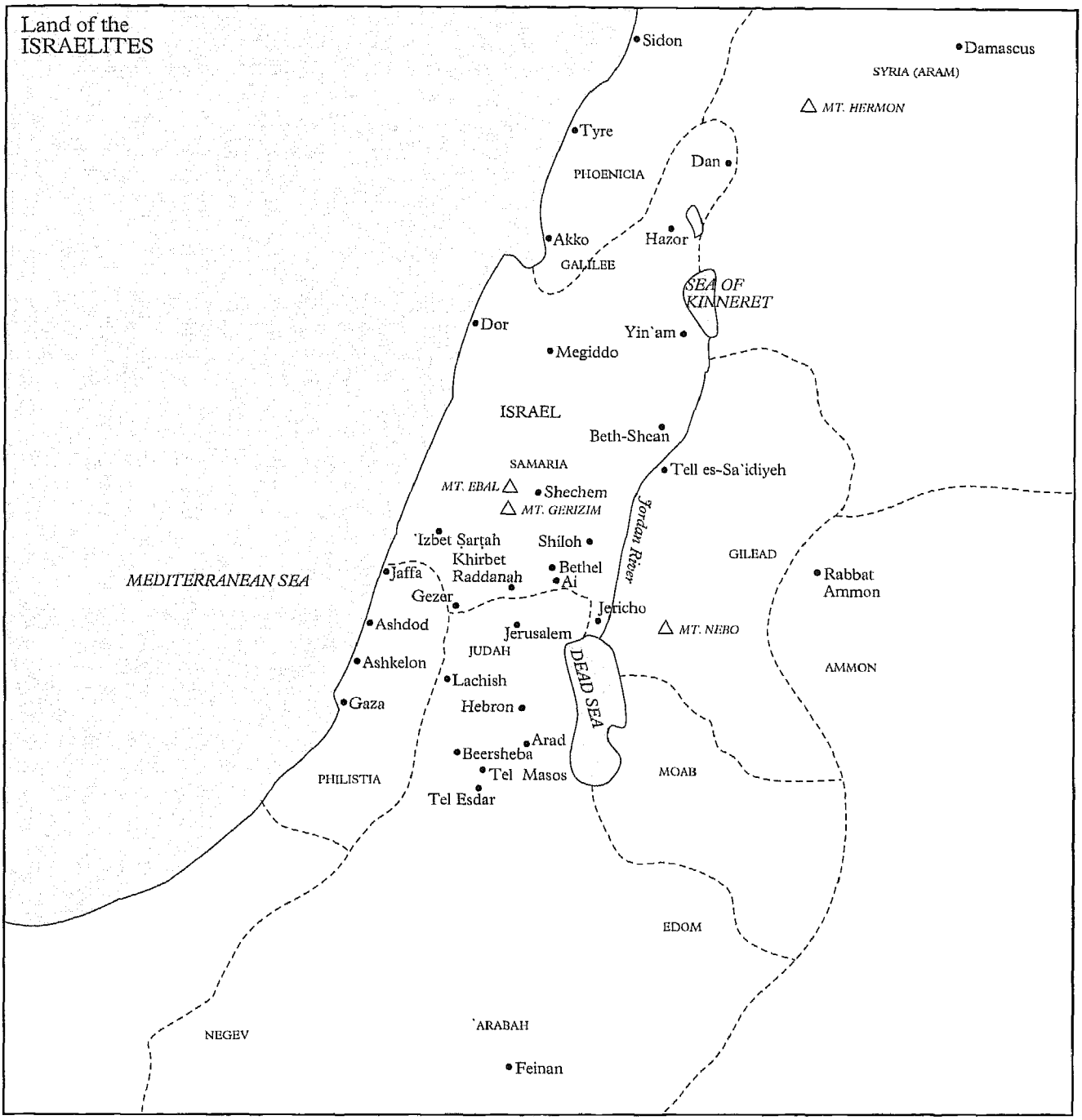
Nomenclature. "The people" is understood as the amalgamation of twelve tribes, each of which is traced back to a tribal father. Their common father is Jacob, who, as a logical consequence, is renamed Israel (*Gn.* 32:23–33). The Israelite people are thus fictitiously traced back to an ancestor of the same name. This construction presupposes the political union of the tribes under the kingdom; consequently, the use of the name as a designation for the people first dates from the period of the monarchy. At the same time, the name *Israel* is most often used for the ten northern tribes, in contrast to Judah (*2 Sm.* 3:10, 5:5, etc.). After the division of the kingdom in 927 BCE, the name *Israel* is used to designate the northern kingdom. With the demise of the northern kingdom in 722 BCE, the name is also used to refer to Judah (*2 Chr.* 11:3, 21:2). After the end of Judah in 587 BCE, Israel becomes a religious definition in order to differentiate the people who worship Yahweh from the surrounding peoples. [*See* Judah.]

In contrast to the more than twenty-five hundred references to Israel in the Bible, there are only a few extrabiblical ones. The oldest mention is found on the Israel stela of Pharaoh Merneptah (1213–1203 BCE), where the name was represented in the so-called group writing as *ysr'r* (*ANET* 378). According to Helmut Engel (arguing against Gösta Ahlström, 1986), the determinative points to the fact that, in contrast to the previously mentioned cities of Ashkelon, Gezer, and Yeno'am, the reference is to a population group in the region of the land of Canaan. The spelling *yśr'l* in the Moabite Mesha inscription from the ninth century BCE (*ANET* 320ff.) and the Aramaic stela fragment from Dan (Biran and Naveh, 1993) corresponds to the biblical spelling and is evidence for the general use of the Assyrian form *sir-'i-la-a-a*, from the time of Shalmaneser III (shortly after 853 BCE) (*ANET* 278ff.). [*See* Moabite Stone; Dan.] The name is constructed with the theophoric element *El;* the verbal element is formed using the root *yśr*, whose meaning is unclear because of a lack of evidence. In the folk-etymological explanation in *Genesis* 32:29, the name is linked with *śrh*, "to fight." For the time being the etymology must remain open.

Origins. The name is not attested in the Bible for the prestate period; Israel as a nation-state is not historically understandable before 1000 BCE. However, the Egyptian reference shows that there must have been a population element with this name, although no closer determination is possible either ethnically or with respect to geographic settlement. The Song of Deborah (*Jgs.* 5:13–18) names a total of ten tribes, which to be sure did not form a political unity but were nevertheless pledged to common action in case of war on behalf of Yahweh. With two exceptions, the names are identical with those in the later system of twelve tribes: Ephraim, Benjamin, Machir, Zebulon, Issachar, Reuben, Gilead, Dan, Asher, and Naphtali. These tribes did not form a political unit and did not have control over a self-contained settlement area; however, they were later merged into the totality of the Israelite people.

The origin of the Israelite tribes is unknown. The biblical story of a long stay in Egypt is fiction. Locating the emergence of Israel as a people in Egypt in a time period lacking precise description shows that no unified tradition existed concerning the origin of the people. A reconstruction of Israel as an ethnic unit in the prestate period is purely hypothetical. Because the report in *Joshua* 1–12 of the conquering of the land is similarly not historical, two different models, with various modifications—the "revolution" model and the "immigration" model—have been developed recently to explain the occupation of the land; each also explains the origin of these new population groups, replacing older "conquest" models.

The revolution model (Mendenhall, 1962, 1970; Got-



twald, 1979; Lemche, 1985) postulated a social revolution within the Canaanite city-states at the end of the Late Bronze Age. This radical change resulted in the ruling class losing power and the lower class becoming independent. The latter group then left the urban centers and founded new settlements outside the previously settled areas. This thesis explains the downfall of the city-states as a revolutionary event and identifies the population of the new settlements as Canaanites, who certainly modified their lifestyle and social structure but nevertheless retained their economic form and material culture. The immigration model (Alt, 1989; Finkelstein, 1988; Fritz, 1987) postulates a nomadic population outside of the Canaanite city-states, with which they engaged in economic and cultural exchanges. With the collapse of the urban centers, this symbiotic relationship of the nomadic groups and the cities necessarily came to an end. Therefore, the groups outside the cities were forced to form fixed settlements in order to feed

themselves by practicing agriculture and stock breeding. Thus, a modification of the economic system was connected with a modification of lifestyle. The inhabitants of the new settlements were from elements formerly in the areas surrounding the cities, but it is impossible to determine their ethnic identity any more closely than that. Possibilities include the underprivileged groups called ʿApiru (Ḥapiru) in sources, or the nomads also named in the texts, of which the Shasu *(šꜣsw)* were the most important group.

The historical processes for the Israelite tribes developing from the Canaanite population or from groups outside the city-states are, however, largely obscure, making it impossible to choose between the hypotheses. The archaeological remains also give no certain data regarding the origin of the inhabitants in the new settlements. The variety in settlement patterns and construction forms supports the idea of a mixed population. Thus, it seems entirely possible to combine the two hypotheses. Both forms of development are conceivable and could have taken place in a parallel fashion. Following the collapse of the Canaanite city-states, portions of the Canaanite population could very well have sought other habitation sites. At the same time, the nomadic populations in the vicinity of the cities could have been forced to occupy new settlement areas. In any case, the various elements of the population were not cut off from each other but were, rather, involved in many forms of exchange, which were continually altered in form and content. The final destruction of most of the cities, which took place no later than the first half of the twelfth century BCE, altered the previous ways of life so radically that all the groups living in the land were forced to give up their familiar way of life to found and occupy new settlement sites. Because the two hypotheses complement each other in explaining the development of the new settlements, they can also be used to reconstruct the historical processes.

Settlements. In comparison with the Late Bronze Age cities, the distribution of the Iron Age I settlements presents a completely different picture. Not only has the number of settlements greatly increased, but they are also generally located outside the spheres of influence of the former city-states, in areas that were only sporadically settled or completely unsettled during the second millennium BCE. The preferred regions for the settlements, which generally had a size of only 0.5–1 ha (1–2.5 acres), are Galilee, the central hill country, the Negev desert, and the cultivated strip along the middle of the east bank of the Jordan River. However, even in layout and size, the Early Iron Age settlements are fundamentally different from the Canaanite cities because of their lack of large-scale palaces and temples. [*See* Palace; Temples, *article on* Syro-Palestinian Temples.] In addition, the settlements are as a rule unfortified, even in those cases where the houses located on the perimeter are laid out in the form of a fortification ring. The settlements are characterized by an ad hoc plan, as well as by the presence of numerous silos and cisterns. [*See* Cisterns.] Three types of settlement can be differentiated on the basis of their layout.

1. *Ring-form settlements.* Houses organized in a circle or an oval, which created a central open area, are known as ring-form settlements. Examples were found at Tel Esdar stratum III, ʿIzbet Ṣarṭah stratum III, and Beersheba stratum VII.

2. *Nucleated villages.* Settlements characterized as having been built up randomly, either with individual houses or with complexes consisting of several buildings, are known as nucleated villages. There may be streets of varying width or irregularly shaped open areas between the various units. The arrangement of the houses is completely unplanned, and the settlement is open on the perimeter. The settlements of Ai, Khirbet Raddanah, ʿIzbet Ṣarṭah stratum II, Tel Masos stratum II, and Beersheba stratum VI are examples of this type.

3. *Farmsteads.* Individual buildings or a group of buildings surrounded by a wall and that may have had a certain protective function are known as farmsteads. The remains at Beit Jala and on Mt. Ebal are freestanding farmsteads.

Architecture. With the exception of the architecture, the material culture of the Early Iron Age shows a strong continuity with that of the preceding Late Bronze Age period. Only the house construction—the so-called "four-room" house—shows a certain originality. Even if the construction types are supposed not to have been deeply rooted in the Late Bronze Age, the almost complete lack of courtyard houses and the development of new forms of construction give the Iron Age I a distinctive cultural stamp. Irrespective of the differences in the type of settlement, it is possible to determine the development of a few house types that became common in Iron II as well.

1. *Broadroom houses.* While it is true that broadroom houses occur only occasionally, they are by no means restricted to ring-form settlements. Their distinguishing characteristic is the position of the entrance on the long side of the building. Originally, this type was a single-roomed house; however, it could also be divided by stone pillars along its length and was provided with small rooms separated by diagonal walls.

2. *Pillar houses.* As rare as the broadroom house, the pillar house is a rectangular building with the entrance on the narrow side. It is divided along its length by two rows of stone pillars. Of the three long rooms formed in this fashion, the middle room is wider than the two side rooms. This part was presumably not roofed and was therefore an open courtyard.

3. *Three- and four-room houses.* Residential architecture is primarily characterized by three- and four-room houses that often are arranged in a row next to each other. [*See* Four-room House.] The "four-room house" indicates a building that, like the pillar house, is divided by two rows of stone pillars along its length, but that has an additional room

situated on the side opposite the entrance. The room extends across the entire width of the house. The designation "four-room house" is misleading, insofar as the central area was an open courtyard providing air and light for the other rooms. The basic conception could be varied by interior and exterior structures, as well as by changes in construction; however, the ubiquitousness of the plan shows that it was a firmly established type. The three-room house is simply a variant of this construction form, in which there is only one side room next to the courtyard.

These three forms of residential house are closely related typologically, but no clear derivation has yet been established. In spite of their courtyards, the Iron Age houses are fundamentally different from the courtyard house in their use of stone pillars and in the arrangement of the rooms. Although the LB courtyard house cannot possibly be the model for the form of the residential house in the Iron Age, in LB cities there are occasional instances of buildings divided by rows of stone pillars. Even if this form of room construction represents an exception, it is still possible in the last analysis to trace the division of rectangular rooms by stone pillars back to the Canaanite culture. However, the predominance of this construction type and its almost exclusive use in the Early Iron Age is new. The broadroom house, the pillar house, and the four-room house are all characteristic of the Early Iron Age settlements. It is striking that up to the present time there is still no evidence of cult buildings for the period. There may have been sacred structures outside the settlements, but so far there is no clear proof of any.

Ceramics. The ceramic repertoire of the Late Bronze Age was taken over and developed in the Iron Age. In the process, decoration with geometric patterns and mythological motifs disappeared almost completely. Slip and burnish became new techniques for surface treatment. Apart from changes in its design, the cooking pot was provided with two handles, and a pot with a narrow opening was developed from the jug. Some forms, such as the jug with a spout and the collar-rim jar were not used after the end of Iron I. [*See* Ceramics, *article on* Syro-Palestinian Ceramics of the Neolithic, Bronze, and Iron Ages.]

Metallurgy. In metalworking as well the Canaanite tradition was carried on in the beginning; this is demonstrated especially by the Early Iron Age hoards found in the old urban centers of Megiddo, Beth-Shean, and Tell es-Sa'idiyeh. [*See* Megiddo; Beth-Shean; Sa'idiyeh, Tell-es.] However, even in the new settlements weapons and tools were manufactured from bronze using older methods and designs. As a new form, the bowed fibula was adopted from the Aegean area during Iron II. After the collapse of foreign trade at the end of the Late Bronze Age, the raw material presumably came from the only known deposits in the country, at Feinan, on the east edge of the 'Arabah. [*See* Feinan.] In the case of many tools and weapons, however, bronze was gradually replaced by iron. Above all knives, sickles, daggers, and swords were made exclusively from iron from the tenth century BCE onward because the blades could be sharpened better and were stronger. The prerequisite for this changeover was the development of a new technology for tempering iron. The early manufacture of steel resulted from forging in conjunction with heating in a charcoal fire, so that the iron was carburized. The carbon gave a greater strength to the iron, making it superior to bronze. [*See* Metals, *article on* Neolithic, Bronze, and Iron Ages.]

Language. In the Early Iron Age villages the population most probably spoke an early form of Hebrew. It is true that long inscriptions are lacking, but the core portion of the Song of Deborah (*Jgs.* 5:12ff.) permits the conclusion. In any case, this song remains the only text from the prestate period. From the tenth century BCE onward, the Hebrew language is attested by both biblical and extrabiblical sources. Like Canaanite, Phoenician, and Aramaic, Hebrew is one of the northwest group of Semitic languages. As numerous other Northwest Semitic idioms, Hebrew was written with an alphabetic script that consisted only of consonants. This had been developed in the southern Levant during the course of the second millennium BCE. In contrast to the syllabic script of Egypt and Mesopotamia, the alphabetic script represented an innovation and a simplification. Based on an acrophonic principle (every symbol reproduces the sound of the first letter of the word after which it is named), it reduces the written characters to the number of sounds present in a language. The oldest documentation for this form of writing in Hebrew is the ostracon from 'Izbet Ṣarṭah. This abecedary, or handwriting exercise, consists of five lines scratched onto a fragment of pottery (ostracon); the bottom line reproduces the letters of the Hebrew alphabet—with the exception of *mem*—in the sequence still used today, although *'ayin* and *pe* have traded places. [*See* Ostracon.] The letters are written by an unpracticed hand from left to right and are in the tradition of the Proto-Canaanite script, as it is attested by short inscriptions from the Canaanite cities. [*See* Hebrew Language and Literature.]

Urbanization. After the foundation of the kingdom, there was a wave of urbanization under David and Solomon that led to the dissolution of the village form of settlement in Iron II. This reurbanization continued during the course of the United Monarchy. Building the new cities corresponded to the requirements for the new state to consolidate its power internally and externally. Because different requirements governed the location of the city, there was continued development only in exceptional cases. To found a city it was necessary to have a nearby source of living water, arable land in the vicinity; and a strategic location in terms of defense and commercial and other traffic. These had been the prerequisites for the Canaanite cities, so it is not surprising that a number of Iron Age cities were founded on Bronze Age tells. Furthermore, the Canaanite settlements

that had survived the collapse of the culture were included in the newly formed kingdom of David and Solomon.

Based on their layout, the cities can be divided into four groups: (1) residential cities; (2) cities with limited administrative or military function; (3) administrative or military centers; and (4) royal cities. [*For details, see* Cities, *article on* Cities of the Bronze and Iron Ages.] In spite of their differences, these various types of cities reveal a series of common characteristics. In plan they are round or oval, which is determined by the character of the topography (they were erected either on a mountaintop or on an older tell—sloping sites and or sites on spurs are rare. The city was surrounded by a strong ring of walls, where various fortification elements, such as massive walls, casemate walls, and projecting towers, could be utilized. As a rule, the city's single gate took on civil functions in the absence of other large buildings. In residential construction, the three- and four-room houses predominated, but public buildings were laid out as pillar houses; in addition there were palace structures. Numerous cities were equipped with their own water-supply systems, a significant technical achievement.

Urban foundations at the outset of the kingdom were planned. A state with the desire to expand must factor in the need for defense and take appropriate measures. The new phase of urbanization in Israel that coincided with the formation of the state reflects the strong desire to structure the country politically. The settlements were fitted inside a ring of walls in order to offer the inhabitants a certain measure of security in case of attack. The technical execution of those fortifications was adopted from the country's construction tradition and topography.

Economy. In the prestate period, as during the monarchy, the economy was based on farming and stock breeding. Agriculture was not restricted to growing grain, but included vineyards and olive groves. Sheep and goats were the primary livestock, although cattle accounted for about a fourth of the livestock raised. In any case, planting based on rainfall and a mixed economy must be assumed. The foodstuffs produced were mainly for direct consumption; any excess would have been exchanged for finished goods from craftspeople: primarily ceramics, weapons, bronze and iron tools, and jewelry.

Society. In the Early Iron Age settlements social differences seem not to have been very marked, inasmuch as the overall construction is very homogeneous. In spite of this uniformity, a certain social stratification must be postulated. Ownership is ownership of land, and this could vary in size. For example, the story of Nabal (*1 Sm.* 25) shows that there were already large landholders in Israel in the prestate period. The amount of land under cultivation determined economic strength, and this in turn determined social standing. With the advent of the kingdom, the social structure was modified to the extent that the king and his entourage occupied the highest position. Responsibilities connected to administration and military obligations demanded, on the one hand, the possession of land as crown estate and, on the other, a contribution from the people in the form of taxes in goods and services. This could lead to the appropriation of the property of the individual and in the long run to an overall restructuring of all relationships relating to property. In any case, changes in ownership, in the final analysis, necessarily resulted in a change in the social order.

The king had not only political, but also economic power; possession of land, contributions, and services secured his supremacy, in which the members of his entourage shared. Farmers could make up for the necessary contributions only by cutting back on their own needs or through increased cultivation. Because only large landholders were able to increase the amount of land in production and the size of their work force, the kingdom necessarily led to a two-class society: an economically powerful, but small, upper class and the mass of small farmers whom debt could reduce to the status of slaves.

Monarchy to Exile. Under pressure from the Philistines, the Israelite tribes formed a state by raising Saul to the kingship. In the beginning this consisted only of cooperation in common military endeavors. David was the first leader to provide the kingdom with the necessary stability by eliminating the Philistine threat and by subduing the neighboring states of Ammon, Moab, and Edom, as well as the small Aramaic principalities. [*See* Ammon; Moab; Edom; Arameans.] Through personal union David united not only the dominion over Judah, but also the kingdom of Israel over the northern tribes and the royal status of the city of Jerusalem that he had conquered (*2 Sm.* 2:1–4, 5:1–10). Under his son and successor, Solomon, there followed the consequent elaboration of the state in the realm of internal politics. With Solomon's death, the kingdom David had built fell apart because the vassals defected; its division into the two kingdoms of Israel and Judah followed (*1 Kgs.* 11, 12). Of the two kingdoms, Israel was at first the stronger economically, and all of Judah's attempts to reestablish the unity of the kingdom failed because of Israel's military superiority. A peace arrangement was not established until the ninth century BCE, when it was sealed by the marriage of Jehoram, heir to the throne of Judah, to the Israelite princess Athaliah, one of the daughters of Ahab (*2 Kgs.* 8:18). In the course of the western campaigns of the Assyrians in the eighth century BCE, Israel was conquered by Tiglath-Pileser III; a large portion of the territory of the state was incorporated into the Assyrian kingdom as the provinces of Dor, Megiddo, and Gilead. [*See* Assyrians; Dor; Gilead.] In 722 BCE, the conquest of the capital city of Samaria meant the end of the northern kingdom of Israel. The remaining area was set up under direct Assyrian administration as the province of Samaria. In Judah, the kingdom continued to exist under Assyrian rule until the Assyrians were replaced by the Babylonians. With the seizure of Jerusalem by Nebuchadrezzar

in 586 BCE, however, the king was exiled to Babylon. With the Exile, the kingdom ruled by the dynasty David founded came to an end. After their loss of sovereignty, the populations of the states of Israel and Judah and their neighbors lived in exile both inside and outside the country under the changing rule of the great powers that succeeded each other in turn. Until its destruction in 70 CE, the Temple in Jerusalem that Solomon had founded and that was newly reerected after the Exile became the focal point of the people. [*See* Biblical Temple.]

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VOLKMAR FRITZ

Translated from German by Susan I. Schiedel

ISTANBUL. *See* Constantinople.

ISTITUTO ITALIANO PER IL MEDIO ED ESTREMO ORIENTE.

The Italian Institute for the Middle and Far East, known as IsMEO, was founded in 1933 by Giovanni Gentile, who was its first president. Giuseppe Tucci, who had been close to Gentile, became president in 1947. He was succeeded by Sabatino Moscati in 1978 and by Gherardo Gnoli in 1979.

The institute was founded in response both to the foreign policy needs of the Italian government at the time and to the lagging development of oriental studies, particularly concerning areas beyond the Near East, as compared to that of other European countries. The stated aims of the institute, which operates under the supervision of the Ministry of Foreign Affairs, are concerned with cultural relations between Italy and Asian countries, as well as with the study of Asian civilizations. It originally also had the task of fostering economic relations, but that never came within the main focus of its efforts. Currently boasting more than 100 general members (who alone have voting rights in every decision taken), more than 150 associate members, and about 70 corresponding members in countries in Asia and Europe and in the United States, the institute's members are orientalist scholars and archaeologists from numerous universities and cultural institutions, as well as Italian diplomats.

IsMEO is currently engaged in archaeological work in Nepal, Oman, Pakistan, Russia, Thailand, Hungary, and Yemen. New projects will involve China, Jordan, India, and Mongolia. Its research is organized through agreements with Italian institutions (mainly the National Research Council and the Oriental Institute of Naples), as well as with foreign institutions in Europe (in Austria, France, Germany, the United Kingdom, Russia, and Hungary), the United States,

and Asia (in China, Japan, Jordan, India, Kuwait, Oman, Pakistan, Thailand, Turkmenistan, and Yemen).

GHERARDO GNOLI

IVORY. *See* Bone, Ivory, and Shell.

'IZBET ṢARṬAH, hill country site located northeast of Rosh ha-'Ayin, southwest of Kafr Qasim, and about 16 km (10 mi.) east of Tel Aviv (map reference 14675 × 16795). In the western margins of the western hill country, the site is situated on a hill that borders on and overlooks the coastal plain. Tel Aphek, site of a Canaanite city-state on the coastal plain, is about 3 km (2 mi.) to the west, across the Aphek Pass. With access to the Yarkon River controlled by Aphek, occupants of 'Izbet Ṣarṭah had to store water in cisterns cut into the hillside. [*See* Aphek; Cisterns.]

An archaeological survey team from Tel Aviv University discovered the site in 1973. Excavations, directed by Moshe Kochavi, continued for four seasons (1976–1978) under the auspices of the Institute of Archaeology of Tel Aviv University and the Department for the Land of Israel Studies at Bar-Ilan University, with Israel Finkelstein serving as field director. The excavators distinguished three Iron Age strata: the two earliest date to Iron I; the latest, to the beginning of Iron II. Six other Iron I sites were identified nearby. Settlement patterns in the region and architectural features in every stratum of the site indicate that the occupants of 'Izbet Ṣarṭah belonged to the population that settled hundreds of hill country sites in the early Iron Age.

An oval-shaped settlement established at the end of the thirteenth or at the beginning of the twelfth century BCE was uncovered at the earliest level, stratum III. The site was roughly half an acre in size, with a continuous outer wall. Access was from the northeast; where a narrow opening flanked by monolithic doorjambs led to stone-paved open space. At the center of the settlement was a courtyard in which several stone-faced silos were found. The courtyard was surrounded by a wall, to which a belt of contiguous broad rooms of various widths was attached. The rooms lacked internal doorways and had to be entered from the courtyard. Their walls, made out of large stones, were preserved to one course and most of the floors were bedrock.

Sherds from the entire settlement history of stratum III were uncovered, and the variety of pottery types indicates that the inhabitants interacted with the people of the nearby coastal plain. Because the site was situated on the border between the hill country and the coastal plain, 'Izbet Ṣarṭah was affected by regional rivalries. At the beginning of the eleventh century BCE, the stratum III settlement was abandoned as a result of growing tensions between the people of the hill country and the Philistines on the coastal plain. [*See* Philistines, *article on* Early Philistines.]

Abandonment was apparently planned, as only a few complete pottery vessels, including three collar-rim storejars, were found. Among the earliest pieces were fragments of a Mycenaean stirrup jar, a krater of the "ibex-and-palm" type, and a krater with a "palm" ornamentation applied in relief; bases of "Canaanite" jars; cooking pots with an everted rim; and various bowls in pottery styles of the Late Bronze Age. The latest pottery pieces were rims of red-slipped bowls and fragments of jars with plain, unshaped rims.

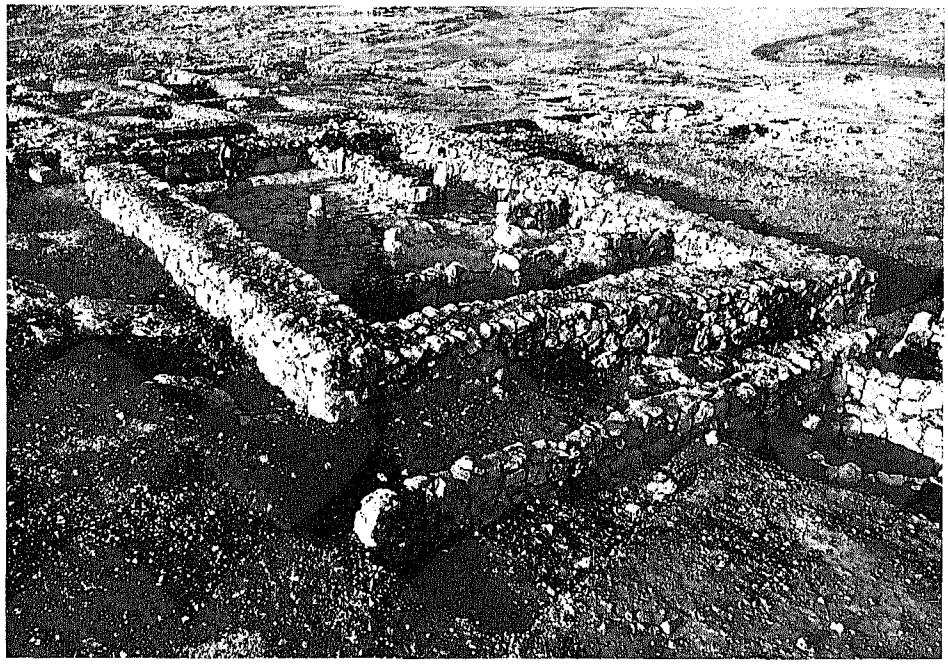
'Izbet Ṣarṭah was resettled at the end of the eleventh century BCE, after the destruction of Aphek and probably as part of the Israelite westward expansion from the hill country to the coastal plain—perhaps under King Saul. There are indications that aspects of this stratum II settlement were planned. Its layout varies significantly from that of stratum III in size—it was roughly an acre—and in its internal configuration.

At the center of the settlement a large, four-room house (16 × 12 m) was preserved up to three courses of stone with outer walls as much as 1.4 m thick. Three long, connecting rooms were separated by two rows of stone pillars. An enclosed room was situated perpendicular to them along the south wall. The floors of the side rooms were made out of stone slabs; the rest were of bedrock or beaten earth. The only entrance was at the northern end of the long western wall, and a small room was attached to the house at its northwest corner (see figure 1).

Clustered around three sides of the house were forty-three silos that had been dug into a light-colored, mud-brick material, as well as the rooms of the earlier stratum. This brick substance, ubiquitous in stratum III, was reused as foundation material for the stratum II houses, which were built in a series along the edge of the site. Like the large central house, two of these smaller structures had four rooms. Although they were positioned near the slope of the hill, these structures did not function as a line of defense because they were not built contiguously.

The silos, which were lined with small and medium-sized stones, held an estimated volume of 1.3 cu m. Found inside of one of them (no. 605) was an ostracon in two fragments bearing eighty-six letters of Proto-Canaanite script, the longest Proto-Canaanite inscription uncovered in the country to date. Only one line of the five-line inscription, a Proto-Canaanite abecedary, is legible. [*See* Proto-Canaanite.]

The stratum II settlement was abandoned after only a few decades, perhaps in the wake of the Philistine consolidation of power in the region. 'Izbet Ṣarṭah was reoccupied shortly thereafter, however, at the beginning of the tenth century BCE, perhaps when Israelite expansion westward was resumed under King David. The stratum I site was smaller than that of stratum II, but their plans were similar. The four-room house was rebuilt with partitions between the col-



ʿIZBET ṢARṬAH. Figure 1. *Four-room house after restoration.* (Courtesy ASOR Archives)

umns, and two rooms, with installations, were added at the north of the building. A few new silos also were added. In the process of rebuilding, the stratum II houses at the edge of the site were damaged. The same pottery types as those found in stratum II were uncovered in stratum I; only a statistical analysis can differentiate sherds from the two levels. [*See also* Four-room House; Granaries and Silos.]

Like stratum II, the stratum I site was abandoned after a brief occupation, this time because the fertile Yarkon basin had opened to Israelite settlement. ʿIzbet Ṣarṭah was never resettled, but during the later Byzantine period it was used as an agricultural site. Stones taken from stratum II structures were reused to build several walls, one of them around the top of the hill.

[*See also* Canaanites.]

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LESLIE WATKINS

Based on material submitted by Israel Finkelstein

IZEH, a plain and a town located in the western Bakhtiari Mountains of Iran and known as Malamir in the later Islamic period until 1935. The plain, approximately 22 km (14 mi.) long and 10 km (6 mi.) wide, is mainly used for agriculture. An archaeological survey uncovered numerous ancient sites from as early as the third millennium, but no full-scale excavation has yet been carried out there (Wright, 1979). Reliefs carved on the surrounding rocks and boulders testify to the site's importance from the early second millennium BCE until the Parthian period. The rock carvings are presented here in a proposed chronological order. The numbering of the individual reliefs follows Louis Vanden Berghe (1963).

Elamite Period. In default of excavated finds, rock carvings are almost the only evidence for Elamite culture in the Izeh valley. They show people in cultic ceremonies. The earliest reliefs were manufactured in the Old Elamite period; the most important carvings range from the twelfth century BCE up to the Neo-Elamite period.

Shah Savar. At the southeastern end of the plain, a smoothed panel is cut in a vertical cliff. Only the upper part of the panel was used for a frieze in low relief. Four standing orants are introduced by a fifth to a seated deity. The structure (the pictoral frieze over a blank area) and the topic

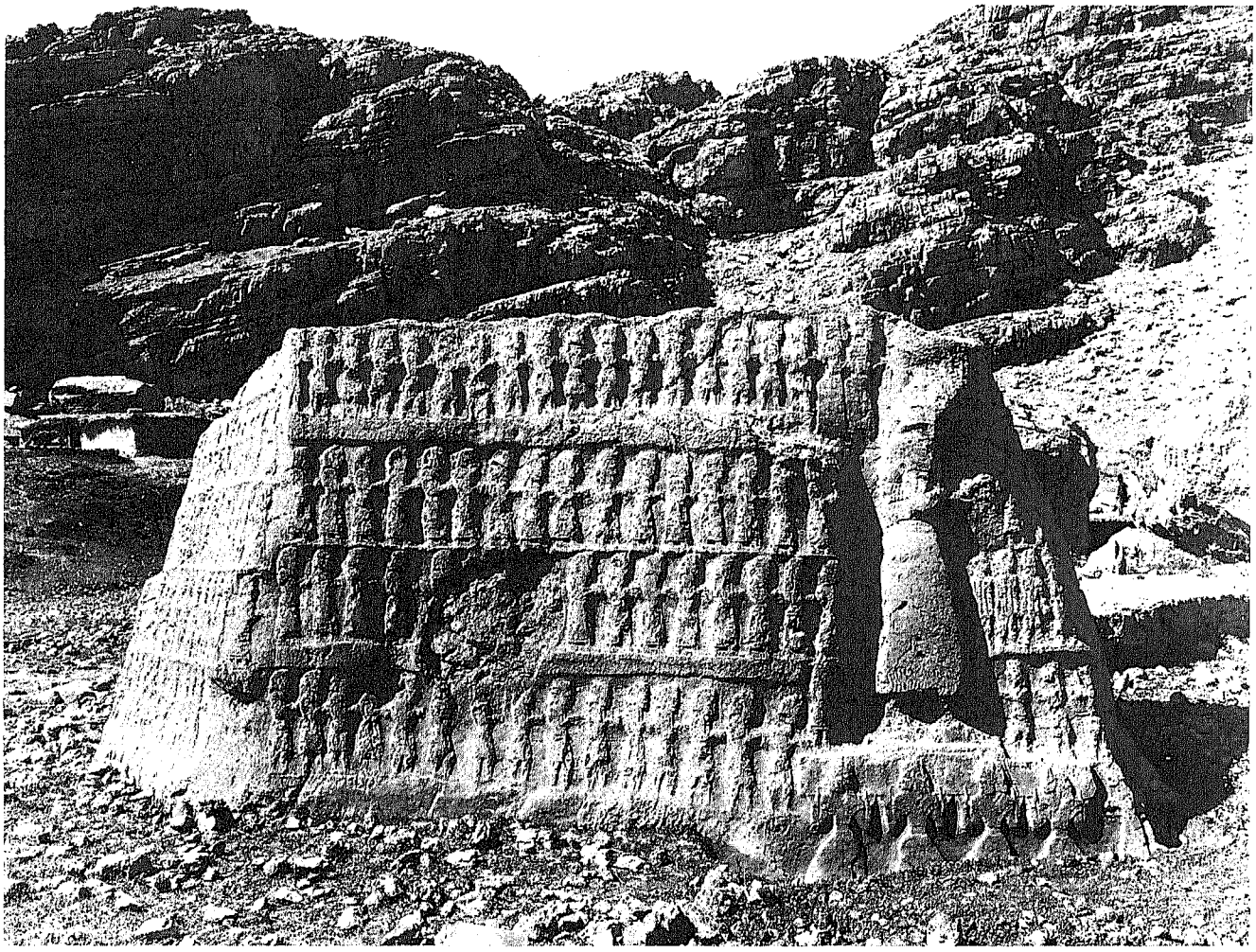
(orants with an enthroned god) can be compared with the Elamite rock reliefs at Kurangun and Naqsh-i Rustam, dated to the seventeenth and sixteenth centuries BCE, respectively. [*See* Naqsh-i Rustam.]

Hung-i Nowruzi (mod. Hung-Azhdar). At the northern end of the plain, two oblong panels are cut into a boulder. The relief is carved only in the lower space. Faint remains of at least seven standing figures can be discerned. The little that is preserved seems to resemble the Shah Savar panel and may date to the same period.

Shikaft-i Salman I–IV. At the southwestern border, there is a wide cave with a spring. Two reliefs (Shikaft-i Salman I and II) are carved on the outside, on the cliff at the right side of the cave, and two (III and IV) on the inside. Carved in relief I are two men, a child, and a woman who are standing and facing left, behind a thymiaterion (or censer); in II a man, a child, and a woman face left (see figure 1); in III a man faces right; and in IV a man wearing a long skirt faces right. All the figures face the place where water springs from the rock and where a huge water (?) channel comes from above. Their hands are posed in two different Elamite prayer gestures: one or both hands raised before the face or clasped at the waist (figure 1). The figures have stylistic parallels in a relief from Susa that was assembled by Pierre Amiet (*Arts Asiatiques* 32 [1976]; 13–28) from scattered glazed bricks; the Susa relief is dated to the time of Shilhak-Inshushinak (twelfth century BCE) by a contemporary inscription. The rock reliefs at Shikaft-i Salman are accompanied by cuneiform inscriptions that name Hanni son of Tahhi, chief of Ajapir, as having commissioned them. He is the same ruler who commissioned the inscription and relief Kul-i Farah I (see below); he may have lived anywhere between the late eighth and early sixth centuries BCE. Thus, the dates of manufacture of the reliefs and of the inscriptions are separated by several centuries, which can be explained only by means of a usurpation of older pictures by Hanni. Nevertheless, the late inscriptions may hint at the significance of the place. The large text to the left of relief III relates the dedication (?) of images of Hanni and his family to the goddess Mashti at a place called Tarrisha. As neither the deity's nor the place's name are mentioned in the Kul-i Farah inscription, both may be connected to Shikaft-i Salman, probably since deepest antiquity. This means that nameless men, women, and children from the end of the second millennium BCE may be represented at this cave with a spring venerating the goddess Mashti, mistress of Tarrisha.

Kul-i Farah I–IV. Opposite Shikaft-i Salman, at the

IZEH. Figure 1. *Shikaft-i Salman II relief.* (Photograph by Barbara Grunewald, Deutsches Archäologisches Institut, Tehran)



IZEH. Figure 2. *Kul-i Farah III relief, south side.* (Photograph by Barbara Grunewald, Deutsches Archäologisches Institut, Tehran)

northeastern border, a ravine called Kul-i Farah with reliefs on its slopes and on boulders shows processions (III and IV), animal sacrifices (I–III, V) and a banquet scene (IV). Together with other scattered rocks (either roughly worked as platforms or with cavities on the top, or with smoothed panels on one side), the whole arrangement points to a cultic use. Based on their style, it appears that the reliefs were manufactured at different dates.

Relief IV. The banquet scene, with about 150 figures, covers several rock faces that jut out at various angles along the south side of the ravine. The central figure is seated in front of a stand that holds three goblets; he faces a table and is surrounded by his servants. His arms bearer is positioned in the register below. From both sides, figures arranged in registers face the center. Most of these hold their right hand to their mouth in a gesture of eating or of veneration, and some are playing musical instruments. The banquet scene has parallels on Middle Elamite seals. The shape of the throne is known from a bead of Shilhak Inshushinak (twelfth century BCE); the goblets represented were in use no later than about 1000–900 BCE.

Relief III. The northern, southern, and the southwestern sides of a boulder are covered with processions moving east (see figure 2). The procession on the north is divided into three registers and headed by a man whose height fills all three registers. Encountering him are smaller individuals, similar to the participants in the procession, three of whom are playing harps. The southwestern and southern processions follow in four registers, a large figure supported by four kneeling men. He is preceded by three naked men and encountered by some ordinary people, as on the northern side. The destination of the processions seems to be the rounded east side, where three bulls and eighteen smaller animals are represented.

Relief VI. The same large figure supported by kneeling men is shown in relief VI. He is followed only by a few smaller individuals, among them the arms bearer (cf. Kul-i Farah IV, I).

Style and iconography place reliefs III, IV, and VI in one group. They therefore may originate in roughly the same period, at about the end of the second or the beginning of the first millennium BCE.

Relief I. A rectangular panel on the north wall of the ravine, relief I is the only inscribed monument at Kul-i Farah. On its upper part, a text of twenty-four lines covers the space unoccupied by the figures; short captions, or labels, are carved on or beside the human figures. The main figure is, according to the text on his skirt, Hanni son of Tahhi, chief of Ajapir, who dedicated his image to the god Tirutur. Behind him stand, in smaller scale, his arms bearer and another official in a long skirt. In front of Hanni in the upper part of the relief, are three musicians; in the lower part are four men engaged in sacrificial acts. The "one who delivers the sacrificial victim" leads a goat; the "priest" is occupied with a thymiaterion and the others with a bull; and three beheaded carcasses and loose heads of rams lie in between. The text contains invocations of Elamite deities, deeds of Hanni, and the dedication of the relief to the god Tirutur. For the text, Matthew Stolper suggests "a date within the seventh century" (Calmeyer and Stolper, 1988, p. 279). Although comparable Neo-Elamite art is scarce, there is no reason to doubt here—in contrast to Shikaft-i Salman—that the text and pictures are contemporaneous. In particular, the large figure of Hanni differs from the reliefs at Shikaft-i Salman and at Kul-i Farah III, IV, and VI in style and iconography. The headdress and the garment with its rosette border and fringes find their parallels in the clothing of the Elamite king Tepti-Humban-Inshushinak (Assyr, Te'umman), killed during a battle with Ashurbanipal in 653 BCE, that is pictured in Assyrian reliefs at Nineveh.

Reliefs II and V. Similar in subject to most of the Kul-i Farah reliefs, in reliefs II and V a large man, followed by four smaller figures, is directed to a slaughtering scene where a naked man is occupied with a bull lying on its back. With the bull are six smaller animals in the same position (i.e., in the same numerical relationship as on relief III). On relief V, the large man is praying over a thymiaterion. Too few details are given or preserved to allow a positive dating. In all probability they were carved after IV, III, and VI, but their temporal relation to relief I cannot be fixed. Certainly, they were made before Achaemenid times.

Kul-i Farah, seen through its reliefs, seems to be a place of ceremonies with animal sacrifices, processions with music, and symposia.

Parthian Period. The latest rock reliefs are Parthian. They are located on the northern side of the valley. The subject of these carvings is different from the Elamite ones. They show people of rank facing the sovereign.

Hung-i Nowruzi (Hung-i Azhdar). The boulder with the faint Elamite relief bears a Parthian relief on its back side, facing the cliff; in front of it, an isolated stone relief is lying on the ground. The rock relief shows a horseman with his attendant moving to the right and four standing men in front of him, in frontal view. The two parts of the relief differ in style and iconography. The rider is Greek in inspiration. Comparable heads can be found on Arsacid coins of the second half of the second century BCE. The four standing men have their closest parallels in Parthian reliefs from the beginning of the third century CE. Various proposals, the following among them, have been made to explain this discrepancy.

The entire relief has been dated based on the elements of the left side, the rider. Louis Vanden Berghe (1963) compares the head with that of Mithridates I (171–138 BCE) on a coin, interpreting the relief as the representation of Mithridates I as he is received by Elymaean nobles after the Parthian conquest of Elymais in 140/39 BCE. This would make the four men the oldest examples of frontal representation. To support this view, other scholars argue with sculptors from different schools or with the ecclecticism of Greco-Iranian art.

The entire relief has also been dated, based on the elements of the right side, the four standing men. Trudy S. Kawami (1987) argues that the artistic style and details of dress and hairstyle of the four nobles indicate a date in the Late Parthian period, at the end of second or third centuries CE. She suggests that a local ruler and his entourage are represented as they pay homage to their ancestor, sculptured in the fashion of the Hellenistic period.

Other scholars have harmonized the dating discrepancy by proposing a date between the two extremes (first century BCE and first century CE) for the entire relief. However, Hans E. Mathiesen proposes that an unfinished relief of the victorious Mithridates I (second century BCE) was "completed" by a Parthian or Elymaean king in about 200 CE, which means that the carvings on the left and right sides belong to different times. (The relief lying on the ground shows a man in frontal view, who may have been part of a larger nearby composition.)

Hung-i Yar-i Alivand. The weathered rock relief at Hung-i Yar-i Alivand shows two standing figures in frontal view. A shallow circular element between them suggests the interpretation that this is an investiture scene. The dating for the carving ranges from the first century BCE to the late second century CE.

Hung-i Kamalvand. The rock relief at Hung-i Kamalvand shows a horseman and a standing figure pouring a libation before him. An inscription names "Phraa]tes the priest, son of Kabniskir." The date of the carving is usually given as second century CE.

[*See also* Elamites; *and* Susa.]

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URSULA SEIDL

J

JACOBSEN, THORKILD (1904–1993), philologist, cuneiformist, and archaeologist; one of the great interpreters of Mesopotamian culture. Born in Denmark, Jacobsen studied Assyriology first at the university of his native Copenhagen and then, in the late 1920s, at the University of Chicago. Throughout his life, he was passionately and deeply committed to the study of ancient Mesopotamia, its land, cultures, and languages.

Jacobsen was a field assyriologist with the Iraq Expedition of the Oriental Institute (1929–1937), working closely with Henri Frankfort, its director, as well as with Pinhas Delougaz, Seton Lloyd, and Gordon Loud. He was the epigrapher at Khorsabad and in the Diyala region and led the excavation at Ishchali. Together with Lloyd, Jacobsen excavated Sennacherib's aqueduct at Jerwan. He was instrumental in introducing to Iraq the method of systematic surface ceramic survey.

Returning to Chicago in 1937, Jacobsen began a twenty-five-year affiliation with the university. From 1946 to 1951, he was director of the Oriental Institute and then dean of the Division of Humanities. As director, he gave new shape to the Assyriology faculty of the Oriental Institute and to American Assyriology, in general. Moreover, he set the agenda for American archaeology in Iraq by reestablishing American excavations at Nippur jointly with the University of Pennsylvania and setting in motion the surface surveys that would lead to his and Robert McC. Adams's important discoveries regarding waterways, salinization, and settlement patterns (Jacobsen and Adams, 1958). Disagreements over the policies, direction, and execution of the Chicago Assyrian Dictionary led to Jacobsen leaving Chicago in 1962 for Harvard University, where he taught until his retirement in 1974.

Jacobsen's unique blend of textual scholarship, knowledge of art and archaeology, quest for conceptual patterns, appreciation of the environment and way of life of ancient Mesopotamia, and his own deep human sympathy allowed him to fathom the meaning and recreate the image of a past civilization. He approached the task in an existential spirit and saw that alien and distant human life was something that not only existed in its own terms, but also mattered very deeply for the enduring human spirit.

[*See also* Assyrians; Diyala; Khorsabad; Nippur; Sumerian; Sumerians; Ur; *and the biographies of Frankfort and Lloyd.*]

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TZVI ABUSCH

JAFFA, site located along the southern edge of modern Tel Aviv–Jaffa, on a promontory jutting into the Mediterranean Sea that forms one of the few ancient harbors along the coast of Israel (32°01′ N, 34°45′ E; map reference 162 × 127). Jaffa is referred to in Egyptian texts and the Hebrew Bible as Jaffa, and the name is preserved in Arabic as Yafa el-'Atiqa ("ancient Jaffa").

The Harris papyrus and reliefs on the Karnak temple refer to the conquest of Jaffa by Thutmosis III in the fifteenth century BCE. Jaffa is one of the Egyptian administrative centers through which the Egyptians controlled Syria-Palestine in the Late Bronze Age. The Amarna letters and Papyrus Anastasi I, dated to the fourteenth and thirteenth centuries BCE, respectively, mention Jaffa as an Egyptian stronghold. [*See* Amarna Tablets.] Additionally, an Akkadian letter sent from Ugarit and found at Aphek mentions Jaffa as the seat of an Egyptian official. [*See* Aphek.] In 701 BCE Sennacherib recorded the conquest of Jaffa on the Prism stela. The Hebrew Bible includes Jaffa within the tribal boundary of Dan (*Jos.* 19:46). The site is connected with the shipping of cedars from Lebanon in the construction of the First and Second Temples (*2 Chr.* 2:15; *Ezr.* 3:7). Jonah attempts to flee from God via Jaffa (*Jon.* 1:3).

Jaffa was excavated from 1945 to 1950 by P. L. O. Guy for the Department of Antiquities of Israel. John Bowman and B. S. J. Isserlin excavated in 1952 for the University of Leeds. The most extensive excavation was undertaken by Jacob Kaplan, between 1955 and 1974, for the Museum of Antiquities of Tel Aviv–Jaffa. During six seasons of excavation, Kaplan opened four areas (A, B, C, and Y). Eight archaeological strata have been discerned, from the Middle Bronze Age II through the Roman Period. [*See the biography of Guy.*]

Stratum VII dates to MB IIB/C. In area A, along with mud-brick walls, a small section of a typical MB IIB glacis was found. In area C, the eighth-century glacis may rest on the remains of an MB IIA glacis. In area Y, an infant jar burial and an MB IIB/C tomb were excavated.

The Late Bronze Age is well represented in area A. Architectural remains from stratum VI (LB I) are dated by Bichrome, Gray-Burnished, and Cypriot Base-Ring and Monochrome wares. In area Y, stratum VI is limited to pits dug into loam. Stratum V (LB IIA) is dated to the fourteenth century BCE by pottery found in a silo. Strata IVA and B both date to the Late Bronze IIB (cf. Kaplan, 1993). The earliest LB gate was founded in stratum IVB. This gate system includes mud-brick walls and sandstone doorjambs. Four doorjamb fragments were inscribed with titles of Rameses II, along with part of his name. Rivka Gonen (1992) has suggested that this gate may be freestanding and purely ceremonial. In stratum IVA a better-preserved gate on the same orientation was uncovered. At this point the city was fortified with a wall system that included a fortified structure or citadel. Bronze hinges from this stratum IVA gate were found in situ on the bottom left doorjamb. There is evidence of burning and destruction ending both strata IVA and B within the thirteenth century BCE.

Kaplan (1993) suggests that a small (4.4 × 5.8 m) rectangular structure next to the citadel is a temple. This poorly preserved building includes a white plaster floor and two column bases; almost no small finds or pottery, except for a lion's skull with a half scarab near its teeth, were recovered. The excavator dates this structure to the late thirteenth/early twelfth centuries BCE and compares it to the northern temple at Beth-Shean. Mariusz Burdajewicz (1990) suggests that it is only a small shrine and rejects the comparison to the Beth-Shean temple because of its small size. Initially Amihai Mazar suggested architectural parallels at Tell Qasile and in the Aegean. More recently however, Mazar (1992) has cast doubt on whether this structure is a temple at all.

The scant Iron Age (stratum IIIB) remains from area A include Philistine sherds found in pits and depressions that date the stratum to the eleventh century BCE. A rough stone wall and floor and two cattle burials with stone markers belong to stratum IIIA (eighth century BCE). In area C there is some indication of a glacis. Jaffa is now under the political control of Ashkelon.

Persian period (stratum II) remains include an ashlar wall dating to the fifth century BCE. Stone walls of large structures with mud-brick and stone paving were found throughout area A. In this stratum a construction technique using ashlar piers interspersed with fieldstone fills—a technique associated with the Phoenicians—was revealed. Stern (1992) suggests that Jaffa may mark the southernmost extent of Phoenician culture from the eighth century BCE to the Hellenistic period. Jaffa may have belonged to the Sidonians, as it was recorded in the Eshmunazar Inscription (fifth century BCE?) that the king of Persia presented Eshmunazar of Sidon with Dor and Jaffa. Fragments of Attic ware were found in area Y. [*See* Phoenicians; Sidon.]

Stratum I dates to the Hellenistic period. An ashlar corner of a fortress was found in stratum IB (third century BCE), along with the remains of an ashlar casemate wall. A possible cult hall with a fieldstone altar was also uncovered in this stratum. A third-century BCE catacomb was found in area C, and in area Y there was evidence of a monumental ashlar building with square rooms that may be part of a Hellenistic agora. The Zenon papyri mention the visit of an Egyptian treasury official during the reign of Ptolemy II, in 259/58 BCE. Under the Hasmoneans (stratum IA) the city was captured from the Seleucids and became a Jewish port. Guy found a hoard of more than eight hundred coins in his excavations dating to the reign of Alexander Jannaeus.

The only stratified remains from the Roman period were found in area C (levels VI–I). Fragments of a mosaic date to the sixth–seventh centuries CE (level I). Architectural frag-

ments were excavated in levels II (fifth century CE), III (fourth century CE), and IV (third century CE). In level V (second century CE) better-preserved architecture was found, along with a hoard of bronze and silver coins dating no later than Trajan's reign (98–117 CE). A small glass factory and a well-constructed catacomb were also excavated. Two important Greek inscriptions found in level VI (first century CE) include a limestone inscription mentioning Judah, an *agoranomos* of Jaffa during the reigns of Nerva (96–98 CE) and Trajan. The second inscription is a third-century BCE votive that mentions Ptolemy IV Philopator. Additional inscriptions include jar handles with Greek and Latin inscriptions, a tile with a Tenth Legion stamp, and a pyramidal seal with the name *Ariston*. A marble door leaf (mid-second–mid-third centuries CE) was also found. Jacob Pinkerfeld (1955) suggests that this fragment is similar to mausoleum doors from the necropolis at Palmyra. [*See* Palmyra.] The city was destroyed by Cestius Gallus and Vespasian in 67 CE; it was later rebuilt and referred to as Flavia Ioppa. A Jewish cemetery from nearby Abu Kabir, east of Jaffa, dates from the first through the fifth centuries.

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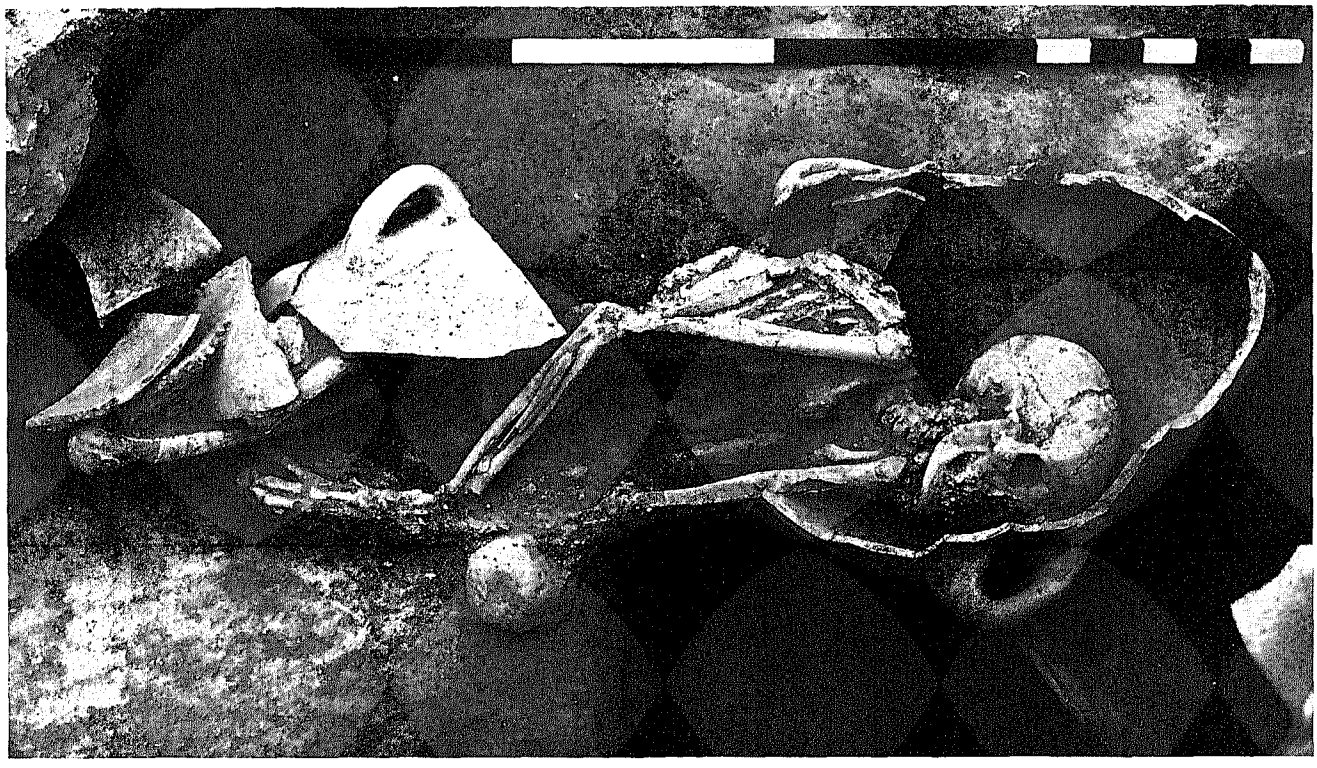
J. P. DESSEL

JAR BURIALS. One of the many forms of human interment places the body of the deceased in a jar for burial. Infants and children were inserted into a single jar, while adults were positioned in one large jar or two facing jars. The neck of the jar frequently was removed to facilitate the insertion of an adult body. Jar burial is similar to the Late Bronze–Iron Age practice of anthropoid coffin burial: both employed ceramic vessels to contain (predominantly) primary interments with accompanying mortuary offerings. In contrast to these forms of primary interment, Iron Age Phoenician urn burials have yielded predominantly cremated remains (Tell er-Rugeish, Achziv, Khaldeh), and Chalcolithic and Hellenistic-Byzantine ossuaries encased secondary bone collections (Azor, Ḥaderah).

From the Natufian period through the Middle Bronze Age (c. 10,500–1550 BCE), infants and children were buried in jars or in large jars called pithoi, under house floors or courtyards (Aphek, Ashkelon, Yoqneʿam). During this same period, adolescents and adults were buried in caves or shaft tombs and pit or cist graves (Adeimeh, Bab edh-Dhraʿ, Jericho, Shiqmim). Infant jar burials beneath occupation surfaces have been reported from the fifth-millennium Pottery Neolithic site of Shaʿar ha-Golan. Stillborns, infants, and children up to approximately the age of nine were buried in pithoi at the more southerly sites of Naḥal Besor and Teleilat el-Ghassul during the Chalcolithic period (4300–3300 BCE).

Jar burial was reintroduced beginning in the MB IIA (2000–1500 BCE), when the northern coast and valleys were resettled. As in the earlier periods, children, now with a small number of provisions, including ointment juglets and jewelry, were interred in jars under occupation surfaces (Ashkelon, Yoqneʿam). The introduction of jar burial for adults, which first appeared in the Late Bronze II (1400–1200 BCE), is also attributed to northern influence. Extramural interments of exclusively mature individuals, inserted at the time of death into one or two large jars positioned to form a burial receptacle, have been reported from the four northern sites of Azor, Kefar Yehoshuʿa, Tell el-Farʿah (North), and Tel Zeror. The forty-year-old man buried at Kefar Yehoshuʿa was provided with flasks, other pottery vessels, a bronze blade, and cuts of sheep, ox, and pig for nourishment.

Jar burial continued through the Iron Age (1200–586 BCE), although with diminishing frequency. Eleven sites yielded jar burials in northern and coastal Cisjordan and on the Transjordanian plateau in Iron I (1200–1000 BCE), for example, at Afula, Amman, and Azor, whereas only six or



JAR BURIALS. *Double-pithos burial from Tell es-Saʿidiyeh.* (Courtesy ASOR Archives)

seven sites provided Iron II examples (1000–586 BCE). Small numbers of children continued to be interred in jars, which were usually buried in cave or chamber tombs along with adolescents and adults.

[*See also* Burial Techniques. *In addition, many of the sites mentioned are the subject of independent entries.*]

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ELIZABETH BLOCH-SMITH

JARMO (or Qalʿat Jarmo), prehistoric site located in northern Iraq (35°33′ N, 44°57′ E), approximately 11 km (7 mi.) east of the town of Chemchamal, at an altitude of 8,250 m. Jarmo occupies a hilltop above a wadi locally known as Cham-Gawra, one of several that drain the higher slopes of the ridges enclosing an intermontane plain in the Iraqi foothills of the Zagros Mountains. This plain is bounded by the Kani Domlan-Jabal Tasak and the Kani Shaitan Hasan-Sarirma Dagh ridges, and is 16 km (10 mi.) wide by 56 km (35 mi.) long (Braidwood and Howe, 1960, pp. 26–27).

Jarmo, dated to the seventh millennium BCE (see below), was for many years the oldest known agricultural and pastoral community in the world. It was first located in the 1940s by the Iraqi Directorate of Antiquities, which recommended it to Robert J. Braidwood of the Oriental Institute at the University of Chicago when he inquired about ancient village sites in northern Iraq (Braidwood, 1974). Under the auspices of the Oriental Institute, Braidwood excavated at Jarmo from March to June 1948; September 1950 to spring 1951; and March to June 1955.

Excavation was undertaken to recover empirical evidence for the beginnings of agriculture and pastoralism. The site was the first in the Near East in which interdisciplinary field archaeology was applied to elucidating the origins of food production. In the second and third seasons of excavation, Braidwood's staff included natural scientists as well as ar-

chaeologists. The structure and functioning of these interdisciplinary teams investigating an important cultural and economic transition influenced subsequent archaeological projects in many parts of the Old and New World long after the Iraq-Jarmo Project's fieldwork was terminated.

As the first archaeologically known example of a very early agricultural and pastoral village, Jarmo's architectural and other cultural remains were for many years the only documentation available for the way of life of the world's first farmers and herders.

Braidwood's work at Jarmo was emulated by subsequent generations of archaeologists (several of whom were his students) in addressing the same problem in many other areas of western Asia. Braidwood himself has fielded a series of more recent projects in Iran and Turkey. Our understanding of the transformation from hunting-gathering-foraging economies to food-producing ones is now much different from that of the late 1950s when the Jarmo data were new and unique (for recent summaries see Bar-Yosef and Meadow, in press; Bar-Yosef and Belfer-Cohen, 1989; and Moore, 1985; see also Braidwood, 1974). Nevertheless, Jarmo continues to have significance in the history of world archaeology.

The archaeological work at Jarmo was interrupted after a nationalist revolution took place in Iraq in the summer of 1958. No excavation has been carried out since then. Information gained from analyses on the material recovered between 1948 and 1955 are detailed in two volumes (Braidwood and Howe, 1960; Braidwood et al., 1983). Braidwood dates the site to early in the seventh millennium BCE but freely admits that the various radiocarbon dates are not very helpful. Apparently, contamination by bitumen (locally available and used throughout the occupation) and complex site-formation processes affected the radiocarbon samples.

The village of Jarmo is thought to have been occupied by approximately 100 to 150 people at any one time (there is a maximum of some 7 m of deposit). Its population lived in rectilinear household complexes constructed of puddled adobe (Ar., *tauf*). The Jarmoan economy was based on domestic emmer and einkorn wheat, two-row barley, lentils, and vetchling. Available wild plants included field pea, pistachio nuts, acorns, and wild wheat and barley. The villagers kept dogs, domestic goats and sheep, and—in the later period of the site's occupation—domestic pigs. There was considerable hunting of wild animals. Cattle, onager, and small mammals were apparently taken for food. Bones of lion, leopard, a small wildcat, fox, and lynx have been identified among the Jarmo fauna. These carniverous species may have been killed for their pelts, or to protect the villagers and their flocks.

The Jarmo people were skilled flint and obsidian knappers, producing both normal-sized and microlithic tools, primarily from blade cores. The obsidian was imported from Anatolia, but not in large quantities. Other imports included marine shells and, perhaps, turquoise. Milling stones are well represented in the ground-stone categories, as are small celts and chisel-like implements, beads, pendants, and bracelets. Nicely made stone bowls were produced in some quantity from a wide variety of fine-grained local limestone; and a plethora of small clay figurines (human, animal, and geometric) are also characteristic of the Jarmo artifact assemblage. Bone tools, especially perforators, or awls, are abundant, and the bone industry also includes carefully made spoons and beads. The villagers made small quantities of pottery, an innovation that seems to have originated elsewhere and is only patchily found in the Jarmo deposit.

The Jarmo assemblage, once virtually the only one of its kind, can now be seen as an example of many such farming and herding communities scattered throughout the Zagros region in both Iraq and Iran in the Early and Mid-Holocene periods. As Braidwood pointed out forty years ago, these humble but vigorous settlements created the economic and social foundations for the rise of Mesopotamian civilization in the fourth millennium BCE.

[*See also* Paleobotany; Paleoenvironmental Reconstruction; *and* Paleozoology.]

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PATTY JO WATSON

JAWA, large fortified site located in northeastern Jordan, at the eastern margins of the Fertile Crescent, on the border between steppe and arable land (32°20′ N, 37°0′ E). The site was founded in the Early Bronze Age IA as a walled settlement sustained by an elaborate water-harvesting system of dams, canals, and pools. The system drew winter runoff from Wadi Rajil, one of the largest of the wadis draining southward from the volcanic peak of Jebel al-Druze in southern Syria. This first occupation was short lived, and the site was abandoned after a few decades. Jawa was oc-

cupied again at the beginning of the Middle Bronze Age (EB–MB/MB IIA) when a "citadel" and outbuildings were constructed on its summit, within the EB walls.

Because of its remote location, Jawa was not known to pioneer archaeologists in Syria and Palestine. The site was first recorded in an aerial photograph taken by Antoine Poidebard in the 1930s. Poidebard believed Jawa to be Roman because of the regular nature of the fortification walls. It was also visited by Aurel Stein at about this time. The first to recognize its true date was G. Lankester Harding, when he and Fred Winnett explored the area in the 1950s, looking for inscriptions. In the 1970s, Svend Helms began excavations at Jawa under the auspices of the British School of Archaeology in Jerusalem. His work provided a detailed record of the occupations and water systems associated with the site. [*See the biographies of Poidebard, Harding, and Winnett.*]

Jawa is located on a rocky island between the main gorge of Wadi Rajil and a tributary valley entering the main gorge from the west. The EB town consisted of an upper settlement, defended by massive fortifications that followed the edge of the rock scarp, and a lower part of the town, spread around the slopes of the hill and enclosed by an outer wall. The upper settlement was entered through a large chambered gateway on the west. Entrances to the lower town were found at the southern end of the site, while posterns around the walls allowed limited access at other places. The Jawa houses were rounded and built of stone and mud brick with packed-clay floors. The roofs were of mud and straw laid on timber beams.

The MB settlement was laid out within the upper fortification walls of the earlier town. In the center was a citadel, a complex comprising a rectangular unit divided into a series of interconnected cells. The cells were roofed with basalt slabs laid on stone piers. A ring of rectangular courtyard houses built of stone and also roofed with basalt slabs surrounded the citadel.

The site was supported by a complex water-harvesting system constructed in the Early Bronze Age. More than 8 km (5 mi.) of structural remains of stone gravity canals, diversions, earth-and-stone-lined dams, and reservoirs can still be seen along Wadi Rajil, and at Jawa itself. The water system was simple in principle. The annual winter discharge of Wadi Rajil was deflected into canals at three points, and these canals led the water to the main reservoirs in the valley, west of the site. Overflow and secondary diversion systems led water into other pools farther downstream.

Jawa had a limited cultural assemblage, probably reflecting its location on the edge of the steppe. Items at the site, most of them basic and functional, had to be made locally or transported from a long way off. The EB pottery assemblage can be divided into two repertoires, one reflecting Palestinian, and the other Syrian, influence. Holemouth jars are one of the most common forms. Most have a line of punctuate decoration (dots) below the rim and some have vestigial lug handles. Large Syrian-type jars with lug handles and punctuate decoration and smaller jars with stamp seal impressions on both the body of the vessel and on lug handles are also part of the assemblage. Bowls and platters are less common. Painting and plastic decoration appear on some of the jar forms. The MB pottery assemblage similarly reflects contact with both Palestine and Syria.

Other items found at the site include basalt saddle querns, rubbing stones and stone vessels, flint tools, stone and shell beads, and small clay animal figurines.

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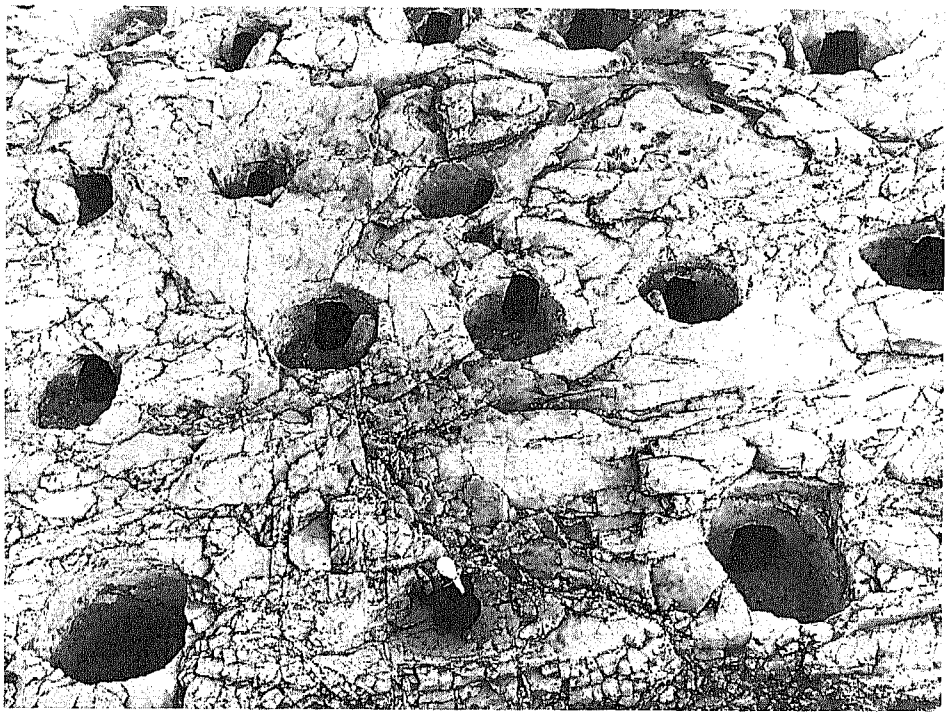
ALISON V. G. BETTS

JEBEL QA'AQIR, site located 12 km (7.5 mi.) west of Hebron at the juncture of the Central Hills and the Shephelah (map reference 1457 × 1034). It was discovered by William G. Dever and excavated by him on behalf of the Hebrew Union College in Jerusalem in 1967–1971.

The site is occupied almost exclusively in Early Bronze IV (c. 2200–2000 BCE). It consists mostly of typical shaft-tomb cemeteries with hundreds of tombs. Many had been robbed in 1967, but thirty-eight of these were excavated in Cemetery B (see figure 1), and some forty were cleared and planned elsewhere in Cemeteries A, B, C, D, and E. The tombs were all laid out systematically along steplike terraces on the lower slopes of the horseshoe-shaped ridge. They had round or oval shafts 1.00–1.75 m in diameter and as much as 2.00 m deep, and round dome-shaped chambers up to 2.00 m in diameter. Most were single-chamber tombs, but a few were bilobate. The doorways into the lateral chambers were blocked by large stones, often plastered into place. Shallow body-recesses and lamp-niches were often present, but the bones were never in the recesses or the lamps in the niches. These and other considerations, such as the fact that the lack of weathering of the rock in the shafts indicates only summer burials between the rains, leads to the conclusion that some groups living at the site prepared the tombs in large numbers in advance of their use by other groups.

Most tombs contained the bones of a single individual, but some had up to four. Frequently a headless sheep or goat carcass was included. Other offerings consisted of a few pieces of pottery, or a copper dagger, javelin, or awl. All the



JEBEL QA'AQIR. Figure 1. *EB IV shaft tombs in cemetery B, c. 2000 BCE.* (Photograph by Theodore Rosen)

bones, both human and animal, were disarticulated, indicating that these were secondary burials. Analysis of the human bones by Patricia Smith revealed that 17 percent were children, 17 percent adolescents, and the remainder adults of both sexes. The skeletal type was gracile Mediterranean, identical to local population groups of the third millennium BCE, but different from the more robust second-millennium BCE groups. The disarticulated burials no doubt indicate a seminomadic population, probably pastoralists who migrated seasonally and transported their dead for burial at ancestral cemeteries. Such customs may seem strange, but they are well documented ethnographically.

The only dwellings at the site were natural caves, sometimes enlarged and furnished with storage areas, hearths, and mortars cut into the bedrock. One cave, G 26, produced an assemblage of more than two dozen pots and stone tools. Another, Cave G 23, perhaps a dump, yielded sherds of more than 1800 vessels. These caves probably represent summer shelters of pastoralists camping briefly at the site.

On the ridge above the cemetery there were found a well preserved potter's kiln; a large dolmenlike structure; an enigmatic "high place" with standing stones; a dozen large cairns that were not, however, used as expected for burials; and a rambling boundary wall.

The significance of Jebel Qa'aqir is that it is one of the few Early Bronze IV "domestic" sites of Dever's "Southern Family" thus far excavated, although it has extensive ceramic links with pastoral nomadic encampments in the Negev, like Be'er Resisim. It is best understood as a very small year-round settlement with a large influx of summertime pastoralists from the Negev who used the area as a burying ground.

[*See also* Burial Sites; Tombs.]

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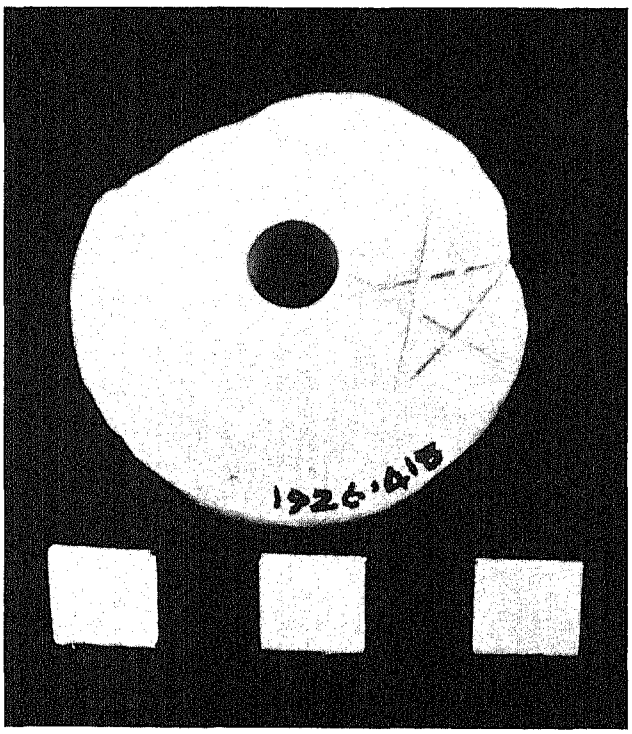
WILLIAM G. DEVER

JEMDET NASR, site located 100 km (62 mi.) south of Baghdad, approximately halfway between the Euphrates

and Tigris Rivers at the northern end of the south Mesopotamian plain (32°42′ N, 44°47′ E). The Proto-cuneiform symbols NI + RU or UB are possible representations of the site's ancient name. The UB sign, a five-pointed star, occurs on clay tablets, spindle whorls, a cylinder seal, and painted and incised pottery from the site. The modern name derives from *jemdet,* an Iraqi word for "small mound" and *"Nasr,"* the name of a modern local sheikh. Of the two mounds at Jemdet Nasr, mound A covers 1.5ha (3.7 acres) and mound B totals 7.5 ha (18.5 acres). Almost all excavation so far has taken place on mound B, which rises to a height of 3.5 m. Occupation commences in the Ubaid period (c. 4000 BCE) and flourishes from 3,400 to 2,800 BCE, during the Late Uruk, Jemdet Nasr, and Early Dynastic I periods. On the summit of mound A the foundations of a baked-brick building of Neo-Babylonian or Parthian date have been excavated.

Jemdet Nasr first came to notice in 1925, when artifacts from the site were brought to the nearby camp of the Oxford University–Field Museum (Chicago) Expedition to Mesopotamia excavating the Sumerian city of Kish under Stephen Langdon. Langdon conducted a season of excavations at Jemdet Nasr in 1926; Louis Watelin, field director at Kish, directed a brief second season in 1928. Material from these two seasons was hastily excavated and inadequately published. More recent excavations, in 1988 and 1989, were carried out by R. J. Matthews for the British Archaeological Expedition to Iraq.



JEMDET NASR. *Spindle whorl.* Note the incised five-pointed star, the UB sign, a possible ancient representation of the name of Jemdet Nasr. From the 1926 excavation. (Courtesy R. J. Matthews)

The principal architectural feature at Jemdet Nasr is a large building (92 × 48 m) constructed of both sun-dried and baked mud bricks, with clay roofing and ceramic gutters or drains. The building consists of ranges of long, narrow rooms on three sides of a more open area, all resting on a brick platform. The contents of this large building, as well as its unusual size and plan, suggest that it functioned as an administrative organization of some significance, probably a temple. Artifacts from this building were considered distinctive enough to define a previously unknown period, called Jemdet Nasr (3200–3000 BCE). When this period was first identified, there was some uncertainty as to its nature and extent. It is now clear, however, that Jemdet Nasr, as a cultural definition, is a term which can only be applied to southern Mesopotamian communities of the late fourth millennium. In contrast to the preceding Late Uruk period, when a largely homogeneous material culture spread from southern Mesopotamia across great areas of the ancient Near East—from southwestern Iran to southern Anatolia and even reaching Egypt—the Jemdet Nasr period was a time of retrenchment and relative cultural isolation in southern Mesopotamia.

An extremely important group of more than two hundred inscribed clay tablets was found within the large building. Other tablets, now in museums in Europe, are thought to have been illicitly removed from the site. The Jemdet Nasr tablets are written in a Proto-cuneiform script comparable to that employed on tablets from the Eanna Archaic III levels at the site of Uruk-Warka, immediately postdating the Eanna Archaic IV tablets which are the earliest inscribed clay tablets from Mesopotamia. [*See* Uruk-Warka.] The language of these tablets is likely to bear some relation to the Sumerian language of later, Early Dynastic texts, although the lack of grammatical elements makes any language identification hazardous. The Jemdet Nasr tablets deal with the administration of an unidentified important institution, probably a temple, and concern the management of labor, measurement of land, herding of animals, and distribution of rations; they employ a range of numerical counting systems including sexagesimal and bisexagesimal. The tablets thus appear to deal exclusively with economic and administrative matters; many bear impressions made by cylinder seals which depict naturalistic scenes of humans, animals, architecture, and decorative motifs. One group of thirteen tablets bears a seal impression which lists the names of several early Mesopotamian cities, including Ur, Larsa, Nippur, Uruk, Kesh, Zabala, and Urum. [*See* Seals.] Similar lists of early Mesopotamian cities are known from contemporary contexts at Uruk-Warka, as well as from Early Dynastic and Old Babylonian tablets from Abu Salabikh and Ur. This evidence is the earliest indication of some form of intercity cooperation in ancient Mesopotamia, although its precise

JEMDET NASR. *Burial of the Late Uruk period.* Next to the contracted body are grave goods, including pots, a stone bowl, and many shells. From the 1989 excavation. (Courtesy R. J. Matthews)

nature remains unclear. The need for cities to act in concert in the Jemdet Nasr period may be an indication of military threats to southern Mesopotamia attendant upon the collapse of the Late Uruk cultural sphere.

Other artifacts include distinctive stone cylinder seals with abstract designs of ladders, spiders, and pig-tailed humans, very different from the seal impressions on the tablets. In a large rubbish dump of Early Dynastic I date, a group of 180 clay sealings was recovered. These sealings, which had originally sealed door locks and containers, were impressed with naturalistic scenes similar in many respects to those on the Proto-cuneiform tablets, thus demonstrating continuity from Jemdet Nasr into Early Dynastic times. The Jemdet Nasr pottery assemblage includes polychrome painted vessels which display distinctive plum, dark red, and black colors, and a range of plain pottery types subsequently found at other sites in southern Mesopotamia as far north as the Diyala valley and Hamrin mountains. Based on the ceramics, the main Jemdet Nasr period sites in southern Mesopotamia are Uruk-Warka, Ur, Fara, Nippur, and Tell Uqair. In sum, the material culture of Jemdet Nasr reflects the consolidation of administrative and social developments in the centuries following the invention of Proto-cuneiform writing in the Late Uruk period in southern Mesopotamia. These developments were to underpin the spectacular achievements of Sumerian civilization in the succeeding Early Dynastic period.

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R. J. MATTHEWS

JEMMEH, TELL, site located in Naḥal Besor, about 10 km (6 mi.) due south of Gaza (map reference 097 × 088). W. J. Phythian-Adams and Sir William Flinders Petrie identified it as biblical Gerar. However, Benjamin Mazar has demonstrated that it is Yurza, a border town mentioned in New Kingdom topographical lists and in the Amarna texts. Yurza is also "Arṣa on the Brook of Egypt" of the Esarhaddon inscriptions. Yardha, Yurza, and Arṣa are not mentioned in the Bible. Phythian-Adams first sampled the site for one day in 1922, followed by Petrie for six months in 1926–1927. Gus Van Beek conducted major excavations in 1970–1978, and small, problem-solving digs in 1982, 1984, 1987, and 1990.

At virgin soil, the area of the site was approximately 12.15 acres; 15 m of occupational debris covered about 1,500 years of continuous occupation from the Middle Bronze III through the Early Hellenistic periods. Although the entire site was settled in most periods from the tenth to the eighth centuries BCE, and again in the Persian period, only the western half was occupied. A small Chalcolithic settlement was found on the east side. Occasional Crusader and twentieth century CE artifacts were found at the surface.

The site was resettled in the MB II–III, ending a 1,500-year hiatus. The climate had by then changed sufficiently to

support rainfall agriculture in this marginal environment. The site was protected by an earthen revetment, and ass sacrifices were found buried beneath buildings. Imports show a brisk trade with Cyprus, and a Tell el-Yahudiyeh bull vessel relates Jemmeh to coastal and Jordan Valley Canaan.

The Late Bronze II was an extraordinarily active period at the site, indicated by debris accumulated to a depth of 6 m. The elite lived on the west side, where an enormous house of the thirteenth century featured a public area—with cobblestone floor, mud benches along the walls, a bread oven in one corner, and a plastered bathroom in another—and a domestic section complete with courtyard, ovens, and a private entrance. Camel bones first appear in this period, and African fauna are represented by vertebrae of an African ostrich and a horn core of a hartebeest.

A Philistine settlement followed and may have lasted to the end of the occupation. The most noteworthy find of the twelfth–tenth centuries is a very large, technologically sophisticated pottery kiln, so far unparalleled in Israel. The tenth-century settlement exhibited a method of minimizing damage to mud-brick buildings from earthquake by surrounding the mud-brick foundations with compressible sand.

In the seventh century BCE the Assryian king Esarhaddon conquered Arṣa and converted the town into a military base, protected by a casemate-wall system, for his assault on Egypt. He built new buildings following a common Assyrian plan, vaulted rooms with the pitched-brick method long known in Assyria, and outfitted one building with fine ceramic Assyrian Palace ware. Two ostraca were found, written in a script with Philistine characteristics, one of which contains an unusual series of names, in which six probable family names end in *šin*.

Petrie's largest building was probably a massive Persian fort guarding a small town. Petrie found ten and Van Beek two circular storage buildings with no house remains. This suggests that the site was a central storage facility during Ptolemaic rule in the late fourth–third centuries BCE. The ostraca indicate that produce, representing taxes paid to the state, was deposited in the structures according to kind—grain in some, wine in others.

Jemmeh is the first Palestinian excavation in which everything—bones, seeds, plaster, slag—was saved and attempts were made to restore all artifacts. This methodology eliminated collecting biases, yielded new forms and artifacts not heretofore seen, and made it easier to determine the functions of structures and areas.

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JEMMEH, TELL. *Granary, from the northeast.* The two piers are the springers of a radially arched crosswall supporting roofing beams. Superimposed mud-brick floors indicate use in two periods. (Courtesy G. W. Van Beek)

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GUS W. VAN BEEK

JERASH, site located in the region of Gilead, 34 km (21 mi.) north of Amman, Jordan, and 22 km (14 mi.) east of 'Ajlun (32°17′ N, 35°54′ E). The ruins at Jerash (Gk., Gerasa) attest to the city's prominence in the Hellenistic and Roman eras. Identification of the site is based on Roman-era public inscriptions that describe the city's inhabitants as Gerasenes. Coins and other inscriptions offer a more complete title for the city: "the city of the Antiochenes on the River Chrysorhoas, formerly [of] the people of Gerasa, holy and sacrosanct" (C. B. Welles, "Indices to the Inscriptions," in *Gerasa: City of the Decapolis,* New Haven, 1938 [hereafter Welles, 1938], no. 232). The Hellenistic title *Antioch* may have been bestowed in honor of Antiochus III (223–187 BCE) or IV (175 BCE) once Transjordan passed to the Seleucid dynasty (200 BCE). One account (*Etymologicon Magnicum,* col. 207) offers an etymology of the pre-Hellenistic name for Gerasa based on the tradition that when Alexander the Great captured the city, the younger men were killed and only the elderly *(geron)* survived. Another account (Stephanus Byzantius, *de Urbibus* 3.543) attributes the title to a company of *gerontes* ("veterans") that Alexander settled at the site. It is more likely that the name *Gerasa* was the hellenized version of an unknown Semitic name for the pre-Hellenistic settlement.

Although the German scholar Ulrich Seetzen first recognized the site in 1806, major excavation did not begin until 1925, when George Horsfield led an Anglo-American team sponsored by the British Mandatory Government. Their work continued until 1931 and was supplemented in 1928 by a joint expedition from the British School of Archaeology in Jerusalem and Yale University, led by John Winter Crowfoot. The American School of Oriental Research (ASOR) replaced the British school in 1930 under the direction of Clarence S. Fisher, and then Nelson Glueck in 1933–1934. Between 1925 and 1934, excavators uncovered the sanctuaries of Zeus and Artemis and the southern theater and cleared the *cardo* and many church foundations. The area of the city east of the bisecting Chryorhoas River has not been excavated because it runs under the modern town of Jerash. [*See the biographies of Horsfield, Crowfoot, Fisher, and Glueck.*]

Restoration continued in the 1940s and 1950s. The lower terrace of the Temple of Zeus and the oval plaza were partially restored in the 1940s, and restoration of the southern theater lasted until the 1960s. Otherwise, work during the 1960s was limited to removing debris from either side of the *cardo* and partially restoring the gates of the Temple of Artemis (see figure 1). An Italian expedition from the University of Turin resumed excavations at Jerash in 1975; it was subsumed in 1982 by The Jerash Archaeological Project, composed at various times of teams from Jordan, Great Britain, the United States, Australia, France, Poland, Spain, and Italy. The project has excavated many structures in the western half of the city, principally the Temples of Artemis and Zeus, as well as the hippodrome and tombs outside the city.

Pre-Roman sites outside the walls of Jerash have yielded Acheulean hand axes, numerous Neolithic flint implements, and hearths, as well as Chalcolithic flint implements and burial mounds. These finds, along with Bronze Age, Middle Bronze Age, and Iron Age pottery from inside and outside the city walls, suggest that the site and its environs had been intermittently inhabited since the earliest Stone Age settlement.

It is likely that a small Hellenistic or pre-Hellenistic settlement existed at Gerasa and became a polis after Antiochus III or IV won Transjordan. A Roman inscription states that a group of Macedonians, perhaps Greek veterans, were early inhabitants (Welles, 1938, no. 78). Various legends assign the founding of the city to a particular political figure (Antiochus IV, Alexander the Great, or one of Alexander's successors: Perdiccas or Antigonus). A Roman-era inscription (Welles, 1938, no. 137) states that a statue of Perdiccas, Alexander's general, was erected at Gerasa; it suggests that during the Roman era Perdiccas was regarded as the founder of the Hellenistic city.

By the mid-second century BCE both the Ptolemaic and Seleucid empires were weakening. [*See* Ptolemies; Seleucids.] Hostility toward Hellenism led to the Hasmonean revolt against the Seleucids in 173–164 BCE. Under Alexander Jannaeus, in 103 BCE, the Hasmoneans took control of the Decapolis cities. [*See* Decapolis.] Gerasa and Philadelphia, however, remained in the hands of Zeno and Theodorus, the "tyrants" of Philadelphia, who brought some of their treasure for safekeeping to the Temple of Zeus at Gerasa (Josephus, *War* 1.104; *Antiq.* 13.393). Indeed, excavation of the foundation walls of the temenos of the Temple of Zeus uncovered Rhodian stamped jar handles (c. 210–180 BCE),

JERASH. Figure 1. *View of the propylaea and staircase leading to the Sanctuary of Artemis.* (Courtesy E. C. Lapp)

confirming the existence of the sanctuary at that time. Alexander Jannaeus reportedly captured Gerasa at the end of his reign (102–76 BCE), however, and died while besieging Ragaba, in Gerasene territory (Josephus, *Antiq.* 13.398).

The Decapolis region, contested among local powers such as the Nabateans, Itureans, and Hasmoneans in the wake of Seleucid disintegration, succumbed to Rome with the arrival of Pompey in 63 BCE. The Decapolis cities, including Gerasa, were given back their autonomy by Pompey, but they remained under the hegemony of the Province of Syria to the north.

The city came to flourish with the broad security and prosperity that characterized the Pax Romana, possibly interrupted by Jewish uprisings. During the First Jewish Revolt against Rome (66–70 CE), the rebels reportedly attacked Gerasa, despite reports of peace between the Romans and Jews (*War* 2.458; 4.480). [*See* First Jewish Revolt.] Indeed, the continuity of the building program during the revolt suggests to most scholars that the Gerasa captured by the Romans (*War* 4.487–848) was not the Decapolis city. Architectural fragments attributed to a synagogue and found in the fill of Hadrian's arch suggest that the city's Jewish community was destroyed prior to 130, although not necessarily as a result of the Jewish uprising in the 60s (cf. Welles, 1938, nos. 56–57).

The renewed prosperity at the advent of the Roman era led to the renovation of the Temple of Zeus (22–24 CE). A terraced courtyard surrounding the temple was built on a hill in the southwest quarter of the city in 27/28 CE. Its vaulting required substantial retaining walls, so a major building project, perhaps during the reign of Augustus, preceded the courtyard. The second renovation (161–163 CE) added three successive terraces joined by stairs that ascend the hill toward the temple. The upper terrace, a flat, colonnaded platform (110 × 50 m), surrounds the temple proper. The temple rests on subterranean vaults, with eight columns along its facade and twelve along its sides. Two altar inscriptions dated to the 40s CE (Welles, 1938, nos. 2, 4) reveal that the temple was a local enterprise subsidized by Gerasenes and suggest a substantial degree of private wealth.

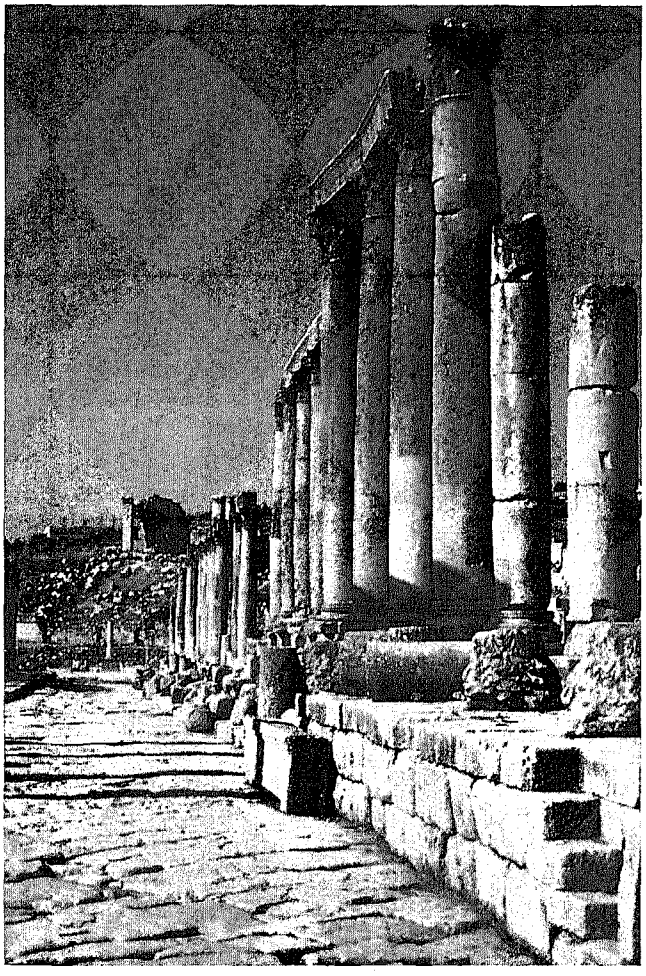
The basis for later urban development was also laid during the Early Roman era. Gerasa's orthogonal plan, with its bisecting *cardo maximus,* two *decumani,* and a city wall of uniform construction (101 towers spaced at 17–22 m intervals), was formulated by 75/76 (Welles, 1938, no. 65). Excavations against the inner face of the southern city wall indicate that the first Roman wall was built in 70 CE, although the present, thicker walls date to the fourth century. Six gates interrupt the wall; the most elaborate pair mark the north and south entrances, with two on the west and two water gates to accommodate the Chrysorhoas River. The 12-meter-wide, Ionic-colonnaded *cardo maximus* (see figure 2) extends for more than 800 m to the city's northern and southern extremes and intersects two 8–9-meter-wide *decumani.* The *cardo* also conceals the main artery of the underground sewage system and parallels the course of the Chrysorhoas, which is traversed by three bridges.

A Corinthian triple archway joins the *cardo maximus* to the oval plaza (first century), a unique precinct set in a natural depression northeast of the Temple of Zeus. Surround-

ing the elliptical (90 × 80 m) area's stone-slab pavement are 160 Ionic columns. Underneath the plaza lies the confluence of a network of water and drainage channels for the west and southwest of the city, and a small street joins the plaza with the city's south gate.

The south theater, just west of the Temple of Zeus, was dedicated in 90/91. The lower auditorium *(ima cavea)* was built into a natural slope and contained four divisions *(cunei)*, while the upper auditorium *(summa cavea)* stood above and contained eight. The theater held, in its eight sections of fifteen rows each, about three thousand spectators and displayed an elaborately decorated scaenae.

The next phase in Gerasa's growth followed Trajan's reorganization of the Roman east in 106, when the expansionist emperor annexed the Nabatean kingdom and founded the Roman Province of Arabia. [*See* Nabateans.] Gerasa became a central part of the new province, whose political and military capital was at Bosra. Gerasa continued to prosper in its role as a caravan city, then more profitably placed along a tributary of the major international route linking east–west trade, the Via Nova Trajana. By the end of the Hadrian's reign (117–138), the Roman road network in Syria-Palestine was complete. [*See* Roads; Transportation.] Jerash became a key junction along the route that connected Philadelphia with the Mediterranean cities. This boost in trade led to increased contact with the Nabateans, evidenced by Nabatean coins and jewelry styles and a Nabatean public inscription. A building spree followed Trajan's reorganization of the east and continued during the reign of Hadrian, who visited the city, heralded by a triumphal arch. Also at this time (until the reign of Alexander Severus), Gerasa began to strike its own coins bearing the image of Artemis or *Tyche* with the emperor.



JERASH. Figure 2. *View of the central colonnade next to the cardo.* (Courtesy E. C. Lapp)

In addition to considerable renovation of the Temple of Zeus (162–166) and monumentalization of the *cardo* with the northern and southern tetrapyla, expensive construction began during the second century on the Temple of Artemis. The new sanctuary to the city's patron goddess became the focal point of the city during the Middle Roman era and required thirty years of construction (150–180). Its size, complex architecture, and well-planned approach up its processional way rendered the Artemesion one of the most impressive sanctuaries in the Syro-Palestinian world. Beginning in the eastern half of the city, the processional way (11 m wide × 500 m long) bridges the river, approaches the *cardo* at an ornamental exedra, and ascends the retaining wall toward the eastern end of the colonnaded propylaeum. A staircase then leads to the outer court (161 × 121 m) of the temenos through a triple gate and finally to a colonnade (11 m wide × 100 m long) that leads to the temple court (124 × 88 m). The Temple of Artemis stands in this colonnaded court; two sets of stairs ascend the podium (40 × 22.6 × 4 m) to the temple. Of peripteral hexastylos design, the temple displays six Corinthian columns along its facade, with eleven along each of its sides.

Another extravagant structure, the triumphal arch, lies 400 m south of the city and is dated to 130 CE, just prior to Hadrian's visit. Its main passageway is flanked by subsidiary passages, and both facades contain four engaged Corinthian columns that bear an ornamented architrave and pediment. A passage running from side to side under the main arch indicates that the arch was intended to be a part of the city's southern wall, but the extension of the wall to meet the arch never took place.

Also outside the city walls, northwest of the triumphal arch, lies Gerasa's hippodrome (mid-second century CE). Despite an interior length of 244 m and a capacity for fifteen thousand spectators, it is the smallest circus in the east. At its southern end are ten well-preserved compartments from which the chariots started. Recent excavation redated (based on lamp fragments and inscriptions) the structure to this era from its formerly posited third-century date (Kehrberg, 1988; Seigne, 1988).

Telling evidence for the wealth of the city also appears in the duplication of structures. The northern theater, situated northeast of the Temple of Artemis and south of the northern *decumanus,* is smaller than its earlier, southern counterpart and dates to 162–166 CE. Features include vaulted entrances, at least four vomitoria, and two double passageways, or *paradoi.* Recent excavation suggests that the original building may have been a roofed odeum and estimate its capacity to some sixteen hundred spectators (Khouri, 1986). [*See* Theaters; Odeum.] The theater was expanded in a later phase (222–235) and rededicated then. Inscribed on some of the seats of the fourteen-row auditorium are eight legible names of Greek gods and one reference to Hadrian that may have represented the voting tribes *(phylai)* in the city's *boule.*

Temple C (110–150 CE) is the smallest temple in the city (24 × 27 m). The structure faces southeast, and the entrance to the T-shaped cella rests within a rectangular peristyle court (15.3 × 9.4 m). The vaulted chamber that lies underneath the podium suggests to some that the structure may have functioned as a *heroon* ("hero's shrine"; see Kraeling, 1938).

The western baths (150–200 CE), situated at the corner of the *cardo* and northern *decumanus,* comprise one of the largest structures in the city (50 × 75 m). Although unexcavated, surface finds suggest a plan similar to those at Timgad and Cyrene. [*See* Cyrene.] Entered from the east, the structure centered around a domed frigidarium flanked by apodyteria to the east and a *caldarium* to the west.

The nymphaeum (191 CE), a small (22 m wide) but finely decorated monument, also indicates the second-century expenditure on ornamental buildings at Gerasa. Placed south of the Artemision along the *cardo maximus,* the structure displays a two-level facade and central apse, with niches and a Corinthian colonnade spanning its length. The first, marble-covered level bears an elaborately carved entabulature; the second level, plastered and richly painted, bears pediments and a once-gilded or painted half dome. Water flowed from the statues of the lower story to a basin, through lion heads, to lower circular basins decorated with dolphin motifs and into an underground channel.

The decline of Jerash began early in the third century. Political instability and economic vulnerabilities loosened the cohesion of the empire so that Caracalla's promotion of the status of Gerasa, dubbing it Colonia Aurelai Antoniniana, was only an ostensible improvement in the city's fortunes. Trade diminished as the Nabateans began to relinquish their political and economic power to the aspiring Palmyrenes. [*See* Palmyra.] When Roman political instability succeeded in hampering international trade, Gerasa's fortunes faded rapidly. The widespread, lavish construction of previous eras gave way to the dismantling of standing structures for construction materials, although new construction projects did include the (as yet unexcavated) east baths, the festival theater at Birketein (1,200 m north of the city walls), and the expansion of the north theater. The imperial reforms of Diocletian offered a temporary reprieve from Gerasa's decline late in the third century. It was during that time that the city's walls were refortified and a small marketplace just west of the city's south gate was established.

In the absence of epigraphic evidence from the city between 307 and 440, little can be added to the city's history. The reign of Justinian (527–565), however, marks a renaissance in the life of the city. Reforms in civil and military administration, the protection of the frontiers, and the return of government spending on public buildings improved Gerasa's economic situation and the Gerasenes' standard of living.

The Christian character of the sixth-century city is exhibited in the variety and sophistication of its ecclesiastical structures: chapels, baths for parishioners, and churches. [*See* Churches.] Church interiors were decorated with mosaics and silver; a glass chalice and several Late Roman glass lamps have been recovered. [*See* Mosaics.]

A series of churches was built in the late fifth and early sixth centuries, beginning in 464/465 (Welles, 1938, no. 298) with the Apostles, Prophets, and Martyrs Church, situated in the northeast part of the city. The church exhibits a cruciform plan: each of its arms contains a nave and aisles, with the central area of the cross supported by Corinthian columns. Building continued with St. Theodore's (496), distinguished by a narthex-flanked nave that led to a rhomboid-shaped atrium to the west and a fountain court to the east. The Procopius Church (526) was the first sixth-century ecclesiastical structure, and the only church on the city's east bank. Its sparse remains suggest that it was basilical, with Corinthian-colonnaded side aisles; its mosaic floors depict floral and geometric motifs.

The complex of St. George, St. John the Baptist, and Sts. Cosmas and Damian dates to 529–533. The three churches actually comprise one structure (a central church with lateral churches). The Church of St. John was built in 531 (Welles, 1938, no. 306). It is circular, with an exedra facing each of the cardinal points. The apse is on the east, with the chancel in front of it, and the dome was supported by four columns. The two flanking churches are identical basilicas with apses in their eastern walls.

The Synagogue Church, built in 530–531, is so-named because the remains of a synagogue were found beneath the church. [*See* Synagogues.] Beneath the church's apse was the synagogue's narthex, whose floor had a mosaic depicting animals entering Noah's ark. From the narthex, three doors opened to the synagogue's hall, which was divided into a nave and aisles by two rows of columns. An inscription (Welles, 1938, no. 341) records the names of its three donors.

Sts. Peter and Paul (540) and the Mortuary Church (565),

found in the southwest quarter of the city, were excavated under Horsfield's direction in 1929. The former was a basilica with three apses and a colonnaded atrium at its western end, dated to 540 on the basis of mosaic parallels with other dated churches. The nearby Mortuary Church, a burial chapel, was a simple hall, terminating in an apse that opened on the south into a burial cave dating from the latter half of the sixth century. The Church of St. Genesius, a basilica with an exterior apse and a chapel on the southwest, is dated by an inscription (Welles, 1938, no. 331) to 611. Shortly after the construction of the church, the city was occupied by the Persians (614), and in 635 it fell to the Muslims. Jerash was occupied until a series of earthquakes struck in the mid- to late eight century. The ruined site may have hosted settlement periodically until its final destruction in 1122 by Baldwin III.

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MELISSA M. AUBIN

JERBA, island off the coast of southern Tunisia, occupying a central position in the Mediterranean seaways (33°53′ N, 10°52′ E). Jerba (Djerba) is one of the first ports north and west of the Gulf of Syrte. It provides essential water and supplies for boats traveling from Tripolitania to the Maghrib. The island is relatively flat, with long beaches on the sea-front punctuated by small coves. The best harbor is now found at Houmt Souk; however, all of the coast to the southeast provides protected anchorages, and the major ports in antiquity seem to have been located there.

In Hellenistic and Roman times the island was known as Meninx, after its principal port. Pliny (5.41) reports that Eratosthenes, a Greek astronomer, identified the island with the land of the Lotus eaters visited by Odysseus. Meninx remained the largest town through the third century CE and in 251 Vibius Gallus and Volusius were proclaimed emperors there (Aurelius Victor, *Epit.* 31). However, by that time the name of the island was shifting to that of another city, Girba (Aurelius Victor, *Epit.* 31; Cuntz, 1929). This has been identified with modern Houmt Souk on the basis of an inscription found there that mentions the Respublica Girbitana (*Année Épigraphique,* 1987, 1032); however, some doubt may persist as to whether the ancient site was not farther inland. The Arab traveler al-Tijani, writing in the fourteenth century, speaks of the ruined city of Gerba with a splendid mosque and baths, some distance from the fortress at Houmt Souk (Gragueb, 1976, pp. 25–44).

Jerba has been settled since prehistoric times. The island formed part of the Numidian kingdom of Masinissa; a large city site at Henchir Borgou, marked by the ruins of a tower-tomb, appears to date from the early second century BCE. Jerba's economic potential was reinforced under the Antonines by the construction of a causeway linking it to the coast; the rapid development of Meninx during the Roman period seems to be related to this event. There is a strong possibility that the island was a center for the slave trade, dealing in slaves from south of the Sahara desert who were brought up to the coast through the valley of the Fazzan in southern Libya.

Byzantine remains, such as the small fort on the main road between the causeway and Houmt Souk, as well as the rec-

ords of bishops of the island, qualified in Latin as *Girbitani,* suggest that occupation and some prosperity continued up to the Arab conquest. In the eighth century most of the original population appears to have converted to the Ibadi Muslim sect, which was, until recently, in the majority.

Jewish communities are found at Hara Sghrir and Hara Kebira, just inland from Houmt Souk. Tradition dates the Jewish settlement of the island to the destruction of the First Temple in Jerusalem in 586 BCE; it is said that a door of the temple and stones from a sanctuary were brought to Jerba by a group of *kōhănîm* (Heb., "priests") and built into the synagogue at Hara Sghrir, known as the Ghriba. This is the reason commonly given for the importance of the Ghriba as a pilgrimage site. Although there is no archaeological or documentary proof of this early origin, numerous Jewish communities in Roman North Africa are known. Furthermore, certain local customs, such as the recitation of a long *kiddush* (Heb., "sanctification") before Passover, find parallels in Morocco and Yemen and may predate the unification of Jewish ritual.[*See* Hebrew Language and Literature.] Thus, the origin of the community may well lie in the second, if not the first, diaspora. The existence of the Jewish community on Jerba is first demonstrated by documents from the Cairo Geniza dating to about 1030 CE. These merchants' records show that, by the eleventh century, Jerba was participating in a wide commercial network, trading agricultural products as well as slaves with Cairo, Sicily, Amalfi, Genoa, and Venice. The Norman conquest of the island probably did not damage this trade, although the effects of a massacre in 1154 will have to be evaluated by historians. Subsequently, the island was taken by the Aragonese, and from then on was the subject of a dispute between Christians and Muslims.

Two Aragonese forts are known from the medieval period. One, the Borj Ghazi Mustafa in Houmt Souk, has been excavated by the Tunisian Department of Antiquities. The earliest fortress, constructed between 1284 and 1289 by Roger de Loria, admiral of Aragon and Sicily, is defended by circular, square, and octagonal towers (the latter mentioned by al-Tijani in the fourteenth century). The second Aragonese fort is found at Borj Kastil, on the tip of a long sandspit on the southeast side of the island.

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ELIZABETH FENTRESS

JERICHO (31°80′ N, 35°30′ E; map reference 192 × 142), site located in the Jordan Valley, northwest of the Dead Sea, about 2 km (1 mi.) northwest of the modern oasis of Jericho (Ar., er-Riha) and to the east of the mountains of Judea (Judah). Geographically, the first settlement occurred on the fertile plain of the Great African Rift Valley, some 250 m (825 ft.) below sea level, through which the Jordan River descends into the Dead Sea.

The first references to Jericho in the Hebrew Bible are in the books of *Numbers* (22:1, 26:3), where the encampment of Israel is described across the river from the town; of *Deuteronomy* (34:1, 3), where the site is named; and of *Joshua* (2:1–3, 5:13–6:26), where it is recorded that spies were sent to examine the city and that the town was surrounded and conquered. The modern name of the mound, Tell es-Sultan, is the medieval name given to the site because it is located at the spring of 'Ain es-Sultan ("Elisha's fountain"). During the period of the Judges, when the site was purportedly occupied by Eglon of Moab, the town was also known as the "city of palm trees" (*Jgs.* 3:13).

Archaeological History. Because of its biblical connections, the site of Jericho inspired considerable attention for nearly fifteen hundred years before the advent of modern archaeological research. Many pilgrims and travelers visited the area during the first millennium CE, the first written account, in 333 CE, being that of the Pilgrim of Bordeau (described in *Jerusalem Pilgrimage, 1099–1185,* by John Wilkinson, with Joyce Hill and W. F. Ryan, London, 1988, p. 4). It was not until 1868, however, that the first archaeological investigation of the mound was undertaken by Charles Warren, on behalf of the British Palestine Exploration Fund. Warren excavated east-west trenches on the mound and sank 2.4 sq. m shafts 6.1 m into the earth (Warren, 1869, pp. 14–16). Although Warren dug through the EB town wall and found artifacts, he did not consider that the excavated material remains (pottery and stone mortars) were very important occupational finds for dating successive historical periods. Warren's conclusion regarding Jericho and other similar sites was: "The fact that in the Jordan valley these mounds generally stand at the mouths of the great wadies, is rather in favour of their having been the sites of ancient guard-houses or watch-towers" (Warren, 1869, p. 210).

The site was more seriously investigated when Claude R. Conder and H. H. Kitchener made a topographical survey of Jericho and its surroundings, published in *The Survey of Western Palestine,* vol. 3 (London, 1883). The second archaeological expedition to the site was conducted by an Austro-German team directed by Ernst Sellin and Carl Watzinger between 1907 and 1909 and in 1911, under the sponsorship of the German Oriental Society (Deutsche Orient-Gesellschaft); the results appeared in *Jericho: Die Ergebnisse der Ausgrabungen* (Leipzig, 1913). The large portion of the mound excavated revealed much of the Middle Bronze Age glacis, which originally surrounded the town, as well as

portions of the EB town walls. Houses belonging to the Israelite occupation of the town (eleventh–early sixth centuries BCE) were discovered on the southeast side of the mound. Controversy over the dating and capture of Jericho by Joshua has centered around two main schools of thought. The first theory conforms essentially to the biblical view that the Israelite occupation occurred with military attacks on Canaanite cities (a view primarily maintained by William Foxwell Albright, G. Ernest Wright, and John Bright). The second theory is that the conquest was a gradual and peaceful assimilation process that occurred in about 1200 BCE, at the beginning of the Iron Age (a view held by Albrecht Alt and Martin Noth and more recently discussed by Manfred Weippert [1971], and Israel Finkelstein [1988]).

In an effort to obtain further archaeological evidence concerning this question, excavations were conducted at Jericho from 1930 to 1936 by John Garstang. He led the Marston-Melchett Expedition on behalf of the University of Liverpool and the British School of Archaeology in Jerusalem. Garstang excavated many areas on the mound and also located a number of MB and LB tombs in the necropolis associated with the site (Garstang, 1932, pp. 18–22, 41–54; 1933, pp. 4–42; Bienkowski, 1986, pp. 32–102). Garstang originally claimed that the Israelites had indeed destroyed Jericho on the evidence of fallen walls he dated to the end of the Late Bronze Age, but he later revised their destruction to a much earlier period. Although the Joshua controversy was not solved, Garstang did reveal the very early Mesolithic and Neolithic stages of occupation on the site.

In an effort to resolve the Joshua problem and to clarify the results of Garstang's excavations, Kathleen M. Kenyon directed the most recent archaeological work at Jericho (1952–1958), sponsored by the British School of Archaeology in Jerusalem, the Palestine Exploration Fund, and the British Academy in collaboration with the American School of Oriental Research (now Albright Institute) in Jerusalem and the Royal Ontario Museum, Toronto (Kenyon, 1957, 1960, 1965, 1981; Kenyon and Holland, 1982, 1983). The Kenyon expedition excavated a large number of tombs in the necropolis dating from the Proto-Urban period (c. 3400–3100 BCE) to the Roman period. Although much of the ancient mound had already been dug by the previous two expeditions, Kenyon was able to plot three main trenches on the north (trench II), west (trench I), and south (trench III) slopes of the tell in order to obtain comparative stratigraphical cross-sections of the main fortification systems of different historical periods. She also excavated a number of large squares inside the walls of the town in order to cross-check the results of the former excavations as well as to expose larger areas of the Mesolithic and Neolithic periods of occupation; these squares are lettered and numbered A I–II (grid E4–5, on the highest part of the tell, 24 m high), D I, D II (grid H4–5, east end of trench I), E I–V (grid E–F6–7, northeast side of the tell), F I (grid G4–5, northeast end of trench I), H I–VI (grid H6–7, east side of the mound above the spring), L I (grid G5–6, center of the mound), and M I (grid F–G5, overlapping the EB town wall on the northwestern side of the mound).

Major Remains. Archaeological investigations of the site have shown that it is one of the earliest settled communities in the world. During the Mesolithic period (or Epipaleolithic, beginning c. 12,000 BCE), local hunters camped around the natural spring and constructed an oblong platform of clay directly on bedrock in square E I (Kenyon, 1981, pl. 144b). Kenyon indentified a group of three stone sockets associated with the platform as probable supports for "totem poles" used in a shrine or sanctuary, but Peter Dorrell (Kenyon and Holland, 1983, p. 489) later reclassified these stones as limestone mortars. Many Natufian flint and bone tools, including a small bone harpoon, were found in this area.

The next stage of growth at Jericho occurred during the Epipaleolithic/Neolithic I period (c. 8700–8500 BCE). Rudimentary clay "humplike" (or "hog-backed") bricks belonging to the bases of walls of shelters, with probable branch and skin superstructures, were found in squares D–F and M I (Kenyon, 1981, pls. 129, 295). The most important aspect of the flint industry was the occurrence of pale-gray obsidian tools. The obsidian for making the tools came from Çiftlik in eastern Turkey, thereby confirming that the inhabitants of Jericho had already evolved extensive trade relations, making it a major center of evolving civilization.

Although there was a gap in occupation between the Epipaleolithic/Neolithic I period and the next stage of development, the Neolithic I occupation (c. 8500 BCE), great advances had been made in architecture and town planning. The development of one-room, domed, round houses constructed with plano-convex mud bricks implies a permanent settlement and the beginning of a true town. For reasons not yet ascertained, the inhabitants built a major stone wall around the town, as well as a stone tower (diameter, 8.5 m; height, 7.75 m) against the inner side of the town wall in trench I (Kenyon, 1981, pls. 4, 6). The excavator suggested that these constructions were either for defense or protection from wild animals, but Ofer Bar-Yosef (1986, pp. 159–161) has hypothesized that the wall may have been necessary to keep the rising accumulation of ground debris out of the town. The tower may also have been used for some religious purpose. The presence of bone tools such as pins, awls, and a shuttle attest to both a skin-working industry and weaving (see figure 1).

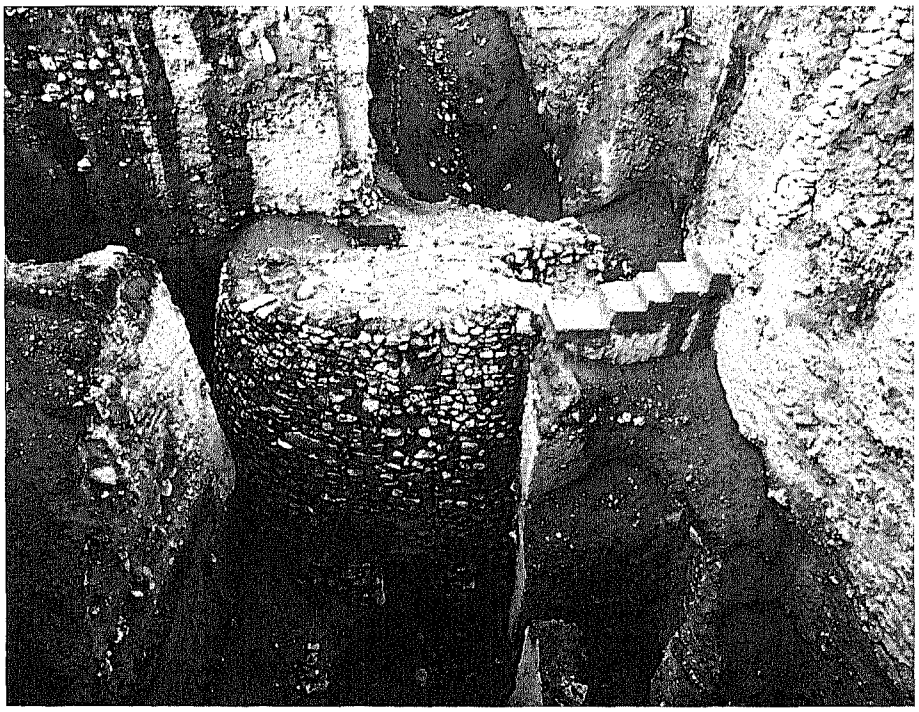
The succeeding Neolithic 2 period (c. 7000 BCE) is architecturally notable in that there was a complete change in house construction from simple round rooms to rectangular rooms. Seventeen building levels were found that revealed that the houses were built around a central courtyard containing fireplaces. Impressions left in the clay floors gave evidence of different patterns of rush-made mats (Crowfoot

in Kenyon and Holland, 1982, pp. 546–550, pls. 4–5). One very large room (about 6 m × 6 m) stands out because it contained a plaster-lined basin and a series of pits, as well as adjoining semicircular domed enclosures on its east and west sides (Kenyon, 1981, pls. 46b, 221). Because of its unique plan, Kenyon suggested that it probably served as a cult center or temple. However, the presence of bone tools could imply that it was a skin-working "factory," with the domed enclosures used as drying kilns. Other finds certainly suggest some form of cult practice or ancestor worship. A group of human skulls was plastered and painted to represent human faces, possibly to resemble the actual features of the deceased (Kenyon, 1981, pls. 50–59). Dated to the end of this period were two clay figures stylized to represent human figures; one had shells inlaid as eyes and painted features (Garstang, 1935, pl. 53) (see figure 2).

It is known that Jericho was abandoned at the end of Neolithic 2 because there were considerable layers of eroded material over the occupation remains of that period. The next sequence of settlements is known as the Pottery Neolithic A and B period, or Neolithic 3–4, because the newcomers to the site brought the art of pottery making with them. Two distinct styles of pottery indicate that there were two separate groups of settlers (Kenyon and Holland, 1982, figs. 1–19, 21–33 for the A and B period pottery types). While the Pottery Neolithic A people lived only in pit dwellings cut into the debris of the previous occupation, the arrival of the B people introduced the construction of hut dwellings and, later, of freestanding houses with stone foundations and handmade mud-brick superstructures. Crowfoot Payne has identified the new types of flint tools used as Yarmukian (Kenyon and Holland, 1983, pp. 706–716, figs. 332–341). An analysis of the plant remains from this period led Maria Hopf (Kenyon and Holland, 1983, p. 578) to conclude that the Pottery Neolithic, or Neolithic 3–4, people were primarily herdsmen and hunters.

Jericho was again abandoned for a considerable period of time at the end of the Pottery Neolithic period. The next occupation of the site, in Kenyon's terminology, is known as the Proto-Urban period (c. 3400–3100 BCE = EB I elsewhere), which she subdivided into periods A and B on the basis of different pottery styles found in the tombs of the necropolis belonging to this stage of occupation. Garstang's excavations in area E revealed the best information concerning the religious customs and architecture of this period; he found a broadroom building, with an entrance facing east, that he labeled shrine 420 (Garstang, 1936, pp. 73–74, pl. 41a). Stone objects associated with the shrine included a small libation altar and an oval-shaped smoothed stone Garstang thought could have been a prototype of the *maṣṣēbâ*.

The next occupation at Jericho is the Early Bronze Age (Kenyon's EB I–III, c. 3050–2300 BCE = EB II–III elsewhere), which gradually evolved out of the preceding Proto-Urban period. Defense of the town seems to have been uppermost in the thoughts of its EB occupants, as Kenyon found remains of two parallel town walls constructed of



JERICHO. Figure 1. *Neolithic moat, tower, and fortification wall.* (Erich Lessing/Art Resource, NY)

JERICHO. Figure 2. *Pre-Pottery Neolithic B head with inlaid seashell eyes.* (Courtesy ASOR Archives)

mold-made, unbaked rectangular mud bricks. During the later stages of the walls, the town was also protected by an external ditch. Architecturally, the earliest houses are either oblong with a curved end, or circular; later, rectangular designs were employed, as well as mud-brick built silos for storing grain. This was the first period at Jericho in which artificial irrigation was employed to produce food for self-sufficiency: large quantities of carbonized naked hexaploid bread-wheat remains were found (Hopf in Kenyon and Holland, 1983, p. 579). Multiple burials in the rock-cut tombs in the necropolis contained pottery vessels and personal ornamentation, attesting to some belief in an afterlife. International trade was thriving, as both pottery and objects were imported from eastern Turkey, Syria, and Egypt. The prosperity of this period ceased when the town was violently destroyed, probably as a result of a general collapse of the economy caused by deforestation of the region—which in turn made the town vulnerable to invasion as well as disease. The archaeological evidence shows that the town was then unoccupied for about two hundred years.

The town was partially reoccupied during Kenyon's Intermediate Early Bronze–Middle Bronze Age (c. 2100–1950 BCE) by a group of seminomadic newcomers who may be identified with the "Amorites" (other scholars identify this period at other sites as EB IIIB or EB IV, c. 2300–1950 BCE). The new pottery is related to types also found in north Syria (Kenyon, 1981, fig. 12). A new type of tomb plan was introduced that had a vertical shaft leading into rock-cut chambers below. Kenyon postulated that the newcomers were organized into tribal groups because seven different burial customs could be observed in the tombs. The tomb types are dagger, pottery, dagger/pottery, outsize, bead, composite, and multiple burial (Kenyon, 1960, 1965).

Kenyon divided the following MB period at Jericho into two major stages: MB I (1950–1850 BCE) and MB II (1800–1550 BCE). The town was very heavily fortified by three successive plastered ramparts placed against the steeply sloping sides of the mound, which had been created by previous occupation debris. Originally, the rampart was most likely crowned with a freestanding mud-brick defensive wall, but erosion has removed all traces of this. The houses Garstang and Kenyon excavated in grids H–K6 show good town planning in that the dwellings are well aligned with two streets and drains (Garstang, 1934, pp. 118–130, pls. xiii–xvi; Kenyon, 1981, pl. 336a). The objects of everyday use, as well as the burial customs, of the MB inhabitants are extremely well preserved because of the excellent state of preservation of the tombs in the necropolis (Garstang, 1932, pp. 41–54; 1933, pp. 3–37; Kenyon, 1960, pp. 263–515; 1965, pp. 167–478). This period in the history of Jericho was brought to a violent end by a major conflagration that may have been caused by an earthquake or by the Egyptians.

The Late Bronze Age period at Jericho (c. 1400–1325 BCE) is perhaps the most controversial with regard to its fortification system and its historical connections with the biblical Joshua story (the entry and settlement of the Israelites into Canaan). Many scholars (cf. Finkelstein, 1988) believe that the settlement was a peaceful and gradual infiltration of an already-established local population. Kenyon concluded, with reference to the military conquest theory and the LB walls, that there was no archaeological data to support the thesis that the town had been surrounded by a wall at the end of LB I (c. 1400 BCE; for recent arguments against this view, see Bryant G. Wood, 1990, and the rebuttal by Piotr Bienkowski, 1990). Also, Kenyon found very few remains on the mound that can be dated to this period in the site's history (see Kenyon, 1981, p. 371, fig. 14:6, pl. 199a, b; cf. Garstang, 1934, pp. 105–108, pl. xii). However, evidence from the necropolis, tombs 4 and 5, does indicate burials during this period (Bienkowski, 1986, pp. 71, 90, 102).

The reoccupation of Jericho does not occur until the Iron Age (c. 1200–587 BCE), in about the eleventh century. Pottery evidence from a tenth-century tomb, A 85 (Tushingham in Kenyon, 1965, p. 487, fig. 253), accords well with the biblical account in *1 Kings* 16:34 that Jericho was reoccupied and fortified by Hiel the Bethelite during the time of

Ahab. The town's main Iron Age occupation did not occur until the seventh century BCE, however. Extensive occupational remains were found by all three expeditions (see especially Franken, 1974, and Weippert and Weippert, 1976). The presence of a royal stamped jar handle impressed with a two-winged royal stamp implies that Jericho was administered by Judah at this time (Bartlett in Kenyon and Holland, 1982, p. 537, fig. 220:1, pl. 3a). The pottery evidence also suggests that the town remained occupied until the Babylonian Exile in 587 BCE.

As a result of erosion there is no evidence of any building remains on the ancient mound after the end of the Iron Age, if any such occupation occurred. Occupation from the Persian through the Byzantine periods was centered on two nearby mounds known as Tulul Abu el-'Alayiq. The town's position on the eastern flank of Judea probably continued to make it strategically important militarily. As a natural oasis it was also of great economic value to a succession of conquerers by providing them with food and medicinal plants. A bronze barbed arrowhead attests to at least the presence of Persian warriors or their subjugates (Kenyon and Holland, 1982, p. 569, fig. 229:18); a Rhodian stamped handle implies active trade during the Hellenistic period (Bartlett in Kenyon and Holland, 1982, p. 542, fig. 220:6); and Roman tombs and graves indicate the presence of Roman legionnaires either encamped on or near the ancient town.

[*See also* American Schools of Oriental Research; British School of Archaeology in Jerusalem; Herodian Jericho; *and the biographies of Conder, Garstang, Kenyon, Kitchener, Sellin, Warren, and Watzinger.*]

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JERUSALEM, site located at an average height of 740 m above sea level, on the spine of the Judean range, 40 km (25 mi.) east of the Mediterranean coast (UTM map reference 7115 × 5183). The name of the city is derived from Canaanite, in which it means "the god Salem is its founder." This god is well known from Ugaritic texts (fourteenth century BCE), in which he is one of the two "agreeable and handsome gods" Šaḥar and Šalem—the gods of day and night, respectively. Because the oldest occurrences of *Jerusalem* are as *Urushalimun* in the Egyptian execration texts (nineteenth and eighteenth centuries BCE) and *Urusalim* (Amarna tablets, Egypt, fourteenth century BCE), some scholars dispute the derivation and meaning of the name. Archaeologically, the site of ancient Jerusalem can be divided into three sectors: the biblical City of David (the hill of Ophel), its historical nucleus, located south of the Old City and the Temple Mount (UTM map reference 7117 × 5184); the Old City itself, encircled by the sixteenth-century Ottoman walls; and the areas outside the walls, which include the ancient Jewish cemetery on the Mount of Olives, the Kidron

Valley below the City of David, and many Christian holy places. The ancient city is well defined by the Kidron and Hinnom valleys, which form the framework in which the city is engulfed from east, south, and west, leaving the northern side entirely exposed to attacks with no natural defense. The vulnerability of Jerusalem from the north is an important factor in its history. Another valley, named Tyropoean by Flavius, crosses the city from north to south, creating the western confine of the City of David as well as the Temple Mount.

History of Excavations. The first archeological excavations in Jerusalem were those of Félicien de Saulcy, who in 1860 cleared the so-called royal tombs north of the Old City. These excavations mark the beginning of a long list of nineteenth-century explorations of the city and its topography by individuals working without religious bias or superstition, investigations that yielded information of enduring relevance. More methodical exploration of the city began with the survey directed by Charles Wilson in 1864 and the excavations directed by Charles Warren in 1867–1870, that followed, on behalf of the Palestine Exploration Fund (PEF). Warren explored sections of the hill south of the Temple Mount (the Ophel), not realizing that he was digging the biblical city. It was only in 1881, after Hermann Guthe's excavations on the hill, on behalf of the Deutscher Verein zur Erforschung Palästinas, that it was identified as the core of the ancient city. In 1894–1897 Frederick Jones Bliss and Archibald Campbell Dickie, also for the PEF, excavated sections of the Ophel, uncovering not only the city's "First Wall" (see below), but also the remains of one of its early churches. In 1911 a group of engineers headed by Montague Parker cleared the immediate vicinity of the only perennial spring, the Gihon, located on the eastern slope of the City of David. There they discovered a group of three Early Bronze I tombs, since dubbed the Ophel tombs, as well as an elaborate tunnel system fed by the spring. [*See* Palestine Exploration Fund; *and the biographies of Saulcy, Wilson, Warren, and Bliss.*]

Louis-Hugues Vincent thoroughly studied Parker's explorations, correctly identifying the results of the work and giving them scholarly significance. More advanced and archeologically reliable excavations on the Ophel began with the work of Raymond Weill in 1913–1914 and again in 1923–1924. His excavations provided a more thorough view because he revealed strata from various periods, thus placing the hill and its water installations in historical context. Weill was followed by R. A. S. Macalister and J. Garrow Duncan (in 1923–1925), who discovered partial remains of the city's defenses and residential quarters. They were succeeded by John W. Crowfoot and Gerald M. FitzGerald (in 1927–1929) who, under the auspices of the British School of Archaeology in Jerusalem (BSAJ) and the PEF, uncovered, among other remains, the Valley Gate, thus defining the western boundary of the City of David. Their original plan was to dig a trench that would extend across the hill, the deep valley that borders it on the west (the Tyropoean), and the city's western hill (known today as Mt. Zion). Technical problems created by the accumulation of enormous fills over the centuries prevented them from achieving their goal. [*See* British School of Archaeology in Jerusalem; *and the biographies of Vincent, Weill, Macalister, and Crowfoot.*]

From 1961 to 1968, Kathleen M. Kenyon, under the auspices of the PEF and institutions in France, Canada, England, and Australia, reexcavated the City of David. In 1978, another team, headed by Yigal Shiloh on behalf of the Hebrew University of Jerusalem and the City of David Society, initiated a new series of excavations on the hill. This project was concluded in 1985 and, together with Kenyon's excavation results, succeeded in giving the scholarly world a comprehensive view of ancient Jerusalem's history and archeology. [*See the biographies of Kenyon and Shiloh.*]

Bronze Age. The earliest remains on the hill were found in Shiloh's excavation areas B, E1, and E3. The remains of the Chalcolithic period (late fourth millenium) consist mainly of pits dug into the natural bedrock and filled with debris and Early Bronze Age I (third millenium) pottery, which contributes important additional data for the period of the Ophel tombs (see above). In area E1 remains of a typical broadroom house were found; it had been built on bedrock, with its interior walls surrounded by stone benches. The later phases of the urban Early Bronze Age are not represented in Jerusalem. The Middle Bronze Age I (also designated EB IV), although not found in the City of David, is nevertheless represented by tombs dated to the period found by the Kenyon team, as well as by the nineteenth-century scholars who worked on the Mount of Olives and in the village of Silwan across the Kidron Valley from the City of David. (It is now also suggested that the grotto under the Dome of the Rock on the Temple Mount is also a burial cave that dates to this period [see Rivka Gonen, "On Ancient Tombs and Holy Places," *Cathedra* 34 (1985): 3–14].)

The transformation of Jerusalem into a fortified city took place in the Middle Bronze Age II period (eighteenth century BCE), when the site was surrounded by a city wall some 3 m thick (found by both Kenyon in her section A and Shiloh in his area E). In the following MB phases, bastions were added to the wall; it is highly probable that a tower flanking a gate, found in Kenyon's section A also belongs to the MB fortifications. Because the tower was found at a point where the wall is above the spring, and because the buildings there had been in use when the Babylonian army destroyed Jerusalem in 586 BCE, many scholars believe that the gate is the biblical Spring Gate (*Neh.* 2:14, 3:15, 8:3, 16). The eastern slope of the hill above the spring is very steep, demanding a resourceful solution to make construction possible there: a system of terraces proved to be the answer. It is

probable, as Kenyon suggested, that these terraces are the structures referred to in the Bible as the *millô'* (Heb., "fill") built by David and repaired by Solomon and Hezekiah (Kenyon, 1974).

In the Late Bronze Age, Jerusalem is mentioned in the Amarna tablets (see above), which give the impression that the city was then quite prosperous and attempting to expand into the territories of the neighboring city-states. Excavations in the vicinity of the City of David seem to confirm this: in 1954, Sylvester J. Saller discovered a wealthy tomb on the Mount of Olives (Saller, *The Jebusite Burial Place*, Jerusalem, 1964, pp. 7–10). In 1935, on the Hill of Evil Counsel (south of the Hinnom Valley), D. C. Baramki discovered a cistern with a rich assemblage of LB finds (Baramki, "An Ancient Cistern in the Grounds of Government House, Jerusalem," *Quarterly of the Department of Antiquities in Jerusalem* 4 [1935]: 165–167) and in 1933, a tomb rich with grave goods was found in the Naḥlat Aḥim neighborhood northwest of the Old City (published by Ruth Amiran in *Eretz-Israel* 6 [1960]: 28–37 [Heb.], 27* [Eng.]). [*See the biographies of Saller and Baramki.*] At the summit of the southeastern hill in the City of David itself, a monumental LB structure was found that constitutes a series of terraces built of small stones on various levels to create a huge artificial mound. No doubt the work of the Canaanite kings of Jerusalem, the structure created a podium on which a citadel or a royal palace might suitably have been built. Later, in David's time, the podium was covered with an enormous stepped stone structure, the best-preserved structure dated to the time of that king (c. 1000–940 BCE).

Iron Age. The remains of the period immediately preceeding the Davidic conquest of Jerusalem, found in Shiloh's areas D1 and E1, were too poor to cast any light on the "Jebusites" who then dwelled in the city (*Jos.* 15:63; *Jgs.* 1:21, etc.). Except for the podium (see above), remains in the city from the tenth century are quite scant. Area G, where the stepped structure was found (Kenyon's section A) is located at the northeast corner of the City of David. The structure served as the city's citadel then. Kenyon found, as its western extention, a city wall of the casemate type, which is typical of tenth-century BCE fortifications (her area H). Slightly east of the stepped structure Kenyon also found a palmette ("Proto Aeolic" type) capital, which is an indicator of "royal" architecture at other cities in the country as well (e.g., Hazor). All the indications therefore are that the stepped structure belonged to the citadel of David, as his palace and fort are referred to in the Bible (*2 Sm.* 5:7; *1 Kgs.* 8:1). It was only in the time of his son Solomon that the city's civic and administrative center moved farther north to the Temple Mount. Because of its location, no archeological evidence of that center has yet been found. The condition of the stepped structure may be an indication of the process of erosion by millennia of winter rains. In the eighth–seventh centuries BCE, when the city reached its zenith, the stepped structure was utilized as an artificial hill on which some of the city's best-preserved private houses were built. Cult objects such as figurines representing various deities were found there—examples of the syncretistic religious inclinations of the city's inhabitants (Shiloh, 1984, p. 17).

An important feature of biblical Jerusalem is its water installations. The earliest are simple canals directing water from the Gihon Spring to pools—the Kings Pool and the Siloam Pool—farther down the Kidron and Tyropoean Valleys. The first installation, discovered by Warren in 1867, is known today as Warren's Shaft. The date of its construction is not clear because Warren destroyed its immediate archeological context. The shaft consists of three main parts: a tunnel that brings water from the spring toward the inside of the hill (22 m long); a vertical shaft (12.3 m long) to the tunnel that served as a well from which water could be drawn; and a long tunnel that begins at the lower part at the top of the shaft and ascends at first moderately (28 m long) and then steeply, necessitating steps (8 m high) to the surface (Shiloh, 1984, pp. 21–22, 24). Warren's shaft enlarged natural karstic cavities in the bedrock. It was designed for use when the city was under siege as an undisturbed and unseen source of water. Some scholars identify it as the *ṣinnôr* (Heb., "pipe") the Bible says was the passage through which David's men entered Jerusalem in order to conquer it (*2 Sm.* 5:18; *1 Chr.* 11:6). If, however, the water system should be dated to the time of Solomon, this identification is untenable.

The second water installation is Hezekiah's tunnel. During that king's reign, the city expanded westward, covering the hill west of the City of David. Hezekiah surrounded the newly settled environs of the city with a wall (see below) that included the Tyropoean Valley and the Siloam Pool within the city wall. These new topographic realities enabled Hezekiah to bore a water tunnel over half a kilometer long (because of later construction and quarrying on the hill it is impossible to be more precise, but 533 m is frequently conjectured). The tunnel slopes about 30 cm from the spring to the pool. At a certain point in Hezekiah's tunnel, an inscription (discovered by local children in 1880) was installed. It describes the moment when the two parties, hewing the tunnel from two ends, met. It is not a royal inscription, however, and the king is not even mentioned. The ascription of the tunnel to Hezekiah rests on the epigraphic dating of the inscription to the late eighth-century BCE and the biblical description of the deeds of that king. [*See* Water Tunnels; *and* Siloam Tunnel Inscription.]

The western limits of the City of David are still a matter of dispute because no substantial remains have been discovered. A section of a city wall about 8 m wide, in which a gate was incorporated was discovered by Crowfoot and Duncan in 1927–1928 (see above). They ascribed it to the biblical city, it is now dated to the second or first century BCE. North of the City of David, toward the Temple Mount, Benjamin

Mazar and Elat Mazar excavated a large public building (some parts of it were first excavated by Warren and other parts by Kenyon) and a second structure. Benjamin Mazar has identified the first one as *bēt millô'* (*2 Kgs.* 12:21); Elat Mazar believes the second structure to be a city gate (Mazar and Mazar, 1989, pp. 58–60; many scholars prefer to interpret it as a royal storehouse, however). Although these remains are later than the Solomonic period, they nevertheless indicate the great works carried out by the kings of Judea (Judah) in the immediate vicinity of the Temple Mount. Of the Temple itself, there are no remains from the biblical period. The present Temple Mount and its retaining walls date to the first century BCE, the Second Temple period, and they have obliterated or conceal all earlier remains. [*See the biography of Mazar.*]

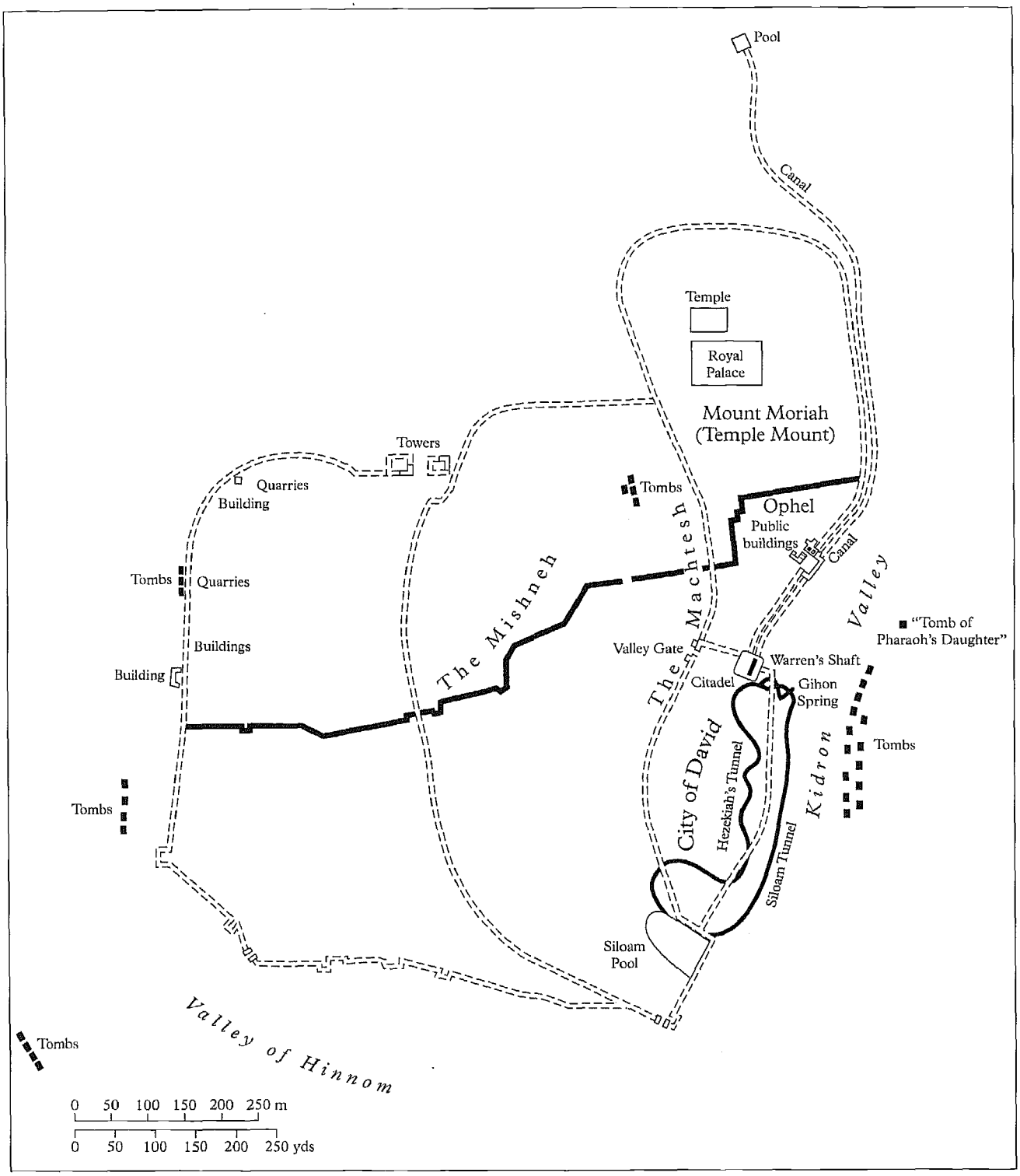
The cemeteries of the Iron II period (most of the eighth–seventh centuries BCE), have recently become subject to thorough study. David Ussishkin surveyed the cemetery in the village of Silwan across the valley from the City of David in 1968–1971. His survey revealed more tombs similar to the ones known from Charles Clermont-Ganneau's 1874 survey and subsequent surveys (altogether, some fifty burial caves). [*See the biography of Clermont-Ganneau.*] Gabriel Barkay has identified rock-cut tombs on the grounds of the École Biblique et Archéologique Française as being part of the large cemetery north of the present Old City. Amos Kloner and Amihai Mazar produced more information about the latter, describing an additional fifteen caves, including the Garden Tomb. In 1990 Ronny Reich found another section of that cemetery west of the Old City. This and another cemetery discovered by Barkay farther south, in his excavations on the grounds of the Scottish church from 1979 to 1988, reveal the extent of the burial grounds around the ancient city. (See Barkay, Kloner, and Mazar, "The Northern Necropolis of Jerusalem during the First Temple Period, in Geva, ed., 1994, pp. 119–127; Barkay and Kloner, "Jerusalem Tombs from the Days of the First Temple," *Biblical Archaeology Review* 12 [1986]: 22–30; and Barkay, "Excavations at Ketef Hinnom in Jerusalem," in Geva, ed., 1994, pp. 85–106.) Research into these cemeteries concentrates on two problems: does the diffusion of the tombs reflect the size of Jerusalem at the end of the First Temple Period, and can the size of the cemetery help to deduce the number of inhabitants then living in the city?

Many remains of the First Temple period have been discovered on Jerusalem's western hill (see figure 1). The Jewish Quarter, in the Old City, was excavated during the quarter's reconstruction and rehabilitation. Directed by Nahman Avigad from 1968 to 1978, the excavations recovered a 65-meter-segment of the "Broad Wall," or Nehemiah's wall (Avigad, 1983). It forms a section of a 7-meter-deep city wall probably constructed by Hezekiah in the late eighth–early seventh centuries BCE. [*See the biography of Avigad.*] Many Judean refugees moved to Jerusalem at about that time, following the expansion of the independent pagan coastal cities; others were fleeing the Assyrian destruction of northern Israel. The expansion of the city, as well as the need to fortify the newly founded neighborhoods to its west, compelled Hezekiah to build the wall, which withstood the Assyrian siege of 701 BCE. The wall and adjacent remains of fortifications were surrounded by houses, some of which were demolished by the construction of the wall (cf. *Is.* 22:10). At the western edge of the hill more contemporary remains were uncovered at the Citadel, near the Jaffa Gate (by Hillel Geva, 1976–1980; and Renee Sivan and Giora Solar, 1980–1988; see Geva, "Excavations at the Citadel of Jerusalem, 1976–1980," and Sivan and Solar, "Excavations in the Jerusalem Citadel, 1980–1988," in Geva, ed., 1994) and on the southern slope of Mount Zion (by Bargil Pixner, Doron Chen, and Shlomo Margalit, 1977–1988; see Chen, Margalit, and Pixner, "Discovery of Iron Age Fortifications below the Gate of the Essenes," in Geva, ed., 1994, pp. 76–81). All these remains indicate the city's expansion toward the end of the First Temple period, although many questions remain unanswered.

Persian Period. During the fifth century BCE, when repatriates from Babylon came to Jerusalem, some reconstruction work was undertaken. This activity continued until the time of Ezra and Nehemiah (*Neh.* 3:1–32). The latter even reconstructed the city walls, although there is no archaeological proof of that activity. On the southeastern hill of the City of David, a few poorly constructed walls were found by Shiloh in his area G that had been used as terraces to support the debris of collapse from the 586 BCE Babylonian destruction (stratum 10). In his area D1–2, more contemporary remains were found, constituting, among other things, a quarry, possibly an indication of the works carried out in the city as a part of its rebuilding by Nehemiah.

Hellenistic Period. The period between Nehemiah (c. 445 BCE) and the second century BCE is one of the most obscure in the history of Jerusalem, although some literary sources that describe the city are available (e.g., the Letter of Aristeas). It seems that only after the Maccabean revolt against the Seleucids, when Jerusalem became independent again (164 BCE), does its expansion toward the western hill become its most prominent urban feature. From what can be deduced from the archaeological record, the city shrank during the Persian period to its earlier dimensions—when it was limited to the southeastern hill, the City of David. The remains of the biblical city were still prominent above ground on the western hill, however, and when the western hill was surrounded by a wall those remains were incorporated. Avigad's excavations (see above) defined the limits of the settlement of the western hill. It became, in the second century BCE, the center of the city, and remained so until the fall of Jerusalem in 70 CE.

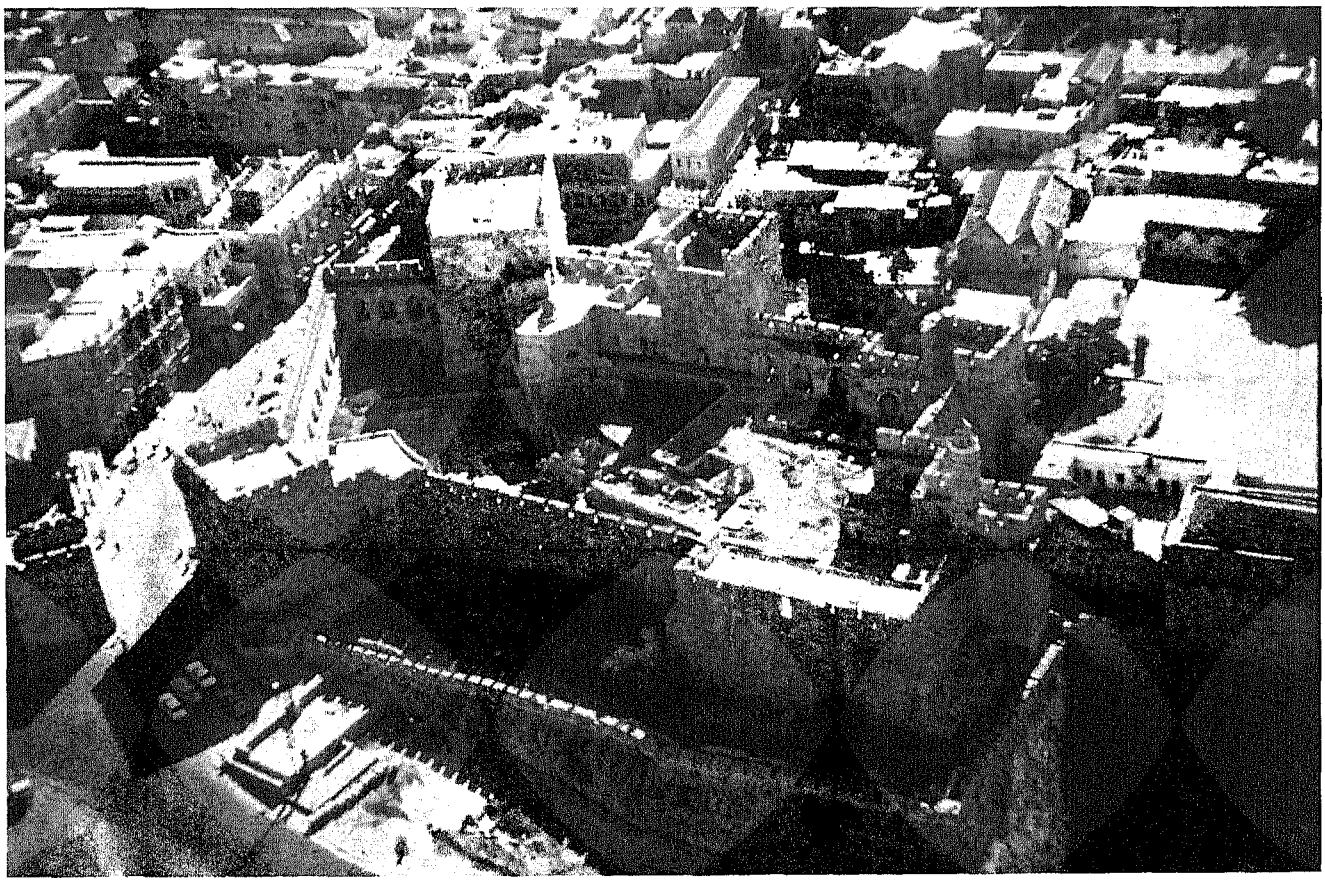
The southeastern hill, the City of David, was surrounded by walls that partially reused the Bronze Age–Iron Age walls,



JERUSALEM. Figure 1. *Plan of the city, First Temple period.* (After Bahat, 1990)

but were modified by Nehemiah. His changes included removing the wall's eastern alignment from halfway up the slope to its summit, giving the city its smallest dimensions ever. Macalister and Duncan (see above) had excavated that city wall but misinterpreted it; Kenyon and Shiloh corrected the dating to the second–first centuries BCE. The remains include two towers and a section of a wall, along with other elements Macalister and Duncan had discovered on the eastern slope and by Bliss and Dickie (see above) along the southern slope of the same hill and on the southern slope of the western hill (Mt. Zion). From 1977 to 1988, Pixner, Chen, and Margalit reexcavated a small section in the wall examined by Macalister and Duncan, confirming their dating. In 1973–1976, farther north on the western slope of that hill, Magen Broshi excavated the entire length of the wall. He distinguished two phases: of the Maccabean period and of the Herodian period. The latter was a reinforcement of the earlier wall and was probably connected with the construction of the Herodian palace inside the wall at that point (Broshi, "Excavations along the Western and Southern Wall of the Old City of Jerusalem," in Geva, ed., 1994, pp. 147–155). Between 1934 and 1947, C. N. Johns had found another section of the wall in the Citadel, along with three towers incorporated into it. Later excavators (Ruth Amiran and Avraham Eitan in 1968–1969; Hillel Geva from 1976 to 1980; Sivan from 1980 to 1988) confirmed Johns's results and refined his discovery of the two phases of construction, Maccabean and Herodian (Amiran and Eitan, "Excavations in the Jerusalem Citadel," in Yadin, ed., 1975, pp. 52–54). It was in the latter phase that the Tower of David was constructed, still one of the city's dominant features (see figure 2). Avigad excavated the eastern extension of the wall above, and discovered a gate in it that, although irregular in form, still must be interpreted as a city gate—it is unarguably an opening in the wall. The entire length of the wall is, thus, now well understood. The first-century CE historian Josephus Flavius named it the "First Wall" (*War* 5.142–145).

The city confined within the First Wall yielded a great many archaeological finds: from the City of David, an inscribed stone that probably was originally installed above the lintel of a synagogue served by at least of three generations of the same family. Although from Josephus's descriptions some of the city's most sumptuous structures were located in the city of David, excavation has not revealed any structures of importance (Shiloh, 1984, pp. 29–30). The lack of monumental remains on the southeastern hill can be as-



JERUSALEM. Figure 2. *The citadel/tower of David.* (Courtesy Pictorial Archive)

cribed to the fact that in successive periods it served as a quarry. The remains of the Maccabean period on the western hill are better known from Avigad's excavations (see above). Although built over in the Herodian period, these survived—the lower parts of the houses revealed the lower parts of walls, cisterns, and baths, both for secular and religious purposes. In addition, many of the small finds indicate the character and size of the city in the Late Hellenistic period.

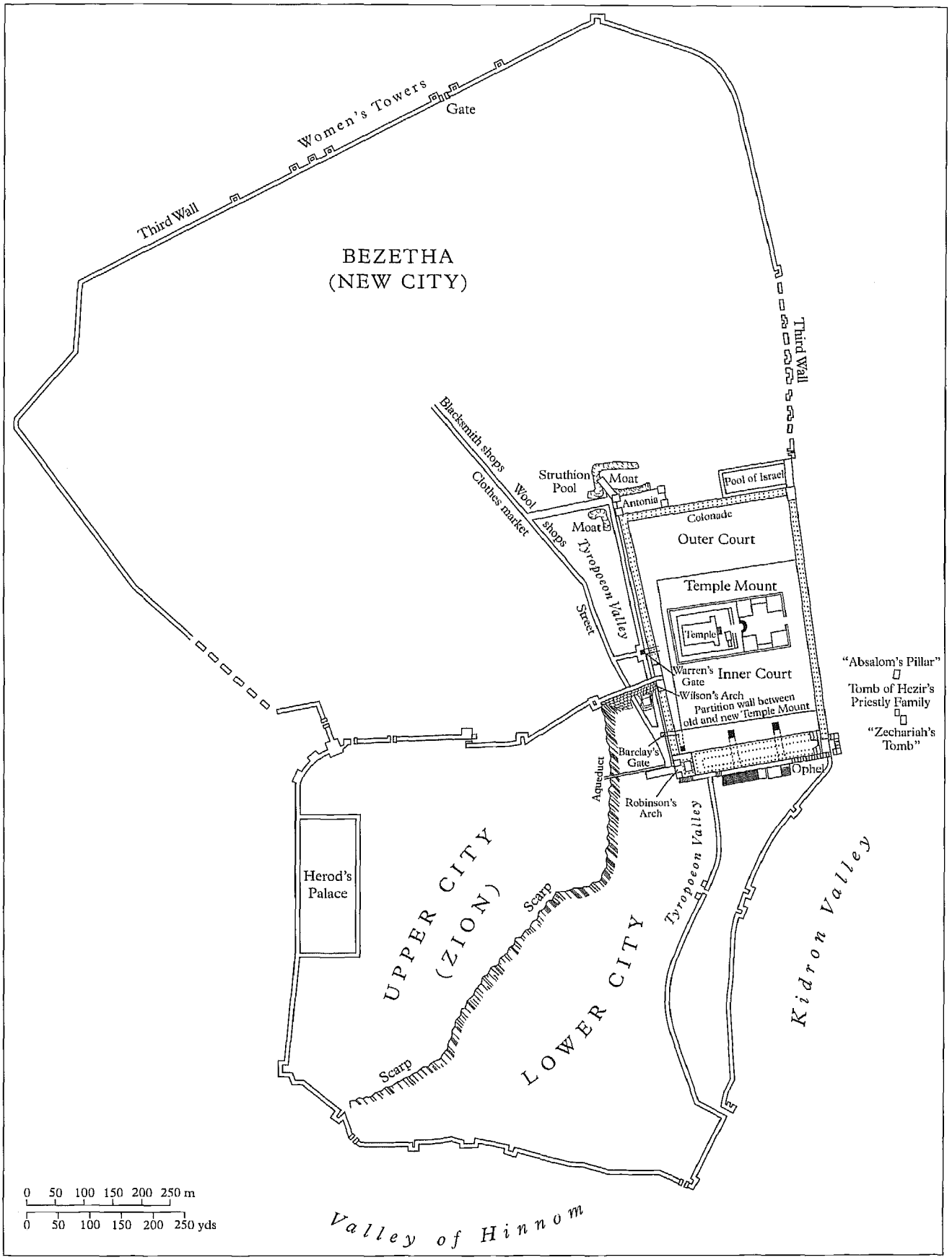
Roman Period. The Herodian period marks the apex in the development of the western hill (also called the Upper City and Zion by Josephus, *War* 5.137). Avigad's excavations revealed whole neighborhoods, including villas of great elegance—the Burnt House and the Western House—in the residential quarter, known as the Herodian Quarter, that occupied the entire western hill (see figure 3). Amiran and Eitan's excavation in the Citadel (see above) confirmed these findings. Two distictive strata were discovered in the Citadel representing the Maccabean and Herodian periods. From the small area excavated, the urban plan featured grids of crisscrossed streets flanked by houses, as was common in contemporary cities in the Greco-Roman world. This plan was also found in Broshi's 1972 excavations on Mt. Zion (see above), as well as in minor excavations on the lower parts of the eastern slope of the western hill (Bliss and Dickie in 1894–1897; Yitzhak Margovsky in 1969; Meir Ben-Dov in 1975–1977; See Margovsky in *Revue Biblique* 78 [1971], p. 597; Ben-Dov, "Excavations and Architectural Survey of the Archaeological Remains along the Southern Wall of the Jerusalem Old City," in Geva, ed., 1994, pp. 311–320). The houses on the western hill, which were built on a slope, all followed a similar plan: installations in their lower part—for storage, cisterns, and baths—supported the main floor. The main floor incorporated a central paved courtyard surrounded by rooms of various sizes. The houses were decorated with mosaic floors and frescoes. These adhered to the Jewish law forbidding human representation and display floral and geometric designs. Only one house was found in which the courtyard was surrounded by a colonnade (the Column House). Of special importance is the fact that furniture was found in some of the rooms, of which the most common type are stone tables in more than one design. The abundance of small finds includes terra sigillata ware, painted bowls, cups, trays, and beautiful glass and stoneware. The entire quarter was destroyed by the conflagration of 70 CE, whose traces were dramatic and ubiquitous (Avigad, 1983).

According to Josephus (*War* 5.176–183), Herod built a sumptuous palace on the western hill. In excavations carried out on its supposed site (by A. D. Tushingham from 1962 to 1967 and Dan Bahat and Broshi in 1971–1972) its foundations were exposed. The palace was large (130 × 330 m) and raised on an artificial platform constructed on a crisscross pattern of retaining walls that created compartments filled with earth to a height of more than 8 m. Some fragments of painted plaster found in secondary use in the Citadel may have belonged to the upper part of the palace.

Another city wall, which Josephus called the Second Wall (*War* 5.146), surrounded the northern quarter of the city. Dated to Herod's reign, some scholars believe that it may be earlier. Because the alignment of this wall underlies the present Old City, there is very little chance that archaeology will reveal traces of it. Its course has been a matter of dispute since the beginning of scholarship on Jerusalem. Avigad discovered a city gate in his excavations in the Jewish quarter (see above) that may be the Gate of Genneth Josephus mentions as the starting point of the Second Wall; Josephus maintains that its final point was at the fortress named Antonia (see below). The only clear trace of the wall is a small fragment of a thick wall, built of typical Herodian ashlars discovered by R. W. Hamilton (1949) while excavating the Damascus Gate in 1937–1938. Warren uncovered other remains in 1867–1870 in the so-called Muristan Quarter of the Old City he ascribed to the Second Wall. They were found to belong to the Late Roman period (see below). They were excavated under the nearby Church of the Redeemer by Ute Lux and K. Vriezen in 1971–1972. The same is true of the ancient remains exposed by N. Khitrowo in 1874 in the Russian Hospice east of the Church of the Holy Sepulcher. Moreover, Kenyon's excavations in the Muristan (her area C) found that the entire area had been used as a quarry, probably also in the Herodian period, as well as a burial ground. (In the Church of the Holy Sepulcher at least six burial caves were found, including the traditional tomb of Jesus.) No vestiges of the city's domestic quarters surrounded by the Second Wall have ever been found.

The city's northernmost extension was defended by another wall, the Third Wall (Josephus, *War* 5.147–148). Many sections of this wall were found forming a long (about one kilometer) east–west curtain. The remains of the wall were still visible in the nineteenth century and were described by Edward Robinson (in 1838; see his *Biblical Researches in Palestine*, 2 vols., Boston, 1841; for this wall, see vol. 1, pp. 465–467) and then by Wilson (in 1864). In 1925–1927 and again in 1940, Eleazar L. Sukenik and L. A. Mayer (1930) excavated a long section of the wall and some towers bonded to it. Because most of the stones were robbed in antiquity, only a few details are known of its construction. It was about 4.5 m wide and built with stones dressed with typically Herodian margins and bosses. The towers protruded northward for more than 7 m from the wall's northern face. The wall's foundations were a packed earthwork—whose remains are in many cases the only indication of the wall's existence. [*See the biographies of Robinson and Sukenik.*]

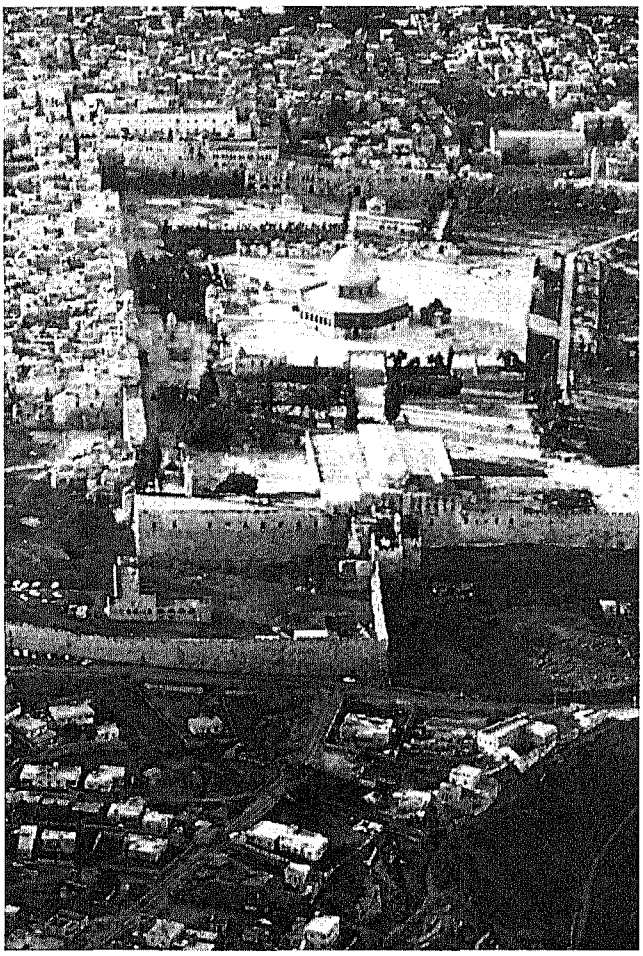
Another excavation, by Emmett W. Hamrick in 1965, yielded coins dating from the 50s CE found in the wall's foundation layer, suggesting that the wall was built near the time



JERUSALEM. Figure 3. *Plan of the city, Herodian period.* (After Bahat, 1990)

of the First Jewish Revolt against Rome (67–70 CE), exactly as described by Josephus (*War* 5.148). In 1972–1974, Ehud Netzer and Sarah Ben-Arieh uncovered a house adjacent to the wall, finding evidence of the wall's destruction during the revolt ("Excavations along the 'Third Wall' of Jerusalem, 1972–1974," *IEJ* 24 [1974]: 97–107). Excavations along the line of the wall were resumed between 1990 and 1992 by four teams, who found signs of quarrying activity as well as a hoard of tools at the site and in some sections of the wall (see V. Tzaferis, N. Feig, A. Onn, and E. Shukron, "Excavations at the Third Wall, North of the Jerusalem Old City," in Geva, ed., 1994, pp. 287–292). In the area defended by the wall, a few contemporary remains were uncovered by Conrad Schick in 1879 and 1893 and by Netzer and Ben-Arieh in 1977: some partial remains of houses, one of which was excavated by Netzer and Ben-Arieh (see above) and a round structure, built in the *opus reticulatum* technique. The function of the round structure is unclear, although it is most likely a decorated tomb, possibly the one Josephus (*War* 5.108, 507) describes as Herod's Monument. [*See the biography of Schick.*]

Since the beginning of archaeological exploration in Israel the Temple Mount has been a focus of scholarly attention, both in survey and excavation (see figure 4). Of the Temple itself, however, practically no remains have survived. The present Temple Mount is essentially the one built by Herod the Great during the last two decades of the first century BCE. The first excavations along the outer face of the Temple Mount's retaining walls were carried out by Warren (in 1867–1870), who was following the lines of Wilson's 1864 survey. The next major studies were by Kenyon and Roland de Vaux in 1961–1968 (they reached the Ummayyad layer only in their area J) and then by Benjamin Mazar (see above), who excavated the western part of the southern retaining wall of the Temple Mount and the southernmost section of the western wall. [*See the biography of Vaux.*] In addition, Mazar's expedition investigated the tunnel that the Ministry of Religious Affairs had bored along the length of the Western Wall (the Kotel). Work in that tunnel was resumed in 1985 under Bahat's supervision. These excavations and surveys have, in combination, provided clear details of the Temple Mount: it is a large, irregular rectangle (488 × 320 × 280 × 470 m), 740 above sea level. The Herodian construction destroyed that of Solomon and of the temples built by the repatriates from Babylon and the Maccabeans. The Herodian foundations, which reach bedrock, thus conceal any earlier remains. The Herodian walls are built with bossed ashlars incised with double margins. The Herodian additions to the Temple Mount were installed along its north, west, and south sides. To construct the new areas level with the existing Maccabean platform, enormous fills became extensions on the south and north. The hill that held the Antonia fortress was partially cut away, and the valleys between it and the existing hilltop were also filled in.



JERUSALEM. Figure 4. *The Temple Mount.* (Courtesy Pictorial Archive)

Some stones in the wall weigh as much as several hundred metric tons, making the Herodian walls one of the marvels of the ancient world. Geoelectric analysis has revealed the thickness of the wall to be 4.60 m. Streets paved with large stones abutted the western and southern sections of the artificial hill. The street at the northernmost point of the Temple Mount was flanked by columns, although they were found in too limited an exposure to permit conclusions as to their purpose.

The platform's two southern gates, today called the Double and Triple Gates (erroneously named the Hulda Gates) and the four western gates (named after their discoverers—Robinson, James T. Barclay, Wilson, and Warren) were initially studied in the nineteenth century. The Double Gate still retains its Herodian decorated domes over the ancient passageway. Warren's expedition (see above) discovered subterranean passages under the Triple Gate, whose function is not yet clear. Two broad staircases, opposite the western gate (65 m wide) and eastern gate (about 15 m wide), explored by Mazar (see above), suggest the monumentality

and beauty of the Herodian structures. The entire area just south of the southern wall was dotted with ritual baths, indicating an ardent need to preserve the laws of purity for the Temple. On the southern street many fragments of decorated stones were found that probably came from the magnificent royal stoa Herod built along the southern retaining wall of the Mount. Mazar's expedition cleared the majestic staircase that descends from the southern gate in the western wall and the pier supporting the large arch over which the stairs were installed (Robinson's Arch). Farther north, Barklay (in 1854) described another passage (5.60 m wide and about 8 m high) to the Temple Mount platform that still carries his name. Another gate even farther north was named as homage to Warren by Charles Wilson, who examined it from inside the passageway. During work in the tunnel along the western wall in 1985, Bahat studied its outer side (Bahat, "The Western Wall Tunnels," in Geva, ed., 1994, pp. 181–182). Between these two gates, a bridge was discovered by Titus Tobler in 1853 and investigated by Wilson in 1864. The existing easternmost vault (Wilson's Arch) is dated to the Umayyad period (eight century CE); it replaced a Herodian vault. Warren investigated the entire system of the bridge, which he called the Great Causeway (Conder and Warren, 1884, pp. 193–209). It consisted of a series of small vaults, all dating to the same period. The arch (or rather the bridge of which it formed a part) was rebuilt over an older one that had not only facilitated the walk from the western hill across the central valley (the Tyropoean) but supported the aqueduct conveying water from "Solomon's Pools" south of Bethlehem to the Temple. [*See* Aqueducts.] Under the bridge, a large room—which Warren called the Masonic Hall—is one of the country's best-preserved examples of Herodian architecture, although its function is not yet clear. At the northern end of the tunnel that was bored along the western wall, excavation revealed that Herod did not finish constructing the western wall: it ends in the partially cut away Antonia hill. Because the hill itself was left intact, some earlier pre-Herodian remains are preserved, including another aqueduct. (Warren had originally discovered that aqueduct in 1868, but it was subsequently forgotten.) Cisterns and the remains of foundation trenches for walls were also preserved—the last remains of the fortress built by the Maccabean rulers as a palace called Baris (see Bahat, in Geva, ed., 1994, p. 187). No traces of the Antonia fortress have hitherto been found in the tunnel. Many scholars have studied the rocky pinnacle on which the Antonia fortress was built. Vincent and, later, Marie Aline de Sion (in 1955) attempted to reconstruct the fortress from remains of the natural rock, which had been carved by Herod's workmen from four sides to create defensive scarps (de Sion, *La Fortress Antonia à Jérusalem et la question du Prétoire,* Jerusalem, 1955). On the northern side a deep moat was excavated in which Herod installed a large pool, still visible in the monastery of the Sisters of Zion. Farther east, another contemporary pool was found, the one known as the Sheep Pool or, in the Christian tradition, the Bethesda Pool. Originating in the First Temple period, it is really two pools, separated by a thick wall (50–60 × 95 m). The pools were partially excavated most recently (in 1981) by Marie-Joseph Pierre and Jourdain-Marie Roussée ("Saint Marie de la Probatique: États et orientations de recherche," *Proche Orient Chretien* 31 [1981]: 23–42). Another pool of the same date, adjacent to the northern wall of the Temple Mount, was filled in in the 1930s. It is known today as the Pool of Israel. Its ancient name is unknown, but it was the largest of the city's pools (110 × 38 m). The aqueducts that provided water to the city from Solomon's Pools were still in use in the twentieth century. [*See* Pools.]

Considerable scholarship has been focused on the city's many surrounding cemeteries, as well as its water systems. It is possible that almost a thousand burial caves have been found in those cemeteries from the Herodian period and described by scholars since the nineteenth century. The hills surrounding the city were once pockmarked with caves for a distance of about 3 km (2 mi.) from the city limits in all directions. Some won fame because of the great beauty of their facade decoration (Avigad, 1954; L. Y. Rahmani, "Ossuaries and Ossilegium (Bone-Gathering) in the Late Second Temple Period," in Geva, ed., 1994, pp. 191–205). Most of the tombs date to the first centuries BCE and CE. [*See* Burial Sites; Tombs.]

Following the period of Roman oppression and the First Jewish Revolt against Rome in 63–70 CE, the city was almost entirely destroyed. Only a few remains, such as the western section of the city wall and the Temple Mount, were preserved. It was only after the emperor Hadrian's visit in 129 CE that the decision was made to reconstruct the city. [*See* First Jewish Revolt; Bar Kokhba Revolt.] Most of the important remains of the Roman city date, therefore, to the second century CE. Under Hadrian (r. 117–138) a typical Roman city was planned—a plan that is retained in the Old City to the present.

The camp of the Tenth Roman Legion stationed in Jerusalem was installed in what is today the Old City's Armenian Quarter. Excavations in the Citadel (by Johns in 1934) and in the Armenian Garden (by Kenyon and Tushingham from 1962 to 1967) produced some evidence of the camp, namely many roof tiles bearing seals of the legion (which were also found in the Jewish Quarter, although not in situ). In the Citadel some fragments of walls were also found, but none that permit the reconstruction of any installation. In 1949, a workshop that had produced similar tiles was discovered by Michael Avi-Yonah about 3 km (2 mi.) northwest of the Old City that was recently (1992) excavated entirely. A considerable amount of information about this period has been gleaned from the inscriptions found in the city, all of them in secondary use in later installations, mostly epitaphs of legionnaires.

The city's fortifications in the Roman period pose a problem because there is no concrete evidence for precise archaeological dating; all hypotheses for dating the walls must therefore rest on historical evidence. Hamilton's excavations at the Damascus Gate in 1937–1938 revealed the city gate and its later abutting walls (Hamilton, "Excavations against the Northern Wall of Jerusalem," *Quarterly of the Department of Antiquities in Palestine* 10 [1994]: 1–54). On the east, the gate has the typical configuration of a large central gate with two smaller flanking gates. A fragment of an inscription mentions the name of the city then, Aelia Capitolina. No precise date could be obtained for this gate's construction, but it seems that it should be assigned to Hadrian's reign. Recent excavations (M. Magen, "Excavations at the Damascus Gate, 1979–1984," in Geva, ed., 1994, pp. 281–286) along the northern city walls suggest two possibilities for dating: either the walls were built toward the end of the third century, when the Tenth Legion left and the city was defenseless, or they were built in the first third of the fourth century, when, with the triumph of Christianity, Jerusalem became a central city within the framework of the Byzantine Empire. Archaeologically, the finds associated with the walls are conclusive. The Roman Damascus Gate may simply have been a triumphal arch if no wall was attached to it for at least 150 years. There were three more such arches in the city: two at the entrance to either of the fora that existed in Jerusalem (see below), and one about 400 m north of the Damascus Gate. Some contemporary streets have also been located. The city's main street, the *cardo,* was found, including a piazza, adjacent the Damascus Gate, by Menahem Magen in 1979–1984. Farther south, a small segment of pavement and a column belonging to the flanking portico were found by Margalit in 1978. Still farther south, Avigad, in the framework of the excavations in the Jewish Quarter (see above), located the extension of the *cardo,* constructed in the sixth century. Another, eastern *cardo* was found during development work in 1978 by Magen and Emanuel Eisenberg. Another street, today the main street in the Christian Quarter, was excavated for its entire length by Margalit in 1977. No remains of the *decumanus,* the east–west main street, that probably once existed, have been found, however, in spite of the deep trenches excavated in 1986 along its supposed line.

Altogether it seems that the Roman city had two distinctive features: a northern civil administration sector and a southern military sector occupied by the army. The present Jewish Quarter is still problematic regarding its function during the Roman period. Avigad (see above) discovered many fragments of tiles and other contemporary finds, but none in situ. It is thus assumed that the legion's camp was installed farther west, in the present Armenian Quarter. No definite line for the camp's western limits has ever been found. As already pointed out, a street grid was found for the northern half of the city, along with its two fora. The eastern forum was located north of the Temple Mount during construction of the monastery of the Sisters of Zion in 1868–1874. Although Vincent and Marie Aline (see above) misinterpreted the remains (believing them to belong to the Herodian Antonia fortress), in 1971, Pierre Benoit proved that they were a forum with a beautifully paved piazza, surrounded by various installations (columns, incisions on the floors, etc.) and a rocky scarp, all artificially hewn. A triumphal arch was erected on the west, toward the city. It was identified in the late medieval period as the Ecce Homo arch, where Jesus was taken from the Antonia fortress by Roman soldiers to be crucified. The entire complex had been erroneously identified as the Praetorium, where Jesus was tried by Pilate (*Mt.* 27:11–14; *Mk.* 15:2–5; *Lk.* 23:3–12). Part of the western forum has been excavated. In 1874 Khitrowo excavated the triumphal arch and a section of its pavement. Kenyon uncovered other sections of the pavement (her area C), and Lux and Vriezen (see above) excavated more under the Church of the Redeemer. North of this forum, the Temple of Aphrodite was built in Hadrian's time; during the Byzantine Empire, it became the Church of the Holy Sepulcher. The two superimposed edifices were excavated and studied between 1960 and 1969 by Charles Coüasnon (*The Church of the Holy Sepulchre in Jerusalem,* London, 1974) and later by Virgilio C. Corbo (*Il Santo Sepolcro di Gerusalemme,* Jerusalem, 1982), revealing that very few remains of the Roman temple are preserved. What is preserved are the retaining walls of the temple precinct, a large wall under the present facade of the church (the southern retaining wall), and wall remains in the nearby Russian Hospice, which include the enclosure's eastern facade. Broshi and Barkay discovered some of the temple's foundation under the church in 1975–1976 (Broshi and Barkay, "Excavations in the Chapel of St. Vartan in the Holy Sepulchre," *IEJ* 35 [1985]: 108–128). These scant remains do not permit a clear picture of the temple to be drawn. [*See the biography of Corbo.*]

In Mazar's excavations along the southern and western walls of the Temple Mount (see above), remains of at least three large public buildings, tiles of the Tenth Legion, and some inscriptions were also found that are attributed to the activity of the legion in this part of the city. Because the Roman city was built north of the City of David, it appears that the city's ancient core was used as a quarry where many of the stones needed to construct the new city were cut. At the southern end of this hill, the Romans rebuilt the Siloam Pool, transforming it into a square pool surrounded by colonnades (Bliss and Dickie, 1898, esp. pp. 132–177); a contemporary adjacent street was also found there, descending the valley from the city lying farther to the north. Tombs of the period were found surrounding the city, but no single burial ground has so far been discovered. On Salah edh-Din Street Hamilton and S. A. S. Husseini excavated some contemporary tombs in 1934. Netzer and Ben-Arieh also found tombs along the Third Wall (see above). At Naḥal Raqafot,

about 3 km (2 mi.) west of the city, L. Y. Rahmani found some of the best-preserved tombs in 1972 (Rahmani, "Roman Tombs in Nahal Raqafot, Jerusalem," *'Atiqot* 11 [1976]: 77–88). Some Roman tombs were found among the Iron Age tombs discovered between 1975 and 1994 at the Scottish Church. The only other temple discovered in Jerusalem was that of Aesclepius, excavated by the White Fathers on their property at the Church of St. Anne inside St. Stephen's Gate (the Lion's Gate) within the walls of the Old City.

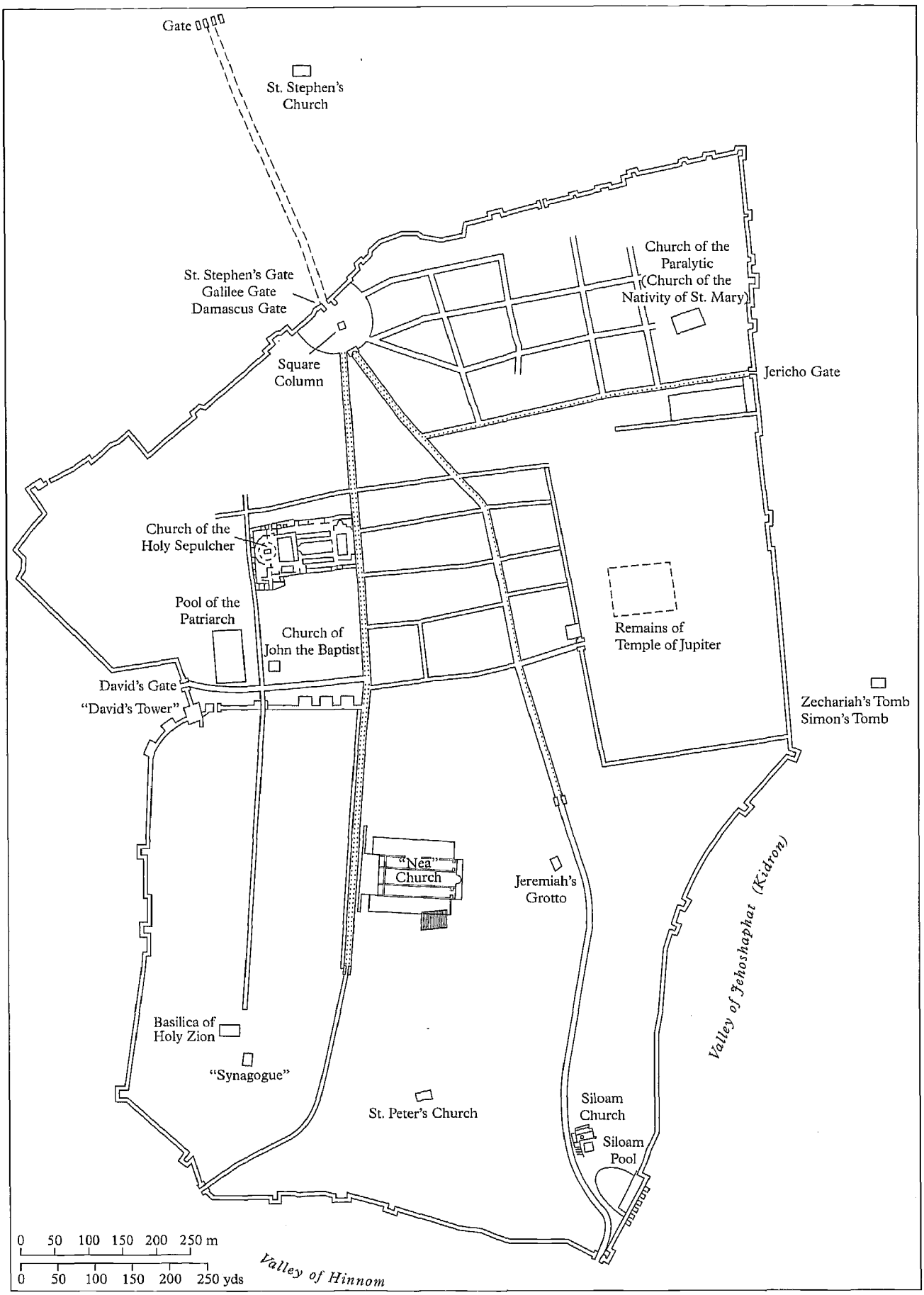
Byzantine Period. The ascendancy of Christianity made Jerusalem a central city in the Byzantine Empire. Many clergymen, pilgrims, and others flocked to the city, which grew immensely in the fourth and fifth centuries and reached its apex in the sixth (see figure 5). Church building was the city's main area of development and the churches are the prominent features in the archaeology of the period. Foremost is the Church of the Holy Sepulcher, built by Emperor Constantine in the 320s. Built above the pagan Temple of Aphrodite, it has the same dimensions (see above). The church is divided into four parts: a central round structure regarded as the tomb of Jesus; the Holy Garden, an open courtyard with porticoes on three sides that incorporates the hill of Golgotha in the southwest corner; the basilica, which was actually the temple in which the Christian cult was practiced; and the atrium, or forecourt, which gave access to the church from the east—from the *cardo,* where the church's three gates were located.

Another church (fifth century), excavated by Bliss and Dickie (see above), was built at the Siloam Pool, incorporating the pool itself. In the excavations in the Jewish Quarter, Avigad partially exposed the "Nea" Church, revealing its immense size. The identification of the remains with the church, which is mentioned in contemporary literary sources, was further confirmed by the discovery of a building inscription in subterranean vaults. The vaults served to level the site for construction and as cisterns for the church and its numerous dependencies (e.g., hospices). The inscription mentions the founder, Emperor Justinian, and a date of about 549 CE (Nahman Avigad, "A Building Inscription of the Emperor Justinian and the Nea in Jerusalem," *IEJ* 27 [1977]: 145–151). The Church of Holy Zion, a fourth-century structure, was first discovered in 1898–1899 by H. Renard and then investigated by Eisenberg in 1983. The building had a basilical plan with five naves. The traditional tomb of King David is incorporated in it.

A church was discovered at a site where tradition locates a miracle—that of the healing of the paralytic (*Jn.* 5:2–9). The church, a typical basilica in plan was built on the large wall that divides the two Bethesda pools (see above), on 13-meter-high pillars that reach from the bottom of the pool to the surface. (C. Mauss in 1854, the White Fathers in 1914, and Rousée and Pierre in 1956).

The church of St. Stephen was built by the empress Eudocia in the fifth century. It was excavated by Marie-Joseph Legrange from 1885 to 1893 and entirely reconstructed for use by the Dominican fathers. On the Mt. of Olives, the emperor Constantine built a church named Eleona (Gk., "of the olives") that was discovered in 1910–1911 by Vincent and partially cleared and restored. Other churches on the slopes of the mountain have also been excavated, including the Dominus Flevit (probably the Late Byzantine Church of Gethsemane) by J. T. Milik and Billarmino Bagatti in 1955; the Church of Gethsemane built by Theodosius I in 385 and excavated by Gaudence Orfali from 1910 to 1919; two chapels on the site of the present Russian Church of the Ascension, investigated from 1870 to 1893 that include the tomb of the Virgin, even though the remains are mostly from the Crusader period; and two unidentified churches on top of the mountain, investigated by Bliss and Dickie in 1894. Many contemporary tombs have also been discovered on the mountain's slopes. Barkay found a church on the hill of the Scottish Church during his 1975–1989 excavations. To this repertoire belong burial chapels: one decorated with birds in a mosaic pavement found by Dickie in 1894 north of the Damascus Gate; the "Orpheus mosaic" found in the same area studied by Vincent in 1901; and the chapel recently discovered by Reich in his 1992 excavation in the Mamilla area west of the Old City (Reich, "The Ancient Burial Ground in the Mamilla Neighborhood, Jerusalem," in Geva, ed., 1994, pp. 117–118). [*See* Churches; Mosaics.]

The Byzantine period's primary contribution to Jerusalem's fortifications was the empress Eudocia's addition, in 446 CE, of a new southern city wall—actually a reconstruction of the First Wall (first century BCE). The empress, a resident of the city, rebuilt the wall to enclose the newly built churches of Siloam, Zion, and Peter in Galicantu, as well as the nearby residential neighborhoods. Bliss and Dickie excavated most of this new city wall in 1894–1897; Kenyon, Warren, Broshi, Macalister and Duncan, and others excavated more of it. Some evidence of the network of streets in that part of the city was revealed in every excavation that took place there (see Broshi, "Standards of Street Widths in the Roman–Byzantine Period," *IEJ* 27 [1977]: 232–235). A fragment of the city wall was also discovered in Sivan's excavations in the Citadel (see above). Evidence of the density of the residential quarter that wall encircled can be deduced from the excavations on the southeastern hill of the city of David by Macalister and Duncan in 1923–1925 and Crowfoot and FitzGerald in 1927 and from Mazar's 1967–1978 excavations along the southern wall of the Temple Mount. A well-planned residential quarter was revealed in which the streets were flanked by well-built houses in which a central open courtyard was the main feature. Only in Mazar's excavations did the location of the houses seem to be unplanned, although their embellishments reveal that the inhabitants were well-to-do. In the Jewish Quarter the extensions of the Roman *cardo* was found to belong to the Byzantine period. It was apparently built by the emperor Justinian to



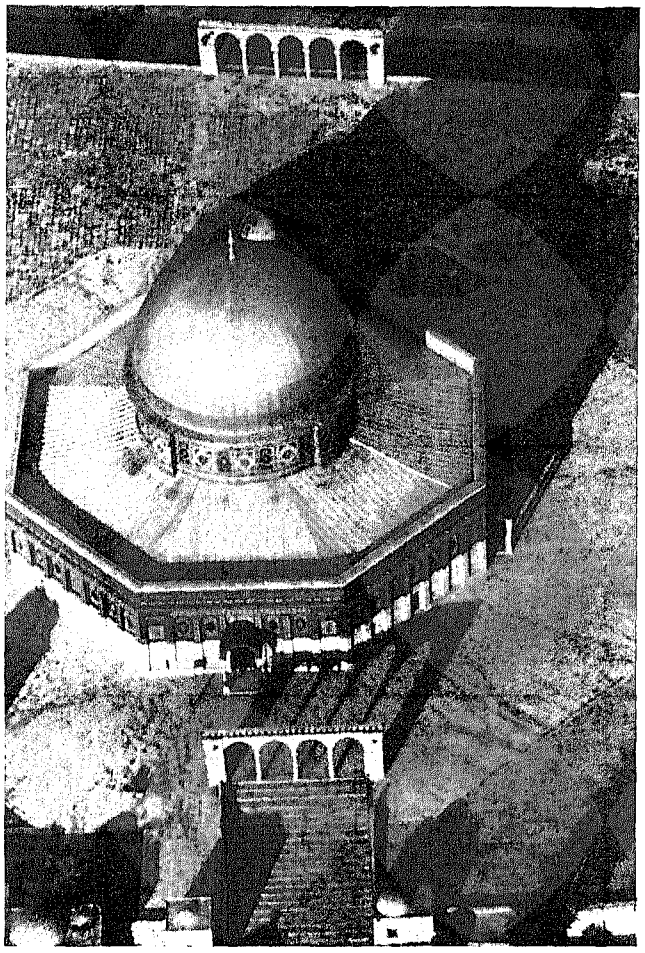
JERUSALEM. Figure 5. *Plan of the city, Byzantine period.* (After Bahat, 1990)

connect the Church of the Holy Spulcher to the newly built Nea church, probably for religious processions. Fragments of the eastern *cardo* may well belong to this period (see above).

Excavations that began in 1990 north of the Old City have revealed monasteries and chapels along the Third Wall (first century CE.) Similar structures were found in previous excavations along this wall—by Sukenik and Mayer (1930) in 1929 and by Netzer and Ben-Arieh in 1972–1974 (see above). The last of the Byzantine construction projects was the Golden Gate. It was built in 629 by the emperor Heraclius as a triumphal arch when he brought True Cross back to the city after its captivity among the Persians, who had conquered Jerusalem in 614.

Islamic Period. The Arab conquest of Jerusalem in 638 did not alter the city appreciably, but there were some alterations in its landscape as the Nea church had been destroyed. The period is characterized by considerable building activity on and around the Temple Mount. It was under the Umayyad dynasty (661–750) that the focus of the sanctity of the Holy City moved from the Church of the Holy Sepulcher back to the Temple Mount. The Dome of the Rock and the al-Aqṣa mosque were built in 691 and 711–713, respectively, along with other, minor structures on the Mount (see figure 6). An administrative compound was built south of the Temple Mount. It is unique of its kind because, although literary documents from the period reveal that similar compounds were constructed in all the main cities of Islam, the one in Jerusalem is so far the only one to survive. Excavated by Mazar between 1967 and 1978, it comprised six large palaces organized along the west and the south walls of the Temple Mount. Wall paintings, stucco, and vast dimensions are their main aesthetic features.

During the period earthquakes struck the country, creating decisive destruction in the city. The 747 or 749 quake left the Umayyad structures in ruin. Only the Dome of the Rock survived it. There are almost no architectural remains from the ʿAbbasid period that followed. The earthquake of 1033 also created major devastation in the city. It was during the reconstruction that followed it that the present southern alignment of the city wall was created. In his excavations in the Jewish Quarter, Avigad recovered a small section of this eleventh-century wall with a postern. The present northern city wall was repaired then and some fragments of that reconstruction have been found in excavation (by De Groot in 1979). J. Basil Hennessy's excavations at the Damascus Gate revealed two cisterns flanking the gate's entry that he ascribes to the Umayyad period (see G. J. Wightman, *The Damascus Gate, Jerusalem,* Oxford, 1989). As a result of the repairs after the 1033 earthquake, the southern part of the city was left outside the walls, and the inhabitants of that part of the city moved into the port city, which was included by the new walls. Other contemporary building projects include the repair work of the Temple Mount retaining walls and the installation of the so-called Solomon's Stables under the Temple Mount esplanade. The Byzantine neighborhood on the southeastern hill (the City of David) existed into the Arab period, but the architectural renovations they underwent were of inferior quality.



JERUSALEM. Figure 6. *Dome of the Rock.* (Courtesy Pictorial Archive)

Medieval Period. The Crusaders conquered Jerusalem on 15 July 1099. The alignment of the city walls then remained through subsequent repairs in the ʿAyyubid (1187–1250) and Ottoman (1517–1917) periods. It was during those periods that Jerusalem acquired its Oriental character, still apparent to the visitor. The Muslims made conscious efforts to change the city's Crusader/Christian features. [*See* Crusader Period.]

In the last few decades, many excavations have been carried out in the city to obtain a better understanding of the Late and post-Medieval periods: for example, the Citadel (by Geva in 1976–1980 and Sivan in 1980–1988); the Churches of St. Julian (by Bahat in 1972) and St. Peter in Vinculi and the Crusader southern market (by Avigad from

1969 to 1982); the Churches of St. Thomas of the Germans (by Bahat and Reich in 1976) and St. Mary of the Germans (by Asher Ovadiah and Netzer in 1968); the Holy Sepulcher (by Corbo, Coüasnon, Christos Katsimbinis from 1960 to 1969); the foundations of the chapel of St. Egidius (by Bahat in 1985); the cloister of St. Mary Magdalene (by Bahat in 1978); the Crusader royal palace (by Bahat and Broshi in 1970–1971; see their "Excavations in the Armenian Garden," in Yadin, ed., 1975, p. 56); the Templar wall, south of the Temple Mount (by B. Mazar from 1967 to 1978); and the Damascus Gate (by Hennessy in 1972).

Some 'Ayyubid remains have been uncovered as well. Many vestiges of this period are preserved in the city and are responsible for its special character. In 1961–1967, in the Armenian Garden, Tushingham found a large building in his area L that he interpreted as a caravanserai, although its plan may be better explained as an administrative structure. The building's centrality was underscored by the discovery of strong towers in the contemporary western and southern city wall built by the nephew of Salah edh-Din (Saladin) between 1202 and 1212. These towers (excavated by Broshi in 1971–1972, Avigad from 1969 to 1982, Margowsky from 1969 to 1972, and Ben-Dov from 1973 to 1977) were incorporated in a city wall of which only small sections are preserved. However, Bliss and Dickie (from 1894 to 1897) discovered a city wall crowning Mt. Zion that can be identified with a wall the literary sources report was built by Salah edh-Din, who also excavated a moat in front of it. The northwestern corner of the Old City preserves the remains of a tower and a section of the medieval city wall (explored by Bahat and Menashe Ben-Ari in 1972). Between 1968 and 1983 Michael H. Burgoyne did a survey of Mamluk buildings in the city for the BSAJ. The greatest change in the character of the city took place in the sixteenth century under the Ottoman sultan Süleiman the Magnificent. The city walls of Jerusalem (demolished by Saladin's nephew in the thirteenth century) were reconstructed, as were six fountains built by him in addition to the reconstruction of the aqueducts from Solomon's Pools south of Bethlehem. Public buildings were also added to the city and its present Muslim character was thus secured.

[*See also* Bibilical Temple.]

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DAN BAHAT

JEWELRY. Adornment and satisfying the wearer's vanity are only two of the contributions jewelry makes to an individual's well-being. Some pieces of jewelry, many of them shaped like deities, their attribute animals, or symbols, are at the same time meant to protect the individual and to demonstrate one's piety. Jewelry shaped like flowers or fruit reflects the time-honored use of plants as personal ornament, as well as the symbolic significance of their shape or divine associations (e.g., McGovern, 1985). The materials (gold = sun, silver = moon) usually are also weighted with symbolic significance. When worn, jewelry also serves to express human difference/inequality (see below). Lastly, jewelry is an investment, and in precoinage times (and later) could be used as money: many types have a standard weight and gold/silver content, their value being enhanced by fine work, whether viewed as personal effects or as money.

In the ancient Near East and elsewhere, the craving to bedeck oneself with jewels transcended gender. Excavated finds on skeletal remains of known gender, as well as artistic representations, reveal that by their appearance alone it is

seldom possible to distinguish women's jewels from those of men (Marcus, 1993, p. 170). This may, at least in part, be an archaeological optical illusion: common sense suggests, and ample ethnological studies illustrate, that jewelry—along with other personal ornaments and accessories, clothing, and tattooing—did express differences, of wealth, gender, family and social status, official function, and ethnos (cf. Marcus, 1993), and that some of it was intended for special occasions such as weddings and festivals. Possessed of emotions and desires on a majestic scale, many gods display a knack for jewelry no less than that of mortals.

Jewelry is found least in habitational contexts—that is, on the floors; exceptions to this rule occur chiefly in cases of violent destruction not followed by plundering (Marcus, 1993, p. 159). Most jewelry is found in tombs, foundation deposits, temple favissae, or hoards.

While in the former three its function is plain enough, there are several possibilities for the preburial role of jewelry from hoards. It is often impossible to decide whether the pieces in a hoard belong to a jeweler/trader or are the property of a customer. Intact jewelry pieces may be identified as finished products/stock-in-trade of the former, and as personal ornaments or money of the latter. Broken jewelry pieces may be identified as spare parts/recyclables of the former, and as money of the latter.

Unfortunately, the archaeological context does not always permit one to distinguish a foundation deposit from a hoard, which might have been hidden in the face of danger. When it can be distinguished, a hoard will not only afford chronological, technological, and typological insight; it might offer an opportunity for economic interpretation (Balmuth, 1976; Curtis, 1984).

In Mesopotamia, archaeologists have unearthed the splendid jewelry of the third-millennium royal tombs of Ur; Egypt, in addition to the grave goods of Tutankhamun, has yielded a sizable sample of second-millennium and early first-millennium BCE royal jewelry. Students of ancient Palestinian jewelry have to content themselves with a far more modest corpus. In another contrast with Egypt there is hardly any piece that can be regarded as funerary in origin. Representational art (e.g. Neo-Assyrian reliefs) and textual mentions (like in *Ex.* 39 and *Is.* 3:18–24) complement the picture and lend it perspective.

Materials, Techniques, and Tools. The first known gold, usually considered to be of Egyptian origin (for a modest local source exploited much later, Wadi Ṭawaḥin near Eilat, see Wolff, 1993, pp. 160–162), appears in Palestine in the Chalcolithic period. Copper, thought to have been mined locally at Feinan and Timnaʿ, makes its appearance in Palestine in the same period. Silver, probably coming from Anatolia, is first found in jewelry of the Early Bronze I period (see Prag, 1978). Bronze makes its debut in jewelry, as well as in tools and weapons, in the Middle Bronze I period (see Eisenberg, 1985). Iron was not a popular metal in jewelry making; personal ornaments in this metal belong chiefly to the early Iron II.

Stones were valued chiefly for their colors, not because they refracted light (precious stones, such as diamonds and rubies, were not yet used). Lapis lazuli from Afghanistan and turquoise from Sinai, so popular in Egypt—the former also in Mesopotamia—were rare in Palestine. Carnelian (quartz with iron minerals, from the surrounding sandstone deserts) was used abundantly in Palestine in beads from the late Neolithic onward. Other quartzes, such as amethyst (quartz with manganese minerals, from near Aswan, Egypt), are found less frequently from the EB I onward. Animal and plant products were always available locally and were in use as jewelry long before the Chalcolithic period—such as wood, Mediterranean and Red Sea shells, ostrich-egg shell, and bone (e.g., in the PPNB Naḥal Ḥemar cave, Bar-Yosef and Alon, 1988, pp. 19–20). Elephant ivory, coming from Egypt and possibly Syria, and hippopotamus ivory, available also locally, was used in Palestine since the Chalcolithic, and amber since the Late Bronze. The source of the latter seems to be the Baltic region, probably attesting to indirect trade, with Greece the last leg of the relay before Syria-Palestine; the local amber product was of low quality (Todd, 1985; Bass, 1986, p. 286; Harding, 1987; Pulak, 1988, pp. 24–25; Sherratt, 1995).

Manufactured materials used in jewelry production included the alkaline glaze on "soapstone" beads, known since the Chalcolithic period; glazed faience (since EB I); and glass (since MB IIA; cf. McGovern et al., 1991, and the section on MB IIA below). Glass, like stones, was valued for its colors. A twelfth-century BCE sizable glass ingot discovered at Ashdod may attest to the local manufacture.

Innovative methods and technological breakthroughs in metallurgy are detectable in jewelry. In the Chalcolithic period, soldering and lost wax casting were introduced; since EB II–III (and possibly earlier) chasing and repoussé are employed to enhance pieces; in the MB IIB granulation, which depended on fine soldering, and cloisonné techniques appear in Palestine for the first time (on granulation see Hoffmann and Davidson, 1965, p. 46; Carroll, 1974); filigree is found rarely since the LB period, like gilding in Iron II (the exact technique for the latter is still unclear).

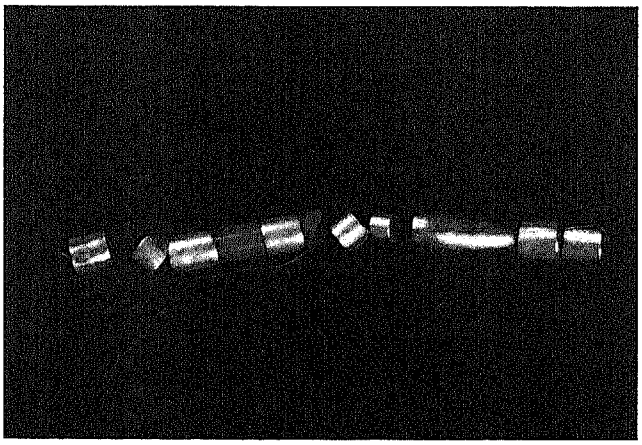
Jewelers used drills, anvils (Potts, 1985, p. 186), chasing hammers, doming blocks, and drawplates; the latter two are still missing from the archaeological record of Palestine, but hardstone beads are a possible alternative for drawplates. Also employed were stone dies for impressing a pattern into sheet metal, and stone molds (distinguishable by their pouring channels from dies) were probably used only for casting wax in the lost-wax technique. The finest soldering was done employing a brazier and blowpipe (documented in Egyptian tomb paintings of jewelers).

Chalcolithic Period. Until the fifth millennium (pre-Ghassulian cultures) jewelry finds consist mostly of beads and pendants, such as the carnelian, garnet and other stone beads from Kabri in Israel. From the Ghassulian Chalcolithic heavy gold rings (ingots?) were found in the Naḥal Qana cave (Gopher et al., 1990), which is roughly contemporary with the elite cemetery at Varna (Bulgaria), and its gold jewelry. Although no jewelry was recovered in the Naḥal Mishmar "Cave of the Treasure," there was ample evidence among the metal objects discovered for sophisticated soldering and the lost-wax technique (Shalev et al., 1992, 1993; Tadmor et al., 1995). A double-spiral wire pendant was discovered within a small copper hoard at Neve Noy near Beersheba, closely related to the Naḥal Mishmar finds (Baumgarten and Eldar, 1985; Negbi, 1976, pl. 47, shows how it was worn). A pendant with the same double-spiral motif in relief was found at Biqʿat ʿUvda in the southern Negev desert (Avner, 1984, pl. 16:2). This motif was widespread in the ancient Near East and in Old Europe and was probably related to fertility (Keel, 1987). An ivory hairpin surmounted by a bird was found among other ivories of Egyptian inspiration at Beersheba (Perrot, 1955, pp. 171–172, pl. 22B), and there is a similar example from Shiqmim. Unique among the finds from Palestine is a beadwork purse(?) from a cave in Naḥal Seʿelim in the Judean Desert, made of white- and blue-glazed stone beads (Aharoni, 1961, p. 15, pl. 7A). Bracelets, of a type found also around much of the Indian Ocean rim, cut from Red Sea shells like Lambis truncata *sabae*, continue from the Chalcolithic (Levy and Alon, 1985, pp. 129–130) into the EB (Schaub and Rast, 1989, pp. 310–312).

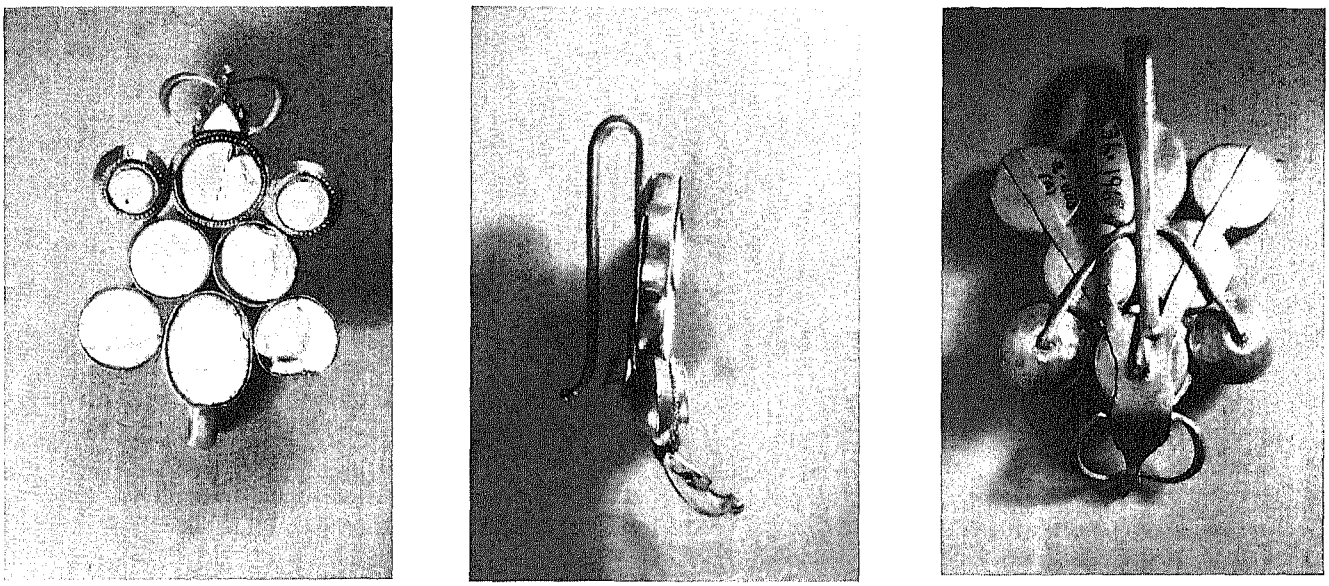
Early Bronze Age. Among the rare gold finds from the EB I are wire spiral hair(?) rings (also found in electrum and silver) from tombs at Azor (Ben-Tor, 1975, p. 24; and excavation by A. Druks, exhibited in the Israel Museum, Jerusalem, unpublished), and a wire ring (earring?) and seamless, seemingly soldered tube from Tell en-Naṣbeh. Some of the earliest silver finds from the Levant are a pin (hairpin?), unearthed in an EB I tomb at Bab edh-Dhraʿ in Jordan (Schaub and Rast, 1989, pp. 312–313), and the items from Azor just mentioned. From a tomb at Azor two oblate amethyst beads (finished Egyptian imports) were among the twelve hundred beads found (Ben-Tor, 1975, p. 23). From an EB I tomb at Tell el-Assawir and from a contemporary domestic context at ʿEin-Besor come Egyptian or egyptianizing Ram's(?)-head pendant beads (Gophna, 1980, p. 15, pl. III:4). Faience beads were recovered in quantity from EB I tombs, e.g. at Jericho, that may have been produced locally.

Splendid isolated EB II–III finds hint at the richness and diversity of the jeweler's craft. In an unexpected find-spot, a modest habitational site at out-of-the-way ʿEin ha-Meʿara in the western Negev, were discovered three drop-shaped, hollow, gold pendant-beads (exact date within the EB uncertain; Haiman, 1989, p. 180), with comparable finds but not exact parallels in Egypt. In a late EB II or early EB III tomb excavated in 1941 at Kinneret, a locality on the Sea of Galilee, the finds include a repoussé gold disk, of uncertain use, and beads attesting to the advanced technology of the day: hollow cylinders with closed ends, thick ones whose soldering is visible and thin ones that may have covered now-decayed faience beads; tubular carnelian beads with gold caps and a band (with comparisons in contemporary Egypt and Mesopotamia); and a barrel-shaped electrum(?) bead with what may be hammered-on gold caps (Mazar et al., 1973; Amiran, 1993; see figure 1). Similar material—cylindrical gold beads and two repoussé gold plaques—was recovered from an EB III charnel house at Bab edh-Dhraʿ (Rast and Schaub, 1987, p. 48; Schaub and Rast, 1989, pp. 468–469). The jewelry from Kinneret was believed to show Anatolian inspiration, but when considered together with the Bab edh-Dhraʿ finds local origins are suggested. Three star-shaped spacer beads were found at Jericho in Tomb A (Garstang, 1932, pl. XXII); it is not clear whether they are local or imported. An ivory hairpin surmounted by an animal shape was found at Megiddo, stratum XVIII (Loud, 1948, pl. 201). Although granulation and cloisonné are known in third-millennium Mesopotamia, and cloisonné is known in contemporary Egypt, these two techniques are unknown in the EB II–III Levant. Nor are finger rings found in the region before the MB I.

Middle Bronze I. In this period bronze is introduced and is employed *inter alia* in jewelry and personal accessories, such as toggle pins. In fact the latter, used to fasten garments, made their debut in this period—in Mesopotamia toggle pins are found already in the Early Dynastic III period. MB I toggle pins made of bronze come, for instance, from ʿEinan. At the same site copper bracelets were found in situ on a woman's arm, as were finger rings, two of them in situ on the middle finger of a woman's right hand, and



JEWELRY. Figure 1. *Gold, silver, and carnelian beads.* From an EB tomb at Kinneret, near the Sea of Galilee. (IAA 41.488, 41.498, 41.500, 41.501, 41.503, 41.516; courtesy Israel Antiquities Authority)



JEWELRY. Figure 2. *Three views of a gold and glass earring.* From a mid-second-millennium BCE tomb at Megiddo. (IAA 36.196; courtesy Israel Antiquities Authority)

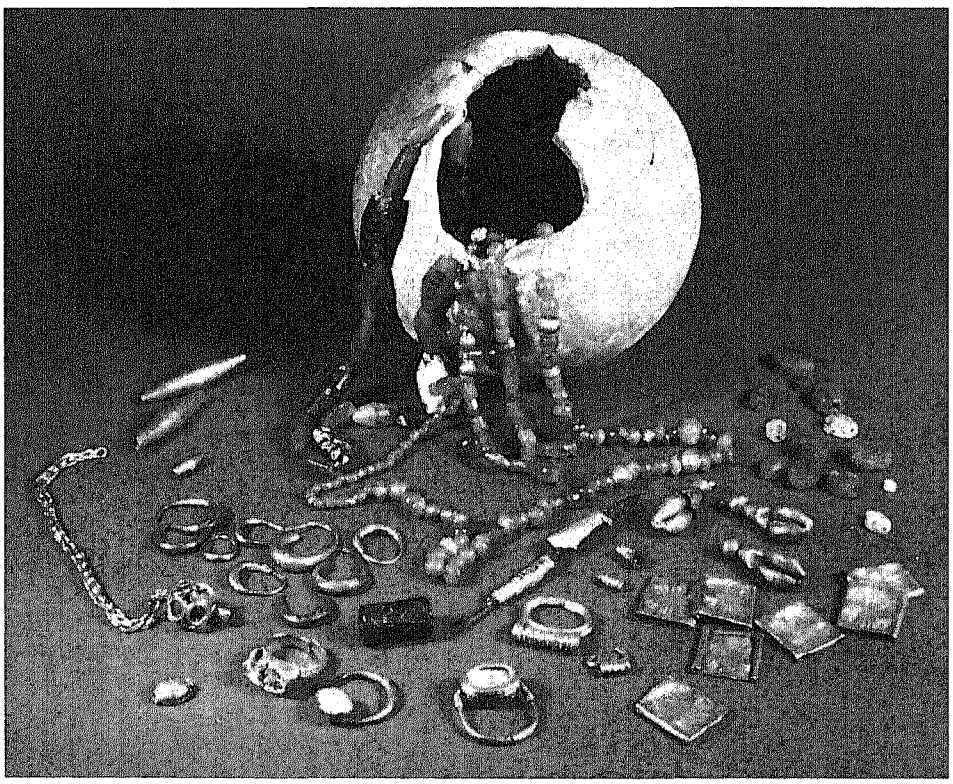
spiral hair rings (Eisenberg, 1985, pp. 71–72). An MB I copper diadem was found on the skull in a tomb at Jericho (Kenyon, 1965, fig. 41:8), and an amethyst bead, a rare Egyptian import, at Maʿabarot (Dar, 1977, pp. 35–37). A silver bracelet was unearthed in a tomb of the same period at Hazoreaʿ (Meyerhof, 1989, p. 106, pl. 37), a very rare find in this metal besides the celebrated ʿAin es-Samiyeh goblet (Tadmor, 1986, 100–102).

Middle Bronze IIA. The MB IIA royal tombs at Byblos revealed the first Syro-Palestinian gold granulation, some of it made into elaborate figural motifs never since repeated (Maxwell-Hyslop, 1971, p. 103). Little jewelry datable to this period was recovered in Palestine. (Aphek in the Sharon, the type-site for the stratigraphy and pottery chronology of the Palestinian MB IIA, yielded hardly any jewelry at all.) The earliest glass find from Palestine belongs to this period: a bead from Tel Dan (Ilan et al., 1993); it is roughly contemporary with the substantial find from Aššur (Wartke, in Harper et al., 1995, pp. 54, 106).

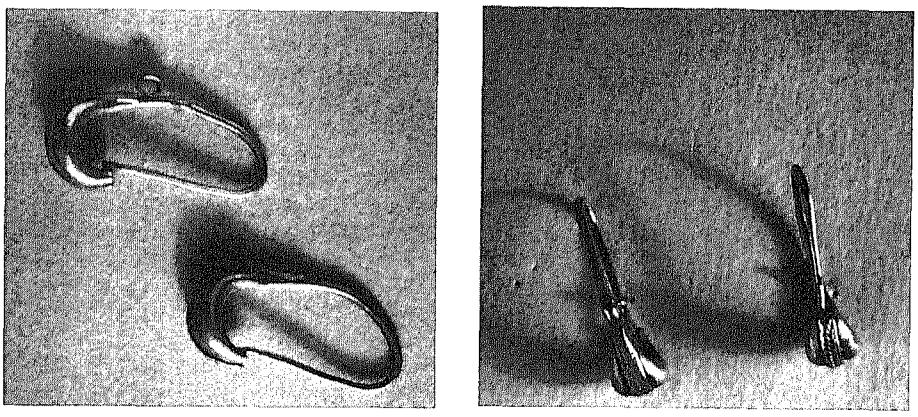
Middle Bronze IIB to Late Bronze I. Throughout the second millennium gold finds outnumber silver in Syria-Palestine. The richest find in Palestine in the late MB/early LB period and the one that comes nearest to royal jewelry, or, rather, princely jewelry was made at Tell el-ʿAjjul (Negbi, 1970, using outdated chronology; Ziffer, 1990, pp. 54*–63* [English], 63–78 [Hebrew]). Egyptian influence, expressed for instance in scarabs mounted in gold and silver and in the use of amethyst (Ziffer, 1990, p. 74), is present amongst the mostly local work of the ʿAjjul assemblages, much of it exhibiting great skill in execution, such as in the fine granulation. There are partial parallels to the ʿAjjul material in the princely tombs at Ebla, with a few further comparisons from the Uluburun shipwreck, and at Tell ed-Dabʿa in the eastern Nile Delta. In this period (late MB/early LB) toggle pins became elaborate in design (Ziffer, 1990, p. 71). Crescent pendants, which began as an open form, gradually closed in the course of the Late Bronze Age (Ziffer, 1990, p. 58*; Tadmor and Misch-Brandl, 1980, p. 78). Solid crescentic (or "boat") earrings began to appear then and continued as a popular form for more than a millennium. Legume-shaped sheet-gold earrings from Tell el-ʿAjjul have symbolic significance because of their crescentic shape (Negbi, 1971). One pair was provided with a unique sliding lock (Ziffer, 1990, p. 55*). By adding a head and tail, and decorating the crescentic base-form in a semblance of feathers, the same shape was transformed into a bird with outspread, raised wings (Ziffer, 1990, pp. 65 vs. 64), tentatively identified by Tufnell (1983) as a wryneck. Most of these legume-shaped and bird-shaped earrings are decorated with granulation and wire (Lilyquist, 1993). Fly and fly-larva pendant beads (Tadmor, 1986, p. 123 bottom left), and flamboyant glass-inlayed multiple-eye (blue and yellow concentric circles) earrings with rams' heads soldered at the bottom have also been found at Tell el-ʿAjjul (Ziffer, 1990, pp. 56*, 66), and a similar pair turned up at Megiddo (see figure 2). Also from ʿAjjul are neck ornaments or belts made of multiple, hinged parts (Ziffer, 1990, p. 69) and a diadem or choker in the shape of a gold strap with evenly spaced tubes that may have held now-vanished gold flowers (Ziffer, 1990, p. 68, comparable to an intact item from Egypt, ibid., p. 67). In Megiddo was found a complex hinged silver bracelet of the late MB or early LB (Guy and Engberg, 1938, pl. 145:22). Sheet-metal repoussé pendants are rather common in Syria-Palestine, continuing from the MB II well into the LB period: circular examples

with a "Cappadocian symbol" or double thunderbolt, the symbol of the storm god (e.g., from late MB Shiloh, Finkelstein and Brandl, 1985, pp. 23–24), or with an eight-pointed star, the symbol of the goddess Ishtar, and drop-shaped pendants with the schematic image of a naked goddess (examples of latter two from Tell el-ʿAjjul, Tadmor, 1986, pp. 123, 125).

Late Bronze II to Early Iron I. Just as MB IIB and LB I jewelry are inseparable, so the jewelry items of the fourteenth–twelfth centuries form a fairly coherent group. Jewelry lists were found for instance in Syria in the Ningal Temple at Qatna, and in the Amarna letters. Gold ingots were recovered at Beth-Shean, and bivalve stone molds (see above) for casting several items each—earrings, beads, pin—were found at Hazor stratum XIV (Yadin et al., 1961, pl. 158:31); Tell Abu Hawam stratum V (Hamilton, 1935, p. 58, no. 359); and Beth-Shemesh (Grant, 1931, pl. 13). Jewelry in the Late Bronze Age II reflects a mixture of local types—traditional plus innovative designs—and Egyptian types. Circular and goddess-shaped pendants begin to appear in glass (Megiddo, Lachish, Dan, Tel Mevorakh). Pomegranate-bud pendant earrings with the hoop separate are new, and have as their provenience Deir el-Balaḥ (Dothan, 1979, pp. 74, 76), a hoard from Beth-Shemesh (Tadmor and Misch-Brandl, 1980, p. 77; see figure 3), Tell el-Farʿah (South), Tel Nami (unpublished), Megiddo, and Ugarit. Beads and pendant-beads in palmette, drop, lotus-seed, and Egyptian *nefer* (hieroglyph denoting "good[ly]") shapes, made of gold, carnelian, and faience, and belonging to Egyptian-type necklaces or broad collars, were found at Deir el-Balaḥ (where red-tinted gold was also used; Dothan, 1979, pp. 78–80; Tadmor, 1986, p. 133), Dhahrat el-Humraya, Beth-Shean (Tadmor, 1986, p. 135) and Lachish. Inscribed massive Egyptian-type finger rings in metal, stone, and faience are known from several sites: from ʿAjjul comes a gold ring with the name of Tutankhamun; in Judur, Aphek, and Azor were discovered finger rings inscribed with good wishes in Egyptian hieroglyphs. Granulation in the LB II is less widespread than in the preceding period; whether this reflects a real decline of the technique or only the chances of discovery cannot be said. One example in silver or electrum, a pair of bracelet centerpieces, comes from Kamid el-Loz (Hachmann, 1983, p. 157); a pair of gold bracelets from the tomb of Tutankhamun constitutes a close parallel (Andrews, 1990, p. 157 right). The earliest known appearance of cloisonné is certainly inspired by Egypt (where this technique is at home), but the jewelry pieces thus made have a possibly local origin: isolated examples have been found at Lachish (Tufnell, 1958, pl. 25:9); Megiddo (Loud, 1948, pl. 224:27); and Kamid el-Loz (Miron, 1990, pp. 45, 168, 171, pl. I). An LB II filigree bead in gold from



JEWELRY. Figure 3. *Part of a jewelry hoard.* Beth-Shemesh; thirteenth century BCE. Also shown is the ceramic vessel in which the hoard was found. (Courtesy Israel Antiquities Authority)



JEWELRY. Figure 4. *Two views of a pair of gold earings.* Tell Jemmeh, early first millennium BCE. (IAA J.1006; courtesy Israel Antiquities Authority)

the Beth-Shemesh hoard is the only local example of this rare technique (Tadmor and Misch-Brandl, 1980, p. 75). The bead has exact parallels in the Valley of the Kings in Thebes, Egypt, in a tomb of a daughter of Queen Tawosert (1188–1186 BCE) (Andrews, 1990, p. 127), and from Tell el-ʿAjjul comes an imitation in faience (Petrie 1933, no. 10 on p. 5, pls. 8, 10). Tapering metal-band finger rings in the Hittite style appear at Tell el-Farʿah (South) (Petrie, 1930, pl. 36; Macdonald et al., 1932, pl. 51) and Tel Nami (Singer, 1993). The earliest-known amber beads in Palestine, of Baltic origin, were found at Tell Abu Hawam and a few other sites in LB II contexts (Sherratt, 1995, p. 202; more references in "materials" section above). In early Iron I, LB traditions initially were continued, as is evidenced, for instance, at Tell el-Farʿah (South), where Flinders Petrie found a late twelfth- or eleventh-century gold crescent pendant and carnelian lotus-seed beads (Petrie, 1930, pls. 36, 37, 39).

Late Iron I to Early Iron II. As far as jewelry is concerned this period, the eleventh–ninth centuries, is to be regarded as a continuum. New local jewelry types introduced, perhaps by the Sea Peoples, are known chiefly from the Tell el-Farʿah (South) cemeteries. Tassel earrings in gold, electrum, silver, and bronze, whose prototype probably was floral (Maxwell-Hyslop, 1971, p. 225, photographs 198, 200), are also known, in addition to Tell el-Farʿah, from Madaba (Harding, 1953, p. 32, nos. 197–198), Timnaʿ (Rothenberg, 1988, pl. 55:15), the Judean Desert (unpublished), and Tawilan, the latter in a sixth–fifth-century context (Bienkowski, 1991, p. 102). Early examples of "basket" earring(?) pendants were unearthed in eleventh–ninth-centuries contexts, an example in gold at Tell el-Farʿah (South) (Petrie, 1930, pls. 36, 39) and in silver at Beth-Shean; these finds herald the much later Phoenician type (see below). The earliest examples of massive bracelets, armlets and anklets, the latter two distinguished by their size, also appear in late Iron I: iron examples were found at Tell el-Farʿah (South) and Tell Qasile (Mazar, 1985, p. 8–9).

Iron I types continued into the Early Iron II, pre-Assyrian period, as noted, and new developments are discernible. At Eshtemoaʿ a silver hoard was recovered (Yeivin, 1990) and at Tell Jemmeh there were silver and gold finds (Petrie, 1928), both apparently from the ninth century. Elongated gold crescent earrings with a herringbone wire decoration and a loop to hold a pendant, the latter now lost, were discovered at Tell Jemmeh (see figure 4), and silver specimens come from Arad and Eshtemoaʿ. Other earrings from Tell Jemmeh and elsewhere display a flattened crescentic hoop decorated with a row of granules (Yeivin, 1990, fig. 16:11), and use is made of granulation on items from the Eshtemoaʿ hoard (Yeivin, 1990, fig. 17:7). Iron and bronze bangles were found at Lachish and at other sites, but while the use of the bronze specimens continues, the interest in iron bangles appears eventually to diminish. Subsequently, at Tell el-Mazar, a burial was found with both bracelets and anklets in situ on the skeleton (Yassine, 1984, p. 93). Fibulas, invented in the Late Bronze Age Aegean, began to replace toggle pins in Syria-Palestine in the Early Iron II or perhaps as early as Iron I. Fibulas were also used for securing a seal with a chain, and there is a type of fibula which is cast in one piece with a seal (Curtis, 1994; Curtis, in Curtis and Reade, 1995, p. 174).

Late Iron II. From this period mostly silver jewelry is found; gold is rare. There appears to be little cloisonné work, though cloisonné decoration of ivory and wood carving is popular. New shapes in jewelry proliferated, displaying Syro-Assyrian and Phoenician as well as local styles. The former is probably the result of Assyrian deportations, certainly of Assyria's imperial rule, and one may be entitled to speak of a Syro-Assyrian koine, encompassing most of the Near East: parallels to jewelry finds from Palestine exist as far afield as Karmir Blur in Urartu. Late Iron II jewelry finds in the southern Levant are mainly from inland sites, e.g., Ketef Hinnom, Kamid el-Loz (Hachmann and Kuschke, 1966), Meqabelein, and Tel ʿIra. Some types continue into

the sixth–fifth centuries, or else are difficult to differentiate; there are, for example, mixed seventh–fifth-centuries tombs in Jerusalem (Ketef Hinnom) and Amman (Adoninur). Abundant use is made of hollow shapes embellished with granulation and wire decoration, mainly in earrings. Cloisonné is found in Amman (the tomb of Adoninur) and Meqabelein in ring bezels. In Palestine, at Tel Miqne/Ekron, a sheet-silver pendant, incised with the images of Ishtar and a worshiper (Gitin, 1995, fig. 4.14), is a provincial rendering of North Syrian work paralleled at Zincirli. Triangular eye beads made of glass, of Assyrian type, were found at Gezer and other sites (Reich and Brandl, 1985, p. 49).

Though artifacts coming from or inspired by Phoenicia are common in Iron II Palestine, Phoenician influence in jewelry (some of it egyptianizing) has been first observed only in work done in the early 1990s on late Iron II finds from the coastal sites of Achziv and Tel Miqne/Ekron (former unpublished, latter in Gitin, 1995, fig. 4.12); inland jewelry shows Syro-Assyrian influence (see above). Parallels to the Miqne and Achziv jewelry come mainly from the Phoenician West. Among the finds are elaborate earrings, including some with multiple pendants (basket and lotus flower), and a rare example of gilding was observed on silver Horus eyes from Miqne. A silver finger ring from the same site, with a hieroglyphic inscription, should be noted. Few Phoenician/egyptianizing finds are also known from inland sites, such as a gold finger ring from Samaria, that has a parallel in a bracelet of Sheshonq found at Tanis. At Achziv a lion-shaped pin-head made of Baltic amber was found (Sherratt, 1995, p. 202; more references in "materials" section above).

Multiple hollow-ball earrings are probably of local inspiration, an offshoot of the MB–LB granule-cluster earrings, unless the Iron Age version was made by Iranian deportees to Palestine—somewhat similar earrings of the early first millennium BCE are known from Marlik and Hasanlu in Iran (Maxwell-Hyslop, 1971, photographs 135, 144). Examples of the local type found in a seventh-century BCE tomb at Tel 'Ira (Beit-Arieh, 1985, p. 23) testify to the date of their introduction; when they appear elsewhere it is often in post-Iron II or mixed contexts, e.g., at Ketef Hinnom and Kamid el-Loz (Hachmann and Kuschke, 1966, p. 64, fig. 20:6–7). Also found only locally are hoops of several earring types decorated with wound wire and tiny hollow balls.

An abundance of inexpensive Egyptian faience amulets in the shapes of deities and their symbols, such as Horus eyes (Herrmann, 1994), and local carved bone "club" and "hammer" pendants (Platt, 1978; Herrmann, 1994, p. 814) have been found, for example, at Lachish.

[*See also* Bone, Ivory, and Shell; *and* Metals. *In addition, many of the sites mentioned are the subject of independent entries.*]

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JEWISH PALESTINE EXPLORATION SOCIETY. *See* Israel Exploration Society.

JEZREEL, TEL, a 15-acre mound situated in the eastern part of the Jezreel Valley on a ridge extending along its southern side. The site's a commanding position offers a breathtaking view of the valley. Although there is a large spring, 'Ein Jezreel, in the valley to the northeast, it seems that the numerous rock-cut cisterns that collected rainwater at the site and in its immediate surroundings served as the settlement's main water source.

Development works carried out nearby in 1987 revealed Iron Age monumental remains. Following limited salvage excavations by the Israel Antiquities Authority, systematic excavations were started by David Ussishkin and John Woodhead, on behalf of Tel Aviv University and the British School of Archaeology in Jerusalem, respectively. Six large-scale seasons of excavation took place between 1990 and 1995.

A few Late Neolithic flint implements of the Wadi Rabbah culture are the earliest finds collected at the site. A considerable number of Early Bronze Age I and III pottery fragments were also recovered on the surface and a few Middle Bronze Age II sherds were found. A considerable amount of Late Bronze Age pottery concentrated in the constructional fills of the Iron Age gate indicates the existence of a settlement in the central part of the mound during that period. The existence of a Canaanite settlement at Jezreel has a bearing on the origins of the name of the site and the valley, which first appears in late biblical accounts. Jezreel was located in the tribal inheritance of Issachar (*Jos.* 19:18). It is mentioned in the list of Solomon's district officers (*1 Kgs.* 4:12). Iron I pottery found in the constructional fills of the later Iron Age indicates that Jezreel was probably settled during the period of the United Monarchy.

During the reign of the Omride dynasty (882–842 BCE), Jezreel became a royal center of considerable importance in the kingdom of Israel, and a large enclosure was built there. The site's importance during this period is attested in two biblical stories: *1 Kings* 21 describes the story of Naboth the Jezreelite who had an orchard near King Ahab's "palace," and *2 Kings* 9–10 relates in detail the story of Jehu's revolt in 842 BCE. It was there that he received the decapitated heads of the members of Ahab's family sent to him from Samaria. *Hosea* (1:4) mentions "the blood of Jezreel upon the house of Jehu"—a possible indication that Jehu destroyed Jezreel at that time.

The royal enclosure, built on a grand scale and according to a uniform plan, is rectangular and surrounded by a casemate wall with projecting towers at the corners. Its outer maximal measurements are about 332 × 184 m, and the area inside the enclosure is about 45 dunams (11 acres). One of the long sides follows the slope and faces the valley. The gate, of the six-chambered type, is located in the opposite long side. The casemate wall is supported by a massive earthen rampart. On three sides—but not on the long side facing the valley—a rock-cut moat forms the outer ring of the fortifications. The moat is about 8–12 m wide and, at one point at which its bottom was reached in excavation, it is about 6 m deep. It was estimated on the basis of presently available data that about 26,800 cu m of rock were quarried in the moat and that at least 23,300 cu m of material were dumped in the ramparts. The area of the enclosure is largely destroyed or covered with later remains, and relatively little is known about the buildings inside. Remains of a domestic character were found in the casemates and adjoining structures.

Iron Age domestic remains probably dating to the eighth century BCE were found superimposed on the enclosure's ruined walls, an indication that it had only been used for a brief period. To this later settlement should be assigned a handle of a royal Judean storage jar; it bears a stamp with a two-winged emblem and the city name *m[mšt]*, which dates to the time of Sennacherib's campaign in Judah in 701 BCE. The distribution of royal storage jars was limited to Judah, which makes this particular handle significant. [*See* Seals; Judah.]

A number of suggestions have been raised regarding the role of Jezreel in the period of the Omride dynasty. According to one, Israel had two capitals then—Samaria and Jezreel, one Samaria may have served as a "summer" capital and Jezreel in the winter. [*See* Samaria.] It has also been suggested that the kingdom had two religious centers—one Israelite and the other, Phoenician, the latter having been promoted by Jezebel, Ahab's wife. The present excavators have raised the possibility that Jezreel was built as a central military base for the royal Israelite army at the time of the Omride kings. This view is supported by the nature of the enclosure, the unusually massive fortifications, the poor

quality of construction, and the poor domestic remains within its perimeter.

Following the destruction of the Iron Age enclosure, settlement at Jezreel apparently continued uninterruptedly until the twentieth century CE. Remains of the Persian, Hellenistic, and Roman periods have been found. During the Byzantine period, a densely populated settlement (Esdraela of Eusebius's *Onomasticon*) existed here. Structural remains were found all over the site and its outskirts, as well as inside the disused Iron Age moat.

During the period of the Crusades, a settlement belonging to the Templars, Le Petit Gérin, existed here. It is mentioned several times in association with battles of the period. Its center was apparently at the western side of the site, where an Ottoman tower is located, founded on Crusader walls—probably the remains of the crusader settlement's main building or fort. A church was built nearby. In later periods, the Arab village of Zer'in developed on this part of the site.

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DAVID USSISHKIN

JILAT, WADI EL-, tributary of Wadi ed-Dabi (Wadi Dhobai), which drains the southwestern sector of the Azraq basin, an internal drainage basin in north-central Jordan (31°30′ N, 36°25′ E). The wadi runs through low hills of Late Cretaceous and Early Tertiary limestones, marls, and cherts, at elevations of between 950 and 750 m. These are located in the present-day transition zone between steppe and desert, receiving about 100 mm of rainfall per year. The western drainage is covered by loessic soils held in place by perennial grasses and other vegetation; the eastern sector is actively deflating into a desert environment. A series of Pleistocene and Holocene fluvial, colluvial, and eolian deposits has been identified on the valley floor (Garrard et al., 1988). A gorge cuts through these deposits, in which water may be found after winter rains. This attracts bedouin who graze camel, sheep, and goats in this region between late autumn and spring.

In 1937–1938, John d'A. Waechter et al. (1938) conducted an archaeological survey in the valley, recording a number of Epipaleolithic and Neolithic sites, as well as a well-constructed dam of historic date. Waechter excavated soundings at two of the prehistoric sites (Dhobai B and K), which have recently been the subject of more intensive research. Between 1982 and 1989 six seasons of paleoenvironmental and archaeological survey and excavations were conducted in the valley focusing on the Paleolithic and Neolithic occupation (Garrard et al., 1994). More than thirty Stone Age sites were found in a 5-kilometer (3 mi.) stretch of the valley floor; soundings were excavated at eight of them and broader area excavations were undertaken at another five.

The most spectacular of the Epipaleolithic sites is Jilat 6 (Garrard and Byrd, 1992). The site forms a low mound and is covered by a dense canopy of flint artifacts for an area of 20,000 sq m (2 ha, or 5 acres). With the exception of Kharaneh 4, which is located 25 km (16 mi.) to the north, Jilat 6 is the largest site of its period known in the Near East. Although the scale may partly be the result of erosion, it is thought to represent a seasonal aggregation site used by hunter-gatherers in the period around 14,000 BCE. Animal and plant remains demonstrate that the groups subsisted on gazelle, wild ass, hare, and the seeds and tubers of the local steppic plants.

A series of Neolithic sites was excavated dating to between 7500 and 5500 BCE (Garrard et al., 1994). These are much smaller than contemporary sites in the better-watered areas to the west and were probably occupied seasonally. Excavations revealed semisubterranean circular or oval dwellings with external walls built from upright slabs of the local limestone. Roofs were probably constructed from perishable organic materials. The site of Jilat 26 (c. 6700 BCE) contained a semicircle of twenty such structures, with evidence of an outdoor activity area on the side sheltered from the wind. Plant remains from the Jilat Neolithic sites indicate that domestic wheat and barley were in use from the earliest levels onward; it is unclear, however, whether these were cultivated locally or imported from areas to the west. [*See* Cereals.] Presently the local climate is too arid for regular cultivation. The animal remains indicate that hunting of gazelle and hare remained important down to 6000 BCE. Later Neolithic sites contain substantial numbers of sheep and goat bones thought to derive from imported livestock. Their appearance provides a terminus ante quem for the process of caprine domestication in the southern Levant. [*See* Sheep and Goats.]

With the exception of a minor excavation at the Early Bronze Age site of Jilat 27 (Garrard, unpublished), no work has been done on later prehistoric sites and burial cairns in the region. However, the dam, which has been described as one "of the most impressive hydraulic architectural structures in Jordan," is the subject of an article by Konstantinos D. Politis (1993, quotation from p. 43). It was built across the main gorge and is 58 m long, 5 m wide, and 6 m in maximum height. Its downstream face is built from stepped ashlar masonry, supported by three buttresses. Politis found Nabatean sherds in the cement, but the presence of Byzantine and Umayyad sherds in the vicinity suggests that the present dam may have been built in this later period. The reservoir area has completely filled in with silt, which may

have happened quite rapidly after its construction. It has been suggested that the dam may have been built as a showpiece or as a gift to local tribes in exchange for support (King et al., 1983).

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JORDAN. *See* Transjordan.

JORDAN VALLEY.

The Jordan Rift Valley lies between the Sea of Galilee and the Dead Sea. It is situated below sea level and encompasses the lowest spot on earth. The Jordan Valley is part of a much larger rift extending from Iskanderun in North Syria into Africa, beyond the Red Sea. It is bordered by two ranges of mountains with steep slopes on its west and east sides that rise to about 500–1200 m above sea level. Its eastern highland is interrupted by several side wadis running east–west and emptying into the Jordan River or the Dead Sea: Wadi el-Yarmuk, Wadi el-ʿArab, Wadi Ziqlab, Wadi el-Jirm, Wadi el-Yabis, Wadi Kafranja, Wadi Rajib, Wadi ez-Zerqa, Wadi Shuʿeib, Wadi el-Kafrain, Wadi er-Ramah, and Wadi Azeimah. [See Ziqlab, Wadi; Yabis, Wadi el-; Shuʿeib, Wadi.] These wadis, together with other water sources, account for the valley's continuous occupation. The valley varies in width. It is about 2 km across near Tell es-Saʿidiyeh and the modern village of Kraymeh, but it becomes much wider (about 18 km, or 11 mi.) to the south, around the plains of Sweimeh and Jericho. [*See* Saʿidiyeh, Tell es-.] The west side of the valley is narrower than the east side and has a smaller number of side wadis with perennial streams. There are also fewer modern villages and archaeological sites than on the east. The main wadis on the west are Nahr el-Jalud, Wadi el-Maliḥ, Wadi el-Farʿah, Wadi el-Auja, and Wadi el-Qelt. The Marj ibn Amir (Esdraelon Valley) cuts through the western highland to become the main connecting corridor between the Ghor and the Mediterranean Sea. The Ghor, the major part of the valley, is flat and has been cultivated throughout history. All the major wadis on both sides of the valley have carved courses for themselves through the floor of the Ghor, preparing suitable locations for many major and small settlements, including the northern Jordan Valley's important archaeological sites of Beisan (Beth-Shean) and Ṭabaqaṭ Faḥl (Pella). [*See* Beth-Shean; Pella.] The area between Wadi Shuʿeib and Wadi ez-Zerqa (a distance of about 15 km, or 9 mi.) was not irrigated until the Umayyad period, around Ghor Kibid, and then in connection with the modern extension of the East Ghor Canal. Irrigation meant bringing water from distant streams. [*See* Irrigation; Agriculture.]

The Jordan Valley consists of three main geographic zones: ez-Zor is the small valley cut by the Jordan River until it empties into the Dead Sea. The Zor is up to a kilometer wide, but it lacks major settlements because of flooding and the changing bed of the Jordan River in this zone. The second zone is called al-Katar, a region of barren, desiccated hills that separates the Ghor from the Zor. These hills date from the Pleistocene Age, and some were settled in the Neolithic Chalcolithic, Early Bronze, and Iron Ages. The major part of the valley is al-Ghor (see above).

Archaeological and ethnoarchaeological studies have shown strong connections between the Jordan Valley and the highlands in all periods. The inhabitants of the Jordan Valley have had to locate their settlements carefully, taking into consideration the availability of water, security, and roads. They have also had to avoid areas subject to floods and earthquakes, or adapt themselves to their occurrence. In most cases the Ghor's good soil was protected and settlements were placed on barren land or in the foothills. Those settlements were constructed mainly of mud bricks and reeds, in contrast to stone, the main building material in the highlands.

Agriculture has always been the main occupation of Ghor settlers, whose abundance was distributed beyond the boundaries of the Jordan Valley. Its tomatoes, cucumbers, and other products are still exported. During the Islamic period, it was the main source of cane sugar for the area of greater Syria (see below).

Deforestation on the foothills and salinization are critical environmental problems in the valley. In certain areas, the soil was washed down from the highlands and the slopes to

form new soil layers. Evidence of highland *terra rosa* has been found as far away as the Katar hills along the Jordan River. Strong soil erosion and frost occasionally destroy the area's agricultural products. In addition to agriculture, the inhabitants of the valley have also produced pottery, metals, and textiles. Evidence of these industries has been found in excavations in the area.

The valley is comfortably warm to intolerably hot and humid. It receives rain mainly between the months of November and March, ranging between 38 and 41 cm (15–16 in.) annually. The valley's tropical character has been made green through water and irrigation systems, and malignant malaria and other epidemics were eradicated a few decades ago.

Two main, parallel roads were used in antiquity, running north–south on both sides of the valley, connecting its major settlements. The roads are dated by numerous Roman milestones, but they appear to have played a similar role as early as the first and second millennia BCE. They were open to the north, but ended in the south at the Dead Sea and the surrounding steep cliffs, disconnected from the Wadi ʿArabah and the Red Sea. Both roads were interconnected with a number of subsidiary roads.

Many archaeological surveys and excavations have been carried out in the valley, including those of William Foxwell Albright (1926) in the 1920s; Nelson Glueck (1951) in the 1930s–1940s; Henri de Contenson (1964) and James Mellaart in the early 1950s; and Moawiyah Ibrahim, James Sauer, and Khair Yassine in the 1970s (Ibrahim et al., 1976). Until the mid-1970s, large-scale excavations were restricted to a few sites: Teleilat el-Ghassul, Qumran, Tell es-Sultan (Jericho), Tulul Abu el-ʿAlayiq, Khirbat al-Mafjar, Tell Iktanu, Tell Deir ʿAlla, Tell es-Saʿidiyeh, Mallaḥa, Shaʿar ha-Golan (al-'Uqhuwanah), and Khirbet Kerak (Beth-Yeraḥ). [*See* Teleilat el-Ghassul; Qumran; Jericho; Mafjar, Khirbat al-; Iktanu, Tell; Deir ʿAlla, Tell; Shaʿar ha-Golan; Beth-Yeraḥ.] In addition, small excavations were conducted at Shuna (North), Pella, Tell Abu Ḥabil, Ghrubba, and Azeimah. [*See* Ghrubba.] Work has been resumed at old excavation sites in the east Jordan Valley, at Ghassul, Iktanu, Deir ʿAlla, Saʿidiyeh, Pella, and Shunah (North), while new excavations have begun at Tell Nimrin, Umm Ḥammad esh-Sharqi (et-Twal), Kataret es-Samra, Abu Sarbut, Tell el-Mazar, Abu Ḥamid, Abu en-Ni'aj, Tell el-Ḥayyat, Abu el-Kharaz, el-Maqbarah, and Dhraʿ el-Khan. [*See* Nimrin, Tell; Mazar, Tell el-; Ḥayyat, Tell el-.]

Paleolithic to Chalcolithic Periods. The earliest evidence of habitation in the Jordan Valley was found at the Paleolithic sites of Tell Abu Ḥabil, south of Wadi el-Yabis, and Wadi el-Ḥammeh, about 2 km (1 mi.) north of Ṭabaqat Faḥl (Pella). In the lower Wadi el-Ḥammeh basin, a sequence of Pleistocene deposits dating from about 80,000–11,000 years BP have been attested. Among these deposits were Upper Paleolithic, Kebaran, and Natufian sites. The Natufian occupation includes two isolated large oval enclosures and smaller structures (Edwards, 1989, pp. 409–412).

Natufian and Pre-Pottery Neolithic (PPN) evidence has also been found at Abu 'Urabi, Mhith, and Dhraʿ el-Khan, sites situated at the mouth of wadis close to foothills. The most impressive Natufian and PPN remains in the valley were excavated at Jericho and ʿAin Mallaḥa. The Natufian evidence at Mallaḥa included three levels with a large number of huts and plastered storage pits, in addition to pits with collective burials. At Jericho a clay platform with microliths and a bone harpoon-head were the main finds from the Natufian I period. Jericho is a unique PPN settlement, with its successive layers and distinctive defensive structures, which include a wall enclosing an area of 4 ha (10 acres) and a massive stone tower (Kenyon, 1960, 1965, 1981; Kenyon and Holland, 1982, 1983). Except for its defensive structures, Jericho's repertoire has close parallels at Wadi Himar, ʿAin Ghazal, and Wadi Shuʿeib. [*See* Jericho; ʿAin Ghazal.]

Jericho and Shaʿar ha-Golan, represent two groups in an early phase of the Pottery Neolithic (PN) in Palestine. Jericho's pottery includes distinctive coarse ware and decorated red-burnished ware; Shaʿar ha-Golan and other sites display the painted and incised pottery with simple geometric designs of the Yarmukian culture, in addition to distinctive examples of engraved and incised pebbles and human figures. Other sites include PN material: Ghassul, Ghruba, Ghannam, Dhraʿ el-Hesseini, Katar Zakari, Qa'dan, Pella, Baqurah, and Abu Ḥamid. Most show no distinction between PN and Chalcolithic material. Both periods seem to represent early village farming communities that were related to many other sites on the highland.

The Chalcolithic period that followed has been attested at many large, open settlements in the valley with coarse and painted handmade pottery, chisel axes, and fan scrapers. Large-scale excavations, such as at Ghassul and Abu Ḥamid, exposed large rectangular houses and storage facilities.

Bronze Age. Early phases of the Early Bronze Age (before the beginning of the third millennium) appear at open settlements such as Rweihah, Umm Ḥammad esh-Sharqi, and Kataret es-Samra. Other EB II–III sites were located in the foothills and have a defensive character. Khirbet Kerak (Beth-Yeraḥ) and Jericho are the main fortified towns in the valley. More recent excavations at Iktanu, Saʿidiyeh, Abu el-Kharaz, Pella, and Shunah (North) show scanty evidence of EB fortifications. In the following transitional period (EB IV–Middle Bronze I), there are numerous low sites with new locations in the Katar hills, foothills, and side wadis. Most lack architectural remains; the primary evidence is from shaft tombs, such as at Wadi el-Ḥammeh, Umm Ḥammad (et-Twal), and Jericho. [*See* Shaft Tombs.]

The MB period is well represented at many sites in the valley where excavation has revealed architectural complexes: Pella, Tell el-Ḥayyat, and Deir ʿAlla. Most striking

are a series of four roughly square MB IIA–C temples at Tell el-Hayyat and defensive walls at Jericho, Deir ʿAlla, and Pella. Significant MB material has come from tombs at Jericho and Pella (Kenyon, 1960, 1965).

The prosperity of the Jordan Valley continued throughout the Late Bronze Age (1550–1200 BCE) and has been widely attested in settlements at Jericho, Deir ʿAlla, Pella, Abu el-Kharaz, Saʿidiyeh, and Kataret es-Samra. At some of these sites, LB tombs were also excavated. Egyptian, Cypriot, and Mycenaean materials demonstrate strong international contacts with other Mediterranean regions. An LB sanctuary on a high platform was excavated at Deir ʿAlla.

Iron Age. There seems to have been a smooth transition from the Late Bronze into the Iron Age. Most major LB sites were reoccupied in the main periods of the Iron Age. This cultural continuity can be demonstrated at Jericho, Nimrin, Deir ʿAlla, Mazar, Saʿidiyeh, Pella, and Abu el-Kharaz, although some recession in international contacts can be observed during Iron I.

Significant material from Iron II comes from excavations at Deir ʿAlla, phase IX (Franken, 1969, phase M). This phase includes a large architectural complex that may have served as a religious center and related workshops. A lengthy Ammonite/Aramaic plaster text attributed to Balaam Bar Beor, the Balaam mentioned in the Hebrew Bible appears to represent a tradition of religious practice in the Jordan Valley that may extend beyond the immediate region. [*See* Deir ʿAlla Inscriptions, Aramaic Language and Literature.] A strong earthquake toward the end of the ninth century BCE destroyed this settlement and perhaps others in the area.

Persian through Islamic Periods. At the end of the Iron Age, in about the mid-sixth century BCE, there is a decline in the material culture of the Jordan Valley, even though some sites reflect continuous occupation between the sixth and first centuries BCE. The best-known sites during this period are Nimrin, Deir ʿAlla, Mazar, Saʿidiyeh, and Pella; however, there is relatively little architectural evidence from them for the Persian and Early Hellenistic periods. Toward the end of the Hellenistic period (second and first centuries BCE), prosperity is demonstrated through building activities and the quantity of imported amphora handles with inscriptions. The Dead Sea Scrolls found at Qumran, at the northwest corner of the Dead Sea, and in the surrounding caves are the most dramatic discovery in the Jordan Valley. [*See* Dead Sea Scrolls.]

The Roman period is well represented throughout the Jordan Valley. More than fifty Roman sites are distributed in and near foothills, on the Ghor, and near the Katar hills. Many were situated along the Roman road, which is indicated by a number of milestones, some bearing Latin inscriptions. Sites located on the peaks of hills served defensive and military purposes, while other, open sites were supported by agriculture. Most of the Roman sites have been identified in surveys. A few were excavated: Tulul Abu el-ʿAlayiq, Abu el-Kharaz, and Pella. These investigations showed that the Roman occupation in the valley was strongly connected to urban sites in the highlands. Cultural, religious, and commercial activities are best represented at Pella, which Josephus Flavius (first century CE) referred to as a city of importance. Excavations at the site revealed a large civic complex and some tombs from the Roman period.

During the Byzantine era, population density was high, reflecting, to a large extent the preceding Roman period. Byzantine sites are found everywhere in the valley and indicate that agriculture was practiced on a large scale. Byzantine remains have been excavated mainly at Pella, the largest city in the area then. Excavation has uncovered three churches and large residential quarters. [*See* Churches.] The Byzantine city must have served as an administrative center for at least the northern Jordan Valley and parts of the eastern highland.

Islamic sites are represented in all parts of the valley, especially (but not exclusively) from the eleventh to the fifteenth centuries. Archaeological surveys have shown Ottoman sites to be underrepresented, although historical sources mention a significant number of settlements during the period. Interest in Islamic sites is increasing, and a number of them have been excavated. Hisham's palace at Khirbat al-Mafjar near Jericho for example, was built in the first years of the Umayyad caliph Hisham ibn ʿAbd al-Malik (724–743). It comprises a large central courtyard and a bath complex with painted mosaic floors, in addition to a mosque and a gatehouse (Hamilton, 1959). The most impressive archaeological evidence of a large Islamic settlement comes from Pella, however, where, as with many other sites in the area, the inhabitants' Christian and civic rights seem to have been maintained as a result of a peace covenant with the Muslim army led by Abu ʿUbaidah ʿAmir bin el-Jarrah. In Arab sources, Fahl (Pella) is mentioned as a center for the district of Transjordan (Jund el-ʿUrdun). The archaeological and the historical evidence reveals continuity from the Byzantine into the Umayyad and ʿAbbasid periods. The area experienced a severe earthquake in 747, whose effects could be traced in a number of locations at Pella. A sizable ʿAbbasid settlement, north of the mound, was established in the ninth and continued into the tenth century (Walmsley, 1989, pp. 436–438). [*See* Umayyad Caliphate; ʿAbbasid Caliphate.]

Most of the Islamic sites in the Jordan valley are agricultural and were sometimes connected to aqueducts and other elements in irrigation systems. There is clear evidence that sugar was produced on a large scale in the valley, based on the number of sugar mills associated with quantities of "sugar pots." Mosques, mausolea, and cemeteries are found all over the valley. [*See* Mosque; Mausoleum.] Monuments carry the names Nebi Musa, Abu ʿUbayad, Dirar, Sharhabil, Maʿadh, and Waqqas. They are difficult to date but were

dedicated to prophets and to leaders of early Islam. Most are located at Early Islamic sites or in their immediate vicinity.

[*See also* Palestine; *and* Transjordan. *For further discussion of the western side of the valley, see* Judah *and* Judean Desert Caves.]

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MOAWIYAH IBRAHIM

JOTAPATA (Gk., Iotapata; Heb., Yodefat; Ar., Khirbet Shifat), site located in the Galilee, directly south of modern Moshav Yodefat and described by Josephus (*War* 3.158–160) as surrounded on three sides by steep ravines and accessible from the north, hidden by surrounding mountains, and having no natural water source (map reference 176 × 248). Jotapata was the site of the first major battle between Roman Jewish forces in the Jewish War that began in 66 CE. Josephus, the commander of the Jewish forces, describes in great detail the battle and his subsequent capture by Vespasian (*War* 3.145–288, 316–408). Archaeological remains provide a glimpse of the battle as well as a rare look at a first-century CE Galilean site undisturbed by building activities from later periods.

In 1847, E. G. Schultz (1849) first properly identified Jotapata; Edward Robinson associated the site with Jiphthahel (*Jos.* 19:14, 27), but the apparent absence of Late Bronze or Iron I pottery makes his identification unlikely. Claude R. Conder and H. H. Kitchener (1881) suggested that the site might also be the Gopatata of the Talmud (*Ecclesiastes Rabbah* 108a), Yodpat in the Mishnah (*ʿArakh.* 9.6), and Jotabe, an episcopal town in 536 CE. William Foxwell Albright associated it with biblical Yotva. A place called Yodefat existed in the time of Joshua, according to the Mishnah (*ʿArakh.* 9.6), but excavations in 1992 directed by Douglas Edwards, Mordechai Aviam, and David Adan-Bayewitz indicate that the first major occupation of the site occurred in the Hellenistic period.

The site consists of upper Yodefat, or Jotapata, and is approximately 480 acres in area when combined with lower Khirbet Shifat immediately to the north. Jotapata had a large outer fortification wall that experienced at least three building phases: in its earliest phase (probably belonging to the Seleucid period), an outer wall (2.5–3.5 m thick) extended around the north, east, and west sides. [*See* Seleucids.] The inner part of the fortification wall was built over an earlier building that produced large storage jars and a Ptolemaic coin on its floor, suggesting a founding date for the town in the Ptolemaic period. An inner wall at the northern part of the site increased the wall's thickness to more than 5 m. Its construction style resembles that of the Hellenistic city wall found at the coastal city of Dor. [*See* Dor.]

On the north, the city wall consists of large ashlars founded on bedrock; the ashlars were covered on their north face by chipped pieces of limestone, in some spots to a depth of almost 4 m. A series of narrow walls held the limestone

chips in place, creating an artificial hill to the northwest that increased protection where the town was most vulnerable.

A portion of a ramp composed of mortar and crushed pottery, probably built by the Romans during their attack on Jotapata in 67 CE, was also found on the northwest. [*See* First Jewish Revolt.] Ballista, iron bow and catapult arrowheads, possible sandal nails, and Early Roman pottery embedded in or under the mortar that stabilized the ground in front of the wall are clear evidence of the first-century battle between the Roman army and the town's Jewish defenders. Another rubble wall 5 m inside the ashlar wall on the northeast created a casemate wall 5–6 thick. The casemate structure was built on top of the quarried limestone chips associated with the earlier wall (see above). This construction appears to date to the Early Roman period and may be associated with preparations for war against the Romans. Similar rubble walls extend south: one follows the contour of the hill and the other follows the upper hill. The upper wall appears to have been built during the Hellenistic period; the lower wall enclosed the lower plateau in the Roman period.

The language of at least some of the first-century CE inhabitants was Aramaic or Hebrew, as shown by an ostracon found in a first-century context. An unfinished olive press and an olive-press complex in a cave on the site's steep east side suggest the industry's importance in the town. Several stepped pools, possibly *miqvaot* or ritual baths, have been located near the oil-press operations. However, the pools may have simply served as settling pools. An Early Roman pottery kiln at the southern edge of the town indicates that Jotapata had a degree of self-sufficiency in ceramic manufacturing, although pottery from kilns at Kefar Ḥananyah show that Jotapata was part of a regional economic network that linked pagan cities (such as the coastal city of Akko) with Galilean cities, towns, and villages. [*See* Kefar Ḥananyah.]

Upper Yodefat, or Jotapata, was apparently not occupied after the Romans destroyed it in the first century. The lower part of the town, Khirbet Shifat, was apparently reestablished to the north in the late first or early second century CE. Pottery found down to floor surfaces indicates that this lower town continued at least into the medieval period.

[*See also* Galilee; *and the biographies of Albright, Conder, Kitchener, and Robinson.*]

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DOUGLAS R. EDWARDS

JUBAH, WADI AL-, isolated, yet protected, valley located at a mountain/sand desert interface in the modern Republic of Yemen, with the central highlands to the west and the Ramlat as-Sabʿatayn to the east. The upstream southwestern tail of the crescent-shaped wadi is at 14°57′ N, 45°15′ E; the eastern edge of the wadi is at 15°01′ N, 45°21′ E; and the northwestern reach, where the wadi vanishes into the sands of the desert, is at 15°12′ N, 45°17′ E, 25 km (15 mi.) south of Marib.

Precambrian metamorphic rocks intruded by plutons of Late Proterozoic diorite and granite underlie the area. Near the center of the structurally controlled erosional course of Wadi al-Jubah through these rocks, the roof of the diorite pluton was breached, forming a basin rimmed on all sides by mountainous barriers. Pleistocene and Holocene alluvial deposits within the basin created a fertile plain that became a rich savannah during more moist periods. With the advent in about 5000 BCE of the current more arid cycle, a grassy, arid savannah developed that persisted until early agriculturalists overgrazed and irrigated the region.

Except for squeezes taken from Sabaean and Qatabanian inscriptions by local inhabitants employed by Eduard Glaser during the late nineteenth century and a short epigraphic survey conducted by Albert Jamme of the Catholic University, Washington, D.C., in the area in 1975–1976, this wadi was unknown to archaeologists until 1982. In that year, the American Foundation for the Study of Man (AFSM) initiated an archaeological project in Wadi al-Jubah to continue the pioneering work done between 1950 and 1952 in nearby Wadi Beiḥan and at Marib, under the direction of Wendell Phillips and William Foxwell Albright. Between 1982 and 1987 the new AFSM team conducted six campaigns in Wadi al-Jubah, consisting of archaeological, geological, pedological, botanical, and epigraphic surveys, with test excavations at six sites. The project's initial goal was reconnaissance: to identify the types, extent, and dates of archaeological remains preserved in this region. The project was coordinated

by James A. Sauer (chief archaeologist), Jamme (epigrapher), and Jeffrey A. Blakely (field director since 1983).

It is not known when hominids first reached the southern part of the Arabian Peninsula, but the presence of core and flake tools with Acheulean characteristics, found in secondary alluvial contexts within Wadi al-Jubah, indicates that hominids were in the wadi, at least periodically, by the Lower Paleolithic period. A few Upper Paleolithic and possibly Neolithic tools were also discerned only in secondary alluvial contexts. Hearths, cairns, and small structures attributed to the fifth, fourth, and early third millennia are present. Because the project was largely survey, these remains were not investigated in any detail. The AFSM located a large South Arabian Bronze Age site (late third–mid-second millennium) just to the north of Wadi al-Jubah but did not investigate it in detail.

The vast majority of the visible archaeological remains within Wadi al-Jubah date to the Sabaean and Qatabanian periods (approximately the fifteenth century BCE–first century CE). For much of this period Wadi al-Jubah was dominated by its one major site, Hajar ar-Rayḥani, more commonly called al-Hajar (15°05′ N, 45°18′ E); the remainder of the wadi appears to have supported small farming communities set across an intensively irrigated landscape. Starting in the mid-second millennium, a series of dams and canals fed water to a growing field system. Sediment in the irrigation water replenished soil nutrients but also raised the level of the fields and canals several meters until, apparently, the fields grew too high to receive adequate water and the system failed, in about the mid-first millennium BCE.

Hajar ar-Rayḥani appears to have been the central place within the wadi and to have served as a stop on the ancient South Arabian trade route, situated near where it crossed the border separating Qataban from Saba' (Sheba). Its ruins are located on top of a Bronze Age site and may represent continuous occupation from that period. It received a massive fortification wall in about the eighth century BCE and experienced a major destruction a few hundred years later. The site supported local ceramic, metallurgical, and lapidary industries, possibly until its abandonment early in the first or second century CE. Following this site's abandonment, Wadi al-Jubah was not occupied by a sedentary population living in permanent structures until the nineteenth century, when the wadi was repopulated and a new irrigation system was established on top of the older, eroded system.

[*See also* Marib.]

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JEFFREY A. BLAKELY

JUDAH. Covering the southern third of Israel, Judah (Lat., Judea) designates, in certain late periods, an entire country. Both poor and remote, this small region was the cradle of the Hebrew Bible.

Geography. Judah extends over some 4,400 sq km (2,728 sq. mi.): 2,150 sq km (1,333 sq. mi.) are essentially desert; 1,500 sq km (930 sq. mi.) are partly cultivatable highlands; and 750 sq km (465 sq. mi.) tend to have good soil. The adjacent regions are, from the north, counterclockwise, the highland of Ephraim; Philistia (the coastal plain and the western Negev desert); the Negev highlands; and the Dead Sea and Jordan Valley.

The core of the region is the Jerusalem area (about 150 sq km or 93 sq. mi.) and the highlands of Judah (about 1,000 sq km or 625 sq. mi., including the ʿArqub in the northwest, and the central and southern parts, also known as the highlands of Hebron). The Land of Benjamin (the Benjamin highlands, about 350 sq km, or 217 sq. mi.), is north of these. All of these areas (the Judean highlands) comprise the southern part of modern Israel's central highlands. The altitude ranges from 600 m above sea level in the south to 1,020 m near Hebron. Mean annual rainfall ranges from 300 to 400 mm in the south, to about 700 mm (including snow) in the highest parts of the region, but it may fall to below 300–200 mm in the frequent drought years. Mean temperature is about 10–7°C (January) to 22–26°C (August). The Judean highlands, especially south of Jerusalem, are the highest, steepest, and poorest part of the central highlands.

East of the highlands, the Judean Desert slopes down to the Jordan Valley and the Dead Sea shore (about 400 m below sea level). The desert is large (about 1,150 sq km, or

713 sq. mi., not including Jericho) but very marginal: it has a mean annual rainfall of only 50–100 mm (200–400 mm on the higher desert plateau) and, in August, a mean temperature of only 26–34°C. To the south lies the Beersheba-Arad valley: the biblical Negev of Judah (only part of the modern Negev). This also is a fringe area, but it is not so marginal. An important natural route to the south and east, it extends for more than about 1,000 sq km (620 sq. mi.). Its mean annual rainfall is about 300–150 mm and its mean temperature is about 28–26°C (August) to 14–10°C (January).

Below, to the west, lies the Shephelah of Judah (about 750 sq km, or 465 sq. mi., excluding the western parts, which are connected to Philistia), the richest part of Judah, composed of moderately undulating hills. Its altitude is about 150–300 m in the lower (western) Shephelah and 300–600 m in the upper (eastern) Shephelah. This is the real biblical hill country of Judah, although some translations give that name to the highlands. Its mean annual rainfall is about 350–550 mm; its mean temperature is the same as the Negev's.

History and Methods of Research. Judah's ancient remains were first recorded by such nineteenth-century explorers as Edward Robinson, Victor Guerin, and above all Claude R. Conder and Horatio Herbert Kitchener, but they were unable to date most of the ruins. [*See the biographies of Robinson, Guerin, Conder, and Kitchener.*] Modern excavations have been conducted at several sites since the 1920s. The main stratigraphic excavations (mostly of more than one period) are in the Judean highlands: Jerusalem, Khirbet et-Tell (Ai), Tell el-Jib, Tell en-Naṣbeh, Tell el-Ful, Ramat Raḥel, Giloh, Herodium, Beth-Zur, Hebron, Susiya, and Khirbet Rabud (Debir); in the Shephelah: Beth-Shemesh, Tel Yarmut, ʿAzekah, Mareshah (Marisa)/Beth-Guvrin, Lachish, Tell Beit Mirsim, and Tel Ḥalif; in the Negev of Judah: Tel Beersheba, Tel Esdar, Tel Masos, Tel ʿIra, Arad, ʿAroʿer, Tel Malḥata, and Ḥorvat ʿUza; and in the Judean Desert: Masada, ʿEin-Gedi, Qumran, several caves and monasteries, and sites in the Buqeiʿa valley and along the Dead Sea shore. Major stratigraphic-ceramic sequences for the early periods have been published for Tell Beit Mirsim and Lachish.

The first modern archaeological survey, systematic but very selective, was conducted in the Judean Desert and highlands in 1967–1968 (Kochavi, 1972). More detailed surveys have been conducted since the early 1980s in the highlands and the Shephelah. The available data (Finkelstein and Magen, 1993) from the various subregions still differ significantly.

The highlands of Judah have been surveyed by Avi Ofer since 1982 (800 sq km, or 496 sq. mi., not including the ʿArqub). A sample of about a third of the area has been completed, enabling an estimation of the possible lacunae in the selective survey (completed for the entire region, including all ruins marked on maps). To fill in the gaps, 15 percent must be added to the settled area in the surveyed region, based on results from the wide sample areas. An additional 35 percent must be added for the ʿArqub. The size of each site in different periods is estimated following a standard technique: sherd scatters and maximum size of site. Diagnostic pottery rims from each period are counted, while the rims that can be dated to more than one period are assigned to them according to percentages. This counting is weighted according to the length of each period, which is indispensable for valid analysis. The weighted relative percentage of each period, compared with the maximum percentage, yields the relation of its size to the maximum size, or a calculated size estimate. For early periods, this estimate may be too low, as sherds could be covered by later debris. To minimize error, an average is made between the maximum and the calculated size, using a factor proportional to the extent of later debris. This averaged estimate may reduce possible errors and is the basis for further evaluations. In special cases, the estimate is changed according to other relevant data (e.g., sherd distribution over the site, which, however, generally is not useful). Several averages were calculated for each period and subregion, such as relative height above sea level as a security factor, distance from water sources and roads, and land use. The averages were calculated not only per site, but also per settled area, which is more significant. A rank-size analysis of all periods indicates possible changes in social integration. The intensity of pottery at every site and in every period was also analyzed, representing the intensity of human activity—population size relative to carrying capacity (an estimate based on settled area is, however, problematic because the coefficients of inhabitants per acre vary too much). By all these means, a purely archaeological history of the region was obtained, which will be compared to its documented history.

Many surveyors have explored the small Land of Benjamin (Finkelstein and Magen, 1993). In most cases the indispensable data are published (although unweighted), but most periods lack subdivisions, such as Iron II–III, and the data, evaluated separately for each arbitrary survey unit, have not been synthesized. Most of the Jerusalem area has been surveyed but not yet published. Yehudah Dagan (1992) has surveyed the Shephelah, covering about 75 percent of the area and almost all of its principal sites. Most of his data has not yet been evaluated or published, but the Iron Age sites are reasonably well known. In the desert there has not been much progress since Pessah Bar-Adon's work (1967 onward). Many scholars have explored the Negev of Judah, especially Yohanan Aharoni and his successors, but their work was not part of a systematic research program or publication, and most of their surveys were incomplete.

History of Settlement. A detailed archaeological analysis is so far available only for the highlands of Judah.

Prehistory. There have been almost no surveys of prehistoric Judah. However, René Neuville's work in the desert yielded some caves and rock shelters, important type-sites

for the prehistoric cultures in Israel: Umm Qaṭafa (Early Paleolithic), ʿErq el-Aḥmar (Middle to Epipaleolithic), and el-Khiam (Middle Paleolithic to Neolithic). Other Neolithic sites are Naḥal Ḥemar, Abu Ghosh, and (nearby) Khirbet Rabud.

Protohistory (c. 4000–2000 BCE). During the Chalcolithic period, the Beersheba-Ghassul culture in the Shephelah and Negev flourished, including the type-sites in the Beersheba basin. The highest level of solid organization seems to have been small chiefdoms. The extensive human activity in the desert in the period includes a regional temple found above the oasis of ʿEin-Gedi; a magnificent hoard of bronzes was found in the nearby Cave of the Treasure. Signs of human activity are scant in the Judean highlands, however—perhaps the result of the environment. [*See* ʿEin-Gedi.]

The Early Bronze Age witnessed the first urban civilization. In the first stage (EB I) many sites were inhabited in all of the nondesert parts of Judah, significantly penetrating the highlands. Twenty-eight sites are known in the highlands of Judah, with a total size of about 42/17 acres (42 averaged, 17 calculated). To the north, ten more sites are recorded (about 37 acres in total) that are dominated by the site of Ai. The area south of Jerusalem may have been dominated by the great city at Tel ʿErani, on the southwestern edge of the Shephelah. During EB II, a large city existed at Arad, connected with copper mining and trade in the southern deserts (Sinai and the ʿArabah). In the southern highlands, between Arad and Ai, there seems to have been a decline in sites; the situation in the Shephelah is not yet clear. The transition to EB III witnessed a grave crisis in the south, perhaps connected to the strengthening of Egypt under the third dynasty and competition over copper sources. Arad and other centers were weakened or abandoned. In contrast, settlements in the highlands flourished. Ai (27 acres) was still the center of a unit extending north of the region. In the highlands of Judah, twenty-two sites (32/20 acres), most of them fortified, were headed by a large city (15 acres) at Ras Tawra, on the highest mountain in the region (1,010 m high). EB III culture comes to an end in the last third of the third millennium BCE. During the succeeding EB IV, pastoral society is found everywhere in the central highlands (it was not entirely nomadic, as was thought), represented by a few poor sites, with many cemeteries of typical shaft tombs, frequently unconnected to any particular site. [*See* Arad; Ai.]

Middle Bronze Age (c. 2000–1500 BCE). In the Middle Bronze Age a new urban culture flourishes. For the first time, documents are available, evidence of a dimorphic Amorite-Canaanite (West Semitic) society—that is, it combines urban and pastoral elements. The main city-states are found at Lachish in the Shephelah and Jerusalem in the Judean highlands. In the latter, twenty-three sites (a total of 34 acres) are centered in the fortified site of Hebron (6 acres). A cuneiform tablet from Hebron, unique in Judah, reveals the existence of an Amorite-Canaanite society, with a Hurrian element. It seems that Hebron was a third city-state, smaller than the other two and maneuvering between them. In the Negev, only two fortified sites were found (Tel Masos and Tel Malḥata), which may belong to a unit centered west of the region. [*See* Lachish; Hebron.]

Late Bronze Age (c. 1550–1150 BCE). Under the domination of the Egyptian Empire, the Late Bronze Age is a period of great decline, especially in the highlands and frontier zones. The main centers are still Lachish and Jerusalem, bordered on the west by Gezer and Gath (Tel eṣ-Ṣafi). The Amarna letters testify to this reality and to the existence of smaller centers (e.g., Qeʿilah in the Shephelah) maneuvering between the greater city-states. In the highlands of Judah there is only one significant site, Khirbet Rabud (Debir), which is small. An element of refugees (the *ḫapiru*) appears, mainly in the highlands. [*See* Gezer; Rabud, Khirbet.]

Iron Age IA–B (c. 1200–1050 BCE). Although the Iron I is generally defined as the twelfth–eleventh centuries, it seems that the late eleventh century belongs to the next phase. In Iron I, a mass of new settlements is evident all over the highlands: it appears to be a new society, just beginning to crystalize, without dominant centers. In the highlands of Judah some eighteen settlements appear (45/27 acres) in which the main site is Hebron. These sites are not very small, but their economic preferences tend toward horticulture. Northward, the same appears to be true for western Benjamin; it is uncertain, however, whether the eastern sites here antedate the tenth century BCE. In Iron I/IIA, the name Judah first appears, designating only the highlands of Judah. Looking westward, the settlers saw the hill country, which they referred to as "the lowland" (Heb., *shephelah*). That region was then completely abandoned, and the Philistine culture was emerging to the west. A few large villages appeared in the Negev: Tel Masos, Naḥal Yattir, and probably Beersheba, whose material culture was connected to the coast. [*See* Masos, Tel; Beersheba.]

The population in the central highlands seems to have been composed of northern groups emigrating from the crumbling Hittite Empire; local elements, such as the *ḫapriu;* and other settling pastoralists, called Proto-Israelites. Local centers were reestablished in Jerusalem by the Jebusites, in Hebron, and perhaps at other sites, such as Gibeon. [*See* Gibeon.]

Iron Age IC–IIA (c. 1050–800 BCE). The process of settlement accelerated in new directions in the Iron IC–IIA. The desert fringe became densely inhabited for the first time. Probably most of the tribal-pastoral elements that were to become the core of the Judahites only now began to settle. The Judean highlands were settled through a continuous process, changing once and for all from a fringe area to an integral part of the inhabited land. In the highlands of Judah, there are thirty-three known Iron IIA sites (85/50 acres al-

together) and eighty-six Iron IIB sites (137/95 acres). The estimated total inhabited area toward 800 BCE was 237 acres; in Benjamin and the area surrounding Jerusalem, 187 acres; Jerusalem, 75 acres; the Shephelah, about 237 acres; and the Negev, 12 acres.

The continuous settlement increased integration among the settled groups, and foreign occupation by the Philistines accelerated the process. An Israelite national kingdom was established in all of the central highlands under King Saul, whose expansion may have stimulated the rise of other ethnic entities in the region. The most important event in the history of Judah, however, was the rise of King David, first in Hebron and then in Jerusalem, where he established the capital of his dynasty. David and his son Solomon built Jerusalem as their kingdom's impressive center. Judah first appeared as a unified entity extending over all of Judah in the schism following Solomon's death. The entity was then in transition from a city-state to a national kingdom, a process completed two centuries later.

Iron Age IIB (c. 800–701 BCE). The climax of Judah's settlement, in Iron IIB, is matched only in the later Byzantine period. In the highlands of Judah, 122 sites were surveyed (232/215 acres); in Benjamin, about 100 sites (225 acres); in the Shephelah about 340 sites (about 500 acres). The estimated total inhabited area in the highlands of Judah is 388 acres; in Benjamin, 300 acres; in the Shephelah, 625 acres; in the Negev, 20 acres; in the desert, 10 acres; and in Jerusalem about 150 acres. The total is about 1,500 acres, or 120,000–150,000 inhabitants (using traditional estimates). The Ceramic Intensity Index is much higher than for other periods (40 percent higher than in the Byzantine period), so figures should perhaps be higher. It seems that Judah became a fully integrated nation only toward this stage, which ended in catastrophe. In 701 BCE, the Assyrians, under Sennacherib, marched on Judah to suppress the revolt of King Hezekiah. They destroyed the country and killed or exiled most of the inhabitants of the Shephelah and about 50–70 percent of those inland. Only Jerusalem resisted.

Iron Age IIC–Iron III (c. 701–538 BCE). Following the Assyrian destruction Judah's recovery began in the highlands and then spread partially to the Shephelah. The Negev and the desert flourished. Toward the end of the seventh century BCE, the inhabited area is estimated as follows: the highlands of Judah, 300 acres (mostly in the north); Benjamin, 225 acres; the Shephelah, 225 acres (±75); the Negev, 37 acres; and the desert, 25 acres. Jerusalem (still 150 acres) was more central, materially and spiritually. The Deuteronomic ideology flourished, heralding the coming transition to Judaism.

The recovery was disrupted by the events that led to the destruction of the First Temple and the termination of the kingdom by the Babylonians under Nebuchadrezzar. The destruction in the countryside was less severe than previously, but long-term processes led the Shephelah, Negev, and highlands of Hebron into continuous impoverishment. They were separated from Judah and incorporated in Edom (later Idumea). [*See* Edom.]

Persian Period (c. 538–332 BCE). With the return of the exiles, following the edict of King Cyrus, Judaism definitively replaced the old Judahite/Israelite national identity. It centered in the Yehud district (Heb., *medinah*), including Benjamin and part of the highlands of Judah. Half of the highlands sites (eighty-seven sites; 120/90 acres) are in that northern one-quarter of the district. The Second Temple was built and was regarded by the Jewish community as the only legitimate sanctuary. The western part of Idumea was inhabited by urban, Hellenized Phoenicians and the inland part by a rural society with autochthonous roots. With the tide of history turning, the old polis regime reappeared.

Hellenistic Period (c. 332–37 BCE). Both Jewish and Hellenistic culture flourished between 332 and 37 BCE throughout the highlands of Judah (ninety-eight sites; 132/75 acres), first under Ptolemaic and then under Seleucid kings. The Maccabean Revolt, beginning in 167 BCE, ended with the consolidation of the Hasmonean kingdom of Judah. At its zenith, under Alexander Jannaeus, it covered the whole land of Israel, including most of Transjordan and the Golan. When Pompey established Roman hegemony in 63 BCE, Judah was reduced to the mostly Jewish-populated areas in the highlands, parts of Transjordan, and the Galilee. [*See* Ptolemies; Seleucids; Hasmoneans.]

Roman I Period (c. 37–135 BCE). The kingdom of Judah reached its maximum expansion and wealth in the time of Herod the Great (40/37–4 BCE). Jerusalem, "most famous among [Near] Eastern cities" (Pliny), again became the center of a great kingdom. The Second Temple, rebuilt by Herod, was the period's outstanding monument, and Judah prospered (the highlands of Judah included ninety known sites, extending to 245/115 acres). The kingdom did not survive Herod, however, and Judah became the Roman province of Judea. Later, the great revolt of the Jews (66–70 CE) led to the country's destruction by the Romans under Vespasian and Titus. Jerusalem and the Temple were destroyed in 70 CE, as well as many other Judean sites (the last stronghold, Masada, is the most famous and most excavated). Following the destruction, Judea became the garrison of the Roman Tenth Legion. [*See* Masada.]

The period (Roman I) was one of great unrest. The main archaeological evidence comes from the Judean Desert sites, including Qumran. The canonization of the Hebrew Bible was completed; the Pharisees achieved hegemony in Judaism; the Saducees and Essenes disappeared; and Christianity emerged. Messianic yearnings led to the Bar Kokhba Revolt against the Roman emperor Hadrian, ending with the massive destruction of Judea in 135 CE and the end of its Jewish identity until the modern era. [*See* Judean Desert Caves; Qumran; Essenes; *and* Bar Kokhba Revolt.]

Roman II Period (c. 135–324 BCE). Following the destruction by Hadrian, the name Judea was changed to Syria-Palaestina (Philistia) and then to Palaestina Prima, in order

to erase the memory of Judah (hence the name Palestine, which lasted until modern times). The Land of Judah never had a specific name after that. Jerusalem was rebuilt as Aelia Capitolina. In about 200 CE, Emperor Septimius Severus established Eleutheropolis (Beth-Guvrin), which dominated most of Judah, except for Aelia and its surroundings. In the highlands of Judah, ninety-five sites are known (150/90 acres). Its southern part remained predominantly Jewish (Heb., *dromah*, "southern") and the rest was mostly pagan.

Byzantine Period (c. 324–638 BCE). The Byzantine period is generally assumed to be the most heavily populated of the ancient periods in Israel. In the highlands of Judah 273 sites (425/350 acres) are known. However, the Ceramic Intensity Index is only about 70 percent Iron IIB, which is consistent with the settlements' uncrowded character. Christianity became the official religion in the Byzantine period and the society was composed mainly of religious communities: Christians, Jews, Samaritans, and pagans.

"Medieval Period" (c. 638–1516 BCE). In archaeological and especially in ceramic terms, the period between 638 and 1516 is not well known. It will only be discussed briefly here.

Early Arab period (c. 638–1099 CE). Following the Arab conquest in 638 CE, the Jund Philastin inherited Palaestina Prima. Judah was included within three subdistricts (Ar., *achwar*): Aelia (Jerusalem), Beit Jibrin, and the Dead Sea. Under the Umayyad, 'Abbasid, and Fatimid dynasties, part of the population became Muslim, and some Arab bedouin tribes settled in the Land of Judah, mainly on the desert fringes. Ramla became the capital of Philastin. The al-Aqṣa mosque and the Dome of the Rock were built in Jerusalem, which became Islam's third important pilgrimage site. [*See* Umayyad Dynasty; 'Abbasid Dynasty; Fatimid Dynasty; *and* Ramla.]

Crusader and Ayyubid period (c. 1099–1291 CE). Most of the Crusader remains known in Judah are in Jerusalem, although forts and fortified properties were built in the countryside as well. Between 1099 and 1291, the Frankish element of the society played an important role within the Kingdom of Jerusalem. Judah was the first royal domain, and then Hebron and Beth-Guvrin became independent principalities. Following the kingdom's end (in 1191 CE), Judah became predominantly Muslim.

Late Arab period (c. 1291–1516 CE). Under the Mamluks, the coastal plain was intentionally depopulated, turning it into a fringe area, while the population of the highlands increased. Judah was divided first between the districts of Jerusalem and Hebron (as a province of Damascus) and then the province of Gaza. The deterioration of the land reached its peak during this period. In 1376, Jerusalem became the seat of a minor governor.

*Ottoman Period (*1516–1917 CE). Following the Ottoman conquest in 1516, most of Judah was unified within the district of Jerusalem, including the city's subdistricts and Hebron. Parts of the Shephelah fell within the Ramla subdistrict. The land flourished in the sixteenth century, and Jerusalem was refortified with the wall that still encircles it. Ottoman administrative documents (Tk., *defteri*) give the best information on the economics of the land's traditional society. In the following centuries Judah sank into decline, while Jerusalem's position was strengthened, heralding the political and cultural importance it would know in the twentieth century.

[*See also* Jerusalem; Negev; Northern Samaria, Survey of; Shephelah; *and* Southern Samaria, Survey of. *In addition, the following sites not previously cross-referenced above are the subject of independent entries:* 'Aro'er; Beit Mirsim, Tell; Beth-Shemesh; Beth-Zur; Esdar, Tel; Ful, Tell el-; Giloh; Herodium; 'Ira, Tel; Mareshah; Naṣbeh, Tell en-; Ramat Raḥel; Susiya; *and* Yarmut, Tel.]

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AVI OFER

JUDEA. *See* Judah.

JUDEAN DESERT CAVES. Since the fourth century CE there have been reports of discoveries of scrolls and other artifacts in caves in the Judean desert (cf. Eusebius, *Ecclesiastical History* 6.16.1). Modern interest in these caves stems from the discovery of the Qumran scrolls in 1947. After bedouins had ransacked many of the caves in the area of Qumran, it was decided that a comprehensive and systematic search of the Judean Desert caves should be undertaken by archaeologists. This was done in 1952 under the direction of Roland de Vaux and G. Lankester Harding while they were digging at Qumran. There were also several follow-up excavations at the caves and sites in the immediate vicinity of Qumran, on the Jordanian side of the border with Israel, during the 1950s. Nonetheless, bedouin discoveries continued to preempt those of the archaeologists.

The eastern Judean desert is dissected by several east–west canyons that drain toward the Dead Sea. Expeditions on the Israeli side of the border in 1961–1962 focused on the area between Masada and 'Ein-Gedi and divided the region into four sectors with a team assigned to each sector. The four teams were directed by Yohaman Aharoni, Pessah Bar-Adon, Nahman Avigad, and Yigael Yadin; their task was to explore every cave and crevice in their sector (Avigad et al., 1960–1961). Exploration and excavation of these dark caverns was made difficult by the large rocks that cluttered the cave floors and by the occasional thick layers of animal droppings that covered the floors. Equally daunting was the fact that many caves were located in sheer cliffs far above the valley floor and could be entered only after a perilous climb (Yadin, 1963).

The discovery of materials from the Chalcolithic, Middle Bronze, Iron, and Roman periods made it clear that the caves had served as places of refuge throughout history for people forced to flee their homes. The artifactual and inscriptional remains from the Middle Bronze and Iron Ages are meager, indicating that the caves were only used intermittently and for short periods of time. The materials from the Chalcolithic and Roman periods, however, are considerable and impressive. While nearly all of the caves evidenced occupation during the Chalcolithic period, the most significant finds came from the Cave of the Treasure in Naḥal Mishmar (Bar-Adon, 1980). The vast amount of household vessels, tools, textiles, and foodstuffs found in this cave indicates that during the Chalcolithic period it was inhabited for regular and prolonged periods. The most spectacular discovery was a cache of more than four hundred copper items: tools, mace heads, baskets, crowns, and utensils. Many of these items are ornately decorated and can be seen in the Israel Museum in Jerusalem. The objects suggest that the owners were wealthy individuals who brought their treasures with them in the hope of returning home once the danger that forced them into the cave had passed. Unfortunately, they never again used their valuables in the luxurious surroundings for which they were obviously intended.

Equally noteworthy are the discoveries dating to the time of the Second Jewish Revolt against Rome led by Bar Kokhba (132–135 CE).[*See* Bar Kokhba Revolt.] While the leader of this revolt is traditionally identified as Bar Kokhba ("son of a star"), a title with messianic overtones, some Jewish traditions label him Bar Koziba ("son of a lie"). The Bar Kokhba letters, from the Cave of Letters in Naḥal Ḥever, identify the leader's actual name and title as "Simon ben Kosiba, prince of Israel." Both forms of his name, *Bar Kokhba* and *Bar Koziba,* are, therefore, tendentious corruptions of his real name and reflect two attitudes toward his revolt. Many Jewish rebels followed Bar Kokhba and fled into the desert to prosecute their war against the Romans.

The caves in the Judean desert have yielded a tremendous amount of information about these Jewish rebels and their way of life. The discovery of pottery, glass, and other luxury items from this period indicate that the inhabitants prepared the caves in advance for prolonged stays and entered them only when necessary. Once refugees were safely inside the caves, it would have been nearly impossible to attack or expel them forcibly. The Romans watched the rebels from camps they established above the caves and on the opposite sides of the canyons. This strategy enabled the soldiers stationed across a canyon to watch the rebels in the caves and relay the information to other soldiers stationed in the camp above the caves. The rebels waited in the caves and used the rations they had brought with them. Their plan, however, failed terribly. One cave, the Cave of Horror in Naḥal Ḥever, yielded more than forty skeletons of men, women, and children who perished there. In the end, the Romans outlasted the rebels by cutting off their supply lines and starving them.

The Cave of Letters in Naḥal Ḥever yielded two large collections of documents (Lewis et al., 1989; Yadin, 1963). The Bar Kokhba letters comprise more than a dozen dispatches in Hebrew, Aramaic, and Greek sent by Bar Kokhba to his commanders in other places (principally 'Ein-Gedi). [*See* 'Ein-Gedi.] This correspondence provides details about the rebels' chain of command, their observation of Jewish festivals, and Bar Kokhba's stern leadership style. The Archive of Babatha, the daughter of Simon, is a collection of thirty-five legal documents (marriage contract, loans, deeds, wills) in Nabatean, Aramaic, and Greek, dating from 93 to 132 CE. [*See* Nabatean Inscriptions.] Babatha, once a wealthy and prominent resident of Nabatea, moved to 'Ein-Gedi and eventually fled to the caves in advance of the Roman assault on Bar Kokhba's forces. Although traditions about this revolt were preserved in a variety of sources, the discoveries from the Judean Desert caves provided the first direct evidence of the rebels and their way of life.

Other caves in the region have yielded additional evidence

of occasional occupation from prehistoric times through the Middle Ages. Excavation and exploration of the caves continues under the direction of the Israel Antiquities Authority and the Society for the Preservation of Nature. A comprehensive survey of the region was conducted during the 1980s, and reports of artifactual and inscriptional finds continue to surface.

[*See also* Dead Sea Scrolls; Judah; Qumran; *and the biographies of Aharoni, Avigad, Harding, Vaux, and Yadin.*]

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J. EDWARD WRIGHT

JUDEIDEH, TELL EL- (Heb., Tel Goded), site located in the Shephelah (31°38′ N, 34°54′ E; map reference 141 × 115) on a natural hill about 398 m above sea level, and about 25.4 km (15 mi.) south of Gezer, 43.5 km (27 mi.) north-northeast of Beersheba, 34.5 km (21.5 mi.) east of Ashkelon, and 22 km (13.7 mi.) northwest of Hebron.

The site has generally been identified with the Moreshet-Gath of *Micah* 1:14, the home of the prophet Micah (*Mi.* 1:1; *Jer.* 26:18). *Micah* 1:13–15 implies that Moreshet-Gath was near Lachish (9.6 km [6 mi.] southwest of Tell el-Judeideh) and Mareshah (Marisa; about 4.5 km [2.8 mi.] south-southwest of the site). The Madaba map places Moreshet-Gath north of Beth-Guvrin (2 km [1 mi.] south of Judeideh). Both F.-M. Abel (*Géographic de la Palestine,* vol. 2, Paris, 1938, p. 392) and Yohanan Aharoni (*The Land of the Bible,* rev. ed., translated and edited by Anson F. Rainey, Philadelphia, 1979, p. 330) subscribe to this identification; Zecharia Kallai (1962), however, identifies Tell el-Judeideh with Libnah (cf. Negev 1990). Apart from the proposed identifications with cities mentioned in the Hebrew Bible and what can be reconstructed through excavation, the history of the site is unknown.

Tell el-Judeideh was excavated as part of a regional project in 1899–1900, under the direction of F. J. Bliss and R. A. S. Macalister, funded by the Palestine Exploration Fund. Because archaeology was then in its infancy and ceramic typology was yet to be understood, the results of that excavation are confusing and disappointing. Of the approximately 2.5-hectare (7-acre) site, Bliss and Macalister excavated about 87 sq m, finding few remains from the "pre-Israelite" period (the Bronze Age); the "Jewish" period (the Iron Age); and the "Hellenistic–Roman" period.

Many of the fragmentary wall remains from the Iron Age showed extensive evidence of fire. However, because of the excavation's limited exposure and the state of the art, it is impossible to assign a precise date to them. The excavation did not reveal a fortification system for the Iron Age, but it did uncover thirty-seven stamped *lmlk* jar handles. Among them were representations of both the two-wing and four-wing variety, as well as references to the four cities regularly attested: Ziph, Hebron, Socoh, and *mmšt.* These handles imply an occupation of the site in the late eighth century BCE.

The bulk of the remains date from the Roman period and consist of an oval enclosure encompassed by a wall approximately 228 m long and about 91.5 m wide. The wall is, on the average, about 3.35 m thick and is built of roughly dressed stones, dry laid in horizontal courses. Sixteen unevenly spaced internal buttresses strengthen it. Only some of the buttresses are bonded to the wall; they extend 1–1.5 m into the enclosure.

Four gates, each directed to a cardinal point, provide access to the enclosure. Internal square towers flank the gates. Some of the towers have interior chambers, and Bliss postulated that those that appear to have been solid were probably destroyed into their foundations below the chambers. Some of the gates retain their pillars, sockets, and thresholds, which indicate that they had double-wing doors. That a fifth gate, leading to the southeast, may have existed was inferred from Bliss's discovery of two large slabs of stone in the line of the city wall (1900, p. 93). The two streets extending from the gates—the north-south *cardo,* and the east-west *decumanus*—intersected at right angles just south of a large two-part building in the middle of the enclosure.

The western part of the building is square (13.6 m) with exterior walls that are 1 meter thick. Eight rooms that apparently had earthen floors and no exterior windows surrounded a courtyard. The eastern building was separated from it by a hallway. It had four rooms on its eastern side and one room or a columned porch on its south, all of which opened into a courtyard with a large pool. Eight columns originally surrounded the pool in an asymmetrical arrangement; six column bases were found in situ.

Broshi suggests (1977, p. 696) that the western building was a women's house (a *gynaeconitis*), and the eastern one was for men (an *andron*). On the basis of the architectural styles, he proposes a Herodian date for the structure.

[*See also the biographies of Bliss and Macalister.*]

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DALE W. MANOR

K

KABRI, TEL, a large mound of about 80 acres located in the foothills of the western Lower Galilee bordering the Jezreel Valley, 5 km (3 mi.) inland from Nahariya (map reference 1632 × 2681). The site may be ancient Rehob, mentioned in the Egyptian Execration texts and in *Jos.* 19:28. Moshe Prausnitz carried out surveys and soundings for the Israel Department of Antiquities in 1957–1958; and Aharon Kempinski carried out major excavations in 1986–1993 for the Institute of Archaeology of Tel Aviv University, assisted by W.-D. Niemeier of Heidelberg University.

The site, well watered and in a very fertile area, was occupied extensively in the Neolithic period and into the Early Chalcolithic phases. Belonging to this horizon are Dark-Faced Burnished wares of the so-called Wadi Rabah culture.

The third millennium is represented by an Early Bronze IA–B phase (c. 3400–3100 BCE) characterized by large oval houses with central pillars; quantities of typical pottery, including Grain Washed; several rich tombs, one with a radiocarbon date of about 3494 BCE; and a sealing that is Mesopotamian in style and usually found only in EB II–III contexts. The EB II phase exhibits substantial broadroom houses and "metallic" wares that are northern in type.

The Middle Bronze Age saw the maximum expansion of Kabri, exhibiting two phases of fortifications. The first, with a shallow earthen rampart and an inner wall, belongs to MB I. A later phase, of MB II–III date, witnessed the addition of a massive city wall. The MB pottery includes vessels that are Anatolian in type, "North Syrian Painted Ware," and Cypriot imports. Several burials produced scarabs, including one with the name of a Hyksos king, *ykbm.* The most spectacular remains of this phase belong to a large, multiroom palace (no. 607) with a plastered "ceremonial hall" decorated with multicolored floral frescoes on both the floors and walls (more than 2,300 fragments). The closest parallels are from Middle Minoan II Crete (Phaistos); Late Minoan IA Knossos and Thera; and now Tell ed-Dabʿa in the Egyptian Delta. [*See* Dabʿa, Tell ed-.] The destruction of the MB levels may have occurred as early as 1600 BCE.

Later remains belong to the Iron Age, with Cypro-Phoenician and Phoenician pottery. The Iron Age was brought to an end by Assyrian and Babylonian destructions. Persian and Hellenistic occupations are also attested.

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WILLIAM G. DEVER

KAFRANJA, WADI, region of Jordan, located between Wadi el-Yabis and Wadi Rajib, that drains the western face of Jebel ʿAjlun (biblical Gilead), entering the Jordan River at Tell es-Saʿidiyeh. The region is well watered, receiving 300–600 mm (12–23.5 in.) rainfall annually and possessing numerous springs. Cereals, olives, and vines are cultivated on slopes and terraces near the wadi head, and its drier southwestern tail is suitable for grazing. Pine, pistachio, and oak forests cover the ridges dominating the valley. In medieval times iron was mined in the surrounding limestone hills and smelted locally. The sharply dissected topography with elevations up to 1100 m (3,610 ft.) isolate the region from the plains north, east, and south and the Jordan valley to the west.

There have been no systematic excavations in Wadi Kafranja. Qalʿat er-Rabad (map reference 2185 × 1922), built in 1284–1285 at Saladin's behest, is the principal monument. The castle was cleared and repaired during the British Mandate of 1921–1948 (Johns, 1932), but never excavated. In ʿAjlun village (map reference 2213 × 1940) the Department of Antiquities has carried out salvage excavations and the Department of Religious Affairs has restored a Mamluk mosque.

Nineteenth-century travelers visited Qalʿat er-Rabad and extolled the verdure of Wadi Kafranja (Merrill, 1881; Le Strange, 1886; Conder, 1892). Gottlieb Schumacher conducted the first concerted survey around 1900 (Schumacher and Steuernagel, 1924–1926). Nelson Glueck reconnoitered the wadi in 1942, but reported only four sites (1951; pp. 231–235). Augostino Augustinović and Bellarmino Bagatti (1951–1952) explored ʿAjlun village and the highlands east, north, and west, but did not descend into the wadi. Ernst Kutsch (1965) found evidence of ancient occupation at modern Anjara and Kafranja and at sites along the wadi

bottom. Siegfried Mittmann (1970) incorporated this earlier work into a comprehensive study of ancient settlement in northern Transjordan. Wolf Dieter Hütteroth and Kamal Abdulfattah (1977) examined early Ottoman tax records for Wadi Kafranja in a study of the historical geography of the sixteenth-century CE southern Levant. The most recent archaeological survey of the Wadi Kafranja was completed in 1986 (Greene, 1996).

This superbly habitable but rather remote region was settled perhaps as early as the Chalcolithic, if the seven dolmen fields at the wadi's southern end date to that period, and not, as previously believed, to the Early Bronze. Early Bronze occupation in the wadi is well attested (eight sites), but the Middle Bronze is not (three sites). Late Bronze settlement is more widespread than initially supposed (five sites). The Iron Age saw a clear increase in settlement (Iron I, fourteen sites; Iron II/Persian; twenty-nine). There was a sharp decline in the Hellenistic (ten sites) but settlement grew again in the Roman period (twenty-two sites). The Byzantine collapse in the early seventh century was not accompanied by a serious retraction of settlement in Wadi Kafranja. Byzantine (sixteen sites) and Late Byzantine/Umayyad settlement (eleven sites) shows strong continuity and significant ceramic connections with contemporary Jerash nearby. There is a significant and surprising increase in 'Abbasid settlement (twenty sites). Later, the construction of Qal'at er-Rabad, intended to prevent Crusader incursions across the Jordan, enhanced security in the region. The castle was rebuilt in the ensuing Ayyubid–Mamluk period coinciding with the densest occupation (thirty sites). There was a simultaneous expansion of water-powered grist mills in the wadi. Remains of nineteen mills probably dating in this period line the wadi between 'Ajlun and Kafranja villages. Ottoman tax records indicate that at least sixteen mills were functioning in 1596 CE. Only one remained in use after World War II (Greene, 1995).

Wadi Kafranja and sites in it are not mentioned in biblical or other ancient Near Eastern texts, though such mentions are common in medieval Arabic literature (see the article "'Adjlun," in *Encyclopaedia of Islam,* new ed., Leiden, 1960–, vol. 1, p. 208). Ottoman tax accounts name settlements in the wadi corresponding to sites of Ottoman date recorded by archaeological survey.

[*See also* 'Ajlun.]

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JOSEPH A. GREENE

KALAVASOS, village (34°46′ N, 33°18′ E) situated close to the southern coast of Cyprus, halfway between Limassol and Larnaca. The village area has been occupied since the Neolithic period (c. 4500 BCE), but its ancient name is unknown. Brief excavations at Tenta, south of Kalavasos, by Porphyrios Dikaios in 1947 under the auspices of the Cypriot Department of Antiquities revealed the presence of

an Aceramic Neolithic settlement, then dated to 5800 BCE. Since 1976 the Vasilikos valley, centered on Kalavasos, has been the scene of multidisciplinary fieldwork designed to elucidate the sequence of occupation and nature of life in the valley from the earliest Neolithic until medieval times, some nine thousand years. Excavations have been undertaken at four sites, in conjunction with a field survey designed to recover information on the pattern of ancient settlement.

The Aceramic Neolithic village of Tenta, now dated to the seventh millennium, represents the earliest excavated settlement in the valley. Located on a small hill 2.3 km (1.4 mi.) south–southeast of Kalavasos, it consists of a cluster of curvilinear stone and mud-brick domestic buildings (see figure 1), surrounded by an outer settlement wall with a ditch cut in the limestone outside it. The reason for these defensive features and the origin and circumstances of the initial settlers are unknown. The population was small, perhaps fifty people. The dead were buried under house floors and in open areas outside. Stone was used for the manufacture of sophisticated vessels, domestic equipment, and items of personal adornment. Domesticated plants (emmer and einkorn wheat, barley, and lentils) and animals (sheep, goat, and pig) were known to the inhabitants, and fallow deer were hunted. Following the end of the Aceramic Neolithic, the site was reoccupied (c. 4500 BCE) after a considerable gap, but the remains are insubstantial.

The succeeding Early Chalcolithic period (c. 3500 BCE) is represented by the excavated site of Ayious, on the east side of the valley, opposite Tenta. No standing architectural remains were identified, only pits of various types, including several large ones connected by subterranean tunnels. Dikaios located similar pits at nearby Pamboules (site B) in 1947, which he interpreted as pit dwellings. It seems likely that the pits are the extant remains of a settlement that consisted mainly of lightly built structures. Finely painted pottery, ceramic figurine fragments, and domestic stone tools were found within the pits.

The later Chalcolithic period in the valley is known only from scattered surface finds of pottery at several sites. The nature of the succeeding Early Bronze Age remains to be established, but the Middle Bronze Age (c. 1950–1650 BCE) is well represented by numerous excavated subterranean chamber tombs within the confines of the village, especially in the area of the church and mosque. Large numbers of fine pottery vessels, bronze tools and weapons, and stone and faience beads were deposited with the dead. Excavation of a contemporary settlement has not yet been undertaken in the valley, but the field survey attested dense occupation of the Kalavasos region in the early second millennium BCE.

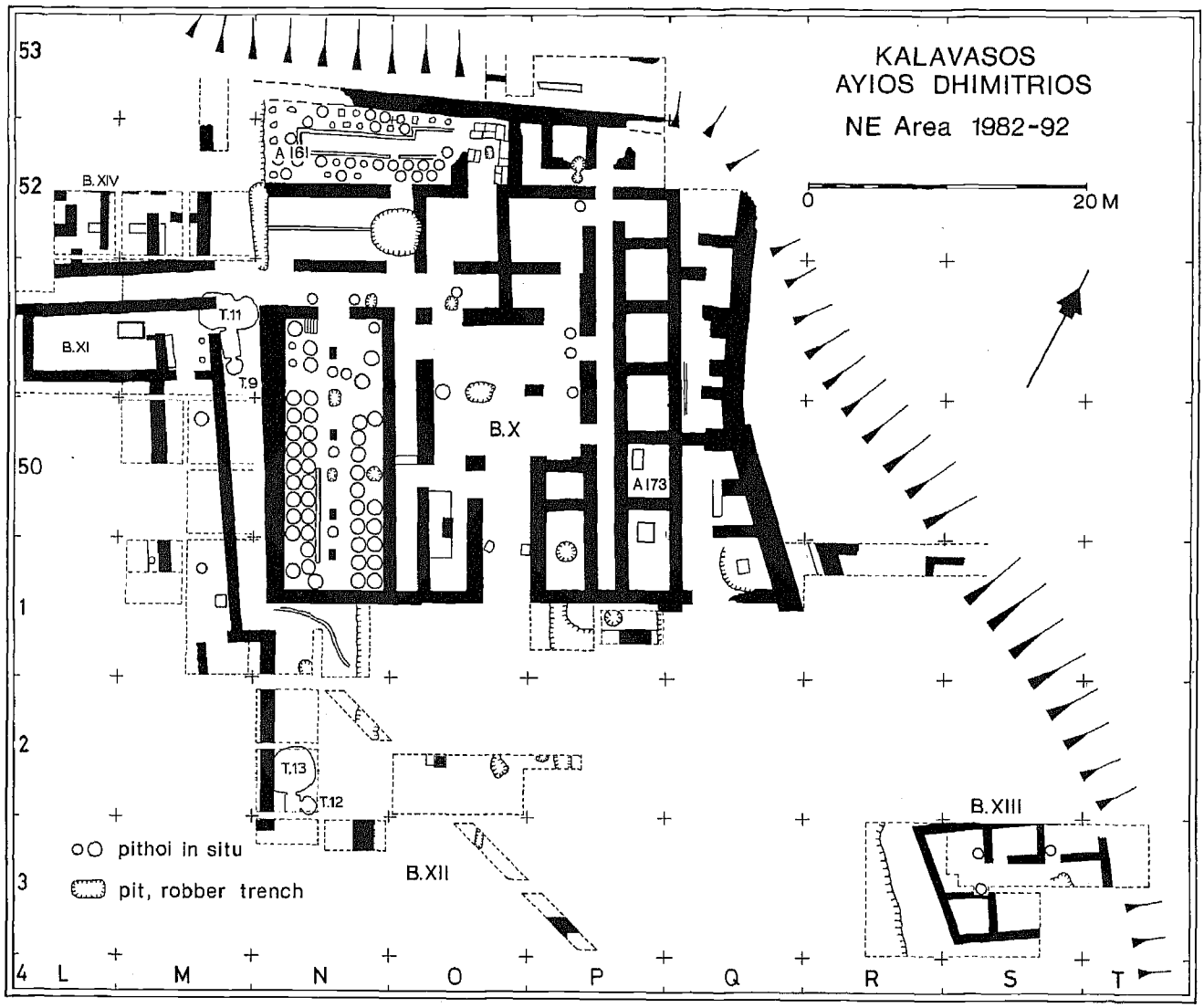
While there may have been a reduction in the density of settlement in the early Late Bronze Age, the large, town-sized settlement of Ayios Dhimitrios south of Tenta is indicative of the urban character of life in the thirteenth century BCE. The site occupies 11.5 ha (28.4 acres) of gently sloping ground overlooking an easy crossing of the Vasilikos River from its western side. The location is strategic because it also lies at the junction of two major routes—east–west along the southern coastal region of the island, and north–south from the copper mines north of Kalavasos down to the coast. In view of the known importance of copper in the LB economy of Cyprus, it can scarcely be doubted that the

KALAVASOS. Figure 1. *Kalavasos-Tenta.* Architecture on the upper part of the site, from the south-southeast. (Courtesy I. A. Todd)

Kalavasos mining region was of considerable significance for its copper deposits at the time Ayios Dhimitrios was occupied. The field survey did not prove beyond doubt the LB utilization of the Kalavasos mining area, but Bronze Age remains have been found within 500 m of the mining zone.

Initial excavations were undertaken at Ayios Dhimitrios within the line of the Nicosia–Limassol highway that has obliterated the settlement's central sector. Rectilinear structures (100–600 sq m in area) were found, fronting onto long, straight streets. Subsequent excavations at the north end of the site revealed a palatial complex, called building X. The plan of this square structure (30.5 m across) is tripartite around a central courtyard (see figure 2). Extensive use of finely cut, large stone blocks was made in the outer walls, and the building probably had an upper story. The most impressive architectural feature is a rectangular hall, with a central row of stone pillars to support the roof, used for storing olive oil (and perhaps other commodities) in rows of very large storage jars (pithoi). The fifty pithoi in the main hall had an estimated capacity of 33,500 liters (see below). The building's character is clearly public rather than private; an administrative purpose may be supported by the discovery within and adjacent to it of a number of small clay cylinders with signs inscribed in the Cypro-Minoan script, indicating a literate clientele.

Immediately west of building X, excavation revealed parts of another building (XI) in which olive oil was probably manufactured. A very large stone tank was set into the floor of one room, and gas chromatography analyses of its interior face suggested that it had contained olive oil, as was the case



KALAVASOS. Figure 2. *Kalavasos-Ayios Dhimitrios.* General plan of building X and adjacent areas. (Courtesy I. A. Todd)

with some of the pithoi. Crushing and pressing equipment has not yet been found.

A series of rock-cut chamber tombs was also found within the settlement area; in the most significant of these, tomb 11 (c. 1375 BCE), three young women, a young child, and three infants were buried together with quantities of fine imported and local pottery, gold jewelry, and other exotic grave goods; the latest skeleton was found completely intact, with its associated grave gifts in situ. The apparent wealth of the inhabitants of Ayios Dhimitrios seems to have been derived from copper trading and olive-oil manufacture.

[*See also* Olives.]

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IAN A. TODD and ALISON K. SOUTH

KAMID EL-LOZ, tell located at the southeastern edge of the Lebanese Biqa' (Bekaa) Valley, north of the modern road that branches off the north–south road from Qabb Ilyas to Mashgara, leading eastward via Jubb Jannin and joining the southbound road from Masna to Rashaya. Kamid el-Loz is strategically located at the place where two ancient main roads cross: the old road going from the Upper Jordan Valley through Wadi-at Taym, crossing the Biqa' into Syria, and another one from the Phoenician coast. Tell Kamid el-Loz is one of the largest (300 × 240 m) and highest (26 m) settlement hills in the Biqa'. Two springs are in close proximity to the tell: one to the north, the other at its western edge.

As early as 1897, A. Guthe suggested that the modern name of Kamid el-Loz implied that of ancient Kumidi. Egyptian sources of the second half of the second millennium BCE mention a location KMT *(Ku'-m'-t),* or Kumidi, several times, most probably an administrative center, that of a *rabu* (ruler) of an Egyptian province in Asia. This identification was confirmed in 1969 by the discovery of four clay tablets (followed by more between 1972 and 1978, letters written by the Egyptian pharaoh to the *rabu,* in which it is clear that Kumidi is a city in the southern Biqa' and that it is located at a cultural crossroad. This applies perfectly to Kamid el-Loz, the only tell in the southern Biqa' that meets all the requirements established for Kumidi.

In 1954, Arnulf Kuschke identified the site of Kamid el-Loz and began excavating it in 1963. Fieldwork between 1963 and 1965 was carried out by joint expeditions from the Universities of Johana Gutenberg of Mainz and the University of Saarbrucken, directed by Kuschke and Rolf Hachmann, respectively. Between 1964 and 1981, the University of Saarbrucken alone assumed the work. The excavation continued for six years into the Lebanese civil war (with the exception of the years 1975 and 1976) and closed prematurely in 1981. Since then, treasure hunters with bulldozers have destroyed the fragile architectural evidence and stratification of the second- and third-millennium town. Prior to 1981, excavation had cleared an area of 5,700 sq m.

The earliest archaeological remains cover the bedrock at the northern edge of the tell. They revealed an Early Neolithic settlement yielding plain Neolithic pottery, a few clay idols, and numerous lithic tools. The Chalcolithic level has not yet been found. All that is known about the existence of an Early Bronze Age town are some pottery sherds found out of context in later strata. The Middle Bronze Age was excavated over an area of 2,400 sq m. A number of urban settlements were uncovered whose size, building materials, and building techniques were superior to those of later periods. This probably indicates a politically more important settlement than any of the later Late Bronze Age towns. A fortified city wall was cleared on the tell's northern and eastern slopes. The location of the MB palace and temples is known; they lie, unexcavated, underneath the LB palace and temple.

The excavations concentrated mainly on the Late Bronze Age city, which was cleared for 3,800 sq m. A city wall surrounded the LB city. The temple was located in the northwestern part of the tell, separated from the palace by an esplanade that opened onto a street leading outside the city. The temple was destroyed and rebuilt four times. The distinctiveness of this temple is its double court. The western court was paved with mud-brick blocks and had three rectangular basins lined with plaster, probably used for sacrifices. Four temple models were found in the court. An annex

to the temple consisted of two rooms where large number of clay vases and bronze figurines were found. The LB palace was located south of the temple. Like the temple, the palace was destroyed and rebuilt five times. The mud-brick walls of the entrance hall were preserved to a height of more than 3 m.

Only one building was excavated to the east of the oldest palace. Tombs of three people with rich funerary material, were found beneath it; it was probably the site's royal cemetery. [*See* Grave Goods.]

To this same period belong beautiful ivory objects and six Amarna tablets. [*See* Amarna Tablets.] Following this period, the city remained uninhabited for a time. An area of 4,400 sq m was excavated from the Iron Age I period. It yielded eight superposed levels of nonfortified villages consisting of small, irregular houses of one to two rooms, built out of wood. Poor residential materials were found inside. No Phoenician remains from the Iron II period were found. The excavator indicates that period could be present in the southern, unexcavated part of the tell. In the Persian period the deserted northwest sector of the tell was used as a cemetary. Modern occupation of the site covers part of the Persian, Hellenistic, and Roman cemeteries.

[*See also* Phoenicians.]

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LEILA BADRE

KANEŠ (or Neša; mod. Tk., Kültepe [ashmound] and Karahöyük, the latter the name of a small village near the mound), site situated 21 km (13 mi.) to the northeast of Caesarea (modern Kayseri), the capital of the Cappadocian kingdom. The site is at the junction of several natural roads: an east–west road coming from Sebasteia (modern Sivas), a southeast–west road via Malatya, and a south–north road from Cilicia. This strategic location increased the importance of Kaneš in the commerce of the ancient world and is one of the main reasons it became one of the trading centers of ancient Syro-Mesopotamia.

Kaneš consisted of two parts; a city mound *(tepe)* and a lower city (*karum* or trade center in Assyrian terminology). The city mound includes an inner citadel and the areas in which the palaces and temples of the kings were built. The mound rises 20 m above the Kayseri plain and contains a series of occupation levels. With a diameter of 550 m, it is among the largest mounds in central Anatolia. Surrounding the mound and rising 2–2.5 m above the plain, and with a diameter of up to 3 km (2 mi.), is the lower city of Karum Kaneš, the center of the system of Old Assyrian trading colonies in Anatolia.

Kaneš is 124 km (77 mi.) from the Hittite capital Ḫattuša (Boğazköy) and 73 km (45 mi.) to the south of Alişar (ancient Ankuwa). The city mound of Kaneš had a long existence, while the Karum Kaneš only lasted for about three hundred years—it was founded much later than the site on the mound and was abandoned much sooner.

Kaneš-Kültepe became known in the archaeological literature when the first cuneiform tablets were found there in 1871. Ernest Chantre undertook the first excavations on the mound in 1893–1894. In 1906, Hugo Winckler and also Hugo Grothe carried out brief excavations on the mound only. In 1925, Bedrich Hrozny conducted excavations both on the mound and in the lower city for one season. He succeeded in discovering about one thousand tablets. The finds identified the center as Karum Kaneš, which had been suggested by Benno Landsberger as early as 1924.

Systematic excavations by a team under the direction of Tahsin Özgüç began in 1948 on behalf of the Turkish Historical Foundation and the General Directorate of Monuments and Museums; they are still underway regularly. Both the mound and the *karum* were excavated in parallel projects and yielded important monuments, now in the process of being restored.

Karum. The *karum* of Kaneš consists of four levels (I–IV): the upper level contains two phases, Ia and Ib. Levels IV (built on virgin soil) and III belong to the very beginning of the Middle Bronze Age (c. 2000–1920 BCE). They did not yield written documents, but the entire area of the *karum* was built up in both levels. The pottery used in these levels was monochrome wheelmade ware found side by side with handmade polychrome ware.

The most spectacular era at Kaneš is represented by *karum* level II (1920–1850 BCE), established in the period of the Assyrian king Erishum I, and the following phase of *karum* Ib (1800–1750 BCE). Level II was destroyed by a heavy conflagration in about 1850 BCE, in the time of the Assyrian king Puzur-Ashur. After an interval of at most two generations, the town of level Ib was established on the ruins. From historical and archaeological perspectives, the discoveries from these levels reveal two facts of major importance: cuneiform tablets record the beginning of Anatolian history, and the very lively commercial and cultural relations that existed among Anatolia, Mesopotamia, and North Syria, stimulated the development of native Anatolian art.

Karum level II presents a town with stone-paved streets, below which run functional drainage channels, and open spaces that mark divisions into various districts.

The *karum* of Kaneš in levels II and Ib was surrounded by a fortification wall whose diameter is the largest in the Near East.

In the period of the Assyrian trading colonies (levels II and Ib), Kaneš was a very strong city protected by two con-

KANEŠ. *Beak-spouted pitcher.* From level II; red slipped and highly polished. Note the pair of horses set on the wide band handle, which tend to be light brown in color. Height, including horses, is 26 cm. Museum of Anatolian Civilizations, Ankara. (Courtesy T. Özgüç)

centric fortification systems, the center of the kingdom of Kaneš.

In houses of two, four, or six rooms, most of them two-storied, tablets in Assyrian were found, in archives mostly belonging to Assyrian and, in fewer instances, to native merchants, on top of regularly aligned jars, boxes, rush matting, and bags and on wooden shelves. Fourteen thousand tablets and envelopes were discovered between 1948 and 1992. Because the fire that destroyed the city started very suddenly, the people of the town could just save their lives; all their belongings that were fireproof remained in place until they were excavated. Pottery in the Hittite style and cult objects in the shape of animals sacred to the gods—bulls, lions, eagles, antelopes, rabbits, and boars—reached a high level of development in this period. [*See* Hittites.]

In layout, *karum* level Ib follows that of level II, in which building techniques and plans are native Anatolian. In level Ib, in contrast to level II, commercial relations with Aššur weakened, while trade within Anatolia gained momentum. As in level II, ivory, bronze, faience, silver, lead, stone, and terra-cotta figurines of gods and goddesses and stone molds for their manufacture were discovered in houses and in tombs. These are the first examples of native Anatolian style. They became the source of the Hittite style that developed later in central Anatolia. In level Ia, Kaneš declined in importance, written records disappeared, and evidently trade relations were cut. The *karum* of Kaneš was not subsequently occupied.

In every level at Kaneš the dead were buried below the floors of the houses in pits, jars, or stone cists. The funeral gifts were rich and varied. Figurines imported from northern Syria and Mesopotamia, in metal and terra cotta, expand the evidence provided by tablets and cylinder seals to refine the dating for this period.

One of the richest groups of finds from the Assyrian trading colony period represented at Kaneš level II (1920–1840 BCE) is the glyptic group—cylinder seal impressions on baked clay envelopes containing tablets and on bullae. These seal impressions, clearly reflecting the cosmopolitan character of the trade with foreign peoples, are in Ur III Neo-Sumerian, Old Babylonian, Old Assyrian, and Old Syrian styles. Among the styles represented, Kaneš's native Anatolian group takes a very important and very informative place. Executed in a highly individual style, they consist of representational scenes executed in fine detail: processions of deities standing on sacred animals and hunting or war

KANEŠ. *Clay drinking vessel in the shape of a lion.* From level II. Filled through the spout located on its back, the outlet for the liquid was through an opening in the mouth. Length 21 cm, width 17.8 cm. Museum of Anatolian Civilizations, Ankara. (Courtesy T. Özgüç)

scenes. The surface of these seals is filled with multiple motifs and symbols. Stamp seals, which are typical of Anatolia, and appear in every level at Kaneš, reached their true development in levels II and Ib. With the end of the Assyrian trading period at Kaneš, cylinder seals went out of use. [*See* Seals.]

Mound. Excavations on the mound went down to the final phase of Early Bronze Age I, distinguishing a total of eighteen building levels. The final phases on the mound are two Roman building levels (1–2) and one Hellenistic level (3). At that time Kültepe was a small town overshadowed by Kayseri. A major part of the *karum* of Kaneš had become the site of the cemetery. Levels 4–5 represent the Late Hittite period. Kültepe then was the center of one of the kingdoms allied to the land of Great Tabal. In the tenth–eighth centuries BCE, Kültepe maintained a strong position, but toward the end of the eighth century BCE it was conquered and destroyed by the Assyrians, who shattered its hieroglyphic stelae, statues, and sculpted orthostats.

The concordance of the Middle Bronze Age levels on the mound and in the *karum* follow:

mound	*karum*
6	Ia
7	Ib
8	II
9	III
10	IV

In levels 7 and 8 a series of five royal rulers (one of them a queen) are known by name; they had palaces and temples that were built both on the inner citadel and in the surrounding area. Tablets from the palace archives reveal that one of those palaces belonged to Waršama son of Inar, king of Kaneš. It is evident that palaces in that period were built like Old Babylonian palaces, but temples were built in the native Anatolian style. [*See* Palace, Temples, *article on* Mesopotamian Temples.] A spearhead with an Akkadian inscription by King Anitta, who ruled over Neša, found in the official storage building of the Anitta palace, was the first authentic historical document found in situ at Kaneš.

Levels 11–13 represent the Early Bronze III period, an important prelude to the Assyrian trading colony era. Kaneš, equipped with monumental buildings, had developed extensive economic and cultural connections with Mesopotamia and North Syria, to which imported cylinder seals, pottery, and metal objects testify. Alabaster figurines of goddesses and gods, characteristic of this period, were discovered in the inner sanctum of temples and in tombs. Levels 14–17 represent Early Bronze Age II. Level 18 is the final phase of Early Bronze I.

[*See also* Kültepe Texts.]

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TAHSIN ÖZGÜÇ

KARATEPE PHOENICIAN INSCRIPTIONS.

Karatepe, a Neo-Hittite walled town overlooking the Ceyhan River, is situated approximately 100 km (62 mi.) northeast of Adana in Cilicia, Turkey. It was discovered in 1946 by the German archaeologist Helmuth T. Bossert, and a Turkish team began a series of excavations there in the following year. Those excavations and a meticulous restoration project culminated in the creation of an open-air museum at the site.

Karatepe basically consists of a walled enclosure approximately 1 km in circumference with two monumental gates. The lower part of the two gates is comprised of orthostats covered with bas-reliefs and inscriptions in Phoenician and hieroglyphic Hittite (Luwian). The Phoenician text appears in three places: there are two identical texts on each of the gate structures and a third, which is slightly different, on the statue of a divinity. Each gate also has a hieroglyphic version. Upon discovering the Phoenician inscriptions, Bossert sent copies to a dozen Semitic scholars, each of whom published a translation. Bossert himself began translating the more difficult hieroglyphic text, a task eventually completed in 1974 by Franz Steinherr, one of his students.

The author of the inscriptions, a certain Azatiwada *('ztwd),* identifies himself as a vassal of Urikki, king of the Danunians *('wrk mlk Dnnym).* He refers to the blessings he has brought to the Danunians, inhabitants of the Adana plain, while keeping Urikki's descendants on the throne. Thus, he appears to have played the role of a kind of palace prefect. He boasts of the part he has played in maintaining peace in the region, particularly by constructing a citadel, which he named after himself (Azatiwada), on the orders of the gods Baal and Rašap (Resheph), in whose honor he has

established sacrifices. The inscription ends with a prayer to the gods to bless him, the city, and its inhabitants and with curses on anyone attempting to destroy his work.

These inscriptions are not without problems, one of the most crucial of which is their date. Indeed, the only indication of a specific time period is the mention of Urikki, the vassal of the Assyrian king, in the annals of Tiglath-Pileser III (738, 732 BCE) and in a letter found at Nimrud dating to 709. Because the inscriptions had to have been written after Urikki's death, they are probably from the very end of the eighth century, which would correspond to the paleographic analysis of the Phoenician text. Because the archaeological data appear to indicate an earlier date for the fortress (ninth century BCE), a great deal of debate has centered around this apparent discrepancy. The later date is now generally accepted for the inscriptions and the earlier one for the fortress. It is hypothesized that Azitawada constructed his citadel on the remains of previous construction. Nevertheless, the historical context remains unclear: the absence of any mention of Assyria is particularly surprising; it apparently implies a period of Assyrian retreat after the death of Sargon II (705).

These inscriptions are significant because they constitute the longest known Phoenician text to date. With the Kilamuwa inscription at Zincirli and the Cebel Ires Dağı inscription, they reveal the status of Phoenician as an international language in Anatolia from the ninth to the seventh centuries BCE. The fact that the inscriptions are in two languages proved to be instrumental in deciphering the Hittite hieroglyph. Finally, they provide information about the Luwian pantheon in this period and the functional parallels in the Phoenician version.

[*See also* Hittite; Luwians; Neo-Hittites; *and* Phoenician-Punic.]

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FRANÇOIS BRON

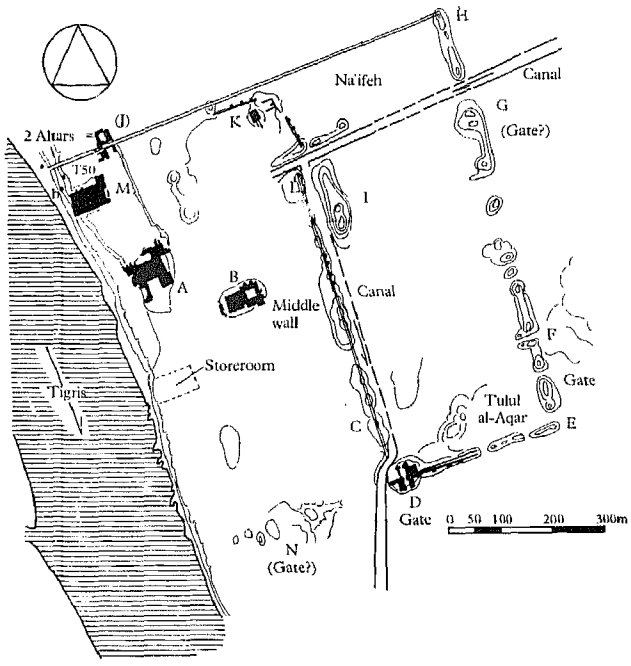
Translated from French by Monique Fecteau

KAR-TUKULTI-NINURTA. Site located about 3 km (2 mi.) north of Aššur in northern Iraq, on the east bank of the Tigris River. Since 1960, two villages have appeared within the old ruin: Tulul al-ʿAqir (its official modern name) and Naʿifeh. Serious archaeological work at the site was carried out in winter 1913–1914 by the architect Walter Bachmann, a member of Walter Andrae's team at Aššur. The identification of Tulul al-ʿAqir with ancient Kar-Tukulti-Ninurta, a residential city founded by the Middle Assyrian ruler Tukulti-Ninurta I (1233–1197 BCE), already suggested by Friedrich Sarre and Ernst Herzfeld (1911), was proved by the several foundation tablets Bachmann excavated. Unfortunately, Bachmann did not write a final report and the original field notes were considered lost. Based on the existing original plans and maps, it was at least possible for Tilman Eickhoff (1985) to publish a summary of Bachmann's work. Fieldwork under the direction of Reinhard Dittmann sponsored by the German Research Foundation was reopened at the site in 1986 and continued in 1989. The original data belonging to the early campaign were recovered in 1992, in Dresden, Germany. [*See* Aššur; *and the biography of Andrae.*]

The site is about 500 ha (1,235 acres) in area (only 250 ha, or 617 acres, have been surveyed and mapped thus far). The site's western limit is defined by the Tigris; its eastern one must be next to a large Middle Assyrian channel running parallel to the river that enters the plain about 25 km (16 mi.) to the north. The ruin's northern limit cannot be defined today because of recent leveling activities; the southern city wall was not traced until 1989. The city was subdivided into several quarters: an official royal-administrative one, separated from the others by a fortification wall and further subdivided by a smaller wall into western and eastern sections. This complex could be entered through at least four gates (figure 1: D, F, G, N). The western quarter, on the bank of the Tigris, includes the palace and temples. The eastern part is as yet functionally unidentified and partly overlaid by the two recent villages.

Of the original palace complex (minimum measurements 320 × 150 m), only two parts have been excavated so far. The so-called North Palace (figure 1: M) was accessed from a courtyard or an open space to the north through a monumental entrance that led to the representative rooms; this plan foreshadows the later Neo-Assyrian reception suite layout, in which access is given to a large unexcavated area, perhaps to a courtyard (or more than one) ending in a huge terrace originally about 18 m high (see the South Palace, figure 1: A). Fragments of elaborate wall paintings on the flanks of the eroded terrace indicate the former importance of the rooms on the top; assuming two stories, they were almost the same height as the top of the neighboring ziggurat of the Aššur Temple (see figure 1: B, i.e., about 30 m high). South of the terrace are industrial-like installations.

Recent surveys, south of the terrace, makes likely the existence of a large (165 × 120 m) unexcavated structure. About 60 m north of the North Palace, recent excavations unearthed parts of another large complex with a room or courtyard paved with unique rhomboid bricks. The walls



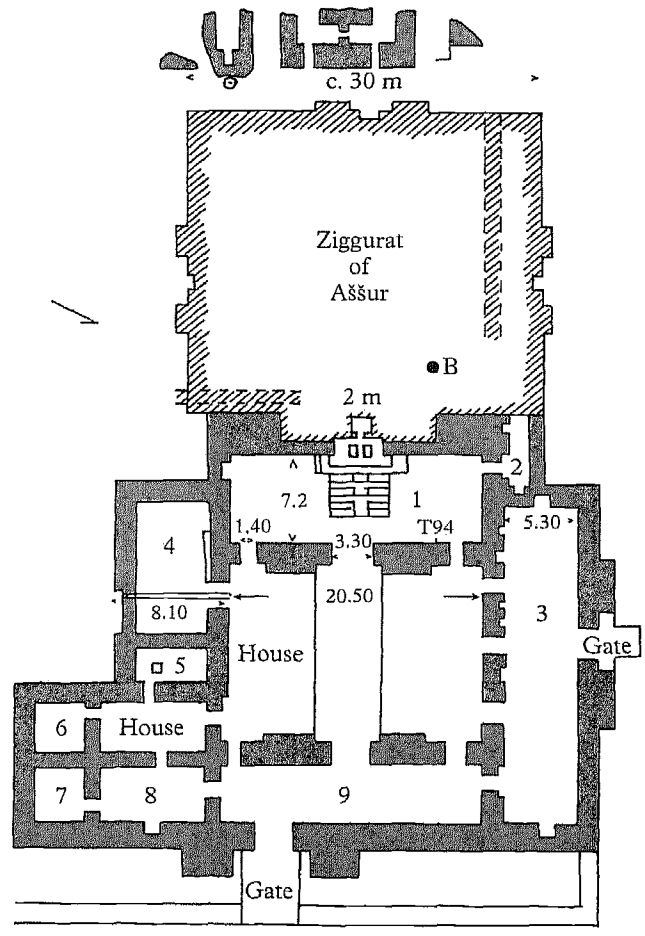
KAR-TUKULTI-NINURTA. Figure 1. *The official section of the town.* (Courtesy R. Dittmann)

had been decorated with glazed tiles in green and yellow, with frit panels with palmette motifs. The only large fragment found has a direct, contemporaneous parallel in the area of the Ishtar Temple at Aššur; in light of the three votive altars found in the immediate vicinity, this structure might be another temple and not part of the palace, as the stamps, marked É. GAL, on the bricks suggest. In the northeast corner of the western official part, a small (18.5 × 20 m), towerlike structure of unknown function has been excavated (figure 1: K).

The Aššur Temple with its ziggurat (figure 1: B, figure 2; measuring 30 × 30 m) at the base) is located immediately to the southeast of the terrace of the South Palace. The niche of its cella, whose layout is somewhat Babylonian, offers some enigmatic installations that could belong to a wood-panel construction once perhaps decorated with paintings. Because in the 1913–1914 excavations no other temple was found or traced on the ruin, the structures found in 1989 have now altered the assumption that the large oblong room next to the cella is the place where the gods mentioned in the texts (see Freydank, 1976–) as worshiped at Kar-Tukulti-Ninurta (in addition to Aššur: Adad, Shamash, Ninurta, Nusku, Nergal, Sebittu, and Ishtar), were assembled in the form of votive altars. Access to the ziggurat is unclear. Andrae and Bachmann identified a small structure west of the ziggurat as a staircase building from which, via a bridgelike construction, the first level of the ziggurat could be reached. Another hypothesis, based on the evidence of Tell er-Rimah (possibly ancient Karana), envisions access via the roof of the temple. [*See* Rimah, Tell er-.] The Aššur Temple at Kar-Tukulti-Ninurta has no staircase, and the possibility that there was no real access to the Middle Assyrian ziggurat needs to be considered. This would also be in harmony with the Aššur-Enlil Ziggurat at Aššur. [*See* Ziggurat.]

About 250 m north-northeast of the North Palace, a new small temple was excavated in 1989 at an elevation called Tell O. The deity worshiped is as yet unidentified; it is also unclear whether this structure belonged to the administrative sector of the city, to a residential area, or the suburbs. Midway between this temple and the palace is an area (about 150 × 150 m) with a dense concentration of pottery and a lot of grinding-stone fragments. The finds may indicate a grain-manufacture and storage unit, such as mentioned in the texts. Traces of large structures are found in the vast southern parts of the city along the channel, surely the place where the king settled the different peoples exiled there following his campaigns in neighboring countries.

It has been assumed that after the violent death of Tukulti-Ninurta I the ruin was either completely deserted or was no more than a hamlet. Survey evidence, as well as a critical



KAR-TUKULTI-NINURTA. Figure 2. *Plan of the Aššur temple with ziggurat.* (Sketch by W. Bachmann)

examination of the historical sources, shows that there was a brief interruption in the use of most of the public buildings (with the exception of the new temple in Tell O, which continued to be in use for a short time) and that in the one-year reign of Ninurta-Tukulti-Aššur (1133 BCE) parts of structures had been pulled down. So-called Ishtar hands, found in some quantities especially in the South Palace, attest to a partial reuse of the ruin in the ninth century BCE. Important traces of a Neo-Assyrian occupation have mostly been found in the official sector of the town (figure 1: J? and newly excavated areas). Historical records mention at least two official administrators of the town at the end of the ninth and the second half of the eighth centuries BCE. No traces of a post-Assyrian occupation have yet been found, with the exception of a few Parthian sherds and some medieval pottery.

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KASSITES. A tribal people of unknown origin, the Kassites (Kaššu) are attested mainly in Babylonia and western Iran in the second and first millennia BCE. Apart from Kassite-Akkadian bilinguals and Kassite onomastica (Balkan, 1954, pp. 2–4), a Kassite presence in Babylonia is deduced from textual references to a "land of the Kassites" (Kessler, 1982, p. 57, no. 1), a "king of the Kassites" (Brinkman, 1976, p. 405), a "Kassite" dynasty (Babylonian king list A), and certain individuals designated as Kassite in administrative records.

The Kassite dynasty (fifteenth–twelfth centuries BCE) is bracketed by two "dark ages" which obscure what is known of its rise and the aftermath of its fall. Though often dismissed as a reign lacking in cultural identity, Kassite rule brought an extended period of relative political stability and economic prosperity to a unified Sumer-Babylonia, which attained international prestige, ranking with Assyria, Ḫatti, and Egypt in the Amarna correspondence of the fifteenth–thirteenth centuries BCE. [*See* Amarna Tablets.] The culture and literature of Babylonia, promoted by the Kassites in an effort to legitimize their rule at home, spread throughout the Near East, along with the widespread adoption of Babylonian as the language of diplomacy.

History. Texts of the eighteenth century BCE provide the first references to individuals and groups of Kassites linked primarily with Sippar and its tribal environs. As agricultural laborers and militiamen, these early Kassites appear in collaboration, but also in confrontation, with the Babylonians. By the end of the Old Babylonian period, a Kassite is attested as far west as Alalakh in the Orontes valley; their main concentration lay on the Middle Euphrates and Khabur river valleys, near Khana and Terqa. This area was ruled by a king with the Kassite name of Kashtiliashu, who may have been a Babylonian vassal (Podany, 1991–1993, p. 60, n. 60).

From the region of Khana, the Kassites gained control of northern Babylonia following the decline of the first dynasty of Babylon in the early sixteenth century BCE. With the departure of the Sealand kings and the conquest of their territories, the Kassites then ruled over a united Sumer-Babylonia between about 1475 and 1155 BCE. Most of what is known about the Kassites of this period relates to the ruling dynasty.

According to the Babylonian king list A, the Kassite dynasty consisted of thirty-six kings who, with minor interruptions, reigned an unprecedented 576 years. Little is known of the earlier kings until the reign of Agum II. In an inscription known from a later copy, which may be a scribal forgery, Agum II is said to have returned the statues of Marduk and his wife from Khani to Babylon twenty-four years after their removal by the Hittites in about 1595 BCE (middle chronology). The first Kassite monarch to rule the north as king of Babylonia was Burna-Buriash I (c. 1510 BCE), but it is not until the late fifteenth century BCE that there are contemporary sources for the Kassite kings. Royal inscriptions and the Amarna letters, dating largely between 1402 and 1347 BCE, document the intensification of international relations between Egypt and Babylonia—from the initial exchange of ambassadors and gifts under Kara-indash (c. 1415 BCE) to diplomatic marriages and large-scale trade during the reign of Burna-Buriash II (1359–1333 BCE).

The early years of Sumero-Babylonian unification and the establishment of the Kassite dynasty were marked by extensive building programs, associated in particular with Kara-

indash and Kurigalzu I (c. 1390 BCE). With proceeds obtained largely from international trade, major restoration and reconstruction were undertaken in several old Sumerian cities, notably at Ur, Eridu and Uruk. A fortified capital or royal residence was erected at Dur Kurigalzu/ʿAqar Quf on the outskirts of modern Baghdad, presumably to defend the capital at Babylon against Assyria or Elam. With the decline of Mitannian hegemony in the mid-fourteenth century BCE, Babylon extended its boundaries northward to Kirkuk, where Kassites made up approximately 2 percent of the population in and around Nuzi (1440–1340 BCE), whose records provide the oldest archival corpus of Kassite onomastica. [*See* Mitanni.]

During the reign of Burna-Buriash II, the Kassite dynasty ranked among the major powers of the Near East, its monarch hailed internationally as a "Great King" and his family linked by diplomatic marriages to the courts of Ḫatti, Egypt, and Assyria, where the influence of Babylonian language, religion, and customs is apparent.

After 1335 BCE, the equilibrium was upset by occasional conflicts on the northern and eastern frontiers, with Babylonian incursions into Assyria and Iran and vice versa. A short-lived Assyrian interregnum under Ashur-Uballit I was followed by Tukulti-Ninurta I's more major conquest of Babylonia (c. 1225–1217 BCE), which recovered its independence before the Elamite invasion by Shutruk-Nahhunte brought about the end of the Kassite dynasty in about 1155 BCE. The deportation of prisoners and booty accounts for the presence of Kassites in northern Mesopotamia from the late thirteenth century BCE. They are still attested serving in various capacities in Neo-Assyrian records of the first millennium BCE. At this time, monarchs with Kassite names reigned in the northerly regions of Allabria and Na'iri. Large concentrations of Kassites had been settled to the east in the Namri (Namar)-Habban area, which fell under Assyrian influence in the ninth century BCE.

After the fall of the Kassite dynasty in the mid-twelfth century BCE, Kassites continued to reside in Babylonia, where they appear to have been fully assimilated. They bear Babylonian names and hold high governmental posts, until at least the ninth century BCE. Monarchs of Kassite descent occupied the throne under the second Sealand and Bazu dynasties in the late eleventh and early tenth centuries BCE. At that time, when trade relations to the west and north of Babylonia were being disrupted by the Arameans, there were close artistic and economic connections between Babylonia and the people living in the area of the Zagros Mountains, on either side of the Baghdad-Kermanshah road. It is there, in the piedmont hills of eastern Iraq and western Iran, that the majority of Kassites settled in the first millennium BCE. A warlike tribal people, they retained their independence from the Neo-Assyrian period through to Achaemenid and Hellenistic times, when the main textual sources are in Greek or Latin (Brinkman, 1968, 1972, 1976).

Language and Literature. Knowledge of the Kassite language and its syntax is limited, based as it is on bilingual lists and scattered references to Kassite deities, names, terms, and words. From what is known, it bears no relation to any other language or language family. Archives and texts dating to the Kassite dynasty have been found at numerous sites on the Middle Euphrates (Terqa); in the Hamrin (Tell Mohammed, Tell Imlihiye, Tell Zubaydi); in Sumer-Babylonia (Ur, Larsa, Uruk, Isin, Nippur, Babylon, Dur Kurigalzu, Sippar); at Susa; and on both Failaka (Kuwait) and Bahrain (Qalaʿat al-Bahrain). The bulk, largely unpublished, are written in Middle Babylonian and concern economic life. Dedicatory building inscriptions were, by contrast, written in Sumerian. [*See* Sumerian.] These, the letters, and the royal inscriptions (notably from Dur Kurigalzu) shed light on international affairs, the conventional titulary of the Kassite monarchs, and their public display of power and piety through major building projects. Boundary stones *(kudurru)* from the final quarter of the dynasty inform on the tax structure and provincial administration under Kassite rule.

In addition to restoring and maintaining national shrines, the Kassite kings also promoted the collection, composition, and recording of literary works, which were stored in temple libraries, such as those largely preserved at Ur, Uruk, Nippur, Babylon, and Sippar. Some of these were looted by Tukulti-Ninurta I, following his sack of Babylon in the thirteenth century BCE. It appears that many of the standard literary works found in the later Neo-Assyrian libraries of the seventh century BCE are copies of Kassite originals and compilations. Scribal families of the first millennium BCE claimed descent from famous Kassite forebears, one of whom, Sin-leqe-unnini, is credited with the authorship of the eleven-tablet Epic of Gilgamesh found in Ashurbanipal's library at Nineveh.

Sociopolitical Structure and Settlement Patterns. As ruler of a unified Sumer-Babylonia, the Kassite monarch replaced the old political structure of city-states with a national state and surpassed his predecessors in international prestige. In what appears to have been an attempt to appease the ancient Sumerian centers, the Kassite monarchs (who bore Kassite names until the reign of Kudur-Enlil [1254–1246 BCE], when some assumed Babylonian names) adopted Babylonian titulary, customs, religion, and language.

For much of its rule, the Kassite monarchy was dominated by a single family; the normal succession being father–son, but fraternal succession may also have occurred. The Amarna correspondence demonstrates that the palace engaged in foreign trade—though the extent of its involvement is uncertain—and royal participation in military maneuvers—which then incorporated the horse and chariot—is also attested.

Information on the government bureaucracy, provincial administration, and taxation derives mainly from *kudurrus*

(boundary stones) of the last quarter of the dynasty. The individual provinces were governed by a *šaknu*/*šaknu mati* (governor/governor of the land) or, in the case of Nippur, the *šandabakku* (a unique title for the governor of Nippur), but little is known of their duties or the extent of their jurisdiction. Private ownership of land was recognized by the crown. Exemption from taxes in kind, corvée, and military service was normally obtained only by royal decree, which may have been granted to certain religious cities (e.g., Babylon) at this time.

Apart from the ruling dynasty, little is known of the Kassite aristocracy or the Kassite component within the population of Babylonia. Kassite social structure was tribal, based on a unit called House of So-and-So, after an eponymous ancestor. Each house or clan, comprising persons related in the male line, involved up to several villages with considerable agricultural land and was headed by a *bēl biti* ("lord of the house"). The Kassite tribal organization is best attested between 1200 and 850 BCE. There are, however, references to Kassite "houses" in the eighteenth century BCE, suggesting the existence of similar social units on the outskirts of Old Babylonian cities. These units seem to have retained their social structure throughout the period of the Kassite dynasty. The prominence of relatively small clan and tribal units in Kassite society may account for the steady rise in the percentage of small nonurban settlements (e.g., Tell Zubaydi) and the decline in urban complexes in Babylonia during the Late Bronze Age.

Economy. The extensive building and restoration programs undertaken by the Kassite monarchs in the fourteenth and thirteenth centuries BCE were largely financed by trade, in particular with Egypt. In its age-old role as middleman, Babylonia prospered at the center of a complex network of commercial contacts that spread throughout the Near East and beyond to the Aegean, as well as to present-day Afghanistan. Babylonian textiles, horses (steeds), and chariots were sent west to Egypt with transhipped luxury items such as lapis lazuli in exchange for gold and precious stones. The textual evidence for far-flung trade during the Amarna period is borne out in the archaeological record by the discovery of a Babylonian cylinder at Failaka and another in the Uluburun shipwreck, which was bound westward, where Kassite seals made of lapis lazuli were found in a hoard at Thebes in Boeotia (Porada, 1981). Evidence for foreign shipments within Babylonia include a Mycenaean-style ingot from Tell al-Abyad, as well as Egyptian jewelry found at Babylon, Tell ed-Der, and Nippur. As a result of this trade, the country's economy went on the gold standard, which lasted at least until the reign of Ada-shuma-iddina (c. 1222–1217 BCE). Under the last kings of the dynasty, trade had dwindled to such an extent that Babylonia briefly went on a copper standard.

Religion and Burial Customs. The official embrace of Mesopotamian religion and liturgy left little trace of the veneration of Kassite deities, and much of the evidence is textual. The investiture of the Kassite kings took place at Babylon in the shrine of their patron deities, Šuqamuna and his consort Šimalija, both mountain deities of foreign origin, whose names occur in Ugaritic literature and whose statues were still preserved in the seventh century BCE. There is an indication of a possible cult of a Kassite goddess (^{d}Kaššītu) in about the mid-first millennium BCE at Uruk and perhaps also at Babylon.

Other prominent Kassite deities include: Buriaš, the weather god; Ḫarbe, the lord of the pantheon—a god also venerated in Hurrian areas; Maruttaš (often equated with the Sumero-Akkadian Ninurta); Mirizir, a goddess identified with the generic Bēltu; Saḫ, a sun god; Šipak, the moon god; and Šuriaš, the more common solar deity. The names of some of the Kassite gods have been compared with Indo-European deities, but contact, if any, would have occurred prior to the arrival of the Kassites in Mesopotamia (Brinkman, 1976).

Material Culture. As with the religious and literary culture of the Kassites, there is little remaining in the way of architecture, industry, or art that is quintessentially Kassite. At the capital, Babylon, most of the Kassite occupation lies under the water table, but contemporary levels have been exposed at several ancient Sumerian cities (Nippur, Isin, Larsa, and Ur) and, most recently, in the Hamrin and Haditha regions. [*See* Hamrin Dam Salvage Project.] These provide evidence for Kassite town planning, as well as secular and religious architecture and burials—which, on the whole, adhere to Mesopotamian conventions. Much the same applies to the extant artwork of the Kassite period, which is characterized by the selective adaptation of established forms and iconography.

Architecture and architectural decoration. The earliest-known Kassite building is the Inanna temple built by Kara-indash at Uruk (late fifteenth century BCE). Its rectangular plan follows the Assyrian *langraum* scheme, with the entrance in the center of the short wall, directly opposite the altar. Its exterior decoration of baked, molded bricks is derived from unbaked variations at Old Babylonian and Old Assyrian temples. The alternating mountain and water deities, which decorate the facade, each have older prototypes, but their combination is unique. Fragments of molded-brick ornament have also been found at Ur, Nippur, Larsa, and Dur Kurigalzu. The technique was adopted and developed by the Elamites, Assyrians, Babylonians, and Persians.

Dur Kurigalzu was most probably founded by Kurigalzu I in the early fourteenth century BCE. The eroded remains of its ziggurat, which still rises about 57 m above the plain, was often mistaken by early travelers for the biblical Tower of Babel. [*See* Ziggurat.] Its mud-brick core was leveled and bonded with layers of reed matting and plaited ropes at regular intervals. Aside from this construction method, the ziggurat conforms to southern decoration and plan with an ex-

terior facade of buttresses and recesses and a triple staircase giving access to the temple on top. Also reminiscent of Ur III and Isin/Larsa-period religious precincts is the adjoining complex of partially excavated courtyards and corridors—identified as temples though they lack a recognizable shrine.

The palace at Tell Abyad, 700 m northwest of the ziggurat, covered an area of about 300 sq m. It consisted of several courtyard blocks with four building levels, of which level II is associated with tablets of Kudur-Enlil (1254–1246 BCE) and Kashtiliashu IV (1232–1225 BCE); level I contained those of Marduk-apla-iddina (1171–1159 BCE). Wall painting, found in all four building levels, is especially well preserved in level IC, where individuals and groups are shown in procession. The procession motif prefigures the common theme of Assyrian palace decoration, and the fez, which is later adopted as the royal headdress in Assyria, appears here in connection with one group of Babylonian nobility or Assyrian subjects. [*See* Wall Paintings.]

Sculpture. The Kassites are credited with the introduction of the *kudurru,* an elaborately carved boundary stone which served to commemorate royal land grants (see figure 1). Most popular in the thirteenth–fourteenth centuries BCE, the oldest extant *kudurru* dates to the fourteenth century BCE; they continued to be made into the first millennium BCE. The text is generally accompanied by a relief decoration illustrating the symbols of the deities who witnessed the transaction. While most deities and symbols are Mesopotamian in origin, three symbols (a bird with its head reversed, a bird on a pole, and the cross) represent Kassite gods.

Glyptic. Kassite glyptic is conventionally divided into four main styles, whose regional and chronological distribution is difficult to determine on the basis of the evidence available to date. First Kassite has been traced to origins in the eighteenth century BCE although a number of seals from the Khana kingdom have now been redated to the sixteenth century BCE (Podany, 1991–1993). It is seen as an outgrowth of the late Old Babylonian style, continuing to at least the mid-thirteenth century BCE. Characterized by its hard-stone material and full-length inscriptions, this group includes most of the seals inscribed with royal names. [*See* Seals.] Comparisons between this group and the later paintings at ʿAqar Quf, on the one hand, and Kassite *kudurru* on the other, are considered unconvincing. Caps of granulated gold, once regarded as typically Kassite, are now known to have been used during the reign of Shamshi-Adad I of Assyria.

Second Kassite includes a variety of mainly symmetrical designs of which the most important is the "cthonic god" series. The scenes depicting a god rising from either water or mountains resemble the figural decoration on the Temple of Kara-indash at Uruk and find parallels at Aššur. Other typical designs are centered on an upright man, demon, or tree that is flanked by diagonal fish men, animals, or monsters. This group ranges from the fourteenth to late thirteenth centuries BCE. The related Third Kassite/Isin II group is posited in the twelfth century BCE, on account of its apparent derivation from Assyrian prototypes of the thirteenth century BCE. The scenes concentrate on the themes of animals, monsters, and trees and are identified above all by the volute tree and garland motif.

KASSITES. Figure 1. *A kudurru representing the mastiff of Gula.* (Courtesy J. C. Margueron)

Pseudo-Kassite is typified by its soft-stone or composite material, its truncated inscriptions, horizontal and vertical borders, and the twisted tree. A tentative origin in the mid-fourteenth century BCE is argued on the basis of impressions on dated tablets from Nippur. A hybrid group, pseudo-Kassite designs show influence form Babylonian, Mitannian, and Elamite traditions. (Matthews, 1992; Kühne, 1995).

Luxury products. The Kassite-period industry in luxury goods is characterized by the production of faience, sintered quartz, and glass wares, which, in common with other production centers of the Amarna Age, was largely restricted to local needs. A foreign, Egyptian influence is manifest in the jewelry of this period, as well as in the painted terra-cotta head from the palace at ʿAqar Quf.

[*See also* Mesopotamia, *article on* Ancient Mesopotamia. *In addition, most of the sites mentioned are the subject of independent entries.*]

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DIANA L. STEIN

KAZEL, TELL AL-, one of the largest five tells on the Syrian coast, situated on the ʿAkkar plain in the western part of the topographic depression of Homs, the easiest pass from Syria's interior to the sea. It dominates the al-Abrash River at a distance of about 3.5 km (22 mi.) from the sea, 8 km (5 mi.) north of Nahr al-Kabir al-Junubi (the Eleutheros) and about 25 km (16 mi.) southeast of Tortose and Arwad. The tell is shaped like an oval platform (310 × 280 m). Its summit is about 25 m above the surrounding plain and 50 m above sea level. Three ancient roads climb to the tell's upper terraces, which were used in antiquity. The modern village, which until recently occupied the center of the tell, was transferred to the plain.

The word *kazel* in this toponym is not Arabic or any other Semitic language. However, *casal,* which means "castle" in the toponymy of the Crusader period in Syria, may explain the name ("tell of the castle"). In fact there was a *casal* crowning the tell as early as the Roman period, whose tower was uncovered in 1956 during the excavations of Maurice Dunand and Nassib Saliby (see below). Ptolemy (5.15.4) mentions the Simyra *castellum,* as does Pomponius Mela (1.12). It is probable that Simyra was the name of the site in the Greco-Roman period, a likely variation of *Sumur,* the name of the city in the Amarna letters and *Sumri* in the Middle Assyrian records. [*See* Amarna Tablets.] Sumur, the capital of Amurru, is mentioned more than fifty times in the Amarna texts. It would correspond well to the privileged position of Tell al-Kazel in the historically important pass from the coast to inner Syria and at the center of a very fertile plain of about 500 sq km (310 sq. mi.)

From *Genesis* (10:18), Pliny (*Nat. Hist.* 5.20.17) and Strabo (*Geog.* 16.2.12) followed by W. M. Thomson (*Bibliotheca Sacra,* 1848, vol. 5, pp. 15–17) and Ernest Renan (*Mission en Phénicie,* Paris, 1864, p. 115) it is possible to conclude that the city of Simyra should exist on the plain between the Amrit (Marathus) River and the Nahr al-Kabir al-Junubi (the Eleutheros). These resources confirm the annals of Thutmosis III (Breasted, 1906, 11.108.465) and Tiglath-Pileser I (Luckenbill, 1926, p. 98, no. 302). The latter arrived from Arwad to "Sumri" in six hours (three double hours), which corresponds exactly to the distance between the two sites. Finally, the land to the north of Tell al-Kazel is still named Ard Simyrian ("land of Simyrian"), after the later name of the site (Simyra). From the archaeological point of view, Tell al-Kazel is the largest and the richest of the tells, and its stratigraphy is in accord with the known period of Sumur/Simyra. [*See the biography of Renan.*]

The primary argument against the identification of Sumur/Simyra with Tell al-Kazel considers that the Amarna letters mention "the ships of Sumur," and Tell al-Kazel is 3.5 km (2 mi.) from the sea. However, the Mediterranean sea has undergone frequent fluctuations throughout history, so that the coastline then may have been closer to the site. If this were true for the Amarna period, the river could have been used to bring the ship into a harbor in front of the city. In any case, many harbors, like Minet el-Beida and al-Mina, were far from the cities they served.

E. O. Forrer in 1939 and Robert Braidwood in 1940 (see "A Note on the Identification of Simyra," *Syria* 21 [1940]: 218–221) were the first to refer to Tell al-Kazel. In 1956 the tell was surveyed under the auspices of the Syrian Directorate General of Antiquities and Museums by Maurice Dunand and Nassib Saliby. In 1960–1961 and 1962, Dunand, Adnan Bounni, and Saliby undertook large-scale excavations there. In 1985, jointly with the museum of the American University of Beirut, the Syrian Directorate General resumed a season of excavations headed by Bounni and Leila Badre. Since 1986, Bounni granted the entire permit to the AUB team directed by Badre with the strict collaboration of Michel Al-Maqdissi from the Syrian Directorate General of Antiquities and Museums.

The riverbank at the foot of Tell al-Kazel is rich in stone artifacts from the Lower and Middle Paleolithic periods. The tell itself is on a natural promontory on which the first settlement was located in the Neolithic period. Neolithic stone implements for agriculture and hunting have been found on the surface, with scattered material from other periods before the end of the third millennium. The debris from these periods is 10 m thick.

Urban installations presumably began with the arrival of the Cananite-Amorite population. [*See* Amorites.] The city was then protected by a rampart. The extraction and reuse of stones from the tell both recently and in antiquity have greatly disturbed the archaeological sequences. Nevertheless, from the pottery and some undisturbed locations in the three excavated areas to the west, southeast, and northeast the history of the site since the Middle Bronze Age can be reconstructed:

1. *MB period.* The city wall in area III to the northeast was built of stone rubble and buttressed by a glacis made of hard yellow clay. The corresponding ceramics are mainly carinated black bowls and burnished flat-based jars.

2. *Amarna period.* The palace to the northwest and another LB III architectural remains produced local plain jars and utensils, white-slipped bowls, base-ring juglets, Mycenaean-type vessels with Canaanite garments, and weapons.

3. *Iron Age I.* The lower parts of large rooms were excavated, and local bichrome and sub-Mycenaean III C pottery were found (necklace beads and an Astarte plaque).

4. *Iron Age II.* A great quantity of red-slipped pottery was found in level A. Cypro-Geometric vessels were also well represented along with some Neo-Assyrian pottery sherds.

5. *Achaemenid period.* A rich level was excavated from the Achaemenid period with a monumental building and probably a Cananite temple (a Persian-style column base and one offering table). The principal corresponding types of pottery were Cananite jars and imported Attic ceramics (sixth–fourth centuries BCE). Noteworthy also was a large collection of terra-cotta heads of typical Cananite (Phoenician) priests. [*See* Phoenicians.]

6. *Hellenistic period.* The principal area excavated from the Hellenistic period was a large cemetery on the northeast terrace. It was very rich in local and imported pottery: Late Cananite small jars, imported Rhodian amphorae, local fish plates, Megarian bowls and bowls from Pergamon.

7. *Roman period.* On the southern side of the tell the lower part of a Roman tower was excavated, but there were few other traces of this period, except for quantities of Early and Late Roman pottery.

8. *Byzantine and Islamic periods.* Byzantine pottery and a variety of glazed Islamic vessels were found on the surface without a clear connection to any buildings, which had mostly been removed during agricultural activities.

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ADNAN BOUNNI

KEFAR ḤANANYAH, Jewish village located on the lower slope of a hill east of the Ḥananyah Valley, in northern Lower Galilee, about 9 km (5.5 mi.) southwest of Safed (map reference 189 × 258). The identification of ancient Kefar Ḥananyah with modern Kafr 'Inan (Kufr 'Anan) is based on geographic references in tannaitic literature, including mention of Kefar Ḥananyah as a boundary point between Upper and Lower Galilee (Mishnah Shev. 9.2); on archaeological and archaeometric evidence showing that the site was a pottery-manufacturing center during the Roman and Early Byzantine periods (see below); on the mention in a twelfth-century CE text of a rock-cut synagogue at Kefar

Ḥananyah (see below); and on the phonetic similarity of Kafr ʿInan (Kufr ʿAnan) to Kefar Ḥananyah.

Rabbinic sources dating to the first/second–fourth centuries CE refer to Kefar Ḥananyah as a well-known pottery-manufacturing center, mentioning several of its products and attesting to their durability under conditions of thermal stress. Rabbi Ḥalafta of Kefar Ḥananyah (second century CE) is quoted several times in tannaitic sources. The description by Jacob ben Nathanel, a twelfth-century (prior to 1187) traveler, of a synagogue at Kefar Ḥananyah "quarried from the hill with only one built wall" (Reiner, forthcoming, no. 1), seems to refer to more substantial remains then visible of the rock-cut structure at the site (see below). Menachem ha-Ḥevroni (c. 1215) mentions a synagogue in use by the residents of Kefar Ḥananyah (Reiner, forthcoming, no. 5). In two unpublished manuscripts (c. sixteenth century), and apparently also in a fragmentary third text (probably late fifteenth century), two synagogues are mentioned (in two cases the authors state that one of the synagogues is in use by the Jews of the settlement; Reiner, forthcoming, no. 10).

Joseph Braslavsky (Braslavi; 1933) identified remains of a rectangular rock-cut public structure (similar to that at Meiron) located east of the village of Kufr ʿAnan as an ancient synagogue. [*See* Synagogues.] In the early 1980s, Zvi Ilan (1981–1982) published a plan of that building, found remains of another public building he suggested was a second synagogue, and traced remains of an aqueduct to the site, suggesting an early date for its construction (it is apparently medieval, however; see below). [*See* Aqueducts.] Parts of several installations for olive-oil production have been studied by Rafael Frankel (1984). [*See* Olives.] A bronze polycandelon, bearing an Aramaic dedicatory inscription mentioning the "holy place of Kefar Ḥananyah" and inscribed with two seven-branched menorahs, each flanked by a lulav and shofar, was found at el-Makr in the western Galilee and published by Jean-Baptiste Frey (1952) and, subsequently, by Joseph Naveh (1978, 1988).

The pottery center at Kefar Ḥananyah was studied as part of an interdisciplinary regional project investigating the manufacture and local trade of common pottery in the Galilee and Golan in the Late Hellenistic, Roman, and Early Byzantine periods. The ongoing project, directed by David Adan-Bayewitz, was begun in 1981 by him and the late Isadore Perlman at the Hebrew University of Jerusalem, and has continued at Bar-Ilan University and the Lawrence Berkeley National Laboratory, with the collaboration of Frank Asaro, Robert D. Giauque, and Helen V. Michel of the latter institution, and Moshe Wieder, of the former.

Archaeometric work conducted between 1981 and 1985 showed that Kefar Ḥananyah supplied most of the kitchen pottery of the Galilee, and a significant minority of the cooking vessels of the Golan, from the Early Roman through the Early Byzantine periods (c. mid-first century BCE–early fifth century CE). The vessel forms made at Kefar Ḥananyah have been identified and dated, and their geographic and quantitative distribution described (Adan-Bayewitz, 1993).

In the wake of this analytical study, Adan-Bayewitz directed three seasons of excavation at Kefar Ḥananyah (1986, 1987, 1989), under the auspices of Bar-Ilan University. Unearthed were remains of a Late Roman pottery kiln with a stone-paved approach, a rock-cut pit containing a large quantity of ash along one side of the access pavement, and an outer structure (possibly a fuel store) supported by ashlar pillars. All four components were built in a trench (3–3.5 m wide) cut into the slope. Two successive plaster-lined structures, which may have served as clay-soaking pools, were found about 10.5 m west of the kiln.

The kiln is a common Roman type, circular in plan (about 2.9 m in diameter) with a round central pillar (1 m in diameter). At the north (rear) and east of the furnace chamber one or two courses of cut stones line the bedrock. The entrance to the furnace chamber is about 0.9 m wide, and its jambs are built of ashlars. Following the destruction in the Early Byzantine period of the apparently disused kiln and outer structure, the recessed area served as a dump for discarded vessels—including an estimated equivalent of 9,500–13,000 whole vessels, about 98 percent of which were of two Kefar Ḥananyah vessel forms. Recovered in the excavations were pottery wasters of Kefar Ḥananyah vessels dating to the Early, Middle, and Late Roman–Early Byzantine periods.

The trench cut into the bedrock slope, in which the kiln and associated structures were built, also cut through an earlier roof-tile layer, above an Early Roman accumulation. A number of the tiles bore the impression of the Legio VI Ferrata (LEGVIF). No architectural remains associated with the roof-tile layer have been found.

Probes excavated in the final in situ section of the Kefar Ḥananyah aqueduct (see above) showed that that part of the aqueduct had not been constructed prior to the medieval period.

[*See also* Galilee, *article on* Galilee in the Hellenistic through Byzantine Periods; *and* Golan.]

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DAVID ADAN-BAYEWITZ

KEISAN, TELL, a high, prominent mound of about 15 acres, situated on the Akko plain between Haifa and Akko. Although the site is today about 8 km (5 mi.) inland, it originally connected the Mediterranean coast with the hills of Lower Galilee. It has been identified tentatively with biblical Achshaph (*Jos.* 11:1, 12:20, 19:25).

Tell Keisan was excavated by John Garstang and Alan Rowe in 1935 and 1936 and again from 1971 to 1980 by Roland de Vaux, Jacques Prignaud, Jacques Briend, and Jean Baptiste Humbert for the École Biblique et Archéologique Française in Jerusalem. [*See* École Biblique et Archéologique Française.]

There are scattered Neolithic remains, but the tell was first settled in the Early Bronze I–III period (stratum XVI, following the system of the 1935 excavation), with a city wall 5 m wide. Even more massive walls, embankments, and a glacis characterize the Middle Bronze Age strata (XV–XIV) city. A Late Bronze Age occupation, while attested, is not well documented (strata XIII–XI). The later excavations, however, delineated an important LB II/Iron I transitional horizon (Garstang and Rowe's stratum 13) characterized by both Egyptian imports and Late Mycenaean IIIC pottery. It came to a violent end in a destruction in the early twelfth century BCE plausibly attributed to the "Sea Peoples."

The Iron I levels at Tell Keisan (strata 12–9), some 3 m thick, are especially significant. Stratum 12 may represent a mid-twelfth-century BCE rebuilding by a northern group of the Sea Peoples (the Sherden?), with some Philistine Bichrome ware. Stratum 11 represents a more substantial urban establishment, in the late twelfth century BCE, that ended either in destruction or abandonment. Stratum 10 reflects the mixed cultural influences of Lower Galilee and the northern coast in the eleventh century BCE, with Philistine ware continuing alongside locally made pottery of Mycenaean and Cypriot derivation. The recent excavators refer to it as Levanto-Mycenaean, but it could be a forerunner of the slightly later Phoenician coastal ceramic repertoire. Some of the vessels were used in the manufacture of purple dye, for which the Phoenicians were well-known. Strata 9C–A, which cover much of the eleventh century BCE, revealed substantial well-planned, multiroomed structures laid out on a rectangular grid, although no city wall was in evidence. Philistine Bichrome ware disappeared by the end of stratum 9A, overlapping with distinctive Phoenician Bichrome jugs that begin in stratum 9B. Stratum 9 ends in about 1000 BCE in a conflagration that is also in evidence at other northern sites (Tel Abu Hawam IV; Hazor XI; Megiddo VIA); however, the destruction is more likely to be the result of local events than to any northern campaigns of King David (*2 Sm.* 8:3–12). Stratum 9 is perhaps best understood as marking the Phoenician ascendency in the area. [*See* Abu Hawam, Tell; Hazor; Megiddo; Phoenicians.]

Strata 8–6 (Iron II period) witnessed major changes. The settlement of stratum 8, which was relatively impoverished, initially reused some earlier walls and did not expand; this settlement continued from about 1000 BCE into about the mid-eighth century BCE with no notable feature but remarkable continuity. By the beginning of stratum 7, the old LB traditions were finally exhausted, and the subsequent pottery was typical Iron Age domestic ware, noteworthy only

for scattered Cypro-Phoenician and Samaria wares. When stratum 5 ended, it was without any clear indication of the Assyrian destructions of the late eighth century BCE.

Strata 5–4 belong to the period of Assyrian conquest and domination (referred to by the later excavators as Iron III), when Tell Keisan underwent a sort of renascence. An Assyrian influence is then apparent and is reflected in "Palace" and other wares, as well as in Assyrian-style seals. [*See* Seals.] Stratum 4, with two phases, is characterized in its plan by a new rectangular grid. The later excavators see, especially in the pottery, a Phoenician culture combined with Neo-Assyrian elements. Numerous Phoenician amphorae found throughout the eighth–sixth centuries BCE point to maritime trade: links with Cyprus are especially close, but by late in stratum 4 (4A) large quantities of Aegean, Rhodian, and Ionian wares were also imported. Stratum 4A ended in destruction in the mid-seventh century BCE, perhaps the work of a punitive expedition to Akko in 643 BCE mentioned in the annals of Ashurbanipal.

Strata 3–1 are Persian and Hellenistic, respectively, and are characterized by Greek imports. The strata ended by the late second century BCE. In the Byzantine period a small Christian community occupied the site until the seventh century CE.

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WILLIAM G. DEVER

KENYON, KATHLEEN MARY (1906–1978), archaeologist born in London, the elder daughter of Frederic Kenyon the papyrologist and director and principal librarian of the British Museum (1909–1930). Kathleen M. Kenyon was educated at St. Paul's Girls' School in London and at Somerville College, Oxford, where she specialized in history. She became a member of the Oxford Archaeological Society and was its first woman president. She was a good student and a fine athlete, with the energy and drive to make her a natural leader.

On graduation in 1929 she accompanied Gertrude Caton-Thompson (who had been a student and colleague of William Flinders Petrie) as general assistant, photographer, and driver, to excavate the stone ruins of Zimbabwe, in what was then Southern Rhodesia. Upon her return to England, she was recruited by R. E. Mortimer Wheeler and his wife Tessa to participate in a major excavation (1930–1936) of the Romano-British city of Verulamium (St. Albans).

From the Wheelers Kenyon learned the principles and techniques of the new stratigraphic method they had been developing since before World War I. It involves excavation by trenches, or squares, and very careful observation, interpretation, and recording (as excavation proceeds) of the soil strata encountered (distinguished by color, texture, and composition). When the vertical faces of the trenches and of balks running up to them are recorded and drawn to scale, it is possible to plot, in three dimensions, the stratigraphic positions and relationships of all structures and finds, and to assign relative dates to them. Absolute dates could be assigned on the basis of the pottery or coins contained in the pertinent strata. When the carbon-14 method of dating became available, the remanent radioactivity in preserved organic materials such as bone or wood could provide absolute dates. Although the method requires meticulous technique, the evidence for the conclusions educed is preserved for all to see and, if necessary, to reassess. Kenyon, who describes this method in *Beginning in Archaeology* (1952), introduced it to the Near East during her work with John W. Crowfoot at Samaria (1931–1933).

Back in England she was closely associated with Wheeler in the founding of the University of London Institute of Archaeology (1934). Before and after World War II (during which she served with the Red Cross) she worked at British sites. From 1948 to 1951, she joined John Ward-Perkins, director of the British School in Rome, in excavations at Sabratha in Tripolitania. Soundings into the essentially Romano-Byzantine city reached important Phoenician levels.

In 1951, Miss Kenyon became honorary director of the British School in Jerusalem. John Garstang had made important discoveries at Jericho (1931–1936) but raised problems requiring further investigation. Kenyon's excavations there (1952–1958) made Jericho the type-site in Palestine for the application of the Wheeler-Kenyon stratigraphic method.

In 1961 Kenyon began what would be seven years of excavation in Jerusalem. The site was an exceedingly difficult one because of its topography (its steeply sloped terrain), its history (the accumulated debris of centuries), and its being a living city (with its houses and roads in daily use). She was able to establish for the first time a historic framework for the city over its 3,800 years of existence.

In 1962 Kenyon became principal of St. Hugh's College, Oxford. When she retired in 1973, after a tenure of great practical and creative advantage to the college, she was able to concentrate on publication. Her detailed annual reports in the *Palestine Exploration Quarterly* during her excavations of Jericho and Jerusalem were supplemented by popular (but by no means superficial) general works. Of the definitive publications on Jericho, only two volumes of her *Excavations at Jericho* (1960, 1965) were released before her untimely death. However, she left much virtually completed work, which was subsequently edited and, where incomplete, augmented as volumes 3–5 (1981–1983). Since her death, three volumes on the Jerusalem expedition have been published (vols. 1, 2, and 4; 1985, 1990, and 1995). Kenyon made important contributions to the new (third) edition of

the *Cambridge Ancient History*. While archaeological data were the chief sources for these works, in them and in her *Amorites and Canaanites* (1966), she attempted to relate the cultural, social, and political conditions reflected in written as well as archaeological documentation. The fourth and much-revised edition of her *Archaeology in the Holy Land* (1960) appeared, posthumously, in 1979.

Kathleen M. Kenyon is not only remembered for her dynamic and imaginative leadership in the field and the significance of her discoveries, but for the encouragement and training she devoted to scores of young students who, in turn, have made their reputations in archaeology all over the world. Her accomplishments led to many academic and international honors but the appreciation of her own country was marked most vividly by the DBE (Dame of the Order of the British Empire) conferred on her by Queen Elizabeth II in 1973.

[*See also* British School of Archaeology in Jerusalem; Jericho; Jerusalem; Samaria; *and the biographies of Caton-Thompson, Crowfoot, Garstang, and Wheeler.*]

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A. D. TUSHINGHAM

KERAK (al-Karak; often Karak), site commanding the intersection of the main north–south route along the Transjordanian plateau with an important east–west route from the desert to the Dead Sea and the west bank of the Jordan River (31°11′ N, 35°42′ E).

The town occupies an irregular plateau (850 m north–south × 750 m east–west), at the north end of a ridge, naturally protected by steep escarpments. To the south, the ridge narrows into an isthmus (200 m long × 110–140 m wide) isolated from the rest of the ridge by deep ditches cut to the north and south: a castle (see below) occupies the resulting island.

Early History. Kerak was an important Moabite center. A Moabite inscription names Mesha, or his father Chemosh-yat, mid-ninth-century BCE kings of Moab, and suggests that Kerak had a temple to the god Chemosh. The place names Qîr-Mô'āb (*Is.* 15:1), Qîr-Ḥereś (*Jer.* 48:31, 48:36; *Is.* 16:11), and Qir-Ḥāreśet (*Is.* 16:7; *2 Kgs.* 3:25) are thought to refer to Kerak, perhaps because the Isaiah Targum renders Qîr-Mô'āb by the Aramaic Karkā' dĕ-Mô'āb. If correct, then Kerak was an important fortress in the revolt of Mesha against Israel and the site of the dramatic siege in *2 Kings* 3:25–27. Kerak cannot be the Qarḥoh on Mesha's stela, which was evidently a quarter of Dibon.

Kerak was the administrative center of Moab during the Persian period (539/520–332 BCE). Nabatean pottery is commonly found there and Nabatean-Roman *spolia* (architectural and decorative fragments) are reused in the castle (see below). In about 130 Hadrian granted polis status to Kerak, which later had its own mint. The Madaba map (mid sixth-century CE) shows [Khara]khmōba as a walled, hilltop city. [*See* Madaba.]

Crusader Kerak and the Lordship of Oultrejourdain. Early in the twelfth century CE, the kings of Jerusalem built a line of fortifications to protect their revenue from Trans-

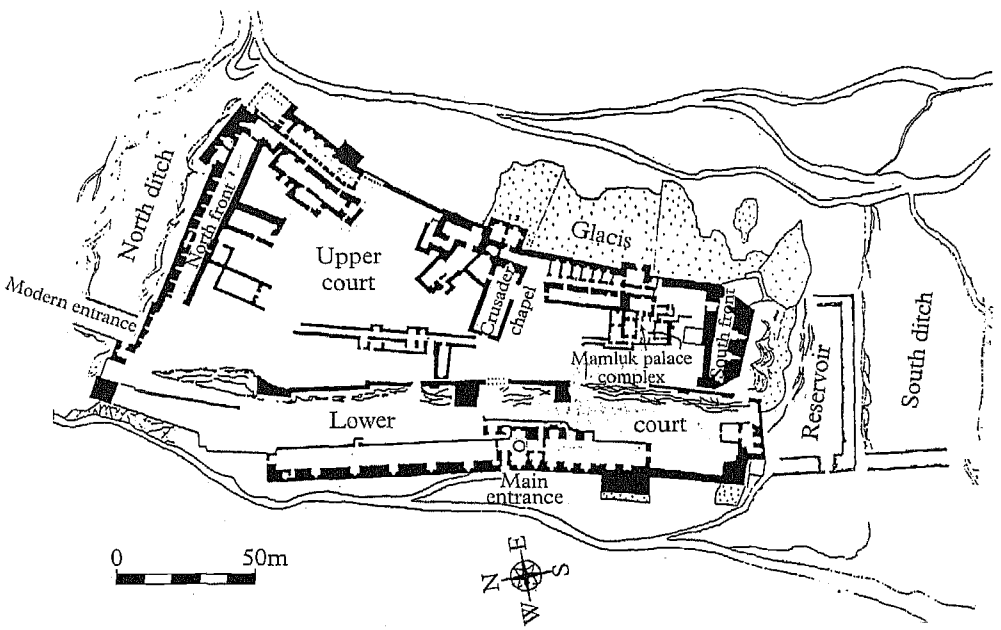
jordan and to dominate the trade routes: al-Ḥabīs (Crusader, Cava de Suet, Cave de Sueth; Ar., ʿAyn Ḥabīs, al-Ḥabīs, Ḥabīs Jaldak), pre-1109(?); Montreal (Crusader, Mons regalis, Mont royal, Montreal; Ar., al-Shawbak), 1115; Ayla (Crusader, Helim) and Ile de Graye (Ar., Jazīra Fara'ūn, al-Qurayyah), 1116–17(?); Li Vaux Moys (Crusader, Li Vaux Moys, Castellum Vallis Moysis; Ar., al-Wu ayra); and two other castles in the Petra region, Celle (Ar., al-Ṣalʿā[?]) and Hormoz (Ar., al-Ḥabīs [?]), 1127(?). Castles were also built at Amman (Crusader, Ahamant) and Tafīla (Crusader, Taphila). [*See* Qurayyah; Amman.]

Oultrejourdain was kept mostly in the royal domain until about 1126 when it was granted to Pagan the Butler (Romain de Puy was not the first lord of Oultrejourdain but held lands in the Balqāʿ). The crown retained some castles and lands until 1161, when Baldwin III invested Philip de Milly with all royal property from Wadi Zarqa to the Red Sea. The lordship was crucial to the defense of the kingdom and was economically important: it exported bitumen, dates, grain, oil, salt, sugar, and wine. Kerak had its own Dead Sea port. Tolls were levied on caravans and bedouin passing through the region.

In 1142, Pagan built Kerak castle (Crusader, Chrac, Crac [not to be confused with Crac des Chevaliers in Syria], Crac de Montreal/Mont royal, Cracum Montis regalis, Petra Deserti, Pierre dou Desert, Civitas Petracensis; Ar., al-Karak, Karak al-Shawbak) to replace Montreal as the center of Oultrejourdain (see figure 1). His successors, Maurice and Philip de Milly, strengthened it. Philip entered the Templars in about 1165 and was succeeded by his daughter's husbands, first Miles de Plancy (1172–1174) and then Reynald de Châtillon (1177–1187). Nur al-Din and Salah ad-Din attempted to take Kerak in 1170 and 1173. When Reynald used Kerak as a base for raids on caravans protected by treaty and on al-Hijaz, Salah ad-Din launched systematic assaults (1183, 1184, 1187). Reynald was killed after the Battle of Hattin in July 1187. In November 1188, after a siege of eight months, Kerak capitulated.

Middle Islamic Kerak. Under the Ayyubids (1193–1263), Kerak usually belonged to the independent Syrian principality of Damascus, although al-Nāṣir Dāwūd (1227–1249) and al-Mughith ʿUmar (1250–1263) ruled Kerak as a semiautonomous principality. Al-ʿĀdil (1193–1198) refortified the castle, converted the cathedral into a mosque, and founded a mosque in Wadi Kerak. Al-Muʿaẓẓam (1198–1227) repaired the castle after the earthquake of 1211, constructed the western entrance tunnel, and ordered the improvement of the Ḥajj road from Damascus to al-Hijaz (work at Muʿta and Maʿān was completed). Further refortification was carried out under al-Nāṣir Dāwūd, who built a palace within the castle. Al-Mugith ʿUmar repaired damage caused by the 1261 earthquake.

Under the Mamluk sultans (1263–1517), Kerak became the chief town of an administrative province stretching from Ziza to ʿAqaba and from the Dead Sea to the desert. Kerak's prosperity was largely dependent on the patronage of the sultans, although the region continued to export agricultural products, especially sugar. Baybars I (1260–1277) visited Kerak frequently and undertook its major refortification (see below). In the late thirteenth and fourteenth centuries, Kerak was used as a school where the sons of the dynasty could be educated in Arab ways and as a place of exile for



KERAK. Figure 1. *Plan of Kerak Castle.* (Courtesy J. Johns)

troublesome members of the ruling family. Al-Nāṣir Muḥammad spent two periods of exile in Kerak (1294–1298, 1308–1310) and in 1311 had a palace, bath, school, khan, hospital, and mosque built there. For a few months in 1342, under al-Nāṣir Aḥmad, Kerak became the capital of the Mamluk state. During the fifteenth century, Mamluk interest in Kerak waned, and local tribes increasingly came to dominate the town.

In 1517, an Ottoman governor was installed at Kerak. The Ottomans attempted to retain control of the town throughout the sixteenth century, but soon after 1600 it was in Arab hands. Successive Ottoman expeditions (1655–1656, 1678–1679, 1710–1711) failed to regain control.

Remains. The town's walls and towers are well preserved. Burj al-Ẓāhir is a massive salient, very similar to the castle's south front, and defends the northern extremity of the plateau. A foundation inscription of Baybars I appears on its interior face (*RCEA* 4733). *Burj al-Banawī,* a round tower on the south wall, also carries a foundation inscription of Baybars flanked by two heraldic "lions of Baybars" (*RCEA* 4734). *Burj al-Ṣaʿūb* is an elaborate tower with a machicolated parapet and a talus defending a postern at the easternmost point of the circuit. Entrance to the town was originally through two subterranean passages: northeast of the Burj al-Ṣaʿūb and west of the Burj al-Ẓāhir, the latter dated to 1227 (*RCEA* 3965).

The Crusader cathedral was converted into the *jāmiʿ* (congregational mosque) under al-Malik al-ʿĀdil. The early twentieth-century mosque on the same site preserves two Arabic inscriptions in the prayer hall: one records the foundation of the *jāmiʿ* in 1198 (*RCEA* 3800A); the other records repairs carried out in about 1380 (Albert de Luynes, *Voyages d'exploration à la Mer Morte,* 3 vols. Paris, 1871–1876, vol. 2, pp. 200–201, no. 18). A third inscription, on the minaret, records Sultan Barqūq's perpetual exemption of the Kerakis from all property taxes (*ibid.*, pp. 201–202, no. 19).

The Greek church (of St. George?) is a mid-nineteenth-century reconstruction of a Byzantine structure. The smaller Greek church of St. George is apparently medieval in date. In the cemetery below Burj al-Ẓāhir is a nineteenth-century (?) *qubba* (domed tomb) identified as the tomb of Noah, a claimed shared by Kerak Nūḥ in Lebanon. At nearby Mazar, the mausoleum of Jaʿfar ibn Abū Ṭālib, a companion of the prophet who fell at the Battle of Mut'a, is incorporated into the modern mosque: two Arabic inscriptions record work on the mausoleum in 1327 and 1351 (*ibid.*, pp. 206–208, nos. 23–24).

The constructional history of the castle has yet to be thoroughly investigated. No standing remains are indisputably pre-Crusader. Two distinct phases of Crusader construction may be distinguished, however, and the south and west defenses were extensively rebuilt under Baybars I. There is considerable amount of postmedieval alteration of the interior apartments.

The castle consists of a large upper court occupying the crest of the ridge and a lower court built on a terrace to the west. The north front, built of huge limestone blocks, was originally flanked by two massive salients: of these only the eastern survives; the modern entrance is through the ruined west corner. The much-damaged Crusader chapel and adjoining sacristy lie in the middle of the upper court. South and west of the chapel, below the court, are the apartments of the Mamluk palace. Of particular note are a small entrance court decorated by a plaque with an intricate inlaid geometric design (originally one of a pair); a reception hall; and what may be a small mosque. The south end of the castle is dominated by the massive south front overlooking the castle reservoir and the south ditch: the foundation inscription of Baybars I is on the exterior face. The lower court is separated from the upper court by a curtain wall. In Mamluk times, the principal entrance was through a monumental gate in the west wall, into a long gallery beneath the lower court. There are also small posterns in the north and south fronts. The central salient in the west wall of the lower court bears a much-damaged foundation inscription of Baybars I.

[*See also* Ayyubid-Mamluk Dynasties; Crusader Period.]

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JEREMY JOHNS

KESTEL, an Early Bronze Age tin mine and its associated specialized mining areas, located 4 km (2.5 mi.) from the town of Çamardı and situated upslope from several rivers coursing through the Niğde Massif, a large volcanic dome formation in south-central Turkey (37°50′ N, 34°58′ E). The Kuruçay stream, with the highest analyzed cassiterite (tin oxide) sediments, carrys with it sediments rich in pyrite, hematite, garnet, tourmaline, magnetite, scheelite, cinnabar, titanite, rutile, apatite, monazite, and gold. The tin appears as sand-sized brilliant red, orange, yellow, and (rarely) black cassiterite grains that can be easily separated by manual means such as a pan or a vanning shovel and very little water. Because of their high specific gravity, tin particles sediment out from the less dense magnetite, hematite, and quartz. This simple process was replicated a number of times at Celaller village in 1992 by Bryan Earl from Cornwall, England. The Kestel mine is characterized by intense tectonic movement and is in a major subduction zone, where mineralization is common. The mine was cut into a slope composed of granite, marble, gneiss, and quartzite. The site of the Early Bronze Age miner's village, Göltepe, lies 2 km due south of the Kestel tin mine, across the valley on a prominent hilltop that overlooks the Kuruçay stream.

Cassiterite was found at the Kestel mine by the Turkish Geological Research and Survey (MTA) after sifting through 80 tons of alluvial stream sediments in the course of a major five-year research project investigating the sources of heavy minerals. K. Aslıhan Yener investigated and excavated the tin mine from 1987 to 1989 and in collaboration with Lynn Willies from 1990 to 1992. Only subeconomic material remains unmined today. The most convincing evidence of former tin production is the one ton of metallurgical debris, such as crucible fragments with tin-rich slag accretion, found in excavation at the neighboring site of Göltepe and at the entrance to the Kestel mine. Recent analyses by atomic absorption spectroscopy from veins remaining unmined inside the Kestel mine indicated that even after extensive mining in antiquity, the veins still contained more than 1.5 percent tin. [*See* Spectroscopy.] There have been two primary mineralizing episodes: an early tin-bearing one and a later one of hematite with weak tin. Willies notes that evidence of ore extraction continues below the marble into the underlying quartzitic schist and granitic pegmatites. As of the 1992 excavation season, the depth of the Kestel mine measured 1.5 km in its greatest known extent.

As presently understood, the Kestel mine was originally in operation in about 3000 BCE, probably as an open-pit-mining operation. During the early EB I–II, the mine expanded into shaft and gallery systems, workshops were set up outside the mine entrance, and Göltepe was settled. Göltepe grew into what may have been a substantial walled town and tin-processing workshop toward the middle of the third millennium (EB II), at the same time that bronze was being widely used in Anatolia and was increasing in use in Syria and Mesopotamia. The settlement and the mine attained their largest extent during this and the early part of the EB III period. At that time, they comprised one of a number of centers lining the strategic passes through the Taurus Mountains. The sites may have controlled resources, production, and intermontane traffic during the pre-Akkadian period.

Aside from the original four soundings done in 1987–1988, the soundings made in 1991 and 1992 in the Kestel mine were to obtain a chronological sequence for the mine and to determine the extent and nature of the tin mineralization. Mined by fire setting in antiquity, five samples of charcoal from excavated contexts inside the Kestel mine gave radiocarbon determinations of 2070–1880 BCE, calibrated to 2870–2200 BCE, dating its use firmly in the Early Bronze Age. Another six dates recently obtained suggest an even earlier beginning for the mine (2740 BCE ±100 calibrated 3240–3100 BCE).

In order to test the assumption that cassiterite was the targeted mineral in the Bronze Age, four small-scale soundings 1 × 2 m in size were initiated inside the galleries in 1988 and 1989. The assumption was that the detritus of mining activity would yield important information about dating the mine and about the original ore body composition. Sounding S.2 (1.5 × 1 m) was placed in chamber VI at the confluence of five upsloping galleries, some of which measured a scant 60 cm in diameter. These galleries had circular cross sections and differed morphologically from chambers I and II, which have larger entrances. Careful study of the stratified assemblage indicated that the mining debris dates to the Bronze Age. Also supporting this view were the massive layers of rubble with third-millennium ceramics that were overlaid by thin horizons dating to the Byzantine period, but without any associated mining debris. Thus, the fact that there are Byzantine-period strata in the mine, dated by ceramics and radiocarbon (charcoal samples from sounding S2, at −30 cm = 380 ±60 CE, calibrated 347–609 CE), does not indicate that mining took place during these later periods.

The discovery of a large diabase mortar or anvil with two circular hollows on one surface provided information about the specific tools of extraction and beneficiation in this chamber. The EB sherds are mostly dark-burnished and unburnished varieties, with a red-burnished and micaceous finish. Some cruder examples, such as a holemouth jar and several straw-tempered types, also emerged in the lowest strata, suggesting the existence of a Late Chalcolithic phase in this mine as well.

Sounding S2 has established several discernible features about this chamber. First of all, cassiterite was being mined in the third millennium. The technique entailed fire setting and then battering the ore with heavy hammerstones. Mortars, pestles, and bucking stones indicate that some ore beneficiation was also taking place inside the mine. It is apparent from the stone tool types found inside that hammerstones for battering and pulverizing the ore were being utilized. Surprisingly, however, bucking stones, a stone with one flat surface and a hollow in the middle, indicate that grinding also took place. The debris may have been used as backfill in the mine. The presence of beneficiation suggests that some fine-scale processing was essential for extraction and may indicate that veins were small or that testing of the particular area of the deposit by empirical means was necessary and was more efficiently carried out within the mine. It may also be that some tools were stored or discarded in the mine. Therefore, the ore was battered, pecked, and enriched there. Second, the presence of pottery with open forms, the domestic fauna, and a hearth suggest that a certain minimal amount of domestic activity also took place inside the mine. Larger ceramic forms, presumably to contain water for beneficiation and drinking or cooking, may have been used for such short-term storage.

The soundings in the mine have provided important information about the tools employed in the technology of Bronze Age mining and ore pulverization; they also indicate that the mine probably provided some amount of habitation or shelter. The Kestel excavations have helped define an interactive system between the mine and Göltepe, with its specialized sectors devoted to smelting tin. Tin smelting entailed an initial ore enrichment at Kestel, followed by grinding and washing phases at Göltepe. Fired in crucibles of various sizes, the resulting tin metal was fabricated into ingots by pouring the molten metal into molds. The data from this project have led to the irrefutable conclusion that tin was mined at Kestel and processed at Göltepe in the third millennium. Reconstruction can now proceed to question where the products went and what the impact of this strategic industry was on the bronze producers.

In the process of mapping and excavating test trenches inside the galleries, a mortuary/burial chamber was discovered in several abandoned mine shafts. Mortuary traditions as well as data on status, diet, and population can be derived from the excavation of this new evidence. One extensive mortuary chamber contained a number of different burial traditions—pithos burials, stone-built tombs, simple interment, and rock-cut chamber tombs—spanning a date from the Late Chalcolithic/EB I to the end of the third millennium. [*See* Burial Practices.] Broken fragments of human skeletal material occurred throughout the chambers. A preliminary assessment has identified a minimum of eight individuals interred in the chamber, based on counts and aging information from femurs, mandibles, and a few pelvises. So far, this small demographic sample contains children, men, and at least one woman, mirroring a true population composition. One is an infant fewer than two years old. Three are subadults younger than eighteen years of age: one twelve–fifteen-year-old, one from five–ten years old, and the other approximately eight. Four adults are represented, including one female and one probable male. [*See* Demography; Paleopathology.]

Pottery in association within the burial chamber has chronological and stylistic parallels with the Göltepe and Kestel assemblages. Red- and black-burnished wares, light-clay minature lug ware, painted Anatolian metallic wares, and imported ceramics such as Syrian bottles and Syrian metallic wares link the mine not only with the processing site, Göltepe, but with neighboring regions as well. A copper spiral akin to examples dating to the end of the third millennium, as well as Syrian bottles, plain simple ware, and Syrian metallic wares, indicate interregional connections with Syria and Mesopotamia, as well as the Mediterranean coast.

In addition to Kestel representing the earliest and largest shaft-and-gallery systems related to tin mining, the 1992 research indicated that an earlier phase of occupation existed on the slope of the mine, most likely dating to the Late Chalcolithic/EB I. Data on initial settlement in this area and the earliest extraction phase for the mine can be derived from this area. It is clear that the mortuary chamber will be an important source of data and will be critical to understanding each of the settlements and the interaction among them. So far no comparable examples of burials in mine chambers are known from other regions.

[*See also* Göltepe; Metals, *article on* Artifacts of the Neolithic, Bronze, and Iron Ages; *and* Taurus Mountains.]

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K. ASLIHAN YENER

KETEF HINNOM, Iron Age cemetery located along a high scarp on the southwestern bank of the Hinnom Valley, south and southwest of Jerusalem (31°40′ N, 35°15′ E; map reference 173 × 131). This necropolis is located on the grounds of St. Andrew's Scottish Church and Hospice. The site is known by its Hebrew name, which means "shoulder of Hinnom."

Three major necropoli served Iron Age Jerusalem: the eastern necropolis in the village of Silwan, the northern necropolis north of the Damascus Gate, and the western necropolis along the slopes of the Hinnom Valley. The southern and southwestern extents of the Hinnom Valley were utilized in response to the growth of the city in the eighth and seventh centuries BCE. Thirty-seven tombs have been located along the length of the valley. This area of ancient Jerusalem and its environs were partially surveyed by R. A. S. Macalister in 1900. [*See the biography of Macalister.*] More recently, bench tombs at Ketef Hinnom were excavated by Gabriel Barkay (1979–1988), under the auspices of Tel Aviv University. These tombs date to the end of Iron II (late eighth–sixth centuries BCE). Some of the cave tombs may have been used in the Second Temple period as well, however.

A variety of burial types were found at Ketef Hinnom, including plain pit graves and bench tombs. [*See* Tombs; Burial Sites; Burial Techniques.] These bench tombs are typical of Judah in the Iron II and include features such as sarcophagi carved into the bedrock, burial benches carved along the walls, projecting cornices, carved headrests, and the use of two Egyptian cubit standards. [*See* Sarcophagus.] Typically, bench tombs consist of a single or multichambered tomb in which a series of benches is cut along the chamber walls. A small entrance opens to a forecourt that leads into a central hall. Burial chambers are arranged around this central hall. The body was laid out on a bench, into which headrests were often carved. When a new body was interred, the earlier bones and grave goods were gathered and placed in repositories under the burial benches. It is believed that in this way extended families were buried for generations in the same chamber tomb. [*See* Grave Goods.]

Barkay excavated nine bench tombs at Ketef Hinnom, all of which were cut into the bedrock. None of the roughly square tombs was intact, as their ceilings had collapsed. Additionally, the area had been used as a quarry in antiquity. Five of the tombs were single chambered, with benches along three sides. Carved stone headrests were found in several tombs. In cave 13 the headrests were so arranged as to hold two parallel sets of bodies ordered head to foot. Cave 20 is distinctive in its plan, dimensions, and decorative details. It is a multichambered tomb with parallels in Jerusalem's northern necropolis and at Beth-Shemesh tombs 5–8. [*See* Beth-Shemesh.] This tomb also used the short Egyptian measurement system (the *amah*), as opposed to the long, or royal, one used in the other tombs. Many of the tombs throughout Jerusalem utilized such a standardized system of measurement, suggesting the use of a set of plans or blueprints. The Israelite system of measurement, the cubit, was based on the Egyptian system.

The most spectacular find from Ketef Hinnom was the undisturbed repository in room 25, located in burial cave 24. Cave 24 is a complex, multichambered tomb with five chambers off the central hall. A variety of features were used in interring the dead, including benches, headrests, and deep grooves. In room 25 the six headrests could accommodate six bodies arranged side by side. This chamber is roughly 3 × 1.8 m and 2 m high. A cache of mortuary goods was found in the repository that the excavator dates from the seventh century BCE to some time after the Babylonian destruction in 586 BCE (Barkay, 1984). The remains of more than ninety-five individuals were found along with more than one thousand objects. The burial goods included 263 whole ceramic vessels, a bathtub coffin, Scythian iron arrowheads, bronze axheads, bone objects, alabaster vessels, beads, a glass bottle, more than one hundred pieces of silver jewelry, silver seals, and gold objects. A sixth-century BCE coin from the Aegean island of Kos found in this tomb is one of the earliest coins found in Israel. Most significant was the recovery of two small silver amulets inscribed with priestly blessings. The silver amulets were delicately incised, and the largest is only 97 mm long and 27 mm wide. They date to the mid-seventh or early sixth centuries BCE. One amulet records the name *Yahweh.* The wording of both scrolls is almost identical to the priestly benediction in *Numbers* 6:24–26 (Barkay, 1983). This represents the earliest surviving biblical passage, antedating the Dead Sea Scrolls copies by some four hundred years. [*See* Dead Sea Scrolls.]

The importance of this tomb is immeasurable. Its material greatly expands what is known of the nature of the Jewish community in Jerusalem after the Babylonian destruction. Hillel Geva (*New Encyclopedia of Archaeological Excavations in the Holy Land,* edited by Ephraim Stern, vol. 2, p. 715, Jerusalem and New York, 1993) suggests that the western necropolis was used for the lower classes and the eastern necropolis of Silwan for nobility and high officials. While the proximity and architectural elaboration found in the Silwan necropolis indeed supports this suggestion, the notion

of a lower-class necropolis at Ketef Hinnom must be reassessed in light of the finds in room 25 of cave 24.

[*See also* Jerusalem.]

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J. P. DESSEL

KHABUR. The Khabur River catchment of northern Syro-Mesopotamia can be divided into the Khabur Triangle, or Upper Khabur, and the Lower Khabur. The former, where precipitation ranges annually from 500 mm northeast of modern Qamishli at the Syro-Turkish border to 250 mm just south of Hassekeh, is a broad agricultural region formed by a number of tributaries, the most important of which is Wadi Jaghjagh. The narrow alluvial valley of Lower Khabur cuts through very dry areas (from 250 mm to less than 150 mm annual precipitation) on its course to the Euphrates River.

Modern exploration of the Upper Khabur began in 1850 with Austin Henry Layard, who uncovered a Neo-Assyrian *lammasu* ("winged bull") at Tell Araban, today known as Tell Agaga, ancient Shadikanni. In campaigns in 1899, 1911–1913, and 1927–1929, M. von Oppenheim explored the western Khabur and excavated Tell Ḥalaf. Between the world wars, Antoine Poidebard pioneered aerial reconnaissance in his study of the Roman limes system along the Lower Khabur and Wadi Jaghjagh to Nisibin. In 1934–1935 Max Mallowan surveyed portions of the Khabur Triangle and began excavations at Tell Brak and Chaghar Bazar. Recent surveys have been conducted by Frank Hole and by D. J. W. Meijer in the northeast part of the Khabur Triangle and by B. Lyonnet in its central area. Hartmut Kühne has surveyed the lower Khabur and, in anticipation of a new dam, J. Monchambert has surveyed the Middle Khabur. [*See the biographies of Layard, Poidebard, and Mallowan.*]

These surveys, and excavations at approximately thirty sites, document occupation from the Neolithic period to the present; it reached a peak in the late third and early second millennia BCE, both in number of sites and population, estimated from total hectares occupied. Some Bronze Age sites are quite large, ranging from 30 to more than 100 ha (74–247 acres): Mozan, Hamoukar, Barri, Leilan, Chuera, Mabtuh (East), Hamidi, Brak, Beydar, Chaghar Bazar. [*See* Mozan, Tell; Leilan, Tell; Chuera, Tell; Brak, Tell.] In the western part of the Upper Khabur about a dozen Bronze Age tells are surrounded by large earthworks; von Oppenheim first noted this unusual feature and coined the term *kranzhügel,* "wreath-shaped tell," for them. Settlement was relatively sparse from the end of the Middle Bronze Age until the twentieth century.

The earliest excavated remains from the Khabur date to the Pre-Pottery Neolithic B (PPNB) at Tell Feyda, followed by Hassuna material from Kashkashuk II. Von Oppenheim first encountered painted Halafian ceramics of the Chalcolithic period in deep soundings at the ware's namesake, Tell Ḥalaf. [*See* Ḥalaf, Tell.] Important Uruk (late fourth millennium) remains, including the beveled-rim bowl, related to styles from southern Mesopotamia, have been found throughout the Khabur catchment. At Tell Brak, Mallowan excavated the Eye temple from the Uruk period; it contained scores of small stone amulets with exaggerated eyes.

It has been posited that there was a break in occupation in the early third millennium and that the first complex polities—that is, secondary-state formation—in the Khabur, rather than being an outgrowth of Uruk influence, occurred in the mid-third millennium at dry-farming sites such as Tell Leilan. At issue is ceramic chronology: a style of painted and incised pottery called Ninevite 5, which dates to the first half of the third millennium, is found in the eastern part of the Upper Khabur to beyond the Tigris River. Chronologically problematic Metallic/Stone ware is distributed throughout the western Khabur and beyond. It is moot whether the significant increase in number and size of sites during the second half of the third millennium marks the transition to complex society. Nevertheless, this sudden increase in sites and the location of many of them, such as Tell Chuera and other *kranzhügel* tells such as Tell Beydar, where "Ebla" style tablets have been found, in agriculturally

marginal areas, remains to be explained, as does their substantial decline beginning in the second quarter of the second millennium BCE. Several research teams have sought to reconstruct climatic and environmental conditions in the Khabur. A group led by Harvey Weiss of Yale University now suggests that there were climatic fluctuations during the third millennium, climaxed by a severe drought at the end of the Akkadian period, that lasted for several hundred years during the last quarter of the millennium.

On the banks of the lower Khabur River several sites served as storage centers for grain; they were found during salvage excavations in anticipation of a dam to be constructed south of Hassekeh. At Tell Raqai (excavated by Glenn Schwartz and Hans Curvers for Johns Hopkins University and the University of Amsterdam) a circular mud-brick building was identified as a granary complex, and at Tell 'Atij (excavated by Michel Fortin of Laval University) there are storage facilities but little evidence for domestic habitation. Similar configurations are known at Ziyada (excavated by Giorgio Buccellati, Daniela Buia, and Steven Reimer for the University of California, Los Angeles) and at Kerma (excavated by Muntaha Saghié of the Lebanese University in Beirut). It has been proposed that these sites were collection points for grain to be shipped downstream to Mari, or for pastoralists during the summer months when fodder was scarce. [*See* Mari.]

At Tell Brak, the palace of the Sargonic king Naram-Sin, discovered by Mallowan (1947), has been augmented by large mud-brick public buildings in area SS (excavated more recently by David and Joan Oates. Weiss's soundings at Tell Leilan provide a ceramic sequence for much of the third millennium and show that the site greatly increased in size in about 2600 BCE.

During the early second millennium BCE, in the Middle Bronze Age (Old Assyrian, Old Babylonian periods), historical evidence for the Khabur is greatly expanded from archives of the period that tell of the Old Assyrian trade network that passed through the Khabur between Aššur and Anatolia: from the Mari archives of the Old Babylonian period, and recently from post-Mari archives at Tell Leilan (ancient Shubat-Enlil, once the seat of power for Shamsi-Adad, who briefly controlled much of Northern Mesopotamia). [*See* Assyrians; Aššur; Anatolia, *article on* Ancient Anatolia.] With his demise and the destruction of Mari by Hammurabi of Babylon, the Khabur Triangle came under the influence of Yamḫad, ancient Aleppo, for a time. [*See* Aleppo.] Habur ware dates to this period, a painted pottery Mallowan first identified at Chaghar Bazar. The presence of Hurrians increased during this period, one early center of which was Urkish (possibly Tell Mozan, being excavated by Buccellati and Marilyn Kelly-Buccellati). [*See* Hurrians.]

By the middle of the second millennium BCE, the Hurrian-dominated kingdom of Mitanni had emerged as the main power of northern Syro-Mesopotamia; its capital Waššukanni, located in the Khabur Triangle, has not been positively identified, although Tell Fakhariyah is one candidate. [*See* Mitanni; Fakhariyah, Tell.] During this period settlement was relatively sparse, and neither at Brak nor Chuera are Mitanni occupation remains extensive. At Tell Brak there was a palace (that can be reconstructed as a *ḫilani*) and an accompanying temple. During the fourteenth century BCE, Mitannian power collapsed in the face of Hittite pressure, but the main beneficiary in the Khabur region was Aššur, center of the Assyrians, who, after displacing the Mitanni, fought campaigns against pastoralists there. Their struggle led to the establishment of a number of Middle Assyrian settlements, including the fortress of Dur Katlimmu at Tell Sheikh Ḥamad on the Lower Khabur. Kühne recovered a small archive from his excavation at Tell Sheikh Ḥamad, and dates the first irrigation canals on the Khabur to that period. Two painted wares of the Late Bronze Age are Late Ḫabur (Khabur) ware and Nuzi (Mitanni) ware, but the majority of the pottery is plain. [*See* Sheikh Ḥamad, Tell; Nuzi.]

Early in the Iron Age (1200–333 BCE) a major center of the Aramean kingdom of Bit-Baḫiani was the city of Guzana (modern Tell Ḥalaf), which has provided a significant collection of early Aramean art and architecture. [*See* Arameans.] Von Oppenheim excavated two palaces on the acropolis. The so-called temple-palace has the plan of a *ḫilani*. Roman occupation obscures another major Aramean center at Tell Fakhariyah, where McEwan excavated a palace. Recently, a statue of *Hdys'y*, with a bilingual (Aramaic and Akkadian) inscription was discovered there by chance.

In the eighth–seventh centuries BCE, the Khabur region was incorporated into the Assyrian Empire. Neo-Assyrian palace ware was found at Tell Ḥalaf, and major settlements were located at Tell Beydar in the Khabur Triangle and on the Lower Khabur at Tell Agaga and Tell Sheikh Ḥamad. Tell Agaga, where Layard began his explorations in the Khabur, has recently been reexcavated by Assad Mahmoud. A major Neo-Assyrian fortress and administrative center was built at Tell Sheikh Ḥamad, ancient Dur Katlimmu. In the lower city, building F has a *ḫilani* plan, and rooms in building G were decorated with painted lotus friezes.

Settlement in the Neo-Babylonian, Persian, and Hellenistic periods is not well documented archaeologically in the Khabur. During the Roman period, the Khabur Triangle was a frontier between Roman and Parthian/Sasanian (Persian) control. Poidebard's reconstruction of the limes system is currently undergoing reevaluation. In the Byzantine and Islamic periods, settlement was modest in the southern parts of the Khabur catchment, but important settlements existed at Dara, Nisibin, and Diyarbakir. The limited settlement after the mid-second millennium BCE may have been related to the following conditions: its position as a march between

kingdoms and empires where combat was endemic and conditions did not favor sedentary life, or its position as an agriculturally marginal zone where slight fluctuations in climate or human-induced environmental degradation inhibited settlement.

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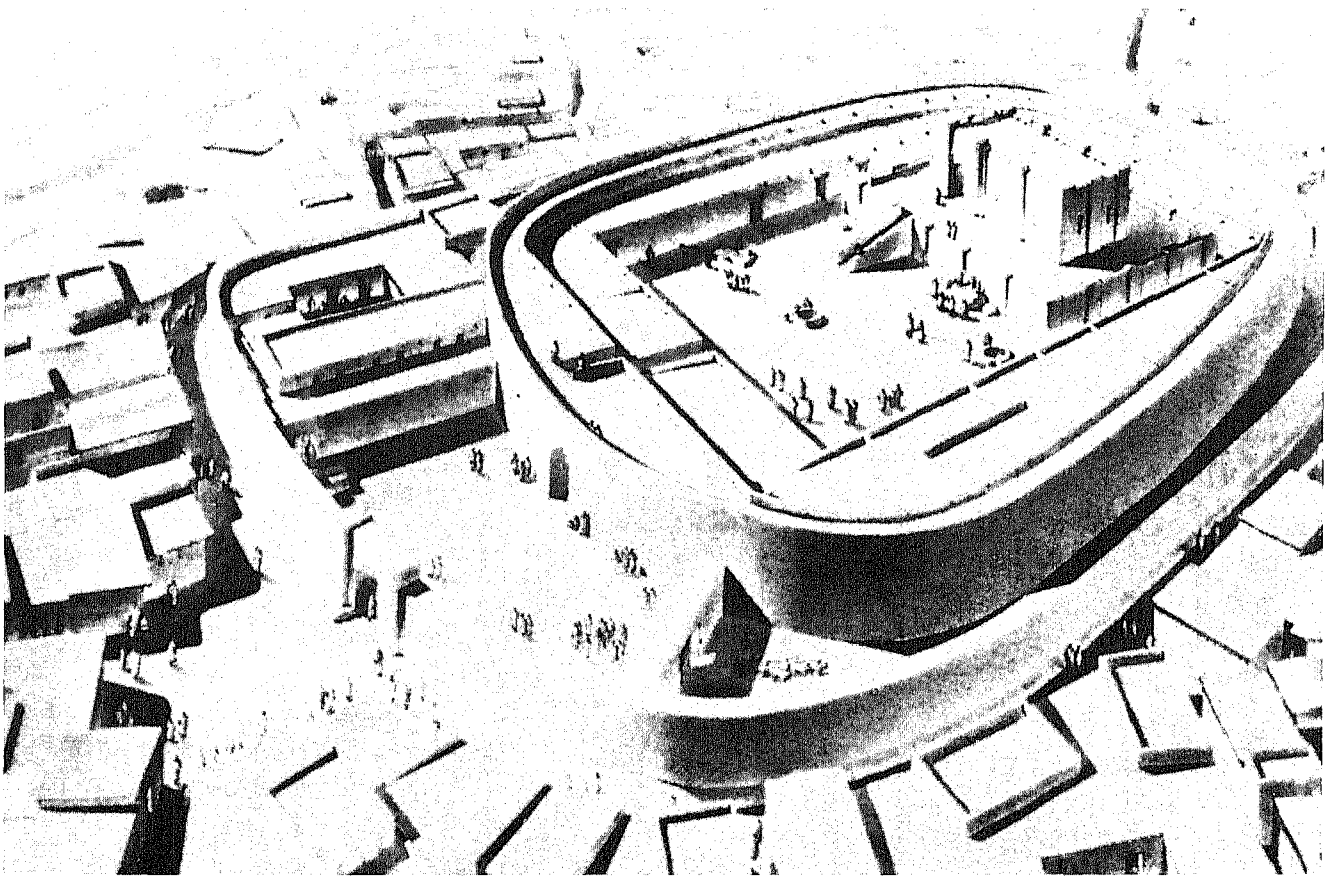
KHAFAJEH, one of the important sites to the east of modern Baghdad and slightly north of the confluence of the Tigris and Diyala rivers (33°38′ N, 44°40′ E). Archaeologically this section of modern Iraq is known as the Lower Diyala region. Because of the areas' proximity to Baghdad, the sites of the Lower Diyala have been known to scholars and travelers since Western interest in early Mesopotamia began in the nineteenth century. Henry Rawlinson mentioned Khafajeh and equated it with the ancient city of Opis. [*See the biography of Rawlinson.*] Modern interest in Khafajeh came about because of a number of illicitly dug antiquities that had appeared on the market in Baghdad that could be traced to the Lower Diyala region. Khafajeh was excavated by the Oriental Institute of The University of Chicago, The University Museum of the University of Pennsylvania, and the American Schools of Oriental Research from 1930 to 1938, followed by some minor work in 1950 by the Directorate General of Antiquities of Iraq. The directors of these excavations were Conrad Preusser, Pinhas Delougaz, and Ephraim A. Speiser. [*See the biography of Speiser.*] The excavation and recording techniques evolved by the excavators of Khafajeh and the other sites of the Lower Diyala became standards for American archaeological excavation in Mesopotamia for many years.

Covering some 216 ha (533.5 acres), Khafajeh is composed of a number of mounds; the four major mounds were labeled A through D by the excavators. These mounds rise from approximately 4 to 6 m (13–19.6 ft.) above the present plain level. Mound A, the largest, is situated in the northern part of the site and is the mound closest to the modern course of the Diyala river. Occupation began in the Uruk and Jemdet Nasr periods and lasted into the Akkadian period when A was abandoned. Mounds B and C are joined and are parts of a single settlement in the southwest. The excavated materials from these mounds are dated to the Old Babylonian period and perhaps to the early Kassite era. Mound D, located in the southeast, is the smallest mound and is dated to the Isin-Larsa and Old Babylonian periods.

Information derived from a hoard of tablets from a temple

of Sin in mound D of the Old Babylonian period allows for the identification of the mound with ancient Tutub, which was a town known in the Akkadian period (Harris, 1955). The name occurs in an Old Akkadian tablet from Eshnunna; therefore, it is likely that mound A, the earliest mound, was also known as Tutub during at least part of its history. An inscribed clay cylinder from Mound B found in the foundations of a room in a massive fortification indicates that in the Old Babylonian period mound B, and probably mound C as well, became known as Dur Samsuiluna. Samsuiluna of Babylon, the ruler after Hammurabi (1792–1750 BCE), constructed a fortress there in the twenty-third year of his reign. It is not known how long these ancient names survived, but it seems probable that in the early part of the first millennium during the Neo-Assyrian period, Khafajeh was located in a region known at one time as Tupliash.

Of the four mounds of Khafajeh, mound A was the most extensively excavated. The building sequences include the so-called Sin temple, the private houses, the small temple in square O 43, the Nintu temple, and the Temple Oval. It is most unlikely that the "Sin temple" was really sacred to the god Sin, but the name is so entrenched in the early literature describing the building that it would be confusing to rename the structure. A sounding beneath the Sin temple probably reached virgin soil and indicated that occupation in the area of the sounding began with the late Uruk period. The excavations of the actual temple are extremely important as they provide an unbroken series of levels of one building dating from the Jemdet Nasr period through the Early Dynastic period. It was one of the archaeological sequences in the excavations of the Lower Diyala region that provided a definition of the Early Dynastic period. Levels I through V of Sin are dated to "Protoliterate c and d," a terminology used by the excavators. This occupation is the equivalent of the Jemdet Nasr period. The chronological situation is somewhat more complicated in that it is now known that Protoliterate d of the Diyala region is actually contemporary with Early Dynastic I of southern Mesopotamia. Sin VI and VII are also Early Dynastic I, Sin VIII and IX are Early Dynastic II, and Sin X dates to Early Dynastic III. The plan of the earliest temple is based on the classic tripartite Sumerian temple type of southern Mesopotamia. By Sin IV the temple is built upon a terrace and is reached by a flight of steps. The plan also incorporates a large court to the east. In the Early Dynastic period plano-convex bricks are used and the building becomes increasingly monumental.



KHAFAJEH. *Reconstruction of the Temple Oval.* ED II period. (Courtesy Oriental Institute, Chicago)

To the west and south of the Sin temple and stratigraphically related to it were the remains of a long sequence of twelve levels of Early Dynastic private houses as well as the smaller Nintu temple and a temple located in square O 43 on the survey map of Khafajeh. These sequences greatly enriched our knowledge of the Early Dynastic period in the Diyala region and underlined the fact that there was an extraordinary diversity of architectural approaches to temple construction at Khafajeh during the third millennium. An additional new type of temple architecture was provided by the excavation of the very large Temple Oval further to the west of the private houses and in close proximity to the town wall. Three different levels of this Early Dynastic temple were excavated. Because the building must have dominated the southern part of mound, it is unfortunate that the deity to whom this temple complex was dedicated is not known. It was originally built on top of a foundation pit filled with some 7 m (23 ft.) of clean sand. The cella (inner part of the temple), which was not preserved, stood on top of a raised platform and was reached by a flight of steps rising from a courtyard surrounded by rooms and a large irregular oval wall. This wall in turn was surrounded by another curved wall. Its length was over 100 m (328 ft.), and in the south a residential type building called house D (no houses A, B, or C exist) was built in the space between the inner and outer curved walls. House D must have served in the administration of the temple. Most of the material found in mound A belongs to the Early Dynastic period, although some Akkadian finds were made in a private house area in the northern part of the mound.

Mention has already been made of the clay-foundation cylinder, which identified the excavated remains of mound B as Dur Samsuiluna, a fortress built by Samsuiluna around 1726. A portion of a 4.7-meter-thick buttressed wall of this fortification was exposed as well as parts of two different buildings. The plan of the larger of the two buildings has two parts that imply a dual function for the building's use, and the excavator suggests that it may have been the residence of a governor or ruler of the fort (Hill, 1990, p. 210). Perhaps to be included in Dur Samsuiluna is mound C. A few soundings on this mound were undertaken but nothing of importance was recorded.

Large-scale excavations were carried out on mound D, which may be dated to the Isin-Larsa and Old Babylonian periods. Part of a massive fortification wall 7 to approximately 12 m (23–39 ft.) thick surrounded what has been termed "the citadel." The shape of the space defined by this wall was very irregular. A street led from an outer gate excavated in the northeastern part of the enclosure to a large temple building surrounded by private houses in the center of the citadel. The excavators defined an earlier and later phase of construction. An Old Babylonian tablet hoard found in a room of the later phase identified this building as a temple of the god Sin and provided for the identification of Khafajeh with ancient Tutub.

[*See also* Diyala.]

KHAFAJEH. *Scarlet Ware jar.* ED I period. (Courtesy I. Theusen)

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KHALDEH (Kobbet Choueifat), site located about 12 km (7 mi.) south of Beirut, Lebanon, along the highway connecting Beirut to Sidon. The site is formed by two promontories, about 10–15 m above sea level, that slope toward the sea for a length of 500 m. A milestone discovered at the site gives its distance as 239 Roman miles from Antioch and

about 12 from Berytus (Beirut). Khaldeh is identified with ancient *Hi-il-du-ya* (in Akkadian), a city of the kingdom of Sidon annexed by Esarhaddon in 677/76 BCE (see *Archiv für Orient Forschung*, Berlin, 1926–, vol. 9, p. 48, col. 3.2). It is known as Mutatio Heldua in the itinerary of the Bordeaux pilgrim of the Roman period; *Khaldeh* is its modern Arabic name.

The site has been known since 1847, when Henn Guys mentioned it in *Beyrouth et le Mont Liban*. In 1960, during construction of the highway near the airport, the Lebanese Department of Antiquities uncovered some Phoenician tombs. Subsequently, archaeological excavations were carried out at the site under the direction of Roger Saidah (1961–1962) under the auspices of the Lebanese Department of Antiquities.

The excavations unearthed stratigraphic levels from the Byzantine-Roman, Early Roman, Greco-Persian, Late Bronze, and Late Chalcolithic periods. A complex of urban houses (villas with mosaic floors and baths) as well as industrial and agricultural quarters (olive presses and cisterns) dating to the Byzantine-Roman period (fourth–sixth centuries CE) were found covering the surface of the mound. The main discoveries from the Early Roman period are terra-cotta sarcophagi, characteristic terra sigillata and Megarian ware, and a number of coins of the imperial period. [*See* Sarcophagus.] The finds indicate a time span from the Late Hellenistic to the Early Roman period. The Greco-Persian period is represented by a few wall foundations constructed of limestone blocks.

About 422 tombs were discovered in the Iron Age (tenth–eight centuries BCE) Phoenician necropolis that shed light on the funerary practices. They were of two types: the majority were inhumations, in which the body was placed directly on the ground between two rows of stones and surrounded by grave goods—mainly Iron Age pottery. A lesser number of burials were in funerary urns found containing some calcinated bones, indicating the practice of incineration. [*See* Phoenicians; Burial Techniques; Grave Goods.] this extensive cemetery points to a large settlement, as yet unfound—possibly the first one in the Phoenician homeland to bear witness to that golden era in Phoenician history.

The Late Bronze Age (thirteenth–eleventh century centuries BCE) is attested by sherds discovered in the area of the cemetery. The Phoenician tombs apparently disturbed earlier LB settlements probably abandoned toward the end of the thirteenth century BCE. As the excavations neared their end, a few oval structures and funerary jars were discovered that are dated to the Late Chalcolithic period (beginning of the third millennium).

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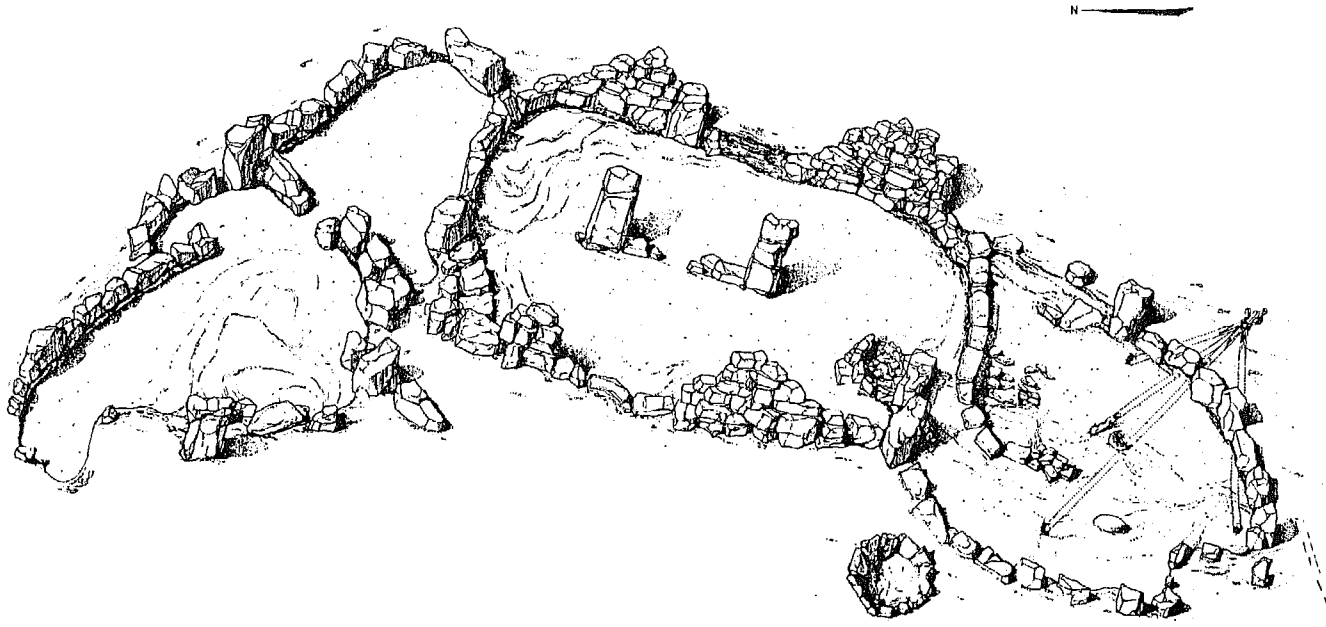
KHAWLAN AṬ-ṬIYAL, region situated on the internal slope of the Yemenite mountains, southeast of Yemen's capital, San'a. It occupies approximately the northwest sector of the basin of Wadi Dhanah (15°00′–15°15′ N, 44°30′–45°00′ E). This great watershed area, which the ancient Sabeans once closed with a dike near their capital, Marib (see below), drains into the desert to the east.

The name Khawlan is very ancient and comes from the name of a Himyarite tribe that occupied the region in the pre-Islamic era (first–second centuries CE). The appellation is derived from the high mountain Ǧabal Ṭiyal, about 3,500 m high) dominating the chain that delimits the region on the north; the name distinguishes it from Khawlan bin 'Amir, located farther north, near the city of Ṣa'dah. The region is sparsely populated today, and the few villages (al-Kibs, Jihanah, 'Asal, Banī Sulayḥ, aḍ-Ḍayq, al-Watadah) are distributed along the alluvial valleys (Wadi Miswar, Wadi Ḥababiḍ, Wadi 'Aṭfah, Wadi Shirwab), cutting into the bare hills of Precambrian granite that slopes toward the desert.

Except for the brief exploratory voyage made by Eduard Glaser at the end of the 1800s, no archaeological research had been done in the area prior to the beginning of the reconnaissance surveys carried out by the Italian Archaeological Mission in 1981.

In addition to a series of extensive Mousterian (Middle Paleolithic) workshops in Wadi Ḥababiḍ that produced flint tools, numerous Neolithic settlements characterized by isolated oval houses and by a sophisticated stone-working industry have been discovered. Several excavations conducted at site 3 in Wadi ath-Thayyilah (1984–1986) have given proof of the beginning of domestication. They have allowed the hypothetical reconstruction of the methods of exploiting resources that were used by the first sedentary Yemenites from about 5000 to 3500 BCE, in an environment more humid than the present one.

The reconnaissance surveys also led to the discovery—for the first time on the southern Arabian Peninsula—of a Bronze Age, datable to the third–second millennium. More than fifty sites from this period were discovered between



KHAWLAN AṬ-ṬIYAL. Figure 1. *Axonometric plan of loci* 1-5, *Wadi Yanaʿim.* (Courtesy A. de Maigret)

1981 and 1985 in the regions of Aʿrush and Suhman (western Khawlan) and Jabal Aʿmas (al-Ḥada). The data from the explorations and from the excavations conducted in four of the principal settlements (Wadi Yanaʿim, Wadi Najid el-Abyaḍ, al-Masannah, ar-Raqlah) offer a quite clear picture of the culture that preceded the Sabaeans.

This picture shows agricultural villages with oval houses centered around areas of common activity (see figure 1). Raised mud walls were perched on foundations of unworked blocks, and central pilasters supported the ceilings. Excavation led to the discovery of stone utensils, objects of bronze and semiprecious stones, grinding stones, pestles, and an abundance of animal bones on ceramic tile floors. The examination of seeds found in the clay of the tiles and of the bones show that the inhabitants cultivated millet, wheat, and barley and raised cattle, sheep, and pigs.

The ceramic ware, which shows evident parallels with Early Bronze Age Syrian-Palestinian wares, is clearly different from that of the following Sabaean period. It may suggest that the origins of the kingdoms of the southern Arabian Peninsula are to be found outside Yemen.

Paleoenvironmental studies have demonstrated that Bronze Age culture came to an end (at least in this area) toward the middle of the second millennium: the geohydrologic equilibrium upon which the economic success of these agricultural communities was based entered into a period of crisis. A drier, more irregular climate ensued, and the Khawlan, now traversed by more ephemeral and violent streams of water, was abandoned. Human occupation shifted toward the desert border to the east and began to be integrated into the emerging Sabaean culture. At that time, imposing hydraulic works were developed that were able to manage the irregular quantities of water coming from the mountains, and large stretches of the desert were cultivated with very intricate systems of irrigation. The dike at Marib is only the largest example of such new technology. [*See* Hydraulics.]

Thus, in the Sabaean period, only the most eastern part of the Khawlan was occupied. This was demonstrated by the Italian mission's discovery in 1985 of a large archaic Sabaean city (ancient Ḥafary) in Wadi Yala, about 30 km (19 mi.) southwest of Marib. A brief excavation conducted there in 1987 made it possible to ascertain that the city was first founded in the thirteenth–twelfth centuries BCE. Such a date should probably be assumed to mark the beginning of Sabaean culture in Yemen and the point of transition between prehistory and history in Khawlan and on the southern Arabian Peninsula.

[*See also* Marib.]

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ALESSANDRO DE MAIGRET

Translated from Italian by Susan I. Schiedel

KHELEIFEH, TELL EL-, site located approximately 500 m from the northern shore of the Gulf of 'Aqaba, roughly equidistant between the modern cities of Eilat and Aqaba. Tell el-Kheleifeh was first surveyed in 1933 by the German explorer Fritz Frank, who identified the site with the biblical city of Ezion-Geber (*Nm.* 33: 35–36; *Dt.* 2: 8; *1 Kgs.* 9: 26–28; 22: 47–48; *2 Chr.* 8: 17–18). In 1937, Nelson Glueck conducted a surface survey of this low, mud-brick mound and concluded that the site had been occupied between the tenth and eighth centuries BCE. Glueck directed three seasons of excavation at Tell el-Kheleifeh for the Smithsonian Institution and the American Schools of Oriental Research (ASOR) between 1938 and 1940. He discerned six major periods of occupation, which he dated between the Iron I and Persian periods. Glueck wrote a number of articles about Tell el-Kheleifeh (see Vogel, 1970) but never published a final excavation report. He accepted Franks' Tell el-Kheleifeh/Ezion-Geber identification. (For a recent reappraisal of Glueck's excavations, see Pratico, 1985, 1993.)

Casemate Fortress. Two major architectural phases could be discerned in the mud-brick ruins at Tell el-Kheleifeh: the first, and earliest, was a casemate fortress; the later one was a fortified settlement. The former was composed of a square (45 m on each side) of casemate rooms. A large building, constructed on the so-called four-room house plan (Shiloh, 1970) was located in the center of this casemate square. This structure, identified by the excavator as a citadel or granary, measured 12.30 × 13.20 m. It was composed of three contiguous units at the northern end of the fortress. Each of these units, or small rooms, was roughly square. Extending to the south were three larger rectangular rooms (approximately 7.40 m long and 2–3 m wide) whose walls were preserved to a height of 2.70 m. An open space between the casemate fortification and this monumental building was, devoid of architecture and used as a courtyard until the later fortified settlement was built (see below).

In light of the excavated data, the chronology of the casemate fortress cannot be established. The only pottery that can be assigned to this level with certainty is Negevite ware, a handmade Iron Age tradition for which a refined typology has yet to be established. The chronology of Negevite pottery can only be determined on the basis of its association with datable wheelmade forms.

The fortress's plan is intriguingly similar to an architectural tradition well attested in the central Negev southward to the site of Tell el-Qudeirat (Qadesh-Barnea). Recent surveys and excavations have documented an extensive network of early Iron Age fortresses (eleventh and/or tenth centuries BCE) with notable similarities to the Tell el-Kheleifeh fortress, including the casemate construction and nearby buildings exhibiting the four-room plan (Cohen, 1979). Given the fact that Tell el-Kheleifeh's pottery and inscriptional materials do not predate the eighth century BCE (see below), this observation of the striking similarities between the Tell el-Kheleifeh fortress and those of the central Negev must be, for the present, one of comparative architecture and not chronology.

Fortified Settlement. When the casemate fortress was destroyed, a fortified settlement of considerable size (56 m [north] by 59 m [east] by 59 m [south] by 63 m [west] replaced it. This new, larger settlement was surrounded by a solid offset/inset wall with a different alignment that gave access through a four-chambered gate on the south. Unlike the casemate fortress with its open courtyards between the casemate wall and the central structure, the spaces inside the new offsets/insets wall were now occupied with buildings.

In part, the earlier casemate fortress was incorporated into the new plan. The edifice that once stood in the center of the casemate square was now located in the northwest corner of the fortified settlement. Some of the old casemate rooms, primarily those on the southern and eastern sides of the old fortress, continued in use. The casemate rooms of the western and northern sides, however, were now outside the new fortification perimeter.

The chronology of the fortified (offsets/insets) settlement can be established with reasonable certainty on the basis of the wheelmade pottery recovered (c. eighth–early sixth century BCE). The same chronology is also suggested by a small but important collection of stamp impressions that appear on the handles of storage jars. The inscriptions read "belonging to Qaws'anal, servant of the king" *(lqws'nl 'bd hmlk).* The script dates to the seventh or early sixth century BCE.

The offsets/insets settlement represents the last major architectural level at the site. There is fragmentary evidence for later occupation, after the sixth century BCE (a few Phoenician and Aramaic ostraca of the fifth and fourth centuries, a small collection of Greek body sherds and some pottery of the fifth century BCE). The building remains of the later occupation are poorly preserved.

Identification. Reappraising Glueck's work at Tell el-Kheleifeh has verified a number of his conclusions, but has also indicated the need for some significant revisions and refinements, particularly for the site's chronology and identification. Reappraisal has suggested later chronological horizons for the site than originally proposed by Glueck. As noted above, Tell el-Kheleifeh's wheelmade pottery is dated to between the eighth and early sixth centuries BCE, creating a problem in terms of the biblical references to Ezion-Geber (see above): the question is whether the ruins of Tell el-Kheleifeh do indeed preserve the story of biblical Ezion-

Geber and/or Eilat. The revised chronology provides no clear archaeological evidence for the period of Israel's wilderness traditions (*Nm.* 33: 35–36) or even for the time of Solomon's reign in the tenth century (*1 Kgs.* 9: 26–28). Additionally, the site provides only questionable evidence for the ninth century BCE (*1 Kgs.* 22: 47–48). Assuming the correctness of the revised chronology, the identification of Tell el-Kheleifeh is both an archaeological and a historical problem.

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KHIRBEH (Ar., *khirbet,* joined with a noun, meaning "ruin"). The term *khirbeh* indicates that at least some portion of a ruined structure or city is visible: for example, a wall line, cistern, or architectural fragment(s). Eighteenth- and nineteenth-century Western travelers to the Near East observed that a Palestinian *khirbeh* was a ruined city of ancient Palestine. Many such sites had names descriptive of their location: for example, Khirbet Qumran ("ruin of the grayish spot") and Khirbet el-Busl ("ruin of the onion"). [*See* Qumran.] Other descriptors referred to a current or previous owner: Khirbet el-Huseinat ("ruin of the Husein clan"). The names of still others represented their specific archaeological features: Khirbeh ed-Deir ("ruin of the monastery") and Khirbet es-Sukriyeh ("ruin of the sugar factories").

The *khirbeh* sites that attracted the most interest in the nineteenth century were those with Arabic place names that appeared to preserve "corrupted" versions of their ancient Hebrew, Greek, or Latin names: for example, Khirbet Seilun (biblical Shiloh) and Khirbet ʿAjlan (biblical Eglon). [*See* Shiloh.] Recognizing linguistic transformations between languages led to the identification of many biblical sites and to the creation of the first more-or-less comprehensive historical geography of biblical Palestine in the mid-nineteenth century. [*See* Historical Geography.]

Subsequent archaeological research, beginning in 1890 with the work of Flinders Petrie, showed that most of the ruined sites did not date to the period of the Hebrew Bible at all; they were, rather, ruined Roman-, Byzantine-, Crusader- or Islamic-period sites that in turn might preserve an earlier biblical place name from the immediate region but not necessarily of the site itself: the Roman, Byzantine, and Islamic site of Khirbet ʿAbdeh was Oboda/Avdat and Khirbet Kaisariyeh was Caesarea, but Khirbet el-Jezery was only adjacent to biblical Gezer. [*See* Avdat; Caesarea; Gezer.] Overzealous attempts to see biblical place names in Arabic place names produced erroneous results. The aforementioned Khirbet ʿAjlan, for example, probably had nothing to do with biblical Eglon, but rather was named in the seventh century CE by ʿAmr ibn al-ʿAṣ. Once scholars realized that the Palestinian *khirbeh* sites were post biblical (and often Islamic in date), interest in them as worthy of study on their own merit vanished.

Historical documentation identifies many *Khirbeh* sites as active villages through the sixteenth century and suggests that they were abandoned and ruined in the seventeenth and eighteenth centuries. Others were only seasonal habitation spots founded in the early nineteenth century. These also attracted the name *khirbeh,* in these instances meaning "temporary site." Finally, some of the Arab villages abandoned in 1948 and now located within modern Israel have also come to be referred to as *khirbeh.* Most *khirbeh* sites in modern Israel were given Hebrew names prefaced by the word *ḥorvat* ("ruin") and thus have two "modern" names. Many of the new Hebrew names do not preserve a tradition: some are modern identifications of the site's ancient name, when one can be suggested, and may not be accurate; and others may be named after a modern kibbutz and have no antiquity, such as Ḥorvat ʿUza, the modern name of Khirbet Aiyadiyah.

[*See also* History of the Field, *overview article;* Site Survey; Tell; *and the biographies of Petrie, Robinson, and Smith.*]

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JEFFREY A. BLAKELY

KHIRBET _____. *For toponyms beginning with this element (also spelled* Khirbat*), see under latter part of name. For a general definition of the term, see* Khirbeh.

KHORSABAD, modern village on the site of the ancient city of Dur Sharrukin ("fortress of Sargon"), is located in northern Iraq about 20 km (12 mi.) northeast of Nineveh (36°31′ N, 43°14′ E). The ancient city was founded by Sargon II, king of Assyria (721–705 BCE), who purchased the site from the inhabitants of a local village, Magganubba, and built a city there to be his new capital. The reasons for Sargon's decision to build a new capital are not clear. If he usurped the throne, as has often been thought, he may have wished to create a new administrative center away from hostile elements in the older Assyrian cities. He may, however, have simply wished to display his power and wealth by creating a splendid new capital for the expanding Assyrian Empire. With prisoners of war as laborers, work on the new city began in 717, and celebrations in honor of the king and the gods taking up residence were held in 707. Construction of the city remained unfinished at the time of Sargon's death in 705. Sennacherib, his son and successor, moved the capital to Nineveh, but Dur Sharrukin appears to have remained a provincial capital until its final abandonment when the empire fell in about 612 BCE. [*See* Nineveh.] The identity of the site did not disappear from memory, however; the medieval Arab geographer Yaqut referred to "a city called ruins of Ṣarʿon" located beside the contemporary village of Khorsabad.

Khorsabad was the first site in Mesopotamia to be extensively excavated, and it has produced a wealth of archaeological material. Excavation at the site began in the early 1840s, with the work of Paul Émile Botta, the French consul at Mosul. Disappointed at not finding anything of particular interest during earlier digging at Kuyunjik (the citadel of ancient Nineveh), Botta turned his attention to Khorsabad, where inscribed bricks were reported to have been found by the local inhabitants. His excavations were immediately successful. Between 1843 and 1844, numerous large stone slabs with pictorial reliefs were unearthed that had lined the walls of an immense palace. [*See* Palace.] Botta thought that he had uncovered the biblical city of Nineveh. Eugène Flandin, an artist sent by the French government to assist Botta, made drawings of the wall reliefs that were later published. When some of the discoveries were exhibited in Paris, they caused a sensation and spurred a European hunt for Mesopotamian antiquities.

Excavation at Khorsabad was resumed from 1852 to 1854 by Victor Place, Botta's successor as French consul at Mosul. Place cleared about two hundred rooms in the palace and he, too, found numerous stone wall reliefs and statues, most of which were lost in 1855: the boat and rafts conveying them down the Tigris River on the start of their journey to Paris sank near Qurna, after being attacked by rebellious tribesmen. Fortunately, drawings of many of the reliefs and architectural plans had been made by Félix Thomas, Place's draftsman, and these were later published. In addition, photographs (calotypes) of some of the archaeological work at Khorsabad, as well as of other places in Mesopotamia, were taken by Gabriel Tranchard, an engineer and friend of Place. Among the photographs, the most impressive are those showing the various stages in the excavation of a city gate: its arched entrance displays a border of glazed bricks along its upper facade and a flanking pair of stone colossi in the form of human-headed winged bulls.

Systematic excavations at Khorsabad were not resumed until 1929, when the Oriental Institute of the University of Chicago sent an expedition under Edward Chiera. The institute carried out excavations at the site until 1935, with the most important seasons (1932–1935) under the direction of Gordon Loud. Their work centered on the main citadel area, a second smaller citadel (palace F), and one of the city gates (gate 7). In 1957, the Iraqi Directorate General of Antiquities carried out excavations at the temple of the Sebittu (a group of seven beneficent deities) under the direction of Behnam Abu al-Soof.

The city wall surrounding Dur Sharrukin was constructed of mud brick on top of a stone base; it was about 14 m thick and 12 m high and enclosed an area roughly square in plan (approximately 1,800 × 1,700 m—about 300 ha, or 740 acres). Seven monumental gates (gates 1–7) provided entry into the city, and each gate was given a name honoring a Mesopotamian deity (e.g., "The Goddess Ishtar Is The One Who Makes Its People Flourish"). Two gates were located on each side of the city, except on the northwest, where there was only one (gate 7). At the time of excavation, this last gateway was blocked, suggesting that the doors had never been brought into position.

The area serving as the city's main citadel was located against the northwest city wall. The citadel was on the same level as the remainder of the city but was walled off from it and made accessible by two gates (A and B). Within the citadel, the palace complex and the temple to the god Nabu were placed on platforms, raising them above the level of the other structures uncovered there (buildings J, K, L, and M). The form and placement of several of the units within the citadel seem to be somewhat haphazard and irregular. This is surprising because the city was planned and built within a brief period of time.

The royal palace (*é-gal-gaba-ri-nu-tuku-a,* "palace without rival"), with its residential, administrative, ceremonial, and religious sections, was made up of approximately 240 rooms, courtyards, and corridors, and covered about 10 ha (25 acres). The palace complex was placed on a raised terrace about 12 m high that partly jutted beyond the main line of the city wall; its inhabitants thus received the prevailing wind and also obtained a view of the nearby mountains. Access to the terrace was by means of a broad ramp that led from an open square or plaza up to the main entrance of the palace. The palace of Sargon II is perhaps the best known of all the Neo-Assyrian palaces. It was planned around three large courtyards, with the throne-room suite located between the second and third courtyards. The main entrance, on the southeast, had three monumental gateways, each of which was guarded by pairs of colossal winged bulls (see figure 1). This entrance led into the first and largest courtyard, XV (103 × 91 m). Administrative offices were probably located around this courtyard; to its northeast was the palace service area, with kitchens, storerooms, and possibly workshops. The walls of the second major courtyard (VIII), reached by passing through two chambers, were lined with stone reliefs. The ceremonial and official sections of the palace were probably located around this courtyard. On the southwest side of this courtyard, three monumental entrances led into a typical Neo-Assyrian throne-room suite. The large rectangular throne room (about 10 × 47 m) had a stone throne dais against its narrow southeastern end and was embellished with stone wall reliefs and painted decoration. Beyond the suite of rooms adjacent to the throne room was the third and innermost courtyard, around which the palace's residential quarters were probably located.

A somewhat isolated complex of rooms was discovered in the southwest corner of the palace. It was first uncovered by Place, who thought it was the palace harem (Place, 1867–1870). Subsequent work by the Oriental Institute, however, showed that this area contains six sanctuaries, and their subsidiary rooms, grouped around three courtyards (Loud, 1936). The three largest sanctuaries were dedicated to the deities Sin, Shamash, and Ningal, and the three smaller ones to Ea, Adad, and Ninurta. Nearby was a ziggurat that, according to Place, was about 43 × 43 m and could be ascended by means of a stairway that spiraled around it. [*See* Ziggurat.] Place also reported that each level of the ziggurat was about 6 m high and painted a different color; the four preserved levels are white, black, reddish, and bluish (Place, 1867–1870).

KHORSABAD. Figure 1. *Winged bull with a human head, guardian figure from the gate of the palace of Sargon II.* Dated to the second half of the eighth century BCE. Musée du Louvre, Paris. (Alinari/Art Resource, NY)

Sargon claimed (e.g. Fuchs, 1994, p. 294, l. 64) that he built a structure for his palace in the image of a Syrian *bit-ḫilani,* which is generally thought to have included a pillared portico. Although various locations have been suggested for this structure, including an unusual building at the northwest corner of the palace terrace, no firm identification can be made at present. Great care was taken with the construction and decoration of the palace, and Sargon boasted (Fuchs, 1994, p. 294, l. 63) that various woods and precious materials had been employed for those purposes. Important doorways were guarded by colossal statues of winged bulls with human heads and figures of protective deities. The walls of numerous public rooms were faced with stone slabs carved with scenes depicting the king's military accomplishments, ceremonial activities, and religious scenes (see figure 2).

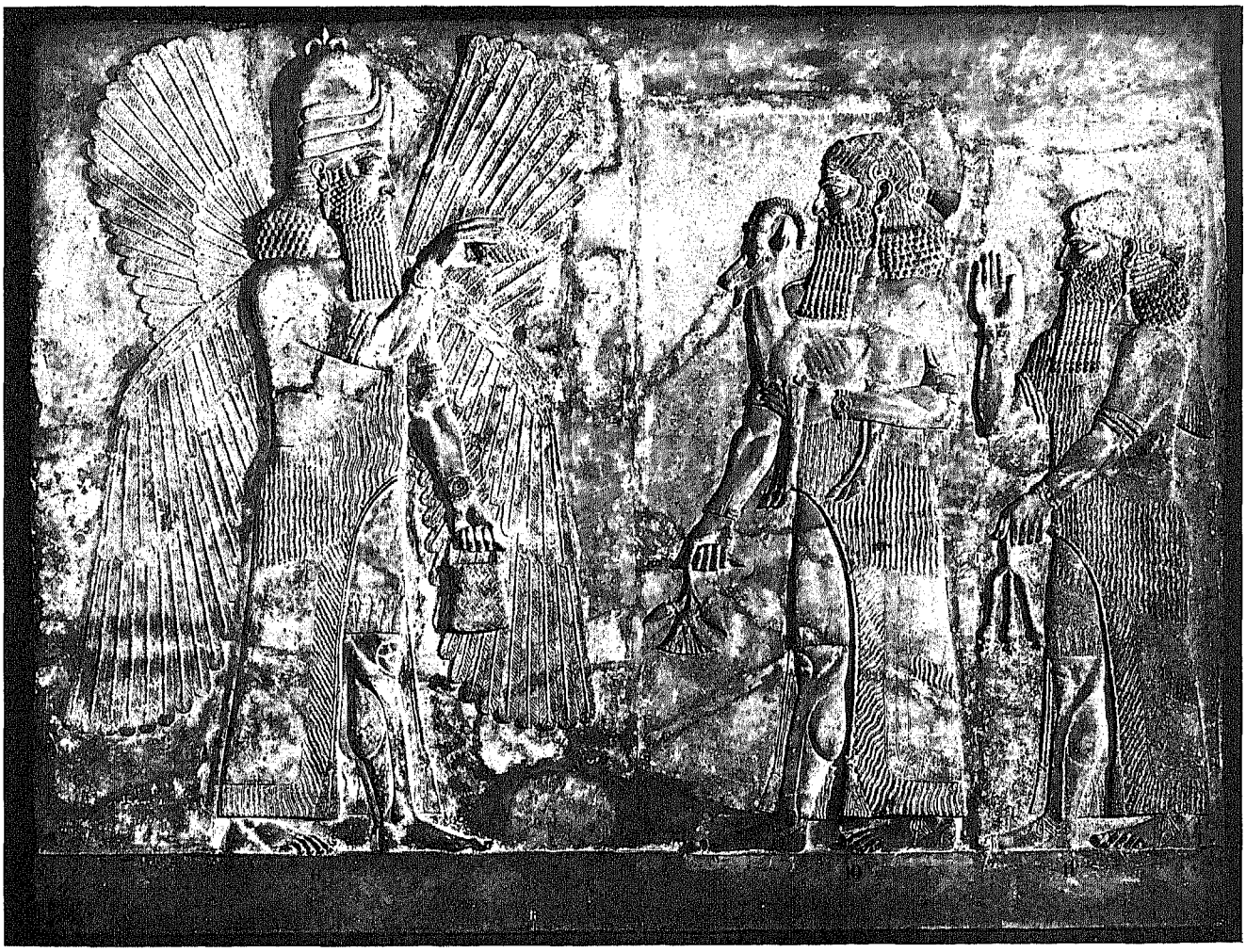
The only independent temple in the citadel at Khorsabad was dedicated to Nabu, the god of writing and wisdom, as was the most important temple discovered on the citadel at Nimrud (ancient Kalḫu). [*See* Nimrud.] South of the palace terrace, and connected to it by a corbeled stone bridge, was

a lower, separate platform on which a large and imposing temple of Nabu (building H) was found. The temple contained about forty-five rooms and corridors arranged around five courtyards. The two major cellae were placed next to one another, the larger one dedicated to Nabu and the slightly smaller one probably dedicated to his spouse, Tashmetu. Two important facades inside the temple were embellished with glazed-brick decoration in bright colors, depicting lions, eagles, bulls, fig trees, and ploughs. Similar decoration was also found on the courtyard facades leading into the palace's Sin, Shamash, and Ningal sanctuaries.

In addition to the palace complex and the Temple of Nabu, at least four large residences were situated in the citadel (buildings J, K, L, and M). These resembled the palace in general layout but were less complex. An inscription found on three stone threshold slabs in the largest residence (building L) indicates that it belonged to Sargon's brother, the vizier Sin-aḫa-uṣur. Although not completely excavated, the structure may have had about two hundred rooms, courtyards, and corridors. No stone wall reliefs were found in these residences, but remains of impressive painted wall decoration were found in the main reception room of building K. [*See* Wall Paintings.]

A second, smaller citadel (palace F) was discovered against the southwest city wall, near one of the city gates. Similar to the palace complex, it was raised above the level of the city and extended beyond the normal line of the city wall. This area has been only partially excavated and was originally thought to be the palace of the crown prince. However, a comparison with Fort Shalmaneser at Nimrud makes it likely that it served as the city's arsenal and military barrack.

Limited excavation has been carried out in the city itself (as distinct from the two citadels), but one large residence located near gate B (building Z; Loud and Altman, 1938), a structure near the center of the city (building G; Place, 1867–1870), and a temple situated between gate 7 and gate A (Safar, 1957) have been uncovered. The temple was ded-



KHORSABAD. Figure 2. *Relief of an offering scene.* (Alinari/Art Resource, NY)

icated to the Sebittu (see above), and in it were found approximately fifteen stone altars of offering tables, each with the same shape: a round top and tripod base, with the bottom corners of the base carved in the form of a lion's paw.

Inscriptions of Sargon II describing his military campaigns and building activities were discovered throughout the royal palace, placed on the front and back of stone wall reliefs, on stone thresholds, on winged-bull colossi, on numerous clay barrel cylinders, and on small metal tablets, among other items. Among the other important inscriptions found at the site was the Khorsabad king list: it lists the rulers of Assyria from earliest times down to 748 BCE and was discovered in the Nabu temple by the Oriental Institute excavations.

The American excavators found few small objects in proportion to the scale of the site, a lack they attributed to the short life of the city and its orderly abandonment following Sargon's death, when most of the inhabitants moved to the new capital of Nineveh (Loud and Altman, 1938). Nevertheless, the site has produced a variety of miscellaneous objects, including carved ivories (similar to ones found at Nimrud, Arslan Tash, and Samaria), fragments of embossed bronze door bands (comparable to the ones found at Balawat), small bronze bells, and weights in the shape of ducks.

[*See also* Assyrians; Mesopotamia, *article on* Ancient Mesopotamia; Nineveh; *and the biography of Botta.*]

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GRANT FRAME

KISH, site located in Iraq northeast of modern Hilla and approximately 15 km (9 mi.) to the east of Babylon (32°33′ N, 44°39′ E). Kish is a region that comprises many mounds of different sizes covering an area some 8 × 2.5 km (50 × 15.5 mi.). Particularly important for archaeology were the mounds called Tell Uhaimir in the eastern part of this wide expanse and Tell Ingharra in the west. From early in the second millennium BCE part of the site (Tell Ingharra) seems to have been referred to as Ḫursagkalama; however, the geographical extent of Ḫursagkalama and its exact relationship to Kish (Tell Uhaimir) is by no means clear. Kish was one of the most important cities of ancient Mesopotamia and was considered to be the first seat of kingship after the Flood. The title "king of Kish" was of major importance in the early historic periods, and it was from Kish that Sargon set out to create the kingdom of Akkad. Diverse parts of the site were occupied from the Ubaid period into the time of the modern Ottomans.

Since the nineteenth century, scholars and travelers have been interested in Kish, and as early as 1852, minor excavations were undertaken by Fulgence Fresnel and Jules Oppert of the Expédition scientifique et artistique de Mésopotamie et Médie that was followed much later in 1912 by a fairly large-scale French expedition under the direction of Henri de Genouillac. Only one season of excavation was completed before the onset of the World War I. After the war a new major long-term joint expedition of the Field Museum of Natural History of Chicago and the Ashmolean Museum of Oxford University began work in 1923. Between 1923 and 1933 eleven campaigns were completed under the direction of Stephen Langdon. Ernest Mackay was the first field director and was succeeded in 1926 by Louis Watelin. In 1989 a Japanese expedition of Kokushikan University (Tokyo) under the leadership of Hideo Fuji started work again at Kish. Only one season of excavation was completed before the commencement of the Gulf War.

The evidence for occupation at Kish prior to the Early Dynastic period (c. 2900–2335) is scarce, but it is evident from the so-called Y-sounding in the major mound Tell Ingharra that the earliest strata excavated contained painted pottery of Jemdet Nasr type. This suggests that there was occupation in Tell Ingharra during the Jemdet Nasr period. On top of these early strata there was a domestic settlement probably of considerable size built with plano-convex bricks in Early Dynastic I. Above and partially sunk into these plano-convex brick levels was a cemetery also dating to Early Dynastic I. The grave materials were particularly rich, and some of the objects from the graves indicated that an advanced state of metal technology was employed. Also found in the Y-sounding were a group of graves containing chariots or carts perhaps drawn by both bovids and equids. Because of the quantity and quality of the objects found in the graves at Kish, these important burials are less famed than the graves from the Royal Cemetery of Ur; however,

at least four burials in Kish indicate that the Ur burials were not unique. They may even predate the Ur cemetery, but it has proved difficult to determine the exact date of the Kish burials because of a series of very complex problems. Dates have ranged from Early Dynastic I to Early Dynastic IIIA.

Probably dating to Early Dynastic III are the remains of two solid structures at Tell Ingharra that have been called ziggurats. One is larger than the other, but both are constructed of plano-convex bricks with some of the successive courses of bricks forming a herringbone pattern, a characteristic building technique of the Early Dynastic period. The plans of these ziggurats are not known completely, and it is not clear whether they were built as a single platform or whether they had more than one stage. They were probably stepped and are of considerable interest for the history of the development of the temple platform and tower. They may well be worthy of further investigation.

More extensive remains of the Early Dynastic period were recovered from Mound A located to the south of the main part of Ingharra but considered to belong to it. Significant is a large building of plano-convex bricks that has been called a palace, clearly the most impressive of the monumental buildings of Early Dynastic Sumer. The entire complex is not known, but the excavated remains include a main north wing, an added south wing, and an eastern primary gateway constructed between the north wing and an eastern wing (?) no longer preserved. Apparently the original staircase was covered by a ramp when the southern wing or annex was built. The drawn plans of the palace complex have been regularized, and certain parts are not easy to interpret as some of the walls and rooms seem to have been improperly dug. A curious feature of the main northern wing is the use of long corridors forming a double enclosure around the rooms and courts of the building. Such corridors are known from other monumental building complexes in Sumer such as the so-called palaces at Eridu. [*See* Eridu.] The southern addition also has a special feature. Columns are used within a large room near the west end of the building and also in a porch on the eastern end. A residential area of the building is not clearly evident from the plan, and it has not been fully ascertained how such a complex as the Kish palace or other monumental buildings functioned as an expression of Sumerian kingship.

Like many of the early remains of Kish, the date of the palace has been much debated. Some have sought to date the building to Early Dynastic II on the basis of the perceived style of a group of inlay pieces. Even if it were possible to limit the style chronologically, such dating is fraught with difficulties. More cogent is the find of a tablet beneath a mud brick bench built in one of the rooms. The tablet is of the "Fara" type, representing a stage in the development of writing attributable to the early part of Early Dynastic IIIA and indicates that the building was in use during that period. Before the end of Early Dynastic IIIA the palace complex had already been abandoned and had at least partially disintegrated. Another cemetery known as Cemetery A was sunk into the palace area, and some 150 graves rich in pottery and seals were excavated. The A cemetery was short lived but is important for our understanding of the archaeology of Early Dynastic III. The change from palace area to cemetery area would imply some type of population shift.

Another monumental building probably also dating to the same time as the palace is the so-called Plano-Convex Building excavated in Area P to the north of Tell Ingharra. The building has very thick buttressed exterior walls and was probably heavily fortified. It has many storage rooms as well as long surrounding corridors in part of the complex. Unfortunately the plan of the entire building is not known.

Graves, pottery, tablets, some objects, a few architectural remains, and textual references from other sources all attest to the continued occupation and importance of Kish from the Akkad through the Old Babylonian and Kassite periods. At Tell Uhaimir was located the ziggurat and temple to the important god of Kish, Zababa. Apparently begun in the Old Babylonian period, the ziggurat underwent several rebuildings, and lasted into the Neo-Babylonian period when the exterior surface was enlivened with a complicated series of brick niches and buttresses. The actual temple seems to have been located on the northeast side of the ziggurat where bricks were found that were part of the reconstruction of the temple undertaken by Hammurabi of Babylon (1792–1750).

Significant to the history of Neo-Babylonian architecture is the uncompleted double temple excavated on Tell Ingharra near the early ziggurats. The main, large part of the temple measures some 92 × 83 m (57 × 51.5 ft.). There is a direct axis approach to the cella (the inner part of the temple housing the image of deity) leading from the main entrance in the northern wall through a large courtyard and then through two antecellas. The broad room cella is flanked on both sides by smaller dependent rooms. Bricks from a foundation box and fragments of a barrel cylinder suggest that the temple was originally built by Nebuchadrezzar II (604–562). In the Achaemenid period this temple no longer was used even though Kish continued to be occupied and many economic texts of the period were found. Fragmentary remains of the settlements in the later Parthian and Sasanian periods have also been preserved.

[*See also* Temples, *article on* Mesopotamian Temples; *and* Ziggurat.]

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KITAN, TEL, two-acre site located on a hillock on the west bank of the Jordan River, approximately 12 km (7.5 mi.) north of Beth-Shean (map reference 2043 × 2270). The site's occupational history was first explored by Nehamiah Tzori in the Beth-Shean Regional Survey. In 1970 Adam Druks cut a stratigraphic section through the tell, on behalf of the Israel Department of Antiquities and Museums. Between 1975 and 1978 Emmanuel Eisenberg conducted five seasons of excavation at the site, also on behalf of the department. In the course of those explorations, ten occupational levels were investigated.

The first settlement at Tel Kitan was in the Chalcolithic period (strata X–VIII). It consisted of several houses, occupied for an extended period of time, and underground silos. One house also contained an enormous buried storejar, one of the largest of its kind found in Israel. Over time, new buildings were constructed over the original houses. The ceramic assemblage at this Chalcolithic site is considered a northern variant of the Ghassulian culture. The excavator suggested that this long-lived village was an extension of the contemporary 60-acre settlement at nearby Neveh Ur.

The late Early Bronze Age I (stratum VII) unwalled village at Tel Kitan included a number of densely packed dwellings. Floors were often below ground level, and plastered benches ran along many interior walls. The rich repertoire of EB I materials found at Tel Kitan is attributed to the sudden destruction and abandonment of the site.

Tel Kitan was reoccupied in Middle Bronze I (stratum VI). While the first sanctuary was constructed in MB II (stratum V), it is likely that sacred activities took place in stratum VI as well. The exterior of the mud-brick sanctuary measured 5.5 × 6.9 m. Piers extended from two walls to form a shallow entryway, and two pillars flanked the entrance.

Five meters in front of the sanctuary facade stood a row of stone stelae; large holes between them may have once contained the socles of other standing stones. The central stela depicts a nude goddess cupping her breasts; her facial features are distinct. Two larger stelae stood elevated behind the front row of stones. Residential buildings, many containing infant jar burials, were located nearby.

Care was taken to preserve the stratum V sanctuary when a new sanctuary was constructed over it later in MB II. The exterior of the stratum IV building measured 11.5 × 14.3 m. In the courtyard, piles of ash filled with animal bones were heaped around a semicircular bench, and four crudely carved stone figurines lay near two basalt bases and a basalt slab. The settlement, which also included several houses, was surrounded by a fortification wall. The site was destroyed at the end of MB II.

In Late Bronze I (stratum III), a new sacred complex was constructed over the earlier one. Many precious and ritual objects were found in the sanctuary, which then consisted of a main hall and two small service rooms. Piles of broken pottery and a small pebble structure were found in the courtyard. As before, houses were located nearby. This occupation came to a sudden end, and Tel Kitan remained unoccupied for nearly two millennia. The thin-walled houses of the Early Arab period (stratum II), situated along a street, were badly eroded. During the Ottoman period (stratum I), a Muslim cemetery was located on the top of the mound.

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BETH ALPERT NAKHAI

KITCHENER, HORATIO HERBERT, first Earl Kitchener of Khartoum and Broome (1850–1916), surveyor for the Survey of Western Palestine (1871–1877). As a young lieutenant in the British Royal Engineers, Herbert Horatio Kitchener was seconded in 1874 to the Survey of Western Palestine being conducted under the auspices of the Palestine Exploration Fund (PEF). A devout Christian, Kitchener brought to the survey a detailed knowledge of the Bible, which, combined with a military eye for topography, led him, like Claude R. Conder, to attempt numerous identifications of biblical sites. Many of his judgments were erroneous, as for example, in placing Ai at Khirbet Haiyan (*The Survey of Western Palestine: Memoirs of the Topography, Orography, Hydrography, and Archaeology*, vol. 3, London, 1883, p. 33). Kitchener's main contribution to the archaeology of Palestine was twofold. First, he surveyed about one-third of the country himself, recording in careful plans many structures which no longer exist. Second, as a keen amateur photographer, he took many photographs (preserved in the PEF archives). Twelve of his photographs were published

in London in 1876 under the title *Guinea Book of Biblical Photographs* (also known as *Photographs of Biblical Sites*).

Much of Kitchener's work was published in the volumes of *Memoirs* which accompanied the maps of the Survey of Western Palestine; his reports and letters were published in the PEF's *Quarterly Statement* between 1874 and 1878. Kitchener went on to survey Cyprus and, in 1883, his fluent knowledge of Arabic led to his being recommended by Charles Wilson to carry out the trigonometrical survey of the Wadi 'Arabah during Edward Hull's geological reconnaissance of the Sinai Peninsula, also under the auspices of the PEF.

Kitchener made his professional name in the administration of Egypt, Sudan, South Africa, and India. He was distinguished as a Knight of the Garter, Knight Grand Cross of the Bath, and Knight Grand Cross of St. Michael and St. George and earned the order of merit. At the time of his death, he held the post of secretary of state for war.

[*See also* Palestine Exploration Fund; Sinai; *and the biographies of Conder and Wilson.*]

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YOLANDE HODSON

KITION, name of a kingdom and a site, today below the city of Larnaka, on the southeast coast of Cyprus (34°54′ N, 33°39′ E), north of the Salt Lake (Aliki). The historical territory of the Cypro-Phoenician kingdom of Kition was bounded by the sea on the south and southeast and was adjacent to the territories of Salamis on the northeast and Amathus on the west. To the north, the rich agricultural region of Idalion was annexed after 450 BCE. Tamassos, to the northwest, with its copper mines, belonged to Kition for several years in the fourth century BCE. [*See* Salamis; Amathus; Idalion.]

The name is attested in Hebrew (from the eighth century BCE) in the ethnic plural *kittîm* (cf. *Nm.* 24:24; *Is.* 23:1; *Ez.* 27:6). The identification with Qartihadasht ("new city"), mentioned in Assyrian on the prism of Esarhaddon from Nineveh and in Phoenician (Cyprus, *CIS* 1.5) has been questioned but is defensible. [*See* Nineveh; Phoenician-Punic.] The name of the city in Phoenician is *Kt(y)*; in alphabetic Greek Kit(t)ion; in syllabic Greek *Ke-ti-o-ne* (genitive); and in Latin, Citium. After the Middle Ages, the names *Scala, Larnaka,* and *Salines* occur.

Kition's location and ancient remains were noted by numerous early travelers in descriptions and schematic plans, among them Richard Pococke (1745), Giorgio Mariti (1769), and Carsten Niebuhr (1837). Pococke copied thirty-three Phoenician inscriptions that are now lost. In the nineteenth century, travelers, merchants, and such scholars as Max Ohnefalsch-Richter and Melchior de Vogüé discovered or occasionally purchased exceptional objects from the area and sent them to museums in Europe and the United States: from Bamboula, the stela of Sargon II from 707 BCE (Vorderasiatische Museum, Berlin) and large Hathoric capitals (Berlin; the Louvre Museum); from the Salt Lake, inscriptions to Eshmun-Melqart of Batsalos (Metropolitan Museum of Art, New York City); figurines from the sanctuary of Artemis Paralia (Louvre; British Museum); and figurines and sarcophagi from various areas of Larnaka, including [*See* Sarcophagus.] Kamelarga and Ayios Giorghos. The work of the British administration in 1879, carried out to do away with the unhealthy environment by filling the marshes with the material from the archaeological mound of Bamboula, irrevocably destroyed important historical remains (cf. Ohnefalsch-Richter, 1879; Sinclair, 1969–1970). Several documents were saved, such as the inscription in Phoenician of the accounts of the Temple of Astarte, now in the British Museum. In *CIS* 1 (1881), the majority of the Phoenician inscriptions from Cyprus are from Kition. The first precise plan of the site appears in the *CIS* (p. 35).

Scientific excavation at Kition began in 1929 with Einar Gjerstad's brief sounding for the Swedish Cyprus Expedition at Bamboula. He located a sanctuary of Herakles Melqart with a bothros filled with figurines. Excavations by the Cypriot Department of Antiquities directed by Vassos Karageorghis began in 1959 at Kathari, north of Larnaka. They uncovered an area with exceptional Late Bronze Age sanctuaries (temples 1–5), evidence of bronze metallurgy, and fortifications (see below). The newly arrived Phoenicians reoccupied and rebuilt the area in the ninth century BCE (temples 1 and 4). The expedition recovered evidence of metallurgy and inscriptions (see below).

In 1976, a resumption of work at Bamboula by a French expedition from the University of Lyon 2 directed by Marguerite Yon uncovered the sanctuaries of Melqart and Astarte (ninth–end eighth centuries) and a naval port with sheds (see figure 1) and boat slips (fifth–fourth centuries). In 1990, a Phoenician inscription was found by chance north of the town of Larnaka describing a monument that had been set up in the port after a naval victory by King Milkyaton in 392 BCE.

The earliest occupation of the area is attested by Early Bronze Age tombs at several places in Larnaka, but no set-

tlement earlier than the thirteenth century BCE has been located. In this period, because silting had closed off the Salt Lake, rendering the port of Hala Sultan Tekke useless, a new settlement was established 1 km to the north on the seacoast at Kition, to find better access to the sea and continue the maritime activities. [*See* Hala Sultan Tekke.] A group of sanctuaries next to the fortification at Kathari and several tombs date to this period (see below).

Several traces of habitation remain from the Geometric I period, including a domestic establishment on the edge of the fortification to the north of Bamboula that was abandoned in the tenth century BCE. In the ninth century the Phoenicians established an important colony in Kition (cf. Justin, 18.5–6) that preserved its Phoenician character until the third century CE (Cypro-Geometric III, Archaic, and classical periods). The period is attested archaeologically at the sites of Kathari, Bamboula, Ayios Giorghios (on the edge of the Salt Lake), and various other locations in Larnaka. It is attested textually (literary texts and inscriptions), especially in the fifth–fourth centuries. Inscriptions and coin legends in Phoenician give the names of several kings, including Baalmilk I, Azibaal, and Baalmilk II (fifth century BCE); and Milkyaton and Pumayyaton (fourth century BCE). Because of their navy, these kings played a role in the maritime rivalries between the Greeks and the Persians in the eastern Mediterranean basin. The wealth of the kingdom depended on that maritime commercial activity, which was supported by the resources of the countryside (corn, olive oil, timber, copper, etc.). The most celebrated Kitian is the philosopher Zenon, founder of Stoicism, who was born there in the fourth century BCE. Ancient authors, such as Cicero (*De finibus* 4.20.56), recognized the Kition's Phoenician character.

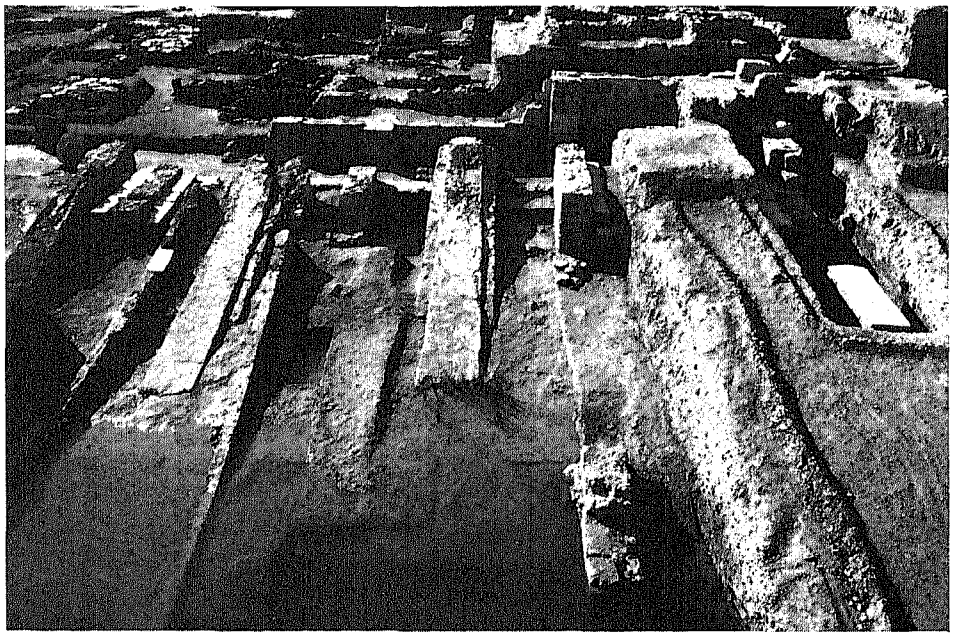
At the end of the fourth century BCE, Ptolemy I Soter seized control of the city (Diodorus 19.79.4), and a new "era of Kition" began (in 311). Kition then followed the fortunes of the Lagid possessions and, after 50 BCE, of the Roman province to which Cyprus belonged.

Monuments are visible at different locations in the town: at Kathari, there are remains of temple 1 (Karageorghis, *Excavations at Kition,* vol. 5, 1987) constructed of cut stone blocks (thirteenth century BCE) and transformed into a Phoenician temple in the ninth century BCE; the remains of other temples and workshops that constituted the sacred area were found next to the fortification.

At Bamboula, various sanctuaries from the ninth century BCE to the classical period survive. The civic works from the beginning of the fourth century include a drainage system with a main sewer. The sanctuary is bounded on the north by the naval port, with sheds and slips for the ships (see Calvet, 1993).

There are tombs in various parts of Larnaka: Early Bronze Age tombs at Ayios Prodromos; LB tombs at Chrysopolitissa with grave goods of rich furnishings and local and imported luxury products; Archaic period tombs at Phaneromeni; beautifully built tombs from the Classical/Hellenistic period from Tourabi and Metropolis and from Ayios Ioannis and Ayios Giorghios, where the tombs continue to yield sarcophagi and funerary furnishings.

[*See also* Cyprus; *and* Phoenicians.]



KITION. Figure 1. *Ship sheds in the naval port.* (Courtesy Mission Française de Kition)

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MARGUERITE YON

Translated from French by Nancy Leinwand

KOLDEWEY, ROBERT (1855–1925), archaeologist whose work revolutionized Mesopotamian archaeology. Koldewey studied architecture, archaeology, and ancient history in Berlin, Munich, and Vienna. His first archaeological experience came on the acropolis at Assos. The German Archaeological Institute subsequently commissioned him to excavate on Lesbos. In 1887, Koldewey worked with Robert Moritz at Surgul and al-Hiba, near Sumerian Telloh, in southern Mesopotamia. There Koldewey refined excavation techniques for following mud-brick walls, finding many small houses separated by twisting, narrow streets. He also followed foundation trenches by observing dark discolorations in the soil, an unheard-of technique at the time. For years, this talented archaeologist worked as an architectural instructor at the university in Gorlitz, Germany, while excavating at classical sites in Italy, Sicily, and Syria. He started large-scale excavations in Babylon in 1899. He remained there for the next eighteen years, only leaving during World War I, when the British advance up the Tigris River threatened to cut off his last route to safety. Koldewey developed sophisticated techniques for tracing that city's myriad mud-brick structures, training teams of diggers to distinguish the texture of room fill and mud brick after careful scraping and picking. Starting with a general knowledge of the city gleaned from cuneiform tablets, Koldewey identified King Hammurabi's city (1790 BCE) and then cleared a large part of Nebuchadrezzar's (604–562 BCE) capital, tracing the course of the paved Procession Street, reconstructing the Ishtar Gate, and untangling the long history of the city's citadel and ziggurat. Koldewey's excavation techniques recovered the general layout of the royal city and enabled him to reconstruct the magnificent enameled friezes that adorned the Ishtar Gate and Procession Street. His methods influenced the techniques of later excavators like Leonard Woolley at Ur. Koldewey did tend to overlook the potential of pottery and small artifacts for dating stratified layers, an oversight his successors regretted.

[*See also* Babylon.]

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BRIAN FAGAN

KOŞAY, HAMIT ZÜBEYR (1897–1984), Turkish archaeologist, ethnologist, and museologist. Koşay was born in the village of Tilenkçi Tamak attached to the Ufa district in Russia's Idil-Ural province. After graduating from high school in 1916, Koşay became interested in ethnographic studies and, planning to study in Budapest, began to learn Hungarian. In Budapest he studied history and languages (1917–1921). He subsequently received a Ph.D. in Turkology and philology from the Eötrös College in Budapest. In 1923–1924 he took courses in ethnography at Berlin University.

Upon his return to Turkey in 1924, Koşay became involved in various government-sponsored projects related to ethnography, archaeology, and museology. Between 1927 and 1931 he created the Ethnography Museum in Ankara and served as its director. He was eventually in 1931 appointed general director of all museums and in 1945 director general of the Department of Antiquities and Museums.

Koşay's involvement in archaeological field projects began in the early 1930s. Atatürk, the leader of the then young Turkish republic, favored government-sponsored archaeological projects directed by Turkish archaeologists. He asked Koşay to excavate in the vicinity of Ankara, the capital of the republic. Thus, in 1933, Ahlatlıbel, southwest of the capital, became Koşay's first archaeological project. A year later he excavated Kumtepe, near Troy. His excavations at Alaça Höyük (1935–1948, 1963–1967) revealed important aspects of Hittite and pre-Hittite civilizations in Anatolia. The site's spectacular finds earned him a reputation as one of Turkey's most experienced and knowledgable field archaeologists. During his long career, Koşay carried out numerous other excavations and field surveys: in the 1930s he excavated the Phrygian site of Pazarlı in Çorum; in the 1940s, at Karaz Höyük in Erzurum and the Late Chalcolithic site of Büyük Güllücek in Çorum; in the 1960s, at the Early Bronze Age settlements at Güzelova and Pulur in Erzurum, and Pulur (Sakyol) in the Keban region; and, in 1972, at Yeniköy, also in the Keban.

Koşay published more than 35 books and 150 articles on Anatolian civilization. His work represents an important data bank on Early Bronze Age, Hittite, and Phrygian cultures in Anatolia.

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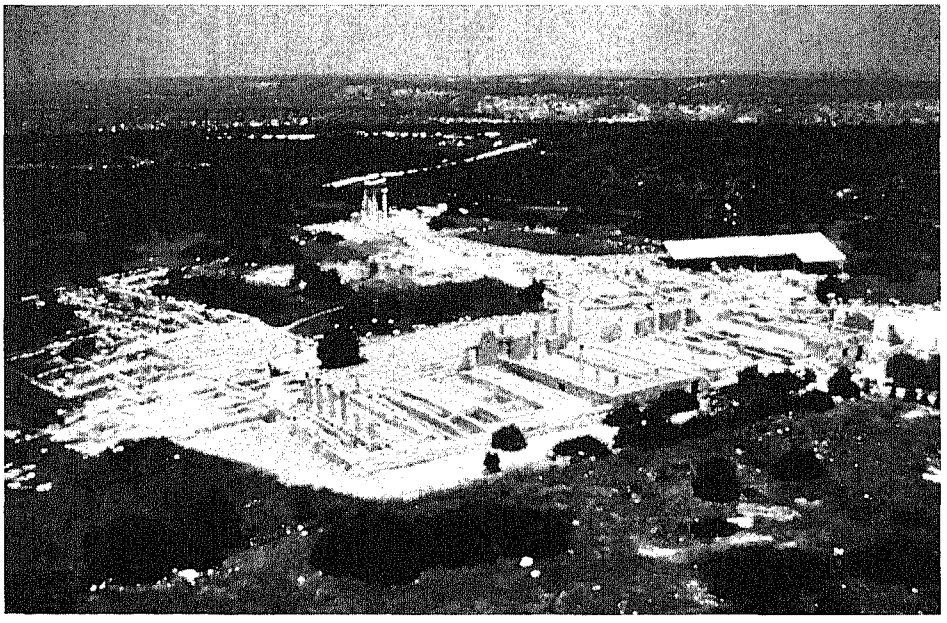
JAK YAKAR

KOURION (Roman Curium), southern Cypriot city lying on a 70-meter bluff overlooking the Bay of Episkopi (34°40′ N, 32°51′ E). A sanctuary of Apollo Hylates (i.e., Apollo of the Woodlands) 2.5 km (1.5 mi.) west of the city that attracted worshipers, and a Roman stadium, perhaps of the second century CE, lay north of the city. Various sites have been found at the foot of the bluff adjacent to the stadium, but only a fraction of Kourion has been excavated.



KOURION. *General view of the site.* (Photograph by Noelle Soren)

Settlements of the Neolithic, Chalcolithic, and Bronze Age periods are within 7 km (4.3 mi.) to the north and east, but the earliest site at Kourion is Episkopi-Kaloriziki 2 km (1.2 mi.) east of the city. A cemetery spanning the Late Bronze Age and the Cypro-Classical period has revealed evidence of Greek settlers (Arcadians?), a new type of square-chamber tomb and Greek artifacts, including the famous falcon-headed, gold, and enamel scepter of Kourion (see Swing, 1982, p. 53, fig. 44; see also George McFadden, "A Late Cypriot III Tomb from Kourion," *American Journal of Archaeology* 58 [1954]: 131–142). Although no settlement was found at Kaloriziki, it seems that the nearby Late Bronze Age site Episkopi-Bamboula diminished in importance as inhabitants moved to Kourion.

Kourion is cited in the Prism of Esarhaddon (673–672 BCE), an important octagonal and cylindrical text, as a city under Assyrian control. Under Persian hegemony, which began around 550, Kourion took part in the Ionian Revolt of 499, when King Stasanor aided the Greeks, but then deserted to the Persian side (Herodotus, 5.113), allowing Kourion to stay independent after the revolt was crushed. In 351 Kourion was one of nine kingdoms of Cyprus (Diodorus, 16.42.4). In 332 Pasicrates, last king of Kourion, aided Alexander the Great against the Persians at the battle of Tyre (Arrian, *Anabasis* 22.2).

Little is known about Ptolemaic Kourion, but it revived considerably under the Romans, particularly in the Julio-Claudian and Trajanic periods. Kourion probably did not exceed twenty thousand inhabitants in the high empire and was supposedly visited by St. Paul and Barnabas (*Acts of Barnabas* 44) during their first missionary journey (45–48 CE). Kourion was destroyed by earthquakes; the most notable of them appears to have occurred on 21 July 365 CE, forcing the abandonment of the area for at least eighteen years. At the beginning of the fifth century, a small community had developed with two impressive early Christian basilica complexes and a palatial dwelling (the Eustolius complex) that featured private baths and fine mosaics with detailed inscriptions. The site was abandoned following Islamic raids of the mid-seventh century.

Excavations at the sanctuary of Apollo were conducted by George McFadden, aided by Bert Hodge Hill, for the University of Pennsylvania Museum (1934–1953). The results were summarized by Robert Scranton in 1967. New excavations began in 1978 by the Walters Art Gallery, Baltimore, under Diana Buitron and the University of Missouri under David Soren. The sanctuary functioned continuously from at least the seventh century BCE to the fourth century CE. Early features included a circular rubble altar in the archaic precinct, which was surrounded by votive terra-cotta figurines. Gold and silver statuettes of bulls found in the altar are now in the Cyprus Museum. Several major caches of votive terra cottas have been found in votive pits at the periphery of the precinct; one group of more than ten thousand horses and riders, chariots, and charioteers was recovered in 1981.

A large circular monument, initially constructed in the seventh or sixth century BCE and rebuilt in the Roman period, was found west of the altar and principal street of the sanctuary. It was placed on a flat, elevated terrace originally surrounded by plantings in rock-cut channels but later entirely walled in during the Julio-Claudian period. Unique in Mediterranean archaeology, it may have been used for sacred dancing. It was hypaethral (i.e., unroofed) and featured seven pits carved in the bedrock in its central area, possibly for date palms (sacred trees?). A wall blocked uninitiates from the proceedings. The precinct surrounding the monument may have been the *alsos* (holy grove) with sacred deer described by Aelian (*De Natura Animalium* 11.7).

The site also featured a temple dedicated by the Roman emperor Nero (54–68 CE) and erected over a simpler rectangular structure of the seventh or sixth century BCE. Thus, in the sixth century BCE it was possible to enter the sanctuary from the south, walk north on the main street, and go from the central court area straight to the rectangular proto-temple, and right to the archaic precinct or left to the circular monument. First uncovered by McFadden in 1934, the temple was restudied by Scranton in 1967. Detailed studies by the Soren team in 1979 led to a proposed reconstruction but Stefanos Sinos partially rebuilt it in situ in 1981 in a manner that differs slightly in the arrangement of front and anta capitals from the reconstruction proposed by Soren. As part of the Roman revisions, the sanctuary received a *palaestra* (low building with central court for exercising and athletics, esp. wrestling), baths, and an apparent visitor center (the South Building).

At the city site of Kourion, McFadden, J. F. Daniel, and Roger Edwards conducted excavations, which began in 1934. The ruins are scattered over a full kilometer and include a well-preserved theater remodeled under Nero but originally built in the late second century BCE. Since 1975 Demos Christou of the Cypriot Department of Antiquities has conducted important excavations in the northern area of the city revealing buildings of the forum including a possible stoa and a monumental building of the first century CE identified as a *nymphaeum* (monumental public forum). The opulence and size of these structures suggests that Kourion must have been of considerable importance in the Roman imperial period.

A. H. S. Megaw of the British School at Athens has unearthed the remains of a large Christian basilica of the early fifth century intended as the key structure for the post-earthquake revitalization of Kourion. Some materials were borrowed from the abandoned Apollo sanctuary. A baptistery, auxiliary chapels, and courtyards have also been unearthed.

Beginning in 1984, David Soren, excavating for the University of Arizona, restudied work by J. F. Daniel in 1934 and revealed a large house and possible market complex in

which the skeletons of nine humans and one mule were found in the debris of the earthquake of 365 CE. This area of the site was never rebuilt. A small museum located in Kourion House in nearby Episkopi village features objects from Kourion and nearby areas.

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DAVID SOREN

KRAELING, CARL HERMANN (1897–1966), historian of religion, prominent educator, archaeologist, and authority on the Near East. Kraeling began his career at the Lutheran Theological Seminary in Philadelphia, where he taught for nine years (1920–1929) and produced his first piece of scholarly research, *Anthropos and Son of Man: A Study in the Religious Syncretism of the Hellenistic Orient* (1927). After completing a Ph.D. from Columbia University (1927), Kraeling joined the faculty of the Yale Divinity School (1929). He earned a Th.D. from the University of Heidelberg (1935). At Yale he served as editor of the *Journal of Biblical Literature* (1931–1933) and was Buckingham Professor of New Testament Criticism and Interpretation (1941).

In the 1930s, Kraeling's interests shifted to archaeology and history. He participated in the British and American excavations at the site of Gerasa (Jerash) in Jordan and edited their findings in *Gerasa, City of the Decapolis* (1938). In 1947, Kraeling founded the Department of Near Eastern Languages and Literature at Yale University and served as its first chair for three years. He then moved to the University of Chicago as professor of Oriental archaeology. An indication of his efforts to promote interest in Near Eastern archaeology was his service as president of the American Schools of Oriental Research (1948–1955) and then as president of the American Oriental Society (1958–1959).

Kraeling served as the director of the Oriental Institute in Chicago from 1950 to 1960. He was responsible for the institute's excavations in Egypt and other parts of the Near East, and he directed the excavations at the Roman site of Ptolemais in Cyrenaica, publishing *Ptolemais, City of the Libyan Pentapolis* (1962). In addition to his administrative duties, he published a volume on *John the Baptist* (1951) and a study on the Dura synagogue (1956). In 1958 he assembled scholars from all over the world for a week-long seminar on the topic of urbanization in the ancient Near East. The proceedings were published as *City Invincible* (1960). From 1946 until 1965, he was a member of the board of directors of the Byzantine Research Institute of Harvard University at Dumbarton Oaks, in Washington, D.C., where he also lectured.

[*See also* American Schools of Oriental Research; Dura-Europos; Gerasa; *and* Ptolemais.]

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VICTOR H. MATTHEWS

KSAR 'AKIL, rockshelter situated 10 km (6 mi.) east-northeast of Beirut in Wadi Antelias, and 2 km (1 mi.) inland from Lebanon's present Mediterranean coastline (33°54′40″ N, 35°36′20″ E). Wadi Antelias has two branches that descend steeply through rugged limestone hills to the sea. Ksar 'Akil is on the northern branch, slightly above its junction with the southern fork. The copious Antelias spring lies half a kilometer downstream and, after heavy rain, a stream fills the wadi below the site. The site was inhabited from the Middle through the Upper Paleolithic into the Epipaleolithic period. Its unusually long, and apparently complete, sequence of occupation has made it the site of reference for the later Paleolithic in the Levant.

The site of Ksar 'Akil has been known since the early years of the twentieth century. Two major excavations have taken place there, one from 1937 to 1938 that was resumed in 1947 and 1948, and another from 1969 to 1975 that came to a

premature end because of the outbreak of civil war. The first series of excavations was undertaken by Joseph G. Doherty, with the assistance of J. Franklin Ewing, under the auspices of Boston College and Fordham University. They dug a deep trench against the back wall of the rockshelter, through the entire sequence of occupation, down to the natural surface 23 m below (Ewing, 1949). The site was never fully published. The second series of excavations was conducted by Jacques Tixier for the Centre National de Recherche Scientifique in France, to obtain detailed information about human activity at Ksar 'Akil and to construct a well-dated sequence of environmental change for the successive periods of occupation there. The site had come under threat from large-scale limestone quarrying in Wadi Antelias, which provided an additional impetus for the work. Tixier's excavation was limited in scale: two sections were cut through the Epipaleolithic and the later Upper Paleolithic levels, to a depth of 7 m, before the excavation was concluded (Tixier and Inizan, 1981).

The sequence revealed in the original excavations was especially important for the development of the Upper Paleolithic, usually designated as the Levantine Aurignacian culture. It has inspired a series of studies on the chipped-stone assemblages from Ksar 'Akil and their geomorphological context. The cultural sequence at Ksar 'Akil began with a Middle Paleolithic of Levalloiso-Mousterian affinities that, after a lengthy intermediate episode, was succeeded by the Levantine Aurignacian. Ewing (1949) had called the intermediate phase a mixed or transitional zone, but it has been renamed Ksar 'Akil, phases A and B, by recent commentators. Ksar 'Akil was inhabited for the entire Upper Paleolithic—that is, Levantine Aurignacian, phases A and B—and through another transitional stage, Levantine Aurignacian C, or the Athlitian, into the Kebaran culture of the earlier Epipaleolithic.

Recent studies of the material from the earlier excavations and inferences derived from Tixier's work suggest that, while the basic sequence still holds, its interpretation should be modified. Anthony E. Marks and P. Volkman (1986) have suggested that the basal deposits may date to the early and middle Levalloiso-Mousterian, and that there may have been a hiatus in occupation between the Middle and Upper Paleolithic at Ksar 'Akil. Christopher Bergman (1987) has concluded that, although the Ksar 'Akil Upper Paleolithic sequence is still the longest known in the Levant, it should be regarded as discontinuous, with periods of human use separated by episodes of abandonment. Tixier had found preserved living surfaces containing hearths, food remains (animal bones), and flint artifacts.

The last phase excavated by Tixier, attributed to the "proto-Kebaran," ended in about 22,000 BP, in radiocarbon years. The lowest levels reached by him, corresponding to the upper part of the Levantine Aurignacian B in the older sequence, dated to about 32,000 BP. It is estimated that the Levantine Aurignacian at Ksar 'Akil began at least 40,000 years ago, whereas the Levalloiso-Mousterian levels probably date to well before 50,000 BP. This suggests that the Upper Paleolithic may have begun earlier in the Levant than in Europe.

Ksar 'Akil was used as a shelter by humans for much of the last cold episode of the Pleistocene. It is known from independent sources, principally deep-sea caves, ice cores, and pollen sequences (for example, Dansgaard and Oeschger, 1989; Shackleton and Opdyke, 1976; and Wijmstrar, 1969), that, although the climate was generally cooler throughout than today, temperature and humidity fluctuated considerably. Those fluctuations are reflected in the long sedimentary sequence in the rockshelter, though they are scarcely apparent in the collections of animal bones from the site. The faunal remains, studied by D. A. Hooijer (1961), are dominated by fallow deer. This suggests that the foothills of the mountains of Lebanon, which formed the environs of Ksar 'Akil, remained wooded, despite the numerous fluctuations in climate that occurred.

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A. M. T. MOORE

KÜLTEPE TEXTS. The body of some twenty-thousand cuneiform tablets written in Old Assyrian script and language discovered in the fields at Kültepe ("ash mound"), the modern name for the ruins of the ancient city of Kaneš (also called Nešа), in ancient Anatolia, is currently known as the Kültepe texts. The site is located about 19 km (12 mi.) northeast of modern Kayseri. [*See* Kaneš.] Nearly all the tablets, which are dated to the twentieth–eighteenth centuries BCE, were discovered in the walled lower city, called *kārum* ("commercial quarter"), an area of more than one square kilometer northeast of the mound. The tablets were found in the houses of traders, usually in so-called sealed rooms or safes, stored on wooden shelves or kept in jars and sealed tablet coffers. A limited number of tablets have been discovered on the city mound, mainly in the ruins of the local palace.

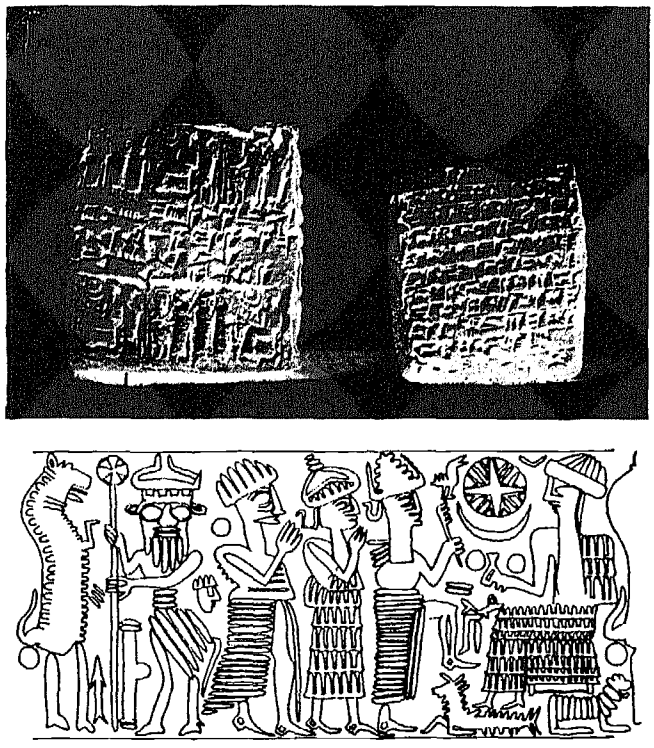
Discovery and Publication. The first tablets appeared in about 1880 via the antiquities market. Until 1948, an estimated four thousand tablets were acquired in this way for collections. Most have been published, at least in cuneiform copies (Veenhof and Klengel-Brandt, 1992). In 1925 their presumed provenance was established during excavations by the Czech scholar Bedřich Hrozný and another one thousand discovered (now in the Archaeological Museum at Istanbul). Since 1948 systematic excavations at Kültepe by Tahsin Özgüç for the Turkish Historical Society, presently directed by Kutlu Emre, yielded about fifteen thousand tablets; they and many other artifacts, are now in the Anatolian Civilizations Museum in Ankara. Publication of these excavated texts begin in 1990 with the appearance of the first volume of the series *Ankara Kültepe Tabletleri*, under the auspices of a "Kültepe Tablets Publication Committee" (Bilgiç, 1990).

History of Trade. Mesopotamian traders in Anatolia are mentioned in epics about Old Akkadian kings (twenty-fourth–twenty-third centuries BCE). Both texts and excavations distinguish two periods. The first is identical to level 2 at *Kārum* Kaneš, based on the total number of year eponyms known today, and may have lasted eighty years, perhaps until 1840/35 BCE, covering three generations of traders and Assyrian kings. Most of the Kültepe texts are from this period (to its last fifty years). It ended with the destruction of Kaneš. After a relatively short interval (perhaps less than one generation), the *kārum* was again inhabited and trade flourished. This second period may have lasted from about 1810 until 1740 BCE (*kārum* level 1b), but although Assyrian traders were still present and the system still functioned more or less, a lot had changed: the role of native Anatolian traders surpasses that of the Assyrians, different articles of trade appear (no tin was imported), and commercial activity, as reflected in the fewer than three hundred texts from this period, reveal that trade took place primarily within the borders of Anatolia.

Old Assyrian Trade in Anatolia. The tablets reveal intensive and sophisticated overland trade between Aššur and central Anatolia, where Assyrian traders had settled in the last quarter of the twentieth century BCE. [*See* Aššur.] The more important settlements were called *kārum* ("commercial quarter"), the designation of important trading stations under the walls of usually bigger Anatolian cities; alongside about fifteen *kārums* there existed about a dozen smaller factories, called *wabartum* ("settlement"). *Kārum* Kaneš administered the network and was equipped with a building ("house," with office and storage facilities and a shrine of Aššur), a secretary, and an assembly (which also acted as a court of law), led by a limited number of important traders. The colonies functioned somewhat as a province of Aššur, subject to its assembly and ruler, maintaining contact via both official letters and "envoys of the city" (who transmitted orders and verdicts and supervised diplomatic contacts with the Anatolian rulers).

Assyrian donkey caravans brought large quantities of expensive woolen textiles and tin into Anatolia. These commodities, acquired rather cheaply in Aššur, could be converted into Anatolian silver with great profit. (The gross profit on tin was at least 100 percent and on textiles at least 300 percent.) Family firms, whose members also used capital invested by rich Assyrians, temples, and commercial moneylenders (interest at 30 percent per year), conducted the trade. Partnerships, service contracts, mutual representation, commission, and credit were vital instruments of trade. Secure and regular communications and a permanent presence in Anatolia guaranteed reliable information on the local markets, which made it possible to grant long-term credit and to direct the flow of merchandise or keep it temporarily in stock.

Written documents played a vital role in the trade, maintaining communication with Aššur and with people in other commercial settlements. Thousands of contracts were validated by the seal impressions of parties and witnesses applied to the clay envelopes in which the tablets were encased: debt notes (originating from credit sales and consignment), service contracts with personnel, transport contracts with caravan leaders, and numerous quit claims. Most are dated by the week, month, and eponym year (in all some 120).



KÜLTEPE TEXTS. *Tablet with its envelope.* Top: The tablet on the right (British Museum, BM 113572) is a business letter of the Assyrian trader Ennum-Aššur son of Šalmah. The envelope on the left is impressed on the top and bottom with the seal of the sender. Bottom: Detail drawing of the seal impression on the envelope (BM 113572a). (Courtesy K. R. Veenhof)

Contracts served evidentiary purposes and were used in the numerous lawsuits among traders. Hundreds of witnessed records of private summonses show that an attempt was first made to solve problems privately or by arbitration before formally appealing to local Assyrian courts (usually a *kārum*). The latter resulted in records of interrogations, negotiations, sworn oaths, and finally formal verdicts, ultimately by the city and the ruler of Aššur, the highest judicial authorities, which could also issue binding procedurial orders and assign attorneys to plaintiffs.

Finally, the archives contain numerous notes, lists, and memoranda: accounts of caravan expenses, lists of merchandise in stock or given in consignment, and individual transactions. They were needed to keep track of the many, often simultaneous and complicated transactions and of payments not in cash but by book transfer (via the *kārum* office), which required periodic general settlements of accounts under the auspices of the *kārum*.

Contacts with native Anatolians, living inside or outside the *kārum*, resulted in the oldest written historical data on Anatolia some two centuries before the Old Hittite Empire emerged. The country consisted of a fair number of city-states, each with its ruler and a varying number of officials, most of whom were designated as "the one in charge of . . ." (lit., "great one of . . ."). The most important were the *rabi simmiltim* ("great one of the stairway"), the second man after the king, frequently the crown prince, and the *rabi sikkitim*, presumably a military official. In addition, the texts introduce priests of various local gods, some that also occur in the names of the festivals mentioned as dates of payments in loans or credits granted to locals. Some rulers of important and powerful cities, such as Kaneš and Purushanda, appear as overlords of smaller ones.

The still-limited number of purely native Anatolian contracts (in the Assyrian script and language mastered by some local scribes) deal with the sale and purchase of houses and slaves, marriage and divorce, adoption and inheritance, debt, slavery, and security. The society was, to all appearances, primarily agricultural, but also characterized by trade and metallurgy. Assyrian traders were allowed to work and settle in *Kārum* Kaneš on the basis of sworn agreements ("oaths") between the authorities and local rulers. Such agreements granted the right to trade, Assyrian jurisdiction, and protection of the caravans in exchange for the payment of import and transit taxes (5 percent on textiles, four pounds of tin per donkey load), and a right of preemption of ten percent of the textiles. Anatolian rulers promised to make good losses from brigands and occasionally (?) to prevent other (Babylonian) traders from entering their territory. Assyrians who tried to dodge the taxes by smuggling could be fined and jailed, and local rulers and officials harming Assyrians or refusing to pay their debts could be boycotted. On the whole, losses and conflicts were exceptional because both parties, profiting from the trade, stuck to the agreements. The linguistic analysis of the large body of Anatolian personal names occurring in the texts reveals that the bulk of the population spoke a language closely related, though not identical, to Old Hittite or (as the Hittites themselves said) "Nešite," probably in a more archaic form. In addition there were proto-Hattian and Hurrian population groups.

Seal Impressions. Several thousand Kültepe tablets, particularly contracts and judicial records, have been found in sealed envelopes and validated as legal documents by seal impressions (see above). In addition, many fragments of envelopes belonging to letters have been discovered (opened to be read) that had been sealed by their senders. Excavations have yielded hundreds of bullae originally attached to a variety of containers and packets in order to protect, identify, or validate them (e.g., by the official seal of the "city office" in Aššur, applied as proof of clearance after payment of the export tax). Some served as labels for transport, others for storage, and still others to close and seal the doors of storerooms. The perhaps two thousand different seal impressions known today exhibit a great mixture of elements of styles and techniques from various traditions and workshops. While most Anatolians used stamp seals, some of

them, and all Assyrians, used cylinder seals. Old Assyrian, Babylonian, Syrian, Anatolian, and Syro-Anatolian styles can be distinguished; some older seals were recut and reused. Seals and sealings, which are subjects for iconographic studies, had legal significance on certain types of records. Once the owner of a seal is identified (only some 15 percent are inscribed), it becomes possible to discover links between the seal and its owner's ethnicity, status, or wealth.

[*See also* Kaneš.]

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KLAAS R. VEENHOF

KUNTILLET 'AJRUD (Heb., Ḥorvat Teman), site located in the northeast Sinai Desert (30°11′ N, 34°25′ E; map reference 0940 × 9560), approximately 50 km (30 mi.) south of Qadesh-Barnea and a few kilometers west of Darb Ghazza, an ancient route and modern track leading to Eilat and southern Sinai. The mound rises prominently from the broad valley of Wadi Qurayyah, which forms a natural east–west route. The top of this isolated hill is a narrow plateau, with ruins at its western end. Shallow wells at the foot of the hill still make the site an important one.

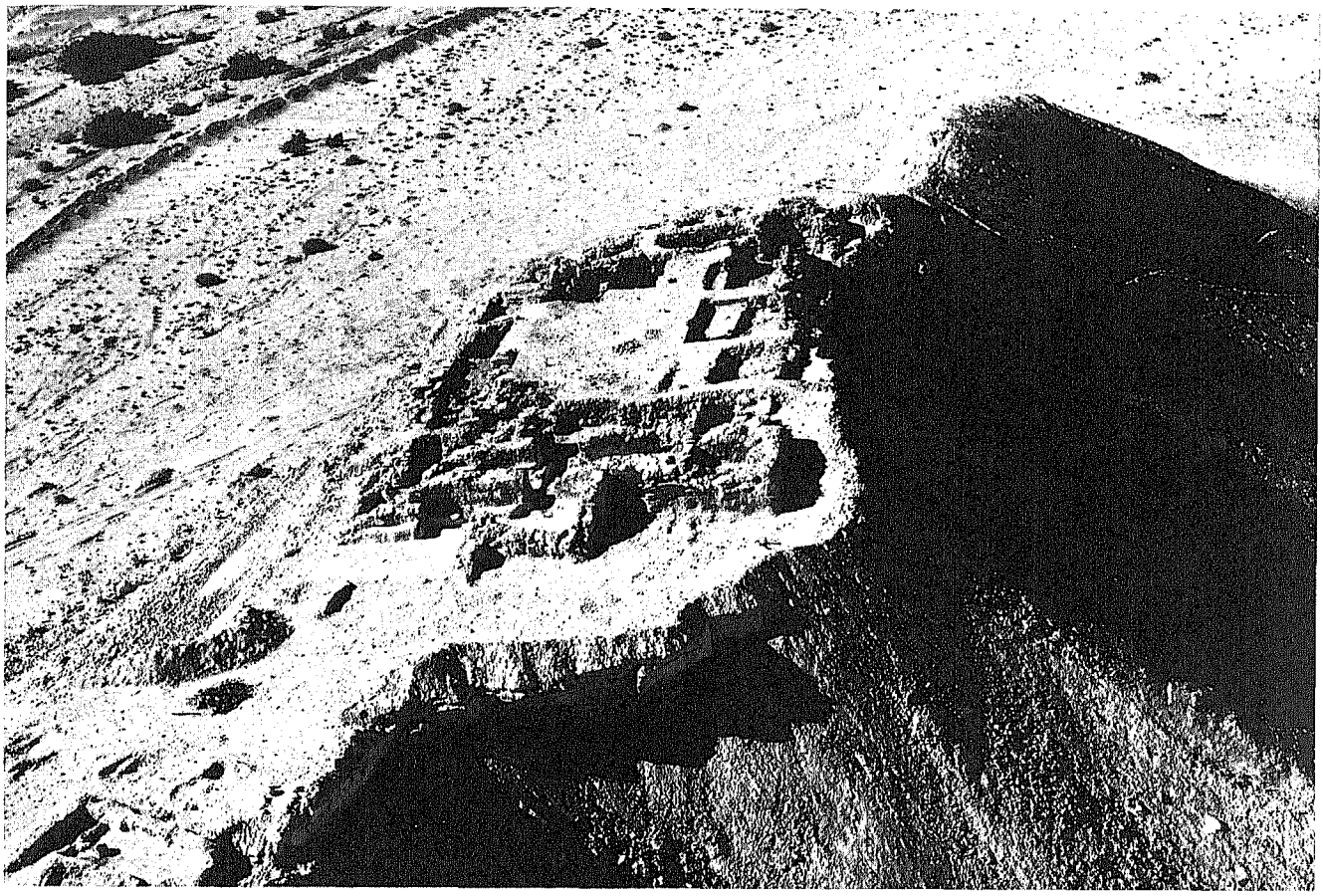
Kuntillet 'Ajrud has been explored by Edward H. Palmer (1869), Alois Musil (1902), Beno Rothenberg (1967), and Ze'ev Meshel (1970); Meshel directed three seasons of excavation between October 1975 and April 1976 under the auspices of Tel Aviv University, the Israel Department of Antiquities, and the Exploring the Land Division of the Kibbutz Movement. There are two structures on the site: a main building at the western end of the plateau, and a secondary one 10 m to its east. The state of preservation of the second one is very poor, as were its finds.

The main building, a rectangle with four corner rooms, covers an area of approximately 15 × 25 m. The entrance was through a small exterior court area ringed with stone benches and then through a small gate room leading to a narrow chamber divided into two wings. In each wing plastered stone benches surrounded the walls. Except for a narrow passage between the wings, the benches fill the spaces. The bench room extends north–south across the entire width of the building and apparently was the most important part of the site. Certainly its function was associated with the benches.

Plaster fragments that had detached from the walls were found in the bench room. Some of the fragments are inscribed with black ink: two Hebrew inscriptions in Phoenician script (see below) and a partial third inscription. The third inscription was found in situ, about 1.5 m above floor level, on the northern doorpost of the entrance leading to the main courtyard. The bench room, the corner rooms abutting its two wings, and the adjoining parts of the main building produced most of the other significant finds. Two pithoi adorned with inscriptions and pictures and stone bowls of various sizes, four of which had the names of donors incised on their rims. Bases of pithoi and large storage jars were found, still in situ, in the two long rooms located to the south and west of the main courtyard. These areas served as storerooms for food supplies.

The Hebrew inscriptions and the cosmopolitan style and motifs of the drawings found at the site attest to its unique significance. Some of the inscriptions are written in ancient Hebrew script and some in Phoenician script, on plaster, stone, and pottery.

1. *Plaster fragments.* Three partial inscriptions, written in ink in Phoenician script but in the Hebrew language, were



KUNTILLET ʿAJRUD. *Aerial view of the site.* (Photograph by Avraham Hay; courtesy Z. Meshel)

found on plaster fragments in the bench room; portions of two others, written in ancient Hebrew script, were found in the debris at the entrance to the western storeroom. One of the Phoenician inscriptions reads: "your days may be prolonged, and you shall be satisfied . . . give YHWH of Teman and his Asherah . . . YHWH of Teman and his Asherah favored. . . ."

Another inscription is a piece of an ancient theophany describing the revelation of God in language echoing the Hebrew Bible: "and when El rose up . . . and hills melted . . . and peaks were pounded . . . bless Baal in (the) day of war . . . the name of El in (the) day of war. . . ." It is noteworthy that Baal and God (Heb., *'el*) are mentioned here in poetic parallelism, in connection with a possible reference to a "day of war" *(yôm milhāmā).*

2. *Stone bowls.* Among the four inscriptions incised on the rims of stone bowls, the most complete one reads: "(donated) by Ovadyo son of ʿAdnah; may he be blessed by YHW(H)." These stone bowls were apparently dedicated to the god of Israel by donors who sought his blessing.

3. *Pottery.* One or two letters are incised on the shoulders of most of the pithoi. The letter *'aleph* is found most frequently, while the letter *yod* is found least often; the combination *qoph-resh* appears in two instances. It is assumed that these letters are abbreviations indicating types of offerings and tithes, a practice described a millennium later in the Mishnah and Tosefta. These letters were incised on the pithoi prior to firing. Neutron activation analysis of their clay established that they were made in the vicinity of Jerusalem, perhaps reinforcing the suggestion that priests lived at the site and received supplies in the forms of sacrifices and tithes. Among the seven inscriptions incised on the shoulders of storejars after firing are four reading *lśr ʿr,* to be read *leśar ʿir,* "(belonging) to a city official." The jars may either have held commodities consigned to an official at the site or registered by him.

Among the inscriptions written in red ink on two large pithoi that are also decorated with pictures are four repetitions of the alphabet, a list of personal names, and two blessings that resemble the priestly benediction. One of these was written above two figures of the Egyptian god Bes and may be reconstructed as follows: "A[shy]o m[lk] (the king) said: tell [x, y, and z], may you be blessed by YHWH of Shomron (Samaria) and his Asherah." If this reconstruction is sound,

it is possible that *'(sy)w (hm)lk* ("Ashyo the king") is a transposition of the name *yw'š*, "Joash," referring to the king *(hmlk)* of Israel who reigned from Samaria (c. 801–786 BCE); this may provide an important synchronism for dating the site. The second inscription is reconstructed as "Amaryo said: tell my lord, may you be well and be blessed by YHWH of Teman and his Asherah. May he bless and keep you and be with you." The two inscriptions not only shed light on the religious character of the site, but also provide revealing glimpses into the history of Israelite religion.

Various divine, human, and animal figures are drawn on the two storejars. On one of them, alongside two representations of Bes, a seated figure, perhaps Asherah, plays a lyre. The familiar motif of the tree of life, flanked by two ibex, also appears on this vessel, along with drawings of a lion, a procession of animals, and a cow licking the tail of a suckling calf. On the other vessel five figures are depicted raising their hands in a gesture of supplication, and an archer raises his bow. Most of these motifs, are well-represented elsewhere in Syria/Phoenicia.

The subject matter of the inscriptions, the references to various deities, and the presence of dedicated vessels all suggest that Kuntillet ʿAjrud was not a temple but a kind of religious center. Given its location (it may have been associated with journeys of the Israelites to Eilat and to Ezion-Geber and perhaps with those of pilgrims to southern Sinai), the absence of ritual appurtenances usually associated with cult or sacrifices (e.g., altars), as well as its architectural plan, it may have been a wayside shrine. A journey south along the Darb Ghazza from Qadesh-Barnea might have included stopping at this well-side station to make dedications to Israel's god in the bench room of the main building.

Kuntillet ʿAjrud was only occupied for a few years. The interpretation of the evidence points to an occupation by a small group of priests from Israel, with an officer *(śr ʿr)* at their head. The reference to "Yahweh of Samaria" on one of the large decorated pithoi, the Phoenician-style writing, the decorative and pictorial artwork, the pottery types, and the onomastic conventions (names ending in *-yau*, and not *-yahu*), suggest that the site was in sustained contact with the northern kingdom of Israel. In return for provisions, primarily from Judah, priests would have rendered various blessings and other services to travelers.

The date of the site, determined by typological and paleographic analysis, and by the need to identify a historical period in which Israelite influence over Judah was especially strong, points in the excavator's opinion, not to the time of the reigns of Jehoram, Ahaziah, and Athaliah (850–837 BCE), but to the period of Joash, king of Israel (c. 801–786 BCE), who captured King Amaziah of Judah, broke down the wall of Jerusalem, and seized the treasures of the Jerusalem Temple and palace (*2 Kgs.* 14:1–16; *2 Chr.* 25:1–24). It is possible that Joash intended to gain direct access to the Red Sea, and that this was the reason for the war between the two kings. The victory of Joash may be reflected in the construction of the buildings at Kuntillet ʿAjrud.

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ZE'EV MESHEL

KURNUB, a fortified settlement in the central Negev desert, also known as Mampsis, located 40 km (25 mi.) southeast of Beersheba, at the junction of the roads from Aila (Eilat) to Jerusalem and Gaza (map reference 156 × 046). Kurnub is the site's Arabic name. At the end of the first century BCE, the site was settled by the Nabateans as a secondary stop on the trade route from Petra to the Mediterranean Sea. The settlement prospered into the second century CE, when it and the rest of the Nabatean kingdom became part of the Roman Provincia Arabia and horse breeding replaced trade as the primary economic activity. (In contrast to other Nabatean sites in the Negev, agriculture at Kurnub was never an important part of the economy, primarily because of the dearth of arable land.) In the Late Roman period Kurnub became a garrison in defense of the Jerusalem—Aila road. Its strategic importance continued into the Byzantine period, primarily because of its proximity to Transjordan. The mosaic Madaba map portrays it (under the Greek name *Mampsis*) as a fortified city—an arched gateway flanked by towers. [*See* Madaba.] It is also mentioned as Mamphis in the military papryi of Nessana, another sixth-century source. [*See* Nessana.] Because the latest coins found at the site date to

the mid-sixth century CE, it is believed that the town was destroyed by Arab invaders sometime before the Muslim conquest of Palestine in 636 CE.

Following numerous late nineteenth- and early twentieth-century surveys and preliminary explorations, Kurnub was extensively excavated between 1965 and 1967, in 1971–1972, and again in 1990 by a team led by Avraham Negev on behalf of the Hebrew University of Jerusalem. Architectural remains at Kurnub are more extensive than at any other site in the Negev, and the quality of that construction is striking. More than two-dozen public buildings have been excavated, among them, two Byzantine churches with mosaic pavements. A Late Roman city wall surrounded the town, which also had an extensive water-collection system and three distinct cemeteries with burials dating from the Nabatean through the Byzantine periods.

Kurnub was not one of the early Nabatean settlements in the Negev. Remains from the Middle Nabatean period (c. 30 BCE–70 CE) are the earliest found there. Studying this period is further hampered because the town was completely rebuilt, following a new plan in the second century CE. The largest of the Middle Nabatean buildings, all of which were built of hammer-dressed stones, was a fortress situated at the site's highest elevation, in the northeast.

The Late Nabatean/Late Roman period (70 CE–mid-fourth century CE) begins with the reign of Rabel II (70–106 CE) and continues into what is known historically as the Late Roman period. (It can, however, be classified as Late Nabatean because the same structures continued in use from the second through the mid-fourth centuries—and in most cases beyond, into the Byzantine period.) The Late Roman finds consist primarily of pottery and coins and the remains of the city wall. Built at the end of the third century or at the beginning of the fourth, the wall was about 900 m long and enclosed an area of about 15 acres. It had two gates and was defended by two towers. The main gate was on the north; the western gate gave access to Naḥal Mamshit.

Many Late Nabatean buildings were constructed on or incorporated into the foundations of earlier buildings. A large Middle Nabatean structure, for example, was uncovered beneath the city wall. Use of the Late Nabatean public pool at the northeastern edge of the city extended into subsequent periods. The pool (18 × 10 × 3m) apparently had a wooden roof supported by pillars. Next to it was the public bathhouse, which consisted of a courtyard that may have been used as a dressing room, two cold baths, a tepid bath, and a three-room hot bath. [*See* Baths.]

Water for the pool, bathhouse, and city cisterns was supplied by a network of water-collection systems constructed at various points for which the Nabateans are known. [*See* Cisterns.] Water was collected primarily by damming Naḥal Mamshit but also by conducting rainwater from a nearby mountain slope. Three dams in Naḥal Mamshit were kept under observation from a high (5 m), square tower (10 × 10 m) situated at the western edge of the town. This structure had a paved courtyard with a roofed water reservoir as well as storerooms, a guest suite (a separate, self-contained dwelling unit), and a square, characteristically Nabatean staircase tower. [*See* Reservoirs.]

A very large building (35 × 20 m), believed to have been the governor's palace, was uncovered northeast of the tower, at the center of the western edge of town. The building's internal courtyard (19 × 6 m) housed a guardroom, reception hall, and library, as well as servant quarters, a kitchen, storerooms, and storage cellars. The colonnade running along the western and northern walls of the courtyard supported arches that in turn supported a balcony onto which the upper rooms opened. This "l"-shaped arrangement has not been found elsewhere in the Negev. A separate residential area—its rooms distinguished by stone floors—was accessed via an arched vestibule.

Also unique to the Negev is the stable found in a large rectangular building (27 × 35 m) in the town's southwestern corner. Three rooms were partitioned such that a wide central area was flanked by two elongated aisles. Animals housed in these aisles were fed from troughs dug into the sills of four arched openings cut out of both the western and eastern walls of the central hall. A stable of the same type—though much larger and more elaborate—was found in a building complex in the eastern section of the city. A square structure (40 × 40 m), it had only one entrance, which led through a vestibule into a large irregularly shaped courtyard. The building comprised numerous units, including workshops, a lavatory, a residential wing and visitors' suite, a stylobate bearing columns with Nabatean capitals, and a treasure room. Both of these buildings contained cisterns.

Traders found respite at the large khan, or caravanserai (23 × 42 m), located to the northwest, just beyond the later Roman city wall. This rest house, which included large courts, halls, and rows of rooms along its northern and eastern sides, resembles the one found at Avdat. [*See* Avdat.] About 50 m from the caravanserai, the excavators uncovered two buildings thought to have been schools in which Nabatean architecture and construction were taught. The earlier building, which was square (30.30 × 30.25 m), contained pottery dating from the Middle Nabatean through the Byzantine periods. Various imported wares indicate that some of its occupants were wealthy. Adjoined to this structure's western wall was a larger, rectangular building (35.80 × 45.25 m) dated to the early second century CE. Destroyed by the mid-fourth century, its remaining pillars and arches were later ruined in an earthquake, perhaps that of 363. Later in its history, this building may have been a barrack for a locally recruited militia.

During the Byzantine period (mid-fourth–early sixth centuries CE) many Late Nabatean buildings continued in use; the primary Byzantine remains, however, are two churches, designated the east church and the west church. Both date

to the second half of the fourth or the beginning of the fifth century. The east church complex (55 × 35 m) contained a chapel, baptistery, annexes (housing a bath and perhaps a monastery), and a square bell tower. [*See* Baptisteries; Baths; Monasteries.] Access to the complex was through a large atrium (15 × 18 m) abutting the basilica on the west. The church (27.5 × 15 m) was entered through one of three openings in the atrium's eastern wall. Both of its aisles were paved in stone. A mosaic floor in the nave was decorated with geometric designs; two large crosses were executed in front of the bema. [*See* Mosaics.] The church had a single, central apse flanked by rectangular rooms; neither room contained an apse, but relics were found inside of both. Extending around the interior of the semicircular apse was a bench with three steps that supported the base of the bishop's throne. Numerous Arabic invocations were engraved on the apse, an indication that Arab tribesmen occupied the site temporarily after it was conquered early in the seventh century.

The west church, situated in the southwestern corner of the city, was built over part of a large Late Nabatean building. Like the east church, it had a colonnaded atrium with a central cistern and three openings that led into the basilica. The interior (17.5 × 10 m) was smaller than that of the east church, but its plan was identical and its aisles were also paved in stone. Bird, fruit, and geometric motifs were executed in the nave's colored-mosaic pavement, which also featured six undated Greek inscriptions.

Most of the city's marketplace, comprising three rows of shops situated along two streets, is dated to the Byzantine period. Its southern portion was constructed on the foundations of a large Middle Nabatean building; and at some point in its history, the structure apparently served as a monastery. The marketplace is one of the few buildings that survived the Muslim conquest of Kurnub.

[*See also* Churches; *and* Nabateans.]

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AVRAHAM NEGEV

KURSI (Ar., Khirbet el-Kursi), site located at the mouth of Naḥal Samakh on the eastern shore of the Sea of Galilee (map reference 2481 × 2102). It and the fertile valley that surrounds it were identified long ago by surveyors and researchers as the land of the Gergesenes of the Gospels, related to the story of the stampeded Gadarene swine (*Mt.* 8:28–34; *Mk.* 5:1–20; *Lk.* 8:26–39). The identification was based mainly on the site's topographical setting, as well as on the modern name *Kursi*, which may be a distortion of the original name, *Gergesa*. Archaeological surveys and excavations conducted in the area after 1967 by Dan Urman and S. Bar-Lev proved the identification beyond doubt (see below). The early Christians identified the site with the place where the miracle took place, according to the Synoptic Gospels. From a topographical point of view, it corresponds to the biblical description of the land of the Gergesenes.

From 1970 to 1974, Vassilios Tzaferis, under the auspices of the Israel Department of Antiquities, excavated a site located some 300 m east of the shore of the Sea of Galilee, partly on the valley side and partly on the slopes overlooking the sea. After three seasons of excavation (1969–1972) a religious settlement consisting of a church and the remains of a walled monastery was revealed. The monastery (140 × 120 m in area) was enclosed by walls on all four sides. At the center of the enclosed area was a magnificent early Christian basilica (25 × 45 m), one of the largest discovered in the vicinity of the Sea of Galilee.

At a distance of several meters to the east of the monastery, halfway up the slope of Naḥal Samakh, another building was discovered that included a small chapel paved with colorful mosaics and a rectangular room with a natural conglomerate stone boulder standing in the center. It was probably this room, with its natural rock, that the early Christians saw as the place of the miracle, at least in the writings of the church fathers from the fourth century onward.

Based on the archaeological evidence, three phases (levels) can be distinguished in the settlement, basilica, and chapel: the earliest dates from the second half of the fifth century to the middle of the sixth century CE; the second lasted from the second half of the sixth century to the beginning of the seventh; and the third began in the seventh century and continued until the middle of the eighth.

In the earliest stage of occupation (level 1) the settlement was a compact and well-organized community with streets, dwellings, and drainage channels. It no doubt functioned as a purely religious community, as evidenced by the magnificent church in its center, its most important element. At

approximately the same time, the chapel dedicated to the "miracle" was erected.

In the second stage (level 2) many changes took place within the church and the monastery, probably as the result of an increase in the Christian population in the region and of changes in liturgical customs. Prosperity ended abruptly with the Persian invasion in 614 CE; the monumental character of the church was altered and its area greatly reduced. Some of the chapels on its two long sides were converted to industrial use: one was used as a storeroom and another held an oil press. Within the residential quarter, new buildings of less refined construction were built on the earlier remains.

The third stage (level 3) was the last occupation before the entire complex was destroyed, probably by an earthquake, and abandoned. New settlers came who were not sensitive to the site's religious significance or to the architectural importance of the church. This final settlement was short-lived, lasting only until the second half of the eighth century. The monastery and the church, as well as the chapel dedicated to the miracle, were destroyed, abandoned, and subsequently laid in ruins.

[*See also* Churches; Monasteries.]

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VASSILIOS TZAFERIS

KUWAIT. Located at the head of the Arab-Iranian Gulf, the State of Kuwait bounds with Saudi Arabia to the south, Iraq to the west and north, and the Gulf to the east. Kuwait consists of 17,000 sq km (10,540 sq. mi.) of the Arabian desert, the Gulf littoral, and several uninhabited off-coast islands, of which Bubiyan and Warba are the largest and lie near the Shatt al-Arab. Other islands to the south—Kubbar, Qaruh, Auha, Umm al-Marindin, and Umm an-Nammal in Kuwait Bay—are bare and small. The principal archaeological remains are found on Failaka Island at the entrance to Kuwait Bay, which has been inhabited since 2000 BCE.

The mainland is characterized by a mostly flat, stony desert plain broken by escarpments and hills. Particularly in the north, the wadi systems drain internally, except along the east coast, where they drain into the Gulf. Wadi al-Batin, the relic of an ancient watercourse, rising in Arabia to the south, is a prominent feature defining the state's western boundary. Shallow, depressed basins (playas) in the central, north, and west of Kuwait are important collection stations for winter rains. Typical coastal sand dunes occur in the southern part of the region.

The earliest inhabitants of the Arabian Peninsula and Gulf must have derived from populations enacting a developed Olduwan culture in Tanzania and Kenya more than one million years BP. Arabian-bound emigrants probably crossed from Africa near Bab al-Mandeb (Ethiopia) to Yemen at the mouth of the Red Sea. Acheulean sites are known in North Arabia at Shuway Hittiyah 644 km (400 mi.) due west of Kuwait) and at more than two hundred lakes sites in central, west, and southwest Arabia dating between 700,000 and 100,000 BP. Wadis running north from central Arabia were natural corridors for the peoples who were to inhabit the Gulf and the whole of the Near East. Wadi al-Batin, framing Kuwait on the west, and still archaeologically unknown, is an obvious route. By 50,000 BP, Mousterian culture had developed on the Arabian Peninsula. The Gulf was a fertile valley, well-watered by an extension of the Shatt al-Arab emptying into the Gulf of Oman (Indian Ocean) at Hormuz. In 15,000 BCE, the Gulf began to fill from the south, forcing the resident populations of the Shatt valley to seek higher ground north and west.

Between 8000 and 5000 BCE, a Mesolithic hunting culture was established in the Burgan Basin, where characteristic microliths have been found in association with bitumen pools. Drawings of animals (horned quadrupeds with elongated bodies, giraffelike creatures) and a palm tree, executed in a reddish-yellow pigment, decorate the underface of a prominent flat rock near Mudaira (on the north side of Kuwait Bay) that may date to this period.

Neolithic (5000–3500 BCE) sites are distributed along all of the Gulf's western littoral. One site identified in Kuwait at Sabiyah (on the north side of Kuwait Bay) exhibits pottery, fishing gear, celts, and small blades, a rather deprived version of the contemporaneous Ubaid culture flourishing in Sumer. [*See* Ubaid.] The Neolithic may have continued for some time in Kuwait, although no artifacts have been discovered on the mainland or islands to suggest any continuity of habitation.

There is no evidence of an Early Bronze culture. Nevertheless, somewhere along the mainland littoral a society based on a fishing culture must have existed because the economic surplus provided by fishing would have created the initial stimulus for trade. Two of the types of boats that would have been utilized still survive: the *warjia* (a reed craft) and the *houri* (a dugout); the bones of large sea mammals from the second-millennium BCE excavations on Failaka Island indicate the use of a frame or plank boat essential for deep-water fishing.

Other recognized archaeological remains in the State of Kuwait are to be found on the tiny island of Umm an-Nammal, located very close to the tip of Cape Asharij, which juts into the rear position of Kuwait Bay. The island is accessible to the mainland at low tide, and they were no doubt joined in antiquity. The staff of the Kuwait National Museum have completed a thorough survey of the island and conducted test excavations at several of the more substantial locations.

Four sites containing meager Bronze Age remains are clustered near the center of the island. One of the sites is identified as a kiln, and sherds of ceramic wares are comparable to material from excavations at Qal'at al-Bahrain that has been dated to the end of the third millennium and the first half of the second millennium BCE. Other small sites on the island contained Late Kassite, Late Hellenistic, and Late Islamic period material.

The Sabiyah peninsula has been briefly surveyed along the Khor Sabiyah, the channel separating the mainland from Bubiyan Island. Four sites were located, devoid of architecture but identified by pottery dating mainly from the Middle and Late Islamic periods.

[*See also* Failaka.]

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L

LACHISH (Ar., Tell ed-Duweir), a prominent mound of about 31 acres located near a major road leading from Israel's coastal plain to the Hebron hills. The site's location, the fertile land in the area, and an ample water supply from numerous wells contributed to its development as an important settlement.

In 1929 William Foxwell Albright identified ancient Lachish with Tell ed-Duweir. With the absence of inscriptions, this identification, which is generally accepted, is based on circumstantial evidence and archaeological data. Tel Lachish was first excavated (1932–1938) by a British expedition directed by James L. Starkey, assisted by G. Lankester Harding and Olga Tufnell. The excavations were terminated when Starkey was murdered by Arab bandits. Starkey published only brief excavation reports, and Tufnell completed the publication work (Tufnell, 1953; Tufnell et al., 1940; Tufnell et al., 1958).

Starkey carried out large-scale excavations on the summit of the mound and in the surrounding area. Most of the remains uncovered on the summit date to the Iron Age and later. Earlier remains were uncovered in a section cut near the northeast corner of the site and on the nearby slope. The Canaanite Fosse Temple was discovered near the northwest corner of the mound, and numerous graveyards and a Bronze Age settlement were uncovered in the area surrounding the mound. Few of Starkey's stratigraphic conclusions (with the exception of the Assyrian siege ramp) were challenged by later excavators. For purposes of interpretation and publication, the most recent excavation (see below) has kept Starkey's stratigraphic divisions and terminology, except for the Middle and Late Bronze Age phases in levels VIII and VII in which his divisions are not sufficiently flexible.

In 1966 and 1968 Yohanan Aharoni (1975), under the auspices of the Hebrew University of Jerusalem, undertook limited excavations in the solar shrine area. In 1973, Tel Aviv University initiated full-scale excavations under the direction of David Ussishkin, assisted by Gabriel Barkay, Christa Clamer, Yehudah Dagan, John Woodhead, and Orna Zimhoni (Ussishkin, 1978, 1983). A reconstruction program for the Iron Age city gates is being carried out by Dagan, who also surveyed the surrounding region (Dagan, 1992). [*See* Restoration and Conservation.]

Neolithic, Chalcolithic, and Early Bronze Ages. An assemblage of flint implements and a single pottery sherd found on the mound probably indicate the existence of a Pottery Neolithic site in one of the surrounding valleys. Chalcolithic Ghassulian pottery was found on the mound, suggesting a settlement. Remains from the end of the Chalcolithic period and the beginning of the Early Bronze Age were uncovered on the northeast corner of the mound and on a ridge northwest of the site, where settlers lived in caves. A dolmen on the northwest ridge is probably related to this settlement. EB remains were found on the northeast corner, in Area D (in the center of the mound) and in tombs, indicating that the site was extensively settled during this period.

Intermediate Bronze Age. Except for a small settlement and its cemetery (cemetery 2000) on the ridge to the northwest there is no sign of habitation in the Intermediate Bronze Age (EB IV); 120 rock-cut single-chambered tombs were excavated. [*See* Tombs.] The period's pottery assemblage belongs to Ruth Amiran's southern Family A (Amiran, 1960) and to William G. Dever's Families J and S (Dever, 1980).

Middle Bronze Age. To date no evidence has been recovered for the MB I Canaanite city, but there was new settlement on the mound and Lachish was an important city-state by MB II–III. A glacis with a lime-plastered sloping surface constructed around the site in the Middle Bronze Age is responsible for the existing mound's configuration, but no remains of a freestanding city wall on top of the glacis have been found. Along the bottom of the glacis, on the west, a fosse was cut into the bedrock. In the center of the mound the northwest wing of a large palace with massive brick walls and perhaps a second story was excavated in area P. The palace probably belonged to the city's ruler. Huge stone slabs in secondary use from an earlier, similar structure were also used in its construction. Destroyed by fire, this palace was subsequently repaired and reused for domestic and industrial purposes. [*See* Palace.] Remains of a cult place were found in area D, but the structure is badly

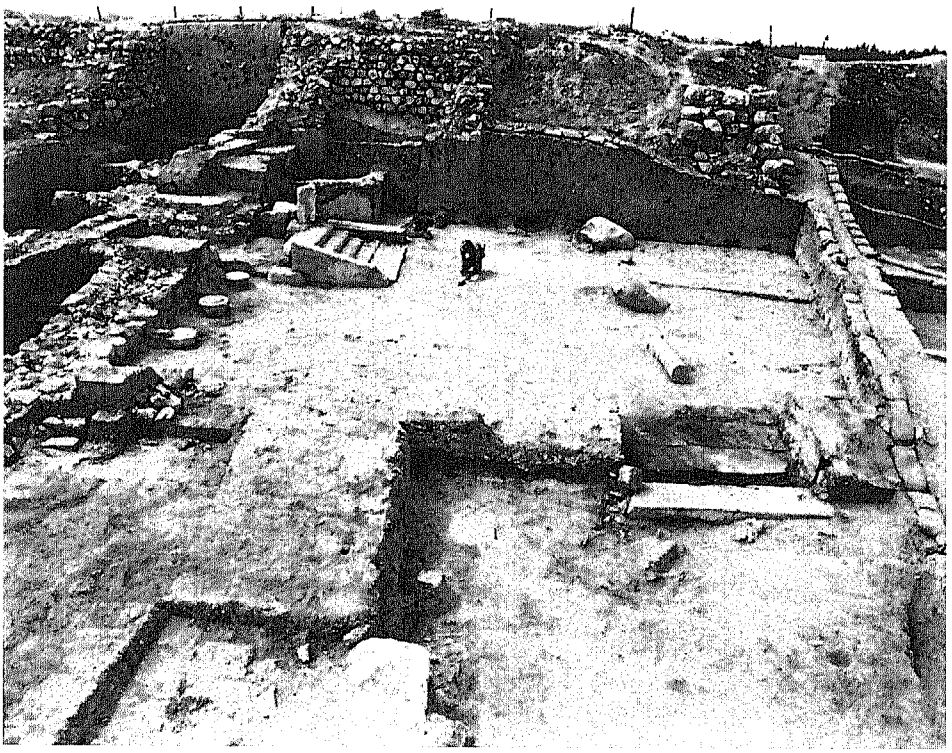
preserved and its character and plan are unknown. Many votive vessels and animal bones indicate its ritual function. Starkey's level VIII in the northeast corner of the site dates to this period. Many rock-cut tombs were found outside the site, richly furnished with pottery, weapons, and scarabs. [*See* Grave Goods; Weapons and Warfare.]

Late Bronze Age. The settlement decreased in size and declined in importance following the MB destruction. It did not regain prominence until the later part of the Late Bronze Age, then becoming one of the most significant city-states in Canaan. Papyrus Hermitage 1116A, dated to the reign of Amenhotep II (1453–1419 BCE), is the earliest written source referring to Lachish. It records food presentations to envoys from Lachish and other Canaanite cities. Several cuneiform tablets containing letters from kings of Lachish to their overlords, Pharaohs Amenhotep III and Amenhotep IV, in the fourteenth century BCE were found at Tell el-Amarna in Egypt. [*See* Cuneiform; Amarna Tablets.] Another letter, discovered at Tell el-Ḥesi, was apparently sent by an Egyptian official stationed at Lachish. [*See* Ḥesi, Tell el-.]

LB Lachish apparently was unfortified, and a temple was erected in the abandoned fosse near the northwest corner of the mound (Tufnell et al., 1940). It was rebuilt twice (phases I–III) and the finds were rich in each successive temple and in the surrounding pits, into which offerings had been thrown. The original fosse temple was modest; fosse temple II was larger. Fosse temple III, the largest, was destroyed by fire; it was apparently contemporaneous with the level VII domestic structures on the mound in area S. All were destroyed at the same time, probably toward the end of the thirteenth century BCE (Ussishkin, 1985). Buildings belonging to levels VII and VI (thirteenth–twelfth centuries BCE) were uncovered near the upper periphery of the mound, indicating that there was no city wall there then. However, the buildings along the upper edge of the site may have been adjoining, forming a line of fortifications around the city. In any case, by the fourteenth century BCE, the entire area excavated in area S up to the edge of the mound was open ground.

Information about the settlement between the end of the Middle Bronze Age and level VII is scarce. Some remains were uncovered in the northeast (Starkey's level VII) as well as in area P and in area S beneath level VII. In addition, many tombs contained pottery vessels, including Cypriot imports, and scarabs.

Level VI. The last prosperous Canaanite city is represented in level VI. It demonstrates a cultural continuity from level VII, but the city was rebuilt along different lines: in area S the level VII domestic structures were replaced by a public building; the fosse temple was not rebuilt, and a new sanctuary was built on the acropolis (see figure 1), possibly as part of the royal palace. The main complex of the acrop-



LACHISH. Figure 1. *Main hall of the Late Bronze Age acropolis temple, from the north.* (Courtesy Institute of Archaeology, Tel Aviv University)

olis temple consists of an antechamber, a main hall, and a cella, climbing the slope in that order. The entrances to the three units are on a straight axis that passes through the center of the complex. The main hall is rectangular; its ceiling was supported by cedar of Lebanon beams resting on two huge columns. The plan of the temple shows affinities to shrines at Tell el-Amarna and Deir el-Medineh in Egypt. [*See* Amarna, Tell el-.] Various architectural elements, such as painted plaster, the stone staircase leading to the cella, and octagonal columns, indicate a strong Egyptian influence. Nevertheless, a gold plaque portraying a naked Canaanite goddess (Clamer, 1980) and a graffito of a Canaanite deity indicate that a Canaanite cult was performed there.

The level VI finds attest to strong ties with Egypt, in particular during the reign of Rameses III (1182–1151 BCE, low chronology of Wente and Van Siclen, 1976). Several bowl fragments inscribed in hieratic script document (as do similar inscribed bowls from Tel Sera') a harvest tax paid to an Egyptian religious institution, probably associated with a local temple (Goldwasser, 1984). [*See* Sera', Tel.] The recording of the harvest tax on votive bowls reflects the economic exploitation of southern Canaan by Egyptian authorities and their religious establishment, suggesting that Lachish was under direct Egyptian control. The level VI city was completely destroyed by fire, its inhabitants were liquidated or driven out, and the site was abandoned until the tenth century BCE. With the absence of inscriptions, the identity of the conquerors cannot be established. One possibility is that Lachish was destroyed by the Sea Peoples, who settled at about that time on the coastal plain. [*See* Philistines, *article on* Early Philistines.] (Significantly, Philistine painted pottery—monochrome as well as bichrome—has not been found at Lachish, except for some sherds in a cave on the slope.) The alternative possibility is that level VI was destroyed by the Israelites, as described in *Joshua* 10:31–32. The biblical record, which describes a large Canaanite city destroyed in a swift attack, fits the archaeological evidence. On the other hand, the motive for the destruction remains obscure: the Israelites did not settle at the site or in the surrounding region (Dagan, 1992) until much later.

A cache of bronze objects, one of which contains a cartouche of Rameses III, was found in area G beneath the level VI destruction debris. Thus, level VI could not have been destroyed before the later part of his reign—in about 1160 BCE. The destruction of Lachish may have coincided with Egyptian loss of control over southern Canaan (c. 1130 BCE), as without Egyptian protection unfortified Lachish could not defend itself.

Seven or eight brief inscriptions written in Canaanite alphabetic script have been recovered (Puech, 1986–1987), making Lachish the cardinal site in Canaan proper for studying this script. The earliest inscription includes four letters incised on an MB bronze dagger. [*See* Proto-Canaanite.]

Level V. The settlement was renewed, but unfortified, after a long period of abandonment in level V. It is usually assigned to the period of the United Monarchy and its destruction to Pharaoh Shishak (Sheshonq)'s campaign in about 925 BCE. Small domestic buildings were uncovered in different parts of the site. Aharoni (1975) discovered a cult room in the solar shrine area; its cultic equipment included a stone altar and pottery incense burners and chalices. The cult room was destroyed by fire; remains of destruction may also have been detected in area S. Level V cannot be dated with certainty because the date of the pottery characterizing it remains problematic.

Level IV. A large fortified city was constructed in level IV, probably because of Judah's new strategic needs (Solomon's divided kingdom). [*See* Judah.] Lachish is cited in *2 Chronicles* 11:5–12,23 as one of the cities fortified by Rehoboam, but the list may refer to construction works by a later Judean king. Level IV appears to have been constructed by one of the early kings of Judah—Rehoboam (928–911 BCE), Asa (908–867 BCE), or Jehoshaphat (870–846 BCE).

The city was surrounded by massive fortifications. The city gate on the southwest included a roadway ascending into the city, an outer gate built as a projecting bastion, a six-chambered inner gate, and an open courtyard between the two gates (see figure 2). An outer revetment surrounded the site halfway down the slope; it supported a glacis that reached the bottom of the main city wall extending along the mound's upper periphery. Whether the outer revetment functioned merely as an obstacle preventing attackers from reaching the main wall or was a city wall that could have been manned in time of siege cannot be determined.

A huge palace-fort (palace B), apparently the residence of the Judean governor, crowned the center of the city. The edifice was built on a raised foundation podium whose superstructure is missing. The foundation podium has two differently constructed parts, A and B. It is generally believed that podium A belonged to an earlier edifice (palace A of level V) that was incorporated in level IV into the newly erected palace B. It seems more probable, however, that podium A was originally an integral part of palace B, and that it was constructed as a separate unit and, for technical reasons, in a different style. Palace B had two annexes. The northern building was probably a storehouse, while the southern one (labeled the "government storehouse" by Starkey) was either a stable or a storehouse (see below). A massive wall (the enclosure wall) connected the corner of the palace-fort and the main city wall.

A great shaft, a rock-cut installation (about 22.50 m deep) on the eastern side of the site, was partially cleared by Starkey. It may be an unfinished water system, but it is more likely the quarry that supplied the stones for the level IV monumental structures. A deep well uncovered at the site's northeast corner was probably the city's main water source, at least in the Iron Age. The beginning of level IV lacks

domestic structures. In a later phase, however, a house was built in area S; some domestic remains were also found near the city gate, indicating the beginning of settlement in open areas of the fort.

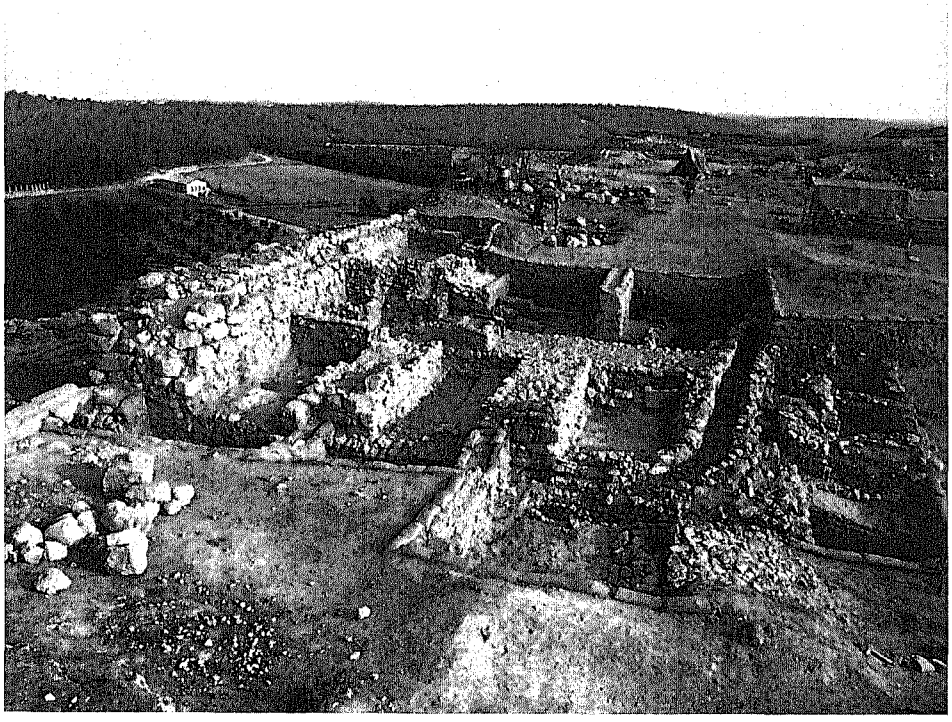
2 Kings 14:19 and *2 Chronicles* 25:27 record that King Amaziah (798–769 BCE) fled to Lachish when a revolt broke out in Jerusalem. The rebels followed him to Lachish and killed him. The king's choice of Lachish as a refuge indicates the city's importance in the kingdom of Judah. It is not known whether this event took place in level IV or III.

Palace B, the city gate, the "enclosure wall," and the residence in area S (but apparently not the city walls) were rebuilt in level III, indicating their destruction at the end of level IV. As no remains of willful destruction were discerned, these structures may have been destroyed by an earthquake, such as the one that occurred in about 760 BCE, during the reign of Uzziah (*Am.* 1:1; *Zec.* 14:5).

Level III. The rebuilding of the city gate, the palace-fort compound, and the enclosure wall mark level III. The number of settlers at Lachish must have increased, as many buildings of domestic character were found in the areas south of the palace-fort and along the road from the city gate into the city. Of note is the enlarged palace-fort compound. Podiums A and B of former palace B, as well as an extension (podium C), formed an enlarged raised foundation for the new palace C. Its superstructure has not survived, except for some floor segments. The palace-fort and its two annexes opened into a large courtyard.

The southern annex was enlarged in level III. Its ground plan (and that of the smaller level IV building) resembles the controversial stable compounds at Megiddo and the storehouse at Tel Beersheba and probably served similar functions. [*See* Megiddo; Beersheba.] If these buildings were stables, the large courtyard might have been a training and parade ground for chariots from the Judean garrison. The lamentation of *Micah* (1:13) associates Lachish with chariots, and the Lachish reliefs (see below) portray burning vehicles, probably chariots, being thrown on the Assyrian attackers.

Assyrian conquest. The level III city was destroyed in 701 BCE by Sennacherib, king of Assyria. Campaigning in Judah, Sennacherib established his camp at Lachish (*2 Kgs.* 18:14, 17; *Is.* 36:2, 37:8; *2 Chr.* 32:9) and from there sent a task force to challenge King Hezekiah in Jerusalem. [*See* Jerusalem.] When the destruction of Lachish was complete, its inhabitants were deported. The region of Lachish was probably included in the Judean territory Sennacherib turned over to the Philistine kings. The well-dated, large assemblages of pottery vessels sealed beneath the destruction debris of the level III structures form the basis for dating the pottery of Judah in that period (Tufnell, 1953; Zimhoni, 1990).



LACHISH. Figure 2. *Excavation of the Iron Age city gate, from the south.* (Courtesy Institute of Archaeology, Tel Aviv University)

The main Assyrian attack was carried out in the southwest corner of the city. The archaeological data make possible the reconstruction of the battle that took place here (Ussishkin, 1990). The Assyrian army laid here a huge siege ramp (the oldest siege ramp, and the sole Assyrian one known). [*See* Assyrians.] Starkey unknowingly removed a substantial part of it. Made of boulders heaped against the slope of the mound, its top reached the bottom of the outer revetment. It is estimated that 13,000–19,000 tons of stone were dumped there. The stones of the upper layer were joined with mortar to create a compact surface. An earthen platform on top of the siege ramp provided level ground for the siege machines.

As a countermeasure, the defenders laid a counterramp against the inner side of the city wall, opposite the siege ramp. It was composed of mound debris topped by a layer of limestone chips. At its apex it is about 3 m higher than the top of the city wall, forming a basis for a new defense line apparently erected there. When the defense positions on top of the city walls collapsed, the Assyrians had to extend the siege ramp in order to attack the new, higher defense line. The second stage of the siege ramp is also composed of boulders.

Remains of weapons, ammunition, and equipment have been recovered, mostly at the point of attack at the southwest corner: a bronze helmet crest, scales of armor, slingstones, iron arrowheads, a few carved bone arrowheads; a fragment of an iron chain, and twelve large, perforated stones apparently used by the defenders to unbalance the siege machines.

Starkey uncovered a mass burial—the scattered, disarticulated skeletons of about fifteen hundred individuals—in a few adjoining caves that may be associated with the Assyrian attack. D. L. Risdon (1939) has studied 695 skulls belonging to men, women, and children; three had been trepanned. Curiously, the crania bear a close racial resemblance to the contemporary population of Egypt.

Lachish reliefs. A series of stone reliefs commemorating the conquest of Lachish existed in Sennacherib's palace at Nineveh (Kuyunjik), decorating the walls of a large room (Ussishkin, 1982). [*See* Nineveh.] The palace was excavated in 1847–1851 by Austen Henry Layard, who sent most of the reliefs to the British Museum in London. The original length of the relief series was 26.85 m; 18.85 m were sent to London and thus preserved. From left to right, the series depicted Assyrian horses and charioteers, Assyrian infantry attacking the city, the besieged city itself, Assyrian soldiers carrying booty, deported families leaving the city, Judean captives, Sennacherib seated on his throne, the royal tent and chariots, and the Assyrian camp. The city is portrayed in detail: the city gate and city walls under attack (see figure 3), the huge siege ramp on which five siege machines are deployed, and a large structure in the center of the city, possibly the palace-fort. The perspective, in schematic Assyrian style, appears to be from a point on the slope of the hill southwest of the mound. It may be the point, probably in front of the Assyrian camp, from which Sennacherib watched the battle from his throne, as depicted in the relief.

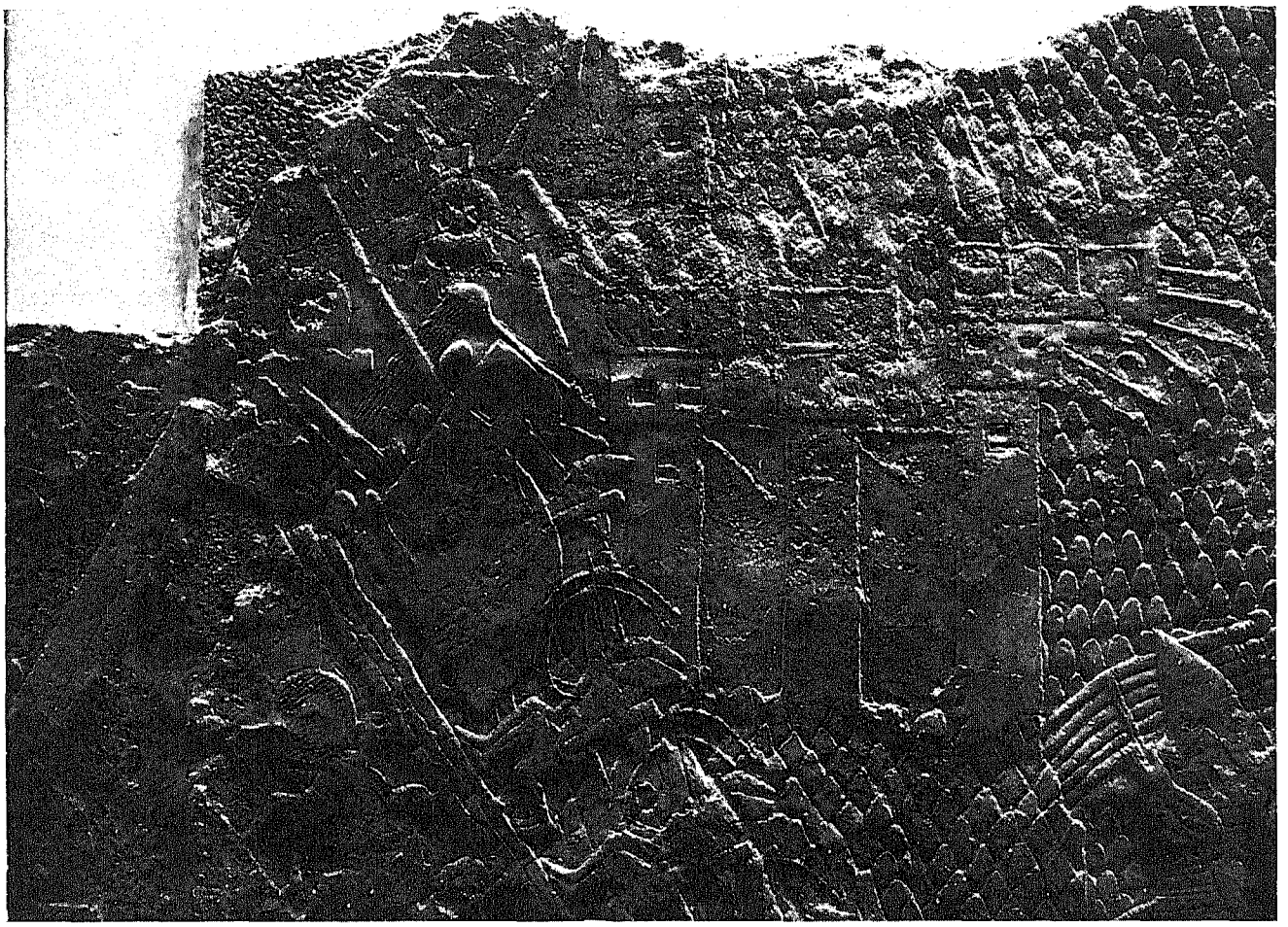
Royal Judean storage jars. Tel Lachish is a key site for studying royal Judean storage jars and their stamps. By 1994, 403 royal stamps and 63 personal stamps from Lachish had been amassed: 85.60 percent of the royal stamps are of the four-winged type, and 73.96 percent of the identifiable royal stamps include the city name *Hebron.* All the stamped handles belong to storage jars of type 484, following Tufnell's classification (Tufnell, 1953), but many jars of this type were not stamped. Neutron activation analysis has shown that these jars were produced of similar clay, originating in the region of Lachish, indicating that they were manufactured at a single regional center.

Ten jars with stamped handles and many unstamped jars were restored. It appears that jars of all the types found were used concurrently. The restorable jars were uncovered beneath the destruction debris of level III and thus date to shortly before 701 BCE. This date fits the view that the royal storage jars were produced by Hezekiah's government as part of the preparations to meet the Assyrian invasion. The capacity of the stamped jars varies, so that the stamps would not have been a royal guarantee of capacity. The personal stamps were also impressed on jars with royal stamps (Ussishkin, 1976), suggesting that the owners of the personal stamps were either potters or officials otherwise associated with the production of the jars. There is no consistent pattern to where on a handle the stamps were applied; many stamps were applied carelessly and were not ment to be read.

Level II. Following a period of abandonment, Lachish was rebuilt and refortified, probably during the reign of Josiah (639–609 BCE). The level II city was poorer and less densely inhabited, and its fortifications weaker than those of levels IV–III. The palace-fort was not rebuilt, and its ruins loomed over the center of the city. Numerous small houses were uncovered in different parts of the site.

A smaller city gate was built on the ruins of the earlier one. It contained an outer and an inner gate, with a rectangular courtyard surrounded by small rooms between them. The Lachish letters uncovered in one of these rooms hint that the city's headquarters were located in the city-gate complex. [*See* Lachish Inscriptions.] The outer revetment was repaired, and a new main stone city wall was erected on the remains of the previous wall.

Numerous Hebrew ostraca, inscriptions on pottery vessels, bullae, seals, and inscribed weights were found in level II. Most important are the Lachish letters, a group of ostraca interpreted as correspondence mostly sent to "my lord Yaush," an army commander at Lachish, by a subordinate



LACHISH. Figure 3. *Detail of the Nineveh reliefs of the siege of Lachish.* An Assyrian battering-ram attacking the city wall. (Courtesy Institute of Archaeology, Tel Aviv University)

stationed at some point not far from the city, shortly before the Babylonian conquest (Torczyner et al., 1938). Yigael Yadin (1984) believed that the letters are copies or drafts of letters sent from Lachish to the commander in Jerusalem. Several inscriptions on vessels were found in a storeroom near the city gate, two of which define types of wine kept in the vessels. Two jar inscriptions mention dates—probably the regnal years of Zedekiah (596–586 BCE). Seventeen bullae stamped with Hebrew seals were found in the solar shrine area; another, stamped with the seal of "Gedaliah who is over the house"—possibly Gedaliah son of Ahikam (*2 Kgs.* 25:22)—was found on the surface of the mound.

Level II was destroyed in 588/86 BCE by Nebuchadrezzar, king of Babylon. Shortly before, Jeremiah (34:7) had named Lachish as one of the remaining Judean strongholds. A considerable amount of pottery—including storage jars stamped with a rosette emblem—was sealed beneath the debris of the houses, providing an indicative pottery assemblage for the period (Zimhoni, 1990).

Level I. After a period of abandonment following the destruction of level II, Lachish was rebuilt as a Persian government center. Level I covers the Babylonian, Persian, and the beginning of the Hellenistic periods. The fortifications were restored, and a small palace (the Residency), a temple (solar shrine), and a few large buildings were constructed. Judeans returning from the Babylonian Exile settled there (*Neh.* 11:30). The Residency was constructed on the foundation podium of the Judean palace-fort, which was cleared of the debris from the level III palace-fort. The Residency was smaller than the earlier edifice. Its plan combined that of an Assyrian open-court house and that of a North Syrian *bit-ḫilani;* the square column bases in the porticos were carved in Achaemenid style. At a later phase of level I, the Residency was settled by squatters. The solar shrine, whose entrance faced east, was built in a style similar to it, and they are probably contemporaneous. The finds indicate that the shrine was in use until the Hellenistic period. The Persian-period finds include about two hundred small limestone al-

tars found outside the mound near the southwest corner. [*See* Altars.] One altar bears an inscription mentioning incense. [*See* Incense.] It is not clear whether these altars were associated with the cult practiced in the solar shrine.

Later Remains. The settlement was abandoned during the Hellenistic period. For unknown reasons, Marisa/Mareshah and then Eleutheropolis/Beth-Guvrin replaced Lachish as the region's central settlement. [*See* Mareshah.] A segment of the Roman road from Eleutheropolis to Gaza, which passed near the site, was uncovered by Starkey. Numerous coins from different periods were found on the surface, indicating that the summit was continuously cultivated. The western part of the summit contained burials, devoid of any burial offerings, which probably belonged to bedouins. The latest remains include trenches, cartridges, and coins from Israel's War of Independence in 1948.

[*See also the biographies of Aharoni, Harding, Layard, Starkey, and Tufnell.*]

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DAVID USSISHKIN

LACHISH INSCRIPTIONS. The site of Tell ed-Duweir or Tel Lachish has provided one of the most important corpora of Hebrew inscriptions: thirty-six are presently known and the ongoing excavations may well discover others. In addition, important Proto-Canaanite inscriptions, *lmlk* sealings and other seals and sealings (Diringer, 1953, pp. 340–348; Aharoni, 1968: 165–167), inscribed weights (Diringer 1953, pp. 348–356; Aharoni, 1968, p. 165), several Egyptian inscriptions (Goldwasser, 1991), and a three-line Aramaic inscription on a Persian-period altar (Diringer, 1953, pp. 358–359) have been recovered at the site.

The first group of Hebrew texts, numbering twenty-one, was discovered in 1935 and 1938 and published almost immediately by Harry Torczyner (Torczyner, 1938, texts 1–18; Torczyner, 1940, texts 19–21). During a trial excavation carried out at the Solar Shrine at Lachish in 1966, a single ostracon was found (Aharoni, 1968, text 22). In the excavations that have been ongoing since 1973 under David Ussishkin, another ten inscriptions have come to light (Lemaire, 1976, text 23; Ussishkin, 1978, texts 24–30, pp. 81–88; and Ussishkin, 1983, texts 31–32, pp. 157–160). For reasons that are unclear, this sequential numbering of the Hebrew inscriptions omitted four brief texts, not written on ostraca, that Diringer reedited (1953, pp. 356–358).

It is the first group of texts, the so-called Lachish letters, that have made the collection famous, for several of these documents are relatively long and well preserved. There can be no doubt that this group is at least partially homogeneous, for five of the ostraca are sherds from the same vessel (G. Lankester Harding in Torczyner, 1938, p. 184). Whether this means that the documents are drafts of letters written on the site and sent elsewhere (Yadin, 1984) is open to debate (Rainey, 1987). The most important documents in this group are letters from an inferior to his superior in an administrative and/or military context (e.g., text 3, ll. 1–2: "Your servant Hoshayahu hereby reports to my lord Yaush"). The letters are generally dated to the period before the fall of Judah, in 586 BCE, perhaps in 589. The concerns of that time appear to be reflected in the mention in text 3 of a high-level embassy to Egypt (the envoy is Konyahu, general of the army [*śr hṣb'*]) and of an unnamed prophet *(hnb')*. Although attempts to identify this prophet as Jeremiah are pure speculation, the extrabiblical attestation of the term *nb'* itself is important; the circumstances of these letters

also are not unlike the situation in the time of Jeremiah, as described in the Hebrew Bible (Dussaud, 1938: 256–271; Lemaire, 1977, p. 109).

Several of this first group of texts are of less historical interest than the letters; they are either simple lists of names (texts 1, 11, and 19) or are too poorly preserved to allow meaningful analysis (texts 10, 12, and 17). Text 20, a brief jar inscription, is important because it may include an element of dating: if *bšʿyt* means "in the ninth (year)," it may refer to the ninth year of Zedekiah, king of Judah, which would correspond to 589–588 BCE, the date indicated in the Hebrew Bible for the beginning of the siege of Lachish (*Jer.* 39:1; cf. Lemaire, 1977, pp. 134–135).

The documents found since 1966 are more heterogeneous and include an ostracon with a list of names (text 22), other fragmentary inscriptions on ostraca (texts 23 and 31), and several inscriptions originally written with ink or incised on whole jars (texts 24–30 and 32). The four inscriptions from the earlier excavations not included in the sequential numbering fall into the heterogeneous category, but two are important: a royal *bat* jar inscription, useful in attempting to ascertain the quantity designated by the term *bat*, and a partial alphabet (Diringer, 1953, pp. 356–358).

These inscriptions provided the first reasonably extensive body of texts in Judean Hebrew written in cursive script. They provided, therefore, an important contribution to early descriptions of extrabiblical cursive paleography (Dussaud, 1938, pp. 270–271), orthographic practice (Cross and Freedman, 1952, pp. 51–56), and grammar. Some of the texts discovered since, at Tel Arad, have shown that orthographic conventions could vary (e.g., they reveal a more extensive use of *matres lectionis*), but that the basic language of these two primary corpora was identical and for all intents and purposes was also identical with standard biblical Hebrew. One of the primary contributions of the Lachish letters to the study of Hebrew syntax has been to show how frequently nonverbal elements were fronted in the spoken language (e.g., text 4, ll. 6–7: *wsmkyhw lqḥh šmʿyhw wyʿlhw hʿyrh*, "Now as for Semakyahu, Shemayahu has seized him and taken him up to the city").

The Lachish letters also provided the first body of extrabiblical data regarding epistolary usages in preexilic Hebrew (Pardee et al., 1982, pp. 67–114, 145–164). These data have more recently been expanded by the letters from Tel Arad (*ibid.*, pp. 24–67). Because the total number of letters known from the period is still small, however, many details of epistolary usage remain unknown.

[*See also* Arad Inscriptions; Hebrew Language and Literature; *and* Lachish.]

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DENNIS PARDEE

LAGASH. *See* Girsu and Lagash.

LAGRANGE, MARIE-JOSEPH (1855–1938), founder of the École Biblique et Archéologique Française in Jerusalem. Lagrange took a doctorate in law at the University of Paris before entering the Toulouse province of the Dominican Order in 1879. After seminary studies at the University of Salamanca in Spain (1880–1884), he taught there and in Toulouse (1884–1888) before undertaking graduate studies at the University of Vienna (1888–1890). He opened the École Biblique on 15 November 1890, and within a decade he had recruited and trained scholars of the caliber of M. A. Jaussen (1871–1962), L.-H. Vincent (1872–1960), A. M. Savignac (1874–1951), F.-M. Abel (1878–1953), and P. E. Dhorme (1881–1966), whose original research quickly demanded an outlet. In 1892 he founded the *Revue Biblique* and in 1900 the monograph series *Études Bibliques*, both of which still flourish.

Lagrange carried out pioneering topographical research in Palestine, Sinai, and Petra but is best known as a historian, a biblical commentator, and the author of twenty-nine

books. In addition to full-scale commentaries on *Judges* (1903), *Mark* (1911), *Romans* (1916), *Galatians* (1918), *Luke* (1921), *Matthew* (1923), and *John* (1925), his research produced major works on the canon and textual criticism of the New Testament, messianism, and intertestamental Judaism. Many of his 248 articles made highly original contributions in areas as diverse as the theology of inspiration, patrology, and Palestinian topography. His 1,500 book reviews reveal a fruitful and sustained dialogue with authors specializing in all facets of biblical studies.

Lagrange's programmatic book *La méthode historique* (1903) won him enemies among Roman Catholic traditionalists during the Modernist crisis, but his loyalty and perseverance eventually established the critical method as fundamental to Catholic biblical studies. Before poor health obliged him to leave Jerusalem in 1935, he had initiated a second generation of brilliant scholars, notably, Pierre Benoit (1906–1987), Bermara Couroyer (1900–), and Roland de Vaux (1903–1971).

[*See also* École Biblique et Archéologique Française.]

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LAHAV (Tel Ḥalif; Ar., Tell Khuweilifeh), 3-acre mound at Kibbutz Lahav in southern Israel, on the southwestern flank of the Judean hills, 8 km (5 mi.) south of Tell Beit Mirsim, 15 km (9 mi.) north of Tel Beersheba, and 25 km (15 mi.) west of Tel Arad (31°23′ N, 34°52′ E; map reference 1373 × 0879). The site's prominent geomorphological location, at the juncture between the coastal plain, Judean mountains, and Negev desert, commands the route from the seacoast north of the Beersheba drainage east into the Judean hills.

Identification. Based on the proximity of Tel Ḥalif to its satellite site, Ḥorvat Rimmon (Ar., Khirbet Umm er-Rammamin), less than 1 km south of it, Félix-Marie Abel, in his 1938 geographical survey, identified Tel Ḥalif with biblical Ziklag, the city that the Philistine overlord Achish ceded to King David (*1 Sm.* 27:6 ff.). In the nineteenth century, Claude R. Conder and H. H. Kitchener identified Ḥorvat Rimmon as the Iron Age Rimmon mentioned in the territorial lists of Judah in *Joshua* 15:32 and 19:7. Accepting this hypothesis, Abel also identified Ḥalif with Tilla, a Byzantine-period settlement that Eusebius, in his *Onomasticon* (99.26), had located near Rimmon, 26 km (16 mi.) south of Beit Jibrin. More recently, noting the absence of Iron Age remains at Ḥorvat Rimmon, Amos Kloner (1980) argued that Ḥalif itself was biblical Rimmon, suggesting that its Byzantine-period satellite later co-opted its name. Nadav Na'aman (1980) has also suggested that Tel Ḥalif is biblical Ḥormah. [*See the biographies of Abel, Conder, and Kitchener.*]

Exploration. Archaeological exploration at Tel Ḥalif began in the 1950s, following the establishment of Kibbutz Lahav on its eastern slopes. The first formal investigations were intermittent salvage operations conducted by the Israel Department of Antiquities. These included investigations of tombs of the Roman/Byzantine settlement at site 66 below the tell on the northwest in 1962 (Gophna and Sussman, 1974) and of the Iron Age at site 72 on the slopes facing the tell to the south in 1964 and 1972 (Biran and Gophna, 1964; Seger, 1972.)

The Lahav Research Project launched an integrated study of Tel Ḥalif and its environs in 1976 that included excavation, regional survey, and ethnographic study. The project was carried out by a consortium of American scholars and institutions under the direction of Joe D. Seger. Field research seasons were conducted in 1976, 1977, 1979, and 1980 (phase I); 1983, 1986, 1987, and 1989 (phase II); and in 1992–1993 (phase III.) These explorations recovered evidence of ancient settlement on the tell itself, on its lower eastern terrace, and at a number of satellite sites. Traces of occupation from the Chalcolithic period (c. 3500 BCE) through the late Byzantine and Islamic periods were found, along with remains of nineteenth- and early twentieth-century CE Arab dwellers.

Settlement History. The first settlers at the site utilized the lower terrace area just above the valley to the east. Excavations at terrace sites 101 and 301 produced evidence of Chalcolithic (stratum XVII) and Early Bronze I (stratum XVI) occupation; they revealed that Ḥalif steadily developed as a significant village site between 3500 and 2900 BCE. Ḥalif's architecture and small finds from the end of the EB I indicate that it was a regional center in commercial contact with early dynastic Egypt.

Ḥalif was not occupied until the end of EB II. Nearby Arad flourished in the EB II, but when it declined at the end of the period, the main tell at Ḥalif underwent vigorous new settlement. In field I, on the eastern slopes, the EB III settlement is marked by four substantial architectural phases (strata XV–XII). The stratum XV city was defended by large fortification walls. Its defenses included a 7.5-meter-wide tower fronted by a well-prepared crushed limestone glacis. The final stratum XII EB settlement was destroyed in the twenty-fourth century BCE, possibly in the course of late fifth-and sixth-dynasty Egyptian forays in the area.

After the eclipse of the stratum XII city, Ḥalif lay unoccupied until just before 1500 BCE. The stratum XI resettle-

ment, in the late Bronze IA period follows closely on the mid-sixteenth-century destruction of city D at nearby Tell Beit Mirsim. In field I at Ḥalif, four LB phases were identified (strata XI–VIII). In strata X and IX, during LB IB and IIA, the presence of a large Egyptian style "residency" building and its associated remains indicates that the settlement was a trading station along the route into the southern Judean hills.

With stratum VIII (LB IIB) all of the field I architecture was converted into a storage complex with numerous stone-lined bins. Elements of an adjacent domestic building in area B10, with three subphases of room resurfacing, testify to the intensity of this thirteenth-century occupation. Stratum VIII ends in destruction in about 1200 BCE.

Modest occupation continues into the Iron I period (stratum VII), as indicated by several later surfacing phases in the area B10 structure in field I, along with evidence from probes in fields II and III. However, significant rebuilding begins again only during stratum VI in the Iron II period. This was a period of extensive growth and expansion at Ḥalif, presumably under the aegis of the Judean monarchy. Traces of the Iron II settlement were found virtually everywhere at and around the site. These included the extensive site 72 cemetery on the slopes of the hill southwest of the tell.

On the summit of the tell, large-scale architectural exposures from the Iron II period were made in fields II, III, and IV. The first major Iron II redevelopment (stratum VIB) took place in the early ninth century BCE. Investigation in fields III and IV indicated that they included casematelike fortification walls associated with intramural domestic buildings and an outlying flagstone paved glacis. The stratum VIB city experienced massive destruction at the end of the eighth century BCE, probably by Sennacherib in his campaign in 701. A subsequent squatter phase of reoccupation (stratum VIA) represents a brief resettlement during the first quarter of the seventh century BCE. After this, occupation ceases until the Persian era.

In stratum V, reoccupation by a regional Persian administration is indicated by pits and surface deposits all across the tell. Significant architecture was encountered only in field II, where elements of a large building (the foundations of its walls are a meter wide) and related artifacts suggest that it was a barrack or other military structure.

Above the Persian remains two subphases of another large building were found. These date to the Hellenistic period (stratum IV). Initial construction is dated to the mid-fourth century BCE. A second-century Ptolemaic coin sealed in a grave beneath final-phase floors shows continuity of settlement until at least about 200 BCE. An occupational hiatus in the Early Roman period followed.

With the flight of Jews and Christians from Jerusalem during the first- and second-century CE wars with Rome, the site recovered dramatically, however. A substantial Roman/Byzantine village (Tilla) was established on the tell and on the terrace below its northeast slopes (stratum III.) This included the cemetery at site 66 below the tell to the northwest. Tilla is part of an intensive regional pattern of Roman/Byzantine resettlement that includes significant satellite villages at Ḥorvat Rimmon to the south, Khirbet Zaʿaq to the north, and Khirbet Abu Hof to the southwest.

Traces of later occupation representing the early Islamic (stratum II) and modern Arabic periods (stratum I) are found mainly on the lower terrace areas. Excavated remains in cave complex A, just below field I, indicate an early Islamic presence from Mamluk times (c. 700 CE) until well into the period of the Crusades. The more prominent remains, however, belong to the late nineteenth- and twentieth-century settlement of Khirbet Khuweilifeh. Excavations and ethnographic research indicate that until about 1940, cave complexes and other structures in the Khuweilifeh village were used seasonally by Arab *fellahin*—sharecroppers, shepherds, craftsmen, and traders—working as clients of bedouin who claimed ownership of the region.

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JOE D. SEGER

LAMPS. The oil lamp was the most common means of lighting in the ancient Near East. It basically consisted of a reservoir, a wick, and fuel; any other features were but variants or embellishments. The wick was an absorbent cord

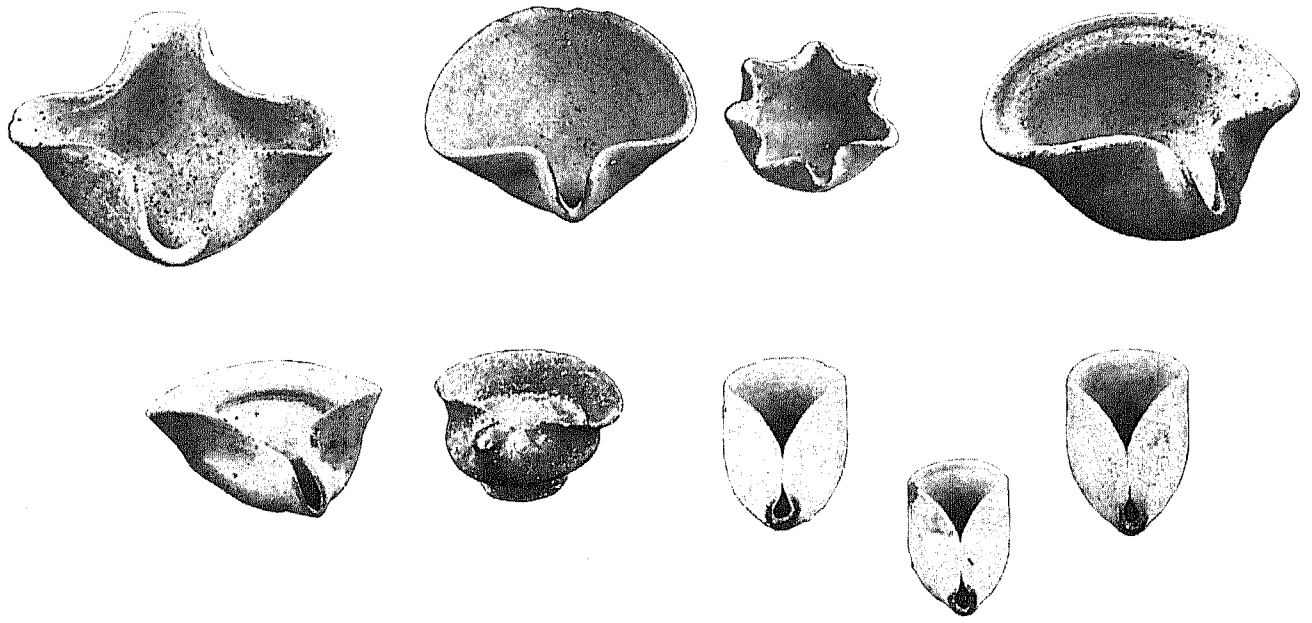
that could be made from a variety of fibrous plants, of which flax was particularly suitable and widely available. Animal fat was an early fuel, but vegetable oils—particularly those derived from olives, castor beans, and sesame seeds—became the most widely used fuel, providing a steady flame that was relatively free from smoke and odor. The labor-intensive agricultural practices of the ancient world dictated frugality with lamp oil in most periods and regions, even though lamps could burn satisfactorily on a grade of oil that was unsuitable for human consumption.

As early as the Epipaleolithic and Pre-Pottery Neolithic in the Near East, concave shells and stone bowls were utilized as lamps. By the fifth and fourth millennia BCE small, handmade ceramic bowls began to serve the same purpose, though as yet there was little attempt to create distinctive lamp forms. The wick was usually draped over the rim of the bowl or floated on the fuel. Because oil would, in time, seep wastefully and messily through the ceramic ware, a lamp was sometimes placed in a saucer of water before or during use.

In Egypt throughout the dynastic period, cylindrical vessels of stone or pottery were used as lamps. They had no wick spouts, the flame rising near the center. Herodotus's description of Egyptian lamps, written in about 400 BCE, would have been appropriate to describe traditional Egyptian lamps at almost any time during the previous two millennia or more: they were "small vases filled with salt and olive oil, on which the wick floated" (*Hist.* 2.62). Even the magnificently carved alabaster lamps in the tomb of the pharaoh Tutankhamun were essentially only large cups. In Mesopotamia the Sumerians made vessels of metal or carved stone in the form of a conch shell, but it is not certain that these always served as lamps.

In the Levant during the Early Bronze Age, ordinary small bowls continued to serve as lamps, as traces of carbon black on their rims indicate, but a potter would sometimes pull out the rim slightly to form a small triangular wick channel. Toward the end of the third millennium the partially nomadic people of the southern Levant used a distinctive flat-bottomed saucer lamp, handmade or turned on a slow wheel, that had four prominent wick channels spaced at equal intervals around the sides.

The Middle Bronze Age in the Levant (c. 1800–1550 BCE), which was closely linked with the Canaanite culture, saw the introduction of a wheelmade saucer lamp that generally had a round bottom but in some regions was given a slightly flattened base. Although there were some typological developments over the successive centuries, this type of lamp continued to be the customary form of Canaanite lamp during the Late Bronze Age (1550–1200 BCE). In addition to their primary function in everyday life, lamps were sometimes placed in the ceremonial foundation deposits of buildings. They also were placed in rock-cut family tombs along with food and objects of daily life, as provisions for the afterlife, and sometimes were left outside the entrances to tombs in memorial rites. Even at this early date—if, indeed,



LAMPS. *Lamps of the Bronze-Iron Ages and the Hellenistic period.* Top row, l to r: MB oil lamp, c. 2000 BCE; two LB oil lamps, c. 1400 BCE; Iron Age I oil lamp, c. 1000 BCE. Bottom row: typical Iron Age II oil lamps, c. 800 BCE; Hellenistic pinched oil lamps, c. 100 BCE. (Courtesy Pictorial Archive)

not before—lamps were recognized not simply as devices for producing light, but as symbols of life.

Saucer lamps continued to be used, in modified form, in the Levant throughout the Iron Age (c. 1200–600 BCE) and Persian period (c. 600–300 BCE). The Phoenicians—seafaring descendants of the Canaanites—carried the saucer lamp, sometimes in a dual-spout form, to Cyprus, North Africa, and elsewhere. Among the varieties of saucer lamp used in central Palestine were a stump-base type in the Iron II period (c. 900–300 BCE) and an extremely shallow version with a large, everted rim that was popular in the Persian period. Occasionally, and perhaps for special purposes, saucer lamps were molded of bronze. Lamps continued to be placed in tombs, sometimes in considerable quantities. Some lamps, having seven wick channels equidistant around the rim and occasionally provided with pedestal bases, may have been used in religious rites. The forms of the lamps in the Temple in Jerusalem were different from those of household specimens and may have changed with passing time; the description of Solomon's Temple (*1 Kgs.* 7:49) alludes to ten gold lampstands, and the priestly account of Israel's ideal cult paraphernalia includes a distinctive seven-branch lampstand (Heb., *menorah*) of gold (*Ex.* 25:31–40).

In Mesopotamia there were, along with varieties of saucer lamps, ceramic specimens harking back to the archaic shape of the conch shell, and some specimens were made of bronze or iron. By the twelfth century BCE, however, the Assyrians were using a new form of wheelmade lamp that had a globular oil reservoir with a flat base and a filling hole at the top, as well as a tubular wick channel that curved upward from the lower part of the reservoir. This lamp form served as the glyphic representation of Nusku, the Assyrian god of fire. Assyrian tombs customarily were provided with a niche in which a lamp was placed. This distinctive lamp continued to be used in Mesopotamia during the Babylonian and Persian periods, and its form appears to have influenced a Palestinian closed lamp during the time of Persian domination.

As early as the seventh and sixth centuries BCE, Greek traders began to bring black-glazed wheelmade lamps into the Near East. The earliest imports had shallow, open bodies, but before long a new style of Greek lamp appeared with a globular oil reservoir, a filling hole at the top, and a short wick channel that extended horizontally from the upper part of the body. Although found most often at commercial settlements on the coast of Asia Minor, the Levant, and Egypt, these sturdily made, handsome lamps sometimes found their way to places farther inland.

The revolution in material culture that swept through the Near East following the conquests of Alexander the Great in the late fourth century BCE brought the rapid alteration of previous lamp traditions. During the third century most lamps were in the new international Hellenistic style, which still relied on the potter's wheel. In the second century BCE, however, molded lamps consisting of joined upper and lower halves largely supplanted the wheelmade tradition throughout the Hellenistic world. A much-favored color for these lamps and other molded vessels was gray, with a glossy gray-black finish, but wares and finishes in other colors sometimes were used. Molding made possible a vast variety of shapes and decorative designs that had been impossible to fabricate on a potter's wheel; factories at Ephesus and at other localities that exported to distant regions sometimes restricted their production largely to a single distinctive form for which they became well known. Decorative designs on molded lamps were largely confined to the area around the filling hole and on the top of the nozzle and tended to be floral or geometric. Loop handles were attached to some specimens. Lamps with multiple nozzles were not uncommon, and elegant bronze lamps were manufactured for special purposes. Typological differences among Hellenistic lamps often provide archaeologists with a useful chronological sequence that contributes to the dating of contemporaneous artifacts.

Despite the immense popularity of molded lamps, wheelmade types continued to be made in some regions of the Near East during the Late Hellenistic period. Small saucer lamps in the Iron Age tradition were manufactured in Egypt in the late dynastic period. In Palestine some potters made a distinctive lamp by pinching together two places on the rim of a small, flat-bottomed bowl so as to form a wick hole. In a different but similarly conservative vein, potters at the Jewish sectarian community of Qumran in the Jordan Valley fashioned distinctive closed lamps on a wheel.

When the Roman period succeeded the Hellenistic era in the mid-first century BCE, the vast majority of lamps continued to be molded; however, a new type of common lamp associated with imperial Rome soon supplanted the Hellenistic forms. The oil reservoir became flattened, with a concave discus on the top, the filling hole was reduced to a small puncture, the wick channel was shortened, and a design in low relief was added to the circular top surface. No longer restricted largely to linear patterns, artisans created a variety of striking designs for the discus, among which were scenes of gladiatorial combat, mythological and animal representations, and abstract patterns. Such lamps often were produced in factories located around the Mediterranean basin that were devoted solely to the manufacture of molded ceramics; the name of the factory sometimes was embossed on the flat base.

In spite of the dominance of the imperial and related lamp types, there was a considerable variety of forms during the early years of the Roman period. Oversized specimens with elaborate decorative handles, sometimes fabricated in bronze or iron, were used in public buildings, cult centers, and the residences of the wealthy. Hellenistic artistic traditions continued to influence both the form and the decoration of finer lamps. Sculptural lamps in an international style also were popular, taking such varied shapes as human

LAMPS. *Roman, Byzantine, and Early Islamic lamps from Sepphoris.* (Courtesy E. M. Meyers)

figures, animals, gods, boats, gladiator helmets, and shoes. Wheelmade lamps sometimes reappeared, though only in provincial contexts; among these was a type with a wheelmade, knife-pared body and a stubby, scimitar-shaped nozzle that was popular in Palestine and Transjordan in the Herodian era. In Mesopotamia molded lamps with short nozzles were often glazed. By this time crude oil (called naphtha) was being used in parts of Mesopotamia as an alternate fuel for lamps. During the Late Roman period (c. 135–335 CE) lamps frequently degenerated, especially as designs were repeatedly copied, with an increasing loss of precision in form and decoration. Specimens tended to develop regional characteristics, some of which have proved useful to archaeologists as indicators of date and provenience. Mesopotamian lamps sometimes continued to reflect their more remote ancestry in the Nusku lamp.

The Byzantine period (c. 335–635 CE) brought new typological developments to lamps in the Near East. In many regions the body and nozzle often merged into an almond shape, with a wide filling hole; decorative elements often were placed, much as in the Hellenistic period, on the shoulder and between the filling hole and the wick hole. The Christian tradition found expression in the frequent display of the cross and other religious motifs and Jewish tradition in the menorah. In Palestine some molded lamps displayed Christian sentiments in Greek, which became increasingly garbled with time. At Carthage, discus lamps in a distinctive red-orange ware retained the small filling hole of Roman lamps so that the discus could be boldly decorated with religious symbols, figures of saints, or pagan motifs. Churches and synagogues were illuminated with large, ornate bronze lamps on tall tripod bases or suspended from chains, and cup-shaped glass lamps came into widespread use in sanctuaries.

By this time a transformation in the function of lamps interred with the dead had undergone a change. There was no longer great concern to provide physical necessities for the dead, but there was much interest in symbolic burial gifts. Epitomizing life, as they so readily did, lamps came to constitute a considerable proportion of funerary gifts. The

variety of specimens found in some tombs suggests that each mourner may have brought a lamp to be left burning in the tomb. In Egypt frog-shaped lamps may have been manufactured primarily for use in burials, inasmuch as in popular Egyptian tradition the frog was believed to represent immortality.

After the Islamic conquest of the Near East in the seventh century CE, Byzantine lamps gradually evolved into distinctively Islamic types; however, the almond shape was long retained, and even the simple saucer shape reappeared in the tenth and eleventh centuries in Egypt and the Levant. During the caliphates of Cairo and Baghdad, new forms emerged; among the many diverse medieval types were green-glazed pedestal lamps and slipper-shaped lamps decorated with blue underglaze. It is only in recent centuries that oil lamps have been superseded by artificial illumination.

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An exhaustive bibliography of studies of lamps in the ancient Near East would include several hundred titles, but no comprehensive overview of the technology and typological history of lamps yet exists for the entire region. Academic interest has chiefly been on lamps of the Greco-Roman and Byzantine periods and their great variety. Geographically, the most extensive research has dealt with the lamps of Palestine, which have been treated in numerous excavation reports, catalogs of museum collections, and scholarly articles. Among the latter are the author's series of articles on "The Household Lamps of Palestine" (*BA* 27 [1964]: 1–31, 101–124; 29 [1966]: 2–27); unlike most lamp studies, which are limited to discussions of lamp typology, chronology, and motifs, these articles discuss the archaeological evidence in light of historical texts, technology, and cultural practices. The lamps of other regions of the ancient Near East have been much less adequately published and studied; for some regions, such as Arabia, there is scarcely any literature. An unusually diverse range of Near Eastern lamp types will be found in Renate Rosenthal and Renee Sivan's *Ancient Lamps in the Schloessinger Collection,* Qedem, vol. 8 (Jerusalem, 1978). Some useful information about the technology of ancient lamps, as well as brief comments about some major lamp types from Egypt, the Levant, and Mesopotamia, will be found in *A History of Technology,* vol. 1, *From Earliest Times to the Fall of Ancient Empires,* edited by Charles Singer et al., pp. 235–237 (London, 1954). An extensive bibliography pertaining to lamps in the ancient Near East can be found in *Les lampes de terre cuite en Méditerranée des origines à Justinien,* edited by Thérèse Oziol and René Rebuffat, Travaux de la Maison de l'Orient, no. 13 (Lyon, 1987).

ROBERT HOUSTON SMITH

LAPITHOS, important village on the north coast of Cyprus approximately 14 km (8.5 mi.) west of the town of Kyrenia and 70 km (43.5 mi.) from the south coast of Turkey (35°22′ N, 33°09′ E). Lapithos falls within the Kyrenia district of the Republic of Cyprus, but came under Turkish occupation during the summer of 1974 and is currently (1995) part of the self-proclaimed and internationally unrecognized Turkish Republic of Northern Cyprus. Its historically predominant ethnic-Greek population has now been replaced by Turkish Cypriot and mainland Turkish settlers.

The village is built on terraces on the lower northern slopes of the Kyrenia mountain range, above the fertile coastal plain, in an area well watered by perennial springs and abundant rainfall. Lapithos has long been noted for its citrus groves and other thriving agriculture. It has also been a traditional center for such crafts as woodcarving, pottery, and embroidery. Although Lapithos lacks a large natural harbor, its shoreline is protected from the prevailing northeasterly winds and would have been adequate for ancient shipping.

The modern village was founded in 654 CE by settlers from the nearby coastal town of Lambousa, who sought protection from Arab raids. However, according to tradition, Lapithos was founded by Laconians in the aftermath of the Trojan War. Archaeology suggests that the vicinity was the center of extensive occupation at least since the Chalcolithic period (c. 3800 BCE).

The area has been the focus of considerable archaeological investigation, beginning with the explorations of John L. Myres in 1913 and Menelaos Markides in 1917 on behalf of the Cyprus Museum. In 1927 the Swedish Cyprus Expedition, under the direction of Einar Gjerstad, conducted extensive excavations in the area, which were fully published in volume 1 of *The Swedish Cyprus Expedition* (1934) and formed the basis for a substantial portion of the syntheses in volume 4 of the same work (1948–1972). This activity was followed in 1931–1932 by an expedition from the University Museum of the University of Pennsylvania, which was directed by B. H. Hill. The results are still largely unpublished, except for the study of one tomb. Little evidence for settlements has been recovered as excavations to date have concentrated on cemeteries.

Lapithos demonstrates the characteristic Cypriot settlement pattern in which successive sites move from place to place within a limited region, presumably all utilizing common resources, such as a water source. The earliest-known habitation is the Chalcolithic settlement at the locality *Alonia ton Plakon,* excavated by the Swedish Cyprus Expedition. This occupation is followed after an apparent hiatus by the extensive Early–Middle Bronze Age (c. 2100–1600 BCE) necropolis near the coast at *Vrysi tou Barba,* explored by Myres, Markides, the Swedish Cyprus Expedition, and the University Museum. Here chamber tombs contained rich offerings of pottery and metal, including the earliest import to Cyprus from the Aegean, a Middle Minoan I jar.

Following another apparent hiatus, Late Cypriot (c. 1300–1050) tombs of two different types were constructed higher up the slopes, at *Ayia Anastasia* and *Kylistra.* These cemeteries were followed by new ones at *Kastros, Kato Kastros, Plakes,* and near the sea, dating from the early Cypro-Geometric to the beginning of Cypro-Archaic (c. 1050–700), another exceptionally rich phase. Class-

ical (fifth–fourth century) and Roman-period remains have also been found in the area.

[*See also the biographies of Gjerstad and Myres.*]

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ELLEN HERSCHER

LAPP, PAUL WILBERT (1930–1970), archaeologist and a director and professor of archaeology at the American School of Oriental Research (ASOR) in Jerusalem (1960–1968). Lapp died in an accident on Cyprus, so that his archaeological career spanned fewer than thirteen years. His major publication, *Palestinian Ceramic Chronology, 200 B.C.–A.D. 70* (1961), grew out of his early field experience at Shechem/Balaṭah (1957, 1960) and Beth-Zur (1957) and his Harvard Th.D. dissertation. It was the first systematic study of Late Hellenistic and Early Roman pottery and is still the basic work for that period.

Developing the field methodology and pottery analysis he studied under William Foxwell Albright at Johns Hopkins University and G. E. Wright at Harvard University, and in close consultation with Kathleen M. Kenyon of the British School of Archaeology in Jerusalem and Roland de Vaux of the École Biblique et Archéologique Française, Lapp attempted to combine the best approaches to field archaeology at that time. At ASOR he concentrated on small excavations to give short-term residents at the institute a variety of field experienes: at ʿIraq el-Amir (1961, 1962), Wadi ed-Daliyeh (1963, 1964), Dhahr Mirzbaneh (1963), Tell el-Ful (1964), Tell er-Rumeith (1962, 1967), and Bab edh-Dhraʿ (1965, 1967). He directed more extensive excavations at Taʿanach (1963, 1966, 1968), in association with the Concordia schools of the Missouri-Synod Lutherans.

Lapp's prompt publication of preliminary reports from his ʿIraq el-Amir, Bab edh-Dhraʿ, and Taʿanach excavations set a standard. The final publication of Dhahr Mirzbaneh appeared in 1966; publication of Wadi ed-Daliyeh, and Tell el-Ful, portions of the ʿIraq el-Amir excavations, and his Bab edh-Dhraʿ excavations were completed by Nancy L. Lapp and other of his colleagues. In addition to excavation reports, Lapp published several synthetic studies.

[*See also* Bab edh-Dhraʿ; Daliyeh, Wadi ed-; Ful, Tell el-; ʿIraq el-Amir; Rumeith, Tell er-; *and* Taʿanach.]

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NANCY L. LAPP

LARSA (modern Tell Senkereh), the royal capital of an important realm in southern Mesopotamia at the beginning of the second millennium BCE, located about 20 km (12 mi.) from ancient Uruk and 100 km (62 mi.) from the modern city of Nasiriyyah.

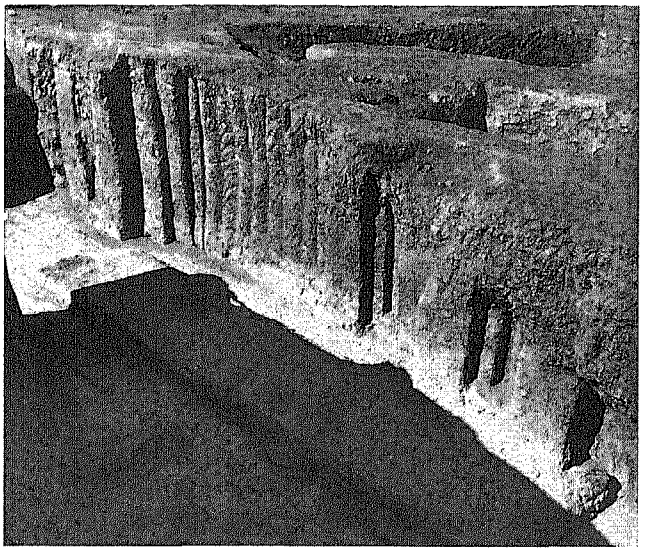
The site was noticed in the mid-nineteenth century by travelers exploring this desert region, specifically by William K. Loftus, who carried out several soundings for the Assyrian Excavation Fund in 1853–1854 that confirmed its identity with Larsa. In 1903 Walter Andrae, the excavator of Aššur, located the outlines of walls that demonstrated the existence of a great monument at the heart of the city. [*See the biography of Andrae.*] The arrival on the antiquities market of numerous beautiful objects, sometimes inscribed, and cuneiform tablets drew the attention of specialists to Senkereh, which had been systematically plundered. André Parrot, under auspices of the National Museums of France, conducted the first campaign to Senkereh in 1933. [*See the biography of Parrot.*] Iraq's denunciation of the partition regime (under which half the objects found at a site stayed in

Iraq and the other half went to the institution that financed the mission) and the discovery of Mari that served to detain Parrot in Syria delayed further excavation until 1967, during which Parrot conducted two campaigns aimed at completing a large sounding at the center of the tell. In 1969 and 1970, under the direction of Jean-Claude Margueron, the excavations reached the palace of Nur-Adad and the temple E.babbar, dedicated to the sun god Shamash (Utu in Sumerian). In 1976, Jean-Louis Huot assumed responsibility for the excavations and, until the Gulf War of 1991, conducted eight campaigns at the site, attending in particular to the religious complex formed by the E.babbar and the ziggurat that occupied the center of the city. [*See* Ziggurat.]

The area of the ruins extends for 2 km north–south and 1.8 km west–east; it reaches an elevation of 22 m. An oval, its perimeter is generally higher than its center, which is occupied by a relatively level plateau; the accumulation of the ruins of the various levels of the E.babbar (see below) forms its highest point.

The city's history is as yet imperfectly known. A number of indices (e.g., the high frequency of fragments of terracotta sickles) suggest that the foundation reaches back to the Ubaid period, although as yet no phase earlier than the third millennium has been found in situ. [*See* Ubaid.] A large building from the Early Dynastic period was located, but its excavation is as yet incomplete; it attests simply to a certain importance of the city in that period. The documentation becomes much richer by the beginning of the second millennium BCE. The texts of that period, sometimes found in excavation, more often coming from the antiquities trade, reveal the city in the period of the Amorite dynasties, when Larsa contended with other Sumero-Babylonian cities, such as Isin, to assume the heritage of the third dynasty of Ur and rebuild the empire. [*See* Isin; Ur.] Larsa played an important role in the nineteenth century BCE and at the beginning of the eighteenth, but it was finally Hammurabi who unified Mesopotamia to the advantage of Babylon. [*See* Babylon.] Larsa survived its imperial dream and remained a place dominated by its sanctuary. Its economic activity was periodically more or less important until the Parthian period, the last represented at the site.

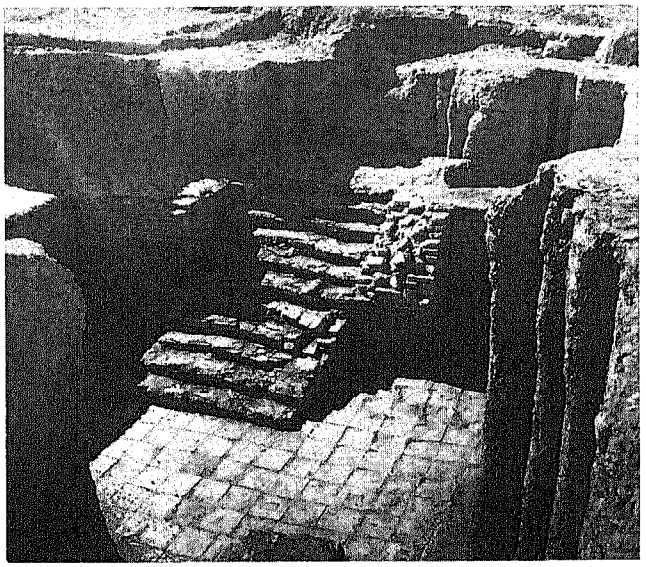
As yet, little is known of the city, but aerial photographs nevertheless permit some understanding of its plan. Excavations have concentrated on its religious core, dominated by the E.babbar and the ziggurat. After conquering the city, Hammurabi endowed it with a monumental complex more than 300 m long that consisted of a linear succession of buildings and great courts. The architecture was ornamented with a series of semiengaged spiral columns that connects with the axis of the ziggurat (see figure 1), itself provided with a court oriented to the northeast. Chapels and workshops lined the courts. The entire grandiose complex was constructed symmetrically on a southwest–northeast axis. The sanctuary (see figure 2) was restored several times



LARSA. Figure 1. *Decorative semi-engaged spiral columns.* North wall, grand court of the E.babbar. (Courtesy J.-C. Margueron)

and survived until the eleventh century BCE. In the Neo-Babylonian period, a more restrained structure stood on the site of the earlier cella. Occupation is attested again in the Seleuco-Parthian period.

The palace of Nur-Adad (1865–1850 BCE) presents the peculiarity of never having been occupied; it is probable that it remained incomplete as a result of the difficulties that king encountered at the end of his reign. Even incomplete, the building embodies the administrative organization of the period, when the system of the palatial economy prevailed in a pure state: the architectural thought of the Amorite period,



LARSA. Figure 2. *Stairway descending into the sanctuary of the temple of the E.babbar.* (Courtesy J.-C. Margueron)

in the form of the palace. [*See* Palace.] The complex composed of the administrative quarters and the throne room is the best expression of what was customary in this sphere. Several fine houses from the Old Babylonian period were also uncovered.

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JEAN-CLAUDE MARGUERON

Translated from French by Nancy W. Leinwand

LATAMNE, open-air Paleolithic site located on a slope above the middle reaches of the Orontes River, 23 km (14 mi.) northwest of the town of Hama, in Syria (35°14′ N, 36°36′32″ E). Latamne is a rare example of an undisturbed camp of the Middle Acheulean culture, one of a very few known anywhere in the world. It has yielded important evidence concerning human activities during the Middle Pleistocene epoch.

Willem J. van Liere, a Dutch geomorphologist, found handaxes and associated bones of Middle Pleistocene animals in deposits exposed by quarrying at Latamne in 1960. A Dutch archaeologist, Pieter J. Modderman, of the University of Groningen, conducted additional investigations of the locality in 1961 and 1962; some of the artifacts he recovered were in such good condition they could only have come from an intact site. Accordingly, the Paleolithic archaeologist J. Desmond Clark of the University of California at Berkeley was invited to excavate the site in 1964 and 1965. Excavation revealed that the Acheulean campsite had once been situated on a sandy bank beside a stream (Clark, 1968). Soon after it was abandoned, however, it was covered by silt, which preserved its cultural remains in situ.

At the time of excavation the site consisted of a single layer of debris 12 × 19 m in extent covered by a thin deposit of sand. The most distinctive remains were numerous limestone blocks grouped in clusters and rows and concentrated mainly in the southwestern part of the site. Other blocks were scattered over the rest of the habitation area. In the center of the camp and toward the northeast were concentrations of flint artifacts and debris. The stone blocks and artifacts had all been brought to the site by its inhabitants from sources nearby. Clark believes that the blocks were used as weights to anchor a shelter made of perishable materials (1967).

The artifacts were unusually varied for a site of such antiquity. They comprised large flint cutting tools, notably handaxes, a number of heavy-duty tools, particularly choppers and scrapers, and some smaller scrapers. Some of them were manufactured at the site while others were brought there in a finished state. Several of the limestone blocks were used as anvils to make flint tools. The evidence suggests that the site was used as a camp by a group of Acheulean people for one or two seasons about 500,000 years ago.

A few bones and animal teeth were found on the site, but considerably more were found in contemporary geologic deposits in the vicinity. The main species were large and medium-sized animals: elephant, hippopotamus, rhinoceros, large deer, gazelle, bison, antelopes, camels, and horses. Some of these animals would have been hunted by the inhabitants of the Latamne campsite. Among the predators were hyenas and jackals. The environment in which these creatures lived would have consisted of open woodland and grasslands, with gallery forest, that is, a narrow band of trees, fringing the Orontes River and its tributary streams.

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A. M. T. MOORE

LATIN. An inflectional language, Latin averages three morphemes per word. As in Spanish and Russian, the Latin vowel system has a two-dimensional structure involving three heights with the added contrast of front-back or unrounded bottom: high (*i, u*), mid (*e, o*), low (*a*), front unrounded (*i, e*), back rounded (*u, o*).

Latin has fifteen to eighteen consonantal phonemes in native words, a phoneme being a *significantly* different and distinct sound. Latin orthography did not distinguish between short and long vowels (which are phonemically distinct) nor between consonantal and vocalic *i* and *u*. The Latin phonemic system underwent a number of changes. Early Latin had from twenty-seven to thirty-one phonemes (depending on the distinction between long and short vowels), and by the mid-first century BCE, the phonemic inventory was from thirty-one to thirty-six phonemes.

Verbs have two voices, active and passive. A verbal form is a "sentence/word," that is, a word that contains the nu-

clear construction of the favorite sentence-type of the language, in this case a predicate constitute. Nouns and adjectives share the inflectional category of number and case; nouns have a gender, and adjectives are inflected for gender. The eight cases of Indo-European were reduced to seven in Latin: nominative, accusative, vocative, genitive, dative, ablative, locative.

Although archaic Latin had a stress accent falling on the first syllable of a word, classical Latin developed a system of accentuation based in part on Greek models. Words of two syllables are accented on the first syllable. Words of more than two syllables are governed by the "penultimate rule." They are accented on the penult (next to the last syllable) if long (e.g., *a-mī'-cus,* "friend"; *con-fi'-ci-o,* "invention") or on the antepenult (syllable before the penultimate) if the penult is short (e.g., *do'-mi-nus,* "lord"; *a'-lăc-ris,* "eager").

History of Latin. The term *Latin* was derived from a group of related tribes called *Latini,* who settled in the region of Latium, where Rome eventually came to occupy a significant position. The Latini originated in central Europe and settled in Latium by the tenth century BCE. Latin belongs to the Italic group of the Indo-European family of languages, and is divided into two groups, Oscan-Umbrian and Latin-Faliscan. Oscan was the standardized common language of central Italy until the area was subjugated by the Romans. Originally the language of Latium and the city of Rome, Latin eventually displaced the other Italic languages as a result of the increasing political and military power which Rome exerted first in central Italy, then throughout the Italian peninsula, then in the western Mediterranean and finally throughout the ancient world.

By the end of the Republic (31 BCE), Greeks dominated Roman education (grammar, rhetoric, philosophy); Greek literature, mythology, and history were basic to Roman education; and Greek was the first language of Roman education. By the first century BCE, young male Roman aristocrats were regularly educated in Greece. Nonetheless, educated Romans were privately bilingual but never boasted publicly of their appreciation of Greek culture or fluency in Greek. By the first century CE, only a small percentage of the population of the residents of Rome were of Roman or Italian ancestry, perhaps 10 percent. Within Rome itself various national groups often maintained linguistic and cultural traditions; the extensive Jewish community, for example, which numbered from thirty thousand to fifty thousand, was a Greek-speaking community, doubtless because of the hellenization of Palestine. Of the 534 Jewish catacomb inscriptions, 76 percent are in Greek, 23 percent are in Latin, and one is in Aramaic. Roman emperors were generally bilingual. Marcus Aurelius, for example, chose to write his *Meditations* in Greek. By the fourth century CE, however, most educated Romans in the west were monolingual and understood little or no Greek. The formal end of classical Latin may be dated to 813, when Charlemagne officially recognized the colloquial forms of Latin as independent Romance languages.

Writing Systems. The Latin alphabet of twenty-one letters was ultimately derived from the Greek alphabet of twenty-six letters. The Greeks in Italy did not use a single, uniform alphabet, but five different alphabets. Of these, the Ionic alphabet of Tarentum was used in some south Oscan inscriptions, and an alphabet from central Greece was the basis for the primitive Etruscan, Oscian, and Umbrian alphabets, as well as those of Rome and Latium. The Latin system, derived from the early twenty-six-letter Etruscan alphabet, originally consisted of twenty letters; The capital letters *C* and *G* were both represented by the *C*. C as an initial capital letter served for both letters in abbreviations for the *praenomina* (forenames) Gaius (C.) and Gnaeus (Cn.), and *z* and *y* were added as phonemes in transliterated Greek words. Later the Latin alphabet was increased to twenty-one letters with the distinction between *c* and *g*. The Roman alphabet lacked *j* (the consonantal version of *i*), *u* (the vocal version of *v*), and *w*. During the first century CE, emperor Claudius attempted to add three new letters to the Latin alphabet, but for the most part these innovations did not long survive his decease (Quintilian, 1.7.26; Suetonius, *Claudius,* 41.3; Tacitus, *Annals,* 2.13–14).

Latin in the West. Although Rome does not appear to have had a formal language policy, Latin was the primary language of Rome (a polyglot city with a substantial Greek population), of all colonies founded by Rome (the first Roman colony outside Italy was Narbo in Gaul, founded in 118 BCE), and of the Roman army and Roman provincial civilian administrations. Italy had previously been multilingual, but Latin increasingly predominated until by the first century BCE it was the dominant language of the peninsula. In the western empire outside Italy and the Roman colonies, the army was one of the main vehicles for the spread of Latin, both through contact with the local population and the learning of Latin by non-Latin speaking auxiliaries. In Italy there were two different kinds of Latin, the formal, polished, correct Latin spoken by the educated and surviving in public speeches and most of extant Latin literature, and common colloquial Latin. Plautus is a major exception. There were striking phonological differences between regional varieties of Latin. (Cicero, *Brutus,* 171–172; Jerome, *Epistles,* 107.9; see Omeltchenko, 1977; Whatmough, 1970), that is, there were a number of vulgar types of Latins. Though some of these vulgar forms developed into the Romance languages, it is hardly appropriate to speak of Latin dialects during the earlier period.

In many of the provinces in which Latin was the language of the army, administration, and culture, there were also native tongues which inevitably exerted influence on Latin phonology (*Historia Augusta Septimus Severus,* 19.9). In North Africa, the indigenous language was Libyan (Berber,

from the Greek term *barbaroi,* "foreign"). From the eighth century it was the language St. Augustine called the *lingua Punica,* that is, a Semitic language based on Phoenician. Libyan was the first language of both the emperor Septimus Severus (145–211 CE) and Augustine (354–430 CE). Although there are some inscriptions in Libyan, many in Punic, and some bilinguals in Punic-Latin and Libyan-Latin, the more than thirty thousand Latin inscriptions from North Africa are most numerous.

The relationship between Rome and the many Greek colonies in the western Mediterranean was complex. Many Greek settlements in Magna Grecia lost their Greek population and language through the conquests of the Samnites. After its capitulation to Rome in the Pyrrhic War in 272 BCE, Tarentum and many other cities were either destroyed or depopulated during the remainder of the Republican period until the inauguration (in 27 BCE and following) of Augustus's policy of the romanization of Italy obliterated the remaining pockets of Greek culture and language. Neapolis was the last city in the western Mediterranean to abandon Greek as an official language, and public and private inscriptions were written in Greek until the late first century CE, perhaps because Roman aristocrats found it convenient to have a Greek city near Rome. During the Second Punic War (218–201), Sicily was captured and plundered by the Romans and later (132 BCE) became the first Roman province. Subsequently, Augustus founded six colonies in Sicily in which Latin was the first language. This development was accompanied by a conscious program of Romanization which resulted in the gradual elimination of the Greek language during the first few centuries CE. Before Augustus, most public inscriptions and legends on coins were in Greek, thereafter, Latin was used almost exclusively. The replacement of Greek by Latin in old Greek colonies occurred primarily in the Augustan age.

Latin in the East. Roman immigration to the East, which was under Greek control, began during the third century BCE and peaked during the second century. Although Macedonia, which was established in the second century (148) was the first Roman eastern province, official Roman colonization in the Greek East did not begin until the mid-first century.

By 14 CE there were about thirty colonies in the Greek East: four in Greece, fifteen in Asia Minor, six in Macedonia, one in Crete, and two in Syria. In addition by the mid-first century CE there were sixteen Roman provinces in the East: four in Greece (Achaea, Epirus, Macedonia, Thracia), six in Asia Minor (Asia, Bithnyia and Pontus, Galatia, Lycia and Pamphylia, Cilicia, Cappodocia), and four in Syria (Syria, Iudaea [Judea], Mesopotamia, Arabia), as well as Egypt and Crete and Cyrenaica (the latter two forming one province).

Latin was the first language of all Roman colonies. Although these settlements were eventually hellenized, the colonists formed a socially separate, privileged group, and the native populations had an inferior social status, lacking Roman citizenship. Both public and private inscriptions as well as legends on coins were exclusively Latin in such colonies.

Syria-Palestine. Following the Roman conquest of Palestine in 63 BCE, Latin was used in Palestine primarily by the Romans for whom it was the language of the army as well as of the civilian administration. Inscriptional evidence for Latin includes dedications on aqueducts and buildings, funerary texts, milestones on Roman roads, and large numbers of bricks and tiles with stamp impressions of abbreviations for the Tenth Legion, Fretensis. The excavation of Caesarea Maritima has uncovered many Latin inscriptions, including a dedicatory slab erected by Pontius Pilate (prefect of Judea around 26–36 CE) for a cult center for Tiberius and a inscription of the Tenth Legion, which repaired the high-level aqueduct during the time of Hadrian. The multilingual character of Jerusalem is attested by the signs posted within the Temple in Greek and Latin forbidding foreigners to enter the holy place.

Two fragmentary Greek copies of this inscription have been found (*Supplementum Epigraphicum Graecum* 8.169; 20.477). The inscription on the cross of Jesus was written in Aramaic, Latin, and Greek (*Jn.* 19:20).

Egypt. The Romans generally regarded Egyptians with contempt, and often made no distinction between native Egyptians and Egyptian Greeks. Egypt had three Greek cities, Naukratis and Alexandria in Lower Egypt and Ptolemais in Upper Egypt. Alexandria was populated primarily by Greeks and Jews who engaged in intermittent conflict. The Greek language predominated in the administration of Roman Egypt. The papyri containing imperial constitutions, edicts, rescripts (orders) and decrees are 75 percent Greek and 25 percent Latin. Generally, imperial rescripts sent to private individuals, including Romans, as well as those for public promulgation in Egypt, are written in Greek, and communications and mandates addressed to Roman officials and instructions to the army are written in Latin. Edicts of the Roman prefect of Egypt and other Roman magistrates in Egypt are almost exclusively promulgated in Greek. Egyptian provincials who were not Roman citizens always used Greek in legal documents. Roman citizens necessarily used Latin for many types of legal documents (e.g., birth certificates, marriage contracts, petitions to the prefect, and wills).

Genre and Text. Latin literature is customarily divided into three major periods: (1) the formative period, that is, Livius Andonicus to Cicero (c. 240–80 BCE); (2) the classical period or Golden Age, to the death of Augustus (c. 80 BCE–14 CE); (3) the Silver Age, to the death of Apuleius (14–180 CE). (Gian Biagio Conte's *Latin Literature* [1994] contains a masterful survey.)

Data for the formative period of Latin literature are limited because of the few texts that antedate the third century

BCE. In the view of both ancient and modern scholars, Latin literature began during the late third century with Livius Andronicus, a Greek from Tarentum who became a school teacher in Rome and translated the *Odyssey* into Latin for a school text. Gnaeus Naevius, a Greek from Sardinia, was trilingual (Greek, Oscan, Latin), and wrote an epic on the first Punic war between Carthage and Rome in Latin. Another Greek, Quintus Ennius of Rudiae near Tarentum, adapted Greek metrical form to the Latin language. Latin prose has its beginning with Ennius's translation of Euhemerus preserved by the Christian rhetorician Lactantius. There was hardly a single author of Latin prose or poetry who actually came from the city of Rome. That means that no Latin literature is completely native. The earliest extensive body of literature that has survived, however, consists of the twenty-one plays of T. Maccius Plautus (late third–early second centuries), from Umbria, who became Rome's greatest dramatist. Terence (c. 195–159), a native of North Africa wrote comedies based closely on Greek originals, particularly Menander. Latin prose began with M. Porcius Cato (234–149 BCE), who wrote orations and essays. Only his *De agricultura* has survived. Prose Roman history, which had its beginnings in the *Annales* or yearly records compiled by the current *pontifex maximus* (the highest priestly office in Rome), was written in Greek beginning in the late third century BCE by Q. Fabius Pictor and his successors.

The classical period or Golden Age of Latin literature began with the admired didactic poem of Lucretius (94–55 BCE), *De rerum natura,* which focused on Epicurean physics. The most innovative author of the period, however, was Marcus Tullius Cicero (106–43 BCE), a politician and orator whose prose compositions, consisting primarily of primarily speeches, letters, and philosophical essays, became literary and rhetorical models for later writers. Other influential writers of this period include Cicero's contemporaries, M. Terentius Varro (116–27), who wrote the now-lost *Roman Antiquities* and his single extant work, *De re rustica* (On Agriculture); Julius Caesar (100–44), who wrote *De bello Gallico* (On the Gallic War), and *De bello civili* (On the Civil Wars) in crisp, unadorned prose; and Sallust (86–35), who also wrote historical works. During the empire period (31 BCE–476 CE), the poet of greatest stature was Vergil (70–19 BCE) whose most important work was the epic *Aenèid,* a modernized *Iliad* and *Odyssey* that promulgated the ideals of the Augustan principate. Other eminent Latin poets include Horace (65–8 BCE), Propertius (late first century), and Ovid (43 BCE–17 CE), who wrote in elegaic meter. Livy (59 BCE–17 CE) wrote a history of Rome in 142 volumes, of which thirty-five have survived.

During the early Imperial period the Latin literature produced during the classical period became models, but to be imitated and reacted against, during the following centuries. After varying degrees of intellectual and literary repression following the death of Augustus in 14 CE, Latin literature again exhibited creativity during the Silver Age, that is, from the end of the first to the middle of the second century CE. Authors of the Silver Age by turns imitated or reacted against the works of the Golden Age. Some of the more important literary figures are Seneca (c. 4 BCE–65 CE), an important writer of literary tragedies, philosophical essays, and letters, and his nephew Lucan (39–65 CE), who wrote *Pharsalia;* both were forced by the emperor Nero to commit suicide. Pliny the Elder (c. 23–79 CE), Pliny the Younger (c. 61–112); and Tacitus (born c. 56), who wrote *Germania, Agricola, Histories,* and *Annals.* The accomplished comic novelist Apuleius (c. 123–180 CE) wrote the *Golden Ass.*

Inscriptions. The earliest surviving Latin inscriptions date to the sixth century BCE. They often resemble Greek letter forms and are sometimes written in the so-called *boustrophedon* ("turning like oxen when plowing") style in which alternate lines written from left to right then right to left. An example is perhaps the earliest Roman inscription from possibly the sixth century BCE (*Corpus Inscriptionum Latinarum,* vol. 1, pt. 2, no. 1). While an early Latin inscription from Praeneste from the seventh century survives (*Inscriptiones Latinae Selectae,* no. 8561), its authenticity is now doubtful (Gordon, 1983, p. 75f.). The Romans began to inscribe texts in the sixth century BCE, while most of the literary and inscriptional evidence for Latin begins to accumulate toward the end of the third century BCE. In addition to stone, bronze was commonly used, particularly for legal texts (Pliny, *Nat. Hist.,* 16.237; 34.99). More perishable wooden boards were frequently used for public notices, such as Caesar's famous short text displayed at his triumph in 47 BCE: *VENI VIDI VICI* "I came, I saw, I conquered" (Suetonius, *Caesar,* 37.2). Vespasian tried to replace the more than three thousand bronze tablets that were destroyed by a fire on the Capitoline in Rome in 69 CE (Suetonius, *Vespasian,* 8.5).

More than three hundred thousand Roman inscriptions are known, mostly carved in capital letters, which reached their fullest development toward the end of the first century CE. The most extensive collection of Latin inscriptions is the *Corpus Inscriptionum Latinarum* (Berlin, 1862–), which consists of eighteen volumes to date, primarily arranged geographically. Hermann Dessau edited a selection of nine thousand texts published as *Inscriptiones Latinae Selectae* (Berlin, 1892–1916). In the western Mediterranean, the language of these inscriptions was primarily Latin, and in provinces east and south of the Adriatic, Greek—the *lingua franca* of the Levant—predominated. The evidence for the use of Oscan is limited to about two hundred inscriptions from the last two centuries BCE. Knowledge of Umbrian is largely restricted to the Iguvine tablets from the first century BCE. The main categories of inscriptions are (1) laws, treaties, and other public documents (often on bronze panels); (2) commemorations of the construction of a building; (3) honorific texts for individuals (often on a statue base); (4)

altars and religious dedications; (5) gravestones; and (6) curse tablets.

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DAVID E. AUNE

LAWRENCE, THOMAS EDWARD (1888–1935), British archaeologist born in Tremadoc, Caernarvonshire, Wales, the illegitimate son of Thomas Chapman and Sarah Lawrence. Educated at City of Oxford High School for Boys and Jesus College, Oxford University, Lawrence, by his late teens had developed a passion for medieval history. He was heavily influenced by the Pre-Raphaelites and the work of William Morris. Lawrence cycled widely as a boy and sailed on his father's yacht when the family lived in France. In 1908, as part of his research for his thesis at Oxford, Lawrence undertook a cycling tour of France, from St. Malo to Marseille and back to Le Havre. The following year he undertook a walking tour of the Crusader castles of Syria, from Beirut into northern Palestine and then north to Aleppo. From 1911 to 1914, Lawrence took part in the British Museum's excavations at Carchemish, a period he regarded as one of the happiest of his life. In spring 1914, Lawrence and his colleague on the Carchemish excavations, C. L. Woolley, were engaged by the Palestine Exploration Fund to carry out an archaeological survey of Palestine's Negev desert.

When World War I broke out in 1914, Lawrence enlisted and, because of his knowledge of the area, was posted in military intelligence in Cairo. Sent as military adviser to the Hashemite army in Transjordan, then in revolt against the Ottoman Turks, he came to play an important role in the war in Palestine but was badly affected by the experiences. His role in the war and in the peace settlement that followed, and the noteriety arising from the publications of Lowell Thomas, prevented Lawrence from returning to archaeology, as Woolley had been able to do. In 1922 Lawrence enlisted in the Royal Air Force (RAF), under the name John Hume Ross, in an attempt to escape from the constant publicity and speculation about his wartime activities. His identity was quickly revealed, and he was discharged. In 1923 he enlisted in the tank corps under the name T. E. Shaw and in 1927 officially changed his name to Shaw. In 1925 he was able to return to the RAF. Late in 1926 he was posted to Karachi, India, and in 1928 to Miranshah on India's northwest frontier, where he remained until his presence was exposed in 1929. He returned to England and from 1929 to 1935 worked as part of an RAF team testing designs for a speedboat to tend seaplanes. Lawrence left the RAF in February 1935, retiring to his cottage at Clouds Hill, Dorset. He died in a motorcycle accident.

[*See also* Carchemish; Negev; Palestine Exploration Fund; *and the biography of Woolley.*]

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RUPERT CHAPMAN

LAYARD, AUSTEN HENRY (1817–1894), excavator of Nineveh and Nimrud. Layard's career as an archaeologist occupied less than a decade of his life but was the basis of his considerable fame and successful career in the British government. Beginning in 1840, he spent several

years in Mesopotamia—after 1842 with the assistance of Stratford Canning, then British ambassador to Turkey. Layard's initial excavation was but one of a range of slightly stealthy activities performed through the ambassador.

Commencing operations at the great mound of Nimrud in November 1845, Layard almost immediately came upon portions of two palaces, one being that of Ashurnasirpal II. His finds of Late Assyrian reliefs, statuary, and other artifacts marked the first major English discoveries in Mesopotamia; within two years the discoveries were on display at the British Museum. By the time Layard returned to England, in 1847, he had discovered portions of eight Assyrian palaces.

Layard's discoveries came two years after those of his colleague and rival, the Frenchman Paul-Émile Botta at Khorsabad. Yet, in a second campaign (1849–1851) Layard succeeded, as Botta had not, at the mound of Kuyunjik (Nineveh), excavating artifactual and textual remains of the great palace of Sennacherib. [*See the biography of Botta.*] Excavations begun by Layard at Kouyunjik and Nimrud were continued and expanded by Hormuzd Rassam and William Kennett Loftus, through 1855, under the auspices of the British Museum and the (private) Assyrian Excavation Fund.

Layard's activities as an archaeologist and also a publicist were central to the fledgling enterprise of Assyriology. The exhibition of his discoveries inspired a host of emulatory representations in, among other media, jewelry, panoramas, theatrical production, painting, poetry, and architecture. Layard's account of the first campaign, *Nineveh and Its Remains* (1849, popular edition 1851) was arguably Britain's greatest archaeological bestseller of the entire nineteenth century.

Layard's work provoked extensive discussion by theologians, historians, and art critics. His discoveries did much to change, as well as complicate, prevailing notions of biblical credence, historical progress, and artistic form. Layard thus contributed significantly to the intellectual growth of the antiquarian science of his time.

[*See also* Nimrud; Nineveh.]

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LEAD ISOTOPE ANALYSIS. Measuring the relative isotopic abundances of lead to characterize its isotopic composition has become a frequently used analytical method in determining the provenance of archaeological finds. In conjunction with diagnostic evaluations of an object's stylistic attributes and method of fabrication, the isotopic data can be used to address archaeological and art historical questions of authenticity, as well as to study the production and distribution of metal. Lead isotope analysis can provide information about the sources of the materials used and their trade patterns, information with valuable socioeconomic and political implications. The technique is applicable to a wide range of lead-containing materials such as glass, glazes, metals (copper, silver, bronzes, brasses, and pewter), paint pigments, and lead ores.

The technique has traditionally been used as an analytical tool in geological studies to measure the geochronological age of the Earth or to determine the age of an ore deposit. Elemental lead is composed of four stable isotopes whose masses are 208, 207, 206, and 204. Stable isotopes differ from each other only by the number of neutrons in their atomic nucleus, referred to as their mass number. Three of the four isotopes of lead (Pb 208, Pb 207, and Pb 206) are derived in part as the stable end products from the radiogenic decay of thorium 232, uranium 235, and uranium 238, respectively, and in part from primordial lead created at the time of the Earth's formation. The fourth isotope (Pb 204) exists in its original form (at the earth's beginning) and is dependent only on the amount originally present in the formation of the deposit. Thus, the isotopic composition of lead in ores is dependent upon the geochemical constituents of the mineralization and its age and emplacement history. These variances in the isotopic composition of lead create a distinct "isotopic signature" in ore deposits containing lead.

Because the differences in isotopic composition are very small, a measurement of high precision and high accuracy is required. Chemical-separation techniques under clean conditions, involving acid dissolution, ion-exchange chromatography, and anodic electrodeposition are used to extract and purify the lead. Thermal ionization mass spectrometry is the analytical tool generally used to measure the relative isotopic abundances in naturally occurring elements. This involves the introduction of a sample into a mass spectrometer, where it is thermally ionized, accelerated by electrostatic forces through a magnetic field, and separated according to mass. The various masses are then electronically detected and measured.

Archaeological evidence has demonstrated that the isotopic signature present in the ore is preserved in the object,

unaffected by the object's metallurgical history or subsequent weathering. In theory, this unique isotopic composition can be used to identify the object's geographic source or to eliminate others. However, the method has its limitations: mixing and overlapping are factors that pose complications in interpretating the data. In antiquity, lead was frequently salvaged, remelted, and reused. During this recycling, certain materials could have been mixed, thus erasing their original lead signatures. The overlapping factor arises from the fact that ores in different regions, sometimes widely separated geographically, can have similar isotopic compositions if formed at the same time under geologically similar conditions. Still used in conjunction with other analytical methods, such as trace-element analysis and multivariate and probability statistical analysis, lead isotope analysis has proven to be an important technique in archaeology.

[*See also* Analytical Techniques.]

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EMILE C. JOEL

LEATHER. In virtually all ancient cultures of the Near East, animal hides must have been used for a variety of purposes as early as Paleolithic times. In the art and texts of the early civilizations of Mesopotamia and Egypt we see leather used for clothing, gloves, footwear, tents, containers or pouches, military implements and armor, fittings for animals, ropes, boats and sails, balls, musical instruments, cushions, furniture, and writing materials. The standard of Ur shows early examples of leather harnesses and kilts with the fleece worn in or out as items of clothing (Henri Frankfort, Harmondsworth, 1954, figs. 76 and 77; C. Leonard Woolley, *Ur Excavations,* Philadelphia, 1927–1976, vol. 2, *The Royal Cemetery,* pl. 92).

The value and versatility of leather as opposed to cured raw skin lies in its qualities of strength, flexibility, and durability, which is achieved only through the process of tanning. Wall paintings in a number of Egyptian tombs illustrate the various aspects of leather production. Among these are a tomb at Beni Hasan, and the tomb of Rekmire at Thebes. After the corium or middle layer of skin was cleaned of hair and flesh through scraping and soaking in solutions of lime and pigeon droppings, the tanning process changed the raw skin or corium into leather resistant to water and to decay through the use of one of three substances: tannic acid commonly derived from the bark, leaves, or fruit of the pomegranate, acacia, or tamarisk; alum and salt to produce a white leather in a process called *tawing;* and third, fish oils in a process called *chamoising.*

A number of ancient texts on tablets from sites in Mesopotamia describe leather products, the processing of leather, and the wages and rights of tanners and shoemakers. Very few clearly identifiable tanners' workshops have been discovered, however, in archaeological excavations of any period in the Near East (at Pergamon—see Machteld J. Mellink, "Archaeology in Anatolia," *American Journal of Archaeology* 96 [1992]: 144–145, and Wolfgang Radt, *Archäologische Anzieger* 1991, pp. 410–412; and at Horvat Sumaq—see Samuel R. Wolff, "Archaeology in Israel," *American Journal of Archaeology* 97 [1993]: 157–158). Tools and objects made of leather have been recovered from Egyptian tombs (including sandals and a stool from the tomb of King Tutankhamun) and from the tombs at Ur, and in caves in Palestine.

Because of the unpleasant smells associated with the processing of hides, tanneries were usually located on the outskirts of town. Among the Hebrews, tanners were considered to be of low status, although leather products were in great demand. In Egypt and Assyria, for example, where warfare was a major activity, tanneries could be owned by the state, especially for the production of the quantities of leather goods required by the army and navy. Independent artisans who produced luxury items were also important, however, and in the Hellenistic and Roman periods tanners had their own guilds in many cities of the Near East.

Among the most famous producers of fine leather in the Islamic world were the tanneries in Morocco. The workshops of Fez, established by the tenth century CE and still functioning, were among the strongest and most influential guilds in the city with one hundred workshops under the Merinide dynasty. A constant source of water, a supply of animal skins, and inspiration and techniques derived from Persia and Moorish Spain account for the importance and success of the industry in Fez. Unlike tanners in other ancient cultures, the tanners of Fez had high status as artisans, whereas olive oil producers and metal workers were accorded the lowest status.

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LEBANON. *See* Phoenicia; Syria.

LEHUN, site located in central Jordan, in the Madaba district (biblical Moab), 80 km (50 mi.) south of Amman, 7 km (4 mi.) east of Dhiban (biblical Dibon) and 3 km (2 mi.) east of ʿAraʿir (biblical ʿAroʿer), on the northern plateau of Wadi Mujib (the biblical Arnon River). The site is quite extensive: 1,100 m north–south by 600 m east–west. It ranges in altitude between 719 and 748 m above ʿAqaba sea level and is divided north–south and east–west by seasonal wadis, delimitating natural areas (excavation sectors A–D), alternatively chosen by settlers in antiquity. The region is fertile, largely open to the steppe and the desert, and has a semiarid Mediterranean microclimate. No literary sources mention Lehun, but some travelers and archaeologists have either visited or otherwise noted it, such as Rudolf-Ernst Brünnow (1904), Nelson Glueck (1933), and Raphael de Savignac (1936).

Excavations at Lehun were sponsored by the Belgian Committee of Excavations in Jordan, whose directors from 1977 to 1984 was P. Naster and since 1977 is Denyse Homès-Fredericq. The site is characterized by permanent settlements from prehistoric to modern times. The southern sectors (B3, C1, D) are its most strategic area: they are well protected by the cliffs of Wadi Mujib and overlook the whole region. Remains of the Early Bronze, Late Bronze, and Iron Ages were found there. In the northern sectors (A, B1–2, C1), on the northern, more fertile slopes of Wadi Lehun, in the vicinity of the fertile fields of the Moabite plateau, some settlements appeared in more peaceful and commercial periods: in the Nabatean and Roman periods, as well as in Islamic, Ottoman, and modern times. [*See* Moab.]

The area has been inhabited since the Paleolithic period, as is attested by nearly one thousand tool samples collected over an area of 225,000 sq m. The range of tools assembled is impressive: racloirs, burins, scrapers, flakes (sometimes Levallois flakes), nuclei, and core fragments in sector C1. The Chalcolithic period is represented by some surface flints and a few sherds.

The first permanent sedentarization (sector B3) appears in the Early Bronze Age. Remains of a large settlement (still to be excavated) and an adjacent water reservoir, similar to the town of Jawa in northern Jordan, have been located. [*See* Jawa.] Separated by the Wadi Lehun, a disturbed family tomb was excavated under an earth layer some 40–60 cm deep. It contained more than 130 specimens of often undamaged and homogeneous handmade ceramics that are comparatively dated by material from Bab edh-Dhraʿ IA–B. [*See* Bab edh-Dhraʿ.] In the transition period of the Late Bronze–Iron Ages (1300–1000 BCE), a fortified village (170 m north–south × 37–60 m east–west) was built following the borders of the well-protected plateau in sector D. The settlement belongs to a period when the Moabite kings were developing and defending their kingdom. Different residential complexes, sometimes of the pillared-house type (see figure 1), were discovered. [*See* Four-room House.] Their wheel-made pottery and artifacts indicate an agricultural environment (storage jars, cooking pots, pilgrim flasks, grinding stones, pestles). A beautiful faience scarab from the twentieth dynasty (1186–1070 BCE) represents a sphinx with a ram's head and an atef before an upraised uraeus and an open lotus flower. Its base is inscribed with a deficient hieroglyph name of Amun-Re, which suggests that Lehun was still inhabited at the end of the second millennium BCE. The village seems to have been temporarily abandoned.

The buildings on the southern part of the plateau were later leveled and their stones used as the foundation for an Iron Age fortress. This fortress, with its central courtyard, probably belonged to the belt of military installations along the northern Moabite plateau: it measures 33–37 m east–west by 43 m north–south and is strategically located, overlooking the whole region and would have controlled all traffic on the King's Highway, in the nearby valleys, and on the southern Moabite plateau. It was protected by the cliffs of northern Moab. Its four inner-corner watchtowers are unique in central Jordan because they were built inside the fortress. Breaks in the fortification's walls and the stone fill found in some of its casemate rooms attest to the building's having been attacked. The wheel-made pottery, some silos, and ovens suggest that this settlement was also agricultural. The fortress probably served an economic purpose as well: fortified storage buildings are known in ancient Palestine and in Assyria, possibly for supplying grain and wheat to garrisons—in this case, to Moabite ʿAroʿer or Dibon. [*See* ʿAroʿer; Dibon.] An Egyptian new year flask of the Saite period (seventh–sixth centuries BCE) reflects international relations in the Near East during the twenty-sixth dynasty.

In the Nabatean period, Lehun must have been a religious center of some importance: it is a small, square temple (6.25 × 6.25 m), built of embossed local limestone blocks, that corresponds to the single-chambered Nabatean sanctuaries that are Oriental in origin. It was probably used by traders and caravaneers traveling one of the byroads of the King's Highway. Ceramic fragments found in the temple date to the first century CE and are of smooth or ribbed common pottery and distinctive Nabatean painted fine ware. The temple and its altar have been restored and reconstructed. An intrusive Nabatean grave was discovered in the Pillar

LEHUN. Figure 1. *Pillar House I, sector D.* (Courtesy D. Homès-Fredericq)

House I in sector D: it belonged to a woman and is dated by the pottery and jewelry (a bead necklace, bronze fibula, earrings, and bracelets). [*See* Nabateans; Grave Goods.]

The Islamic period is represented by a small rural mosque of the late Mamluk period. A bronze coin found on its floor gives a post quem date as late as the fourteenth century. The mosque was built near a small village. A large agricultural complex with a cave has been partially excavated north of it. Three collapsed Ottoman houses (sector C2) are still used as granaries by the villagers of modern Lehun.

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DENYSE HOMÈS-FREDERICQ

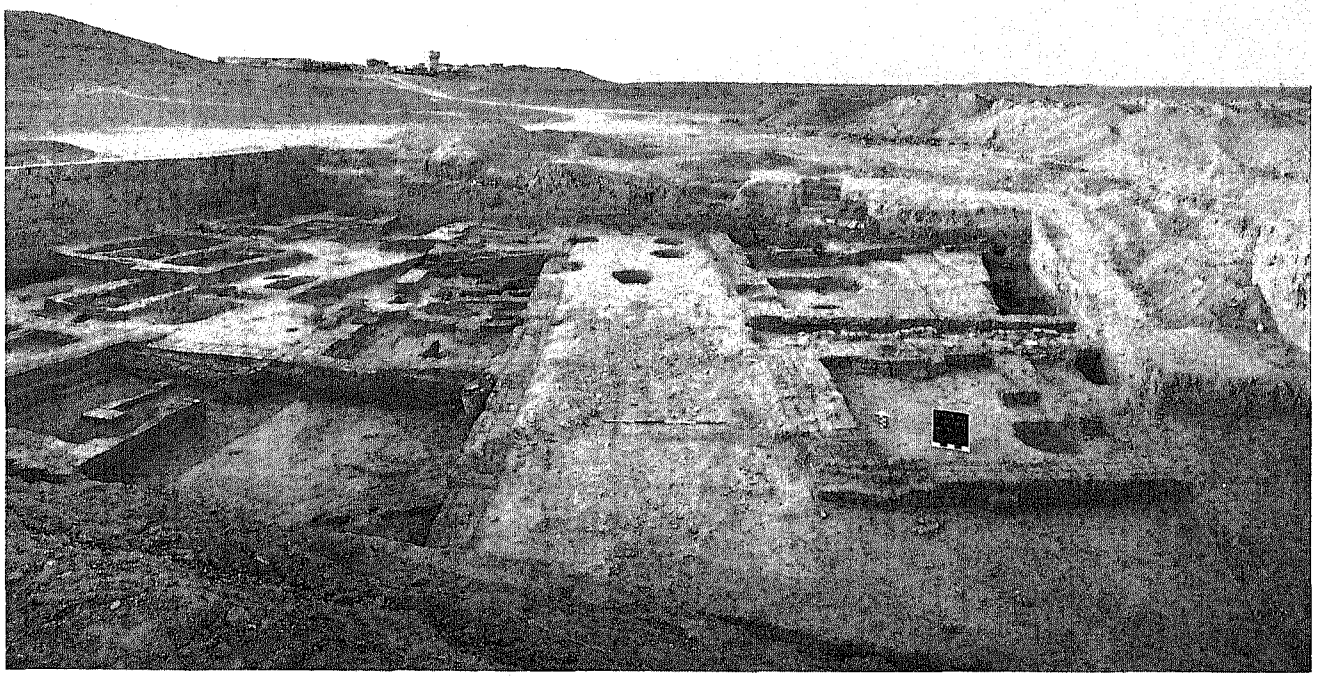
LEILAN, TELL, a roughly 90-ha site located at the confluence of Wadi Jarrah and Wadi Siblah on the eastern half of the Khabur Plains of northeastern Syria (36°57′41.8″ N, 41°30′35.6″ E). Leilan's location on the present-day 440-mm isohyet that stretches across the lowland plains of northern Mesopotamia unites the site with Tell al-Hawa, Tell Taya, Tell er-Rimah, and Mosul/Nineveh to the east and Tell Aid,

Farfara, Tartab, and Tell Mozan to the west. [*See* Taya, Tell; Rimah, Tell er-; Nineveh; Mozan, Tell.] This north Mesopotamian geoclimatic and cultural region was known in the third millennium as Subir, at which time Leilan's name was Shekhna, and in the early second millennium BCE as Subartu, when Leilan's name was Shubat-Enlil.

Prehistoric Periods. Leilan was founded upon a small ridge alongside Wadi Jarrah, in the late Ubaid (Leilan VI) period. [*See* Ubaid.] At this time the Leilan region was already experiencing the forces of early spatiofunctional hierarchization: Leilan was about 20 ha in size and a center for the forty-nine Halaf/Ubaid small village sites located within 15 km (9 mi.) of it. Climatic conditions during this period were significantly more humid than at present, to judge from the Halaf/Ubaid villages in the Wadi Radd region, 20 km (12 mi.) to the south, that is now agriculturally marginal.

Severe, and perhaps sudden, aridification (F. Sirocko et al., "Century-Scale Events in Monsonal Climate in the Past 24,000 Years," *Nature* 364 [1993]: 322–324) occurred during or at the end of the succeeding Leilan V period that may have played a role in local and southern Mesopotamian social stratification and the Late Uruk period expansion process and its sudden collapse. Regional settlement shrank during period V to eight sites. To judge from its Leilan IV period ceramic assemblage, Leilan was then one of the enigmatic Late Uruk period "colonies." The succeeding collapse was followed by the Leilan IIIa (painted Ninevite 5) period, which lasted for about one hundred years. During this period and the next two hundred years (c. 2900–2600 BCE), local settlements were of fewer than 10 ha and widely distributed along the perennial streams of the Khabur River. There is no evidence within individual settlements for social stratification or political organization at the state level. The distinctive cylinder seals used during this period unite the region with the dry-farming stretches of the Zagros piedmont and the proto-Elamite culture area of southwestern Iran. [*See* Seals; Agriculture; Elamites.] Very few sealings from these northern seals have been retrieved in southern Mesopotamia.

Early Historic Periods. In the Leilan IIId period (c. 2600–2400 BCE), Leilan suddenly expanded more than sixfold, growing from an acropolis-based settlement of fewer than 15 ha to the approximately 100 ha comprising most of the lower town and some settled areas outside its later walls.



LEILAN, TELL. Figure 1. *Operation 5, lower town south, residential quarter and street.* Dated to 2600–2000 BCE. (Courtesy Harvey Weiss)

LEILAN, TELL. Figure 2. *"Subarian" style cylinder seal impression showing a seated musician playing a lyre.* Dated about 2600 BCE. L87-1493 (Courtesy Harvey Weiss)

The lower town (south) exposure shows that the Leilan settlement in the IIId period was a planned city—that is, straight streets (4.5 m wide) were laid out with straight street walls providing only limited access to cross alleys (see figure 1).

On the Leilan acropolis (northwest), the small domestic structures of the earlier Leilan IIIc period were now replaced with a public cultic quarter that was to be maintained, renovated and rebuilt during the next four hundred years, to the end of the Akkadian imperialization of the region. [*See* Cult; Akkadians.] The activity center of this quarter was a mud-brick sacrificial altar situated in the center of a mud-brick platform (10 × 15 m). [*See* Altars.] Around the platform were elaborate rooms to the east, including one with more than twenty bones of human adults, juveniles, and infants in an ash-filled submural pit sealed by a late period IIa floor; a ramp and stairway to the south; and, also to the west, storage rooms filled with cylinder-seal impressions.

The cylinder seals in the storage rooms are local Khabur Plains ("Subarian style") imitations of Sumerian late Early Dynastic II/early Early Dynastic III banquet scenes that replaced the local "piedmont Jemdet Nasr" sealing tradition (see figure 2). This contact with southern Mesopotamia, whatever its nature, may have stimulated sudden regional secondary state formation and urbanization. Across the Leilan lower town, as well as on the Leilan acropolis, the ceramics in use during this period were those of the terminal Ninevite 5 incised tradition—that is, the radical social and economic alterations of the period were not accompanied by synchronous changes in traditional ceramic manufacture technologies.

In the Leilan IIa period (c. 2400–2300 BCE), the consolidation of state power within the cities of Subir is marked by the first construction of a defensive wall around the Leilan acropolis (northwest) cultic quarter. It protected and isolated the elite, their wealth, and administrative power from the residents of the Leilan lower town and Leilan-region villages. The acropolis (northwest) cultic quarter wall, of mud brick, was 2.5 m wide. The Leilan lower town, however, still lacked a wall throughout the period. Substantial changes took place during this period in ceramic technology: the tradition of the Ninevite 5 period incising disappeared almost completely, and ceramic production moved toward simplified, less labor-intensive production techniques. This alteration suggests that containers were serving new purposes influenced or controlled by state authority for state standards of measurement—capacities and areas for agricultural production, distribution, collection, taxation, storage, and reinvestment. Economic and political relationships with southern Mesopotamia intensified during this period with cuneiform archives documented at nearby Tell Beidar. [*See* Libraries and Archives.]

The Leilan period IIb (c. 2400–2200 BCE) witnessed the Akkadian conquest and imperialization of Subir by Naram-Sin. This event was conditioned by the availability on the Subarian side of a rich cereal-agriculture region, already urbanized and organized regionally for efficient production, and by the need on the Akkadian side to replace the conquer-plunder-destroy syndrome of previous southern monarchs with a more efficient and longer-lasting system of accessible, adjacent-region exploitation. Naram-Sin's conquest of the Khabur Plains was accompanied by the installation of a complex Akkadian imperial administration penetrating deeply across the urbanized landscape of Subir. At Leilan the Akkadian presence is documented epigraphically by two inscribed artifacts retrieved at the acropolis northwest cultic quarter: one is a fragmentary Old Akkadian tablet, the second a fragmentary Old Akkadian sealing with the Old Akkadian inscription: "Hayabu the shabra official."

Six features of Akkadian imperialization have been identified archaeologically at Tell Leilan:

1. *Population redistribution.* The Akkadian imperialists streamlined the regional administration of production by reducing the number of Leilan-region settlements from twenty-two to thirteen. Tell Mohammed Diyab, the large secondary center only 8 km (5 mi.) southeast of Leilan, was reduced in size from 50 to 10 ha, its population apparently nucleated within Leilan. Do Gir, the comparable satellite site to the north of Leilan, suffered a similar fate.

2. *Regional population control.* Regional control to prevent insurrection and to protect imperial administration and stores required the deployment of local populations for defensive/protective and legitimizing construction works. Substantial numbers of laborers were, for the first time, deployed to construct a massive city wall around Tell Leilan. At the eastern edge of the Leilan lower-town settlement the rock-hard calcitic virgin soil was first excavated to depths of .5–1.5 m. Two concentric walls of mud brick, each 8 m wide (a casemate wall), were then set into these excavations. A middle wall, perhaps a walkway between the two, was one meter wide. On the northern side of the city, where a natural

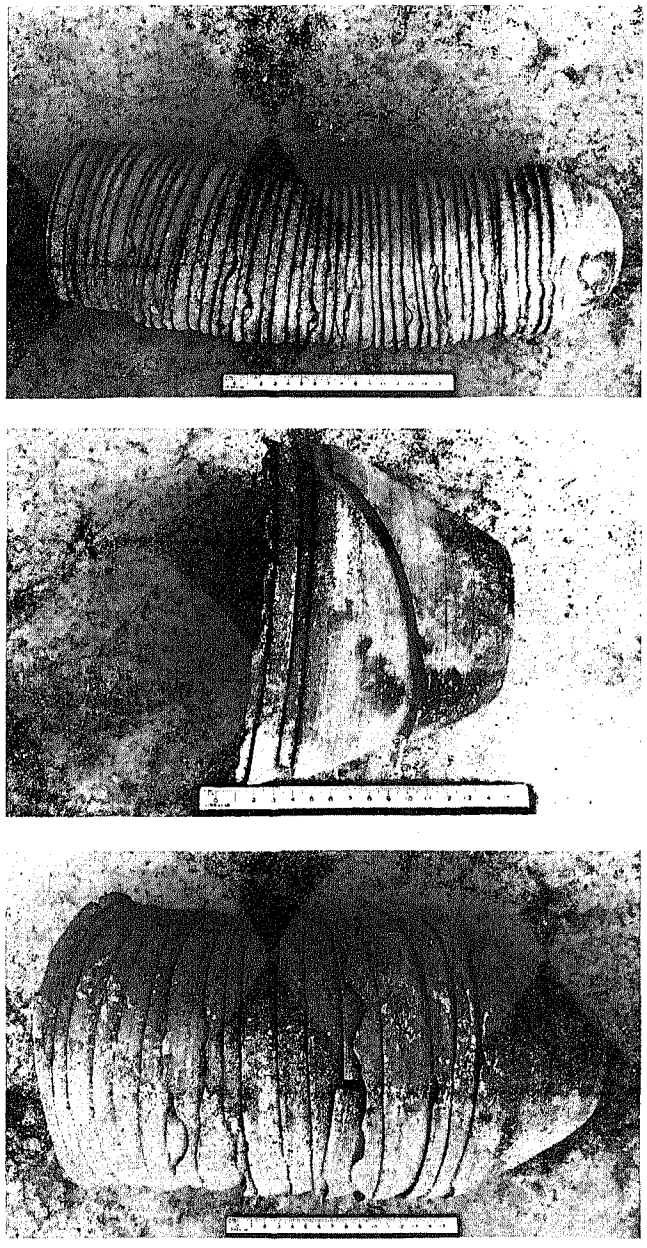
depression and rise afforded protection, an imposing earthen rampart was constructed by excavating a 10-meter-wide/deep ditch and then mounding the excavated virgin soil.

3. *Agricultural redistribution.* Botanical remains within 50–100 percent samples of each lower-town (south) house floor's debris are missing nodal stems, rachises, and nonseed plant parts. The domesticated cereals and pulses, mostly barely and lentils, had already undergone primary and secondary processing and were clean, ready for storage, cooking, and consumption, suggesting that they are the remains of rations previously processed and stored elsewhere prior to distribution. [*See* Cereals.]

4. *Introduction of Akkadian mensuration and Leilan* sila *bowls.* The Leilan IIb (Akkadian) lower-town ceramic assemblage includes a bowl type of distinctive appearance and standardized capacities. The bowl is dark green, with no visible temper; it is wheel made and has a flat base and simple rim with straight sides. Along with 557 sherds of this vessel type that have been retrieved and measured, 27 complete or fragmentary stacked kiln wasters (SKWs) of these vessels have also been retrieved and measured (see figure 3). The SKWs have a trimodal capacity distribution: about 55 percent range between .2 and .4 l; 38 percent between .8 and 1.2 l; and 6 percent at 1.5 l. The rim sherds of the fragmented vessels in general, however, suggest that most derive from vessels of 1-liter (Sumerian *sila*) capacity. These vessels are the only vessels within the Leilan IIb assemblage for which wasters have been retrieved. It seems likely that they are an administrative artifact of Akkadian imperialism: standardized *sila* bowls for ration distribution according to the Akkadian imperial standards.

5. *Akkadian intensification of agroproduction.* As part of the Akkadian reorganization of production, water courses were stabilized by channelization—deepening and straightening water-course channels—to counter the effects of rapid siltation and to maintain efficient water flow. On the western side of Tell Leilan this water management is recorded within a 4-meter sequence of repeated entrenchments into calcic virgin soil, embankments of large basalt blocks, and masses of water-borne silt and pebbles cleared from the channel. Leilan period IIb potsherds were stratified on the beds of the stabilized channels. Channelization prevented wasteful water-course meandering and may have permitted supplemental summer crop production. Akkadian canal-management expertise may have been the source of this intensifier of northern agroproduction.

6. *Akkadian cult practices.* The white-plastered walls of the Leilan IIa acropolis (northwest) cultic quarter were truncated, and surfaces of mud brick and thick mud plaster were prepared over them and over ashy room deposits. Two constructions were set upon these prepared surfaces: stone walls, up to 1.2 m wide, constructed of coarsely prepared basalt boulders (some of these walls had 3–5 courses of mud brick on them, while others were simply topped with a surface of mud plaster and large potsherds); and a large, mud-brick building with three-brick-thick walls, most of which remains to be excavated. The exterior surfaces of these structures covered the period-IIa platform, leaving only the burnt-altar surfaces at floor level. The Akkadians thereby maintained the cultic locus of previous state rulers while instituting their own cult practices.



LEILAN, TELL. Figure 3. *Period IIB "sila" bowls of three standardized volumes.* Top: forty-six fused wasters, each 0.265 liters; middle: five fused wasters, each 1.052 liters; bottom: eighteen fused wasters, each 1.522 liters. (Courtesy Harvey Weiss)

Desertification and desertion (c. 2200–1900 BCE) charac-

terize the collapse of Akkadian imperialism. The extractive organization imposed by the Akkadian dynasty was interrupted by urban collapse in the south and collapse, reorganization, and abandonments in the north. There is no evidence for settlement at Tell Leilan between periods IIb and I—that is, between 2200 and 1900 BCE. (Similarly, there was no sedentary settlement at Tell al-Hawa, Tell Taya, Tell Khoshi, Chaghar Bazar, Tell Mohammed Diyab, or at the hundreds of other settlements within northern Mesopotamia. A reduced local power, using the title "King of Urkish and Nawar," emerged at this time to control briefly the remnant Khabur Plains populations of Mozan and Brak. [*See* Mozan, Tell; Brak, Tell.] A few sherd types retrieved through regional surface surveys (and unassignable with certainty to other periods) may document some village-level sedentary human activity.

Soil micromorphology studies (thin sections of datable pedostratigraphic units) undertaken at Tell Leilan and sites within the surrounding countryside have revealed a rapid alteration of climatic conditions for this period: a sudden intensification of wind circulation; an increase in atmospheric dust; and the establishment of arid conditions. The wind erosion and dust deposition are also documented in southern Mesopotamia and the Persian Gulf. A relatively massive displacement of sedentary agriculturalists and seasonally transhumant pastoralists is suggested by the Leilan and other Khabur Plains settlement abandonments. Synchronous population expansion in southern Mesopotamia, as well as tribal Amorite incursions into the sedentary heartland of southern Mesopotamia, suggest the amplitude of population transfer at this time. [*See* Amorites.]

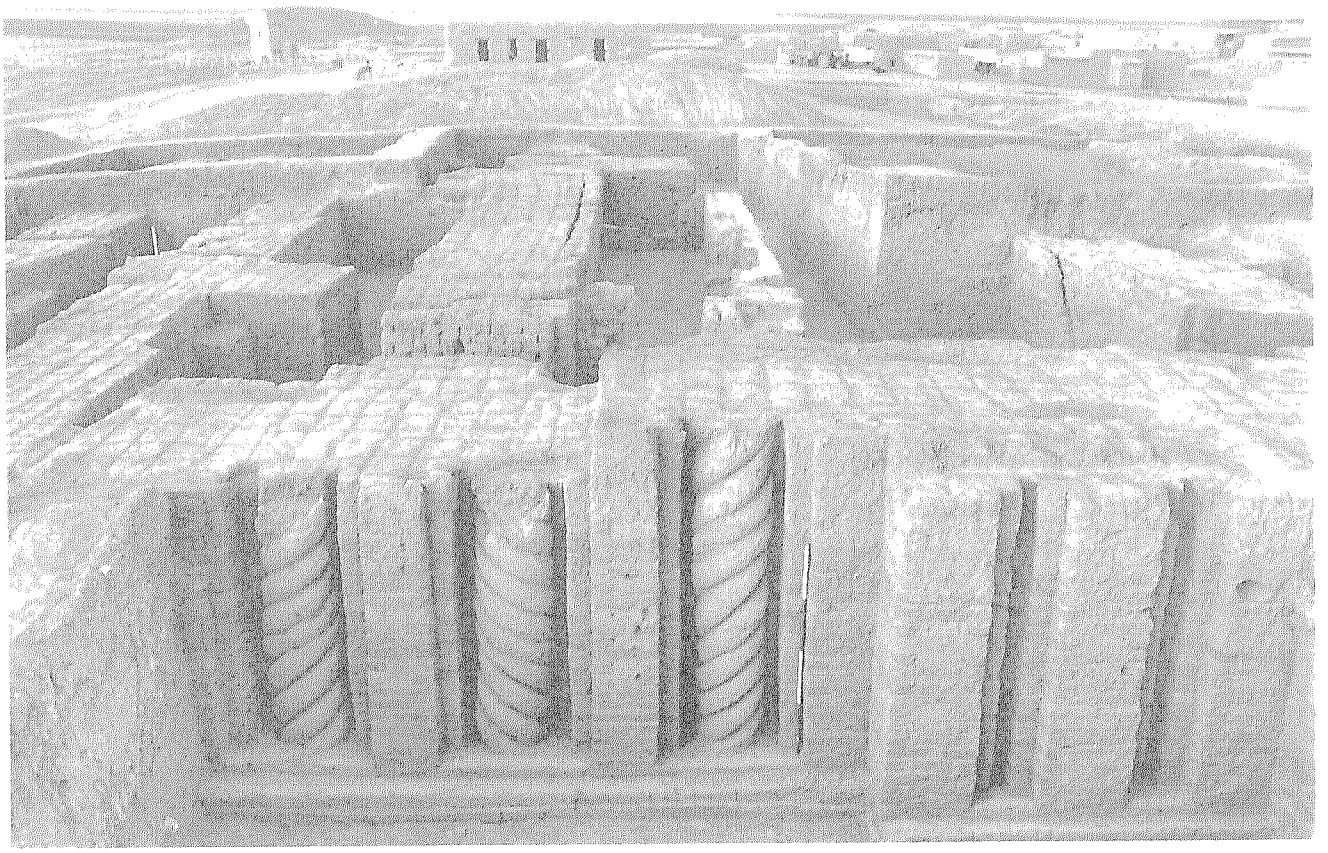
Only at the end of this desertification period, with the reestablishment of favorable climatic conditions in the nineteenth century BCE, was sedentary settlement reestablished on the Khabur Plains by those previously displaced. Amorite chiefs, acculturated in southern Mesopotamia after decades of sedentary life there, led the resettlement; under the paramountcy of Shamshi-Adad, they selected the abandoned urban center at Tell Leilan to be the new Khabur Plains regional administrative center, Shubat Enlil, "the dwelling place of Enlil." Inscriptions of servants of Shamshi-Adad and his successors were retrieved at Leilan within the temples excavated on the northeastern quadrant of the acropolis in 1979, 1980, and 1982. These inscriptions were the first Leilan evidence for the historical identification of the site. Additional epigraphic data have been retrieved from the lower town palace (east) and the lower town palace (north). [*See* Palace.]

On the Leilan acropolis three levels of temple construction were identified. The last, building level I, was a badly eroded, partial rebuilding of building level II. Building level II was an elaborate "long-room" temple with a central cella featuring impressive northern and southern facades decorated with intricate columns and column decoration. The northern facade of building level II was decorated with semi-attached, spiral mud-brick columns (see figure 4); the same building's southern facade was decorated with a variety of columns embellished with mud-plaster incising and relief (see figure 5). Building level II was a foreshortened rebuild of building level III, where interior spiral columns set on each side of a central column were retrieved. An associated building level "X," stratigraphically linked probably to building level II (but almost entirely eroded except for its deeply set wall foundations), provided a range of administrative tablets and sealings linked with officials' and rulers' letters and sealings retrieved in 1985 and 1987 within the lower town palace (east).

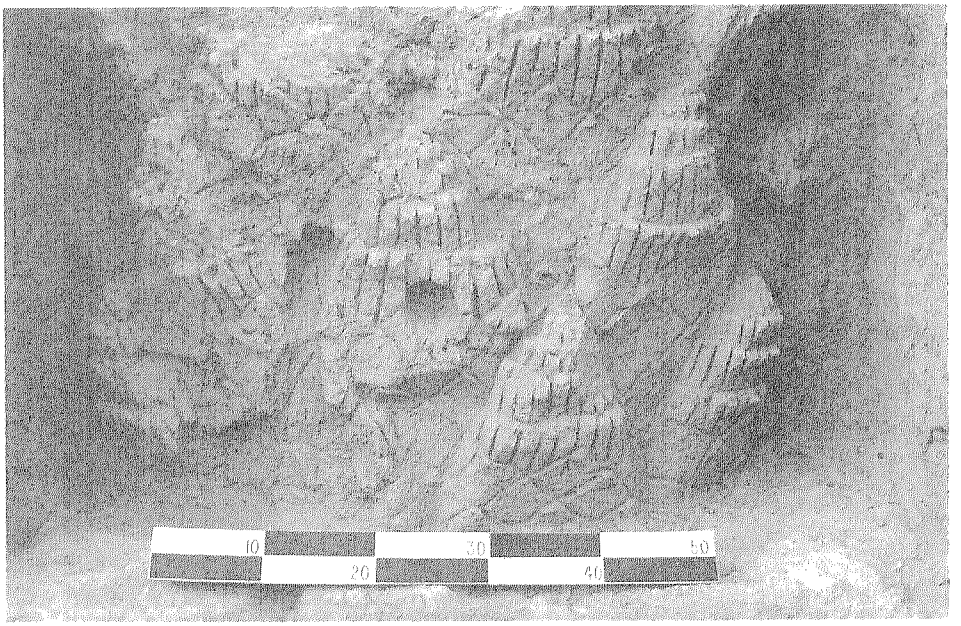
The topography of the lower town suggests that the lower town palace (east) covered an area of 9 or 10 ha and therefore was one of the largest early second-millennium BCE palaces in Mesopotamia. Twenty-five rooms already retrieved include a baked-brick court with a central throne area along the wall opposite the room's main entrance. Side exits from the throne wall lead to smaller rooms, including some with six hundred cuneiform tablets and several hundred tablet fragments, major portions of the palace's royal archives, resting both on the rooms' floors and within their roof and wall collapse. [*See* Cuneiform.] These documents include dated archival, royal administrative texts and royal letters and treaties, many bearing the impressions of inscribed seals of royal servants. Large fragments of a locally copied recension of the Sumerian King List document both the level of scribal activity within the palace complex during this period and relationships with southern Mesopotamian scribal activity. [*See* Sumerians.]

The archives chronicle the activities of the local dynasty that succeeded Shamshi-Adad at Tell Leilan, but sealings of Shamshi-Adad and his sons retrieved in one partially excavated room at the northeast limit of the 1987 exposure suggest that the palace was built and used initially during the reign of Shamshi-Adad himself. The lower town palace (north) was retrieved, in part, in 1991 and provided an archive of 590 tablets devoted exclusively to the administration of receipts for royal beer-preparation supplies and beer disbursement. The disbursement documents are sealed with the seal of an official of the king of Andarig; they suggest that after the death of Shamshi-Adad, the king of Andarig, a powerful neighbor of Shubat-Enlil, had direct or indirect control over the former capital city.

Six soundings in the Leilan lower town and on the acropolis have revealed impressive public architecture associated with the reign of Shamshi-Adad and his successors. The only domestic structures retrieved have been small units piled against the early second-millennium BCE city wall. These data and the topography of the site suggest a relatively small agricultural population within the capital city during this period. Regional survey indicates that the resettlement of the Khabur Plains under the rule of Shamshi-Adad was



LEILAN, TELL. Figure 4. *Northeast acropolis showing the north facade of the period I, level 2 temple.* Nineteenth century BCE. (Courtesy Harvey Weiss)



LEILAN, TELL. Figure 5. *Sculpted mudplaster decoration on a semiattached column.* From a period I building, level 2 temple on the northeast acropolis. (Courtesy Harvey Weiss)

focused at the village level: the reoccupied Leilan administered a densely occupied empire (more than sixty villages within 15 km, or 9 mi.), extending from the Euphrates to the Zagros. [*See* Mari.] The city was conquered and destroyed by Samsuiluna of Babylon in a military campaign in 1728 BCE. The site was only reoccupied in the early twentieth century CE by Kurdish villagers.

[*See also* Mesopotamia, *articles on* Prehistoric Mesopotamia *and* Ancient Mesopotamia; *and* Temples, *article on* Mesopotamian Temples.]

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LEPTIS MAGNA, important Roman harbor situated adjacent to the eastern side of the modern town of Homs, 120 km (74.5 mi.) east of Tripoli in Tripolitania, the western province of Libya (32°48′ N, 14°17′ E). The topographical development of Leptis appears to have been more complex than previously demonstrated. The early Punic levels (Carter, 1965) may be only a part of the full picture. It appears from the *Stadiasmus Maris Magni* (*Geographi Graeci Minores I,* edited by K. Muller, Paris, 1955, pp. 93, 94) that a distinction should be made between the *hormos* (protected harbor) and the actual settlement of Leptis. The latter lay at the

mouth of the Wadi Lebda from at least sometime in the sixth century BCE. By the early second century (accepting the conventional dating of the *Stadiasmus*), however, Leptis still lacked a port and was named *Neapolis*, "new town." The *Stadiasmus* refers to another site called Cape Hermaios at a distance of 15 stades (about 2.7 km or 1.5 mi.) west of Neapolis, and this clearly points to the promontory on which modern Homs is situated. Although silting has occurred at Homs, a small harborage still exists on the east side of the promontory, offering protection from onshore northerly winds. A port, even a small one at this point, also avoids the problem of seasonal floods descending from the Wadi Lebda, a feature of late autumn and winter. Some part of the early history of Leptis is perhaps to be sought here, particularly if the name *Hermaios* is interpreted as cognate with the modern Homs.

This hypothesis has gained greater credibility from recent discoveries to the west of the present waterfront at Homs. Excavations for a new building in 1972 revealed the very extensive remains of a villa belonging to the mid second century CE (Di Vita, 1974). The evident prosperity of the villa with its substantial bath suite is a striking reflection of the wealth at the disposal of the Leptitane upper class. More relevant in this context, however, was the discovery of a harbor mole sealed by the remains of the villa. It was suggested that the remains of the quay with its stone mooring rings were of Hellenistic date. The position of the quayside below the later villa clearly testified to the Homs waterfront having been extended in an eastward direction, perhaps as the result of silting. The date of the mole seems to be before the first century CE, but more precise dating within the Hellenistic period is lacking. Discussion of the chronology involved depends on the use of mooring stones made of Ras el-Ḥammam limestone, an argument that Antonino Di Vita (1969, p. 196) also deploys in his proposed late Hellenistic dating of the layout of the Forum Vetus at Leptis proper. Despite the lack of precision, the sequence of development appears to coincide with the situation implied in the *Stadiasmus*. Until the Hellenistic period Leptis lacked adequate port facilities and relied on use of the *hormos* available at Homs, where some early Phoenician evidence might reasonably be expected to emerge. Whether this (material) is forthcoming remains to be seen, but the reference to Leptis as Neapolis leads to the inference that there was a change of emphasis from Homs to Lebda nearly 3 km (2 mi.) to the west at the mouth of the Wadi.

The next question concerns the possible identification of the early settlement. Study of aerial photographs of Leptis shows quite clearly that north of the old forum important evidence survives towards the triangular promontory ultimately adapted into part of the Severan harbor (Jones, 1989). On morphological grounds the jumbled houses and courtyards visible under a covering of sand may date at least to the period of the late Punic settlement. The detailed plan of the buildings therefore suggests that a small but apparently early quarter of Leptis survives and needs to be incorporated into our view of the evolution of the city.

This reconstruction accords with the picture implied by the *Stadiasmus* for at least early second century BCE. As Di Vita (1974, p. 229) has argued, Homs may have remained the major transshipment port until the little understood harbor development at the mouth of the Wadi Lebda epigraphically attested under Nero (Bartoccini, 1958). The development of the core of Leptis is known primarily from the evidence of the Punic graves located under the stage area of the Roman theater (where the earliest evidence is a Corinthian sherd of c. 500 BCE) and from a deep sondage through the floor of the old forum (Carter, 1965). The results are of great interest, but the development of ceramic studies now make it difficult to accept wholly either the attribution of the various phases to relatively strict chronological dates or the precise dating of the pottery.

Although the early history of this great coastal city still contains many gaps in our knowledge, its development in the early and later Imperial period is uniquely well understood in North Africa. There are two reasons: the manifest changes in the layout and extent of the city, and the wealth of epigraphic and architectural evidence from the early Imperial period (31 BCE–69 CE) when the Punic aristocracy was first assimilated into the Roman provincial system. Two centuries later Septimius Severus, a son of one of Leptis Magna's greatest provincial families, became the emperor of the Roman world and founded a brief African dynasty.

LEPTIS MAGNA. *West gate, Municipal Palace.* Roman period. (SEF/Art Resource, NY)

These two groups from the early and later empire contributed to the architectural growth of the city in a variety of magnificent buildings. Their excavation was undertaken by Italian archaeologists in the years when Tripolitania was under Italian control 1911–1942. Italian involvement has continued along with British survey work, and Libyan archaeologists are continuing to uncover the great amphitheater to the west.

The early core of the town appears to have centered, as one might expect, around the old forum area. Harbor facilities on site must initially have been the foreshore at the mouth of the Wadi Lebda which was protected in part by an offshore island. The three temples of the old forum lay on the north side, and opposite, across the square, lay a *curia,* or council chamber, and a basilica. The date of the formal paving of the area is disputed but the visible paving probably dates to the Augustan period. The changes of alignment in the principal spine road to the southwest reflect the development of the city. The arch of Tiberius stands at the end of the first section close to three remarkable buildings built by local benefactors in the early Julio-Claudian period. The market with its two circular kiosks was constructed by the rich patron Annobal Rufus in 9–8 BCE. He also was responsible for the construction of the famous theater in 1–2 CE. The structure comprises the usual semicircular auditorium or *cavea* fronting a stage through whose ornamental backdrop *(scaenae frons)* an arch revealed a view of an integrated temple to the northeast. This small temple to the deified Roman emperors was constructed through the patronage of Annobal's relative Iddibal Tapapius and dedicated in 43 CE. Between the two major buildings discussed above lay the site of the so-called Chalcidicum, a long, columned portico behind which lay a rectangular open space surrounded by porticos, possibly to serve as another market. It was dedicated by Iddibal Caphada Aemilius in 11–12. The names of the early imperial patrons are of particular interest; they demonstrated the cultural assimilation of Roman nomenclature by a local aristocracy that retained latinized versions of their Libyo-Punic names. These three spectacular buildings sprung up early in the first century CE presumably in areas where development was still possible at the time. The relationship of the central core of the city to the presumably later city walls is not understood at present.

The harbor area, as an inscription (*Inscriptions of Roman Tripolitania,* no. 341) implies, underwent some formalization during the reign of the emperor Nero. The principal developments, however, occurred further west along the coast at the site of the now eroded circus and the magnificent amphitheater, which is slowly emerging from its covering of sand. By the turn of the century the layout of the Chalcidicum and the adjacent arch of Trajan shows that the road to the southwest ran past a formalized street grid of dwelling blocks to the crossroads with the main east–west route along the North African coast. It is evident from both the original

LEPTIS MAGNA. *The scaena, ruins of a Roman theater.* (SEF/Art Resource, NY)

Italian survey and subsequent examination of air photographs that the northwestern coastal area beyond the city walls with an impressive east gate was extensively occupied. Although most of the evidence has been destroyed by the growth of modern-day Homs, beyond the Hunting Baths of second-century CE date with their famous surviving murals there lay a series of major warehouses and storerooms on either side of the road to Tripoli. These structures undoubtedly represent storage areas for agricultural products, notably massive amounts of olive oil from the Gebel hinterland awaiting shipment in Tripolitanian-style amphorae to the markets of southern Italy and above Rome where Tripolitanian oil may have accounted for up to 10 percent of the market.

The first imperial intervention in this setting was the construction across the southeastern quarter of the residential area of the magnificent baths of Hadrian, with a formal palaestra, or colonnaded courtyard, to the north. Still greater remodeling was to come in the last decade of the second century when the emperor Septimius Severus (193–211) glorified his native town with extensive renovation. A four-way arch with scenes depicting his state visit to his native town formalized the junction of the spine road with the great coastal highway. From the eastern side of the Hadrianic baths a colonnaded street was constructed northeast toward the harbor area. Partly to disguise the Wadi Lebda at this point a magnificent nymphaeum opposite the Hadrianic baths acted as a backdrop overlooking a small piazza at a change in the angle of the colonnaded street. Along its

northern side Severus's architect cleverly inserted a huge forum and a separate basilica integrated within an irregular area of former streets. At its southeast gate the forum was focused on the Severan temple to the imperial cult, and an entrance through a series of shop facades led directly into the great basilica completed in 213 CE by Severus's son, the emperor Caracalla (198–217). Its two-story construction and clerestory roof led to its eventual conversion into a Christian cathedral, and it can be argued that this magnificent building had a seminal influence on the later development of the basilican church form. The interior retained not only the twin culmination (with its dedicatory inscription along the entablature) but also the original pilasters with scroll decoration containing largely Bacchic scenes.

The sculptural techniques evident in the forum and the inhabited scrolls of the basilica were generally thought to reflect the school of Aphrodisias in western Anatolia, but isotopic analysis of marble types imported to Leptis Magna along with much Egyptian granite has broadened the picture. Although the Proconnesian origin of the inhabited scrolls in the basilica has been confirmed, the origins of the other marbles used have now been shown to include examples from Dokimeion, Naxos, and Thasos/Aliki around the Aegean and Carrara in Italy. Furthermore, it has been argued that the layout of the Severan buildings flanking the colonnaded street extended in the intended original form farther north toward the Flavian temple. Whether this arrangement was an integral part of the original project is not certain but, if it was, another element needs to be recognized in the already massive urban remodeling brought about under the brief star of the African emperor and his sons (Walda and Walker, 1984, p. 81; 1988, p. 55; Di Vita, 1982, p. 84).

The single largest development in the program was undoubtedly the construction of the Severan harbor around the mouth of the Wadi Lebda. A mole was constructed linking the area of the promontory beyond the old forum with the offshore island on the tip of which a lighthouse was built. The southern mole contained a second lighthouse and a temple of Portumnus together with a range of warehouses flanking the excavated quayside overlooking the now silted interior.

Relatively little work has been devoted to the latest stages of Byzantine Leptis but there is a hint of possible urban continuity from the recovery of seventh-century CE coinage from recent examination of the Flavian temple area. The much-reduced Byzantine wall circuit is generally believed to have encircled the back of the old forum temples and the basilica and then to have crossed the wadi to the south mole. The implications of this reduction may have to be rethought in the light of the possible identification of an outer, T-shaped arm on the eastern side of the Severan harbor. If this extension was in use in the Byzantine period and if the inner harbor perhaps substantially silted, then it would force a considerable adjustment of our view of the inhabited area available within the Byzantine wall circuit. This question, like so many in the vast unexplored area of Tripolitania's greatest city, remains for future decades to unravel.

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G. D. B. JONES

LEVANT. The regional designation Levant is derived from the Latin *levare,* "to raise," the participle being *levans*

(-antis); it is similar in derivation and use to "to orient," for "the lands to the east" (from the European perspective). The term is sometimes employed to designate the lands around the eastern shores of the Mediterranean—the Near/Middle East, as opposed to the Far East. The Levant would thus include modern Asiatic Turkey, Syria, Lebanon, Israel, Jordan, and possibly Egypt (but not necessarily Cyprus).

The term *Levant* was popular in the nineteenth century in such fields as history, geography, economics, political science, and ethnography, especially in French scholarship. More recently, however, "Levantine" has taken on negative connotations, like "Byzantine," to suggest the mysterious mind, bureaucratic intrigue, and unsavory business practices of an Oriental world inferior to the West. Accordingly, the term has been all but abandoned, except in a few very recent attempts to revive it in Anglo-Saxon Near Eastern archaeology. There the term *Southern Levant* is sometimes used alternatively to refer to ancient Syria-Palestine. Such usage among younger archaeologists may be encouraged by the adoption of *Levant* as the name for the annuals of the British School of Archaeology in Jerusalem.

[*See also* Syria-Palestine.]

WILLIAM G. DEVER

LEVI DELLA VIDA, GIORGIO (1886–1967), Semitist and Islamist, called "one of the greatest Orientalists of our times" (Moscati, 1968, p. 1). Levi Della Vida's main works include the publication of Syriac and Arabic manuscripts, the edition of important Western Semitic inscriptions (e.g., from Karatepe in Turkey and all the Punic inscriptions from Tripolitania, North Africa) and historical syntheses of the ancient Semitic and Islamic worlds. His analytical works display profound erudition, subtle intuition, and an exemplary philological method; in his work as a historian he combined positivistic methodology with the idealistic tendencies of contemporary philosophy and historiography.

Levi Della Vida had been a pupil of Ignazio Guidi at the University of Rome. His collaborator, as early as 1911, in his translation of the Arabic sources for *Annali dell' Islam* was Leone Caetani. In 1913 Levi Della Vida became professor of Arabic at the Istituto Universitario Orientale in Naples and in 1916 was a professor of Semitic languages at the University of Turin; in 1920 he succeeded Guidi in teaching Hebrew and Semitics at Rome. In 1931 he refused, with only eleven other Italian professors, to swear allegiance to the fascist government and was consequently removed from his office. From 1932 to 1939 he was employed in the Vatican Library, charged with studying Arabic and Syriac manuscripts, but as a result of political and religious persecution, he was forced to leave Italy. He went to the United States, where he taught Semitics at the University of Pennsylvania until 1945 (and again in 1946–1947). At the end of World War II he returned to Rome, where he taught the history of Islamic institutions until 1956, when he retired. He was a member of the most prominent academies in Europe and America; he received a doctorate *honoris causa* at the universities of Paris (Sorbonne), Algiers, and Jerusalem, and he received Lidzbarski's prize for Semitic epigraphy. His name and image appear on a medal awarded by the University of California to students of Islam.

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MARIA GIULIA AMADASI GUZZO

LIBRARIES AND ARCHIVES. The emergence of writing in the ancient Near East, shortly before 3000 BCE, resulted in two kinds of texts, as the Mesopotamian evidence shows: groups of records drawn up for administrative purposes and texts used in training scribes. The former are usually designated archival texts; the latter, commonly called school texts, in time formed the contents of libraries.

Archival texts were drawn up by scribes/managers as an aid to memory and proof of transactions, to take stock of goods and personnel, to register transfers, and to meet the demands of accountability. Eventually, contracts, letters, and a variety of reports and notes were included, written to control economic and political processes and kept for consultation. Such collections, unearthed during excavations, are called archives. School texts, reflecting the complexity of cuneiform script, comprise a variety of sign and word lists together with student exercises. [*See* Cuneiform.] In the middle of the third millennium school texts were joined by the earliest literary texts (e.g., hymns, incantations, proverbs), written by and for the scribes responsible for the archives and usually found in the same locales. They attest the scholarly scribal activity that eventually developed libraries: collections of nonadministrative, scholarly, and traditional texts written and collected for educational purposes and professional needs. [*See* Scribes and Scribal Techniques.] They keep turning up in houses (schools and dwellings of master scribes), temples, and even palaces, always con-

nected with the literati who collected and used them and who usually lived or worked in the places the texts were found.

Archives. The definition of *archives* as collections of records accumulated during the period of a particular administrative task performed by a person or institution may be too broad. Some would add to it "performed ex officio and still present with those who made and used them." Others would even wish to reserve the term for "a collection or repository of records no longer in use but preserved for their historical value and stored under special conditions." In the ancient Near East, such restrictions were usually ignored. Coherent bodies of administrative and legal records from large private households are in principle no different from those created by officials of a palace or temple—both of which also functioned as a large household. [*See* Palace.] Many archives have been found in situ, left behind when a disaster struck the building in which they were kept and used. A convincing example is the archive in room L 2769 of palace G at Ebla (c. 2400 BCE). [*See* Ebla.] Thousands of tablets had been stored on wooden shelving along walls that collapsed. The room was only accessible from adjoining room L 2875, a typical scriptorium, with low benches along the walls on which tablets could be laid out. [*See* Tablet.] Similar discoveries have been made elsewhere: in the houses of Assyrian traders in Kaneš (Anatolia, nineteenth century BCE), in the residence of Ur-Utu at Sippar/Amnanum (Tell ed-Der, destroyed c. 1630 BCE), and in the house of Shilwatesshub at Nuzi (house A on the northeastern mound, destroyed c. 1330 BCE). [*See* Kaneš; Sippar; Der, Tell ed-; Nuzi.]

Many complete or partial archives have been found in secondary locations: old records, having lost their value, might be discarded or put to secondary use as fill for walls and mud-brick benches or for leveling floors (not surprising in a country without building stone). Reconstruction and terracing suggest that parts of older buildings were displaced together with their contents, including archives. The bulk of the archival texts of the Temple of Inanna at Nippur (Ur III period, twenty-first century BCE) were discovered in distinct pockets in the fill of the foundation platform of a temple (?) erected there two thousand years later. [*See* Nippur.] Hundreds of records of the same period were discovered at Ur, stacked five to six layers deep under the pavement of a building dated to the Kassite period (c. 1300 BCE). [*See* Ur; Kassites.] Archival texts from the period of Assyrian domination of Mari were used as fill for mud-brick benches built in the palace of the next king, Zimrilim (eighteenth century BCE). [*See* Mari.] The so-called Persepolis fortification tablets (Achaemenid period) by their very name perpetuate their secondary use as fill for walls. [*See* Persepolis.]

Remains of archives and coherent files have even been recognized among the oldest administrative records known, those from level IV at Uruk (before 3000 BCE), where they had been deposited as part of the general debris in trash pits or used as architectural fill. [*See* Uruk-Warka.] Such hoards may be treated as archives if they exhibit enough coherence, but as random parts of larger collections, they must be used with caution for historical reconstructions. The best example of an archive as a respository of records no longer in use was found in the archival building of the "tablet hill" at Girsu (Telloh). [*See* Girsu and Lagash.] The archive originally contained some thirty thousand tablets dating to the end of the third millennium, they were carefully filed, in chronological order, in five or six layers on benches in two adjacent galleries. Such huge archives and repositories must have been restricted to large institutions, where, it may be assumed, administrative continuity and storage facilities were accompanied by qualified scribes who respected old records.

Even when violent destruction disturbed an original locale and scattered tablets, the findspot and the contents of the records can help to identify the source. Records dealing mainly with land transfer, dating to the fourteenth century BCE, were found in debris filling the area of court IV in the southern part of the palace at Ugarit (destroyed c. 1180 BCE). Found in the higher levels of the debris, they proved to have fallen from an upper story and had to be distinguished from records dating to the second half of the thirteenth century BCE found in the same area near the floors (particularly in archive rooms nos. 30 and 31). Upper stories could of course also have held current archives, as was the case at Maşat Höyük (Tapigga, with a Hittite palace), Mari, Nineveh, and Ḫattuša/Boğazköy (in building E of the citadel, where they had fallen down the slope). [*See* Nineveh; Boğazköy.]

Another source of confusion is archives having been transferred in antiquity. Tablet labels with Babylonian dates show that the diplomatic correspondence of Zimrilim of Mari was moved to a room (no. 115) adjoining the palace's interior court, where it was inspected by the scribes of the conqueror Hammurabi. In the wake of building new capitals or palaces, the chancery archives of Assyrian kings were moved, as was deduced by Simo Parpola (1983) from the sometimes remarkable location and composition of certain archives. Such operations imply selection because the collections exhibit gaps.

All the examples mentioned thus far concern cuneiform archives. There is no reason to doubt that these observations are also valid for archives consisting of records on papyrus, leather, or wood. [*See* Papyrus.] Destruction (with conflagration) and climate have almost completely robbed history of such collections. They can only be inferred from the existence of the clay sealings or bullae originally attached to certain records that have survived. [*See* Seals.] This applies also to the hundreds of wax-coated wooden writing boards (codices) used in Mesopotamian chanceries and libraries, whose existence is known from colophons and library records. Hoards of bullae with royal seals have been discovered

at Ḫattuša/Boğazköy, in the so-called western building at Nişantepe, in building D at Büyükkale, and in the City of David, Jerusalem, once attached to official documents. Sealed bullae, discovered in Judah from about 600 BCE are considered to be remnants of a burned archive (Avigad, 1986), and the numerous bullae found in an archival chamber with extensive shelving, room 61, of Sennacherib's palace at Nineveh are the remains of an archive containing records on papyrus originating in Egypt and the Levant.

Only under special circumstances have parts of archives not written on clay survived. From ancient South Arabia records in the shape of inscribed wooden sticks are known that survived in the dry climate (Ryckmans et al., 1994). The so-called Samaria papyri (fourth century BCE) were discovered in a cave in Wadi ed-Daliyeh near the Jordan River, (Cross, 1969) and several hoards, including the Babatha archive (c. 100 CE), carefully packed in a leather bag, have been discovered in caves west of the Dead Sea (Yadin, 1971). [*See* Dead Sea Scrolls.] Such hoards had been carried to refuges in inhospitable and dry places. A few hoards of inscribed potsherds (ostraca) are also known that could be called archives: the Samaria ostraca (eighth century BCE), the Lachish ostraca (c. 600 BCE), and the Arad ostraca (i.e., the archive of Elyashib, c. 600 BCE). [*See* Samaria Ostraca; Lachish Inscriptions; Arad Inscriptions.] The first consist of administrative bookings (later digested in a papyrus ledger?); the second and third comprise small groups of letters. The following observations apply almost exclusively to clay tablets because of the lack of substantial archives of noncuneiform texts found in situ.

Storage and filing. A small, private archive could be stored in a jar or basket in a residence. Large institutions had special archival rooms for the systematic storage of records. Large archives, with valuable and sensitive records, were kept in sealed rooms and admission was restricted (ex officio or by mandate). Special committees were appointed to enter the sealed rooms of absent or dead Assyrian traders in Kaneš (Veenhof, 1986, p. 12). The location of archival rooms was often dictated by practical considerations: archives for registering regular deliveries and expenditures near the entrance of a palace (e.g., the eastern and western archives of the palace at Ugarit); the archive of "the king's meal" in the kitchen area of the palace (e.g., at Mari); a chancery archive near the rooms where the king and his counselors met; tablets with international treaties in the archival room of a temple, where they had been deposited before the gods who had to guarantee them (e.g., at Ḫattuša). [*See* Ugarit.] This implies that large institutions usually had several archival rooms for different spheres of domestic and international activity: agriculture, industry, husbandry, commerce, the military. At Archaic Uruk (Eanna, level IV, area of the Red Temple) "substantially coherent and discrete administrative . . . archives, that is, tablets from an individual accounting . . . unit" have been observed (Englund, 1994, p. 14ff.). Practical considerations may explain archival decentralization—for example, in the case of production centers (for textiles, leather, metals, and even agricultural production) outside temples and palaces, such as the Isin Craft Archive (c. 2000 BCE, with nearly a thousand records). This may account for the absence of archives in Early Dynastic temples (however, that may also be because such patrimonial organizations knew only a limited separation of official and private spheres, and thus administrative archives are to be found in the houses of its high officials).

Three methods of storage are usually distinguished: a container system, an open-shelf system, and a pigeonhole system. Many written sources mention jars, baskets, boxes out of wood or reed, trays and leather bags. The first are found regularly in excavations. Some containers even have an inscription identifying the contents, as was the case with some of the ten jars holding the archive of the regular offerings of the Aššur temple (c. 1100 BCE, found in storeroom 3′, under the responsibility of Ezbu-leshir). Traces of baskets and boxes are more elusive, but their use can be deduced from the remains of wood (Gasche, 1989, p. 30ff.; Stein, 1993, p. 24ff.) and metal (copper nails in the archival room of Shilwa-Tesshub at Nuzi). The use of shelves is well attested in Mesopotamia and elsewhere (at Ugarit and Ḫattuša; in buildings A and K at Büyükkale [Veenhof, 1986, p. 13]). Along three walls of the main archival room in the palace at Ebla were clear traces of where triple shelving had been fixed to the walls. Mud-brick benches for storing containers holding tablets may have been an alternative to shelves and were suitable for laying out tablets for inspection. Room 17 of Ur-Utu's residence (see above) was equipped with benches. The pigeonhole system was used in the library room of the Nabu temple at Khorsabad, in Sennacherib's palace at Nineveh (room 61, used for papyrus records), and in the Neo-Babylonian Temple of Shamash at Sippar (room 355, with fifty-six niches built of mud brick, wood, and reeds, in three tiers along three walls). Less sophisticated were brick boxes used as filing cabinets (in the scribal office of the northwest palace at Kalḫu).

Tablets in large archives could be classified by format, size, and style: there are links between the physical appearance and the contents of records (e.g., multi- or single columned, square, round or oblong, with or without a sealed envelope). In the Ur III period, for example, so-called round tablets are used in Lagash for recording the assessment of fields and (their) expected yield (Veenhof, 1986, p. 14). From the seventh century BCE onward, key words, summaries, dates, and names were written in Aramaic on the edges for quick identification. Containers and stacks of tablets could be identified by their labels, in use since the third millennium and particularly common during the third dynasty of Ur. The labels were usually attached to baskets, trays, and boxes with tablets called *pisan-dub-ba,* "tablet"

(dub) basket *(pisan)* in Sumerian (Veenhof, 1986, p. 16ff.). The texts written on them identify the subject, transaction, occasion, date (they frequently cover an accounting period of one month or one year), and place of the group of records. Unfortunately, almost all of them (their number approaches five hundred) lack an archaeological context, so they cannot be linked to particular files. The variety of forms bears witness to systems with different, at times ad hoc criteria of classification. Some labels, moreover, may be transport rather than filing or storage labels. Clay bullae, with seal impressions and short inscriptions are also used. Old Assyrian traders used them also to identify records by provenience, format (sealed or not), type (letters, copies), and subject matter, frequently adding personal names.

Contents. Archives differ widely as to scope, size, and institutional setting. Archives of great institutions may cover various areas and levels of administrative activity, such as production (agriculture, husbandry, crafts), trade, foreign relations (gifts, tribute, booty), jurisdiction, personnel management, the army, cult. The huge archive at Drehem (Puzrish-Dagan, Ur III period), however, only registered, painstakingly, the delivery and disbursement of livestock in the public sphere. The so-called customs archive from Mari consisted only of letters of clearance received by traders entering Mari's territory upon payment of an import duty. The letters were submitted to the overseer of the traders upon the latter's arrival in the city. Private persons and families usually kept a single archive, covering many activities. This could result in large holdings, with at times more than a thousand records (Old Assyrian traders in Kaneš [Veenhof, 1986, p. 9, n. 33], the Teḫip-tilla family in Nuzi [Maidman, 1979], the Murashû firm at Nippur [Stolper, 1985]). Large archives of high officials can be a mixture of records received or kept ex officio and those bearing on private affairs. That of Shamash-hazir, an official of King Hammurabi of Babylon in Larsa charged with the allotment and administration of crown land, contained more than a hundred letters of the king's, as well as his wife's, correspondence. The business reflected in the huge archive of the chief lamentation priest (Ur-Utu) of the goddess Annunitum at Sippar/Amnanum (see above) also reflects his responsibilities as administrator of the temple. Archives of expert scribes and scholars, risen to the ranks of senior officials, may contain private archival records in combination with public records and a personal library of scholarly texts, as was the case with that of Rap'anu at Ugarit.

Administrative records of institutions, which aim at controlling the movement of goods and persons, frequently exhibit standardized formats, styles, and layouts. They comprise both a small tablet for registering single, daily events and monthly and yearly summaries and balanced accounts—ledgers drawn up for the purpose of accountability. The transactions recorded are deliveries, transfers, expenditures, distributions, and accounting. There are always lists of personnel (receipt of rations, wages, fields), of material in stock (inventories), of special expenditures (offerings, gifts), as well as letter orders (as proof of disbursements). Such administrative archives usually cover a limited period—one or two generations at most—with a clear numerical preponderance of records of the last few years before their abandonment or destruction. Many records, especially of daily transactions, after having been consulted could be discarded, stored separately or "erased" (with red lines over the tablets, as at Mari); legal documents (notes of debt) in due time could be "broken" or "killed" (in the language of the texts). Rules for discarding documents as such are not known and may have varied from one administration to another. Certain records, such as a comprehensive yearly account, cadastral texts, and some legal documents, were kept longer, for later reference. The size of a public archive is also conditioned by the measure of bureaucratic control, which of course was never complete and showed remarkable fluctuations from deliberate measures and historical developments. Increased standardization and central control are already attested during the Old Akkadian period (Naram-Sin) and the Ur III period (from the middle of the reign of Shulgi, c. 2050 BCE).

A royal chancery archive, such as that from the Neo-Assyrian period, had a wide scope: political correspondence, legal documents (treaties, grants, conveyances), records concerning the military (conscription, booty, equipment), official religion (expenditures for the cult, building of temples), and the court (royal family, harem, courtiers, officers, specialists, lists of disbursements of luxury items such as wine, oil, and garments). A variety of reports supplied information on military campaigns, conquered areas, production and works, and on ominous features relevant to the royal house (signs on earth and in the heavens, dreams, prophecies). Such palace archives could also contain private records of palace officials, either because they kept them in their offices, or because the king wished to exercise control over powerful and potentially dangerous individuals, such as officers of the guard, royal charioteers, and those controlling the harem (Parpola, 1983). Royal archives usually also contain selections of historical state documents, such as earlier royal correspondence. Thus, such archives could take on the character of a royal reference library.

Institutional and state archives are a mine of information for the historian interested in recovering a past administration's main features, discovering how power was wielded, and the status, duties, and careers of the main officials. Dated records allow the reconstruction of historical events, and the statistical evaluation of large archives make quantitative approximations possible. The king's obligations toward the cult and the temples make such archives a source for the study of religion and of the king's role in it.

Private archives contain a variety of records reflecting the activities of their owners as traders, landowners, priests, and

officials. Among these there are nearly always letters, both those received in function (administrative duties, contractual links with the authorities) and those of a private nature. Letters were essential for overland traders (see above) and make up half of the records of the Old Assyrian traders. Because of their informative and virtual legal value (sealed message tablets contained orders and authorizations) archival copies were kept. In Babylonia, recipients of such letters were advised "to preserve them as proof of my order" and the same may be true of the Sumerian letter orders of the Ur III period. [*See* Sumerian; Sumerians.] Private archives always contain a number of long-term legal documents, such as marriage, adoption, and inheritance contracts and especially title deeds of real property. They were carefully preserved in their sealed envelopes and may go back several generations (some even more than two hundred years). They were the core of the small archive of Silli-Ishtar from Kutalla, which he left wrapped in reed mats and covered by mud bricks when he had to flee from his house in about 1740 BCE, never to return. When Ur-Utu's house in Sippar/Amnanum was destroyed by fire, someone tried to salvage a box of such records but lost them on the way out and they were found before the door to the court (Gasche, 1989, p. 32 with pl. 12.1).

Lawsuits over property rights were occasions to consult and produce tablets, and verdicts confirming the rights they embodied became part of such archives. When lost, they could be "revived" and rewritten on the basis of oral testimony before the judges. When real property was sold, such earlier title deeds—which contained valid descriptions of the property—had to be handed over to the new owner. This explains the presence of seemingly out-of-place records found in private archives. They might also have contained contracts ceded, given as pledge, or deposited there for safekeeping by friends. Also discovered in private archives are small hoards of records belonging to junior members or employees of a household (who had no houses of their own). Without careful excavation and recording (many private archives have been dug illicitly), such data and links are lost. Excavated archives that did not undergo conservation procedures (numbers lost), were poorly published (ignoring the links between textual and archaeological data), or were divided among various museums (e.g., archives from Aššur, Nippur, Nuzi, Ur) are responsible for the loss of essential information.

Well-analyzed private archives are a mine of information for social history. The large variety of legal contracts and judicial records are the main source of what is known of ancient law. Official archives as a rule contained few contracts; only in certain periods and cases (notably records dealing with the transfer of real estate, especially when encumbered with servicies and duties) were private contracts registered or abstracted by the authorities. Official courts of law occasionally kept copies of verdicts (e.g., the collection of tablets with final verdicts passed by city governors in the Ur III period). However, the general rule was that those verdicts and the files to which they belonged would be given to the winning party to store. The enormous variety of letters sheds light on many aspects of daily life, without which what is known of family life, trade, and personal religion would have been rather scant. Such letters, moreover, are a prime source for studying ancient languages, especially idioms.

Libraries. Collections of scholarly and traditional texts written and used by scribes during and after their training developed into libraries. The texts were also used in training pupils, which explains why such collections, especially in early periods, are frequently found in or near the archival rooms where the scribes worked (e.g., at Shuruppak/Fara, Abu Salabikh, Ebla). [*See* Fara; Abu Salabikh.] Expert scribes, with specific duties and interests and perhaps more free time, eventually began writing down or composing additional texts to serve their personal needs, such as ritual, divinatory, liturgical, medical, and astrological texts and incantations not part of the school's standard curriculum. Some worked as master scribes in a palace (chancery) or temple, others earned their living by running a school in their house, where a mixture of school and professional texts and private archival records is usually discovered. Schools in a capital city may have had links with the chancery (where official inscriptions and royal hymns must have been composed). This may explain why some royal texts (hymns, letters, inscriptions—especially of the kings of Ur III and Isin) found their way into the curriculum. When Sumerian disappeared as a spoken and soon after as a written language (after 2000 BCE), it remained indispensable for scholars as the basis of the writing system. [*See* Writing and Writing Systems.] Schools and scholars devoted a great deal of attention to copying traditional Sumerian texts, which led to the growth of a kind of standard corpus, eventually arranged in a normative sequence. This corpus, registered by the first lines of compositions in various catalogs, and to a varying degree actually discovered in schools (especially in Nippur), can be considered a kind of standard library. Texts outside this corpus, written and kept for specific professional needs (e.g., collections of incantations or omens) could be added.

Akkadian compositions (epic and mythical texts, prayers, wisdom texts, historiographic compositions) were composed, written down, and copied in these schools, but what is known of this Akkadian corpus as part of school and scholarly libraries is more limited. [*See* Akkadian.] In the following centuries many such libraries are known, usually in the houses or work places of master scribes. Convincing examples have also come to light at Ugarit, discovered in private houses, such as those of Rap'anu (see above), of "the high priest" (Mesopotamian lexical texts, Hurrian texts, mythical and epic texts in the alphabetic cuneiform script of Ugarit, written by the scribe Ili-malku), and of "the

Hurrian priest" (Hurrian and Ugaritic texts in alphabetic script). [*See* Hurrian; Ugaritic.] Such libraries are also found in temples, where the scholars who wrote and used them worked (e.g., Temple M_1 at Emar/Meskene on the Middle Euphrates, c. 1200 BCE). [*See* Emar.] The many divinatory and incantation texts it contained reveal the specialization of its owner, who also had a small sample of literary texts (wisdom, Epic of Gilgamesh, a ballad). The same pattern is observable in Babylonia after the end of the second millennium BCE. The traditional corpus was by then more or less fixed (the term *canonized* has been used in this context). Many collections discovered in houses and rooms of temples contain a sampling of this standard corpus, together with more specialized texts (e.g., incantations, divinatory and medical texts). Good examples are the library of the incantation priest in Aššur, the one found in a house in the Assyrian town of Huzirina (Sultantepe, four hundred different texts), and that of Anu-bēlshunu, a scholar attached to the Bit-Resh Temple of Seleucid Uruk. [*See* Aššur.] The closest approximation of a temple library (without an admixture of archival texts) was discovered in 1986 in room 355 of the Shamash temple in Sippar (c. 500 BCE), stored in more than fifty niches in the walls; however, its full size remains unknown (Al-Jadir, 1987).

The evidence for palace libraries is very limited. The postulated library of Tiglath-Pileser I in Aššur (c. 1100 BCE) has been shown to be the collection of an Assyrian scribal family from the first decades of the twelfth century BCE. The palace chancery may have incorporated in part some important older state documents (palace edicts, perhaps also the Middle Assyrian laws), but that does not make it a library. That important documents were carefully preserved, perhaps as separate collections, is not surprising. A collection of treaty tablets was stored in the great temple at Ḫattuša, probably because they had been deposited there before the gods who had to watch over them. In the same city, in building A of the citadel house, an important collection of older judicial decisions and royal edicts was found registered in a catalog, perhaps in the royal reference library.

The only real palace library, and perhaps the only library that fully deserves the name, was created by King Ashurbanipal in about the middle of the seventh century BCE in Nineveh. It was discovered and excavated by Austen Henry Layard and his successors between 1850 and 1932. [*See the biography of Layard.*] From royal letters and colophons on tablets it is known that the king wished to collect all scholarly and religious texts considered important. He may have built on an already existing royal collection, but his own contributions were very substantial. Scribes were sent out to collect and copy tablets and, after his victory over Babylonia, hundreds of texts (both on clay tablets and on wax-coated writing boards, including polyptychs) were confiscated from houses and temples. Tablets copied for the library were inscribed with special colophons (some in ink, on existing tablets) that state the king's intentions and identify them as royal property. All of these texts are now in the British Museum, as the K(uyunjik) Collection. The total number of different tablets (many compositions are represented by several—at times up to five or six—copies) has been estimated at around fifteen hundred, with perhaps two hundred thousand lines of text. The collection comprises the whole of the canonical corpus, the stream of tradition.

Catalogs (also those listing all the individual tablets in a lengthy series, with tablet numbers and catch lines) and labels made the library accessible. The majority of tablets consist of magical, medical, divinatory, and ritual texts, indicating that it focused on what was "good for the kingship," especially texts that would protect the king and his family against evil. There is also a substantial group of literary texts, however. Notwithstanding all this information supplied by the king's scribes, it is still not easy to reconstruct the library: in the nineteenth century the rich harvest of texts from at least two palaces and a temple seems to have been mixed up: the southwest palace (rooms 40, 41), built by Sennacherib in about 700 BCE, Ashurbanipal's own northwest palace (the successor to the older Succession Palace), and the Temple of Nabu. In addition, there was a certain amount of mixing of archival records with library texts. It seems that the king considered certain royal archival documents worth preserving alongside scholarly and literary texts. This means that, although there is no doubt that Nineveh contained a large, specifically royal library, the border between royal archive and royal library must have been somewhat fluid—how fluid can only be established if the originally separate royal text collections can be distinguished. A thorough analysis of the libraries of Nineveh remains a task for the future.

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KLAAS R. VEENHOF

LIBYA. Situated at the northeast corner of Africa, Libya consists of three regions: Cyrenaica, Tripolitania, and Fezzan (ancient Phazania). Cyrenaica and Tripolitania are semiarid Mediterranean coastal zones on opposite sides of the Gulf of Syrte. Arid Fezzan, dotted with oases, separates them at the Sahara's northern edge.

For the ancient Greeks, Libya was all of northern Africa between the Nile River and Gibraltar; to them, its light-skinned inhabitants were all "Libyans," though they distinguished subgroups such as Garamentes, Maures, and Numidians. Phoenicians traded with Libyans beyond the Pillars of Hercules (Herodotus 4.196). [*See* Phoenicians.] The *Periplus of the Erythraean Sea* of Hanno the Carthaginian, a partly fanciful, partly factual account of a sea voyage to "Libyan lands beyond the Pillars of Hercules" (presumably the Atlantic coast of Morocco), mentions Libyphoenicians, punicized native peoples. [*See* Phoenician-Punic.] The name also bears tenuous connection with biblical Lehabim (Table of Nations, *Gn.* 10:13) and Lubim (*2 Chr.* 12:3).

The Greeks may have learned the name from the Egyptians, for whom, from the Old Kingdom onward, Libya formed a hostile western desert frontier. In his mortuary complex at Abu Sir, Sahure (fifth dynasty) boasted a victory over Libyans. The Story of Sinuhue (twelfth dynasty) mentions Tehune-Libyans vanquished by Egypt. Rameses II (nineteenth dynasty) built a chain of forts in the western desert against Libyan incursions. On reliefs at Medinet Habu, Rameses' son Merneptah recorded his defeat of a coalition of Sea Peoples and Libyans (written RBW or LBW, vocalized *Lebu* or *Libu*). During the twenty-second–twenty-third dynasties (c. 945–725 BCE), pharaohs with Libyan names like Sheshonq and Osorkon controlled Lower Egypt.

Cyrenaica took its name from Cyrene, the earliest Greek foundation in Africa (631 BCE, following Herodotus 4.150–151). Cyrenaica was also known as Pentapolis for its five

major cities: Apollonia (Sosuza), Cyrene (Shahat), Ptolemais (Tolmeta/Barce), Tauchira (Arsinoe/Tocra), and Euesperides (Berenice/Benghazi) (Stillwell, 1976). The Persians under Cambyses possessed the region, and Ptolemy I annexed it after Alexander's death. In 96 BCE Ptolemy Apion bequeathed Cyrenaica to Rome, after which it was united with nearby Crete as a Roman province. [*See* Cyrene; Ptolemais.]

Tripolitania ("three cities"), colonized by Phoenicians in the seventh century BCE, had three principle cities: Leptis Magna (Labdah), Oea (Tripoli/Trablus), and Sabratha (Stillwell, 1976). [*See* Leptis Magna.] Until 146 BCE, Tripolitania formed the eastern province of a west Phoenician realm dominated by Carthage. [*See* Carthage.] After Carthage's destruction, Rome ceded Tripolitania to its Numidian allies. Tripolitania later became a Roman province famous for olive oil production.

The monumental urban ruins at Cyrenaica and Tripolitania have attracted archaeologists, as have traces of Paleolithic and Neolithic peoples that once inhabited a less desiccated Fezzan. The archaeology of later native North Africans, the Berbers, is still poorly understood, though their language and inscriptions are known (Camps, 1986). One remedy for this neglect has been the UNESCO Libyan Valleys Survey, devoted to the archaeology of rural Tripolitania. The survey has discovered extensive Roman-period (though not necessarily Roman-designed) floodwater irrigation systems. [*See* Irrigation.] These supported a significant inland occupation based on mixed agriculture (grape, olive, cereals) integrated with mobile sheep/goat pastoralism, the prevailing mode of subsistence before and after the Romans (*Journal of Libyan Studies,* 1989).

[*See also* North Africa.]

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JOSEPH A. GREENE

LIMES ARABICUS. The Latin term *limes Arabicus* means "Arabian frontier" and appears in literary sources in the fourth century CE. By this period the eastern frontier of the Roman Empire was divided into frontier districts (Lat., *limites*), each under the command of a *dux*. South of the Euphrates River these districts extended along the edge of the North Arabian desert and formed the empire's southeastern frontier. The limes Arabicus extended from the region just south of Damascus to Wadi el-Hasa, near the southern end of the Dead Sea. By the fourth century the frontier zone south of Wadi el-Hasa was the *limes Palaestinae,* which in turn extended to the Red Sea at Aila ('Aqaba). The limes was defended by Roman garrisons based in forts and towns along the frontier. Their primary mission was to protect the sedentary provincial population and the lucrative caravan traffic that passed through the region against the raids of nomadic Arab tribes (Saraceni, or Saracens) from the adjacent desert. [*See* Hasa, Wadi el-; 'Aqaba.]

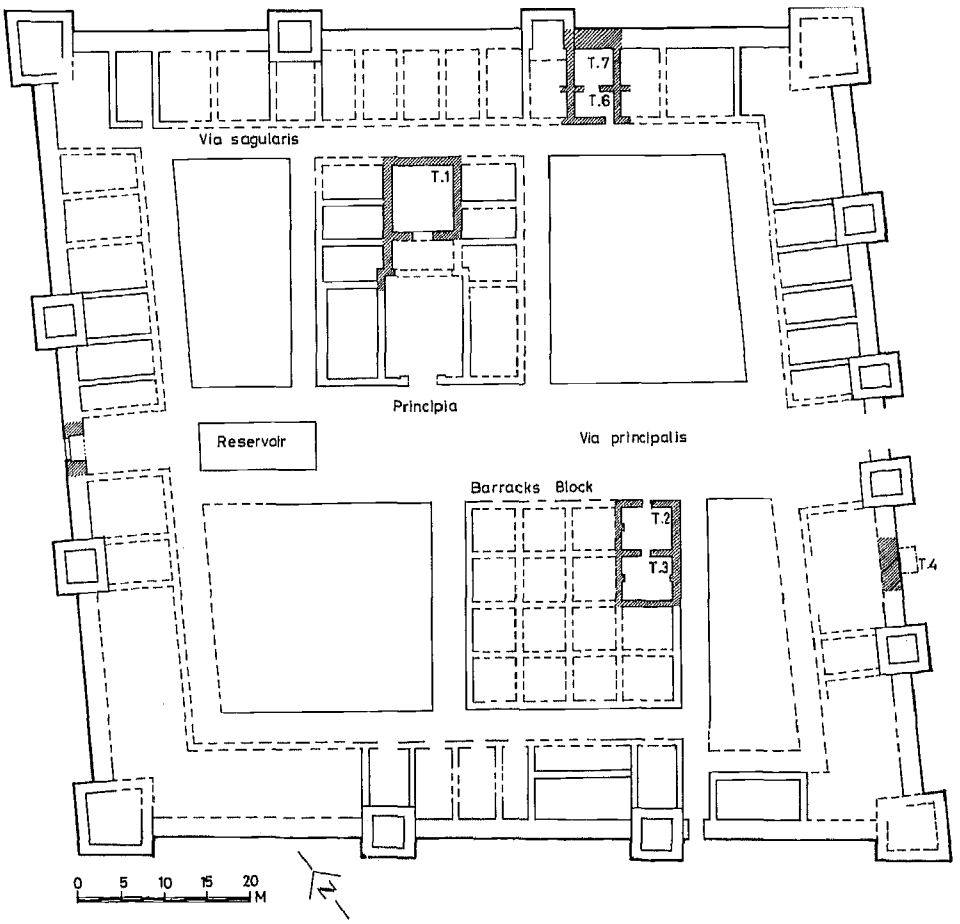
Only two literary sources explicitly refer to the limes Arabicus. The church historian Rufinus (*Hist. Eccl.* 2.6), describing the assault on the frontier by the Saracen queen Mavia during the reign of Valens (364–378 CE), refers to the "towns and cities of the limes Arabicus." The historian Ammianus Marcellinus (31.3.5), describing events leading up the battle of Adrianople in 378 CE, refers to a certain Munderichus, who was later *dux limitis per Arabiam,* "duke of the limes through Arabia."

The Roman frontier in this region was created by Trajan, who annexed the Nabatean kingdom in 106 CE as the new province of Arabia. [*See* Nabateans.] Trajan then built a major road (Via Nova Trajana) that extended from southern Syria to the Red Sea. Most forts of the later limes Arabicus were built along or a short distance east of this road, which was completed between 111 and 114. The original Roman provincial garrison consisted of Legio III Cyrenaica, based at the provincial capital of Bosra in the north, and perhaps ten auxiliary units based in towns and forts along the frontier. [*See* Bosra.] Some strengthening of the Arabian frontier occured under the Severan dynasty (193–235). Inscriptions document the construction of several forts around the northwest outlet of Wadi Sirhan, a natural migration route between southern Syria and the interior of the Arabian Peninsula, and by many milestones reflecting road repairs. The frontier appears to have faced an increased Saracen threat by the late third century, when the frontier defenses were significantly strengthened by Diocletian (284–305). He rebuilt the road system, constructed or rebuilt many new fortifications, and reinforced the provincial army with new units. He also redrew the provincial boundaries, transferring southern Transjordan, the Negev, and Sinai (formerly part of Arabia) to the province of Palestine. [*See* Negev; Sinai.] The military frontier advanced to the desert fringe and Roman forces campaigned deep in the desert, apparently as far as Jawf (Duma) at the southeastern end of Wadi Sirhan. The *Notitia Dignitatum* (*Oriens* 37), dated to about 400 CE, reveals that the *dux Arabiae* commanded two legions, eight elite cavalry vexillations, six cavalry units or *alae,* and five infantry cohorts. These forces were styled *limitanei*—that is, troops that manned the limes. The limes Arabicus appears to have remained well fortified until the late fifth century, when there is evidence for the abandonment of some forts and a decline in the quality of its garrisons. In about 530, Justinian effectively demobilized most of the remaining units by stopping their pay and turned over primary responsibility

for the defense of the southeastern frontier to the Ghassanids, Christian Arab clients. By this date the limes Arabicus, in the sense of a military frontier, effectively ceased to exist.

Although descriptions of some individual sites were made by several nineteenth-century travelers to the region, the first systematic survey of most of the Arabian frontier was conducted by Rudolf-Ernst Brünnow and Alfred von Domaszewski in the 1890s. Their focus was largely architectural and epigraphic. As a result of the subsequent destruction of many sites, their work remains fundamental. Subsequent surveys identified many other smaller sites, such as watchtowers, that formed part of the frontier system. As late as the mid-1970s, however, no fort of the limes had been excavated and no comprehensive survey had been conducted. The Limes Arabicus Survey, directed by S. Thomas Parker in 1976 under the auspices of the American Schools of Oriental Research, collected pottery from most major sites along the entire length of the frontier in Transjordan. This evidence, combined with excavation results from several key sites (e.g., el-Lejjun/Betthorus and Umm el-Jimal), led to the first historical synthesis of the Roman frontier (Parker, 1986). [*See* Umm el-Jimal.] Since the late 1970s several scholars have focused on more limited sectors or individual sites on the frontier, producing important new evidence. A lively debate has begun about the nature of the frontier, with some questioning the level of the Saracen threat while others defend the traditional notion about the purpose of the frontier system.

The fortifications of the limes include watchtowers, *castella* (forts), fortresses, and fortified cities. The last category is beyond the scope of this discussion, but various sources suggest that Roman army units were based within some towns and cities. Hundreds of structures identified as towers exist along the frontier; they seem to date to many periods, but they were not all military structures. The Romans often reused existing Iron Age and Nabatean structures but also built some new towers at key locations. Few have been excavated, further complicating their dating. Analysis of surface pottery and architecture has, however, permitted some understanding of these structures: many were erected on elevations with extensive views, usually intervisible with



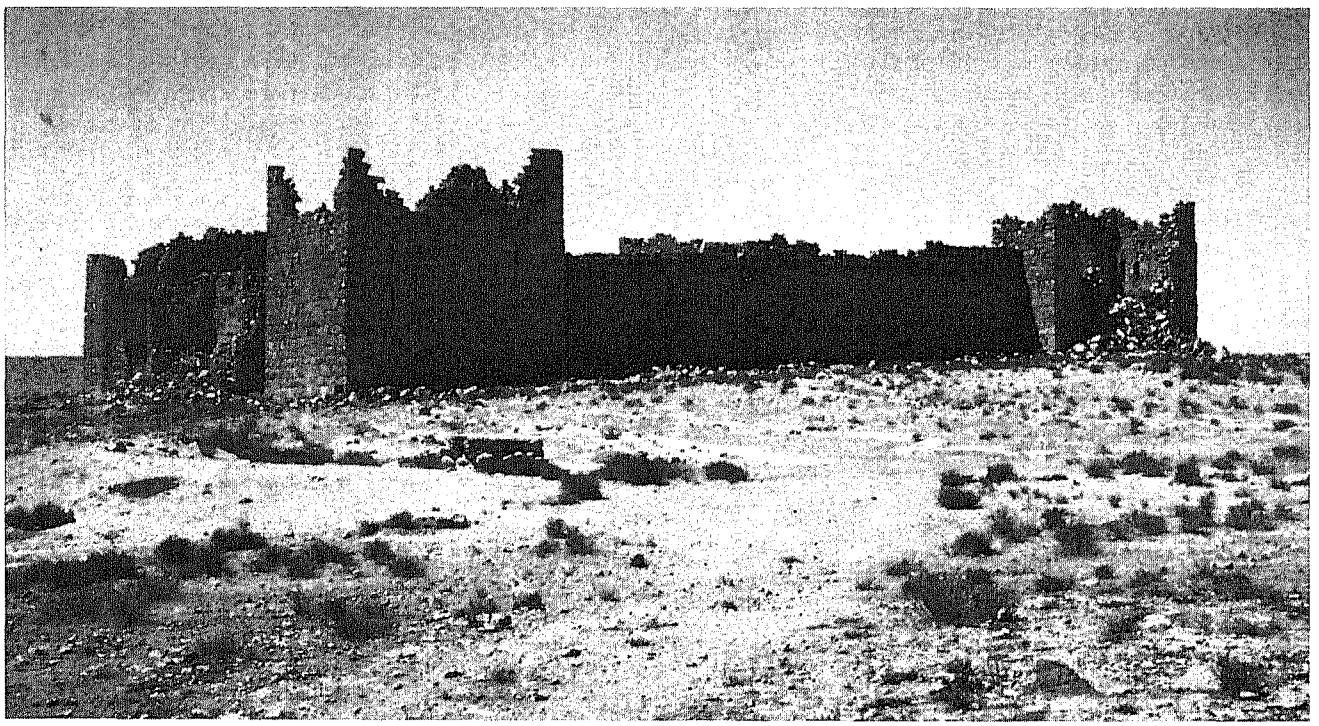
LIMES ARABICUS. Figure 1. *Plan of Da'janiya.* Roman fort built around 300 CE along the Arabian frontier. (Courtesy S. T. Parker)

other towers, and thus presumably served as the "eyes and ears" of the frontier system.

A number of *castella* have now been excavated, including forts at Umm el-Jimal, Qaṣr al-Ḥallabat, Khirbet es-Samra, Umm er-Rasas/Kastron Mefaa, Qaṣr Bshir, Khirbet el-Fityan, Daʿjaniya (see figure 1), and Ḥumeima. [*See* Qaṣr al-Ḥallabat; Umm er-Rasas; Ḥumeima.] The most common type of *castellum* is the so-called *quadriburgium,* or rectangular fort with towers projecting from the four corners. This type may date as early as the early third century, as evidenced by Qaṣr al-Ḥallabat, dated epigraphically to 213 CE. Perhaps the best-preserved and most securely dated *castellum* is Qaṣr Bshir (see figure 2), on the Kerak plateau east of the Dead Sea. [*See* Kerak.] This *quadriburgium* is dated to 293–305 CE by an in situ Latin inscription. The interior plan consists of ranges of two-storied rooms surrounding a central courtyard; the ground-floor rooms served as stables and the second-story rooms housed a garrison of about 150 men. Most other excavated *castella* also date to the tetrarchy, including those at Umm el-Jimal, Khirbet es-Samra, Khirbet el-Fityan, and Daʿjaniya. Recent excavation by John Oleson of the large (approximately 3 ha, or 7 acres) fort at Ḥumeima, on the Via Nova Trajana between Petra and Aila, suggests a second-century date and is thus the earliest-known Roman fort along the frontier.

By the fourth century at least three and possibly four legions were based along the Arabian frontier. The *castra* of the Legio III Cyrenaica has been identified as an annex attached to the city wall of Bosra but is as yet unexcavated. Arabia's second legion, IV Martia, was based in a fortress at el-Lejjun, east of the Dead Sea on the Kerak plateau. At 4.6 ha (11 acres), el-Lejjun is typical of Late Roman legionary fortresses with its massive projecting U-shaped interval towers and semicircular corner towers. Erected in about 300 CE, the fortress seems to have been designed for a garrison of about two thousand men, but this was later reduced to about one thousand, following a reconstruction in the late fourth century. The fortress is the most extensively excavated Roman military site along the frontier, with portions of the fortifications, headquarters, barracks, bath, church, and other structures exposed. The legion remained in garrison until the Justinianic demobilization of the early sixth century. The fortress itself was destroyed in an earthquake in 551 CE.

Farther south, on the limes Palaestinae, the Legio X Fretensis was transferred from Jerusalem to Aila (ʿAqaba) by the end of the third century. Its fortress at Aila has not been identified. Just east of Petra is the great fortress at Udruḥ, which is virtually a twin of el-Lejjun in terms of its size (4.7 ha, or 12 acres) and the number and plan of its gates, interval towers, and angle towers. The original internal plan of Udruḥ was obscured by later Islamic occupation. Although the excavator, Alistair Killick, has proposed a Trajanic date for its construction, no specific evidence has been advanced



LIMES ARABICUS. Figure 2. *Qaṣr Bshir.* Roman fort built between 293 and 305 CE east of the Dead Sea. (Courtesy S. T. Parker)

to support this early date. Rather, the close architectural parallels with el-Lejjun and other late third–early fourth-century fortifications strongly suggest that the extant fortifications at Udruḥ were erected in the Diocletianic era. It has plausibly been suggested that this fortress was originally erected for Palestine's other legion, VI Ferrata, which may have been transferred from northern Palestine to Udruḥ in about 300 CE but was disbanded or destroyed during the fourth century. Neither the legion nor the site appear in the relevant chapter in the *Notitia* (*Oriens* 34).

[*See also* Fortifications, *article on* Fortifications of the Hellenistic, Roman, and Byzantine Periods; Roman Empire; *and* Transjordan, *article on* Transjordan in the Persian through Roman Periods.]

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S. THOMAS PARKER

LIONS. Not found in the fossil record of the Levant until the Late Pleistocene, lions *(Panthera leo)* arrived as tropical elements entering an already diverse fauna. If artistic and literary evidence are any guide, lions were known all over the ancient Near East. With more than 150 citations in the Hebrew Bible, they apparently were familiar in biblical times. Lions were finally hunted to extinction in Palestine in the nineteenth century CE. Elsewhere in the region they were not exterminated until after World War I. Several subspecies of lion ranged throughout the greater Near East until modern times, but it is impossible to determine which were closest to ancient Levantine populations.

Lion imagery was ubiquitous in the cultures of the ancient Near East. In religious and royal symbolism the lion appears as aggressor, victim, and protector of gods and kings. Given its prominence in literature and iconography, it is surprising that the bones of lions are such very rare finds at archaeological sites. The most spectacular discovery has been the skull and mandibles of a lioness found on the floor of a twelfth-century BCE Pre-Philistine temple in Jaffa, Israel. Half a scarab seal found in close proximity led the excavators to suggest that a lion cult was practiced in the temple. The right mandible has two sets of deep cut marks that are consistent with opening the oral cavity from the basal surface of the jaws while leaving the head attached to the skin. Two lion bones associated with Iron I pottery in a noncultic Iron II building were recovered from Tel Miqne/Ekron. A third lion bone was of Iron II date. At Tel Dan, one lion foot bone was recovered from the mid-ninth-century BCE deposit in the altar room complex in the sanctuary; the cut marks on this bone are consistent with skinning. A fragment of a mandible was found in a metalworking area of Iron I date at the same time. These bones are in collections studied by Paula Wapnish and Brian Hesse (see Wapnish and Hesse, 1991).

At the site of Ḥesban, in Jordan, an ankle bone of Roman date and a shoulder from a lion cub (date uncertain) were recovered. Farther afield, from the site of Habuba-Kabira in northern Syria, four lion bones were noted, two from the Uruk period (fourth millennium) and two from the Middle Bronze Age. From Lidar Höyük in southeastern Anatolia, a

lower jaw and lower leg bone were discovered in Late Bronze deposits, and one first phalanx noted from the Hellenistic period.

Documentation of the lion in ancient Egypt comes almost exclusively from artistic representations, from the Old Kingdom onward. However, the remains of seven partial lion skeletons are reported from the grave complex of Hor-Aha in Umm el-Qaab. These bones date from the first dynasty (early third millennium), and are mostly of young animals, suggesting to the investigators that they might have been kept in captivity.

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LITERACY. The subject of literacy in the ancient Near East touches on all major aspects of civilization, not the least being the recording of history, for the invention of writing some five thousand years ago signaled the emergence of humanity from the darkness of the prehistoric age. Writing radically changed all earlier forms of communication, the transmission of tradition, formal education, accounting, and man's perception of the world.

This epic event then, dated to about 3100 BCE, marks the beginning of the historical period. Writing was preceded by oral and iconographic means of communication—including the arduous process of accounting by using tokens and counters bearing agreed-upon designs that may have evolved into pictographic logograms (Schmandt-Besserat, 1984). Those other means of social intercourse coexisted and interacted with literate forms, as they continue to do.

The earliest form of writing is found in ancient Uruk, in southern Mesopotamia. Probably invented by Sumerian accountants as a mnemonic device, it was a system of pictographic signs depicting concrete objects—that is, logograms, or word signs. [*See* Sumerian.] (The $, or dollar sign, used to express the idea of "dollar" is a logogram.) Because it is inherently brief, a pure logographic system lacks the flexibility to reproduce visually the subtleties of language—the ultimate object of writing. Ancient scribes realized this limitation and very early on introduced the phoneticization of writing by depicting syllables, which are called syllabograms. For instance, they would take a logogram such as the original pictographic star-shaped *AN*—meaning "star," "heaven," and "god"—and read it as the syllable *an,* unrelated to the word sign. This is an early application of the rebus principle whereby an object is depicted whose name has the same sound as in the words represented (e.g. two gates and a head = "gateshead"). They could thus reproduce any word phonetically—whether it was a concrete object, a personal name, or a verb. Actually, the conservative Mesopotamian literati chose to write in a combination logosyllabic system, including class determinatives and phonetic complements, comprising a total of about six hundred signs. (Only two hundred or so signs would have been used by any one scribe at any one time, however.) [*See* Writing and Writing Systems; Scribes and Scribal Techniques.]

The external form of the signs evolved from the initial pictograph into a stylized linear representation. With the widespread use of soft clay as a writing surface in Mesopotamia, the signs were reproduced by a prism-shaped split reed that created the wedged-shaped signs now called cuneiform. [*See* Writing Materials; Cuneiform.] These signs evolved over a period of three thousand years, becoming the hallmark of Mesopotamian culture and influence.

The idea of writing in both its essence as a logosyllabic system and in its external form as a pictograph and then in cuneiform had a profound effect on all types of writing in the ancient Near East. It stimulated Egyptian hieroglyphic writing (literally "sacred carvings"), which dates to about 3000 BCE, and its adaptation into linear hieratic, as well as Proto-Elamite. [*See* Hieroglyphs; Egyptian.] The Sumerian system was used to write other languages, such as Akkadian (Babylonian and Assyrian) and Hittite. [*See* Akkadian; Hittite.] The prestige and influence of cuneiform script is apparent in its adoption in Ugarit and Canaan between about 1400–1200 BCE for their innovative alphabetic scripts and in its use in representing the syllabic script of Old Persian, devised in about 520 BCE in the time of Darius the Great. [*See* Ugaritic; Proto-Canaanite; Phoenician-Punic; Persian.]

Scribes. The evolution of writing in ancient Mesopotamia, and the parallel development of ancient Egyptian scripts and their influence in the contemporary Near East, reflects the growing stature and organization of the scribal class in antiquity. Scribes set the standard and defined literacy in its institutionalized form in the school and at court. By the second millennium BCE, they had created a canon of literature that exemplified the great civilizations of Mesopotamia and Egypt and established a code of ethics for the professional scribe. The sum total of their studies, station in

society, and literary productivity might aptly be called scribal culture (Oppenheim, 1964, chap. 5; Hallo, 1991).

The literature (and iconography) of both Mesopotamia and Egypt describe that form of limited literacy that characterized the specific professional class holding the monopoly on writing. While there were differences in language and scripts, the literati of these two great civilizations shared many traits, among them a position of authority and respect, an education, and a conservative and elitist ideology regarding their literate status and privileged position in society and in the eyes of their patron deities.

Already in the Ur III (c. 2110–2000 BCE) and Old Babylonian (nineteenth–eighteenth centuries BCE) periods, scribal schools attracted the sons of the aristocracy and high administration, thus maintaining the profession's privileged status. The children studied in the *edubba,* "the tablet house." The headmaster was the *adda edubba,* or "father of the tablet house," sometimes called the *ummia* > *ummānu,* or "master." In the hierarchy of the school could be found the disciplinarian *(ugula),* the teacher's helper or aid (*shesh-gal*—i.e., "the big brother"), and the teachers of the various subjects the *dumu edubba,* "the son of the tablet house," would learn.

The tens of thousands of documents written in cuneiform and in Egyptian hieroglyphics and in hieratic scripts are the output of the scribal class, a small percentage of their respective societies. John Baines (1983) has estimated that in ancient Egypt the scribal class numbered between 2 and 5 percent of the total population. In addition to the light shed by iconographic and archeological data, most of what is known about these ancient civilizations is derived from and shaped by the work of the scribe.

By the end of the third millennium, a considerable body of literature had come into being in Mesopotamia that was soon incorporated into the curriculum of the Sumerian schools. [*See* Sumerian.] These texts were studied and recopied, forming the basis of a canon. Mesopotamian scribal culture was to become bilingual. At the end of the second millennium BCE, when Sumerian ceased to be a spoken language and was replaced by Akkadian, it continued, much like Latin in the Middle Ages, to be taught, spoken, and even written in scribal schools.

In addition to belles lettres, the written scholarly output included lists of legal phraseology and formulae, linguistic material and encyclopedic data, and *omnia compendia* (collections of unusual natural phenomena). At a later period, mathematics and astronomy texts became more common. Letters and contracts were the scribes' main fare.

The privileged status of the scribes is one of the central themes in the school texts of Mesopotamia and Egypt. The theme was obviously a pedagogic device to support the student through the many required years of tedious study, drill, and discipline. It inculcated the idea of elitism and pride in a profession that claimed immortality in addition to the benefits of this world. One of the best-known texts is the Egyptian composition "In Praise of Learned Scribes":

> As for those learned scribes from the time of those who lived after the gods . . . their names have become everlasting, (even though) they are gone . . . they made heirs for themselves in the writings and in the (books of) wisdom which they composed. They gave themselves [the papyrus roll as a lector] priest, the writing board as a son-he-loves, (books of) wisdom (as) their pyramids, the reed pen their child and the back of a stone for a wife. From great to small were made into his children . . . their names are pronounced because of their books which they made, since they were good and the memory of him who made them (lasts) to the limits of eternity. Be a scribe, put it in your heart, that thy name may fare similarly. More effective is a book than a decorated tombstone or an established tomb wall. . . . It is better than a (well-) founded castle or a stela in a temple" (*ANET,* pp. 431–432).

A Babylonian scribe of the mid-second millennium BCE would probably have felt at home in any number of scribal centers throughout Mesopotamia, Syria, Canaan, and even Egypt. For example, the el-Amarna archive, which contains the diplomatic correspondence of the Egyptian court of the early fourteenth century BCE, as well as some literary and scholarly texts, was written in cuneiform, in the Middle Babylonian dialect, in Akkadian. Half of these letters were from the Canaanite vassal states whose local scribes struggled with the lingua franca. [*See* Amarna Tablets.] Judging from the cuneiform texts found at Canaanite sites, local scribes received a classical, albeit provincial, education.

In ancient Egypt the scribal school, called the *ꜥt n sbꜣ* > *ansebe,* composed many texts that made up the curriculum (including wisdom literature and onomastica) that opened with the key word *sbꜣyt,* "instructions." A scriptorium could be found adjoining the temple that bore the significant name *pr ꜥnḫ* "the house of life."

There is no real proof for widespread literacy in these great civilizations. At different times, there may have been more literati or greater interest in writing and its benefits. In the Old Babylonian period, for example, an increased number of documents is indicated, especially personal ones, such as letters. In addition, in the Old Assyrian period, an attempt was made to reduce the number of signs to a more manageable hundred or so.

It is noteworthy that in Mesopotamia's long history only three kings claimed literacy: Shulgi of Ur (2094–2047 BCE), who was praised as the ideal king; Lipit-Ishtar (1953–1924 BCE) of Isin, known also as a legislator; and Ashurbanipal (668–627 BCE), a king of Assyria. The first two were praised for their patronage of the scribal schools, and the last was renown for his extensive library, discovered at Nineveh. [*See* Nineveh.] Whatever their real expertise in reading and writing cuneiform, their claim is to have mastered the scribal art

and education. Writing never became a prerequisite for kingship or its idealization, as we find in Israel (*Dt.* 17:18–19). Ashurbanipal declared on a tablet:

> The profession of Adapa I learned, the hidden treasure of all the scribal art. I studied the signs of heaven and earth, I argued matters in the assembly of the wise. I discussed (the series) *Šumma Amut Matlat Šame* ("if the liver reflects the heavens") with the scholars. I solved difficult (problems) of division and multiplication that had no solution. I read the artistic script of Sumer and Akkadian writing which is difficult to understand. I collated the sealed, dark, and confused antediluvian inscriptions on stone (D. D. Luckenbill, *Ancient Records of Assyria and Babylonia*, Chicago, 1926–1927, vol. 2, pp. 378–379).

On the other hand, in Egypt the princes seem to have received scribal training. The early Prophesy of Neferti, dated to the Middle Kingdom (c. 1970–1750), narrates how pharaoh "extended his hand to the scribe's case and withdrew for himself a papyrus scroll and a scribal ink board. Then he wrote that which he was told by the lector-priest Neferti" (*ANET*, p. 444). The kings take a prominent place in wisdom literature. For instance, the tenth-dynasty king Merikare in his "Instructions" to his son said, "Do not kill a man when thou knowest his good qualities, one with whom thou once didst sing the writings . . ." (*ANET*, p. 415).

The uses of writing in the civilizations of the ancient Near East, according to A. Leo Oppenheim (1964, pp. 230ff.), fall into three categories: (1) Recording data for future use—administrative records, legal codification, sacred lore (myths, rituals, and local theology), royal annals (historic inscriptions and chronologies), and scholarly data and documentation; (2) communicating data on a synchronic level—letters, royal edicts, public announcements, and school texts and exercises; and (3) ceremonial purposes (documents not meant for human eyes)—Egyptian mortuary texts, cuneiform foundation inscriptions, monumental engravings on mountainsides (e.g., the Bisitun trilingual inscription), letters to the gods, magical writs and incantations on amulets and bowls, and execration texts for sympathetic magic. [*See* Bisitun.] From this catalog it is possible to conclude that the literary productivity of these great civilizations was turned inward—that is, it was meant for the use, education, and enjoyment of the scribal class exclusively. When indeed they felt they should have a wider audience, the scribes created a divine readership, as some of the above ceremonial inscriptions indicate.

Exacting methods of copying texts, the difficulty in acquiring and mastering the use and preparation of the different writing surfaces and implements, and the storing of texts in libraries and archives did not allow for widespread literacy in those ancient societies. Colophons are an important source for understanding scribal practice. Very often the writer added *kima labirshu shaṭirma bari*, "according to its original, it was written and checked." The Ashurbanipal library colophon was *shaṭir shaniq bari*, "written, collated, and checked." Sometimes, the amanuensis would emphasize his source by noting *ki pi ummani*, "dictated by the master," or *ki pi tuppi qabari shaṭir*, "copied from an old text."

On the basis of the literary output and the learned methods of transmission and preservation of these texts, it appears that literacy in these societies was limited to the professional scribes. While there are other examples of limited literacy, as in second-millennium BCE Mycenaean Greece, where Linear B was used for administrative purposes, ancient Mesopotamia and Egypt produced the scribal culture that shaped the entire ancient Near East.

Alphabet. The Canaanite invention of the alphabet in the first half of the second millennium BCE was the most important development in the history of writing since its inception and phonetization, as well as in the spread of literacy in antiquity (for strictures on the use of the term *alphabet* to describe the Canaanite invention, see Gelb, 1963). For more than five hundred years, it evolved from an almost completely pictographic script to a standardized linear signary, conventionally written from right to left. It became the official medium of writing in the emerging Northwest Semitic societies of the Early Iron Age. By the end of the seventh century BCE, the alphabet had become the dominant script of the ancient Near East and literate Mediterranean. The social and cultural consequences of its spread were manifold, ultimately leading to greater popular literacy and the democratization of higher culture.

In essence, the "alphabetic revolution" was the radical reduction of writing from a system of hundreds of logographic and syllabic signs to that of between twenty-two and thirty consonants, according to the phonetic inventory of the language being written. The conception of the alphabet was based on a sophisticated analysis of the phonemic system of Canaanite. Each phoneme received an appropriate sign that was originally a pictograph, for which it was named. In other words, as Alan H. Gardiner assumes, the letter names originally represented a word beginning with that particular phoneme, which he calls the acrophonic principle. For example, the bucranium, or ox head, is called *'alf*, "ox" in Canaanite, and represents the initial phoneme *'a*. Similarly, *bet*, "house," represents the sound *b*. Gardiner demonstrates this principle in his decipherment of the Proto-Sinaitic inscriptions found in and around the turquoise mines of Serabit el-Khadem in southern Sinai. He interprets four recurrent signs as *b'lt*, "lady," a plausible Canaanite epithet for the Egyptian goddess Hathor, "the lady (of turquoise)," worshipped at that site. The acrophonic principle suggests that not only the letter forms, but their names, are intrinsic aspects of the invention of the alphabet. In fact, an abecedary found at Ugarit from the fourteenth century BCE, interpreted by Frank M. Cross and Thomas O. Lambdin (1960) as listing Babylonian syllabic equivalents, supports the contention that the alphabetic letter names are at least that old.

From the epigraphic evidence, it must be assumed that the alphabet was conceived in Canaanite scribal circles in the first half of the second millennium BCE. The earliest alphabetic texts seem to have been found at Gezer, Lachish, and Shechem (seventeenth century BCE). [*See* Gezer; Lachish; Shechem.] Even the above-mentioned Proto-Sinaitic script (which some date to the fifteenth century BCE) was probably written by Canaanite merchants (not slaves) or their secretaries, who had set up camp at the mines. The Canaanite genius who invented the alphabet was probably familiar with several systems of writing—the Egyptian having the greatest influence on his choice of the consonantal values of the signs and some of the hieroglyphic forms he adopted.

The invention of the alphabet seems to be the result of deliberate reflective thought on how to improve upon an existing technique. As Alan R. Millard suggests, the discovery "required thorough analysis of the phonemic stock of his language, an analysis perhaps facilitated by the common practice of listing words as part of school training" (Millard, 1986, p. 394).

Very early on, a set order of the letters was established accompanied by a mnemonic song facilitating the learning process and easy dissemination of the alphabet. Actually, there were two basic orders of the alphabetic letters. The first is the *abecedarium* in all its variations. The earliest examples are the thirty-letter Ugaritic alphabet written in cuneiform; then the reduced twenty-two linear Canaanite alphabet that became the source through Greek and Latin for all the European alphabets and via Aramaic to the scripts of the East—not the least important being the alphabet of classical Arabic. The latter, while rearranged according to external form and supplemented with diacritically differentiated identical signs, is still taught as the *abjedhawa*, recalling the first six letters of the Old Canaanite abecedary.

The second system for ordering the letters is generally called the South Semitic alphabet of twenty-eight letters: h l ḥ m q w š r ġ/b t s k n kh ś f ʾ ʿ ḍ g d b/ġ ṭ z ḏ y ṯ ṣ/ẓ. This order is known from Geʿez and seems to have come originally to Ethiopia by way of South Arabia, where it was used as a means of writing local dialects. A. G. Lunden (1987) discovered this order in a Canaanite cuneiform tablet dated to the thirteenth century BCE from the excavations at Beth-Shemesh in the 1930s. [*See* Beth-Shemesh.] It now becomes apparent that there were at least two basic patterns of ordering the letters of the alphabet in ancient Canaan. For whatever reason, the *ABC* order was preferred over the *HLḤM* order that moved to the periphery of the Semitic world. These innovations in education and communication were introduced by and meant for a very conservative body of professionals, heirs to a tradition of writing fifteen hundred years old. [*See* Alphabet.]

Two Patterns of Literacy. Two basic patterns of literacy existed in the ancient Near East. The predominant form was the limited literacy of the highly trained professional scribes in the main cultural and political centers of Mesopotamia and Egypt and their satellites. Redefining a term introduced by Henri I. Marrou (1956), this form of literacy can be called scribal culture. The second form is the one found in the emerging literate societies—Iron Age Syria, Phoenicia, ancient Israel, and classical Greece—where simple reading and writing skills were learned by laymen employing the local alphabetic scripts. No doubt there was contact and influence between the bearers of both types of culture. It is the former pattern that has left most of the written evidence, indicating greater influence in areas of formal education and defining the categories of "wisdom." Belonging to the restricted "scribal culture" meant not only mastering the techniques of writing, but also learning the rudiments of such subjects as mathematics, astronomy, and engineering, as well as inbibing an esprit de corps of the literati. However, it was the second pattern that ultimately triumphed, inheriting its cultural legacy and becoming the medium that shaped classical antiquity.

Much of the discussion regarding popular literacy and its diffusion and measurement has centered around ancient Israel. This is because of the variety and quality of the literary and epigraphic sources. The Bible, in particular, reflecting a period of some thousand years of Israelite history, remains a basic source for the study of alphabetic literacy. Even so, because of the objective problem of defining *literacy* in antiquity, there is a wide difference of scholarly opinion on the matter. For instance, is literacy the ability to read and write—or just one of them? What level of expertise constitutes "literacy": writing or reading one's name, a simple sentence, or a complex document? Is there a means to determine a gradation in the ability to write that would distinguish between a professional scribal hand, a layman's script, a craftsman's markings, and graffiti in a vulgar style? How can widespread literacy as a social phenomenon be measured? The nature of the problem is that there are variables in the level and extent of literacy in every society. In other words, the problem is methodological because there are no direct, absolute, or objective criteria for defining and measuring broad-based literacy prior to the Industrial Revolution, let alone for antiquity.

Furthermore, regarding ancient Israel, subjective issues have been raised by different disciplines of research regarding the historicity of the Bible and its transmission and the value of epigraphic evidence and paleography to answer social and cultural historical questions. For instance, Swedish scholars identified with the Uppsala school of biblical research claim that the Bible, for the most part, was composed orally and only later, in reaction to the national tragedy of the Exile, was put into writing: thus, in the First Commonwealth period, except for a limited number of scribal administrators, the population would have been illiterate (Engnell, 1969). However, some paleographers claim hard

evidence for widespread literacy during the period of the monarchy (Millard, 1985). It has become increasingly clear that research on the topic must synthesize literary and epigraphic evidence. Issues of composition, transmission, and publication of ancient texts and the typology of formal and occasional inscriptions must be placed in a social context that fits the historical developments of that period of antiquity (Demsky, 1985, 1988).

An attempt in that direction is visible in studies of school and education systems in ancient Israel. There is literary and epigraphic evidence of some formal education for scribes, priests, royalty, women, artisans, and laity (Demsky, 1971). However, it is not clear whether there were actual educational institutions like the Mesopotamian *edubba* or more informal settings like the home or workshop. There is no biblical word for *school.* The term *bēt-hassēfer/hassōfēr,* "the house of the book or of the teacher (scribe)," is Late Hebrew. For that matter, terms like *bēt-midrash* and *yeshivah* are found first in *Ben Sira* 51:23, 29, while *bēt migra* and *bēt talmud* for elementary and higher education are rabbinic.

Following Mesopotamian models, scholars have described the ancient Israelite school by reconstructing the supposed curriculum taught there on the basis of literary and epigraphic evidence. André Lemaire (1981) has gone to one extreme in finding schools throughout the country, while Menahem Haran (1988) has gone to the other extreme of denying their existence. There is no doubt that certain subjects made up a program of formal education—that the simpler the subject the more widespread its adaption. For instance, learning the letters of the alphabet by repetition of the abecedary and accompanying exercises was basic for a general urbanite's education. It would have been of particular use for artisans, who introduced writing into their craft—for which there is evidence from potters, ivory joiners, and builders.

It is of interest that the biblical term *yôdēʿa sēfer* and its opposite, *'ašer lō' yôdēʿa sēfer,* within the prophetic context of *Isaiah* 29:11–12, are the only direct references to the ability to read in the Bible. The former has been translated "one who can read," or "a knower of a book," indicating a reasonable ability to read. This interpretation is seemingly confirmed by Lachish letter 3:8–10, in which a garrison commander is asked: *lō' yādaʿtâ qērō' sēfer,* "Don't you know how to read?" [*See* Lachish Inscriptions.] Actually, *yôdēʿa sēfer* means "to know writ" (Bib. Heb., *sēfer* = Late Heb. and Aram., *ktāb*), implying that with some knowledge of writing it is also possible to read. This Hebrew term for minimal literacy should be compared to the internationally well-known terms for professional scribes: *sōfēr* (Ugar./Phoe., *spr;* Aram., *sāfar*), *šoṭer* (Akk., *šaṭaru*), or *ṭupsar* (Assyr., *ṭupsarru;* Sum., *dup.šar*). Not only a basic knowledge of writing seems to have been common in Israelite urban centers from the eighth century BCE onward, but also some understanding of elementary arithmetic and the ability to inscribe numbers (*Is.* 10:19).

Spread of Literacy. The factors that influence such a complex aspect of life as written communication and the storage of data affect all levels of society to different degrees. This was true in antiquity as well. There factors probably act in concert: the technical innovation of an alphabetic script; changes in the power structure in society; and the degree of motivation in some societies to attempt to change their world.

An alphabet of no more than thirty signs that can be learned in a matter of days—as opposed to a writing system of hundreds of logosyllabic signs, each of which may have multiple values—would, seemingly, allow for wider literacy. However, there were periods of illiteracy or semiliteracy in societies in which the alphabet was used: in Medieval Europe and, as H. C. Youttie (1973) has shown, in Hellenistic-Roman Egypt. On the other hand, when there is high motivation or centralized government control, the masses can learn an even more complex system, as the modern Chinese have proven.

The second factor is social: if there are interest groups that find it necessary, for self-preservation, to prevent or forestall innovations in the field of literacy or communication, there will be limited literacy. For example, from the dual system of administration at the beginning of the Assyrian Empire (end of the eighth century BCE), the iconographic motif found on royal stelae and in wall paintings is of two scribes—the Assyrian *ša zigni,* representing the conservative establishment and writing in cuneiform, and the Aramaic eunuch, the *ša rēši,* standing behind him writing his innovative alphabetic script on a leather scroll. This dual system is further corroborated by contemporary Aramaic notations on cuneiform tablets. Of course, the opposite can also occur. The retreat of the great empires from Syria and Canaan in the thirteenth century BCE left a void in administrative methods and staff. The new peoples, like the Arameans and Israelites, had no comparable scribal tradition or organization. As a result, their leaders readily adopted and encouraged the rapid development of the local Canaanite alphabet. This brought about the standardization of the script, of the direction of writing, and of letter stance and order. It did not take long before they recognized the advantages of this medium to store and recall information (see *Jgs.* 8:14).

The third factor in the spread of literacy is motivation—a drive to control or influence people politically, economically, or religiously through the written word, even within the same ethnic, religious, or national community. The Assyrians realized that in order to succeed in asserting administrative control over their newly established empire (745–611 BCE) and in integrating its many conquered peoples it was wise to adopt the Aramaic language and its written medium, the utilitarian alphabet. Aramaic dialects were spoken widely throughout Syria, parts of Anatolia, and as far as south Chaldean Babylon. After the destruction of Aram Damascus in 732 BCE, the last and strongest independent Ar-

amean kingdom, the Aramaic language was free of national ties and local culture. It became the *Reichsprach,* a most unusual example of a conquered people's language becoming an instrument of the conqueror in empire building. Besides its obvious advantages—many speakers, grammatical simplicity, and no national and geographic ties—Imperial Aramaic had its own facile and utilitarian script that was quickly adopted along with an unemployed professional scribal class. It was under the Neo-Babylonians (609–539 BCE) and Persians (539–333 BCE) that Aramaic became the lingua franca of the ancient Near East and its script the medium of government and civilian life. [*See* Aramaic Language and Literature.]

An example of what may be the economic motivation in the spread of writing might be found in the history of the Phoenicians, those great entrepreneurs who traded off the products of one land for those of another (cf. *Ez.* 27). Egypt, a major client, supplied them with sundry raw materials and goods, among which was papyrus. [*See* Papyrus.] It was probably through Byblos (Phoen., Gebal; Egyp., Keben), which had the longest-standing business relationship with Egypt, that the potential of exporting papyrus throughout the Mediterranean lands was realized (recounted in the early eleventh-century BCE "Journey of Wenamun to Phoenicia," *ANET,* pp. 25–29). However, the market for papyrus as a writing surface had to be created. Perhaps it was this economic need that motivated the Phoenicians to introduce and teach their own Canaanite alphabet as well. It certainly was not for political or religious reasons that it was spread throughout the Mediterranean lands. Herodotus (5.58) in the fifth century BCE, defined the boundaries between the civilized world and the barbarians by who wrote on papyrus (the former) and who on animal skin (the latter). It is worth noting that the Greek word for *book, biblion,* and its cognates in the European languages are derived from the place name *Byblos.* [*See* Byblos.]

There is no need to prove the Greeks' indebtedness to the Phoenicians for their *alpha-beta,* attributed by some to Cadmus (i.e., *qedem,* "the easterner"), who took up residence in mainland Thebes. Opinions differ widely about when this borrowing of the Canaanite alphabet occurred. Joseph Naveh (1987) has proposed an early, eleventh-century BCE date on the basis of comparative paleography. Rhys Carpenter and L. H. Jeffery (1961) argue for an early seventh-century BCE date, with the earliest datable Greek epigraphy. Indeed, there may have been several channels of influence, spread over a long period. However, it seems that the best contact was within the historical framework of the early tenth century BCE and the beginning of Phoenician colonization of the western Mediterranean. [*See* Phoenicians.]

An established religion, especially one using an alphabetic script, can be a catalyst in the spread of literacy. This becomes more obvious with the advent of Israelite monotheism, where, to rephrase Jack R. Goody (1986), there is an intrinsic connection between its features and the literate modes in which its beliefs and behavior are formulated, communicated, and transmitted. Biblical monotheism is characterized by the cardinal belief in the deity who reveals his will through an inscription on stone and in a scroll using the literary form of a vassal covenant to express his special relationship to his chosen people, Israel. This covenant is to be read publically every seven years before all men, women, and children (*Dt.* 31:10–31) in what seems to be the first recorded case of religious education for the masses. It is no wonder that Ezra, in the mid-fifth century BCE, used this commandment as his model for the public Torah reading that would become the centerpiece of synagogue worship (*Neh.* 8:1ff.). The Torah even became the symbol of the divine and the direct object of veneration (cf. *Ps.* 119, esp. verse 48). [*See* Hebrew Language and Literature.]

By the mid-eighth century BCE, apostolic prophets were commanded to write down their message for the sake of communicating it to the masses (e.g., *Is.* 8:1; *Jer.* 29:1, 36:2; *Ez.* 37:16) or as a means to safeguard it for future generations (e.g., *Is.* 30:8; *Jer.* 30:2–3, 32:10ff.). These are the "writing prophets"—beginning with Amos, Hosea, Isaiah, and Micah—and they continue down to the mid-fifth century BCE, with the last of the classical prophets—Haggai, Zechariah, and Malachi. These prophets use various literate means to enhance and publicize their message, a sure sign that their urban audience appreciated and understood this method of instruction. For example, in order to hold his listeners' attention, Jeremiah (25:26, 51:1, 41) introduces the *atbash* exercise familiar to all beginners (in which, after having learned the order of the letters, the student matches letters from opposite ends of the alphabet, e.g., the first [*'aleph*] with the last [*taw*], the second [*beth*] with the next to last [*shin*], etc.). Nahum resorts to an alphabetic acrostic (1:2ff.) familiar from late biblical poetry, and Zechariah (6:10, 14) plays on an alphabetic mnemonic for storing information. Thus, in ancient Israel it seems that writing was an integral part of the religious experience.

This is not to say that writing was absent from pagan religions. The ancient scribes regarded writing like the other arts, as the invention of the gods. The Sumerian Nisaba, the Babylonian Nabu, and the Egyptian Thoth were the patron deities of the scribal profession and assigned similar roles in the divine assembly. Books of wisdom and esoteric divination were attributed to various deities. The idea of the heavenly Tablet of Destiny, the *tup šimati,* where all creation's fate was recorded, is a recurrent motif in Mesopotamian mythology. In the second-millennium BCE *Enuma elish,* the Babylonian story of creation, Tiamat empowers her second consort, Kingu, by presenting him with the Tablet of Destiny. For the Mesopotamian literati, this motif reflects belief in the primordial existence and the efficacy of the written word. In fact, the *Sitz im Leben* of the creation epic is in its being read by the high priest in the inner sanctum before the statue of Marduk on the fourth day of the Akitu new year festival. This literate aspect of cult no doubt superceded

an oral dramatic presentation of the myth and reflects the growing influence of the scribal community even in matters of religion.

A closer comparison of the differences between how Mesopotamian paganism used cuneiform writing and how Israelite monotheism applied the alphabet demonstrates the nature of religion as a catalyst for the spread of literacy. In Babylon, the creation story is about the deeds of Marduk. Its private reading is intended to remind the deity of his duties toward the world in subduing the forces of chaos. Although there is no evidence for how widely the text was known, it certainly was not meant for mass consumption. Cuneiform writing in general is a closed and secret art turned inward upon the scribal class. Similarly, the Tablet of Destiny remains a figment of mythic imagination.

In Israel, conversely, the Torah, or a portion thereof, was to be read publicly before the entire populace every seven years. The text is meant for the edification of all the people and not for initiates alone. It is turned outward. Biblical monotheism is a national religion. The Sinai theophany is described as a public experience and the text is meant to preserve its memory in the literary form of a covenant (*Dt.* 29:13–14). Not only the public reading of the text, but also its private and communal study (*Ps.* 1:2, 19:8ff., 119; *Neh.* 8:13ff.) became religious values for the laity, stimulating the further desemination of the written word and the spread of literacy. Private schools (*Eccl.* 12:9f.; *Ben Sira* 51:23ff.; *Avot* 1:4) and, later, public schools established by Shim'on ben Shetah (c. 100 BCE) and by the high priest Joshua ben Gamla (B.T., *B.B.* 21a) are not secular; they are, rather, institutions for religious instruction (cf. B.T. *Shab.* 104a).

Furthermore, for comparison's sake, the description of the Tablets of the Covenant, written by the finger of God, avoids the introduction of divine mythic writing implements (*Ex.* 32:15f.; 34:1). Moses even shapes the stone writing surface of the second set of tablets. While preserved beyond the view of the populace, they did have a direct obvious influence on the architecture of the desert sanctuary and the Jerusalem Temples, and that influence is felt to this day in the layout of the traditional synagogue and the place of the holy ark. [*See* Synagogues.]

The idea of a revealed written document is so closely associated with the essence of historical monotheism and its mission that Christianity and Islam were able to compete with the authority of the Mosaic Torah only by replacing it with the belief in another superior divinely revealed work. The "holy" is found in Scripture and in the technique of writing and not in nature, as paganism would have it. Literate terms are central to the self-identification of the monotheistic faiths. Early Christianity (as well as the Dead Sea covenanters) borrowed Jeremiah's prophesy of the "new covenant/testament" to be written upon the heart (*Jer.* 31:30ff.) and concretized it into a corpus of naratives, missives, and apocalyptic revelations recorded in the Greek koine. Breaking with tradition, not only in regard to the languages of revelation (Hebrew and Aramaic), but also in abandoning the cumbersome scroll for the compact and portable codex, Christianity's message could now reach out to a wider audience of Greek-speaking Jews and gentiles, heirs to the Hellenistic education that set the standard for literacy in antiquity (Marrou, 1956; Innes, 1950).

Islam's *al-Qur'an,* "the reading/recitation," revealed by the archangel Gabriel (cf. *Dn.* 9:21ff.), was in a language that had almost no written tradition prior to that time. Subsequently, the Arabic of the holy writ would become the model for literate expression. Marking this turning point, the Qur'an proclaims Muhammad "the seal of the prophets" (38.40)—the capstone of all earlier written revelation. Especially noteworthy is the coining of the generic term for members of the monotheistic religions, in particular Judaism, as *'Ahl al-Kitab,* "the people of the book." [*See* Arabic.]

This survey of the history of literacy in the ancient Near East from the end of the fourth millennium BCE until the advent of Islam in the first half of the seventh century CE has touched on great cultural achievements not only in the realm of communication, education, and the storage of information, but also in the areas of politics, government administration, and economics—not to mention established religion. The study of literacy during the first half of this period is primarily the attempt to understand the art of writing as learned and practiced by a limited professional scribal class and how it spread throughout the ancient Near East. For the latter half of this period—beginning in the first millennium BCE—momentous social and religious developments are documented that indicate the gradual democratization of higher literary culture and the formation of literate societies in which laymen and artisans could read and write. It is a period when Mosaic monotheism is integrally associated with a holy book leaving its indelible impression on the formative stages of Christianity and Islam. One of the consequences of these literary developments was the creation of an institutionalized religious service around the public reading and exposition of that holy text. Commentary and translation of the revealed book further encouraged the dissemination of literature culture to the masses in antiquity.

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AARON DEMSKY

LITHICS. [*This entry surveys the history of stone artifacts with reference to the technologies used to create them, the uses to which they were put, and their overall role in the cultures and societies in which they figured. It comprises three articles:*

Typology and Technology
Artifacts of the Chalcolithic Period
Artifacts of the Bronze and Iron Ages

The first serves as an overview, providing a discussion of the importance of typology for identification purposes and the development of specific typologies. The other articles treat the artifacts of specific periods and regions.]

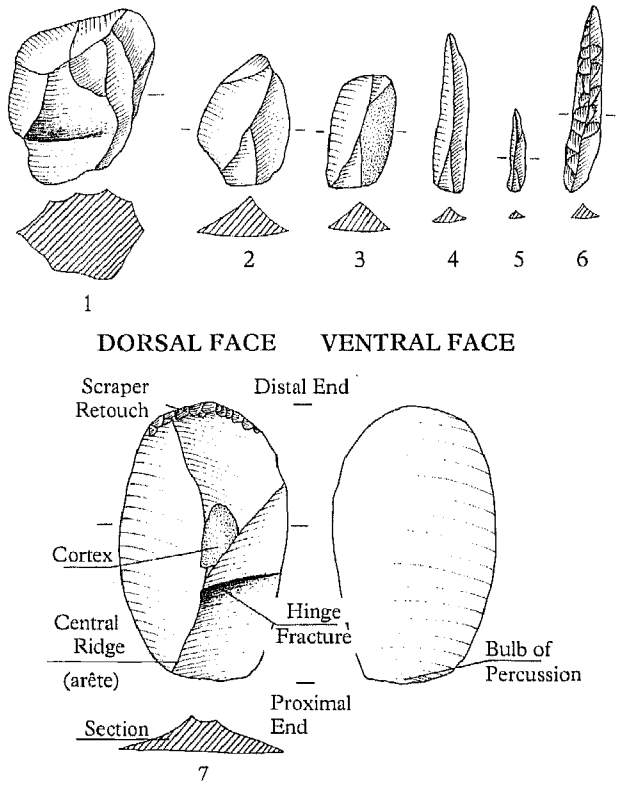
Typology and Technology

Stone tool manufacture is essentially a reduction process wherein a block of raw material is chipped and/or ground, either to a desired shape or to produce flakes that are further modified to a desired shape. The simplest techniques involve the splitting open of cobbles and the removal of a few flakes to produce a sharp cutting or chopping edge, with little attention paid to general morphology. More sophisticated core-reduction techniques involve preparing the core (the original block of raw material) such that the shape of the flakes is predetermined—for example, to points, blades, bladelets, and special flakes.

The removal of flakes (knapping, flaking) can be accomplished using several techniques: direct percussion—that is, a direct blow on the core using a hard (stone) or soft (antler, bone) hammer; indirect percussion—a blow applied to a punch placed in the desired point on the core; block-on-block and anvil techniques; and pressure techniques, such as a chest punch. Further modification (retouch), usually of flakes, can also be accomplished using several methods, most notably direct percussion and pressure retouch.

The preferred, although not exclusive, materials for stone chipping or knapping (the predominant mode of lithic manufacture in prehistoric times) were either amorphous (e.g., obsidian) or cryptocrystalline (e.g., flints, cherts, chalcedonies) in structure. These materials fracture conchoidally, and thus the shape and direction of the chippage can be controlled by the knapper. In contrast, crystalline (e.g., quartz) materials break along cleavage lines. Other advantages of these materials include hardness and sharpness. Beginning in the Late Epipaleolithic, and continuing through historic times, softer, more friable materials (e.g., limestone, dolomite, basalt, phosphorite, schist) were often exploited for various types of grinding stones and stone vessels, although harder materials (e.g., flint, granite) could also be used.

The products of lithic manufacture can be divided into two general classes, waste and tools. Tools are defined by the presence of retouch, or secondary modification, and not by assumed function. Unretouched pieces may indeed have



LITHICS: Typology and Technology. Figure 1. *Idealized lithic tool types and attributes.* (1) core; (2) flake; (3) primary flake, with cortex; (4) blade; (5) bladelet; (6) ridge-blade, core trimming element; (7) scraper and selected flake elements and attributes. (Courtesy S. A. Rosen)

been used. Waste products can be further divided into cores, amorphous debris, and debitage (flake products). Cores and some types of debitage, like tools, are often characteristic of specific cultural units. In general, waste provides information on modes of manufacture. Specific typologies for both waste and tools have been developed for different periods.

Scales of Analysis. On the most detailed level, analyses focus on microscopic edge wear and damage on stone tools in order to ascertain elements of function, such as direction of movement, intensity of utilization, or type of material worked. Experimental studies have suggested potential success rates as high as 80 percent for identifying some elements of function (Keeley, 1980). However, there has been debate over the efficacy of the method, given the nonpristine state of most lithic assemblages and the possibility of multiple uses.

Analyses of macroscopic attributes incorporate metric attributes such as length, width, thickness, and various angular measurements; nominal features such as type of striking platform, planar shape, or location of retouch; and presence/absence attributes, such as sickle gloss, edge retouch, and cortex. Attributes can be chosen to reflect specific factors so that, for example, edge angle is often assumed to reflect function (i.e., scraping versus cutting), whereas wings on arrowheads are usually assumed to be stylistic.

On the level of the artifact, virtually all scholars utilize various agreed-upon types, both waste and retouched tools, in order to expedite analysis. Types are assumed to represent intuitively obvious sets of covarying attributes. Debate exists over the legitimacy of specific tool types and whether they indeed represent types as recognized by early *Homo.* However, a more appropriate measure of their legitimacy is their analytic efficiency—whether they serve a reasonable archaeological goal. Types are usually organized in a hierarchical framework, with several levels of subtypes, and statistical attribute analyses may be conducted to subdivide the types further or to confirm their independent existence.

The assemblage (e.g., Clarke, 1978) is a higher unit of analysis consisting of the collection of artifacts from a physically definable location, usually from a specific stratum or substratum from an archaeological site, although conceivably from a specific locus within a site. In theory, assemblages should represent the final discard stage of the original lithic tool kit employed on the site (assuming little postdepositional disturbance). However, given the difficulties in defining the processes of discard, and the often disturbed nature of many assemblages, interpretation is not straightforward. The key point is that assemblages do not represent frozen or fossilized actions. In a large sense, they are the products of a multitude of actions, both cultural and noncultural, and reflect a range of factors. The classic debate over the interpretation of Mousterian (Middle Paleolithic) variability centered precisely over the issue of which factors dominated the formation of assemblages and the morphology of tool types.

Higher-level analyses involve the definition of "cultures," "industries," and "complexes," but precise definition of these terms has not been achieved. This is probably the result of both the inherent variability in sets of assemblages and the resulting problems in defining borders, as well as the difficulties of restricting normal English terms like *culture* and *industry* to very specific phenomena. Cultures are assumed to represent the equivalent of ethnographically definable tribes or groups and are reconstructed on the basis of what are assumed to be stylistically sensitive attributes, or types. Attempts to define cultures are often disputed by adducing functional or other explanations for the allegedly stylistic traits. Cultures are most easily definable in the later periods of prehistory, when tool standardization is such that regional and chronological variability are easily defined.

In essence, the first well-defined lithic cultures in the Near East occur in the Epipaleolithic—for example, the Natufian, Ḥarifian, and Negev Kebaran. Thus, several "complexes" have also been defined for the Epipaleolithic—the Kebaran complex, the Geometric Kebaran complex, and the Mushabian complex. Each is divided into several, often unnamed,

clusters of assemblages that essentially correspond to cultures. In the case of the Epipaleolithic, the intermediate-level culture is definable; however, for earlier periods there is usually a jump from the assemblage to the complex or industry. This is primarily a consequence of the great variability inherent among assemblages, difficulties in chronology, and often, a relative scarcity of sites. Of course, it may also be that pre-*Homo sapiens sapiens* simply did not exhibit cultural behavior as it is presently recognized.

Causes of Variation. Variability in stone tool morphology, technology, and type frequencies in the archaeological record can be caused by any of a range of factors, either individually or in combination. These are reviewed briefly below.

Raw materials. Both the properties and availability of raw materials affect patterns of exploitation. For example, flint can be of coarse or fine grain, may show many or few impurities, and may come in different-sized nodules that are distributed unevenly over the landscape. Different flint chipping technologies (e.g., flakes, blades, bladelets) may require different qualities of raw material. The same is true of other raw materials, such as basalt and quartzite. Thus, in general, different periods, with different lithic technologies, show exploitation of different types of stone.

Access to and availability of raw materials play a role here. Quantitative variability in assemblage or industrial attributes may be a function of relative expense of acquisition of appropriate raw materials (e.g., Dibble, 1987). Patterns of trade and exchange may often be reconstructed through quantitative analysis of distributions of raw material and completed artifacts.

Function. The different functions of stone tools affect the nature of variation. Function may be reflected on a range of scales, from microscopic edge damage to the general configuration of tool kits. Different types of function can also be defined, so that beyond utilitarian use, stone tools may have subsidiary social and ideological functions. Obvious examples are ritual objects. Other social functions, particularly involving strengthening of group identity, may also obtain.

Style. Stylistic attributes are those that reflect nonutilitarian elements in the design of a stone tool. These may be decorative, or they may be reflected in the choice of different but equivalent technologies for the same utilitarian function. Style is often assumed to reflect ethnic tradition, and stylistic attributes are thus used to reconstruct various units of culture. There is clear overlap between style and socioideological functions.

Biological abilities. Technological evolution is also affected by developments in coordination and intellectual capabilities. Development of the precision grip in later hominids allowed for finer coordination and execution of the knapping process. The evolution of abstract thought is represented in the increasing symmetry of tools, the development of what appear to be paradigmatic types (e.g., handaxes), and in the generally increasing complexity of lithic technologies.

Archaeological biases and postdepositional processes. Biased collection techniques and the deliberate selection of special or supposedly diagnostic types can render assemblages noncomparable, as well as result in the loss of much information. Natural processes such as deflation and erosion can affect lithic analysis on several levels, from the presence of abrasion on individual artifacts to the disappearance of smaller artifacts as a result of natural sorting processes.

Chronological Overview. The following sections review briefly the general development of lithic technology from the first evidence for stone tool manufacture in the Near East up to the apparent final displacement of chipped stone implements in the Iron Age. Notably, ground stone implements and vessels continue in common use more or less up through recent times.

Lower Paleolithic. In the Levant, the Lower Paleolithic industries are core-tool and flake based; the core tools, especially bifaces, comprise the diagnostic elements. The presence of bifaces in virtually all Middle Pleistocene assemblages places the entire Levantine Lower Paleolithic in the Acheulean complex. At 'Ubeidiya (c. 1.4 million years ago) high proportions of chopping tools, spheroids, polyhedrons, and trihedrals among the bifaces distinguish the assemblage from the later Acheulean (Bar-Yosef, 1975).

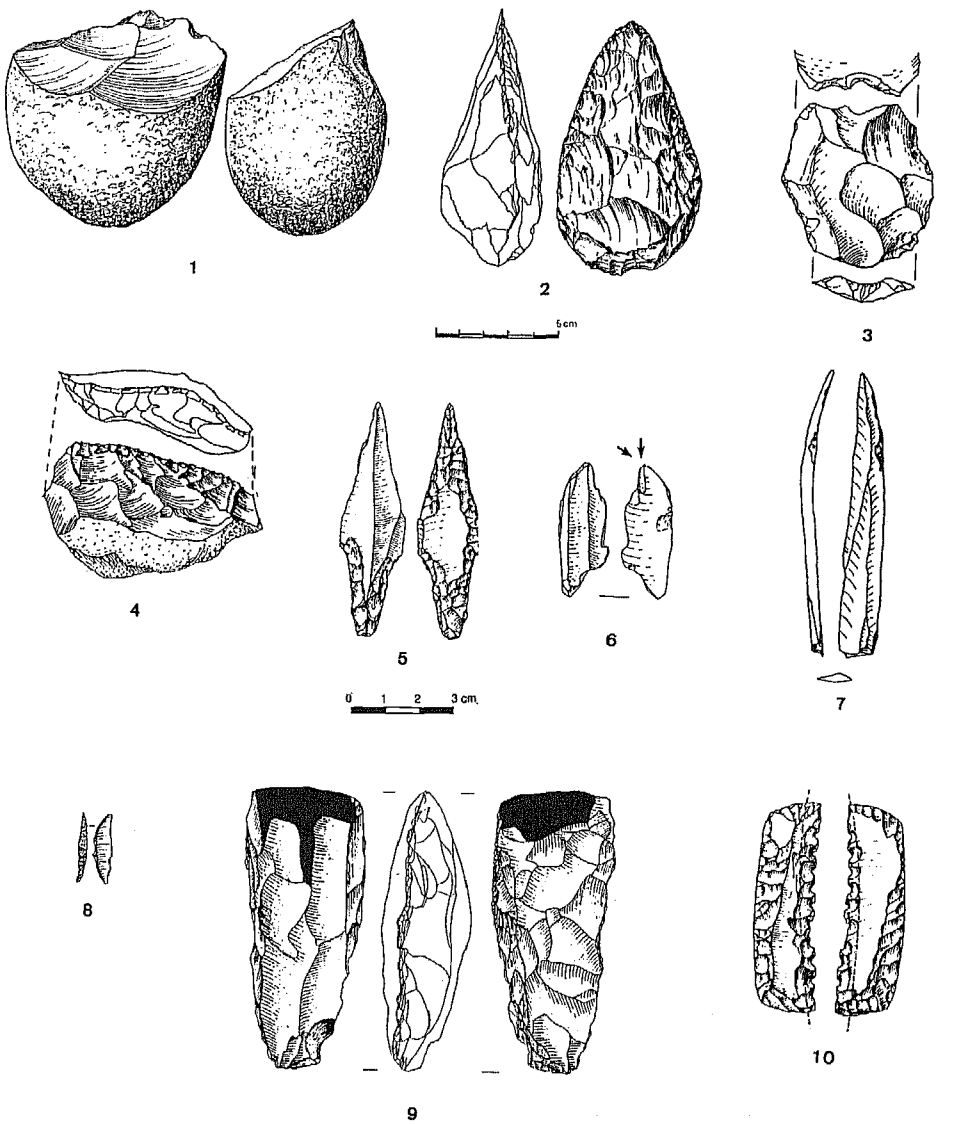
Middle and Late Acheulean assemblages, such as from Berzine, Birkat Ram, 'Emeq Rephaim, 'Evron, Kissufim, Latamne, Ma'ayan Baruch, Tabun, and Umm Qaṭafa show much higher proportions of handaxes. The site of Gesher Benot Ya'aqob shows a significant addition of relatively numerous basalt cleavers to the lithic repertoire. Many of these sites are surface collections and/or were investigated early in the history of research and may reflect collection bias. In general, within the Acheulean there is a trend toward shorter and more finely manufactured bifaces (Gilead, 1970). In the Late Acheulean, the Levallois technique for specialized flake manufacture makes its first appearance.

Interpretation of trends and variability are problematic, especially given the difficulties of chronology in these early periods, and of collections from early excavations. However, given the immense time span of the Acheulean complex, and the fact of physical evolution during this period, it is likely that changes in physical and intellectual abilities played a major role, at least in the long-term trends. The cleavers at Gesher Benot Ya'aqob have been interpreted by some, for example, Ofer Bar-Yosef, to reflect a direct connection to Africa.

Middle Paleolithic. The rise of diagnostic flake tools, especially those manufactured using Levallois technologies, and the concomitant decline and eventual disappearance of bifaces are the primary defining characteristics of the Mid-

dle Paleolithic (Copeland, 1975; Bordes, 1961). Two pre-Mousterian industries can be defined: the Yabrudian (including the Acheulo-Yabrudian) and the Pre-Aurignacian ('Amudian), found at Tabun, Yabrud, Zumoffen, Bezez, Zuttiyeh (Yabrudian only), and Masloukh (Yabrudian only). Many scholars place these industries in the terminal Acheulean or refer to them together as the Mugharan complex (Jelinek, 1982). The Yabrudian is a flake industry characterized especially by the presence of Quina-type scrapers (thick, canted, stepped retouch). Pre-Aurignacian assemblages, sometimes sandwiched between Yabrudian layers, are characterized by high proportions of blade tools and other "Upper Paleolithic" types (burins, endscrapers)—hence the name Pre-Aurignacian. Neither shows high Levallois indices.

The heavy use of the Levallois technique for the manufacture of flakes, blades, and points is the hallmark of the Mousterian in the Levant. A basic unilineal typological framework was established by Dorothy Garrod's (Tabun, Skhul, el-Wad) and René Neuville's ('Erq el-Aḥmar, Abu Sif, Qafzeh) excavations. More recent excavations and studies at numerous sites (e.g., Ksar 'Akil, Kebara, Qafzeh, Tabun, Rosh 'Ein-Mor, Quneitra, Fara, Tirat ha-Carmel) have focused more on functional and technological questions. Assemblages have been viewed as tool kits, and groups of similar assemblages as functionally similar (Binford, 1986).



LITHICS: Typology and Technology. Figure 2. *Examples of lithic tools.* (1) chopping tool; (2) handaxe; (3) Levallois flake; (4) Quina (Yabrudian) scraper; (5) arrowhead; (6) burin; (7) El Wad point; (8) lunate; (9) adze; (10) sickle blade. (For sources, see bibliography)

Tool morphology has been interpreted in light of reduction sequences and different patterns in the exploitation of raw materials (Dibble, 1987). A general trend toward increasingly gracile flakes (greater width–thickness ratio) has also been demonstrated and interpreted to reflect gradual evolution in physical coordination (Jelinek, 1982).

Upper Paleolithic. The dominance of blade technologies in Upper Paleolithic industries replacing the Levallois technique, endscrapers (instead of sidescrapers), burins, and blade tools distinguishes them from those in the Middle Paleolithic. Local transition from the Middle to the Upper Paleolithic has been demonstrated typologically at Ksar 'Akil in the production of Upper Paleolithic scrapers and other types using Levallois blanks (Azoury, 1986). The technological transition has been demonstrated at Boqer Taḥtit and Boqer using conjoinable-piece analysis. It shows the development of Upper Paleolithic prismatic blade cores from Levallois blade cores (Marks, 1983).

Two apparently partially contemporary complexes are defined: the Levantine Aurignacian (e.g., Antelias, el-Wad, Ksar 'Akil, Arkov, Hayonim, 'Erq el-Aḥmar) and the Aḥmarian (e.g., Boqer A, Gebel Lagama sites, Qadesh-Barnea sites, 'Erq el-Aḥmar, Qafzeh, Ksar 'Akil). They differ in the dominance of fine-blade technology and tools in the Aḥmarian (from 'Erq el-Aḥmar), as opposed to flake and blade technologies, and the dominance of burins (for working wood and bone) and endscrapers in the Aurignacian (Gilead, 1991). The significance of the contrasts is disputed; suggestions include differing cultural traditions, ecological adaptations related either to geographical location (the Aḥmarian more evident in the desert, the Aurignacian in the Mediterranean zone) or climatic fluctuations, and chrono-technological developments.

Epipaleolithic. The dominance of bladelet technology and the development of the specialized microburin technique for bladelet truncation in the later Epipaleolithic are the defining technological characteristics of the period. Typologically, complexes and cultures have been defined on a range of standardized microlithic tool types (Goring-Morris, 1987; Henry, 1989). Variation within these tool types, as in length and the presence of Helwan backing retouch on Natufian microlithic lunates (e.g., Hayonim, el-Wad, 'Einan), provide the means for finer subdivision. As in the Upper Paleolithic, the functions of stone tools seem to reflect hunting (points, barbs) and processing (scrapers, burins). The addition of sickles to the repertoire, as evidenced by the lustrous edges of some blades and bladelets, is an important precursor to later Neolithic agriculture. The terminal Epipaleolithic Ḥarifian culture also witnesses the introduction of small arrowheads.

Of special technological significance in the Epipaleolithic is the development of a range of stone pestles, cup marks, mortars, and bowls, the results of a combination of chipping of rough-outs and the grinding of final products. Beyond their utilitarian significance for processing grains, the decorative elements on the pestles and bowls probably held symbolic meaning. Breached stone mortars and bowls have been found with some burials (e.g., Neveh David, Naḥal Oren).

Neolithic. With respect to lithic analysis, this period is notable for the introduction of ground-stone celts, true grinding stones, and heat treatment in the manufacture of long blades. Much of this complex is directly related to the evolution of agriculture. Blades were utilized for arrowheads and sickles. Chronological and geographic distinctions are based on the wide variety of types and attributes in both classes (Gopher, 1994). The end of the Neolithic shows a decline in the use of arrowheads, except in the desert regions, probably related to the decline of hunting in the latest Neolithic economies.

Neolithic industries also include a range of flake tools (scrapers, notches, denticulates), burins, and other blade tools. Technologically, flakes dominate the waste assemblages from most sites, although the diagnostic elements (for the Pre-Pottery Neolithic B and the early Pottery Neolithic) are long, prismatic blades manufactured from bipolar naviform cores.

Stone vessels and art (masks, figurines) have also been discovered (e.g., Sha'ar ha-Golan, Naḥal Ḥemar), presumably of symbolic significance. Of additional interest is the long-distance exchange of obsidian, from sources in Anatolia to as far south as Sinai and the central Negev.

Post-Neolithic. The two major trends in lithic industries following the Neolithic are the increasing specialization in manufacture of all kinds, and a general decline in the importance of chipped-stone artifacts (Rosen, 1989). Specialization is especially evident in sickle and ground-stone vessel manufacture. The decline in chipped-stone tools is reflected both in a decrease in types (and presumably in functions) and an absolute numerical decrease. By the Iron Age, only sickles are present in the chipped-stone tool repertoire (although threshing-sledge teeth may also be present, they are difficult to identify). Iron sickles replace flint toward the end of the Iron Age.

Ground-stone vessels and grinding stones are of increasing importance during the historical periods, as agricultural technologies and economies improve. The introduction of bronze and iron tools provides more efficient means of stoneworking on a larger scale, resulting in a range of objects such as sarcophagi, olive presses, mills, and millstones. [*See* Sarcophagus; Olives.] Many stone vessels incorporate both utilitarian and symbolic functions, as in Chalcolithic basalt fenestrated and decorated bowls and mortars, or in limestone cups from the Second Temple period in Israel.

Summary. Lithic artifacts are the primary remains of material culture available from prehistoric periods. They are thus the primary means for reconstructing basic cultural history, as well as other elements of the cultural process. In the

proto- and early historical periods, they provide a valuable addition to other realms of material culture, especially in making it possible to define specialized modes of manufacture and exchange based on analysis of waste. Study of these artifacts also provides insight into their various functions, usually utilitarian; often, however—but especially in the case of ground-stone vessels—they hold important symbolic meaning.

[*See also the biographies of Garrod and Neuville. In addition, many of the sites mentioned are the subject of independent entries.*]

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STEVEN A. ROSEN

Artifacts of the Chalcolithic Period

The lithic assemblages from the Chalcolithic period, like those from the preceding Neolithic and the later Early Bronze Age, can be divided into two broad technological spheres: ground stone and chipped stone. These are not exclusive categories; some chipped-flint tools (such as celts)

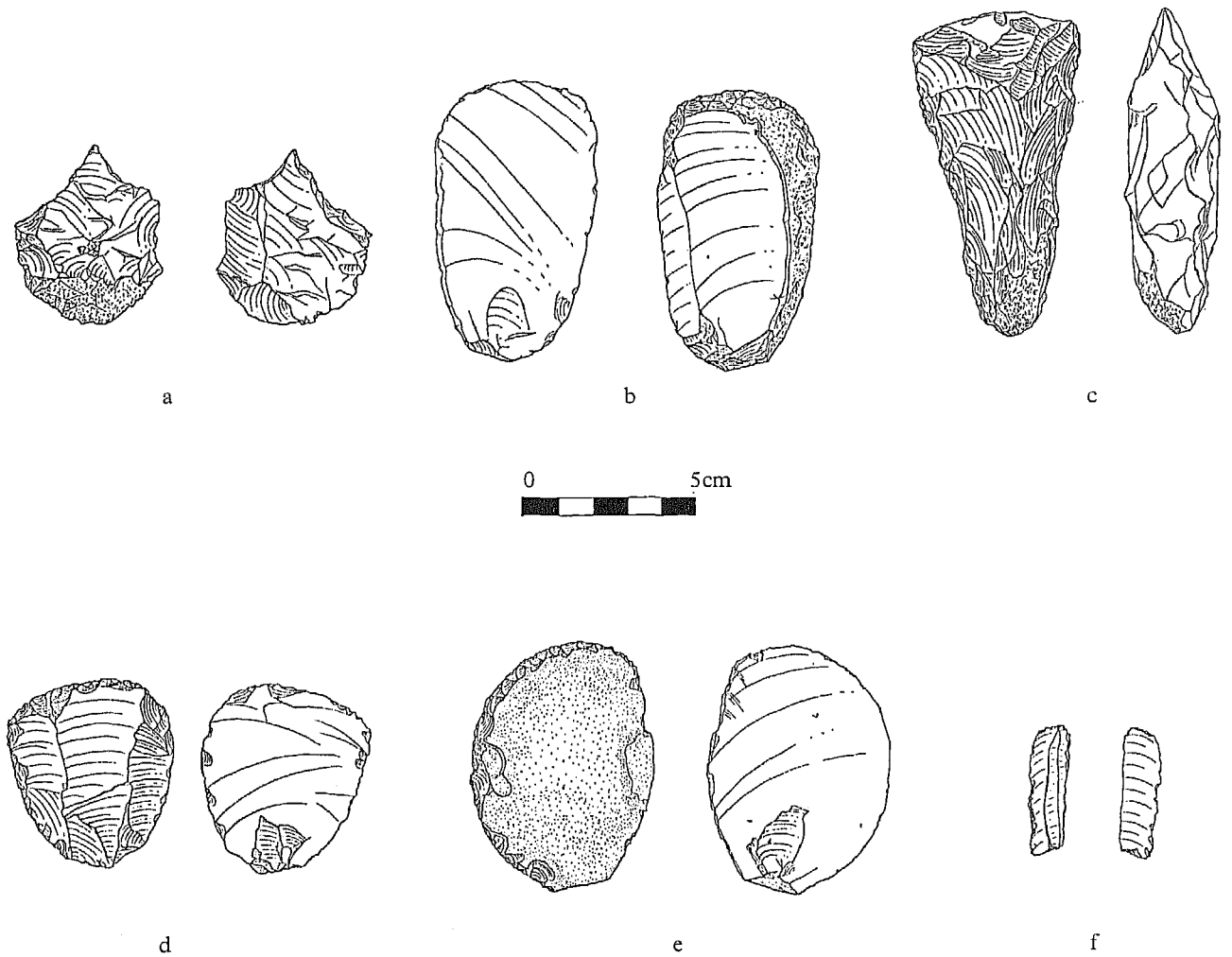
may be finished by grinding, and many ground-stone tools were initially chipped (such as basalt vessels).

Chipped-Stone Industries. Chalcolithic domestic sites usually exhibit at least five different chipped-stone technologies: flake tools, blade tools, tabular scrapers, celt tools, and microlithic tools. In addition to these common chipped-stone technologies, rare tool types may occur at some sites, such as prismatic blades and perforated star-shaped disks, the latter known primarily from sites in the Golan region of modern Israel. [*See* Golan.] All of these types are typically manufactured from cryptocrystalline silicates (chert or flint) of varying quality and color, though chipped-limestone tools have been recovered from sites such as Grar and Gilat. [*See* Gilat.]

Predominant at most sites are the ad hoc tools that represent the domestic production of flint for a wide range of everyday needs. Within the ad hoc tool category a variety of subtypes is commonly recognized, such as notches, denticulates, borers, scrapers, sidescrapers, and choppers, as well as retouched and/or utilized flakes and débitage. The majority of these exhibit a range from standardized to nonstandardized and were produced locally with the common flake technology, requiring no specialized skills or flint.

Blade tools during the Chalcolithic are primarily limited to the manufacture of sickle blades, although some blades were made into awls or other less standardized tools. Sickle blades, identified by the lustrous "sickle sheen" (a result of plant silica deposition) along the working edge, are typically rectangular to trapezoidal in outline, with one side backed (invasive longitudinal retouch). There is evidence for prismatic blade manufacture in the Chalcolithic, but it constitutes a significant part of the flint-tool assemblage only in the Early Bronze Age.

Celt tools, a broad category encompassing axes, adzes,



LITHICS: Chalcolithic Period. *Typical chalcolithic flint artifacts.* (a) borer or perforator; (b, d) endscrapers; (c) axe; (e) "tabular" scraper; (f) micro-endscraper. All tools are from the northern Negev site of Shiqmim. (Courtesy Y. M. Rowan)

and chisels, are generally made from bifacially flaked cores, although flakes are occasionally used. Axes and adzes, differentiated primarily by the adze's asymmetric bit (working edge), as opposed to the axe's symmetric bit, are common at most Chalcolithic sites. Less frequently seen are chisels, often called the Ghassulian chisel after the type-site of Teleilat el-Ghassul, which are generally narrower at the bit and body than axes and adzes. [*See* Teleilat el-Ghassul.]

Tabular scrapers, also known as Ghassulian fan scrapers, only rarely exhibit the classic fan shape. Although they are called scrapers, microwear analyses have suggested that some were used as knives. Manufactured from large cortical flakes of fine-grained flint, these pieces are usually retouched along all edges, often with the intentional removal or thinning of the bulb of percussion. The result is a large, thin flake that sometimes exhibits grinding on the cortical surface (incisions begin only in the Early Bronze Age). Debris from the production of tabular fan scrapers is found only at a few sites, indicating possible specialized production, selectivity in flint procurement, and some form of exchange.

Microlithic tools such as microendscrapers, transverse arrowheads, and microborers are found only at some sites, particularly those on the southern coastal plain, such as Gilat, Grar, and the Wadi Gaza sites; they are less frequent at the Beersheba sites in the northern Negev desert. [*See* Beersheba; Negev.] Microendscrapers (small bladelet tools with slight retouch primarily along the distal tip) are manufactured from a very fine semitranslucent flint. Transverse arrowheads manufactured from bladelets are primarily limited to southern Negev and Sinai sites. [*See* Sinai.] Microborers are not commonly recovered from most sites, but it is difficult to know if this is a result of geography, chronology, or recovery methodology.

Obsidian, more common during the Pre-Pottery Neolithic, is known from a few Chalcolithic sites, such as Gilat, Teleilat el-Ghassul, Tel Kabri, and Sinai site A301, and is indicative of some long-distance trade with Anatolia. [*See* Kabri, Tel; Anatolia, *article on* Prehistoric Anatolia.] A number of sites identified as specialized flint-tool production areas indicate trade in chipped-flint tools. Tabular scraper procurement and production sites are known from the western Negev and Sinai. A number of Wadi Gaza sites specialized in flint-tool production; Wadi Gaza sites A, B, and D show evidence of celt-tool production and possibly export. Site A also produced many stages of tabular scraper production. Only a few sites have recovered large numbers of microborers, sometimes with a scarcity of other flint tools. Unfortunately, microborers, which are probably related to bead production, are extremely small (about 10–20 mm) and may be overlooked during excavations.

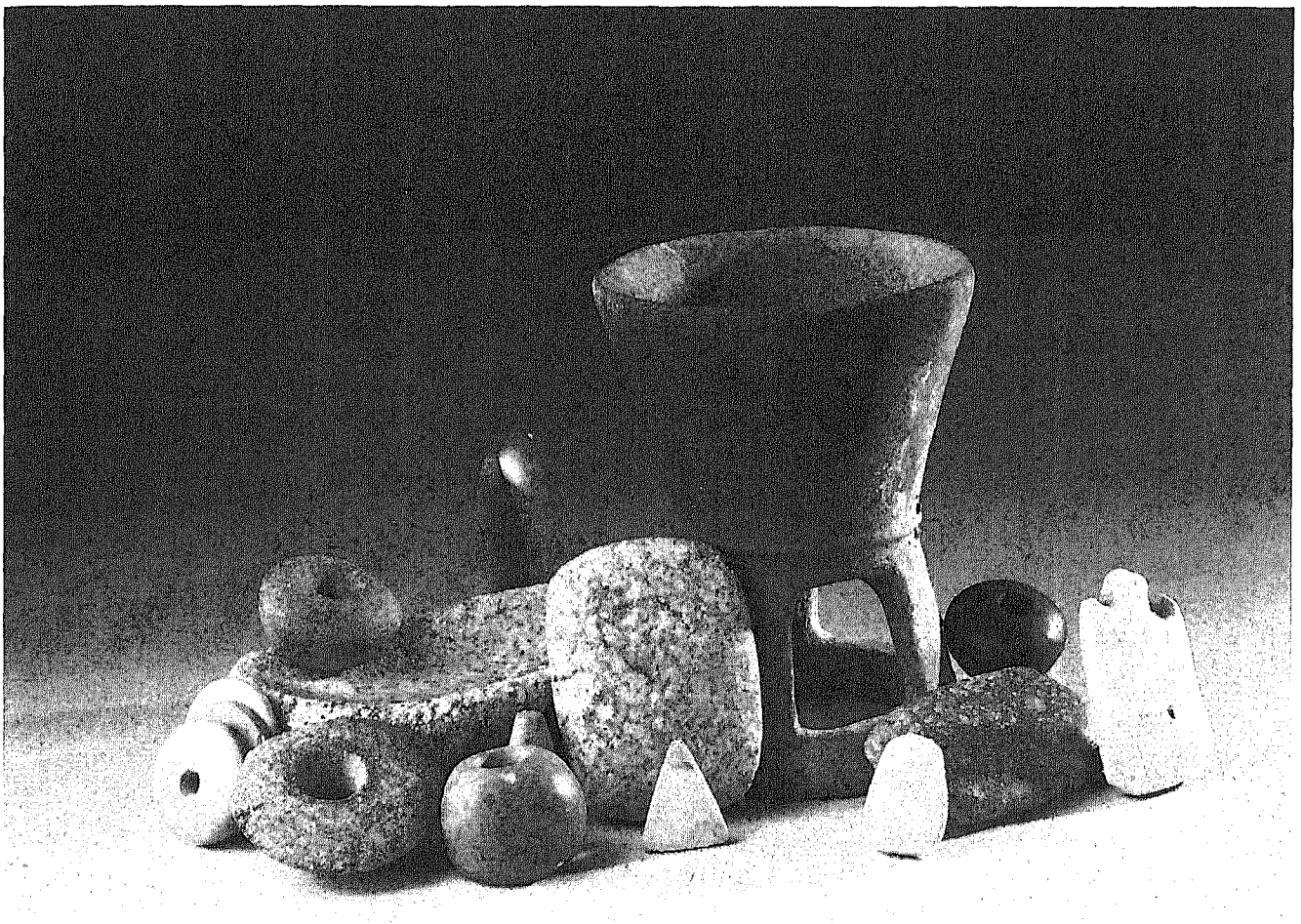
Ground-Stone Artifacts. The majority of ground-stone assemblages are grinders manufactured from beach rock, limestone, or basalt, with the material selection typically a function of a site's proximity to a source. Virtually ubiquitous at domestic sites, grinding stones as well as an array of mortars and pestles affirm the increased reliance on an agricultural subsistence base. Hammerstones and pounding stones, varying from pecked and battered round cobbles to ground and worn stones, are found at virtually all sites. Large stone rings are frequently discovered, alternatively interpreted as digging-stick weights or weights, or, at coastal sites, as anchors or net weights.

Basaltic vessels, a few examples of which are known from the Neolithic period (Tel Dan), achieve the highest craftsmanship during the Chalcolithic period. [*See* Dan.] Two types of basaltic (sometimes actually phosphoritic) vessels are common—the large bowl and the pedestaled, fenestrated stand (or "incense burner"), both represented by similar ceramic forms. Basaltic vessels are often decorated with chevron incisions along a thin, flared rim and with an incised band around the base of a bowl. In addition to vessels, basaltic pillar figurines with anthropomorphic or zoomorphic features are found in the Galilee and Golan regions, presumably manufactured from the locally available basaltic lava flows. However, at sites in the northern Negev and coastal plain regions, basaltic origins are unknown; the Dead Sea area, the Golan, and the Galilee regions all remain potential source areas (geologists have eliminated the Maktesh Ramon in the Negev as a potential basalt source area). The lack of evidence for basaltic artifact production at all sites indicates specialized production and exchange.

A wide range of other artifacts also was manufactured from ground stone, some of it from distant sources. Ground-stone mace-heads, while rare, are also found produced from limestone, diorite, gabro, granite, and haematite, some resembling predynastic Egyptian forms. These artifacts are conceivably items of warfare but may also represent symbols of power, authority, and divinity, as is known from later textual and pictographic evidence from both Egypt and Mesopotamia. Spindle whorls, commonly limestone or ceramic, are infrequently found made of other materials, such as basalt, sandstone, flint, or chlorite schist. These artifacts, flat and circular to elliptical, attest to the increased importance of spinning wool. Other small, perforated ground-stone artifacts are frequently found, alternatively called loom weights or stone rings, which also may relate to the spinning craft.

Decorative items such as beads and pendants, typically manufactured from locally available materials such as limestone and chalk, are sometimes also made of carnelian, malachite, calcite, and amazonite. Palettes, rectangular to trapezoidal in shape and biconvex to concave in cross section, are known made from granite, scoria, chlorite schist, and limestone; some were probably used to grind ocher, an iron oxide pigment used for ceramic paint, and cosmetic or medicinal preparations. Evidence from predynastic Egyptian contexts also supports a possible commemorative function.

Even more rare are the abstract violin-shaped figurines,



LITHICS: Chalcolithic Period. *Assorted ground stone artifacts from the chalcolithic site of Gilat.* Shown are spindle whorls, maceheads, palettes, a votive axe, a basalt fenestrated stand, and a pendant. (Courtesy Y. M. Rowan)

in the southern Levant found only in Chalcolithic contexts, which are often made of similar materials, including granite, chlorite schist, mica schist, limestone, and calcite. By far the greatest number of these enigmatic figurines were found at Gilat, where a plethora of other nonlocal stone materials was also recovered. These abstract, geometric figurines have been interpreted as having served a cultic and/or an economic function. They were manufactured by chipping, grinding, and polishing, and the lack of manufacturing detritus indicates that they were imported.

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YORKE M. ROWAN

Artifacts of the Bronze and Iron Ages

Lithic assemblages of the Bronze and Iron Ages can be divided into two classes: chipped-stone industries and ground-stone industries. Chipped-stone tools are types of small cutting, boring, and scraping utensils manufactured using various knapping methods, usually on cryptocrystalline materials (e.g., flints). The ground-stone industry comprises a wider range of implements, including various kinds of grinding stones, stone vessels and mortars, weights, palettes, polished objects such as votive axes, and lapidary (a technology in itself, and not dealt with here). Production methods include knapping and chiseling; coarse and fine abrasion, or polishing; pecking; cutting; splitting; and drilling. Raw materials include limestones and chalks, basalt, alabaster, steatite, diorite, some cryptocrystalline materials, and semiprecious stone.

Aside from the obvious typomorphological differences between the two classes, there is a contrast between their utilitarian and social functions, technology, raw materials, and general developmental trajectory. Whereas the chipped-stone industries show increasing production specialization and restriction in functions through the Bronze and Iron Ages, the ground-stone assemblages seem to reflect relative stability in production mode and, in fact, show increased diversity in function. To a degree, both of these phenomena can be associated with the introduction of metal tools. Over the three-millennia-long course of this period, metal tools slowly replaced most chipped-stone tools. In contrast, they facilitated the manufacture of other stone implements, allowing better implements, as well as a wider range of them, to be produced. Unlike chipped-stone tools, there is little functional overlap between ground-stone tools and vessels and metal tools in these periods.

In addition to the examination of basic technologies and utilitarian functions of lithic assemblages, these artifacts can also be used to reconstruct other aspects of culture. In particular, the large quantities of production waste associated with both classes of artifacts and the relative scarcity of sources of some raw materials (e.g., basalt or obsidian) allow patterns of production, specialization, and exchange to be analyzed. In some cases, stylistic motifs, reflective of different aspects of cultural traditions, can also be traced.

Chipped-Stone Industries. Although chipped-stone industries have been the subject of detailed reports and synthesis (e.g., Rosen, 1989), the same is not true for other stone implements. Syntheses of other stone technologies, even on the level of the site, are rare, and collections have focused on art objects, sometimes to the near exclusion of other elements.

Early Bronze Age blade industries. Long prismatic blades, usually trapezoidal in section, struck from large uniplatform cores, are characteristic of the Early Bronze Age across virtually the entire Near East. Early excavators in the Levant referred to these blades as ribbon knives, but they were later more formally described and analyzed by René Neuville and John W. Crowfoot, who referred to them as Canaanean blades. No good antecedents for this technology have been found in the Levantine Chalcolithic, nor do they continue into the succeeding Middle Bronze Age, although they are abundant in the EB IV–MB I horizon in northern Israel.

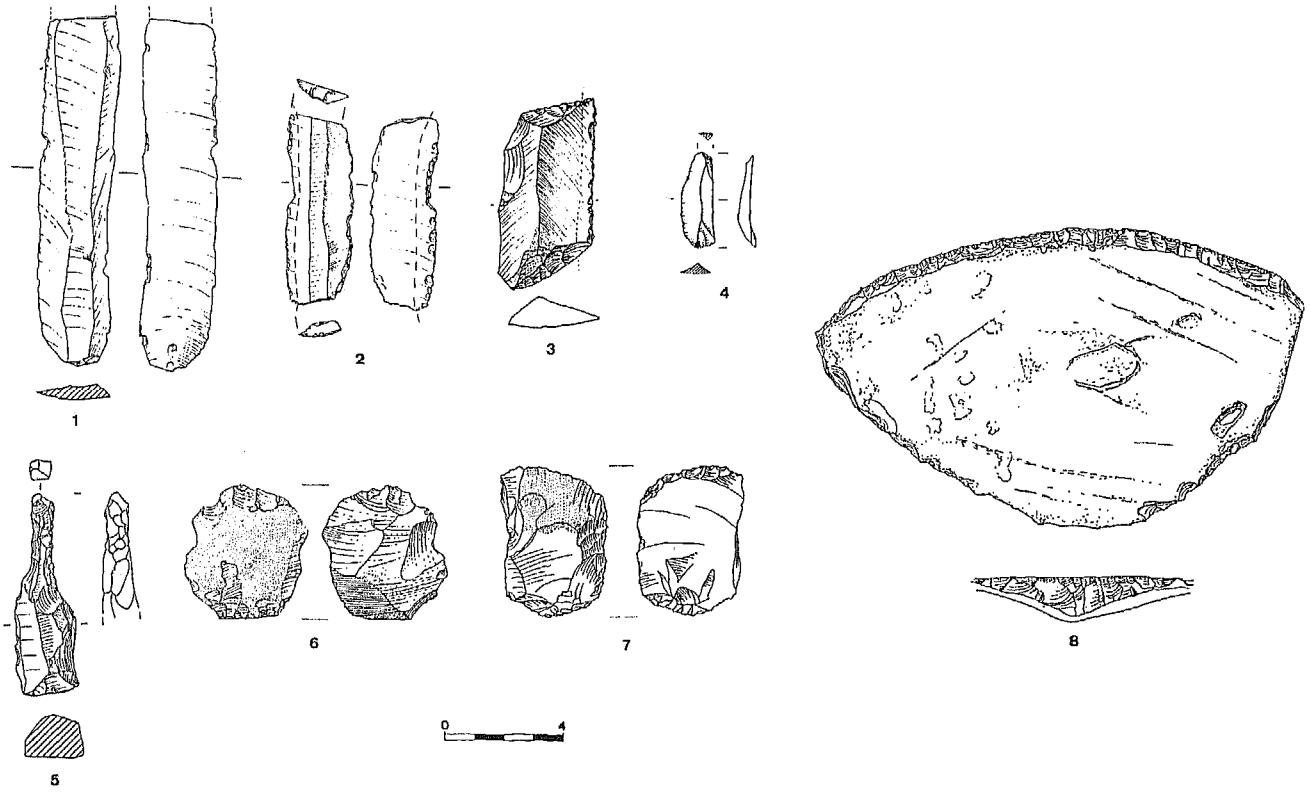
These blades were used primarily for sickle manufacture. Up to 15 cm or more in length, and traditionally of fine-grained brown flint, they were usually snapped into shorter sections, truncated, and hafted. The recovery of relatively fresh pieces with sickle gloss suggests that pieces were retouched or sharpened only after the primary edge dulled. Segments were often reversed in the haft, as reflected in the double-edged gloss on some pieces. Bitumen preserved on the edges of some segments is indicative of a hafting mode, and although most show lateral hafting of short segments, some complete blades were apparently utilized as reaping knives and not sickles in the narrow sense.

The near absence of corresponding cores and debitage at most sites, the recovery of packets of complete, unworked blades deriving from the same core, and the discovery of a few workshops (e.g., at Har-Haruvim and Lahav in Israel, Saida-Dakkerman in Lebanon, and Hassek Höyük in Turkey), indicate exchange and a degree of production specialization.

In addition to Canaanean blades and sickles, two other blade industries are present in the Early Bronze Age. Egyptian bitruncated and/or backed blades have been discovered at some sites in the northern Negev and the Shephelah (e.g., Tel 'Erani). These are smaller, less regular in section, and manufactured on different flint from the Canaanean blades. Utilized in part for sickle manufacture, they seem also to have been used for knives.

In the Negev, especially at Biq'at 'Uvda, small, relatively crude blades served as blanks for backed sickles and arched backed blades—perhaps functionally knives. These types are virtually absent from northern assemblages.

Other blades were also manufactured, apparently as ad-



LITHICS: Bronze and Iron Ages. Figure 1. *Chipped stone tools.* (1) Canaanean blade, broken at end; (2) Canaanean sickle segment; (3) large geometric sickle segment from Iron Age Tell el-Hesi; (4) microendscraper; (5) borer; (6) denticulate/notch; (7) scraper; (8) fanscraper (tabular scraper). (For sources, see bibliography)

juncts or ad hoc substitutes for Canaanean blades. These are smaller and less standardized than their prismatic counterparts. They also show little evidence for production specialization.

Early Bronze Age bladelet industries. The earliest stages of the Early Bronze Age seem to show a continuation of the Chalcolithic bladelet industries. This is reinforced by the presence of Egyptian twisted bladelets in the south. These tools seem to drop out of the repertoire later in the period. In the desert regions, bladelet technology is present in the form of microlithic transverse arrowheads and lunates, as in the assemblages from the *nawamis* tombs of 'Ein-Hudera, Gebel Guna, and associated sites.

Early Bronze Age tabular scraper industry. Tabular scrapers are large, flat, cortical flakes showing different kinds and locations of retouch. The classic type, the fan scraper, is a transverse scraper with distal retouch, a faceted striking platform, and in many cases, bulbar thinning. However, the classic type is relatively rare and there is much variation in shape and preparation. The primary characteristic is the retention of the cortex and even that may have exceptions.

Production techniques seem to have included block-on-block, direct, and indirect percussion. EB types may exhibit cortical incisions in various patterns—for example, the "protoaleph." Microscopic analysis of edge wear has indicated that at least some of these tools functioned as knives. Also, there appears to be some spatial association with ritual loci, suggesting some cultic functions for the class.

EB tabular scrapers as a class clearly originated in the preceding Chalcolithic period or in the terminal Neolithic. They disappear with the end of the EB III and have not been found in reliable contexts at EB IV–MB I sites. In common with Canaanean blades, evidence for the manufacture of these pieces is absent from all but a few sites. Unlike the blades, workshop sites have been found exclusively in the southern deserts, and the quantitative distribution of these pieces shows a geometric decline with distance from the assumed source area. This suggests some kind of down-the-line exchange system similar to that postulated for Anatolian obsidian during the Neolithic period.

Early Bronze Age ad hoc industry. The bulk of most EB assemblages is comprised of a range of retouched and utilized flakes and debris. They may be further subdivided into types: scrapers, notches and denticulates, choppers and hammerstones, and retouched pieces. Within these types there is little standardization. Microwear analyses and the

wide range in morphology and attributes of the general class indicate a wide range of functions, including hide scraping, plant processing, whittling, boneworking, piercing, cutting and shredding of soft materials, and pounding and chopping.

In contrast to other industries, there is abundant evidence for local on-site manufacture for the entire range of these artifacts. Cores and debitage from simple flake manufacture are the most abundant element on virtually all sites, and these tools constitute the most common tool class. There is no evidence for specialized manufacture or exchange of these items, and the raw materials exploited are local.

A similar ad hoc industry dominates Chalcolithic assemblages, although the crude and generalized nature of the technology precludes the assumption of cultural continuity on this basis. These tools are common in the EB IV–MB I horizon as well.

Special classes. Special imported pieces, such as Egyptian bifacial knives and scrapers ('Ein-Besor, Tel 'Erani) are also occasionally recovered. Various obsidian artifacts have been found, especially in the north, and should be treated as a special class because of their potential in defining trade relations.

Post–Early Bronze Age sickles. Following the Early Bronze Age, Canaanean sickle technology was replaced by a flake industry for the production of Large Geometric sickles. This type continues through the middle of the Iron Age, with minor typological variations, until flint sickles are replaced by iron. The technotypological and chronostratigraphic discontinuity between the Canaanean and Large Geometric sickles should be emphasized.

Large Geometric sickles were manufactured by backing and truncating medium-sized flakes (usually 5–7 cm long). Shapes such as rectangles, trapezoids, triangles, and parallelograms were fixed by the angles of the truncations. The bulb of percussion was often deliberately removed, apparently to facilitate hafting. Bitumen and possibly resin-based adhesives have been discovered on the backs of some sickles. Sickles were used first without edge retouch and were later sharpened with a serration retouch.

No obvious cores from Large Geometric sickles have been recovered, but several secondary workshops or caches have been excavated. In several caches at Gezer these consisted of a large number of unretouched flakes appropriate for sickle manufacture, numerous incomplete and unused sickles, a few used sickles, and a horn core for knapping and retouch. Such caches are clear evidence for the specialized manufacture of these sickles.

The continued use of flint sickles even into the Iron Age is a reflection of their effectiveness, the ready availability of the raw material, and the efficiency of the specialized production-distribution system.

Post-EB ad hoc industry. A good definition of the post-EB ad hoc industry is difficult to develop because of the scarcity of well-collected assemblages from unmixed MB II contexts. By the Late Bronze and Iron Ages the industry is considerably reduced, both numerically and typologically. Typically, as at Deir el-Balaḥ, sickles constitute some 80 percent of the assemblage—the rest are comprised for the most part of retouched flakes. The decline of this industry is probably the result of the increasing availability of bronze, and later iron, for small utensils.

Ground-Stone Industries. As mentioned above, ground stone implements in the Bronze and Iron Ages constitute a more diverse class functionally than do the chipped stone tools. The following review touches only on the primary types.

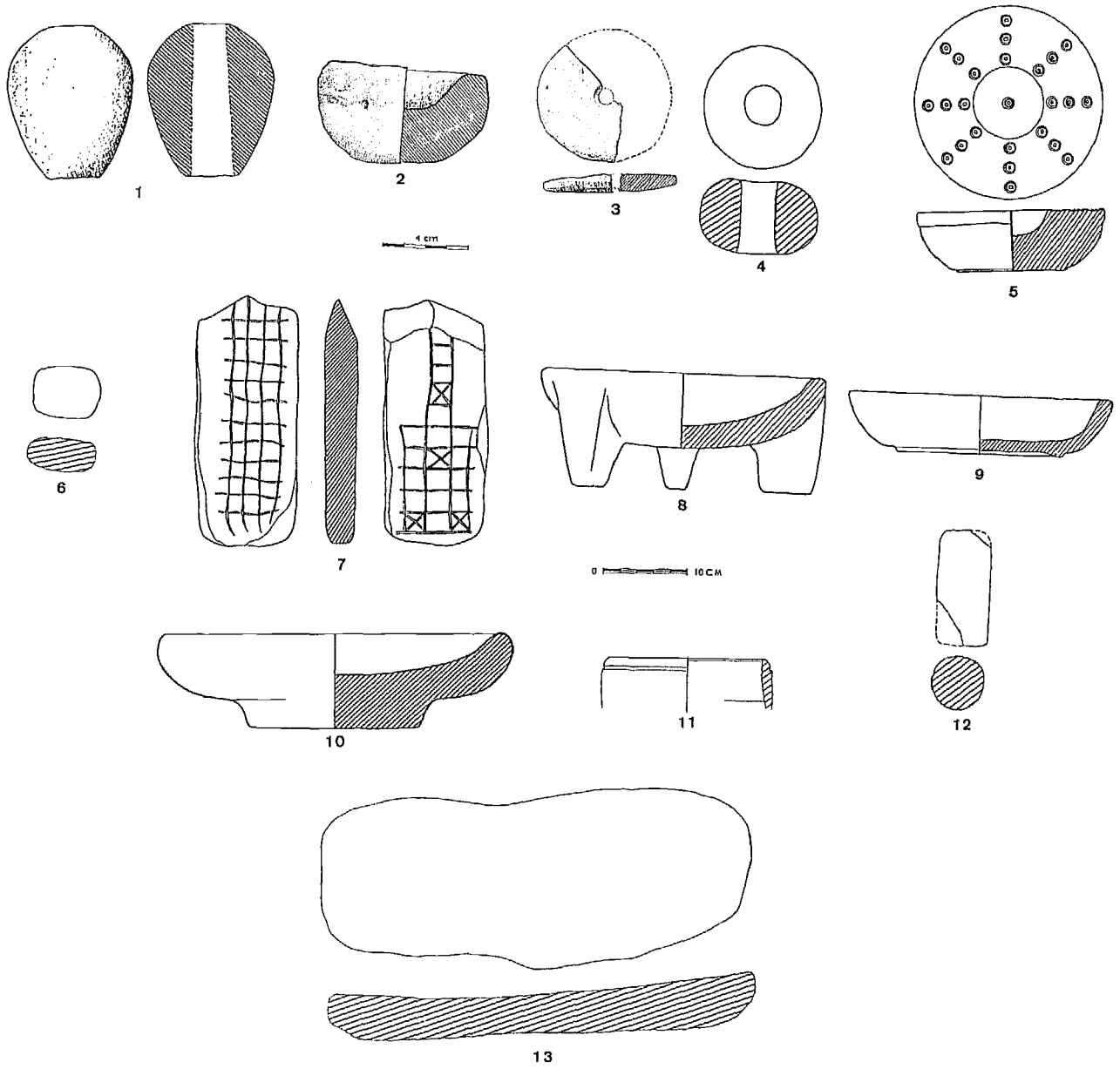
Grinding stones. The standard grinding stones throughout the Bronze and Iron Ages at virtually all sites are saddle querns and associated rubbing stones. The raw material used is usually basalt, sandstone, limestone, or flint. Shapes vary depending on the original block, but rubbing stones are often loaf shaped. Querns from EB Jericho average roughly 30 cm in length and 15–20 cm in width; rubbing stones have about half those dimensions (Dorrell, 1983). At Arad they are somewhat larger (Amiran, 1978). By the Iron Age, as at Tell Qasile, larger rubbing stones and grinding slabs, occasionally with rectangular bases, appear. These allowed more efficient processing of larger quantities of grain. The rotary quern seems not to have been introduced until the second century BCE, and occasional finds from earlier periods are likely to be intrusions. However, large rollers, presumably complementary to rubbing stones, have been found in Iron Age contexts at Megiddo. The absence of chipping debris and rough-outs at virtually all sites, along with the common use of nonlocal raw materials, such as basalt and sandstone, is indicative of production specialization and exchange.

Vessels. The EB basalt vessel industry, as at Arad, Jericho, and other sites, shows a qualitative decline from its Chalcolithic predecessor. Fenestrated bowls disappear (perhaps replaced by ceramic copies), and the fine finish and decorative incisions common in the Chalcolithic are rare or absent in the Early Bronze Age (Braun, 1990; Amiran and Porat, 1984). The most common types show thick, flat bases and high splayed rims. A subtype shows one or, more rarely, several lug-type handles.

In addition to these vessels, crude mortars, often of limestone, are also common, and small, shallow cup marks have also been found. Door sockets, morphologically similar to crude mortars have also been discovered.

MB, LB, and Iron Age basalt vessels, as at Hazor and Megiddo, show a resurgence in basalt vessel craftsmanship. This is especially evident in the introduction of tripod-based bowls and variants with decorative elements. Simple bowls and mortars are also present, and at Jericho they dominate. Various platters, palettes, and shallow bowls, of both coarse (limestone, basalt) and fine (alabaster, calcite, steatite) materials have been found at numerous sites.

As with the grinding stones, the apparent absence of production debris and use of nonlocal materials are indicators



LITHICS: Bronze and Iron Ages. Figure 2. *Stone vessels and other artifacts.* (1-5) upper scale, (6-13) lower scale. (1) limestone macehead; (2) light brown travertine mortar; (3) white limestone perforated disc fragment; (4) limestone macehead; (5) cosmetic stone palette; (6) limestone grinding/rubbing stone; (7) stone gameboard; (8) basalt tripod mortar; (9) basalt bowl; (10) basalt bowl; (11) limestone bowl; (12) limestone pestle; (13) basalt basal grinding stone. (For sources, see bibliography)

of trade and production specialization. Some vessels, of alabaster and calcite, are clearly luxury goods imported from Egypt.

The functions of this class of utensils are varied. Mortars were used for processing grain, and a large mortar at Tell Qasile may be associated with a brewery. Other vessels may also have served as mortars, although many were associated with ritual, perhaps on a domestic level. Door sockets, presumably for attached hinges, have already been noted. Many of the finer palettes and platters were for the preparation and use of cosmetics.

Pestles and pounding stones. Manufactured out of limestone and basalt, the most common type of grinding stone at Jericho was small and almost dome shaped. Pounding stones, hammerstones, and hammers are also found in large numbers in all periods. Hammerstones range from simple cobbles with signs of pecking through fully rounded, fist-sized balls that show deliberate pecking all around.

Hammerheads, as at Megiddo, show worked waists for hafting. This class of tools probably had many uses, including food processing, hammering, the reduction of metal ores (as at Timna') and possibly as ballistas and weights or measures. The more finely worked basalt objects were probably connected to some type of exchange network, but most were locally manufactured.

Pierced objects. Ranging in size from small beads to large stone rings, pierced objects vary considerably in form, workmanship, and function. All show a central hole, probably drilled out with a bow drill. Typologically they include large stone rings, finely polished mace-heads, spindle whorls, loom weights, and beads. Raw materials are varied, both between types and within them. Thus, spindle whorls at Megiddo are of limestone, basalt, steatite, and hematite, and weights are of hematite, limestone, and sandstone. Large stone rings at Arad are of basalt, limestone, and sandstone, but the mace-heads are almost exclusively of limestone. The different types are found throughout the Bronze and Iron Ages, and it is difficult to ascertain any chronotypological change.

The function of the large stone rings is unclear; suggestions include their use as digging-stick weights, net weights, and measuring weights. Ship anchors have been recovered from sites on the coast. [*See* Anchors.] The mace-heads may have been weapons, or alternatively, ritual objects. Their Chalcolithic copper antecedents were certainly not weapons and thus lend credence to a symbolic role, especially in the Early Bronze Age. Spindle whorls and looms generally should be associated with textile manufacture, although, in some cases, use as small measuring weights cannot be ruled out. [*See* Textiles.]

As with other stone implements, the pierced objects seem to reflect varying degrees of production specialization and exchange. A fundamental problem with these objects is the scarcity of good collection and synthetic study.

Miscellaneous objects. Beyond the general groups of ground-stone tools, a wide range of other types is found at all sites: stone disks (sometimes pot lids), casting molds, gaming boards, grooved stones (whetstones), potters' wheels, polished votive axes, and figurines. [*See* Games.] As with other types, most of these reflect degrees of specialization and exchange.

[*See also the biographies of Crowfoot and Neuville. In addition, many of the sites mentioned are the subject of independent entries.*]

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STEVEN A. ROSEN

LLOYD, SETON HOWARD FREDERICK

(1902–1996), archaeologist who worked extensively in Iraq and Turkey. Born in Birmingham, England, Lloyd qualified as an architect in 1926. In 1929 he replaced a colleague as

the architect on Henri Frankfort's excavations at Tell el-Amarna in Egypt; he subsequently assisted Frankfort on the Oriental Institute of Chicago's excavations in Iraq: he worked at first millennium BCE sites at Khorsabad and Jerwan in Assyria; in the Diyala region east of Baghdad, he recorded sequences of temples and palaces from about 3100–1750 BCE by tracing their mud-brick walls. In these excavations he made innovative use of kite photography. In 1937–1938 Lloyd worked with John Garstang at the prehistoric site of Mersin on Turkey's south coast and conducted a survey around Sinjar, in northern Iraq, that provided a model for archaeological surveys and the basis for subsequent excavations (e.g., Tell er-Rimah and Yarim Tepe). During World War II, as adviser to the Directorate General of Antiquities in Iraq, Lloyd worked with Iraqi archaeologists at sites (Hassuna, Uqair, and Eridu) selected to fill gaps in the chronologies of northern and southern Iraq from about 5800 to 2000 BCE. Lloyd also helped to reorganize the collections of the Iraq Museum in Baghdad. In 1949 Lloyd went to Turkey as the first director of the British Institute of Archaeology at Ankara. His excavations at Polatlı, Beycesultan, and Sultantepe provided sequences from the Chalcolithic to the Iron Ages. He also conducted architectural surveys of Islamic Harran and Seljuk Alanya. In 1962 Lloyd became professor of Western Asiatic archaeology at the Institute of Archaeology in London, where he taught until 1969. Lloyd has since added to what was already an extensive list of publications, ranging from guidebooks for troops during World War II to excavation reports and handbooks for students. He has been the recipient of many academic honors and is a Fellow of the British Academy.

[*See also* British Institute of Archaeology at Ankara; Diyala; Eridu; Hassuna; Rimah, Tell er-; *and the biographies of Frankfort and Garstang.*]

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DOMINIQUE COLLON

LOCUS. The technical term archaeologists use to describe certain excavated features is *locus*. The word refers specifically to discrete archaeological entities created by human hand or through postoccupational decay. The locus is the basic unit of excavation; additionally, it provides a means of relating associated artifacts and ceramic materials to those archaeological entities.

Complicating our understanding of the locus is the fact that this basic unit may be defined differently by different archaeologists. Older works may utilize the term locus, but they often neglect to define it at all. More recently, Americans and Europeans have generally used locus to refer to architectural elements, to built features, and to layers of soil, while for Israelis, the term often describes rooms in their entirety.

The locus is a tool that enables an excavator to maintain a three-dimensional perspective. It challenges the excavator of each square, each area, each field, and each site to consider stratigraphic relationships among the various features within each square, among contiguous squares, and throughout a site. Excavation with attention to loci requires the continual evaluation and reevaluation of the stratigraphic relationship among architectural features, for example, walls, revetments, socles, and cisterns, along with soil levels, including surfaces, fills, and postoccupational debris layers. The value of the locus is best seen in archaeological plans and sections, in which the rendering of loci enables the excavator to demonstrate visually the relationship among a site's various architectural and depositional features.

Typically, each discrete archaeological entity is assigned a locus number when it is first encountered in the excavation process. This locus number places the newly discovered feature into the record of excavated features, or loci, in the square in which it was found. The recording of the locus ensures that the new feature is accurately and completely described in the excavation note book. This description usually includes elevation, size, construction materials, color, contents, extent of preservation, a discussion of nearby features to which the locus relates, and other appropriate topics.

The locus number then becomes the reference number for all pottery and artifacts associated with the excavated feature—whether at the time the locus number is originally assigned or later in the excavation process. Sometimes pottery and artifacts that had been excavated in contexts that were ambiguous can later be assigned locus numbers that clarify their contexts. In this way, there is a record for each excavated area describing the association of features and objects.

This record, in which architectural elements, debris layers, artifacts, and pottery are described and related, provides a basic resource for archaeologists in their discussion of stratigraphic and chronological relationships throughout a site. It permits the reevaluation of decisions, should new evidence warrant it. Additionally, it allows those who were not participants in an excavation to review its basic building blocks and the interpretive process that was applied to them.

[*See also* Balk; Stratigraphy.]

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BETH ALPERT NAKHAI

LOWER EGYPT, the northern part of the country, comprising the Nile Delta south to Cairo. The nome (provincial) divisions that characterized Upper (southern) Egypt from very early times developed later in Lower Egypt where they followed the division of the Delta into long lenticular land areas separated by the branches and drainage channels of the Nile River. Eventually, Lower Egypt was divided into twenty nomes, as indicated in the lists from the Ptolemaic and Roman temples of Edfu and Dendera. Memphis in the first nome of Lower Egypt was a major religious capital and the administrative center of Egypt throughout much of its history. The great pyramid cemeteries in the western desert, from Abu Roash in the north to Dahshur on the southern border with Upper Egypt, belong to Memphis. In one of the offices of the civil government, there was a northern vizier for Lower Egypt who lived at Memphis.

Merimde Beni Salame has long been the most important Neolithic site in the Delta, located along its southwestern edge. Recent research indicates that the material from Merimde is part of a predynastic cultural tradition, named after the sites of Maadi and Buto, that developed separately from the predynastic Naqada culture (c. 3850–3000 BCE) in the upper Nile Valley (Bruce Trigger, "The Rise of Egyptian Civilization," in Trigger et al., 1983). The ceramic tradition is exemplified by small shallow bowls and black and brown polished jars with incised and impressed decoration. Late Predynastic and Early Dynastic iconography and texts from Upper Egypt and Saqqara indicate that Buto was an important religious center and perhaps the political capital of Lower Egypt in the Predynastic period.

In early times the ancient Egyptians associated the northeastern Delta with Asiatics, particularly Canaanites from southern Palestine, just as the western Delta may have been continually infiltrated by Egypt's western neighbors, the Libyans. Throughout the three thousand-year history of ancient Egypt there was a continual interplay between southern Palestine and Egypt, beginning with strong Palestinian influence at the Predynastic site of Maadi in the southeastern Delta followed by Egyptian penetration of southern Palestine in the early first dynasty (c. 2920–2770). The lower corners of the flat and expansive Nile Delta were at all periods Egypt's soft points that allowed non-Egyptian cultures—Canaanite, Libyan, Assyrian, Persian, Greek, and Roman—to penetrate and dominate the Egyptian Nile Valley.

An influx of Syrian traders and southern Palestinian immigrants in the late Middle Kingdom (second half of the twelfth dynasty, c. 1845–1783) led to a secondary state in the northeast Delta ruled by non-Egyptians. The Egyptians called them *heka khasut,* "rulers of foreign countries," from which the Greeks derived the more familiar term *Hyksos.* Ruling from Avaris, the site of Tell ed-Dabʿa in the northeast Delta, the Hyksos comprise the fifteenth and sixteenth dynasties. Over the course of nearly three decades of excavation, Manfred Bietak of the Austrian Archaeological Institute in Cairo has found a complete chronological range of Middle Bronze II Canaanite culture, with ceramics, warrior graves, and temples that, in size and classic MBII features, match those found anywhere in Syria or Palestine (Bietak, 1968, 1975).

During the Hyksos domination the Egyptian state, ruled by the kings of the seventeenth dynasty (c. 1640–1550), was restricted to Upper Egypt south of Hermopolis. After the Egyptians defeated and expelled the Hyksos, the eighteenth dynasty (1550–1307) and later New Kingdom rulers (eighteenth–twentieth dynasty) initiated an active program of settlement in Delta sites such as Heliopolis, Saïs, Athribis, and Tanis. The eastern Delta became the staging area for campaigns into Syria and Palestine, the latter area coming under Egyptian control through the eighteenth and nineteenth dynasties. The nineteenth dynasty rulers, particularly Rameses II (1290–1224), built new Delta cities, the most important of which was Per-Rameses, at Qantir just north of the old Hyksos capital at Tell ed-Dabʿa. This new city became the new administrative center of the kingdom.

With the disintegration of the New Kingdom in the Third Intermediate period, a line of ethnic Libyan rulers rose to power from Tell Basta, where Libyans may have been moved by Rameses III after he defeated them in the west. Tell Basta, the capital of the eighteenth Lower Egyptian nome, located southeast of modern Zagazig was important since the Old Kingdom as the cult center of the cat-headed goddess Bastet. During the twenty-second and twenty-third dynasties (c. 945–712), the Delta was fragmented into separate principalities ruled by "Great Chiefs of the Ma" or Meshwesh, one of the Libyan peoples attested in the New Kingdom. Tanis, located at the site of San el-Hagar in the northeastern Delta, became a major religious center. Many royal statues and parts of royal monuments were moved to Tanis for reuse in its temple precinct, which also became the burial ground for the twenty-second dynasty rulers who retained the title "king of Upper and Lower Egypt" even during the times of greatest political fragmentation.

Toward the end of the Third Intermediate period (twenty-first–first half of twenty-fifth dynasty, c. 1070–712)

the entire western Delta was taken by Tefnakht, the leader of another Libyan contingent known as the Libu. His descendants remained in some control through the period of nominal Nubian rule under the twenty-fifth dynasty. Eventually descendants of Tefnakht moved their control from west to east across the Delta and down the Nile Valley to establish their own kingdom over a unified Egypt as the twenty-sixth dynasty (c. 664–525). The capital was now Saïs, which had been a major Delta center since late Predynastic times.

In the Ptolemaic and Roman periods the Delta, which had returned to fragmented political control under the Persian domination, there were many settlements with the accoutrements of hellenized cities, including temples for both Greek and native Egyptian divinities. A large town of the Ptolemaic and Roman periods was found at Tell er-Ruba, which was part of the city of Mendes, the capital of the nome in the east central Delta. Mendes is an example of a true *tell* (mound) site, with settlement extending back to the late Predynastic period. Athribis hosted a Roman spa. In the western Delta Naukratis had been established as a major trading center during the reign of Amasis (c. 570–526) of the twenty-sixth dynasty. Kom Abu Bellou in the western Delta has proved one of the richest sites for burials of the Ptolemaic, Roman, and early Coptic periods (c. 332 BCE–sixth century CE).

Located at the extreme northwest of the Delta, Alexandria grew from a small native Egyptian fishing village, Rakotis, to become the capital of the Ptolemies, the preeminent city in Lower Egypt, one of the major ports of the Mediterranean coast, and the transit point between old native Egypt and the hellenized world.

[*See also* Alexandria; Dab'a, Tell ed-; Delta; Heliopolis; Hyksos; Merimde; Naukratis; Saqqara; *and* Upper Egypt.]

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LUWIANS. Essentially an ethnolinguistic term, Luwian (or Luvian) is used to refer to population groups that became widespread in Anatolia during the second millennium BCE and spoke a common language. Scholars are still uncertain about both the original homeland of the Luwian-speaking peoples and the nature and period of their entry into Anatolia. There is, however, fairly general agreement that they settled in Anatolia during the third millennium BCE, initially occupying extensive areas in the west.

In the first half of the second millennium, a large part of western Anatolia seems to have been called Luwiya. However, the term was probably used only in a broad geographic sense, with no strong political connotations. By the middle of that millennium, *Luwiya* was replaced in the Hittite texts, most explicitly in the Hittite laws, by the term *Arzawa.* The latter, though varying in its geographic limits, nonetheless had distinct political connotations. During the Hittite New Kingdom, it embraced a number of Hittite vassal states known collectively as the Arzawa lands.

Luwian speakers extended far beyond the boundaries of Arzawa. The migrations that had led to their settlement in western Anatolia continued well into the second millennium, and by the middle of that millennium, Luwian-speaking groups occupied much of the southern coast of Anatolia, from the region later known as Lycia, in the west, to Cilicia, in the east. Lycia was the homeland, or part of the homeland, of the Luwian-speaking Lukka people, one of the Lycians' main Bronze Age ancestors. Luwian speakers also settled in Cilicia, particularly in the region of Bronze Age Kizzuwatna. Kizzuwatna also came under strong Hurrian influence and, presumably, Luwian and Hurrian cultural and ethnic elements mingled there.

Our understanding of the spread of Luwian speakers in western and southern Anatolia is based primarily on linguistic and onomastic evidence: a range of place names (names ending in *-assa,* for example) and personal names, as well as the names of Luwian deities. Thus, cults of the Luwian gods Tarḫunt and Šantas (Sandon) are attested in Kizzuwatna, and to the north of Kizzuwatna cults of the Luwian deities Šahašara, Ḫuwaššana, and Kuniyawanni are in evidence in the region of the classical Tyanitis, part of the Hittite Lower Land.

The most tangible evidence of the Luwian presence in Anatolia is provided by two types of inscriptions: cuneiform and hieroglyphic. The cuneiform texts are inscribed on clay tablets, dating to the fourteenth and thirteenth centuries BCE and found in the Hittite archives at Boğazköy/Ḫattuša. In these inscriptions (the bulk of which are published in Heinrich Otten, *Keilschrift Urkunden aus Boghazköi,* vol. 35, Berlin, 1953) the language used is identified as *lu(w)ili,* literally "(written) in the manner of Lu(w)iya." From the inscriptions, which deal mainly with ritual and cultic matters, it is clear that Luwian belongs to the Indo-European language family and has close affinities with the "Hittite" (more strictly Nešite) language. The hieroglyphic texts appear on a number of royal seals and rock monuments. The earliest

known example of the script appears on a seal of Išpuhtahšu, a fifteenth-century king of Kizzuwatna. However, the majority of texts date from the thirteenth through the eighth centuries BCE.

Decipherment of the hieroglyphic script was greatly facilitated by the discovery in 1939 of a bilingual text, in Phoenician and Luwian hieroglyphs, at Karatepe, in eastern Cilicia. More recent work on the language of the inscriptions has established its virtual identity with that of the Luwian cuneiform texts. The character of the script, which was perhaps initially inspired by the monumental script of Egypt, made it a more appropriate medium than cuneiform for recording important achievements on public monuments. In the thirteenth century, increasing use seems to have been made of the script for this purpose, as is illustrated by the discovery in 1988 of a built stone chamber, commonly referred to as the Südburg structure, in the Hittite capital of Ḫattuša. The monument, which dates to the reign of the last Hittite king, Šuppiluliuma II (c. 1205–), bears a hieroglyphic inscription listing the king's military conquests in southern Anatolia.

Luwian elements survived the collapse of the Late Bronze Age civilizations, reemerging in the first millennium BCE. Indeed, the majority of hieroglyphic inscriptions, attributable to the rulers of Early Iron Age kingdoms in southeast Anatolia and northern Syria, date to the first two centuries or so of this period. In Lycia and Cilicia Aspera, Luwian personal names are attested as late as the classical and Roman imperial periods. The Lycian language was a direct descendant of the Luwian language, and Luwian deities figure prominently in the Lycian pantheon.

[*See also* Anatolia, *article on* Ancient Anatolia; Boğazköy; Cilicia; *and* Lycia.]

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TREVOR R. BRYCE

LYCIA. The kingdom of Sarpedon and Glaukos in Homeric tradition, Lycia was located in the southwest corner of Asia Minor. This region was almost certainly part of the homeland of the Late Bronze Age Lukka people, remnants of whom formed one of the main population groups in Lycia in the first millennium BCE. Another population group may have come from Crete.

Lycia figures prominently in Homer's *Iliad* as Troy's most important ally in the Trojan War. However, the earliest archaeological evidence so far for settlement in the country dates only to the late eighth century BCE. A number of buildings of this period have been excavated on the acropolis at Xanthos, which was to become Lycia's largest and most important city.

In about 540 BCE, Lycia became a subject state of the Persian Empire. Shortly afterward, a local ruling dynasty was established at Xanthos that exercised authority over much of the country until the early decades of the fourth century BCE. In 367 BCE, Lycia took part in the abortive satrap rebellion. When the rebellion was crushed, the country was once more forced to submit to Persian overlordship and remained subject to Persia until Alexander the Great invaded the country in 334/33 BCE. After Alexander's death in 323, Lycia came first under the control of Antigonus of Macedon and subsequently under Ptolemaic and Seleucid rule. However, with the defeat of the Seleucid king Antiochus III by the Romans at the battle of Magnesia in 190 BCE, Lycia was brought within the Roman sphere of influence. In 43 CE, the emperor Claudius joined Lycia with the neighboring country of Pamphylia and made it a Roman province.

The language spoken by the native Lycians is closely related to the Late Bronze Age Luwian language. The script used was a modified form of the Greek alphabet. Our knowledge of this rests primarily on 170 inscriptions carved on stone, from the late fifth to the late fourth century BCE. The majority are sepulchral inscriptions, carved on the facades of rock-cut tombs—which often replicate features of the wooden houses in which the Lycians lived. Because in many cases these were family tombs, they often provide important information about Lycian family structure, including some support for Herodotus's claim that there were matrilineal elements in Lycian society. Although much of the content of the inscriptions is still unintelligible to us, the discovery in 1973 of a trilingual inscription—in Lycian, Greek, and Aramaic—has thrown new light on the language.

The inscriptions identify a number of Lycian gods and goddesses. The most prominent of these was "the mother of the gods," a direct descendant of the Luwian mother goddess. Under Greek influence, she was equated with the goddess Leto, who became increasingly important in Lycian religion. By the Roman imperial period, she and her children, Apollo and Artemis, were honored as the country's national gods. National religious festivals were held at the Letoon, the center of their worship. Apollo was also closely associated with the famous oracle at Patara. Lycia was in general well known for its oracular centers.

Early in the second century BCE, the Lycians formed a political federation of their cities. It was known as the *koinon,*

or Lycian League, and met under the presidency of a *lykiarch.* Although under Roman rule the league lost much of its autonomy, it continued to exercise important administrative functions throughout the period of the Roman Empire.

Following the Roman Empire's adoption of Christianity, a number of bishoprics were established in Lycia. The city of Myra, where there are remains of a sixth-century church (with later additions), was the seat of Nicholas, the most famous of the Lycian bishops. Other remains from the early Christian period can be found in the Letoon, where a large church, also from the sixth century, was excavated in the 1970s.

Under Roman rule, Lycia enjoyed a relatively peaceful and prosperous existence. Products for which it was well known included perfume, wine, and, most importantly, timber cut from its cypress and cedar forests. The Arab invasions that began at the end of the seventh century brought major changes to Lycia. Yet, a number of the ancient Lycian cities, including Xanthos, survived and were still in evidence in the eleventh century, when the Seljuk Turks arrived.

[*See also* Anatolia; *and* Luwians.]

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TREVOR R. BRYCE

LYCOPOLIS. *See* Asyut.

M

MA'AGAN MIKHA'EL. In fall 1985, while diving along the shore at Kibbutz Ma'agan Mikha'el, 32 km (20 mi.) south of Haifa, Israel, Ami Eshel noticed, in water less than 2 m deep, a pile of stones not native to the Levantine coast. Pieces of wood and pottery sherds protruded from the stones. Shifting local sand and a diver's keen sense of observation resulted in the discovery of the remains of an ancient merchantman.

Preliminary investigations were carried out soon after the discovery by Shelley Wachsmann, under auspices of the Israel Antiquities Authority. Based on the examination of an oil lamp and storage jar handles, a tentative date of the late fifth century BCE was assigned to the finds. In the following year, during further exploration by Elisha Linder and Avner Raban, several hull planks were observed while a test trench was being cut. The timbers were in an excellent state of preservation because they had been buried in the sand, an anaerobic environment, and protected under a thick layer of stones that turned out to be part of the ship's ballast. Excavation was undertaken by the Center for Maritime Studies of the University of Haifa, under the direction of Elisha Linder.

Survey and Excavation Techniques. To determine the extent of the remains, define the ballast area, and measure the depth of the sand that had accumulated over the site, a probe pipe was inserted into the sea bottom by means of a water jet, which disclosed a clay layer about 4 m below the present sea level. Test trenches aided in locating the vessel's endposts, which were nearly 8 m apart. For recording purposes, datum poles were inserted to define the plan of the site; they remained in place throughout the excavation to facilitate triangulation measurements in recording artifacts.

The ship lay in shallow water at a walking distance of less than 60 m from the shoreline. The surge made working conditions difficult, as sand continually drifted back into the excavation areas, affecting visibility. To prevent interference, a horseshoe trench was dredged around the site, its outside wall lined with some fifteen hundred sandbags, but that failed to eliminate the surge and sand migration; even waves less than a meter high made it impossible to work safely and to avoid movements that would endanger the delicate procedures. In three seasons of excavation (autumn 1988, spring and autumn 1989), out of a total of 160 days at the site, sea conditions allowed only thirty-two days of actual excavation of the hull and its contents.

The first task was to remove the ballast stones, whose total weight was more than 12 tons; some of the stones weighed more than 50 kg (100 lbs.) each. They consisted of three lithological groups: metamorphic, magmatic, and sedimentary rock. The first group, comprising 65 percent of the total, was mostly blue schist. The origin of the stones pointed first to the central Mediterranean seacoast, near Corsica and Calabria. Closer analysis determined a more likely location, however, farther east, in the Greek islands. Beginning at the offshore end of the ship, which the finds indicated was the stern, where the galley would normally be located, the excavation proceeded slowly toward the bow, using a dredger operated by a powerful water pump. Because damage by storm waves was feared, only one section of the inner hull was excavated at a time. Its contents were recorded, mapped, and photographed before they were removed.

Hull Structure. The vessel's original measurements were approximately 12 m long and 4 m wide. More than 11 m of its bottom were recovered, including its keel and the lower portions of its stem- and sternposts. The starboard side was found in a better state of preservation than the port side, rising at its highest to more than a meter above the bottom of the keel. The ship was constructed in the shell-first method: the hull was completely built before the internal frames were installed. The planks were attached to one another by a series of pegged mortise-and-tenon joints. Surprisingly, however, the ends of the planks were also lashed to the end posts by cords. Other structural components included full frames secured to the planks by copper nails, a longitudinal stringer supporting vertical stanchions, and a massive mast step, forward of the middle of the ship, that carried a single mast for a large square sail. The lower end posts were attached to the keel and consisted of a single timber nearly 8 m long with a false keel, or shoe. All of the hull's structural components were of pine, except the tenons, the treenails, and the false keel, which was of oak. The wood was in an excellent state of preservation, the external

timbers unblemished by erosion or teredo worms. The ship appeared almost new and may therefore have been on its maiden voyage when it sank.

Ship's Contents. In addition to the heavy load of ballast and a great deal of dunnage (twigs and branches that buffered the ship's hull from the ballast stones), an impressive array of artifacts was intact in the hull or scattered around it. A complete one-arm anchor, made of oak, with a lead-filled wooden stock was discovered off the ship's starboard bow. The anchor's shank and arm were carved from a single timber. Remains of rope were found around its crown and lifting loop. The find is unique and thus essential to understanding the evolution of the anchor in antiquity.

Among the ceramic items were basket-handle storage jars; utensils the sailors used daily, such as jugs, plates, lamps, and a water "pithos"; and miniature juglets and cups or painted pottery that were probably the sailors' personal belongings. Also in the latter category are three beautifully carved wood artifacts: a heart- or leaf-shaped "jewel box" with a swivel top and two violin-shaped "cosmetic palettes." A collection of carpenter's tools consisting of wood handles belonging to cutting and boring tools, parts of bow drills, a carpenter's square, scores of treenails and tenons, and a whetstone, was found scattered around a woven basket that was probably the shipwright's tool kit. A few meters of rope, in widths varying from 2-40 mm and in a three-strand left-handed twist, were found intact, in undisturbed bundles, with some knots still detectable. Grape and fig seeds and olive pits were identified, as well as barley. A preliminary study of the pollen samples indicates an eastern Mediterranean coastal variety of plants that grow during the summer. The metal finds included what seemed to be a small copper incense scoop and copper and iron nails. A single lead ingot was recovered that was probably a source of raw material for use on board.

Shipbuilding Technology. Only a very few hull remains have been discovered in the Mediterranean in a reasonable good state of preservation from the general same period as the Maʿagan Mikha'el ship. Two are of particular interest: the late fourth-century BCE merchantman excavated and raised from the sea at Kyrenia, Cyprus, and the early sixth-century BCE shipwreck found near the coast of Gela, Sicily, which is still being explored. Considering the many similarities and some of the basic differences among these ships, it now appears that the Maʿagan Mikha'el ship is a missing link in hull construction between the other two vessels. One example points to the extensive use of lashing the timbers by means of cords in the Gela ship, a method that was only partially applied in the Maʿagan Mikha'el ship and disappeared altogether in the Kyrenia vessel. The conservation process of the Maʿagan Mikha'el hull timbers and perishable artifacts lasted three and a half years. Plans are underway for the ship to be reconstructed and displayed at the University of Haifa, in a newly built museum hall.

Summary. The Maʿagan Mikha'el ship plied the Mediterranean in about 400 BCE, a peak period of maritime activity and trade by the Phoenicians and Greeks. In its mode of construction it follows two Mediterranean traditions: mortise-and-tenon joints and cord lashing. More than half of the ship's displacement was comprised of ballast stones not native to the Levantine coast. Whether these were loaded at the port of departure or picked up en route, in a secondary use, is not known. The pottery remains one of the main clues by which the ship is dated and its sailing route traced. Presently, the leads point to Cyprus and Eastern Greece. Who carved the ship's unique wood anchor and where parallels for the carved wooden "boxes" are to be found are not yet known. Because it seems to have been on its maiden voyage, it is possible that the vessel itself was the merchandise. Further investigation and the results of laboratory testing may be able to fill in the existing information gaps.

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ELISHA LINDER

MACALISTER, ROBERT ALEXANDER STEWART (1870–1950), archaeologist born in Dublin into an academic family, his father being a professor of anatomy at Cambridge. Some of Macalister's early training was in architecture and surveying, but his lifelong interests were broad and included not only Near Eastern archaeology but also Celtic archaeology and antiquities, ecclesiastical art and vestments, and music. In pursuit of the latter, he became an accomplished organist and choirmaster and composed hymns, a number of which were relatively well known. He never married and remained a staunch Protestant in Catholic Dublin. After his early fieldwork in Palestine, Macalister returned to University College Dublin, where, as professor of Celtic archaeology, he occupied the first chair in European archaeology in any university (1909–1943), a post he held until his retirement. In later life, he became somewhat notorious for his impatient field methods at Irish national

monuments like Knowth, as well as for his cantankerous responses to any negative reviews of his books on many subjects.

Macalister carried out archaeological surveys and soundings in the Judean Shephelah (1898–1900) with Frederick J. Bliss, at the mounds of Tell es-Zakariyeh, Tell eṣ-Ṣafi, Tell es-Ṣandaḥanna, and Tell el-Judeideh, published in 1902 as *Excavations in Palestine during the Years 1898–1900*. It was Macalister's excavations at Gezer (1902–1909), however, sponsored by the British Palestine Exploration Fund (PEF), that made his reputation. These were among the first large-scale excavations carried out in Palestine, and they were promptly published by the PEF in 1912 in three sumptuous, handsomely illustrated volumes as *The Excavation of Gezer*. Nevertheless, Macalister's insistence on working year-round, alone without proper staff, his neglect of proper stratigraphic methods, and his adoption of a highly idiosyncratic chronology marred what appeared to many to be admirable and innovative work. The fact, revealed by the American excavations of G. Ernest Wright, William G. Dever, and Joe D. Seger in 1964–1974, is that Macalister discerned no more than one-third of the strata present at Gezer, and that his final publication is largely useless for reconstructing the site's actual history. Macalister later worked on the Ophel in Jerusalem with A. C. Dickey (1923–1925); there, his relative chronology of the city walls, although challenged by Kathleen Kenyon, was confirmed by the subsequent excavations of Yigal Shiloh. Macalister's later publications on Celtic archaeology are now regarded as little more than historical curiosities.

[*See also* Gezer; Jerusalem; Judeideh, Tell el-; Palestine Exploration Fund; *and the biography of Bliss.*]

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MACCABEES. *See* Hasmoneans.

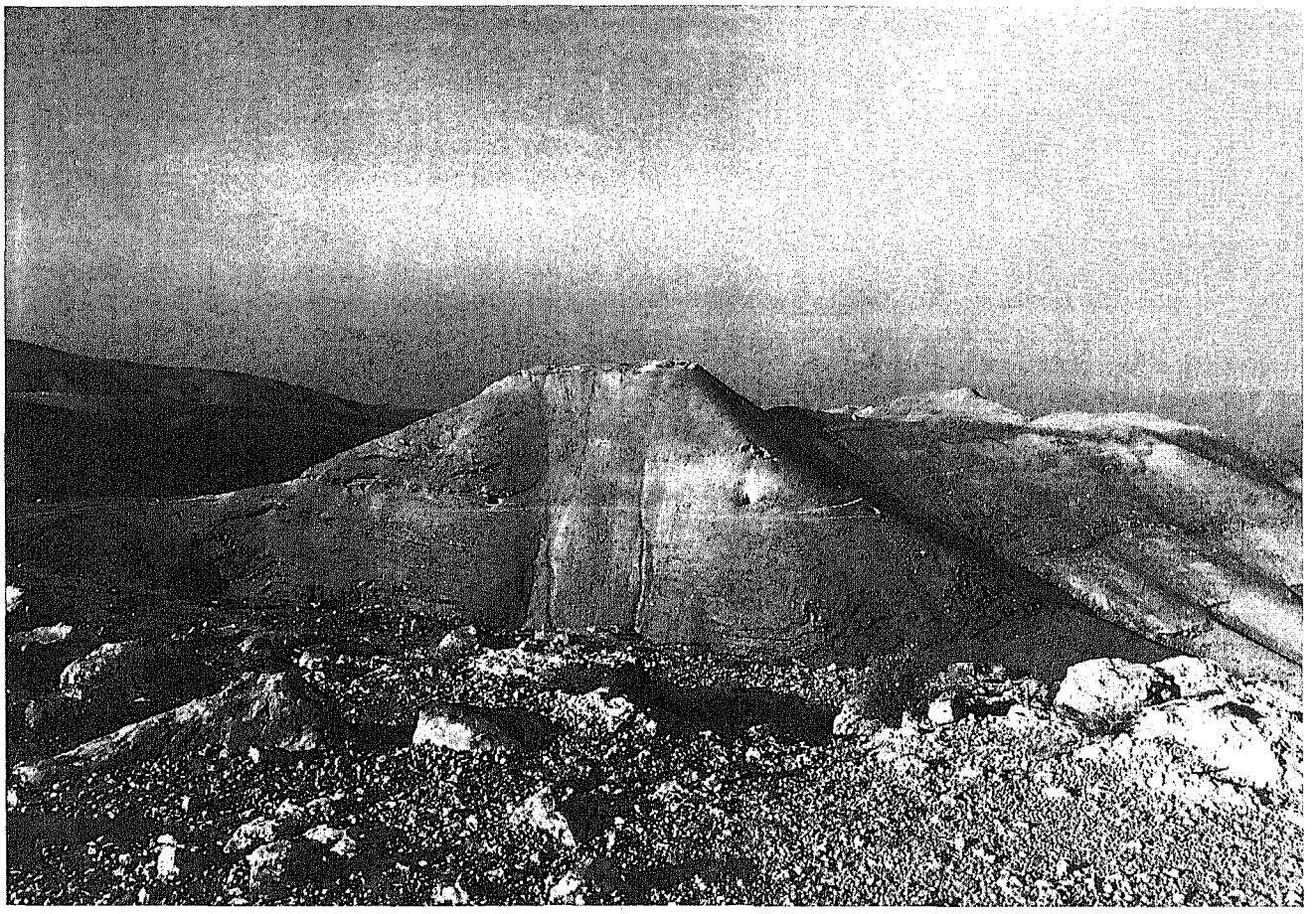
MACHAERUS. The modern village of Mukawer in Jordan, situated 30 km (19 mi.) southwest of Madaba on the south bank of Wadi Zerqa Ma'in (map reference 2092 × 1084), preserves the name of the Hasmonean-Herodian fortress of Machaerus built on the southern border of Jewish Peraea against the Nabateans. The site consists of two distinct areas: the ruins of the fortress on the isolated spur of Qal'at al-Mishnaqa (see figure 1), and the ruins of the Roman-Byzantine village of Machaberous northeast of it that is connected with the high plateau.

According to Josephus (*War* 7), Alexander Jannaeus (103–76 BCE) built the fortress of Machaerus and Gabinius, in 57 BCE, destroyed it. After fleeing from Rome, Aristobulus and his son Alexander sought refuge in its ruins. Herod the Great rebuilt it (after 37 BCE). It was composed of an upper and a lower city. According to Josephus, John the Baptist was thrown into the prison of the fortress, where he was put to death by order of the tetrarch Herod Antipas (*Antiq.* 18.5.1–2). At the outbreak of the First Jewish Revolt against Rome, the Roman garrison abandoned the fortress to the rebels, who held it for six years (until 72 CE). [*See* First Jewish Revolt.] Lucilius Bassus built the siege works around the fortress. The besieged of the upper city surrendered and the lower city was taken by force and burned.

In 1807 Ulrich Jasper Seetzen recorded the name of the village (Seetzen, 1854–1859, vol. 2, pp. 330–334; vol. 4, pp. 378–382) and in 1864 the Duke de Luynes explored its ruins (Luynes, 1874). In 1965 the Jordanian Department of Antiquities partially excavated a Byzantine church there. Joseph Vardaman began excavating the fortress in 1968. In 1973 August Strobel, of the German Evangelical Institute, surveyed the siege works around Qal'at al-Mishnaqa, the *vallum*, the camps, and the towers. In 1978–1981, work was resumed on the fortress by an archaeological team from the Studium Biblicum Franciscanum (SBF), directed by Virgilio Corbo. [*See the biography of Corbo.*] In 1989, a second Byzantine church was excavated in the village. A Greek inscription, with the name of the deceased, was retrieved from one of the plundered tombs of the Roman-Byzantine cemetery hewn in the rock on the east side of the village.

One of the main results of the SBF excavations has been the identification of the upper city on the top of Qal'at al-Mishnaqa with the palace-fortress (with a total surface of about 4,000 sq m) and of the lower city on the mountain's precipitous north slope with the housing for the palace-fortress personnel (an area of 5,000 sq m; only a few of those dwellings, which were destroyed by fire, have been excavated). In the palace-fortress, two main phases and a subphase of occupation were detected and identified with the Hasmonean fortress (three towers with part of the defensive wall), the Herodian fortress, and the fortifications of the Zealots during the First Jewish Revolt (the polygonal surrounding wall and ovens inside the fortress).

To the Hasmonean fortress belong three towers on the crest of the mountain, part of the defensive wall on its southeast side, and some rooms reused as a substructure for the thermae in the Herodian fortress. The tower at the northwest corner of the lower city also belongs to this period. In the tower's small rooms a large number of Late Hellenistic jars, bowls, and lamps were collected along with Hasmonean coins. The tower was connected to a huge rock-cut water



MACHAERUS. Figure 1. *Qal'at al-Mishnaqa-Mukawer.* (Archive Studium Biblicum Franciscanum; photograph by Michele Piccirillo)

reservoir 8 m deep that is perfectly preserved. The original entrance to the reservoir was carefully masked and blocked in antiquity. [*See* Fortifications, *article* on Fortifications of the Hellenistic and Roman Periods; Cisterns; Reservoirs.]

The central Herodian palace-fortress measures 110 m east–west and 60 m north–south. A corridor stretching north–south divides the palace into two blocks: the eastern block has a paved courtyard in the center flanked by the thermae on the south; it has an additional laconicum and rectangular rooms on the north; the western block has a peristylar columination on the north erected on a water cistern and a possible double triclinium on the south. The *apodytherium* of the thermae and the other rooms inside the fortress show traces of mosaic floors. The fortress shows no signs of successive reuse, except for two coins from Trajan's reign (97–117). An aqueduct (15 m high) collected the rainwater from the plateau into a series of plastered cisterns hewn on the northern slope of the mountain. A lower channel directed the rainwater from Wadi al-Mishnaqa in the lower series of cisterns. [*See* Aqueducts.]

Three Byzantine churches have been located in the ruins of the village: the north church was built and its mosaics executed in 603 CE; the central church is from the time of Bishop Malichos (possibly the first half of the seventh century); but the third church has not yet been investigated. [*See* Churches.]

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MACKENZIE, DUNCAN (1861–1934), Scottish archaeologist, excavator, and explorer of various sites in the Aegean, Palestine, Sardinia, and the Sudan. Mackenzie received his undergraduate degree in philosophy from Edinburgh University in 1889, conducted postgraduate studies in classics and archaeology at the universities of Munich and Berlin, and earned a doctorate from the University of Vienna in 1895.

Mackenzie is known primarily for his work at Phylakopi on the island of Melos (1896–1899) and, especially at Knossos, Crete, as assistant to Sir Arthur Evans (1900–1910, 1920–1929). From 1910 to 1912 Mackenzie worked for the Palestine Exploration Fund, directing the excavations at ʿAin Shems (Beth-Shemesh). Mackenzie also traveled and recorded prehistoric monuments in Sardinia in 1906 and 1907 and worked in the Sudan for Sir Henry Wellcome on the excavations at Dar el-Mek and Saqadi in 1913. During World War I he assisted Evans in Oxford with the publication of *The Palace of Minos at Knossos* and with the reorganization of the Aegean collections in the Ashmolean Museum.

Mackenzie published little. His most important works are a chapter in a volume on Phylakopi (1904), articles on the pottery of Knossos (1903, 1906) four articles on Cretan palaces (1905–1908), and his reports on the excavations at ʿAin Shems published by the Palestine Exploration Fund (1911–1913). His main contributions to archaeology are his daybooks of the excavations at Phylakopi, Knossos, and ʿAin Shems. These daybooks not only contain valuable, unpublished information on these important sites but also, together with his surviving correspondence, show a precision in the recording of archaeological excavations and an attention to problems of methodology and interpretation that are quite outstanding for the period.

[*See also* Beth-Shemesh; Crete; Sardinia; *and the biography of Evans.*]

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NICOLETTA MOMIGLIANO

MADABA, city located in central Jordan, 30 km (19 mi.) south of Philadelphia/Amman (map reference 2256 × 1249). The city of Madaba was built on a natural elevation of the Transjordan high plateau with steep slopes on the west, south, and southeast. The Roman-Byzantine town spread to the north over an area that slopes more gently toward the surrounding plain.

The site's ancient name is preserved in the mosaic floor inscriptions of the Church of the Virgin Mary ("the people of this city of Madaba") and in the west courtyard of the "cathedral." In the mosaic floor of the Hippolythus hall, the city is represented as a Tyche seated on a throne. In the Bible, Madaba is recorded among the Cities of the Plain in Moab conquered and occupied by the Israelite tribes (*Nm.* 21:30; *Jos.* 13:9–16). [*See* Moab.] In the environs of the city the battle between King David's army and the coalition of Ammonites and Arameans (*1 Chr.* 19:7ff.) took place. According to the Mesha inscription, the town was liberated by the Moabite king in about the second half of the ninth century BCE (1.7–9). [*See* Moabite Stone.] In later biblical texts, Madaba is mentioned among the cities of Moab (*Is.* 15:2). During the Maccabean revolt (second century BCE), "the sons of Jambri" went out of the city and laid an ambush for the Jewish convoy led by John, one of the brothers of Judas Maccabeus, plundering and killing them. John's death was immediately avenged by Jonathan and Simon (*1 Mc.* 9:36ff.). Later, John Hyrcanus conquered Madaba after a long siege (Josephus, *Antiq.* 13.9.1); it remained in the hands of the Hasmoneans, even during the reign of Alexander Jannaeus (*Antiq.* 15.4). Hyrcanus II, in exchange for the help he asked for in the war against his brother Aristobulus,

promised to restore the city to the Nabatean king Aretas of Petra, together with other cities in the region (*Antiq.* 14.1.4). Madaba became a city of the Provincia Arabia after 106 CE.

In 37 CE, in the time of Aretas IV, the strategos of the city, a certain Abdobodat built a funerary monument for his father Itaybel and his son, also named Itaybel, of the 'Amirat tribe (*banu 'Amrat,* possibly "the sons of Jambri" of *Mc.* 9:36ff.). A bilingual inscription in Greek and Nabatean records that in the third year of the new Provincia Arabia (108/109 CE), another member of the same tribe, Abgar/Isyon son of Monoath, built a tomb for his son Selaman. In a Greek inscription found at el-Mushaqqar, on the road between Esbus/Hesban and Livias/Tell er-Rameh, the priest Zaidallah Petrigenous, *boleuta* (of the city council) of Madaba, is mentioned, who offered the monument in honor of an unknown Roman emperor.

Together with Greek and Latin inscriptions of the second–third centuries mentioning centurions of the Tertia Legio Cyrenaica stationed in the province, a dedicatory inscription was recently found with the name of the governor (Flavius) Iulianus at the time of Emperor Elagabalus (219 CE; see Piccirillo, 1989). Madaba had a local mint at the time of the emperors Septimius Severus, Caracalla, Geta, and Alexander Severus. The main typologies used were the Helios and the Tyche (standing or seated), of the Medabenon (inhabitants of Madaba) and the baetyl in a tetrastyle temple. So far, the main portions of the *decumanus,* the primary paved east–west road of Roman Madaba, and possibly the Tychaion, the temple of the city's Tyche along that road (whose carved architectural elements were reused in the city's Byzantine churches), have been identified.

Ulrich J. Seetzen crossed the ruins of the then abandoned tell of Madaba in 1807. In 1872, coming from the south, the expedition of Canon Tristram arrived at Madaba and camped among the ruins for four days. Explorers from the Palestine Exploration Fund arrived in 1881. Their arrival had been preceded, in December 1880, by ninety Christian bedouin families who had established themselves among the ruins allotted to them by the Turkish authorities. It is to this reoccupation of the site that the greater part of the following discoveries is owed. In 1887, the Latin missionary Don Biever sent to Jerusalem the transcription of the first inscriptions of the mosaic floor from the Church of the Virgin Mary. Gottlieb Schumacher, in October 1891, and P.-M. Séjourné, in 1892, drew the first general plan of the ruins. It was later updated by Frederick J. Bliss, in 1895; Giuseppi Manfredi, in 1899; A. Paulouskji and N. K. Kluge, in 1903; Alois Musil, in 1905; and by Melezios Metaxakis from 1905 to 1907. The Madaba mosaic map was seen in December 1896 in the new church built by the Greek Orthodox patriarchate by Cleofas Kikilides and published the following year. The event focused the attention of scholars from all over the world on Madaba (see figure 1). In 1897 mosaics also were discovered in the crypt of St. Elianos, in the Church of the Prophet Elias, and elsewhere. From that year on, Madaba became "the city of mosaics." [*See* Palestine Exploration Fund; *and the biographies of Schumacher and Bliss.*]

In 1965, a German mission under the direction of H. Donner restored the Madaba map mosaic. In 1966, Ute Lux of the German Evangelical Institute excavated the Church of al-Khadir and, in 1967, the Church of the Apostles (Lux, 1967, 1968). Beginning in 1968, the Department of Antiquities of Jordan conducted excavations in the cathedral and in the Salayta Church. In collaboration with the Department of Antiquities, Michele Piccirillo of the Studium Biblicum Franciscanum (SBF) conducted several archaeological campaigns, as of 1979, in the area of the Church of the Virgin Mary and of the Hippolythus hall, in the "burnt palace" along the paved Roman street, and in the cathedral church on the south side of the tell. [*See* Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes; Franciscan Custody of the Holy Land.]

The finds from two tombs discovered in the necropolis area west of the tell are the only archaeological evidence that Madaba was inhabited at least from the thirteenth century BCE (the final phase of the Late Bronze Age). A second tomb, from the Iron Age I–II, was found on the slopes of the hill in front of the tell on the south.

The main edifices so far excavated are several churches and palaces of the Byzantine and Umayyad periods. It is known that Christianity spread rapidly in the Provincia Arabia. Eusebius mentions Qurayat as "a village of only Christians flourishing near Madaba" (*Onomasticon* 112.14). Monks lived on Mt. Nebo, west of Madaba, at least in the second half of the fourth century. [*See* Nebo, Mount.] However, it is only from the Acts of the Council of Chalcedon, held in 451, that the existence of a Christian community at Madaba is known, with a bishop under the authority of the metropolitan archbishop of Bosra. [*See* Bosra.] The *Life of St. Euthymius,* written by Cyril of Scythopolis, recounts that Gaianus, a disciple of the saint, was consecrated bishop of Maiumas in Gaza. In the fifth century Peter the Iberian, bishop of Maiumas, entered and stopped in Madaba on the road to the hot baths of Baarus (modern Hammamat Ma'in).

The inscriptions in the mosaics of the churches in Madaba and its environs are the principal and practically the only source of historical information available for the first decades of the sixth century through the eighth century. Phidus and Cyrus probably were the bishops of Madaba in the first decades of the sixth century. In the time of Phidus, the lower Chapel of the Priest John at Khirbet el-Mukhayyat was built and a mosaic executed. In the time of Cyrus, the *photisterion* ("baptistery") of the cathedral in Madaba received a mosaic, as did the Church of Kaianos in the Valley of 'Ain Musa north of Mt. Nebo. The mosaics in the diaconicon-baptistery of the Sanctuary of Moses and in the Church of

MADABA. Figure 1. *Detail of the Madaba Map mosaic, showing the Jordan River.* (Archive Studium Biblicum Franciscanum)

St. George in the village of Nebo mention that Elias was bishop in 531 and 536. [*See* Baptisteries.]

In 562, when John was bishop of the diocese, the Chapel of St. Theodore, in the atrium of the cathedral, received a mosaic. During John's episcopate, a small chapel was built in the southeast sector of the city, to which the Church of the Apostles was later added. In the village of Nebo, the upper Chapel of the priest John and the Church of the Holy Martyrs Lot and Procopius were built and paved with mosaic floors.

Just outside the north wall of the city of Madaba in the time of the emperor Justinian, a great reservoir was dug to provide the city's water. In the valley southwest of the tell, another great reservoir (about 100 sq m and 10 m deep) was already in use. The mosaic in the Hippolythus hall, the best example of the city's classical renaissance, is dated to this period, the first half of the sixth century (see figure 2). The hall was part of a mansion that had been added to the west side of the Roman temple (the Tychaion) on the north side of the paved road (the *decumanus*) in the center of the city's northern quarter. The mosaic pavement (7.30 × 9.50 m) is lavishly decorated with Nilotic and mythological motifs inspired by Euripides's tragedy *Hippolytus*. The personifications of the Tychai of the christianized cities of Rome, Gregoria, and Madaba also appear, each one holding a cross on a long staff. In the mosaic's central panel, the characters in the tragedy are accompanied by labels with their respective names: the handmaidens assist Phaedra, while the wet-nurse turns toward Hippolytus, who is accompanied by his ministers and by a servant who holds his mount by the bridle. In a second figurative panel, the goddess Aphrodite, seated on a throne next to Adonis, threatens with her sandal a winged Eros, who is being presented to her by a Grace. A second Eros supports Aphrodite's bare foot, while a third Eros looks on and a fourth is intent on emptying a basket full of flowers representing beans. A second Grace grasps a foot of still another Eros, who takes refuge among the branches of a tree, and a third Grace runs after the sixth

MADABA. Figure 2. *The Church of the Virgin and the Hippolytus Hall.* (Archive Studium Biblicum Franciscanum; photograph by Michele Piccirillo)

Eros. A peasant girl coming from the country observes the scene and locates the scene in the countryside.

From 576 to the end of the century, Sergius was bishop of Madaba. The inscriptions chart the period's building activities, which were especially busy in the diocese during his episcopate. He continued the renovations begun by his predecessor John, and in 576 brought to completion the restoration of the atrium of the cathedral, with its cistern and new baptismal chapel. In 578, the mosaicist Salaman signed mosaic floor of the Church of the Apostles, which was built on the southeast corner of the acropolis. At the same time, at Umm er-Rasas/Kastron Mefaa, 30 km (19 mi.) east of Madaba, the northern church (named the Church of Bishop Sergius), the Church of the Lions, the Church of the Rivers, and the Church of the Priest Wa'il were built and lavish mosaics were laid down. [*See* Umm er-Rasas.] The most important building program in the diocese was the construction of the Basilica of Moses on Mt. Nebo, completed in 597/98. At the same time, a sacred complex that included the Church of the Virgin and the Church of the Prophet Elias was begun in the city. Before the death of Sergius in 595/96, the crypt of the Church of the Prophet Elias was completed.

In 603, Bishop Leontius, "sweetest and true friend of peace," as he was remembered in inscriptions, had already succeeded Bishop Sergius. A room with mosaics, to the north of the church in the cathedral complex, is dated to 603. In the southern territory of the diocese, the west church in the village of Mukawer was decorated with mosaics and dedicated in 603. [*See* Machaerus.] In 608 the building program of the two churches on the main street, begun in the time of Sergius's predecessor, was finished with the aid of funds donated by two brothers, Menas son of Panphilus, and Theodosius. A chapel dedicated to the Virgin Theotokos was added to the baptistery on the southern wall of the Basilica of Moses on Mt. Nebo.

To these dated monuments should be added, for stylistic reasons, several other churches discovered at Madaba and in the nearby villages. They were either built or restored in the second half of the sixth century–beginning of the seventh

century, at the time of the Bishops John, Sergius, and Leontius. It was the period during which the most intense ecclesiastical building activity took place: the northern church with the mosaic map of Palestine, the church of al-Khadir, the Hippolytus hall, and the Burnt palace.

The basilica near the city's north gate had been identified before the Madaba map mosaic was discovered and published. In the 1880s the Greek Orthodox community had chosen the area to build a chapel and a house for its priest. Then in 1896 a new church was built there, during which the left sections of its mosaic floor were uncovered. Within the three-naved church, the mosaic composition did not extend much farther than the limits of those sections, which are each 15.70 m wide and 5.60 m long. The nearly 150 geographic captions in the mosaic's left sections refer mainly to Syro-Palestinian territory from the region of Tyre and Sidon on the north, to the Egyptian Delta on the south, and from the Mediterranean Sea to the Syrian desert. The mosaic's figurative high point is the vignette of Jerusalem, which, in a way is the ideal center of the composition even if it is not in the exact physical center. The city, seen in a bird's-eye view, is represented with its walls, gates, streets, and principal buildings, some of them still identifiable. The map is oriented east, as are its cities and their buildings—so are the captions, which can be seen and read by whomever enters the church and walks toward the altar. In spite of the approximations the map's small area required in order to distribute the localities along the region's road network, the sites are quite clearly indicated, by captions and vignettes that suggest the importance of each locality. From the captions of the toponyms (mostly taken from the *Onomasticon* of Eusebius), and especially from the direct references to the Israelite tribes, it becomes clear that the map is, in the first place, a document of biblical geography. The addition of New Testament localities and the preeminence of Christian sanctuaries and churches and of the basilica of the Holy Sepulcher in the heart of Jerusalem, make the map a Christian rereading of the history of salvation in its geographic framework. Seen in this perspective, the map is a document of the faith of the Christians who executed it. Artistically, the map and the mosaics of Madaba and its environs should be seen in the context of the classical renaissance of the Justinian period.

After a period of historical silence, recent excavations have clarified that the Christian community of Madaba was still vital during the Umayyad period. On the acropolis of Ma'in, "a large village near the hot baths of Baaru" (*Onomasticon* 44.21), a church was rebuilt with a mosaic pavement in 719/20. The pavement depicted a series of buildings representing the cities and villages in Palestine and Transjordan.

At Umm er-Rasas/Kastron Mefaa the church of St. Stephen was rebuilt and paved with the same kind of architectonical representations at the time of Bishop Sergios II—certainly in the eighth century, although the exact year cannot be fixed. In 756, under Bishop Job, the presbytery of the same church was repaved. In 762, also under Bishop Job, the mosaic of the chapel of the Virgin Theotokos in the monastery of ʿAyn al-Kanisah on Mt. Nebo was restored.

In 767, at the time of Bishop Theophane, the mosaic of the church of the Virgin in the center of Madaba was repaved. This is the last date for the Christian community and for the city. Archaeological evidence points to a scanty occupation in the later periods until the modern resettlement in December 1880.

[*See also* Churches; *and* Mosaics.]

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MICHELE PICCIRILLO

MADINAH. *See* Medina.

MAFJAR, KHIRBAT AL-, site located near Jericho in the Jordan Valley, where excavations carried out between 1934 and 1948 brought to light the richest and the most

original of all princely establishments associated with the early Islamic dynasty of the Umayyads (661–750 CE). After 1948 additional sections of the site were cleared and a process of continuing renovation was initiated to preserve the existing ruins and to make them easier for visitors to understand. The vast majority of the finds from the site and most of the records of the excavations are kept in Jerusalem, in the former Palestine Archaeological Museum, now known as the Rockefeller Museum, where several sculpted ensembles have been reconstructed.

Khirbat al-Mafjar is also known as Qaṣr Hisham, because a graffito found in its ruins carries the name of that particular caliph who ruled between 724 and 744. There is in fact no valid reason to associate Khirbat al-Mafjar with Hisham and, even though a reasonable and tempting hypothesis can be made about the patron of the complex (see below), it cannot be demonstrated.

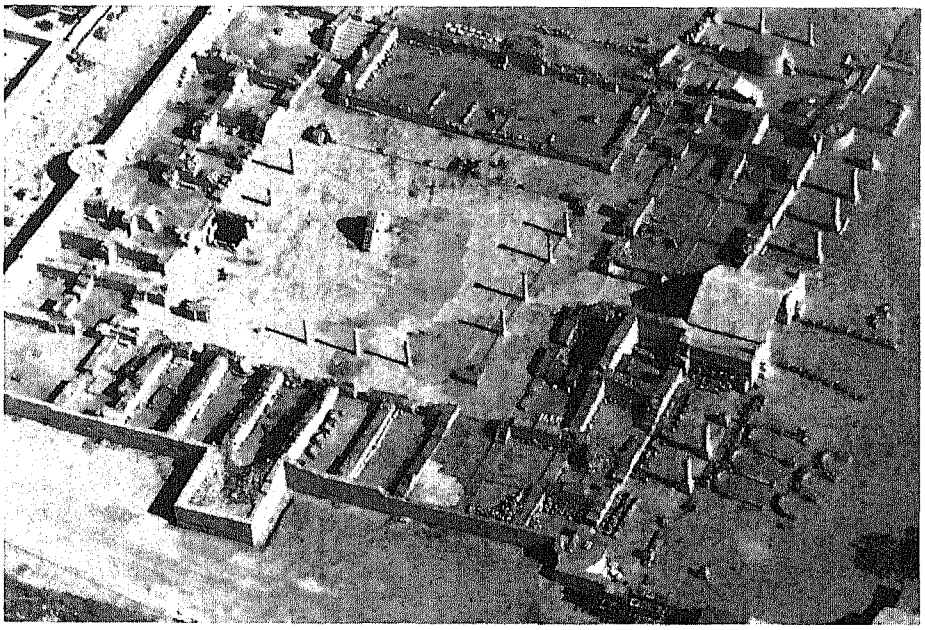
The site had been identified as a significant settlement as early as 1873 by the British surveyors of Palestine. For a while it was considered to be the biblical Gilgal and the Early Christian Galgala. In fact, its excavators first believed that they had found a Christian ecclesiastical establishment. It turned out to be an Umayyad palace that was probably never completed. Its construction seems to have been abandoned rather abruptly—either because of one of the several earthquakes that affected Palestine in the middle of the eighth century or because a patron suddenly disappeared or lost interest.

There are five parts to the establishment:

1. *Two-storied square castle.* Roughly 70 m to the side, the complex has a porticoed courtyard with single rooms, large halls, or apartments known in Arabic as *bayt*s around it (see figure 1); although their exact functions cannot be established, these halls clearly were meant for a diverse set of activities, a relative rarity in palaces of the same type. The entrance complex is unusually large and was decorated with a striking array of stucco sculptures, ranging from traditional geometric and vegetal designs to an unusual number of representations of personages and animals, and mural paintings, some representational, on the second floor. [*See* Palace; Furniture and Furnishings, *article on* Furnishings of the Islamic Period.]

2. *Mosque.* To the north of the castle, a small and architecturally sober mosque had a direct passage to the second floor of the living quarter. [*See* Mosque.]

3. *Bath.* A sequence of rooms—an enormous (30 × 30 m) common room covered by an extraordinary roof of vaults and domes, a small suite of bathing rooms, a large latrine, a heavily decorated small private room, and a monumental entrance—corresponds to the usual system that issued from Roman architecture. The respective sizes of the components and especially the decoration found in them are unique in three ways: by the techniques used (mosaics, paintings, and sculptures); by the subjects depicted (princes, half-clad women, animals in all sorts of guises, a most elaborate geometry, rich vegetation), even though many of the topics have not yet been properly identified; and by the styles of depiction (its models are found in the Mediterranean world as well as in Buddhist Central Asia). A small room in the northwest corner, whose exact function is unclear, is a museum of mosaic and sculpture masterpieces. [*See* Baths; Mosaics; Wall Paintings.]



MAFJAR, KHIRBAT AL-. Figure 1. *General view of the excavated palace.* (Courtesy Pictorial Archive)

4. *Forecourt.* Unifying the bath, mosque, and castle as a single composition, even though they were built at different times, is a forecourt. Toward the center of the courtyard an octagonal domed pavilion stood over a small pool.

5. *Walled and irrigated area.* A large walled and irrigated area surrounding the complex may have been used for cultivation or for hunting.

Khirbat al-Mafjar's architectural planning is awkward in many details, but the ensemble differs from other Umayyad castles through the imagination and originality of some of its construction (vaults in the bath hall, a pavilion in the forecourt), through its elaborate and luxurious decoration, and through the technical quality of most of its decoration. One of its excavators, Robert W. Hamilton (1988), has made a most persuasive argument that the licentious, poetic, and exhilarating life of the prince-poet and short-lived caliph Walid II (assassinated in 744) fits admirably with the setting and decoration of Khirbat al-Mafjar and that he should be considered the palace's patron. Like most sites in Syria and Palestine, Khirbat al-Mafjar was reoccupied in the twelfth–thirteenth centuries, when a caravanserai was built out of its ruins.

[*See also*; Umayyad Caliphate.]

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OLEG GRABAR

MAGDALA (Ar., Majdal), site located on the western shore of the Sea of Galilee, 3 km (2 mi.) north of Tiberias and 5 km (3 mi.) south of Capernaum (32°49′ N, 35°31′ E; map reference 198 × 247) and identified as ancient Migdal by its Arabic name.

No remains of city walls have yet been found at the site, but its borders are known on three sides: to the east, the Sea of Galilee; to the south, a cemetery; and to the west, the mountains. It seems that it was a small town in the early Hellenistic to Byzantine periods, also called Tarichea ("salted fish") and Migdal-Nunia ("the fish tower")—names that reflected the main occupation of its citizens—fishing. [*See* Fishing.] An underwater survey carried out by Ehud Galili for the Israel Antiquities Authority in 1991 raised the possibility that the town was named after a tower built in the water, south of the town, with natural rock as its base.

Magdala was a Jewish town founded in the Late Hellenistic (Hasmonean) period. The town came under siege and a heavy battle was fought there during the First Jewish Revolt against Rome, when Titus attacked it from the Sea of Galilee (Josephus, *War* 3.10.3). [*See* First Jewish Revolt.] According to Josephus, six thousand people were killed. The town is known later, in Christian tradition, as the birthplace of Mary Magdalene, a follower of Jesus (e.g., *Mt.* 27:56). The town survived the Roman defeat of the Jews, and its name appears a few times in Jewish sources (J.T. *Ber* 9.3, *Meg.* 3.1; B.T. *Yoma'* 1.2; see also Manns, 1976).

The largest excavations at the site were carried out by Franciscans, directed by Virgilio Corbo (1976), in 1971–1973 and 1975–1976. Five levels were unearthed. The first features a well-designed building (9 × 7 m) called a mini-synagogue by its excavators. It is a one-room structure, with a flight of steps the excavators interpreted as benches. On three sides of the rectangular building, three rows of pillars 33 cm in diameter and with Doric capitals were arranged in a U shape, with heart-shaped pillars in the corners. The excavators identified two floors, one above the other, with a fill about 30 cm deep. They dated the first floor to the first century BCE and the later floor to the first century CE. Water canals around the walls support Ehud Netzer's identification of the building as a springhouse, rather than a very small and unusual synagogue. [*See* Synagogues.]

West of the structure a group of pools and a water tower are dated to the Early–Late Roman period. The installations are connected to the spring that supplied water to the town. To the north an "urban villa" was excavated, and to the south a large building with twenty-four rooms and a large "piazza" adorned with pillars. [*See* Villas.] These elements point to a well-designed small town in the Roman period. According to the excavators, the eastern side of the town was badly damaged during the Jewish Revolt.

It is possible that the shipwreck found in the Sea of Galilee close to Magdala and dated to the first century CE is also a relic of that war. [*See* Galilee Boat.] The boat was found not far from the location of the town's ancient quay; both inside and near the quay a few arrowheads and a typical first-century CE cooking pot and oil lamp were recovered by Shelley Wachsmann.

A small salvage excavation carried out by the Israel Antiquities Authority in 1991, directed by Hana Abu-Uqsa (1993), uncovered the remains of a private building whose floors held storage jars, cooking pots, and assorted small finds. The earliest coins, as in the Franciscan excavations, are Hasmonean. It seems that the building was damaged during the First Revolt but was later rebuilt and remained in use until the second century. A Byzantine monastery was excavated at the site, which, as at neighboring Tiberias,

demonstrates the social change that took place in formerly Jewish Galilee in the Byzantine period. [*See* Monasteries.]

A few hundred meters south of the site, a number of decorated sarcophagi were unearthed that date to the third-fourth centuries CE. [*See* Sarcophagus.] A hoard of 188 bronze coins minted in different cities was found nearby as well in 1973 (Meshorer, 1976).

[*See also the biography of Corbo.*]

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MAGHREB. *See* North Africa.

MAGNETIC ARCHAEOMETRY.

A nondestructive geophysical investigation technique that reacts to magnetic characteristics in natural and worked materials, of use at archaeohistorical sites, is known as magnetic archaeometry, or magnetic survey analysis. Differences between ambient forces and those induced by human agencies such as heat, compaction, organic decay, and architecture are measurable if their magnetic properties are not the same.

While this form of site study is faster and less expensive than excavating test trenches, nearby vehicles, trains, buildings, and power lines can interfere with testing. Anomalies, which are measurable variations, existing between environmental rocks and sediments and human habitats with trenches, structures, paths and roads, and areas and materials that were fired can be located with instruments in the field.

The ambient magnetic field anywhere on the planet can be observed in the behavior of a suspended magnetized needle. Cartographers call the angle on the earth's surface between the earth's north rotational axis and the magnetic vector, the declination. The inclination is the dip angle between the horizontal at the point of measurement and the magnetic force field within the earth. This magnetic field has wandered through geologic time; it has, in fact, reversed its polarization from time to time.

The intensity of this natural magnetic field is a function of the greatest pull (or vector) on such a "needle" or detector by the forces in any given area on earth. The unit of magnetic field strength expressed by most researchers is the gamma (γ). For example, in the United States the magnetic field varies from 49,900 to 59,500 γ; its inclination varies from 60 to 75° below the horizontal (Weymouth and Huggins, 1985, p. 193). Strength variations occur during solar magnetic storms and over 24-hour periods.

Current magnetic surveys may employ one of three instrumental techniques: the rubidium or cesium magnetometer; the fluxgate magnetometer; or the proton free-precession magnetometer. In the first, atomic electrons of rubidium and cesium (vaporized) capture the magnetic response. The second method detects the vector field forces along the axis of its electromagnetic coil design. Most researchers employ the last—the least costly—mode of instrumentation. The detector of the proton magnetometer is a coil submerged in a liquid (water or kerosene) source for hydrogen. A current in the coil produces an intense magnetic field in the liquid much greater than the natural/or ambient forces. The nuclear protons (actually spinning magnetic dipoles) of the hydrogen are partially polarized. The coil current is cut off and the nuclear protons precess (by a change in the axis of rotation) in the magnetic flux of the earth at that location. The protons briefly precess together, inducing a measurable voltage in the coil. The results are read in gamma units upon amplification of the voltage and determination of the frequency. Instrumentation has been designed to exhibit cycle times in about one second and to have a sensitivity level of 0.1 γ or less.

Environmental materials such as bedrock, residual and transported soils, and iron objects can be magnetized by the effect of applied magnetism. This physical property, known as induced magnetization, disappears when the magnetic forces cease. Those magnetic characteristics displayed in the absence of any applied field are described as remnant magnetization. Heated material, such as certain rocks and most clays, that cools in a magnetic field posseses a thermoremnant magnetization. Some minerals, such as hematite and magnetite, exhibit properties of remnant magnetism. He-

matite, for example, is susceptible to conversion to the more highly magnetic magnetite by heating or in organic decay loci in the absence of oxygen.

Subtle variations in the magnetic field over a site probably indicate the presence of human activities. These data are mapped using block portions of the site area—the blocks may vary in area up to a limit controlled by the frequency of the ambient magnetic changes, usually 100 m × 100 m quadrangles. Sample positions may be set at 1- or 2-meter grid-line spacings within each quadrangle, depending on the desired resolution of the data imagery when mapped. Sensor (detection) height is chosen so as to lower input ("noise") from the subtle magnetic properties of soils: 40–60 cm is regarded as optimal for a one-meter grid. Control points act as references to track the diurnal, or daily, variations in the environment under study. Careful monitoring of these control points (usually every 15–20 minutes) assures greater accuracy of the method and its precision.

The greatest accuracy is achieved when two proton magnetometers are employed in either of the following configurations: one instrument is maintained at a fixed point on the site while the other records values at the grid points; or both instruments are operated together with a fixed spacing between them. When setting up the measurement operations, every natural (geological) and human (archaeological) feature must be recorded. These conditions contribute to the plans for the analytical procedures and to the final understanding of the data. The results of magnetic analysis are best presented as a matrix of corrected site magnetic values. Computer processing is essential in which a dot-line printer is used with characters of different shades, each recorded at representative grid-point intervals. The lightness or darkness of each dot character is a function of the magnetic field force at each point. The maps produced are easily read and interpreted.

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REUBEN G. BULLARD

MAKKAH. *See* Mecca.

MALLON, ALEXIS (1875–1934), best known in the field of Syro-Palestinian archaeology as the excavator of the Chalcolithic type-site of Teleilat el-Ghassul. Mallon was born in La Chapelle-Bertin, France. As a young priest, he was sent to Ghazir in Lebanon. Mallon earned a Ph.D. in Egyptian hieroglyphics and Coptic, and in 1904 he published a grammar of Coptic and a number of articles. After studying theology in England (1905–1909), he returned to Lebanon, where he taught and published numerous articles on Egyptology and Coptic studies in the "Melanges de la Faculte orientale de Beyrouth." Thereafter, his intellectual interests shifted to prehistory and biblical archaeology.

In 1913, the Pontifical Biblical Institute (PBI) acquired land in Jerusalem for a study center and Mallon was selected to oversee the Vatican's building program there. During World War I he returned to Rome, where he wrote "Les Hebreux en Égypte" (1921) and participated in the prehistoric research of Father Bovier-Lapierre. His interest in prehistory lasted until the end of his life.

Mallon returned to Jerusalem in 1919 to continue the PBI construction project, which had ceased during the hostilities. He conducted a number of surveys in the Dead Sea region with the French prehistorian René Neuville, publishing them in a number of concise and erudite reports in the journal *Biblica.* However, his most lasting achievement is the publication of his 1929–1932 excavations at Teleilat el-Ghassul, which appeared shortly after his death (Mallon, Koeppel, and Neuville, 1934).

Mallon's excavations at Teleilat el-Ghassul fundamentally altered Palestinian archaeology through the discovery of a new archaeological culture. William Foxwell Albright, who examined the new material with Mallon, labeled the assemblage Chalcolithic (Albright, 1932). Among the reasons

Mallon's work stands as a lasting achievement is his having been one of the pioneers in a multidisciplinary approach to archaeological fieldwork and analysis. His book on Teleilat el-Ghassul is still the most significant publication of the site, for the scale and care that Mallon and his team achieved.

[*See also* Teleilat el-Ghassul; *and the biography of Neuville.*]

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THOMAS E. LEVY

MALLOWAN, MAX EDGAR LUCIEN (1904–1978), one of the principal archaeologists to work in the Near East. Mallowan received his B.A. in classics at Oxford and was immediately hired as Leonard Woolley's assistant at the Ur excavations, a position he held for six successive seasons (1925–1930). It was at Ur that Mallowan met his wife and archaeological companion of the next forty-five years, the mystery writer Agatha Christie. In 1931 he completed his apprenticeship by joining R. Campbell Thompson's excavations at Nineveh.

Mallowan's interests included all areas of the ancient Near East and the Indus Valley as well, but he excavated exclusively in northern Mesopotamia. He first chose to dig, in 1933, at Arpachiyah where the well-preserved Halaf deposits proved to contain a series of substantial circular buildings (Mallowan's conceivably domed tholoi) and an outstanding range of finely painted Middle and Late Halaf pottery. When subsequent political developments kept British teams from working in Iraq, Mallowan chose to explore the little-known region of the Khabur and Balikh Rivers in nearby northeastern Syria. Following an initial survey, he excavated at Chaghar Bazar in the Khabur basin where, in the course of two full seasons (1935 and 1936), he not only revealed a long Halaf sequence but also an early second millennium occupation associated with Khabur Ware and cuneiform tablets from the time of Shamshi-Adad I (c. 1813–1781 BCE). His second major excavation in the region was at Tell Brak where he discovered the richly appointed Eye Temple of Late Uruk date and an Akkadian palace attributable to Naram-Sin.

Mallowan's final large-scale excavation took place at Nimrud (1949–1957), where he first concentrated on the main buildings of the Neo-Assyrian citadel before turning his attention to outlying Fort Shalmaneser, a royal residence, arsenal and treasury in which an exceptional range of early first-millennium BCE ivories came to light. As an excavator Mallowan was always dependent on fresh finds for future funding and, in response to this pressure, he persisted in digging, well into the 1950s, with a small staff and a large work force. In his own words (*Memoirs,* 1977) he remained "an unashamed supporter of the bygone days of digging."

As the first Professor of Western Asiatic Archaeology at the Institute of Archaeology of the University of London (1947–1960), Mallowan's natural gifts as a teacher were especially valued. Knighted in 1968, he also continued throughout his later years to foster the activities of the British School of Archaeology in Iraq and the British Institute of Persian Studies, two institutions that owe a particular debt to his energy and initiative.

[*See also* Brak, Tell; British Institute of Persian Studies; British School of Archaeology in Iraq; Ḥalaf, Tell; Khabur; Nineveh; Ur; *and the biography of Woolley.*]

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DAVID STRONACH

MALTA. Only by some stretch of the imagination is Malta a Near Eastern land. Although Malta and its sister island Gozo are only 80 km (50 mi.) from Sicily, they are 290 (180) from Tunisia, 335 (210) from Libya, 620 (385) from Greece, 1060 (660) from Turkey, and 1,895 (1,175) from the Syrian coast. The Mediterranean Sea can join, however, as well as divide. At several points in their long history, either directly or with North Africa as intermediary, Malta and Gozo have been linked with Southwest Asia, occasionally quite closely.

Although the concept of diffusion is out of fashion in archaeological interpretations, the origins of farming in the ancient Near East, and its spread from there across Europe, are universally accepted. However, since it took one thousand years to reach Malta, around 5000 BCE, by a route that took it through Greece, Italy, and Sicily, eastern influence was much diluted. Nonetheless, it should not be forgotten that the wheat and barley, sheep and cattle, upon which the earliest Maltese farming was based, originated in the Near East.

In the long and largely indigenous development of Maltese prehistory, there are only two hints of eastern contact.

Associated with the spectacular megalithic temple architecture of 3500–2500 are numerous representations in stone and clay of grossly corpulent and strangely asexual human figures, popularly known as "fat ladies." They are well illustrated in John D. Evans's work on Malta (1971). Although similarities with much earlier examples from Çatal Höyük in Turkey have been noticed, they are in all probability accidental.

Rather more convincing are a series of open straight-walled bowls with flat base, single handle, and lip characteristically thickened on the inner side, discussed by David Trump (1966). The lip is also flat, insloping, and frequently decorated with incised triangles, which are dot-filled or diagonally hatched. A few have been found in temple-period deposits, and they become common in the succeeding Bronze Age, whose cultural affiliations lie with western Greece. Close parallels for this form and its decoration were found in Early Bronze Age Thermi on Lesbos, and occurred also on the nearby mainland at Troy. It is certainly exotic in Malta at much the same period, but the Turkish connection will not be certain until confirmed by clay analyses. All other foreign imports before the first millennium, whether raw materials or manufactured goods, can be traced to Sicily or elsewhere in southern Europe.

Phoenician and Punic Influences. A great change came with the expansion of Levantine, or more specifically Phoenician, trade. Although the first contacts were formerly dated to the ninth century, it is now generally felt that firm evidence goes back no further than the later eighth, though this would not rule out occasional earlier visits. Cultural influence increased strongly when Carthage took over control of Phoenician enterprise in the west in the mid-sixth century. The Punic period in Malta lasted to the arrival of the Romans. They sacked the islands in the First Punic War in the 250s and annexed them in the second war in 218.

Written evidence for the Punic period is remarkably scarce. Diodorus Siculus mentions the Phoenicians' occupation of Malta and Gozo, and Latin writers report the wresting of them from the Carthaginians. Apart from some dedications on potsherds, the earliest of which may date from the third century, epigraphic evidence is confined to the Roman period and will be described below. As a result, our only significant information is from the archaeology.

Direct evidence for settlements of the Punic period is scanty in the extreme. A thin stratum with Phoenician red-slipped sherds but no structures was identified beneath the main square of Victoria, Gozo, stratified between Bronze Age and Roman levels. In limited excavations within the acropolis, known now as the Gran Castello, all earlier deposits had been destroyed by medieval and recent occupation. Mdina, in the center of Malta, produced some Roman structures and a little residual Bronze Age pottery. No excavation has been attempted in Vittoriosa beside Grand Harbour. All these places must have had substantial Phoenician and Punic occupation on the evidence of surrounding cemeteries.

A special case is provided by a strange building of fine ashlar (dressed stone) masonry with an Egyptian-gorge cornice at Zurrieq in the south of the island. This architectural ornament can hardly be anything but Punic work, though excavation has produced no dating evidence in the badly disturbed deposits. It has been variously suggested that this structure could be the remains of a country house, a monumental tomb, or a temple (Houel, 1785; Mayr, 1909; Ashby, 1915; Isserlin, personal communication).

Two more securely religious sites have been discovered on dramatic cliff-bound headlands on the west coasts of Malta and Gozo, at Ras ir-Raheb and Ras il-Wardija. The former has not been properly studied but has yielded a stone *thymaterion* or incense burner and a bone relief carving of a boar. The latter consists of an alcoved rock-cut chamber, including a symbol of the Phoenician goddess Tannit, but no deposits. Both sites had massive water cisterns cut in the rock beneath them.

By far the most important building of the Punic period in the islands is the temple at Ta Silg, excavated by an Italian mission from 1963 to 1970 and reported by Michelangelo Cagiano de Azevedo and colleagues (1965–). A prehistoric temple had been erected on the site in the third millennium and activity continued through the Bronze Age to approximately 1000. About 700 the Phoenicians incorporated the earlier structures in a rectangular temple of their own, with a courtyard and temenos. Alterations such as the enlargement of the enclosure and the addition of a colonnaded portico and further structures were made, particularly in the fourth to second century. These changes show strong Hellenistic influence. Later remodelings under the Romans, and especially in the Byzantine period, further complicate the earlier phases.

The finds from Ta Silg underline the eastern Mediterranean connection, including architectural fragments with Egyptian and proto-Aeolic motifs, a fine ivory carved in openwork relief with palmette and lotus designs, and another fragment of an incense burner. Numerous dedications in Phoenician to Astarte and in Greek to Hera were recovered too. They were incised in pottery before firing and were thus clearly made to serve as votive offerings. These objects strongly support the identification of the site with the temple of Juno, which was looted by Gains Verres (governor of Sicily 73–71), as recorded in Cicero's speech for his prosecution. A second temple dedicated to Hercules/Melkart was mentioned by the geographer Ptolemy, but it has not been identified.

Of other epigraphic material, two marble *cippi* (votive pillars), one in the National Museum of Malta, one in the Louvre, have bilingual dedicatory inscriptions in Punic and Greek. The Louvre specimen assisted the original transliteration of the Phoenician script in the eighteenth century.

They also were probably found in the ruins of Ta Silg. A small and very elegant slab from Gozo, now broken, records work on public buildings and temples. Its second-century date emphasizes an important fact—that Punic culture survived Roman military conquest by two centuries or more. The Maltese people were *barbaroi* at the time of St. Paul's visit about 60 CE, which in the context must surely mean Phoenician-speaking.

This cultural overlap is particularly obvious from the tomb material, which gives us our most detailed evidence concerning the Phoenician impact on Malta. Some tombs undoubtedly date back to the Punic or even Phoenician period. A well-excavated burial from Ghajn Qajjet near Mdina was published by J. G. Baldacchino and T. J. Dunbabin (1953) and can serve as an example. A square shaft was cut into the soft rock and a trapezoidal chamber, which measured 3 × 3.6 m (9.9 × 11.8 ft.), opened from its foot. A stone slab sealed its entrance. A larger horizontal slab inside the chamber served as a bed for two skeletons, one male, one female. They were accompanied by seven bracelets, two of bronze and five of silver; four silver rings; a bronze lampstand top; and four key-shaped loops of iron, probably fittings on a bier. Thirty-three pieces of red-slipped Phoenician pottery included amphorae, an oinochoe (wine vessel), jugs, cups, dishes, plates, and *bilychnis* lamps (saucers with two pinched spouts). In addition, there were two imported Greek cups, a proto-Corinthian kotyle (deep drinking cup) of a little before 700 and a Rhodian bird-bowl of the mid-seventh century. Because the former was noticeably worn, the latter gives the more reliable date for the burial. There was also a plain jar of a form datable to the second century, and it contained cremated human bone. Clearly the tomb had been reopened to take this later interment. This reuse for later burials is only one of the problems in studying the several hundred tombs known from Malta and Gozo.

There are other intact tomb groups, but very few with datable imports. A fine fourth-century Megarian bowl from another tomb at Hamrun is a good example. Usually only locally made pottery was included, making close dating difficult. Gradually red slip was abandoned, though narrow hoops of red or purple paint were often applied to the buff ware. Larger jars and egg-shaped amphorae appear. As an example, in a tomb chamber at Tal Horr, Pawla, a young man was accompanied by two each of amphorae, jugs, bowls, and saucers, all with simple red rings, and a plain two-handled jar. He wore a silver signet ring bearing a palm tree within a cabled border.

Much less informative are the great majority of tombs, which were looted long ago. On the other hand, there are quantities of material, some of it high quality, in private collections of antiquities without provenance or secure association, which must originally have been recovered from these tombs. Fragments of decorated gold foil, a terra-cotta mummiform sarcophagus, numerous amulets in faience, bronze and gold, and silver rings with faience scarab bezels testify to close trading links with the Levant (Gouder, 1991, pp. 8–14).

Later still, the tombs become larger, with one or two rectangular chambers on the same axis as a rectangular shaft. Cremation is now the more usual burial custom, as in the secondary interment at Ghajn Qajjet near Mdina. Most of the tombs must date to the period of Roman occupation. From 100 BCE–100 CE, the whole suite of material of Phoenician derivation is gradually replaced by Roman provincial pottery and glass.

The coin evidence, which has been reviewed by Charles Seltman (1946), should also be mentioned. Whereas trade easily explains coins from Sidon, Aradus, Carthage, and the Greek cities of Sicily, the local issues are much more puzzling. Of these, some were inscribed with the names Anan and Gawl in Phoenician, others had the corresponding Melitaea and Gauliton in Greek, although the Greeks never held the islands. The conclusion from all this evidence is that, although Phoenician and Punic culture became firmly established among the inhabitants of Malta and Gozo, archaeological information from the islands is very restricted, and can add little to that from areas where it is better preserved, in the Levant, North Africa, Spain, Sardinia, and Sicily.

Arabic Influence. The next period of eastern influence comes with the Arab invasion of 870 CE under Ibn Khafadsha, after which Malta was held as a dependency of Tunis until the Arabs were expelled by Count Roger of Sicily in 1090. Historical records are scanty and give no further details. Epigraphy is confined to gravestone inscriptions, a fine one pertaining to Majmuna, a twelve-year-old girl from Gozo, and a number from Rabat, outside the walls of the Arab capital in Mdina. Where datable, most of these tombstones are later, often much later, than the Christian reconquest of 1090. The pattern of slow culture change follows a remarkably similar pattern to that under the Romans.

Maltese traditional pottery shows strong North African influence, presumably going back to the ninth–eleventh-century occupation. It includes lamps, strainer jars for water, and bipartite globular jars. Decoration consists of fine, geometric red painting on white slip or coarser white on burnished red, both again with North African parallels. Unfortunately, intact deposits earlier than the fifteenth century have not yet been found; therefore, such influences and their survival cannot be studied in detail.

That influence is clearest linguistically. Maltese is basically a North African Arabic dialect with considerable additions from Sicilian Italian. That it took such firm root in the two centuries of Arab occupation may be explained, it has been suggested, if in 870 the Maltese were already Semitic speakers, as would have been the case if they were still using Phoenician. Because no contemporary records exist, proof of this hypothesis is not forthcoming. It does remind

us, however, that, although Malta is isolated from the Near East, the sea routes of the Mediterranean allowed eastern influences to make a lasting mark on the culture of the Maltese islands.

[*See also* Phoenicians.]

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MA'LULA, modern village located in the Qalamun Mountains, 60 km (37 mi.) north of Damascus, Syria, and 110 km (68 mi.) south of Homs. The village is 1,650 m above sea level, at the bottom of a valley bordered on three sides by cliffs. If the evidence provided by the inscriptions found by W. H. Waddington and Heinrich Moritz (inscriptions 2563–2565) in the nearby caves is reliable, the site has been occupied since the Roman period; two of the inscriptions give dates of 107 and 167 CE. The existence of the site is, in any case, attested by George of Cyprus (Gelzer, 1890, p. 188, n. 993) as Magloulon. It was then a part of Lebanese Phoenicia. The Arab historian Yaqut mentions Iklim as one of the many villages that are a part of Ma'lula.

The village houses are arranged on the slopes of the valley like the tiers of seating in an immense amphitheater. Behind the summit of the cliff lies the Mar Sarkis Church and, since 1988, a modern hotel, from which there is a magnificent panoramic view. Three quarters of the village's inhabitants are Christians—Greek Orthodox or Greek Catholic; the remaining quarter are Sunni Muslims. Ma'lula is cited as the seat of a seventeenth-century Melchite bishopric, but in 1724 it was reunited with Said Naya. [*See* Said Naya.] It is perhaps its isolation (although it is not far from Damascus it is in the mountains) that has enabled Ma'lula to maintain its predominantly Christian population, unusual in Syria. This isolation did not, however, completely protect it from the hazards of politics. The city was sacked in 1850 by Turkish troops under Mustafa Pasha, whose men were pursuing the survivors of the revolt of the emir of Baalbek who had come to Ma'lula seeking refuge; the village was attacked and besieged again in 1860 and 1925. [*See* Baalbek.]

Nevertheless, in many respects the village remains a living conservatory of the most ancient traditions of Syrian civilization. To begin with, the inhabitants continue to speak a Western Aramaic dialect related to Judeo- and Syro-Palestinian Aramaic. It is therefore not injudicious to surmise that it represents the last example in Syria today of the language spoken in Syria-Palestine in the time of Jesus. [*See* Aramaic Language and Literature.] In comparison, the Aramaic spoken in the villages of the Jezireh and the Ṭur 'Abdin is much further removed, notably in the area of morphology. Ma'lula also retains in use many churches dating to the most ancient Christian past. In the Church of St. Elie, a mosaic from the fourth century has been uncovered. The best-known monasteries in Ma'lula are of Mar Sarkis (St. Serge, whose cult was very widespread in Syria) and St. Takla. The Church of Mar Sarkis was probably constructed on the ruins of a pagan temple; it is a small basilica with columns and a central nave flanked by two aisles. Even though basilicas with cupolas do not appear before the fifth century, the monks of the monastery propose a date for the church before the Council of Nicaea (325 CE); it was then that the altar tables found in pits in the central apse and the northern side chapel were outlawed—because their origin was believed to be pagan. [*See* Basilicas; Churches.] Carbon-14 analysis dates certain wooden elements from the wall supports of the central nave to the fourth century. None of these arguments is entirely convincing. Carbon-14 technology, in particular, does not permit such precise dating. In the absence of an executed scientific study, it is impossible to date this church with certainty. It is, however, entirely possible that its most ancient parts belong to the fourth or fifth century, as tradition holds. Since 1732 the monastery and church have belonged to the Basilien Salvatorien order and the Greek Catholic community.

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GEORGES TATE

Translated from French by Melissa Kaprelian

MALYAN (Anshan), site located in Fars Province, Iran, 50 km (31 mi.) north–northwest of Shiraz at an elevation of 1,611 m above sea level (30°01′ N, 52°25′ E). Malyan is often mentioned with Susa in the royal titulary of Elamite kings. [*See* Susa.] Its ancient city wall, constructed in the Proto-Elamite period, enclosed 200 ha (494 acres), but the occupation mound within the wall has an area of only 130 ha (321 acres). The Archaeological Department of Fars opened soundings under the direction of Feridun Tavaloli in about 1961 and the University Museum of the University of Pennsylvania sponsored five field seasons there (1971–1978) under the direction of William M. Sumner. Excavations focused on the Proto-Elamite (Banesh) period, the Kaftari-Qale period, and the Qale-Middle Elamite period. Ceramic evidence indicates that the site was occupied nearly continuously from about 6000 BCE into the Islamic period.

Proto-Elamite Period (3400–2800 BCE). Proto-Elamite deposits were excavated in four main operations. Large horizontal exposures were excavated in operation ABC, located near the center of the main mound, and in operation TUV, on a small isolated mound near the northeast corner of the city wall. More limited excavations were undertaken in a narrow trench across the city wall (BY8), and in the H5 deep sounding below later Kaftari buildings in operation GHI.

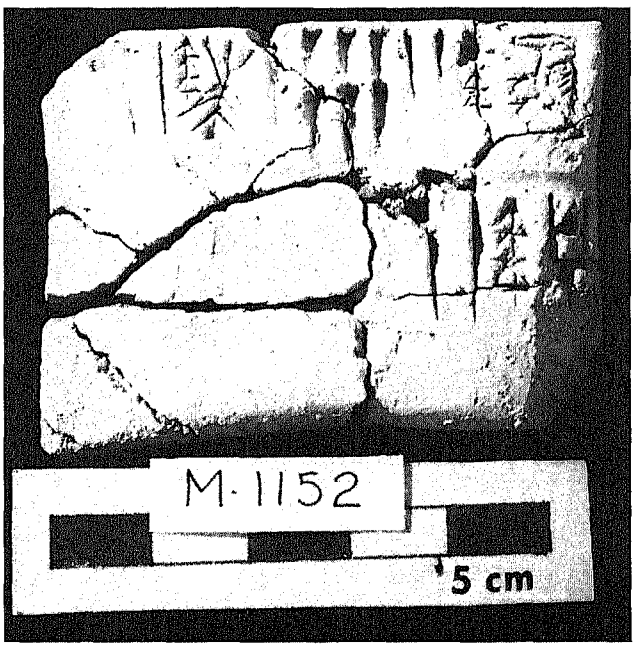
ABC operation. Four Proto-Elamite buildings from building levels 2–5 were excavated in the ABC operation (20 by 30 m, reduced to 10 by 13 m in the lowest level). Building Level 5, founded at the level of the plain, was made of unfired mud bricks, like all the buildings excavated at Malyan. Building Level 4 was constructed directly on the remains of the razed walls of Building Level 5. The earliest Proto-Elamite tablet and glyptic art came from this level. In Building Level 3 (15 by 25 m), with seventeen rooms, had walls decorated with painted rosette, swirl, and nested-step motifs executed in red, white, yellow, gray, and black plaster. Finds included fragments of incised and painted plaster bowls and drum-shaped ceramic vessels with floral and animal decoration in relief. The bricky fill between this building and the floors of Building Level 2 produced a collection of tablets and sealings in the classic Proto-Elamite style that is related to administrative activities in or near Building Level 3.

Building Level 2 was a fifteen-room warehouse (18 by 26 m) containing thirteen large (about 2 m high) Jemdet Nasr-style painted storage jars. Finds included Proto-Elamite tablets, sealings, concentrations of specular hematite, mother-of-pearl geometric inlay, and unworked shells from the Persian Gulf.

TUV operation. Operation TUV was occupied only in the Proto-Elamite period. Building Level 3 (247 sq m) was founded on the ruins of earlier Banesh buildings. The building had a number of rooms, a circular burned structure, and an alleyway; it was later modified for the construction of a pyrotechnical installation for copper smelting. Finds include Proto-Elamite sealed and inscribed tablets (see figure 1), jar and door sealings in several styles, solid clay balls with seal impressions, tools, and raw materials and by-products associated with the production of personal ornaments in metal, stone, and shell. Building Level 3 was razed to make room for the construction of Building Level 2 (455 sq m), which had plaster-lined bins, storage jars, hearths, milling stones, wells, and trash pits. Level 1, which was immediately below the mound surface and partly eroded, included the remains of two buildings separated by an alley. Finds in levels 2 and 1 indicate a continuation of the domestic activities and craft production found in the earlier buildings.

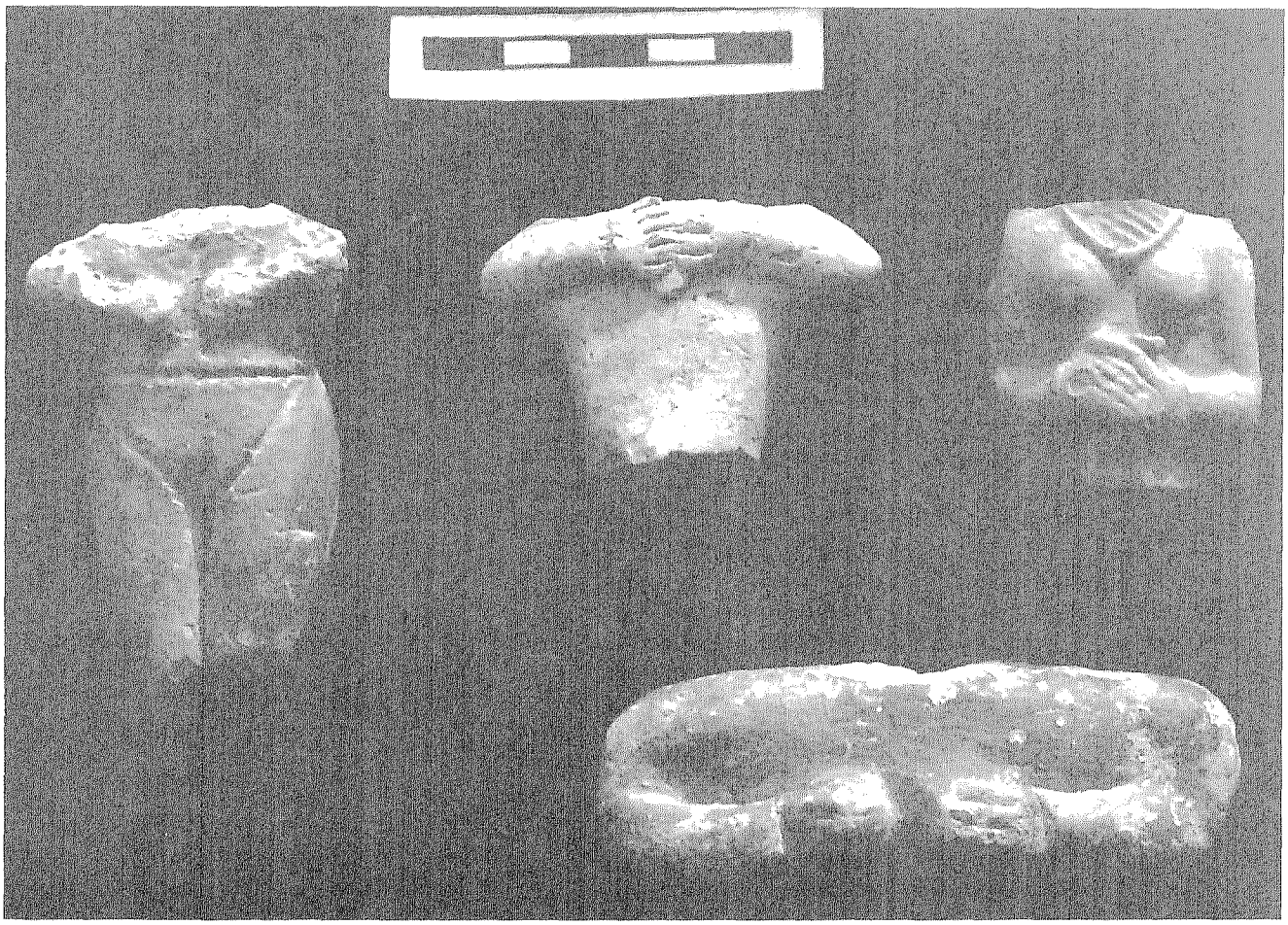
BY8 trench and H5 sounding. The Proto-Elamite wall (Operation BY8, 30 × 4–8 m) was a series of rooms reinforced along its inner face with a mud-brick platform; the rooms were protected on the outer face by a mud-plaster glacis built on a stone foundation. A sounding in operation H5 produced Middle Banesh ceramics below trash deposits with Late Banesh or Early Kaftari ceramics. This is the only context at Malyan that might represent a transition between the Banesh and Kaftari ceramic styles.

Kaftari Period (2200–1600 BCE). The city reached its maximum extent, some 130 ha within the reconstructed city wall, during the Kaftari period. Kaftari deposits were excavated in five main operations: large horizontal excavations in operations ABC and GHI, smaller excavations in two 10



MALYAN. Figure 1. *Proto-Elamite tablet.* Operation TUV, BL3. (Courtesy W. M. Sumner)

MALYAN. Figure 2. *Kaftari stamp seal.* Operation B. (Courtesy W. M. Sumner)



MALYAN. Figure 3. *Kaftari figurines.* Operation ABC. (Courtesy W. M. Sumner)

× 10 m squares (GGX98, FX106), and in the upper strata of a trench across the city wall (BY8).

ABC operation. The upper strata in operation ABC (20 × 30 m) consisted of Kaftari trash layers resting on the eroded surface that had truncated Proto-Elamite level 2. Within this trash deposit were a number of surfaces, pits, wells, fragmentary buildings, and many finds, including seals (see figure 2), tablets, figurines (see figure 3), flints, metal objects, raw materials, and production by-products.

GHI operation. Building Levels 3 and 4 were explored in a reduced area of excavation at the bottom of operation GHI. Building Level 2 was a courtyard building with access to the adjacent street, which was littered with a dense trash deposit. Finds included administrative texts in Sumerian, a lenticular school text, seals and sealings, figurines, and a bronze buckle in the form of hands grasping a bar. Level 1 belonged to the Qale–Middle Elamite period.

FX106 and GGX98 operations. Evidence of five Kaftari building levels was revealed in operation FX106 (10 × 10 m). Building Level 2 was a domestic structure with signs of extensive repair and rebuilding, an exterior well, a drainage ditch, and a walkway paved with square and trapezoidal baked bricks. Finds included figurines, cylinder seal blanks, flint tools, and by-products of metallurgical production. Operation GGX98 (10 × 10 m in area) produced two Kaftari building levels and a large intrusive Kaftari pit that contained a number of black-on-red canteen sherds, inscribed sealings, and a sun-dried-brick production site with rows of bricks left standing to dry in a herringbone pattern.

Qale-Middle Elamite Period (1600–1000 BCE). The EDD operation (1,000 sq m) uncovered a large burned Middle Elamite building with a central courtyard (10 × 14 m), surrounded by a corridor and a series of rooms. Finds from the floors of the destruction level included administrative tablets recording transfers of metals, finished objects, grain, flour, and animal products. The tablets and sealings were impressed with punctate designs representing diamond patterns, cuneiform signs, and naturalistic motifs. Other finds included glazed knobs and tiles, stone door bolts, crude flint flakes, and unworked calcite, hematite, and bitumen. Pottery kilns, constructed after the fire, produced Qale painted and plain ware. A small domestic complex, reusing some of the standing walls of the burned building, was also constructed after the fire. Ceramics and an Elamite tablet, similar to the finds from the burned level, suggest that there was a relatively short time lapse between the later and earlier levels. A burial above the latest building level may date to the Neo-Elamite period.

Late Periods. There is no evidence of an Achaemenid occupation, in spite of the frequent mention of the name *Anshan* in tablets from Persepolis. [*See* Persepolis.] A Sasanian kiln, several late burials, and Islamic ceramics found on the surface represent the final use of the site.

[*See also* Elamites.]

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WILLIAM M. SUMNER

MAMLUK DYNASTY. *See* Ayyubid–Mamluk Dynasties.

MAMPSIS. *See* Kurnub.

MANASSEH, SURVEY OF. *See* Northern Samaria, Survey of.

MANBIJ, provincial town in northern Syria, located 78 km (48 mi.) northeast of Aleppo, the economic and administrative center of a fertile plain south of the Sajur River and near its junction with the Euphrates River. Commonly identified with the Assyrian settlement Nappigi/Nampigi, known as Hierapolis throughout the classical period, the traditional Arabic name, meaning "gushing water," mirrors the abundance of the freshwater supply. Even in antiquity, the water was distributed mainly through subterranean channels (*qanats*) to the irrigated gardens surrounding the city.

The area's fertility has encouraged continuous settlement since prehistory. An important urban center developed there, famed for a large temple dedicated to Atargatis and Hadad, alongside a sacred pool. These, together with other monuments of the Hellenistic period—a theater, the site's circular defensive walls, and several churches, described in some detail by medieval geographers—had already disappeared by the time Gertrude Bell (1911) visited the site in 1910. Buildings from the Islamic era, known from Arabic sources and occasionally from building inscriptions, have also vanished without trace, as has an oratory from AH 463/1070–1071 CE, two madrasas from the mid-twelfth century, and the Great Mosque, of uncertain date, to which a minaret was added in 581/1185–1186. The minaret was still standing, adjacent to some other ruins, in 1879, when Eduard Sachau (1883) passed through Manbij. Soon after, in 1304/1886–1887, the monument was replaced by a modern mosque, constructed by order of the Ottoman sultan Abdülhamid for a newly settled community of Circassians.

Historically, Manbij was an important stronghold at the heavily contested traditional border between Anatolia, Syria, and Mesopotamia, marked by the Upper and Middle Euphrates. Already established as a military base in the Hellenistic period, it formed part of the Roman limes of Chalcis. Later on, in the Early Byzantine period, it was an advance fortification against the Sasanians, who nevertheless succeeded in sacking the town in 540. Conquered by the Muslims in 16/637, the fortified city was renamed Manbij according to the ancient name. On orders from the ʿAbbasid caliph Harun al-Rashid, it was established as the capital of the border provinces (*ʿawāṣim*) in 170/786, the starting point of the yearly military campaigns into the areas of the Byzantine Empire. The site's key position on the major roads connecting the Syrian metropolis of Aleppo with Baghdad in central Mesopotamia and with Mosul in northern Mesopotamia motivated frequent raids by its Christian neighbors, the Byzantines (in 962, 966, 974), and the Crusaders (in 1168–1071, 1111, 1120, 1123, 1124), until a semiautonomous principality was established there under the Ayyubids in the late twelfth century. Devastated by the Mongols in 657/1259, the area was soon depopulated and Manbij was consequently reduced to the status of a provincial settlement.

The nearest crossing point on the Euphrates, 29 km (18 mi.) farther northeast, called Jisr Manbij, was protected by a strongly fortified castle, the Qalʿat Najm, rebuilt in the mid-twelfth century by the Zangid ruler Nur al-Din Maḥmud. The castle was further enlarged by the Ayyubid ruler of Aleppo, al-Ẓahir Ghazi, in 605/1208–1209 and subsequently enriched with a palace, a bath, and a mosque (612/1215). This citadel and a ruined Ayyubid madrasa or mosque, together with a nearby domed mausoleum, are the only surviving architectural witnesses to the important role the region played in history.

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MANDAIC. The national and religious language of the Mandaeans, the only surviving Gnostics, is Mandaic. The language emerged simultaneously with this religious community in southern Mesopotamia in the third century CE. The Mandaeans still live in their ancient communities on both sides of the Persian Gulf. As an ethnic group with an esoteric national religion, they are a foreign element in their environment. According to their own mythologico-legendary traditions, contained in their holy books (*Ginzā Rabbā,*

"The Great Treasure"; *Drašī d-Yahyā*, "Sermons of John [the Baptist]"; the Liturgies; and a later pseudohistorical treatise, the legend *Harrān Goweyṭā*), they had to flee from their original homeland, Palestine, because of Jewish persecution. In spite of the lack of external evidence, these myths and legends appear to have a solid historical kernel. All of this religion's basic and central notions and even its technical terms are decidedly Palestinian, not Babylonian (cf. the use of the root *ṣby*, "to baptize," with the Christian Palestinian *ṣbʿ*, as opposed to the Syriac *ʿmd; yardᵉnā*, "Jordan," the technical term for "river," in which the baptism is performed; *naṣorāya* "observant (of the Law); spiritual leader." All typical technical terms of the *Gospel of John* (light, darkness, way, truth, life, vine), are fundamental expressions of the Mandaean faith and indicate that a strong Proto-Mandaean movement must have existed in the milieu of the author of the fourth Gospel.

Like the Babylonian Jews, the Mandaeans also had to adopt a local Aramaic idiom in their new country. It was a South Babylonian Aramaic dialect closely related to the Aramaic language of the Babylonian Talmud. Minor differences may be explained by the strictly separate life of the two communities, their traditional inimical attitude toward each other, and their diametrically opposite religious ideologies. It is not surprising that the language of Mandaean incantation texts (lead scrolls and magic bowls) is very close to that of Jewish phylacteries—both are written in a sort of Babylonian-Aramaic koine common to Mandaeans, Jews, and Christians (see figure 1). Another reason for the differences between the Mandaic and the Talmudic languages is their literary style. All of the classical Mandaean literature is exclusively poetic, whereas the Talmudic is entirely prosaic.

Once in Mesopotamia, the Mandaean Naṣoraeans had to invent an alphabet and to fix the orthographic rules for the language in which they wanted to propagate their religious ideas (they could not use the Jewish-Aramaic alphabet because of their enmity with the Jews). There are some Elymaean inscriptions (named after Elymaïs, an ancient name of the southern Iranian province of Khuzistan) from the second half of the third century CE that already show prototypes of the Mandaean book script at a time when the Mandaeans are supposed to have immigrated to southern Mesopotamia. The problem of whether the Mandaeans brought this script into this region when they immigrated or took it over has not yet been definitively solved. There are arguments for both sides of the question (Macuch, 1971). Nevertheless, it is noteworthy that the first copy of the Mandaean Liturgies should have been redacted at about that time, according to the colophons from Early Islamic times.

At any rate, the use of this script for Mandaic was an effective invention of the Naṣoraeans, and the speed with which it was adapted to all the practical needs of the language shows that its adoption was clearly premediated. Mandaean scholars broke with many scribal practices of Imperial Aramaic, introducing simple phonetic spelling with a complete *scriptio plena* that has no analogy among the various Aramaic writing systems. Like the Greeks, they used the signs for the laryngeals, which were no longer pronounced, to express vowels: ʾ for *a/ae*, *-ḥ* (original Aramaic *ḥ*) for the final *-ī* as a suffix of the third-person singular masculine, and ʿ for initial *e/i* or as a support for *o/u*. In all other positions the back and the front vowels *o/u* and *e/i* were expressed by the semivowels *w* and *y* used regularly as *matres lectionis*.

1.	ࡀ	æ/a/å, ā/â
2.	ࡁ	b/b̲
3.	ࡂ	g/ġ
4.	ࡃ	d/d̲
5.	ࡄ	h
6.	ࡅ	w/u
7.	ࡆ	z
8.	ࡇ	-ī
9.	ࡈ	ṭ
10.	ࡉ	y/e/i/ī
11.	ࡊ	k/x
12.	ࡋ	l
13.	ࡌ	m
14.	ࡍ	n
15.	ࡎ	s
16.	ࡏ	i/ī/e-, or graphical support for o/u: ـصـ
17.	ࡐ	p/f
18.	ࡑ	ṣ
19.	ࡒ	q
20.	ࡓ	r
21.	ࡔ	š
22.	ࡕ	t/t̲
23.	ـ	(a)d (only as relative particle)
24.	ـ	(= 1)

MANDAIC. Figure 1. *The Mandaic alphabet.*

Nevertheless, the inventors of this simple Mandaic writing system remained captives of the Imperial Aramaic orthography in three respects: the masculine plural ending *-ia* (< **-ayyā*), pronounced simply *-ī*, is still consistently written with the silent final *a(leph)*; the silent *q* (< Proto-Semitic *ḳ*) still appears in the script as in Imperial Aramaic; and similarly, *z* (< Proto-Semitic *ḏ*) is still written, although with frequent (later) variants betraying the actual pronunciation.

Mandaic can be divided into three distinct periods: classical (third century CE–Early Islamic period); postclassical (medieval); and modern.

Classical Period. In the golden era of the Mandaic language and literature, the founders of the Mandaean community developed a South Babylonian Aramaic dialect as an expressive poetic tool for their Gnostic mythology and liturgy. This fundamental period, in which all basic Mandaean writings were written, is of extreme importance in both his-

torico-religious and linguistic respects. Mandaeans are the only Gnostic sect that completely preserved its sacred literature; because it has been preserved as a liturgical language, its traditional recitation, partly supported also by the living colloquial pronunciation, gives welcome means to the study of the ancient phonetic phenomena of South Babylonian Aramaic.

The phonetics of classical Mandaic rest on a Late Babylonian substrate, of which the loss of the laryngeals (*'*, *ḥ*, *ʿ*) and the dissimilation of geminates *(bb > mb, dd > nd, zz > nz)* are especially characteristic. The only laryngeal that remained is *h*. Both phenomena mentioned are already attested in the names of these people and their religion, *mandāyā* ("Mandaean"), an adjective deriving from *mandā*, "knowledge par excellence, or *gnōsis*," hence originally *gnōstikos*—although it simply designates laymen as believers in *mandā d-heyyī, gnōsis tēs zōēs*, the "redeemer of the Mandaean religion." The word derives from *maddᵉʿā* (root *ydʿ*, "to know") and is attested in its dissimilated form, but still with the original laryngeal, *mandaʿ*, four times in the *Book of Daniel* (2:21; 4:31, 33; 5:12). Through the coinage of this technical term for the central notion of the Mandaean religion, the infix *n* was quasi-sanctified. It was often written even where it was not originally pronounced (e.g., *kunza* for *kūza*, "jar"), or pronounced where it was not written.

Mandaic is known for the fluid state of its phonetics, especially the free or combinatory variations of the liquids *l*, *r*, *n*; the disappearance of the laryngeals; the syncope of dentals, sibilants, and palatals; and the metathetical words and roots that created numerous homonyms and facilitated wordplays in polemics against other religious.

Classical Mandaic morphology is simple. Because the Mandaeans did not write silent letters, as did the Syro-Arameans, the phonetically written form of the third-person plural perfect tense became homographic with the same person in the singular: *gᵉṭál*, "he killed" and "they killed." Although the grammatical number was clear from the syntactic construction, in the medieval and modern periods, a full plural form, *gᵉṭalyōn*, "they killed," developed. Otherwise, classical Mandaic morphology is easily comparable to Syriac and other Aramaic dialects.

Classical Mandaic syntax is very archaic, as Theodor Nöldeke (1964) rightly noted in his grammar. This may be the result in part of the predominantly poetic character of ancient Mandaic writings.

Postclassical Period. Compared to the classical period, the postclassical period is extremely prosaic, and in it the classical language was no longer fully understood. The medieval Naṣoraeans wrote down their speculations about the beginning of the world, their historico-geographic imaginings, casuistic commentaries, and astrological and pseudoscientific treatises (most of them published by Drower, 1937) in a new language that may have been closer to the spoken idiom of their time; however, their writings were not aimed at common believers and remained confined to priestly libraries. The writings lack the regularity of the language of the classical period and their syntax is burdensome, obscure, and much inferior to the clear and simple poetic syntax of the Naṣoraeans of the classical period.

Modern Mandaic. Lacking a proper literature, modern Mandaic is found in written form only in the colophons of the last few centuries in Iraq. Mandaic ceased to be spoken before the end of the nineteenth century. In the province of Khuzistan, where the Mandaeans are concentrated, it partly survived under harsh conditions in the cities of Ahwaz and Khorramshahr, to which the Mandaeans of the strongest community of Shustar immigrated because of Muslim persecutions at the beginning of the twentieth century. According to an estimate by Sālem Čoḥeylī from Ahwaz (personal communication, 1991), among the approximately thirty thousand Mandaeans in Iran there are fewer than one thousand who are still able to speak Mandaic.

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RUDOLF MACUCH

MANUAL OF DISCIPLINE. *See* Rule of the Community.

MARDIKH, TELL. *See* Ebla.

MARESHAH (Ar., Tell es-Ṣandaḥanna), site located about 1.5 km (1 mi.) south of Beth-Guvrin and 39 km (24 mi.) east of Ashkelon (map reference 1405 × 1113). The site was identified as biblical Mareshah (Gk., Marisa) by Edward Robinson, William Flinders Petrie, Frederick Jones Bliss, and others on the basis of biblical references and the writings of Josephus and of Eusebius. The identification has been confirmed by excavation. Ancient Mareshah comprised a high mound, a lower city with ancillary cave complexes, and a necropolis that encompassed the entire site.

Mareshah is first mentioned in the Bible as a city in Judah (*Jos.* 15:44). After the destruction of the First Temple it became an Edomite city. In the Late Persian period, it was the capital of Idumea at which time a Sidonian community settled there. It is also mentioned in the Zenon papyri (259 BCE). During the Hasmonean wars, Mareshah was a base camp for assaults on Judah and suffered retaliation by the Maccabees. After John Hyrcanus I took and destroyed Mareshah in 112 BCE, the region remained under Hasmonean control (*Antiq.* 13.396). The Parthians completely devastated the "strong city" in 40 BCE, and it was never rebuilt.

Mareshah was first excavated on behalf of the Palestine Exploration Fund in 1900 by Bliss and R. A. S. Macalister, who uncovered a planned and fortified Hellenistic city surrounded by a wall with towers. They also identified two Hellenistic and one Israelite strata. From 1989 to 1993, Amos Kloner cleared the northwestern tower on behalf of the Israel Antiquities Authority, revealing two Hellenistic building phases. Beneath those fortifications were Persian and Iron Age constructions. The earlier tower, dated to about 300 BCE, was built into debris of the Persian period. A new tower, dated to about 200 BCE, and built over the earlier Hellenistic tower, was probably destroyed toward the end of that century. Finds from the Israelite stratum found during the 1900 excavations include seventeen *lmlk* impressions. Among the numerous Hellenistic finds were 328 Rhodian amphora handles and three inscriptions. Sixteen small lead figurines and fifty-one limestone execration tablets attest magic practices at Hellenistic Mareshah.

Lower City. Ceramic evidence dates the original construction of the lower, partially walled city, which surrounds the mound in a belt of varying width, to the Hellenistic period. The lower city consisted of private houses, baths, workshops, and stores laid out in insulae with lanes and streets. The Southern House above Macalister's cave 53 was almost entirely excavated in 1989. It was erected in the mid-third century BCE and continued in use until the final destruction of the city. A staircase led to a second story and a corridor descended to a network of cisterns. [*See* Cisterns.] A juglet found under a floor contained twenty-five coins of 122–113/112 BCE. Similar dwelling units and caves were excavated in 1992–1993 in area 61, in the eastern part of the lower city. More units and caves beneath them were excavated in 1994 in areas 939–940.

Caves. The lower city had been constructed above hundreds of caves hewn into the soft chalky limestone of the hillsides. Macalister listed sixty-three cave complexes in his survey, and recent investigations have revealed ninety more. The principal uses of these caves were for the manufacture of olive oil and for pigeon breeding. Twenty-one Hellenistic oil presses have been discovered, of which two—comprising a crushing installation, three pressing beds, storage areas, a cistern, and a cultic niche—have been excavated. [*See* Olives.] More than seventy columbaria have been identified, the finest in caves 30 and 61. Cave 21 was excavated by Kloner in 1972 and 1981 and dated to the third–first centuries BCE. Each columbarium comprises halls with many small niches carved in the upper part of the walls; there are probably about fifty thousand such niches in all of Mareshah. There is no evidence for these having been used as repositories for human ashes. It is likely that the niches were intended initially as dovecotes; their subsequent functions are unclear. The caves were also used as stables, animal stalls, storerooms, cisterns, bathhouses, and ritual rooms. Cave 70, examined in 1980, consists of thirty-one rooms and contained various cereal grains and olive pits. Cave 75, explored in 1988, was occupied in the Iron Age, Persian, and Hellenistic periods.

Necropolis. In the eastern necropolis there are fifteen tombs, of which seven were first excavated in 1902 by John P. Peters and Hermann Thiersch (1905). Tomb I is the largest and most lavishly decorated, with a painted frieze of hunting scenes and animals adorning its walls. Greek inscriptions and graffiti date the tomb to 196–119 BCE. Tomb II, also painted, contains inscriptions dating it to 188–135 BCE. The northern necropolis contains twenty loculus tombs dated to the third–second centuries BCE. One tomb in the southwestern necropolis was excavated in 1989. Greek inscriptions and varied pottery assemblages date it to the third and second centuries BCE. Other tombs were cleared in

1989–1994. These tombs indicate that the inhabitants of Mareshah in the Hellenistic period (Idumeans, Sidonians, and Greeks) practiced secondary burial, added loculi for primary burial, and built family tombs.

[*See also* Necropolis; Tombs; *and the biographies of Bliss, Macalister, Petrie, and Robinson.*]

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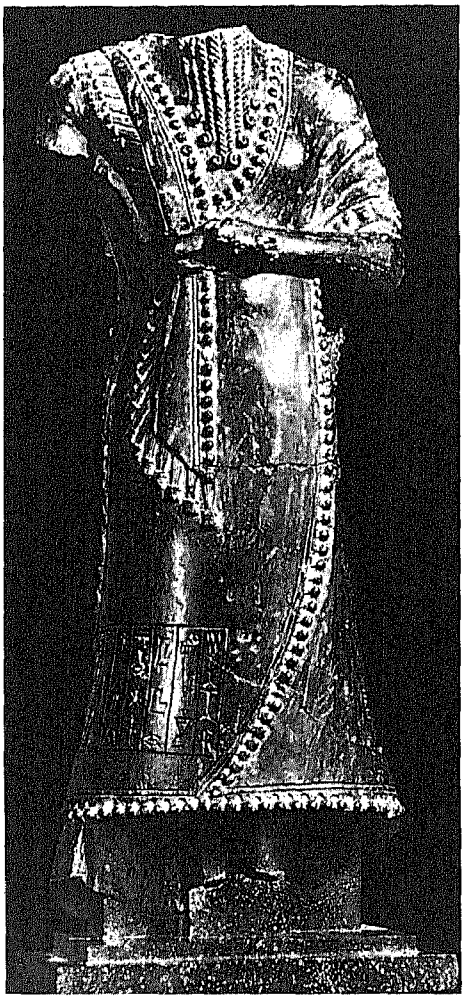
AMOS KLONER

MARI (mod. Tell Hariri), a Mesopotamian royal city that existed from the beginning of the third millennium to the beginning of the second millennium BCE, located on the right bank of the Euphrates River, close to the present-day border between Syria and Iraq. At Mari, the Euphrates traverses a quasi-desert steppe, where rainfall agriculture is impossible because of insufficient precipitation. However, surveys conducted since 1980 have located several canals, a number of which clearly supported agriculture—in particular, the one located on the terrace on the right bank of the river. The flow there seems to have been assured by a dammed lake constructed in Wadi es-Souab. The most important canal was on the left bank; it was connected to the Khabur River and flowed into the Euphrates just short of the lock at Baghouz. This canal (120 km, or 74 mi., long, with a channel that is 11 m wide for its entire length) appears to have been navigable, designed to facilitate the fluvial link between the active Mesopotamian plain and the foothills of the Taurus Mountains (Khabur and northern Syria). [*See* Taurus Mountains.] The birth of Mari—far from the other settlements and great population zones that the plain of the Khabur River, Mesopotamia itself, and western and northern Syria represent—can, thus, be explained in the context of the need for a city as a control point for river traffic, and perhaps also for caravan travel. The payment of taxes would have assured revenues, which explains Mari's wealth in certain periods. Thus, although the network of irrigation channels was designed to assure the subsistence of the population, it was not the primary reason the city was settled.

History of Excavation. In August 1933, Syrian peasants, while digging a grave, excavated a statue carved in the Sumerian style. The find drew the attention of Mesopotamian specialists to Tell Hariri, the source of the object. By December 1933, André Parrot, under the auspices of the National Museums of France, had made the first soundings. In January 1934, in a new trench at the western edge of the tell, in a temple dedicated to the goddess Ishtar, a statuette bearing on its shoulder the inscription "Lamgi-Mari" ("king of Mari") was recovered. The inscription securely identified the site with one of the cities mentioned in the Sumerian king lists as the seat of the tenth dynasty after the Flood and gave the name of an unknown king of Mari—a discovery of great importance. During the second campaign, in 1935, a Royal Palace from the beginning of the second millennium BCE was discovered. This exceptionally well-preserved monument had walls as high as 4 or 5 m and was full of material abandoned by the conquering Hammurabi of Babylon when he destroyed the city in 1760 BCE. The palace was unearthed in the course of five campaigns preceeding World War II. By the onset of the war, Parrot had discovered the palace, several phases of the Temple of Ishtar, and several sanctuaries in the city's sacral quarter, in particular the Temple of the Lions (incorrectly thought to be the sanctuary of Dagan, the great god of the Euphrates).

Parrot understood a new sequence of four campaigns for the Commission on Excavations of the Ministry of Foreign Affairs between 1951 and 1954, shortly after Syrian independence. He turned his attention to the area called the Red Mound, a high terrace from the third millennium, as well as to the temples of Ishtarat and Ninni-Zaza, which yielded a superb collection of statuettes. From 1961 onward, work focused on the structures situated north of the "ziggurat," identified at the time as annexes of the third-millennium Temple of Dagan; in 1964, however, the third-millennium palace under the second-millennium palace was located, leading Parrot to concentrate his efforts there until 1974, when he stopped digging. The work was continued in 1979 by Jean-Claude Margueron, with modified objectives: the whole valley was to be studied, with the aim of understanding the reasons and means by which the capital of the Euphrates was installed in a desert zone. Ten campaigns have been conducted since 1979.

Settlement Periods. Based on the most recent research, the origins of the city are to be placed at the beginning of the third millennium, during the Early Dynastic I period. Written sources attest that the city was destroyed by Hammurabi of Babylon in 1760 BCE (middle chronology). It thus existed for a millennium during which it participated, actively it seems, in the history of Syro-Mesopotamia, with periods of splendor and decline. It is probable that those fluctuations followed changes in the level of trade, which was international, in spite of the anachronism of the term. The various phases of Mesopotamian history are well represented at Mari: The Early Dynastic period (twenty-ninth or twenty-eighth–twenty-fourth centuries BCE); the Akka-

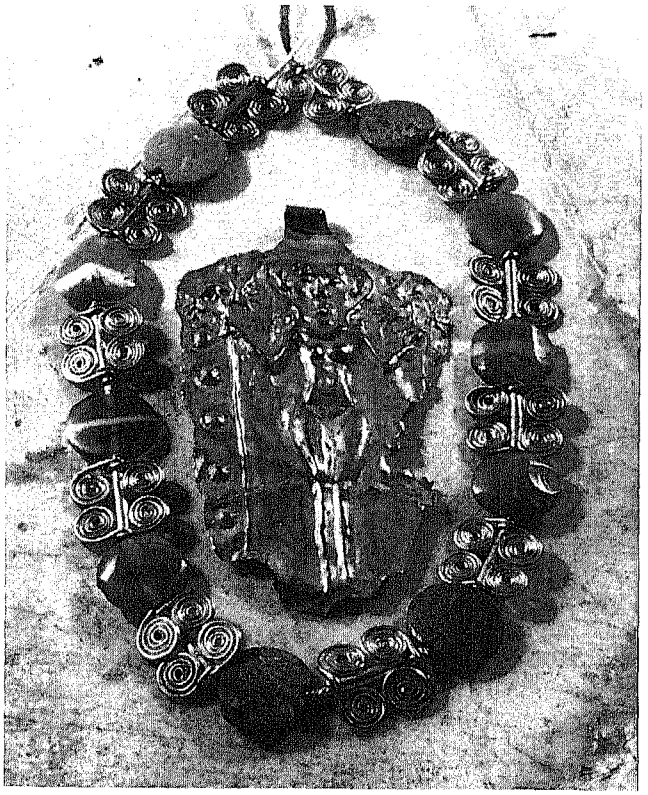


MARI. *Steatite statue of Idi-ilum, governor of Mari.* (Courtesy ASOR Archives)

dian period (to the time of Naram-Sin; twenty-fourth/twenty-third century); the third dynasty of Ur, designated here as the period of the *shakkanakku* (see below), a title meaning "governor" and denoting the holder of power at Mari (twenty-third or twenty-second century–twentieth century? BCE); and the moment at which the Amorite kings dominated the country (end of the nineteenth and beginning of the eighteenth centuries BCE).

The destruction of 1760 BCE, put an end to Mari as the capital of a realm playing a major role in the interchange of the cities of the ancient Near East. However, the traces of later structures attest that the city did not disappear overnight. People continued to live in the ruins of the city Hammurabi devastated. The remains of that epoch, the Khana period (seventeenth–sixteenth centuries BCE), are generally rather poor; it is in the neighboring city of Terqa that life continued. [*See* Terqa.] The Middle Assyrian period (thirteenth–twelfth centuries BCE) is represented by a modest structure located on the tell's northwest promontory and chiefly by a cemetery installed in the ruins of the Royal Palace, which demonstrates a certain affluence for the population. Another cemetery belongs to the Seleucid, or Parthian, period and it seems that Tell Hariri was then occupied by a modest village dependent on Dura-Europos. It seems that from that time onward, except for a contemporary cemetery on the northeast, the site was deserted.

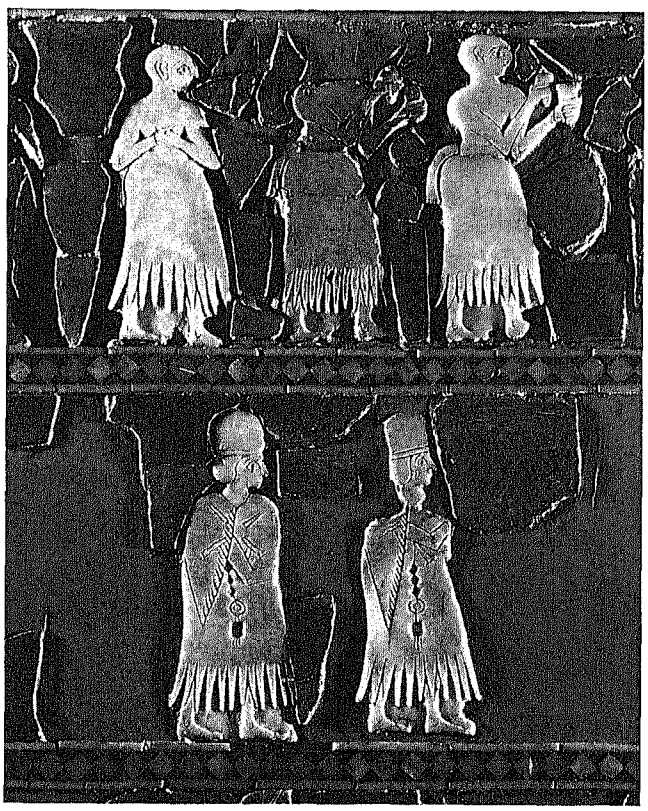
Early Dynastic period. The first centuries of the city are still poorly understood. Because the earliest level, that of the initial settlement, was reached only in two soundings, one on the northern border of the tell (trench B) and the second in the central space of the sacred precinct of the pre-Sargonic palace, it is not possible to describe the organization of the city at its inception. It is known, however, that its plan was circular (1,900 m in diameter) and that it was surrounded by a dike to protect the city from the occasional floods that could ravage the valley. A canal linked to the Euphrates assured the city's water supply and also permitted boats to enter the port. No house plan has emerged clearly, and not enough material was recovered to engage in a general study concerning the first town of Mari. It is not until Early Dynastic III that a coherent whole emerges: the house



MARI. *Necklace of gold wire, lapis lazuli, and other precious stones; pendant with nude goddess.* Late middle Syrian period from tomb 125. National Museum, Aleppo, Syria. (Erich Lessing/Art Resource, NY)

of trench B with its tablets; the houses of the so-called pre-Sargonic quarter, with a small market around a porticoed square; the temples of Ishtar, Ninni-Zaza, and Ishtarat, as well as the one associated with the high terrace called the Red Mound; and especially the rooms of the palace and its Sacred Precinct. A flourishing city is revealed whose characteristics seem very original. At the end of the period, a school of sculptors at Mari made it a primary site of Near Eastern artistic production. The event or events that brought about the end of this phase are not known. It is probable that terrible destructions brought about the end of Mari during the Akkadian period, perhaps at the beginning of the twenty-third century BCE.

City of the shakkanakku. A new phase in the history of the city began near the end of the Akkadian period. The new dynasty is known by the name Shakkanakku (see below) because it undoubtedly resulted from the governors who directed the city for the benefit of the kings of Akkad, when they seized Mari for a short time. Enormous construction projects were undertaken that obliterated, in whole or part, the buildings of the latest levels of the Early Dynastic period. A new Royal Palace was built on top of the ruins of the earlier one, but following a completely new plan—except that the Sacred Precinct was preserved. The plan of the official apartments—a courtyard called the Court of the Palm closely associated with two successive long rooms, the second one being the Throne Hall—is a characteristic formula for royal palaces from the Third Dynasty of Ur (twenty-first century BCE) to the end of the Old Babylonian period (mid-second millennium). A second palace was built to the east of the temple area. Smaller in size, it would have sheltered the king while the new palace was being constructed. It was built over two hypogea that had clearly functioned as burial chambers for the former king and royal family. Unfortunately, they were completely pillaged by robbers in antiquity, perhaps when Hammurabi took Mari. At the heart of the city's sacred area, a new high terrace (sometimes mistakenly called a ziggurat) was erected in association with the Temple of the Lions. It covered over the area that had connected the Sacred Precinct with the temple on the Red Mound (see above).



MARI. *Frieze with mother of pearl inlays, schist, and ivory.* Depicted is a procession of priests and women decorating a bench with bull's legs. National Museum, Damascus, Syria. (Erich Lessing/Art Resource, NY)

Amorite domination. Excavation of the Royal Palace resulted in the recovery of very precise information about how life was organized in a great Amorite palace at the beginning of the second millennium BCE, thanks to the archives and other material abandoned by the Babylonian soldiers. [*See* Palace.] The palace was the political and administrative heart of all Mesopotamian cities. At Mari it was 2.5 ha (6 acres) in area, with nearly three hundred rooms at ground level—a number that could be doubled because there was a second story over most of the building, as proved by the height of the remaining walls (5 m), the position of objects in the filling levels, and the presence of stairs. The palace included the following features.

House of the king, with an official area (Court of the Palm 106, Room of the Goddess with the Flowing Vase 64, throne room 65), storerooms, a staff (servant and slave) area, kitchen, and administrative quarters

Second house, for the women in the court (queens, female workers), consisting of a residential zone (the house centered on room 31), staff quarters, and storerooms

Temple area at the site of the former Sacred Precinct

Great storerooms, partially unrecoverable in the southern part of the structure.

The life of the realm was revealed through the recovered archives, of which there are some fifteen thousand documents that cover daily life at the palace (incoming and outgoing merchandise, food and other goods, food rations as payments, the king's meals); administrative relationships between the king and his servants in the cities that made up the realm (the king gave his orders and received reports and other information from his governors); and the relationships among different realms, or international activities, with other cities in Mesopotamia and Syria. [*See* Mari Texts.]

It is not known what led Hammurabi to attack the capital

of the Middle Euphrates because he and Zimrilim seem to have maintained a long political alliance. All that is known is that the Babylonian king gave the name of the capture of Mari to the thirty-first year of his reign and the destruction of its walls to the thirty-third year, according to their tradition of naming a year by a significant event of the previous year. During the several months he occupied Mari, he systematically pillaged the palace and all the official buildings; he transferred his booty to Babylon, abandoning several stray objects in place (to the joy of the archaeologists). He then burned all the monumental buildings as a statement that Mari no longer held its place in the concert of realms of the twenty-eighth century BCE. Because the trade routes connecting Syria with Mesopotamia no longer principally passed the Euphrates, this destruction marked the end of the role Mari had played for a millennium.

Conclusions. In its diversity, the epigraphic documentation from Mari is one of the richest in the Near East. It gives an exceptionally concentrated picture of the Syro-Mesopotamian world during the brief period that preceded the fall of the city. The quality of Mari's preserved architecture and the richness of the surviving furnishings give an idea of what a city in the first Babylonian Empire, under the kingship of Hammurabi, may have looked like (the excavation of Babylon has not yielded finds from that period). The Royal Palace at Mari remains a unique example of a Bronze Age palace.

In the amplitude and the audacity of its conception, the architecture of the third-millennium palace expresses the inventive power of the Mesopotamian population. The perfection of some of its statues reveals that workshops at Mari were of the first rank for artists, perhaps because they had contact with two close, but not identical, realms—Mesopotamia and Syria.

Finally, the magnitude of the regional organization—resulting from the wealth from trade with the edge of the Taurus Mountain range, its Anatolian hinterland, western Syria, and alluvial or deltaic Mesopotamia—over whose control Mari was created to be the key, illustrates the dynamism of the Sumerian population at the dawn of history in a unique way, revealing all of its true depth in the first of the great urban civilizations. No other site has been so rich in evidence of a millennium of Mesopotamian civilization.

[*See also* Akkadians; Amorites; Babylon; Khabur; Mesopotamia, *article on* Ancient Mesopotamia; Sumerians; Syria, *article on* Syria in the Bronze Age; Temples, *article on* Mesopotamian Temples; *and the biography of Parrot.*]

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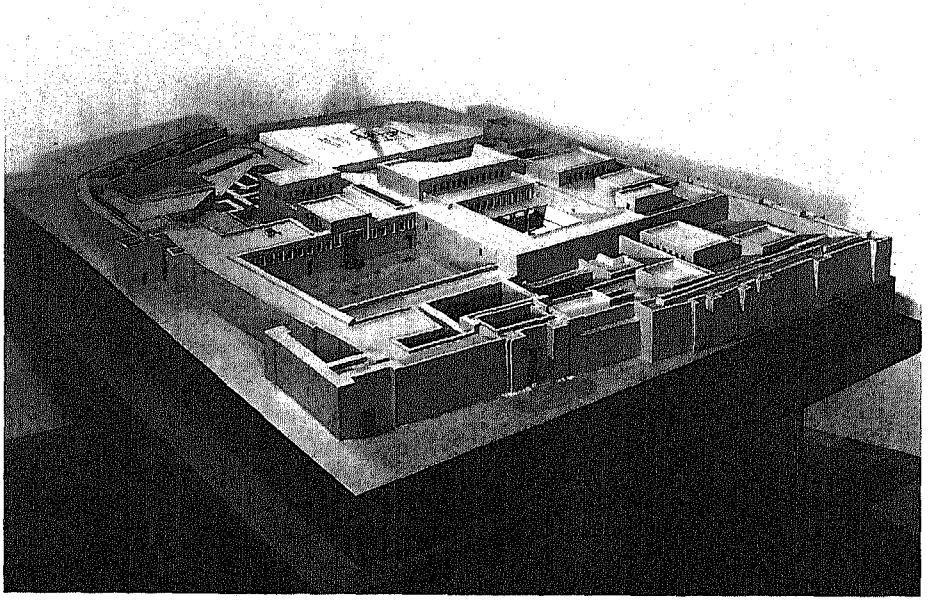

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JEAN-CLAUDE MARGUERON

Translated from French by Nancy Leinwand

MARIB (Sabaean, Maryab), the pre-Islamic capital city of Saba' (biblical Sheba), located on the north bank of Wadi Dhanah, on its large silt delta, in northeastern Yemen, (15°29′ N, 45°28′30″ E). According to tradition, this was the city where the Queen of Sheba (1 *Kgs.* 10) lived and from which she ruled her kingdom. The site is rectangular in plan, with its long axis parallel to the wadi. It measures about 580 m in length (northeast–southwest) by 400 m in width (northwest–southeast), for an approximate area of 232,000 sq m, or 23.20 hectares (57.30 acres). It is the largest known pre-Islamic site in southern Arabia and has about 10 m of occupation debris. Centered in the northeastern area of the site a small, circular, secondary tell stands on the lower, rectangular tell. This piggyback tell contains the remains of successive occupations beginning in the Islamic period; it was occupied until portions were destroyed in Yemen's civil war in the 1960s and the remaining buildings in an earthquake in 1982. The piggyback tell had a surface area of 2.53 hectares or (6.26 acres) and a prewar population of about 765 people. Using a formula that assumes 10 percent occupation by public buildings for the large, pre-Islamic tell would yield a population of about 6,635 in pre-Islamic Marib.

Exploration and Excavation. The first European to visit Marib was Louis Arnaud (1843), who was followed by Joseph Halevy (1869). Of the early explorers, Eduard Glaser contributed the most by copying more than two thousand South Arabian inscriptions during four separate visits (1882–1884, 1885–1886, 1887–1888, 1892–1894). Ahmed Fakhry visited Marib in 1947 and copied inscriptions, photographed ruins, and sketched plans. In 1964 Gus Van Beek measured the site, studied the dam, and collected sherds in the ancient irrigated zone and on the tell.

The first excavations at Marib were directed by Frank P. Albright, on behalf of the American Foundation for the Study of Man (1951–1952), with Albert Jamme, an epigrapher. During an abruptly terminated three-month field season, the entrance hall of the 'Awwam Temple was cleared and a mausoleum adjacent to the precinct wall was excavated. Jamme published 283 South Arabic inscriptions from the excavations; he had been restrained by the local governor from working at the site for almost four weeks, so that the 283 was by no means all of the inscriptions found. The German Archaeological Institute, under the direction of Jürgen Schmidt, has been working at the site, chiefly excavating Temple Bar'an, since the 1980s.

'Awwam Temple. Known as Ḥaram Bilqis, or locally as Maḥram Bilqis, the 'Awwam Temple was dedicated to the moon god, 'Ilumquh, the primary deity at Marib. It is located on the valley floor, about 3.23 km (2 mi.) south-southeast of the Marib tell, straight across Wadi Dhanah. It consists of a large oval enclosure wall, accessed through a peristyle entrance hall on the northeast side and a narrow doorway on the west.

The oval wall encloses an area about 100 m long by 75 m wide and remains unexcavated, although Glaser reported walls and bedrock inside. The casemate oval wall stood about 9.5 m high by about 4.0 m at the base, tapering to 3.6 m at the top. It was constructed of limestone ashlar blocks finished with marginally drafted, pecked surfaces. The inner and outer walls were linked by sixty pairs of crosswalls; the resulting compartments were filled with stones, soil, and sand. The outer surface of the wall on the west side had no fewer than seven beautifully cut South Arabian inscriptions, each dedicating a portion of the construction of the wall to the gods and naming the king who ordered the work. In letters about 23 cm high, the cumulative length of the lines in the seven inscriptions runs to 143.64 m. The longest single inscription (Ja 555) has a total length of 42.37 m. Such inscriptions are unparalleled in the ancient world in pre-Roman times. The earliest inscription belongs to the mid-seventh century BCE, although the oval wall may have an earlier phase or phases.

The entrance hall was built into an opening in the oval wall, probably in the second half of the fifth century BCE by Tubba'karib. Constructed as a casemate wall with masonry similar to that of the oval wall, it measured 23.97 by 19.15 m inside and consisted of an open court surrounded by a peristyle hall. The court was entered from the outside through a series of outer structures: through a line of eight monolithic, square piers, 7.65 m high; then through a small court with a peristyle on three sides; and finally through a triple doorway formed by two massive pylons with recessed corners on their outer sides. The roofed area of the peristyle was supported by the outer walls of the entrance hall and a series of thirty-two rectangular piers—all monoliths, except for two consisting of two stones—and the two pylons. The inner surface of the walls of the entrance hall was decorated with sixty-four false windows with successive recesses intricately carved to represent wooden lattice. Above the latticework was a series of five raised tegular panels, superficially

resembling dentils, with a horizontal grill at the top. Above each window, the tegular panels and grill were repeated in the wall. Similar windows appeared on the outer surface of the north wall, but without regard to the placement of the inside windows. Three steps led to the entrance to the oval wall area. Two pylons formed the doorway and apparently supported a large water tank, from which a stream of water fell on the steps, eroding a large hole through the first and part of the second limestone steps. This may have been a final purification or washing area through which worshipers passed before entering the sacred oval area. The runoff water flowed through a channel to a bronze basin (230 × 69 cm) that bears an inscription on one edge indicating a fifth-century BCE date. A flight of stairs led to a roof room and possibly to a balcony. Other additions were built in various places in the entrance hall, chiefly after the first century CE, and continued to be repaired and repaved as late as the fourth century. Hundreds of inscribed stones, many with lengthy inscriptions, were found on the floor of the peristyle and the surrounding court. Stone bases of votive statues, bronze plaques with mounting dowels on the back edges, and painted inscriptions on the walls illustrate the religious customs and devotion of the Sabeans.

Mausoleum. Built of limestone blocks, a mausoleum touched the northwest corner of the oval wall. The structure (8.34 × 7.73 m) was entered through a doorway in its north wall. Four monolithic rectangular piers (3.60 m high), each finished with a capital with two rows of raised tegular panels, carried the roof, which consisted of granite joists spanning from pier to wall, rabbeted on its upper long edges to support limestone roof panels. A total of sixty burial compartments was arranged in tiers; the compartments were closed by means of two limestone panels fitted into grooves on either side and joined in the middle by a lap joint. The upper front edge was decorated with a grill, with the partitions finished with four or five parallel vertical grooves; both are common South Arabian architectural designs. In the northwest and southwest corners, underground burial chambers had been built. The mausoleum yielded several incense burners, including one of bronze, a gold globule, human skeletal material, and potsherds. Compartment-closing panel fragments contained the names of the deceased, two of whom were kings, proving that this was a royal mausoleum: Sumhu'alay Yanaf and Yith''amara Bayyin, son of Yakrubmalik Watar, both of the second half of the fifth century BCE.

South Tombs. A group of mausolea, located about 100 m south of the royal mausoleum, are more similar in plan and design to the mausolea at Heid Bin 'Aqil, Timna', and Qataban. The burials were badly disturbed, but especially noteworthy is a boustrophedon inscription painted on a wall and dated paleographically to the eighth century BCE.

Temple Bar'an. The Temple of Bar'an is located away from the tell; it is marked by a row of six rectangular, monolithic piers with capitals. An inscription indicates that the name of the temple was Bar'an, and that it was dedicated to the moon god 'Ilumquh. The temple is immediately west of the piers.

Marib Dam. The dam at Marib is one of the best-known monuments of the ancient Near East and the largest dam known from antiquity. It is located about 6 km (3.73 mi.) in a straight line west of the tell. It was built across the narrow defile of Wadi Dhanah, where the wadi emerges into a valley that increasingly widens to its borders, which are formed by black volcanic hills. Wadi Dhanah carries torrents of water during the southwest monsoon in the late winter and spring. The dam functioned as a barrage to deflect the waters into two sluices, one on the south and the other on the north side of the wadi. It was built of soil heaped to a 7-meter-high structure, triangular in section, with a facing on the west side of stones set vertically, cemented in place, and stretching 593 m across the wadi. The dam was anchored to a rock outlier on the south side, and the builders cut a channel through the bedrock to permit water to flow to the fields on the south side of the wadi; this took place during the reign of Sumuhu'alay Yanaf, according to an inscription on the rock in channel, in the second half of the fifth century BCE. Later, a tower wall with a long wall paralleling the axis of the wadi was constructed of ashlar; after two thousand years, it still stands to more than 6 m. On the north side of the wadi, the terrain was flat, so that the north sluice was built with a long wall, angled to abut on the curving dam on the north end. Two sluice openings lead to the primary canal, followed by a massive wall at right angles, to deflect water into the sluices. This sluice in its present form dates from the fourth century CE, during the reign of Shammar Yuhar'ish; it underwent repeated repairs in 449 and 450 CE, as well as by the Abyssinian viceroy, Abraha, in about 542 CE. The sluice was finally destroyed in about 575 CE. So far as is known, the installation was abandoned then.

The primary canal on the north side is partially intact for about one kilometer. Sluices located in the fields distributed the flow as quickly as possible by means of secondary and tertiary channels. On the south side, the primary canal was probably located on the higher ground, near the base of the rock outliers, and is now covered with sand.

The Qur'an (surah 34:14, 15) refers to "gardens, the one on the right hand and the other on the left," which are the fields on the north and south sides of the wadi, irrigated by this system. In aerial photographs, these fields show heavy rectangular erosion and extend eastward well beyond the tell and the 'Awwam Temple. Together they provided a combined area of at least 1619 ha (4,000 acres) of cultivable land.

Thus far, nothing from the time of the Queen of Sheba has been recovered at Marib; the earliest dated material belongs to the eighth century BCE, only two hundred years after her time. The great tell at Marib has not yet been excavated, however, and it is there that remains of the tenth century and perhaps of earlier centuries will surely be found.

[*See also* Qataban; Sheba; *and* Timna' (Arabia).]

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GUS W. VAN BEEK

MARIETTE, AUGUSTE (1821–1881), French founder of the Egyptian Antiquities Service and its national museum of antiquities (both firsts for the Arab world). Mariette began his career in archaeology by discovering the Serapeum at Saqqara—the vast catacomb containing the burials of the sacred Apis bulls—uncovering as well the approach avenue lined with sphinxes and two temples with hundreds of objects.

Although the initial finds from the Serapeum discovery went to the Louvre, which had sent Mariette to Egypt to procure Coptic and Syriac manuscripts, it became his aim to stop the rampant pillaging of Egypt's monuments. With the aid of Ferdinand de Lesseps, Egypt's ruler, Said Pasha, was persuaded to appoint Mariette director of an antiquities service. In this capacity Mariette then launched a massive archaeological rescue effort under his own exclusive authority to excavate throughout Egypt and recover portable objects for the nation, to be housed in what became the first of a series of ever-enlarging museums. At one point, Mariette had simultaneous expeditions in thirty-seven different locales. Certainly, without his supervision at each site, only the most obvious was found, and much of the work consisted of clearing buildings such as the Edfu, Dendera and Deir el-Baḥari temples. More than three hundred tombs were opened at Giza and Saqqara, and from there and Karnak came much of the collection of the current Egyptian Museum in Cairo.

Mariette's energies were also sapped by diplomatic demands from both France and Egypt, international exhibitions, and the publication of some of his work, such as five volumes on the temple of Dendera (1875), and a catalogue of antiquities discovered at Abydos (1880). Although he could not totally stop the illegal digging and export of antiquities, Mariette did raise international awareness of the importance of protecting the heritage of the past.

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MARISA. *See* Mareshah.

MARI TEXTS. The bedouin discovery of Mari on 3 January 1934, at Tell Hariri in Syria revealed the location of a city that had become mythical after its fall. It was known to Assyriologists only by its mention in the Sumerian King Lists as the seat of one the dynasties after the Flood. From 1934 to 1938, six fruitful excavations took place there under the direction of André Parrot. In the first year twenty-five hundred whole tablets and fragments were unearthed. In the following year, no fewer than thirteen thousand inventory numbers were assigned for texts alone. When World War II brought an end to this period of research, some twenty thousand documents had been uncovered. Excavation was resumed after the war (with another long interruption during the Suez expedition in 1956), and another thousand texts were recovered. Tablets are still being discovered, although in more modest numbers, under the direction, since 1979, of Jean-Claude Margueron. [*See the biography of Parrot.*]

For the most part, Parrot excavated tablets in the royal palace and the area immediately southeast of it (the "ziggurat"); in excavations since 1979 tablets have also been found in the small palace of the Šakkanakku (a governing official) northeast of the tell (the House of Asqudum and

the House of Queen Šibtu (where she was installed at the end of the reign of Zimrilim), as well as in areas B (from the period of Ebla), D, E, and F (reign of Yakhdunlim). [*See* Ebla.] In the palace of Zimrilim, the archives were divided among many small rooms, sorted according to administrative categories, indicating the function of different parts of the palace. [*See* Palace.] The most important of these rooms are numbers 108 and 115; 115, situated between the palm-tree court (room 106) and the court of the Temple of Ishtar (room 130) preserved administrative and diplomatic correspondence; 108 held the main body of administrative documents. A good part of the harem archives were recovered in room 72. Although the archives of the palace seem to have remained in their original arrangement, the Babylonians, who systematically sacked Mari, sorted through them to remove any that concerned them. [*See* Babylonians.] Thus, the records of international correspondence are limited. Many groups of documents were recovered from construction fill, such as the texts from the harem of Yasmakh-Addu (1798?–1776 BCE) found in 1982 in the retaining wall of an oil storeroom, and the private archives of Yakhdunlim (1815?–1799? BCE).

Contrary to Parrot's hopes, no library was found at Tell Hariri. The excavated texts belong to the administration of the state or the private archives of the people living in the palace. They give evidence of the daily life, the movement of palace supplies, and the affairs of the kingdom—known as the Banks of the Euphrates—and contact with foreign courts. The letters (e.g., from servants of the king, or his allies) are more important than the administrative texts (e.g., records of the import and export of goods and food, inventories, audits of accounts). The absence of archives concerning the kingdom's tax system suggests that such documents were housed outside the palace (the palace has been completely excavated and such archives would have held no interest for pillagers). There is a limited group of legal texts, as well as texts of an ideological or religious character, such as the "nail" of Yakhdunlim from room 18, or nine bricks inscribed with a single text from the Temple of Shamash that describes that king's expedition to Lebanon, and models of inscribed oracular livers. The (unpublished) epic of Zimrilim, written on a large tablet broken into three pieces, was discovered in room 115. [*See* Tablet.] It is the only work found that can properly be described as belletristic. Many magico-religious texts were found (e.g., incantations—a fragment of one dated to the third millennium was discovered in area B—and penitential and ritual psalms).

The first epigraphist for the French team was François Thureau-Dangin. He was soon superseded by C.-F. Jean and then by Georges Dossin, who turned "mariology" into an important field of study by the number and quality of his publications. In 1979, Jean-Marie Durand and Dominique Charpin took charge of editing the Mari texts, reinvigorating the project. The series *ARM (Archives Royales de Mari)*, founded by Dossin and Parrot, was initially devoted to the epistolary archives and was arranged by the authors of the letters: *ARM* 1, 4, and 5 concern Shamshi-Adad and his sons; *ARM* 3 contains the letters of the governor of Terqa, and 6 and 14 those of others, from Mari and Sagaratum; *ARM* 13 is based on the same principle, but the lots have less breadth. Volume 2 is the only one with any diversity, providing a better sampling of the documents. Some volumes are arranged thematically, such as *ARM* 10, women's correspondence, and, more recently, *ARM* 27, dedicated to the governors of the city of Qaṭṭunan.

Administrative texts were published initially by room: *ARM* 7 (room 170), *ARM* 9 (room 5), *ARM* 21 (rooms 134, 160), and *ARM* 24 (rooms Z, Y). Under Durand and Charpin it was decided that all epistolary and administration documents would be arranged by theme—the better to extract their historical and lexical interest and to allow for the poor data regarding find spots of the documents unearthed by the earlier excavations. *ARM* 26 (in three volumes) marks a significant evolution: the documents published (or republished) are grouped according to thematic or historical criteria (divination, religion, the military affairs of Sindjar and of the Upper Jezireh) without breaking with tradition (e.g., within these categories the letters are arranged by author). Because ARM 23 is a collective work, the administrative documents have been grouped according to themes such as texts dealing with garments or texts dealing with luxury crockery. The commentaries are more abundant and more systematically treated, according to the principle that, for the sake of comprehending the text, purely philological analysis cannot be separated from the reconstruction of the context. Many texts from Mari have also been published individually or in small lots in various journals and collections, such as *Syria* and the *Revue D'Assyriologie (RA)*. Since the 1980s there has also been a specialized journal, *MARI (Mari: Annales de Recherche Interdisciplinaires)*, as well as the occasional series *Florilegium Marianum*.

At first glance, the chronological range of the Mari texts seems fairly large: from the third millennium to 1761 BCE (the latest documented date). In reality, the useful historical span is no more than the twenty–fifty years that document the Amorite dynasty; these are the last decades of Mari. [*See* Amorites.] Earlier, the documents are too rare or brief to reconstruct a historical thread. What characterizes Mari archives is thus a great density of information over a very short period of time: two generations, during the reign of Zimrilim (1775–1761 BCE) and the end of his predecessor's, Yasmakh-Addu. No other period in antiquity is so extensively described and detailed.

The Near East appears in all its picturesqueness and complexity. The palace is revealed in all its different aspects: its gardens and courts where one day a princess exposed herself dangerously to the sun, its sanctuaries, its various administrative functions, its storehouses, and its workshops. The

harem, which occupied its northwestern part, was inhabited by a great number of women, from the queen mother and principal royal wife, to slaves and captives, including concubines, who were the designated musicians, scribes, cooks, water drawers, and floor sweepers. At the entrance to the palace, prophets came to proclaim the truths that a divinity had revealed to them.

The king, in constant consultation with the gods, demanded that his subjects tell him everything they knew, even their dreams about him. It was naturally the divination priests, the governors of the kingdom, and the servants at the palace who had the most occasion to write letters. The chancellor's office maintained diplomatic correspondence with a number of small, turbulent states (principally in the Upper Jezireh) and the great powers of the day: to the west, Aleppo; to the southeast, Qatna; to the east, Eshnunna, Babylon, and Elam (whose Sukkalmah is the avowed suzerian of the Mesopotamian princes); and to the northeast, the monarchies of Sindjar and Ekallatum. [*See* Aleppo; Eshnunna; Babylon.] International exchanges—political, commercial, and cultural—as well as the movements of armies and diplomats, were intense and favored a certain awareness of the unity of the Near East on the part of the guiding classes, at least until family or racial solidarity came into question. Racism was not absent, particularly among the conquering Elamites. [*See* Elamites.]

The written language of Mari was Classical Akkadian, which differs little from that used in Babylon and elsewhere in the Near East. [*See* Akkadian.] More precisely, the syllabic writing and language came from the scribal tradition of Eshnunna, whose practice was adopted at Mari under Zimrilim. Nevertheless, strong influences from Western Semitic are recognizable. Akkadian lexicography and onomastics are also enriched with Hurrian words. [*See* Hurrian.] Peculiarities of syntax in the letters reveal as much the level of language as of any real dialect.

Mari's geographic horizon extended beyond the strict boundary of local politics. Thus Zimrilim could undertake a peaceful voyage, for religious reasons, to the Mediterranean coast. Mari maintained contacts with the island of Bahrain/Dilmun, thanks to passing merchants; with Kaneš/Kayseri in Anatolia; and with the Arab tribes. [*See* Bahrain; Dilmun; Kaneš.] The Mariotes nevertheless needed interpreters when they encountered Cretans on the quays of Ugarit or the people of Marhaši/Parahši in the Iranian mountains.

The Mari documentation testifies to a period in the history of the Near East when relationships among the great powers were more or less in balance, a balance of which there was a clear awareness. However, tensions among states rarely ceased and a king often had to mount a military expedition or extend a strong hand to his allies. There were constant quarrels within the kingdom and at the borders over pasture rights and territory; rivalries existed between nomadic and sedentary groups and among the confederations of bedouins; and occasionally there were great wars, when the armies of Eshnunna or Elam descended. The definitive destruction of Mari marked the end of this equilibrium in the Near East.

[*See also* Mari.]

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Translated from French by Melissa Kaprelian

MARLIK, late second to early first millennium BCE site, located in the region of Rahmatabad of Rudbar in Gilan province in northern Iran, about 50 km (31 mi.) from the town of Rasht on the Caspian Sea (at approx. 37° N, 50° E). During the 1940s and 1950s, the highlands of the northern slopes of the Elburz Mountains south of the Caspian were subject to much clandestine and illegal digging. It produced beautiful spouted pottery vessels, bronze and pottery animal figurines, bronze weapons, and even some silver and gold objects, all belonging to an unknown culture. This material was distributed throughout the world to collections and museums under the term *Amlash*, from the name of the market town to which the objects were taken to be sold to dealers.

In fall 1961, a team from the Iranian Archaeological Service began a survey in the foothills of the Elburz Mountains with the aim of mapping the area's archaeological sites and eventually of conducting systematic and scientific excava-

tions to identify the people responsible for the masterpieces of art and technology. In the course of the survey the team entered the valley of the Gohar Rud (Crystal River), a tributary of the Sefid Rud (White River). There they found five apparently related mounds, Pileh Qal'a, Jazem Kul, Dure Bejar, Zeinab Bejar, and Marlik (or Cheragh-Ali Tepe, after its last owner). The mounds were surveyed one by one. The team eventually reached Marlik, a large mound that appears natural. It has a rocky crest surrounded by olive groves and wild pomegranate bushes and overlooks the rice paddies that blanket the lower slopes of the valley. Its surface was covered by brush and revealed few artifactual traces; one slope bore the scars of several ditches dug by unsuccessful antiquities hunters.

When a test trench produced a range of objects, including two small bronze animal figurines, two cylinder seals, and fourteen gold buttons, the need for immediate scientific excavation was met by the Iranian Archaeological Service, in cooperation with the Institute of Archaeology of the University of Tehran. Their team worked without interruption for fourteen months, from October 1961 to November 1962. Although at first the team had little idea of what might lie beneath the surface, gradually it became clear that Marlik contained the Royal Cemetery of a long-forgotten kingdom. Scattered over its crest were fifty-three tombs filled with a fascinating variety of objects of gold, silver, bronze, and pottery, testifying to the wealth and sophisticated craftsmanship of this three-thousand-year-old culture. Although the richest tombs were concentrated in the Royal Cemetery, the whole lower valley of the Gohar Rud was also essentially a contemporary burial ground for persons of lesser importance. Buried in simpler graves, with fewer grave goods, they had, perhaps, been attracted by the presence of the royal tombs. [*See* Tombs; Grave Goods.]

At Marlik, the tombs were formed basically of walls of broken stone and mud mortar built between the mound's large natural rocks. Some of the tombs were very roughly constructed, while others showed more care. For the most part, the natural stone of the surrounding area was used for construction. For some of the tombs, however, slabs of yellowish stone had been brought from the headwaters of the Gohar Rud, about 15 km (9 mi.) away. This stone might occur only in a single wall or in the form of slabs placed at the bottom of the tomb, but some of the richest tombs were built entirely of it.

In most of the tombs the skeletons had completely disintegrated, but in those few that still contained any, an elaborate burial ritual was revealed in which the body was carefully laid out on a long stone slab and surrounded by precious and ordinary objects their owners would need in the afterlife. With or without skeletal remains, the tombs were filled with a wide range of objects, including ritual vessels, human and animal figurines, jewelry, weapons and tools, domestic utensils, and some models of oxen with yoke and plow and toys.

The metal vessels found in the tombs were of gold, silver, and bronze, in many sizes and shapes—cups, bowls, pots with long spouts, beakers, and vases. They range from plain and unadorned forms to vessels with highly elaborate, sometimes narrative designs done in different techniques, including dotted linear engraving, repoussé in low and high relief (see figure 1), and, on one silver vessel, gold inlay. The workmanship ranges from simple, crude patterns on some vessels to highly elaborate naturalistic or stylized portraits of real and mythical animals and humans on others. In addition to these metal ritual vessels are several beautifully made in glass mosaic and frit.

Striking human and animal figurines were found in the tombs, made of pottery and of metal, including bronze, silver, and gold. The ceramic human figurines, most of them hollow, are highly stylized, as are several solid bronze figurines and one of gold. Some of the animal figurines are also highly stylized, such as the humped bulls, while others are more naturalistic. In addition to the bulls are figurines of stags, mountain goats, mules, horses, rams, bears, leopards, dogs, and wild boars and models of yoked oxen, tiger heads, and birds. The large number and high quality of the Marlik bronze figurines reflect the flourishing state of the bronze

MARLIK. Figure 1. *Gold bowl from Marlik.* An example of repoussé technique. (Courtesy E. O. Nagahban)

industry in the Elburz highlands during the late second and early first millennia BCE.

An extremely rich collection of jewelry was found in the tombs, including necklaces, pendants, buttons, bracelets, earrings, rings, forehead bands, leaves, hair binders, pins, and fibulae. Much of this jewelry came from tombs that appear to have belonged to women. Some ornamental items were, however found in tombs that may have belonged to warriors since they contained large numbers of weapons and hunting items. Most of the jewelry is of gold, sometimes combined with carnelian, agate, or other materials. Small amounts of jewelry out of shell, bone, frit, glass, lime gypsum, and bronze were also found. Some are masterpieces of great delicacy and beauty: pendants and earrings with fine granulation, pomegranate, quadruple spiral, and animal-head beads; and embossed rosette buttons, demonstrating the well-developed technology and skill of the Marlik craftsmen. [*See* Jewelry.]

Both cylinder and stamp seals were found in the tombs. There are fourteen definite and several possible cylinder seals, made of frit, gypsum, various stones, and even gold. The majority are of frit, with surfaces so badly damaged that in some cases the designs have entirely disappeared. Two of the cylinder seals are inscribed, the only evidence of writing found at Marlik, but the writing is legible on only one of them and it is fragmentary. The five stamp seals found are of cast bronze and have simple geometric designs. [*See* Seals.]

The pottery from the tombs seems, for the most part, to have a specifically funerary purpose. Although it does not differ too widely from the site's domestic pottery, it tends to be more elaborate and ornamental. The vessels are red, brown, and gray and of very fine clay tempered with fine grit. The firing was very well controlled and the surface treatment is of high quality. Especially notable among the many stylized forms are beautiful spouted vessels finished with burnishing and sometimes with a pattern-burnished decoration. Among the vessels in the tombs were bottles, jars, pitchers, chalices, mugs, cups, pots, bowls, basins, plates, vases, sieves, and lamps.

Of almost a thousand fairly complete weapons found in the tombs, fewer than forty were made of some material other than bronze, including about twenty-five of stone and a lesser number of iron. By the beginning of the Marlik period, the use of stone for weapons was already outdated. By the end of the Marlik occupation, iron was just beginning to be introduced, although it was still far from common. The large number of weapons in the tombs seems to reflect the role of the deceased as a formidable warrior, although some items, such as the many bronze arrowheads, could also have been used for hunting. Their inclusion with the pottery and bronze figurines of wild game suggests that the occupant of the tomb had been a great hunter. Among the other weapons found in the tombs were mace heads, swords, daggers, spearheads, and arrowheads, along with such military equipment as shields, helmets, cymbals, quivers, belts, and wristbands, almost all of them bronze (see figure 2). [*See* Weapons and Warfare.]

MARLIK. Figure 2. *Bronze macehead.* The form is that of a stylized human head. (Courtesy E. O. Nagahban)

The large collection of finds from Marlik has been assigned typologically to a date between the fourteenth and tenth centuries BCE, a date supported by a carbon-14 date of 1457 ± 55 years BCE. Marlik apparently represents the Royal Cemetery of an Indo-Iranian culture that first settled in the highlands of the northern slopes of the Elburz Mountains in the mid-second millennium BCE and flourished there for several centuries. This highly developed culture, especially notable for its bronze industry, covered the southern zone of the Caspian Sea and the northern slopes of the Elburz Mountains. Its influence was felt throughout the ancient world. The Marlik excavation thus provides information on a dark period of the early Indo-Iranian movement into northern Iran, illustrating the daily life, industry, crafts-

manship, and religious beliefs and traditions of this previously unknown people.

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EZAT O. NEGAHBAN

MARQUET-KRAUSE, JUDITH (1906–1936), Palestinian archaeologist born in Ilanya (Sejera, 13 km, or 8 mi., west-southwest of Tiberias), the first daughter of Eliyahu Krause and Ḥaya (née Ḥankin). Marquet-Krause spent her early childhood in Sejera before the family's move in 1914, to the Miqweh-Israel agricultural school, east of Jaffa, where her father became director. She received her secondary education in Tel Aviv and subsequently studied in Paris, at the Sorbonne, the École des Hautes Études, and the École du Louvre, where she acquainted herself with Palestinian archaeology. On her return to Palestine she worked for a season at Jericho under John Garstang.

Her broad knowledge of Oriental archaeology and command of ancient and modern languages, as well as her enthusiasm and energy, brought her the appointment of director of the Baron Edmond de Rothschild Expedition to Ai (et-Tell). She conducted three seasons of excavation there (1933–1935), establishing that the site had been destroyed and abandoned more than a millennium before the Israelite settlement, and that a small, unfortified village had existed there in the Early Iron Age. These discoveries demonstrated that the account in *Joshua* 7:2–5 and 8:1–29 was an "etiological" legend. The excavations also revealed very important remains from the Early Bronze Age IC–IIIB (3000–2400 BCE): a palace (perhaps originally a temple), a temple that yielded a rich and important assortment of cult objects and Egyptian First Dynasty alabaster vessels, and fortifications that included an elliptical tower and postern. Her excavation of the cemetery recovered significant assemblages of EB pottery.

Judith Marquet-Krause's death from an incurable illness ended the short career of a very promising young scholar. She had planned to excavate at Ai for a few more seasons and then to turn her attention to Hazor. She was the first native Jewish archaeologist in Palestine, the first local woman archaeologist, and the director of the first large-scale expedition carried out by a Jewish team in Palestine.

[*See also* Ai; Jericho; *and the biography of Garstang.*]

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DAN BARAG

MARSEILLE TARIFF. A fragmentary Punic inscription of the third century BCE, engraved on two stones, was found in 1844/45 near a cemetery in Marseille. Now housed in the Musée Borély, in Marseille, they are known as the Marseille Tariff. The stones and text reveal that the inscription originated in Carthage, for fragments of the same type of text have been found in the Punic metropolis. It is not known when or under what circumstances the inscriptions were brought to France.

In antiquity, the tariff was affixed to the gate of the Carthaginian temple of Baal Ṣaphon, the protector of seagoers. It served to regulate fees as well as the parts of the offerings that were designated for the priests and for those who presented the offerings (individuals, religious associations, and clans). The amounts given to each varied according to the type of sacrifice and victim and according to the role played by the priest in the different ceremonies.

The sacrificial material consisted primarily of bovids, ovids/caprids, and birds, but other offerings are attested as well, such as cakes, milk, oil, and various vegetal products. The sacrificial victims are divided into four categories according to age and size: oxen; calves and deer; sheep; and lambs, kids, and other small animals. A distinction seems to have been made between domestic and wild birds.

The text mentions three types of sacrifices: *kll*, *ṣwʿt*, and *šlm kll*, but their nature and their distinguishing characteristics are far from clear. In the case of the *kll*, which can be

a burnt offering, all kinds of animals could be offered, with the exception of birds; the offerer did not receive any part of the victim and was moreover required to pay a fee, in amounts of silver that decreased according to the size of the beast, from the ox to the smaller animals. Some parts of the victim were assigned to the priest. The *ṣw't* sacrifices consisted of the same animals as in the *kll,* but the victim was divided between the offerer(s) and the priests, nothing being due directly to the god(s). The *šlm kll* admitted all kinds of victims. The priests received various amounts of silver, but neither they nor the offerer(s) was allowed to eat the flesh of the slaughtered animals (birds excluded).

It is frequently assumed that the Marseille Tariff has strong affinities with the normative texts of the Hebrew Bible *(Leviticus),* not only in matters of vocabulary but in actual practice as well. A sound analysis of the inscription, however, points up more differences than similarities between the Hebrew and the Punic ritual traditions. Moreover, the aim of the Punic text, with its clear administrative concerns, is not theological but practical. Because of this emphasis on the administration of the cult, both the theologically oriented biblical texts and the tariff itself must be used with care in reconstructing the religion of ancient Carthage.

[*See also* Phoenician-Punic.]

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PAOLO XELLA

MARTYRION. In early Christian usage, *martyrion* denotes a place, shrine, sanctuary, sacred monument, or building marking a "place of witness." The term is comprised of the Greek stem *mart,* to which the denominative suffix *i-on* is appended. In the narrow sense, the Early Christian writers who use the term envisage a place or building that houses the physical remains of a blood witness. The concept developed from the predication of the Greek term *martys* ("witness") to Stephen (*Acts* 20:22), to Antipas (*Rv.* 2:13), and to other unnamed persons (*Rv.* 17:6) who, like Stephen and Antipas, testified to Jesus by giving up their lives. Jesus was the archetype of the blood witness; in Christian tradition, Peter, Stephen, and Paul follow close upon the archetype. In the broader sense, however, a martyrion is any place hallowed by tradition and associated with legendary heroes and heroines, both blood witnesses others.

The term is not a Christian neologism. Herodotus, Aeschylus, and Thucydides use it to denote testimony or physical proof. The plural, martyria, appears in *Exodus* 25:16, 21 as a synonym for the tablets of the Decalogue. It is also true, however, that, although attested in earlier contexts, the word is invoked with much greater frequency in later antiquity (second–sixth centuries) than in any other period of ancient history. Throughout later antiquity the term commonly implies a material place (usually a building), in contrast to earlier usages, where it carried legislative or judicial associations.

Beginning in the Constantinian period (305–337), the term comes to acquire a broad sphere of associated meanings. This fact makes it difficult to identify just exactly which building types should be classified under the martyrial rubric. For example, the Palestinian buildings constructed to mark and commemorate events in the lives of Jesus, John the Baptist, and Mary the mother of Jesus are denominated martyria. Also attested as martyria are certain shrines, sanctuaries, and sacred monuments marking either a theophany or an epiphany of a saint or an apostle or a figure from the Hebrew Bible. The best-known Palestinian example was the Constantinian construction (no longer extant) at Mamre, on a site where, according to tradition (*Gn.* 18:1), the Israelite God appeared to Abraham. In addition, the terms *memoria* and *tropaion* ("commemorative memorial," or "monument"; cf. Eusebius, *Church History* 2.25.7; 7.18.1), though used infrequently in patristic literature, are close functional equivalents to martyrium.

Yet another association the term comes to acquire, also beginning in the fourth century, is *martyrium* used as a synonym for various words denoting church buildings, including *ekklesia, kyriakon,* and *hieron.* This is a consequence of the real-life assimilation of two functionally different kinds of structures—the one for the eucharistic worship of the living community and the other for the commemoration and veneration of the dead. Christian cults of martyrs and holy sites expanded dramatically during the fourth century, and the martyrial structures associated with those cults were often used in multiple capacities, including the performance of liturgical functions unrelated to the cult of the dead. In short, the term *martyrion* was predicated of church buildings with increasing frequency from the fourth century onward.

On questions concerning origins and putative models, André Grabar (1946) hypothesized the derivation of Early Christian martyrial structures from Hellenistic and Greco-

Roman funerary antecedents, notably hero shrines (*herooa*) and mausolea. Grabar's view of this subject is closely tied to his invention of a sevenfold architectural typology of martyrial structures. He subsumes the full range of martyrial types under this scheme. Grabar distinguishes the types of plans: square structures; rectangular structures; structures with one apse on the periphery; triconch structures (or with a cella trichora); structures with a transverse hall or transept; structures built on a circular or polygonal plan; and martyrial buildings constructed on a cruciform grid. Of these seven plan types, the first three may be said to exhibit Hellenistic and Greco-Roman antecedents; for the remaining four, however, the evidence is at least problematic—some would say nonexistent. Thus, although Grabar's monograph is still the basic starting point for any serious study of martyrial structures in later antiquity, his seven-part typology, designed to support a theory of derivation from pagan prototypes, actually requires substantial modification and redefinition. It is necessary to consult more recent publications, especially those listed Kleinbauer's (1992) bibliography. It has been suggested that Christian martyrial structures may have influenced later, non-Christian architectural traditions, notably Islamic saints' shrines (see "Kubba," in *Encyclopaedia of Islam,* new ed., vol. 5, pp. 289–296, Leiden, 1986).

Early Christian martyrial structures situated in Near Eastern settings are products of the fourth through sixth centuries. Constantine endowed four martyrial buildings in the Holy Land: two in Jerusalem, one in Bethlehem, and another in Mamre); one in Constantinople (Holy Apostles); and another in Rome (St. Peter's). In the late fourth century, what Constantine had begun was continued in Palestine (Anastasis and Imbomon, both in Jerusalem) and in other martyrial buildings constructed in Rome and in provincial Italy, North Africa, the Rhineland, and Syria (i.e., St. Babylas in Antioch.) [*See* Jerusalem; Bethlehem; Constantinople; Antioch on Orontes.]

In the fifth and sixth centuries, more martyrial structures were built in virtually all the lands that had been conquered by Christianity. In addition to the places already mentioned, this includes the northern and central Aegean on the Greek side and along the Turkish coast; the interior of Anatolia, Egypt, Jordan, and especially Syria, which became the great Near Eastern center of martyrial architecture. On Syrian soil, the two most-impressive centers of martyrial cult and martyrial architecture are the shrine of the ascetic St. Simeon (d. 24 July 459) at Qal'at Sim'an and the shrine of the Roman soldier St. Sergius (who, according to tradition, was tortured and martyred [with Bakchos] by his fellow soldiers during the Diocletianic period) at Rusafa/Sergiopolis in northeastern Syria, south of the Euphrates River. [See Qal'at Sim'an; Rusafa.]

The following survey, organized alphabetically by region, provides a selected inventory of martyrial buildings in the Near East.

Anatolia/Turkey. (In addition to the items listed below, cf. Robert Edwards, "Yanıkhan (Cilicia in Turkey)" in *Encyclopedia of Early Christian Art and Archaeology* [hereafter *EECAA*], forthcoming.)

Antioch/Kaoussié: Martyrion of St. Babylas, late fourth century (cf. Pauline Donceel-Voûte, *Les pavements des églises byzantines de Syrie et du Liban: Décor, archéologie et liturgie I,* Louvain, 1988, pp. 21–31).

Der Kubbuk (southeast of Midyat in Ṭur ʿAbdin): square funerary structure, possibly a martyrion, fifth or sixth century (cf. G. Wiessner, *Göttingen Orientforschungen. Reihe II* 3 [1993]: 116–120).

Ḥah (Anıth, 20 km (12.5 mi.) northeast of Midyat in Ṭur ʿAbdin): Martyrion of el-'Adrha; two-storied rectangular structure, possibly sixth century (cf. R. Krautheimer, *Early Christian and Byzantine Architecture,* 4th ed., New York, 1986, fig. 263.).

Isauria, Meriamlik, south of Seleucia/Silifke: Martyrial Church of St. Thekla, c. 375; rectangular plan on a longitudinal axis, narthex, nave and two aisles, central apse projecting from the east wall flanked by pastophory and diakonikon (cf. F. Hild, H. Hellenkemper, and G. Hellenkemper-Salies, "Kommagene—Kilikien—Isaurien," in *Reallexikon zur byzantinischen Kunst,* 1984–1989).

Arabian Peninsula. There are no surviving examples of martyrial buildings from the period of later antiquity.

Armenia. (In addition to the items listed below, cf. Robert Edwards, "Armenia," in *EECAA.*)

Aghoudi: two vaulted mausolea, fifth or sixth century (cf. A. Khatchatrian, *L'Architecture Arménienne du IVe au VIe siècle,* Paris, 1971, p. 30, pl. 3, fig. 8).

Aghts: hypogeum of the Arsacid kings, fourth century; vaulted, rectangular burial chamber with two arcosolium burials and an apse projecting from one of the short ends of the chamber (cf. *ibid.,* pp. 29–30, pl. 3, fig. 7).

Ardvi: mausoleum, fifth or sixth century (cf. *ibid.,* p. 31).

Nakhtjavan: hypogeum of the Kamsarkan lords, fifth century (cf. *ibid.,* p. 30).

Vagharchapat: Church of St. Hripsime, martyrial crypt, fourth century (cf. *ibid.,* p. 32, pl. 4, fig. 12; A. B. Eremian, "La chiesa di S. Hripsimé," *Ricerca sull'architettura armena* 6 [1972]: 1–140).

Zvart'nots: Church of St. Gregory (with the epithet Loosavorich, "the Illuminator"), mid- to late seventh century; aisled tetraconch constructed at a site that commemorates the epiphany of St. Gregory to King Tiridates III (cf. W. E. Kleinbauer, "Zvart'nots and the Origins of Christian Architecture in Armenia," *Art Bulletin* 54 [1972]: 245–262).

Cyprus. There are numerous martyrial traditions attributed to early Christian Cyprus, including the apostle Barnabas who is said to have been killed by Jews at Salamis and

whose body is said to have been discovered in 488 (see Raymond Janin, "Chypre," *Dictionnaire d'histoire et géographie ecclèstiastique,* Paris, 1953).

Politiko: martyrion of St. Herakleides, late fourth century or earlier (cf. A. Papageorghiou, *E palaiochristianikē kai Byzantinē technē en Kuprō kata to 1964,* Nicosia, 1965, p. 6).

Egypt

Abu Mina: multiple phases of a martyrial structure, the earliest of them a small rectangular building dated to the late fourth century (cf. Peter Grossmann, "Abu Mina," and A. S. Atiya, "Martyrs, Coptic," both in *The Coptic Encyclopedia,* New York, 1991).

Ethiopia. There are no surviving examples of martyrial buildings from the period of later antiquity (cf. Marilyn Heldman, "Ethiopia," in *EECAA*).

Iran and Iraq. There are no surviving examples of martyrial buildings from the period of later antiquity (see Judith Lerner, "Christianity in Pre-Islamic Persia: Material Remains," in *Encyclopedia Iranica,* New York, 1992).

Israel

Bethlehem: Church of the Nativity, domed octagonal martyrion at the east end of the building commemorating the place where by tradition Jesus was born, mid-fourth century (cf. J. E. Taylor, *Christians and the Holy Places,* Oxford, 1993, pp. 96–112). [*See* Bethlehem.]

Jerusalem: Church of the Holy Sepulcher, domed triconch martyrion at the western end of the building commemorating the place where by tradition Jesus was buried, mid-fourth century (cf. Joseph Patrich, "The Early Church of the Holy Sepulchre in the Light of Excavations and Restoration," in *Ancient Churches Revealed,* edited by Yoram Tsafrir, Jerusalem, 1993, pp. 101–117). [*See* Jerusalem.]

Jerusalem, Mount of Olives: Eleona (Imbomon) Church; rectangular structure, apse at the east end over the cave from where by tradition Jesus ascended to heaven, late fourth century (cf. Taylor, 1993, pp. 143–156).

Mamre/Terebinthos (Ramat el-Khalil): small rectangular martyrial sanctuary where the three angels (the Trinity in Christian exegesis) appeared to Abraham (*Gn.* 18:1–22), fourth century (cf. Taylor, 1993, pp. 86–95).

Mount Gerizim: Church of Mary Theotokos; octagonal martyrial structure with an apse projecting to the east, late fifth century (cf. Y. Magen, "The Church of Mary Theotokos on Mt. Gerizim," in Tsafrir, 1993, pp. 83–89).

Jordan

Madaba: the so-called Cathedral Church, Chapel of the Martyr Theodore; rectangular chapel in the southwest corner of the building, dated 562 (cf. Michele Piccirillo, *The Mosaics of Jordan,* Amman, 1993, pp. 109–113–117). [*See* Madaba.]

Mount Nebo, Siyagha peak: Memorial Church of Moses; triconch martyrial sanctuary, late fourth century (cf. Piccirillo, 1993, pp. 144–145). [*See* Nebo, Mount.]

Lebanon. For martyrial remains in Lebanon, see index V, "Martyrium," in Pauline Donceel-Voûte, *Les pavements des églises byzantines de Syrie et du Liban* (Louvain, 1988).

Syria

Bosra: Church of Sts. Sergius, Bacchus, and Leontios; aisled tetraconch, c. 500 (cf. R. F. Campanati, "Considerazioni sulla chiese dei ss. Sergio, Bacco e Leonzio di Bosra dopo gli ultimi scavi (1977, 1978)" *Römisch-Germanisches Zantralmuseum Monographien* 10.1 [1986]: 133–142; Campanati, "Die italienischen Ausgrabungen in Bosra (Syrien). Der spätantike Zentralbau der Kirche des Hll. Sergius, Bacchus und Leontius," *BOREAS* 9 [1986]: 173–185; Jean-Marie Dentzer, "Bosra," in *EECAA*). [*See* Bosra.]

Qal'at Sim'an: Church of St. Simeon; octagonal central structure with the base of Simeon's column at the center of the octagon; four rectangular wings project from the perimeter of the octagon, creating a cruciform plan, 474–491 (cf. J.-P. Sodini, "Qal'at Sema'an," in *EECAA*). [*See* Qal'at Sim'an.]

Qanawat (Kanatha): Triconch martyrial chapel, fifth or early sixth century (cf. Donceel-Voûte, 1988, pp. 244–249).

Qartamin: Monastery of Mar Samuel, Mar Simeon, and Mar Gabriel; octagonal structure (possibly a martyrion) at the northwest corner of the main church, early to mid-sixth century (cf. E. J. W. Hawkins, M. C. Mundel, and Cyril Mango, "The Mosaics of the Monastery of Mār Samuel, Mār Simeon, and Mār Gabriel, near Kartmin," *Dumbarton Oaks Papers* 27 [1973]; see fig. 2, plan of the monastery).

Rusafa/Sergiopolis: Church (possibly the martyrion) of St. Sergios, located 150 m northwest of the basilica; tetraconch, before 553 (cf. Thilo Ulbert, "Rusafa," in *EECAA*). [*See* Rusafa.]

[*See also* Churches; Mausoleum; Palestine, *article on* Palestine in the Byzantine Period; Syria, *article on* Syria in the Byzantine Period; *and* Transjordan, *article on* Transjordan in the Byzantine Period.]

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PAUL CORBY FINNEY

MASADA, a mesa located at the edge of the Judean Desert on the western shore of the Dead Sea, approximately 25 km (15.5 mi.) south of 'Ein-Gedi. Rising about 440 m above the Dead Sea, Masada's summit covers 23 acres. The cliffs surrounding Masada contain evidence of human activity beginning in the Chalcolithic period, but the site's main occupation was during the late Second Temple period. The history of Masada under the Hasmoneans and through the First Jewish Revolt (66–74 CE) is documented archaeologically and by the Jewish historian Josephus Flavius. Masada was last inhabited during the Byzantine period, when a small church occupied the site. [*See* Churches.]

Josephus' discussions of Masada (*War* 1.13, 15; 2.17, 22; 4.7, 9; 7.7–10; *Antiq.* 14.13–15) provide the basis for all histories of this site. As early as 1838 the American explorer Edward Robinson correctly identified Masada with the site called es-Sebba, basing his identification almost exclusively on information drawn from Josephus's account. Samuel W. Wolcutt visited the mesa in 1842 and identified the Roman walls and camps that encircle it. Félicien de Saulcy was the first to excavate at Masada and in 1851 uncovered the mosaic floor of a Byzantine chapel. [*See* Mosaics.] Claude R. Conder published plans of buildings on the summit and of one Roman camp in 1875. The first in-depth study of the Roman camps was carried out by Alfred von Domaszewski in 1909.

Major studies of the site were begun in 1932 when Adolf Schulter spent a month investigating and sketching the plans of the buildings and Roman camps. The exact location of the so-called Snake Path was established by Shmaryahu Gutman who, later, with A. Alon, surveyed the site's Herodian water system. Gutman then partially excavated and reconstructed some of the Roman camps.

In 1953 the Israel Exploration Society, the Israel Department of Antiquities and Museums, and the Hebrew University of Jerusalem identified structures on the northern and western sides of Masada and drafted corrected maps of the site. The major excavation of the site was carried out by Yigael Yadin in two seasons from 1963 to 1965. The buildings on top of the mesa were the primary focus of investigation, but Yadin also made trial soundings in one of the Roman camps. Using Josephus's record as his primary guide, Yadin excavated 97 percent of the area on the summit.

Josephus ascribed the first construction project on Masada to "Jonathan" (*War* 7.285), whom archaeologist Ehud Netzer (1991) associates with Jonathan Maccabaeus. Others associate him with Alexander Jannaeus. Josephus attributes the major building phase to Herod the Great, who from 37 to 31 BCE expanded the preexisting Hasmonean fortress (*War* 7.300). After a nearly disastrous siege by Antigonus Mattathias, the last of the Hasmonean kings (c. 40 BCE), Herod refortified the site.

Little information remains of the occupation of Masada after Herod's death; however, Josephus writes that rebels, whom he characterizes as *sicarii*, the "short-knived ones" captured the site from a Roman garrison (*War* 2.408, 433–434). This record, coupled with pottery with Latin inscriptions found in excavation, suggests that the fortress housed a Roman garrison following Herod's death. During the First Jewish War (66–74 CE) the site was occupied by the rebel group. In 73 CE the Roman Tenth Legion, led by Flavius Silva, marched against the Masada defenders led by Eleazar ben Ya'ir ben Judah (*War* 2.447; 7.252–253).

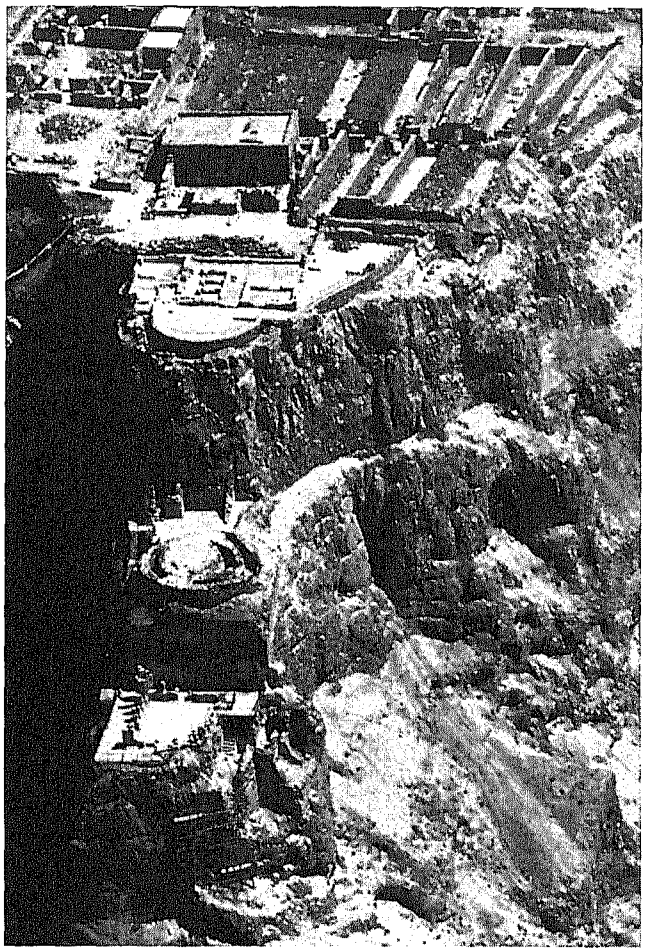
Though Josephus describes extensive Hasmonean construction on Masada, the only clear physical evidence of a Hasmonean presence is an assemblage of coins dating to Alexander Jannaeus and plaster dated to the period from some of the cisterns on the summit. No architecture can be attributed to the period, suggesting that Herodian construction destroyed earlier Hasmonean structures.

A casemate wall, dated to the Herodian period, enclosed the summit except on the north, where a palace forms the outer fortifications. The wall, built of local dolomite stone, about 13,000 m long; the casemates are about 5 m wide. There are four gates, seventy rooms, and thirty towers in the casemate wall. To supply fresh water, a series of aqueducts and cisterns was built. These supplied an abundance of water to the elaborate bathhouses, pools, and (during the Jewish Revolt) ritual baths. [*See* Aqueducts; Cisterns; Baths; Pools; Ritual Baths.]

The four palace complexes contain the most spectacular of all the architecture at Masada. The best known of these, the Northern Palace-Villa complex on the northernmost point of the summit, was built in three tiers near the edge of the cliff (see figure 1). [*See* Villa.] The upper level comprised living quarters with a semicircular porch.

The middle terrace, approximately 20 m below the upper terrace, contained a circular building. That building's foundations incorporated two concentric circular walls; the diameter of the outer wall was 16 m and of the inner wall 10 m. Yadin (1965) and Netzer (1991) propose that two rows of columns supported a roof. A staircase, hidden from view, connected the middle and upper terraces.

The lower terrace, built on a raised area at the cliff's edge, lies 16 m beneath the middle terrace. Building foundations



MASADA. Figure 1. *North end of the site showing the Herodian domestic palace, bath house, and storerooms.* (Courtesy Pictorial Archive)

revealed a central area that had been surrounded by porticoes and an inner columned wall. This terrace contained a small bathhouse with a simple paved mosaic floor and a structure with decorated plaster walls and columns. [*See* Wall Paintings.] Painted and mosaic elements on Masada use geometric patterns. They lack "graven" images, perhaps in accordance with a strict interpretation of the Second Commandment. In this, the art of Masada parallels contemporary art in Jerusalem and elsewhere in Judah. [*See* Jerusalem; Judah.]

The Western Palace, near the casemate wall, is the largest (4,340 m) residential building on Masada. Four distinct blocks of rooms constitute this palace: "royal" apartments, workshops and a service wing, storerooms, and an administrative section near what Yadin (1966) and Netzer (1993) call the residences of the palace officials. The opulence of the surviving architecture may have influenced Yadin's identification of this structure as royal apartments: its walls were decorated with plaster, and an indentation in the floor suggested a throne area to Yadin (1966) and Netzer (1993). The floor was covered with a richly colored mosaic with a central medallion of geometric and plant designs. A Roman-style bath was located in the northeast corner of a wing of this palace.

Situated southeast of this complex were three small palaces whose central courts and two-columned halls reflect the layout of the Western Palace. Herodian ceramics and coins found within the complex provide a reliable chronological indicator. Of special interest was the discovery of a wine amphora inscribed in Latin "to Herod, king of Judea."

Evidence of the Jewish occupation of Masada during the Jewish Revolt of 66–74 is extensive. Two blocks of long rooms (approximately 30 × 3 m) were attached to a building complex at the north end of the site. Yadin (1966) and Netzer (1993) date the remains of flour, oil, wine, dates, olives, and other foodstuffs recovered from these structures to the period of the revolt. Another group of storerooms west and south of the northern building contained caches of weapons. [*See* Weapons and Warfare.] Casemate rooms and palaces underwent conversion into living quarters, and cooking ovens, new walls, and benches were added in many of the Herodian buildings. Ritual baths were apparently built at this time, and in the northern casemate wall a synagogue was constructed in a room that had previously served as a stable. Numerous religious documents were discovered, many of them recovered in, or in close proximity to, the synagogue. The texts included biblical books, the *Book of Ben Sira (Ecclesiasticus),* and "The Songs of the Sabbath Sacrifice." The latter text was also discovered at Qumran. [*See* Qumran.]

The artifacts from the period of the revolt were of special interest to Yadin: items of everyday life (textiles and textile artifacts, ceramics, and baskets), hoards of Jewish coins dating to the fourth year of the revolt (70 CE), and ostraca of various types. [*See* Ostracon.] The ostraca include personal names, designations of priestly tithes, names of foodstuffs, and records of supplies and payments.

Following Josephus (*War* 7.395), Yadin excavated a group of ostraca he identified with the "lots" used by the defenders in carrying out their mass suicide (Yadin, 1966). These ostraca were found near the Water Gate in a group of eleven (a twelfth appears simply to be an incomplete ostracon sherd). Each carries a single name, including the name *Ben-Ya'ir,* who has been associated with Eleazar ben Ya'ir ben Judah. Not all scholars share this identification. Among those who have raised serious questions is S. J. D. Cohen (1982), who doubts the historicity of Josephus's description of the rebels and their mass suicide. Josephus reports that the Sicarii set fire to the "palace" during the final stage of the siege, though evidence of a conflagration was discovered (*War* 7.315–319, 397, 403–406).

Josephus reports that Flavius Silva built an extensive siege wall and a series of camps encompassing Masada (*War* 7.304–314), which archaeological exploration has verified.

Both the wall and several of the camps are still visible. Gutman excavated camp A and the assault ramp and Yadin (1965) made soundings in camp F. After the fall of Masada a Roman garrison remained at the site, but only a few related coins have been recovered that reflect this occupation. The site appears to have been abandoned until the Byzantine period (fifth–sixth centuries). An apsidal church was built northeast of the Western Palace that may have been part of a monastic complex.

[*See also* First Jewish Revolt; Hasmoneans; Israel Antiquities Authority; *and the biographies of Conder, Robinson, Saulcy, and Yadin.*]

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GLENDA W. FRIEND and STEVEN FINE

MASHKAN-SHAPIR, ancient city in Mesopotamia identified with the site Tell Abu Duwari, located at 32°24′7″ N and 45°12′17″ E. The identification of Tell Abu Duwari with Mashkan-shapir was made firm when more than 150 fragments of baked clay cylinders bearing an inscription dedicating Mashkan-shapir's city wall were found in 1989 in association with one of the site's city gates.

In the broader scope of Mesopotamian settlement, the occupation of Mashkan-shapir was quite brief. Its name, which can be translated as "the encampment of the overseer," indicates its humble beginnings. The first textual reference to this town, dated to the Akkadian period (2334–2154 BCE) shows it to have been a place of refuge for a runaway slave girl. Mashkan-shapir continued for several centuries as an obscure outpost of Mesopotamian civilization, concerned more with raising sheep than the larger issues of state. Indeed, had the unification of southern Mesopotamia, which characterized most of the Akkadian and Ur III periods (2334–2004 BCE) persisted, Mashkan-shapir would probably have remained no more than a small rural hamlet.

The succeeding Isin-Larsa period was characterized by political fragmentation, however, with Larsa claiming dominance over the south, Isin the center, and (somewhat later) Babylon the territories of northern Babylonia. Given the absence of native sources of stone, metals, and high-quality timber for construction, this political fragmentation resulted in a disruption in the trade routes so vital to the Mesopotamian economy. Larsa, although in clear control of trade coming up from the Persian Gulf, was cut off by Isin from the usual trade route up the Euphrates River. Larsa therefore turned its attention to the territory between it and the Tigris River—the alternate route to the north.

It is here that Mashkan-shapir becomes significant. Mashkan-shapir was located—as can be seen on satellite images of the area—beside all or some of the path of the Tigris River in the early second millennium BCE. It was thus in a strategic position to control trade moving from areas east and north of Babylonia into the southern heartland.

The interest of the Larsa kings in Mashkan-shapir is made clear both by objects found at the site and by the more extensive textual record. Zabaya (1941–1933 BCE), one of the more obscure of the early Larsa kings, left a record of building activity at the site in the form of an inscribed clay nail; however, it was not until the reign of Sin-iddinam (1845–1843 BCE) that Mashkan-shapir became a major city. Sin-iddinam built the wall around Mashkan-shapir with the express intent "to increase its dwellings," as he says in his dedicatory inscription (see above). Archaeological evidence indicates that his city wall enclosed an area in excess of 70 hectares (173 acres)—an area larger than that walled in at Ur. From this time forth, Mashkan-shapir rose from obscurity and began to play a key role in trade between the key eastward trade route along the Diyala River and the kingdom of Larsa, and this was only the beginning. Within a decade of Sin-iddinam's death, the rulership of the parent city of Larsa was taken over by a family from Mashkan-shapir. Mashkan-shapir then became the second capital of

the Larsa kingdom, playing key roles in justice and international diplomacy, especially following Rim-Sin's defeat of Isin in 1794 BCE. Mashkan-shapir fell when Hammurabi finally moved against Larsa in 1763 BCE. The shift in the allegiance of its armies to Hammurabi precipitated Larsa's downfall.

While Hammurabi's conquest ended Mashkan-shapir's role as a political capital, it remained an important city—as is testified by its inclusion in the prologue of Hammurabi's law code. However, conditions deteriorated in southern Babylonia under Hammurabi's successor, Samsuiluna (1749–1712 BCE). By 1720 BCE the cities of southern and central Babylonia lay abandoned, including Mashkan-shapir—probably the result of a combination of political upheaval and ecological degradation. While in Kassite times (between perhaps 1400 and 1150 BCE) new canals brought water back to old centers of Sumerian culture, Mashkan-shapir was either too far east or had had too brief a tradition for it to be included. It remained lost in the desert until its recent discovery by archaeologists.

The first archaeologist to visit Mashkan-shapir was Robert McC. Adams, who included the site in his survey of the area around Nippur, giving it the identification number 639. Based on his description of the site, Elizabeth C. Stone selected it as a likely candidate for excavation. To date, three seasons of work have been conducted there, two three-week seasons in 1987 and 1988–1989, and a three-month season in 1990.

The brevity of Mashkan-shapir's floruit is what gives its archaeological manifestations particular significance. Apart from an underlying Uruk occupation (3500–3000 BCE) and a very limited Parthian settlement (250 BCE–228 CE), the remains of Mashkan-shapir provide a snapshot of an early second-millennium Mesopotamian city that is unparalleled. Only 2 m above plain level on average, the major features of this ancient city have not been obscured by erosion or later occupation, as is so often the case at longer-lived examples.

Because the primary aim of the Mashkan-shapir project was to recover a sense of the overall city plan, the bulk of the work conducted to date has been devoted to reconnaissance—both aerial and surface surveys. In addition, several small soundings were excavated to test the validity of conclusions drawn from surface survey work alone; one extensive area, covering 1,000 sq m, was excavated in 1990.

The survey work conducted at Mashkan-shapir has not only revealed the site's major features—canals, temple platforms, city walls—but also some that are more subtle—roads, manufacturing areas, and special-purpose zones identified on the basis of their surface objects. Together, these provide a comprehensive view of the ancient city's organization, albeit a somewhat provisional one pending further excavation.

Mashkan-shapir was divided into its component parts by four major canals. Its south, central, western, eastern, and northern parts have different characteristics and apparently served somewhat different functions. A fifth major canal (possibly somewhat later in date) flowed through the northern portion of the site, but no differences in patterning have been observed on either of its banks. Minor canals were also located within the areas in the east and north that appear to have been associated with manufacturing—especially of ceramics. Where the main central canal intersected with the eastern and western branches, the area was opened into two harbors, each covering an area of approximately one hectare. It is not clear whether these harbors should be identified with the main Mashkan-shapir harbor (mentioned in one cuneiform text as holding 270 boats preparatory to an attack on the city of Kish) or if that center of international trade was located a kilometer or so away, on the banks of the Tigris River.

The site's religious quarter was located in the south; there, a quite small area is characterized by both baked-brick and mud-brick platforms that must once have supported temples. Associated with these platforms are some seventy fragments of life-sized and half-sized terra-cotta statuary in the shape of humans, lions, and horses. These statues doubtless guarded the entrance to a temple in the same way that similar statues guarded the entrances to the contemporary temples at Khafajeh, Isin, and Tell Harmal. Tentative evidence suggests that the immediate temple precinct was walled off from the rest of the southern portion of the city, but this conclusion awaits confirmation. [*See* Temples, *article on* Mesopotamian Temples.]

Also on the periphery of the site, but in this case in the southern part of the west mound, is the area that seems to have been devoted to secular administration. Aerial photographs reveal a walled building complex made up of a number of regularly built structures characterized by large courtyards. Large numbers of fragments of models of chariots have been found in this area, but their association with administrative practices is unclear. Two soundings and one larger excavation yielded numerous unbaked clay sealings, an administrative tablet, and some other inscribed materials that confirm the impression that this was an administrative area. The tablet suggests concern with trade and shipments of goods. Numerous fragments of the bitumen (natural asphalt, used for waterproofing) covering of reed and matting wrapped bundles may also be testimony to such activity, but more excavation is needed before the full scope of the area's activities can be assessed.

The third distinctive part of the city lies in the southern portion of the central mound. This was apparently the core of the early settlement. A sounding revealed residential structures dating to early in the Isin-Larsa period, before the city's rise to power. The evidence suggests that this early mound was left unoccupied for the last century or so of Mashkan-shapir's occupation and was used as a cemetery. Numerous fragments of large burial jars and typical grave goods—jewelry, cosmetic palettes, and weapons—litter the

surface of the area (as do the traces of the work of illicit diggers at the site). Like the administrative area and perhaps also the religious quarter, this cemetery area was walled off from the rest of the central mound. Enclosed within this wall is another platform that presumably also supported a temple. It is possible that Mashkan-shapir's dedication to Nergal, the Mesopotamian god of death, may have led to this association between a cemetery and a temple—an association not seen at other Mesopotamian cities.

The rest of the site seems to have been largely residential in character. In some areas aerial photographs reveal the street pattern: major roads paralleled the canals, leaving space for a single row of houses between a street and a canal. Larger areas, though, were bisected by roads that connected with quays or bridges to allow passage across the canals.

The evidence suggests that there was a fairly even distribution of wealth over the spread of the residential districts. Artifacts associated with high status—cylinder seals, stone bowls, and even metal objects—are found all over the city. Also found everywhere are traces of baked-brick architecture and graves—an indication that not everyone was buried in the cemetery.

It is in the residential districts that evidence for manufacturing activities is found. Three such industries have been identified: copperworking, pottery production, and lapidary work. The first two are indicated by the presence of their residues—copper slag, kiln fragments, and wasters—while the third is marked by concentrations of unworked stones found with numerous small, mostly cuboid grinders. It appears that all crafts were represented in all parts of the city, but that there was some specialization. Most of the copper-production centers were located in the central part of the site; ceramic production was focused on the small canals in the north and east; and lapidary work was concentrated in the southeast.

The whole was surrounded by Sin-iddinam's city wall, in which three gates have been identified: a water gate and two gates located beside the canals where their flow enters the city. In many places, the densely occupied portion of the city never reached the wall. Instead, the empty space left held a few large, but scattered, buildings. In plan, some of these suggest storage facilities, so it is possible that the city's granaries were located near the city gates.

Although the exploration of Mashkan-shapir is still in its infancy, its unique occupational history has allowed a quite complete picture of the organization of this Mesopotamian city. Noteworthy are the role the canals played in dividing the city and the peripheral character of its main institutions, with religious and administrative centers located toward its edges.

[*See also* Isin; *and* Larsa.]

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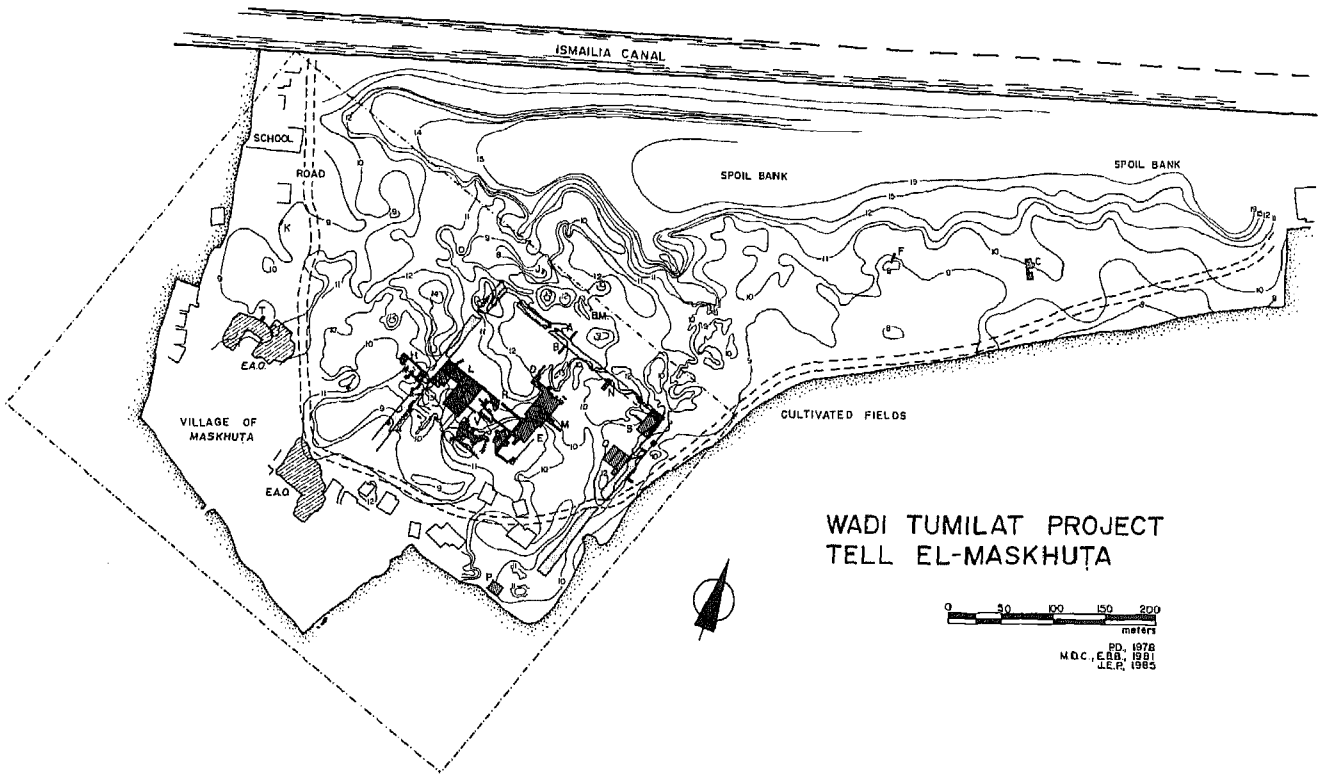
ELIZABETH C. STONE

MASKHUTA, TELL EL-, town in the eastern Nile Delta (see figure 1), occupied in the late Middle Bronze II and from about 610 BCE into the Early Roman period, with gaps in the Late Persian period, and in about 100 BCE–100 CE (30°33′ N, 32°06′ E).

The name of the site in the Second Intermediate period is unknown. Inscriptional and literary evidence indicates that after 610 BCE it was known as Per-Atum Tukw (the "estate of Atum in *Tkw*"); as biblical Pitom or Pithom (*Ex.* 1:11), in the region of *Tkw;* or as biblical Succoth (*Ex.* 12:37, 13:20; *Nm.* 33:5–6). The biblical references are anachronistic, probably arising from the antiquarian interests of Jeremianic refugees resident in the eastern Delta. [*See* Delta.] Though the older name was preserved into the Hellenistic period, it was more commonly known by its Greek name, Heroon polis (Eroopolis, Heroon; the Greek translation of *Gn.* 46:28, "near Heroopolis in the land of Rameses"). The Romans shortened it to Ero (Hero).

The first to excavate the site was Édouard Naville for the Egypt Exploration Society. (1893). Jean Clédat excavated many objects on behalf of the Service des Antiquités (about 1900–1910), but contributed little else. The Egyptian Antiquities Organization excavated in the northern cemetery, along the Ismailia canal, a necropolis area of the Persian period south of the temple precinct, and near the present village (c. 1970–1985). A major series of excavations (1978–1985) was undertaken by the University of Toronto's Wadi Tumilat Project, directed by John S. Holladay, Jr., with funding from the Smithsonian Institution and the Social Science and Humanities Research Council of Canada.

Second Intermediate Period (Middle Bronze IIB). The earliest occupation at the site, about 1700/1650–1600 BCE, was a small, unfortified Asiatic ("Hyksos") village of possibly only 2 ha (5 acres). [*See* Hyksos.] It was of short duration, with a total depth of stratification of about 2 m divided into seven archaeological phases. In its architecture



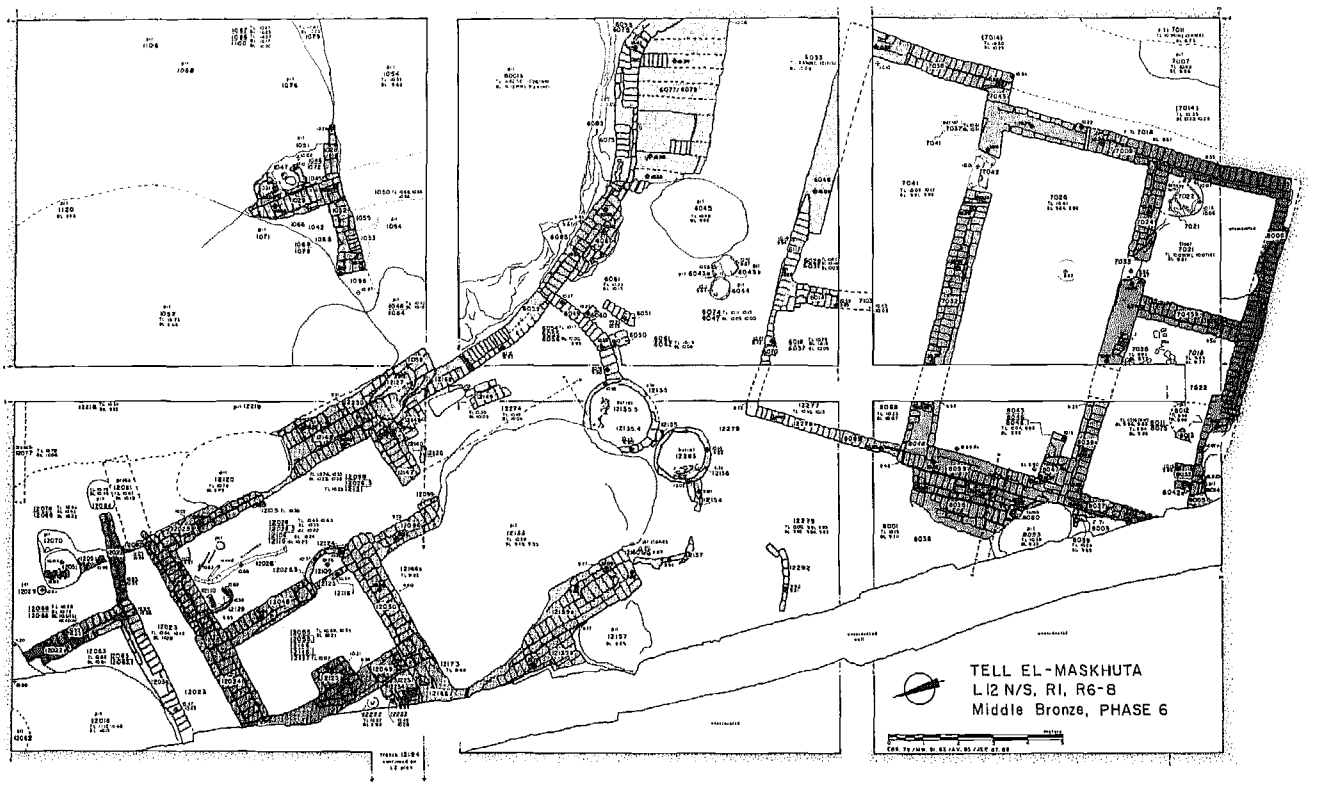
MASKHUTA, TELL EL-. Figure 1. *Plan of the site.* (Courtesy J. S. Holladay)

and burial practices, it resembled Tell ed-Dab'a and presumably functioned as a Hyksos outpost (see figure 2). [*See* Dab'a, Tell ed-.]

The pottery, some of it made on site, is a subset of that found at Tell ed-Dab'a and is a mix of MB IIB and earlier Levantine forms together with local Egyptian forms. Significantly, the Asiatic aspects of the corpus do not resemble typical corpora from either Syria or Palestine. Despite the site's small size, the "urban" character of its architecture and layout is comparable to that at Tell ed-Dab'a, in plot demarcation by sinuous boundary walls, house styles and construction, and a progression in area use from storage facilities (aboveground circular silos) and burials to an increasingly dense pattern of houses and associated features (relating to agricultural, animal husbandry, cooking, and industrial activities). Surprisingly, paleobotanical evidence shows that the site was seasonal, occupied only during the winter (through wheat harvest), with relocation elsewhere (to campsites?) during the summer. [*See* Paleobotany.] The economy was dominated by herding and plow-assisted dry farming (wheat, barley), apparently on more than a subsistence basis. Donkeys, sheep, goats, pigs, horses, hartebeest, and gazelle were present, and a wide variety of small game and birds were hunted. [*See* Hunting.] Crafts include pottery making; secondary bronze smelting and tool/weapon making; textile production using the warp-weighted loom; sickle production with preformed blades; and perhaps silversmithing. One enigmatic workshop housed high-temperature hearths and an industrial process for which multiple stakes had been driven into the floor, and in which red and yellow ocher, cobble-sized grinders, palettes, hammerstones, and reused chert slingstones played significant roles. Large quantities of water had repeatedly been sluiced over the floors. What was involved seems to have been the intensive manufacture of a composite product: possibly leather with metal fittings or ornaments, or elite products that involved precious metals.

Burials include "warrior's tombs," marked by burials of a single donkey and weapons, women's tombs, and small mud-brick tombs for infants and adolescents. [*See* Tombs; Burial Practices.] The tombs contained relatively rich offerings: gold and silver headbands, armbands, and earrings; scarabs; amulets; and food offerings. [*See* Grave Goods.] There were infant jar and cist burials and simple inhumations with few or no grave goods.

The evidence for seasonality, the site's short life-span, ending before the final phase of Hyksos domination, the high level of technological production, the great disparity between the agriculturalist-pastoralist orientation of the domestic economy, the rich burials of the town's residents, and the central-to-eastward trending of settlement in Wadi Tumilat all argue that the village was the primary reception, provisioning, and debarkation point for donkey caravans bearing products northwestward: presumably incense,



MASKHUTA, TELL EL-. Figure 2. *Plan of the final building phase of the MB IIB (Hyksos) occupation.* (Courtesy J. S. Holladay)

spices, ivory, gold, gemstones, precious woods, and animal pelts; commodities transported to the southeast were most likely copper, tin, silver, coniferous woods, linen, fine woolens, alabaster, medicinal drugs, weapons, and tools. The Hyksos settlement at Tell er-Retabah probably functioned as the region's principal military and administrative center and as a way station for caravans to the port city of Tell ed-Dab'a. Such operations had military implications and relied on the cooperation of the indigenous pastoral people of the Sinai. Presumably, this extension of Hyksos settlement to the east occurred when the Nile River was closed to communications between Nubia and the Delta during the fifteenth dynasty. Or, given the hostility between Thebes and Karnak during the late fifteenth dynasty, it is possible that the overland traders operating between the Horn of Africa and its eastward-looking trade connections either were inadequately servicing the traffic into Nubia or began making exorbitant demands, causing Avaris to seek more direct connections with South Arabia. A third possibility is that the development, by the Late MB IIB or Early MB IIC, of overland trade connections between South Arabia and southern Palestine caused the merchant princes of Avaris to want some portion of that overland trade diverted to their own emporium.

Saite Period. With the advent of Necho II (610 BCE) and his sea-level canal connecting the Pelusiac branch of the Nile with the Red Sea via Wadi Tumilat, the site's exposed frontier position, unsettled since the Late MB II period, again became an asset. Following the use of the terrace as a work camp for canal-building and the sacrifice and burial of a large number of bulls (presumably as foundation sacrifices; see figure 3), houses and mid-sized aboveground granaries were built, accompanied by outdoor bread ovens, which also roasted fowl. [*See* Granaries and Silos.] Central planning is suggested by the shared design features in both the houses and silos. Following Necho's defeat and expulsion from Asia in 605 BCE, a 8–9-meter-wide defensive wall was erected. It cut through elements of the original town plan, including newly built houses enclosing an area of roughly 200 m per side. The adequacy of this 4-hectare (7-acre) space for the townsite is demonstrated by the lack of Saite occupational levels in all sectors of the enclosure. Two destruction phases followed, apparently in 601 BCE and in 568 BCE, both carried out by Nebuchadrezzer II. A minor presence of Judean pottery associated with a house destroyed in 568 BCE may attest to the settlement of some Jeremianic refugees from the 582 BCE dispersion. Another destruction marked the Persian conquest of Egypt in 525 BCE. A large Atum temple was

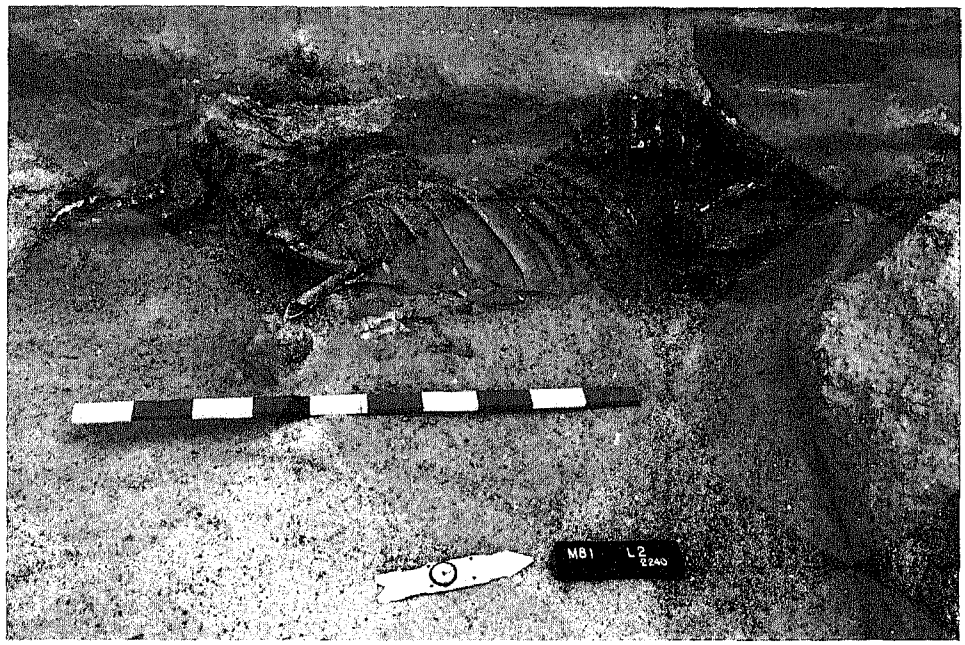
founded at the beginning of this period, probably in association with bull sacrifices.

During the Saite period, expanded trade via the canal is evidenced by massive quantities of Phoenician "crisp ware" amphorae, Greek amphorae from Thassos and Chios, and imported mortaria, probably of Anatolian origin. A Phoenician terra-cotta statuette of a seated pregnant goddess (Asherah/Tannit?) found in a small limestone shrine is probably testimony to the presence of expatriate Phoenician traders. [*See* Phoenicians.] That Phoenician ships were the primary carriers seems evident, given the Egyptian reluctance to venture far from the mouth of the Nile, and given the quantity of Phoenician trade amphorae. The Greek and other amphorae, mortaria, and other heavy cargoes formed a substantial part of the ballast under which the keelless ships of the times sailed. [*See* Ships and Boats.] The ballast could then be sold at any port at which other heavy, large bulk products were to be on-loaded. Red Sea and Indian Ocean trade was not witnessed by material finds, but must be inferred from the wealth of evidence for widespread trade connections at what otherwise would be nothing but a small provincial town at the midpoint of a long canal terminating near Suez.

Persian Period. The site expanded to fill the entire enclosure area in the Persian period, with an elite necropolis to the southwest. The four great quadrilingual stelae near Tell el-Maskhuta and southward (the largest Persian monuments in Egypt), attest to Darius the Great's successful completion of the canal to the Red Sea. Outside the enclosure wall a stone-built well had been deliberately blocked and filled in the rebellion of 487 BCE. With evidence for a water sweep operating with a different well, and no evidence for any gateway in this area, these remains indicate well-supported horticultural and pastoral activities. [*See* Agriculture.] Belowground beehive granaries of no more than small-estate size point to some of the production being controlled by minor elites during this period. Given the massive numbers of Persian storage pits in southern Palestine, Persian agricultural intensification and bulking of agricultural surpluses for the eastern Nile Delta are likely.

Industrial and storehousing activities were concentrated near the enclosure wall on the eastern side of town, near the canal. What may have been priestly quarters are densely built near the temple. A bulla of Darius the Great mentioning the district of *Tkw* suggests that administrative quarters might have been located nearby. Fragmentary monuments from the thirtieth Nectanebid dynasty may be later imports to the site, or may indicate continued Nectanebid administration of the canal.

During the Persian period (c. 525–330), there was an increase in goods imported in Phoenician trade amphorae—probably mostly wine—and in Thassian and Chian amphorae. *Dipinta* (painted) inscriptions on jar fragments are mostly in Demotic, with a few in Phoenician script. Either Egyptian-based Phoenician traders labeled the storage jars in Demotic for local trade or Egyptians controlled most of the trade. Mortaria were imported in quantity, and small cubic limestone altars, ultimately of South Arabian inspira-



MASKHUTA, TELL EL-. Figure 3. *The third bull burial discovered at the site.* The burial pit was cut by the enclosure wall (top right) foundation trench, around 605 BCE. (Courtesy J. S. Holladay)

tion and probably not of local manufacture, suggests the spread of incense use to domestic cultic installations. [*See* Altars.] A cache of thousands of Athenian tetradrachmas points to trade gifts to the Atum temple, as do the "Tell el-Maskhuta bowls," inscribed "to the lady"—presumably Hathor—from Qainu the son of Gashmu, a princely Arabian name witnessed in the Bible (*Neh.* 2:19). Minute Himyaritic silver coins bearing the archaic owl of Athena probably come from this period, further attesting trade relations with South Arabia.

Zoological and botanical analysis shows a great variety in the agricultural economy, reflecting a local intensification, the interests of the Persian rulers of Egypt, and greater availability of nonlocal species and varieties presumably because of traffic on the canal.

Ptolemaic Period. Following a diminished Late Persian and an Early Hellenistic occupation, the site's fortunes turned upward under Ptolemy II (282–246), who rebuilt the canal; he celebrated some of his imports (including elephants) in a stela found by Naville (1903). A new six-chambered granary with an attached bank of bread ovens was constructed and a Late Persian storehouse was restored. Nearby, work went on in support of the renewal of the Atum temple complex: sculptors' "trial pieces," scraps of quality limestone, and evidence of secondary bronze smelting were found in excavation.

It seems unlikely that the series of massive storehouses discovered by Naville (1903) began quite this early. Excavations demonstrated the successive building and wholesale replacement of three differently oriented large storehouses. This series dates from about the second half of the third century to about 150–125 BCE. Other, even more massive storehouses remain to be investigated. The material stored in these structures presumably were part of the trading activities between the Mediterranean basin and South Arabia and the Horn of Africa. During this period it is clear that Tell el-Maskhuta was either a major point of shipment for some heavy, high-volume capacity (e.g., wheat), or a turnaround spot for ships because only a few ships were needed for continuing on into the Red Sea (some choice Greek wines made the journey all the way to India). Alternatively, it is possible that cargoes were deliberately lightened for the southbound leg of the trip, with the transshipment of relatively low-bulk, high-value cargoes to fast triremes at the head of the Red Sea for better handling of the combined northern Red Sea problems of shallow water, adverse winds, and pirates. Transshipment to these Red Sea triremes could have taken place at Per Atum. The returning ocean-going ships could have taken on high-value, lightweight southeastern products (spices, incense, ivory, rare woods, etc.) for value and local products (grain, hides, dried meat) for partial ballast. They could then have gone tightly ballasted as far as Pelusium, where the ballast weight required for ocean travel could be made up of locally accumulated amphorae, metal and glass ingots, and choice building stone. During this period the site outgrew the enclosure area.

Roman Period. The Christian pilgrim Egira mentions a Roman military post at Hero in about 381 CE, but few remains of this period exist. By this time, the military garrison may have been located to the northeast. Following a break in occupation from the first century BCE to the first century CE, the site experienced its greatest period of expansion, probably associated with Trajan's reconstruction of the canal.

Only two small fields in the Roman cemetery were investigated. However, Roman materials overlaid much of the field E storehouse, and a number of Roman limekilns were sunk in pits penetrating MB and Saite levels. Limekilns had already been intensively used for the large and heavily plastered Hellenistic storehouses. The bricks for the latest field E storehouse contained lime flecks, which indicates that they were made of mud recycled from earlier buildings whose plaster had been stripped. Given the rarity of quality limestone in the Delta, it is notable that many large piles of limestone chips remained at the site. No traces of dressed or inscribed outer surfaces appeared, suggesting either that limestone chips were imported for lime making, or that new blocks for the Atum temple were made at locations well east of the temple.

A lack of typically Roman figured lamps and other late indicators suggests a relatively early date for the end of occupation in the late third–early fourth centuries CE. To the east, a Roman cemetery occupied the location of a former Hellenistic suburban village, filling it with squarish, largely subterranean, mud-brick tombs with vaulted roofs. The tombs were entered from a walled dromos centered on the eastern side, the arched tomb entrance being bricked in after each burial. The tomb burials were found stratified, owing to the constant exfoliation of mud-brick materials from the tomb vault. These tombs were looted during their active use-life, clearly by the attendants, and afterward. Traces remained of relatively rich burial goods (gold foil and a gold earring, glass vessels, carved bone hairpins). Simple inhumations lacking durable grave goods were cut into the open spaces between the tombs, and a children's cemetery of amphora burials, possibly slightly later, occupied the southeastern end of the excavation area. Among the latter was one Christian burial—oriented toward Jerusalem—marked by a Coptic epitaph and two chi-rho symbols on a Gaza amphora. A few other inhumations sharing this orientation may also be Christian; most other inhumations were oriented west. Indications of trauma and the mortality curve of adult males are consistent with a military population. [*See* Tombs; Burial Techniques; Grave Goods.]

In the Roman period, the defense and regulation of overland traffic seem to have heightened in importance because increasingly large Roman freighters were unable to operate

safely in the northern Red Sea. [*See* Seafaring.] However, Trajan's reopening of the canal (see above) argues for its continued use as a viable military transit or commercial facility. For the latter activity, a more complicated system of assembling cargoes at Quṣeir or at points farther south in the Red Sea may be posited.

Islamic Period. In about 641 BCE the silted-up canal was reopened by Amr ibn al-ʿAṣ, the conqueror and first governor of Egypt. It was used until 767, when the second ʿAbbasid caliph, Abu Jafar al-Mansur, closed it, to keep supplies from reaching the rebellious cities of Mecca and Medina.

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JOHN S. HOLLADAY, JR.

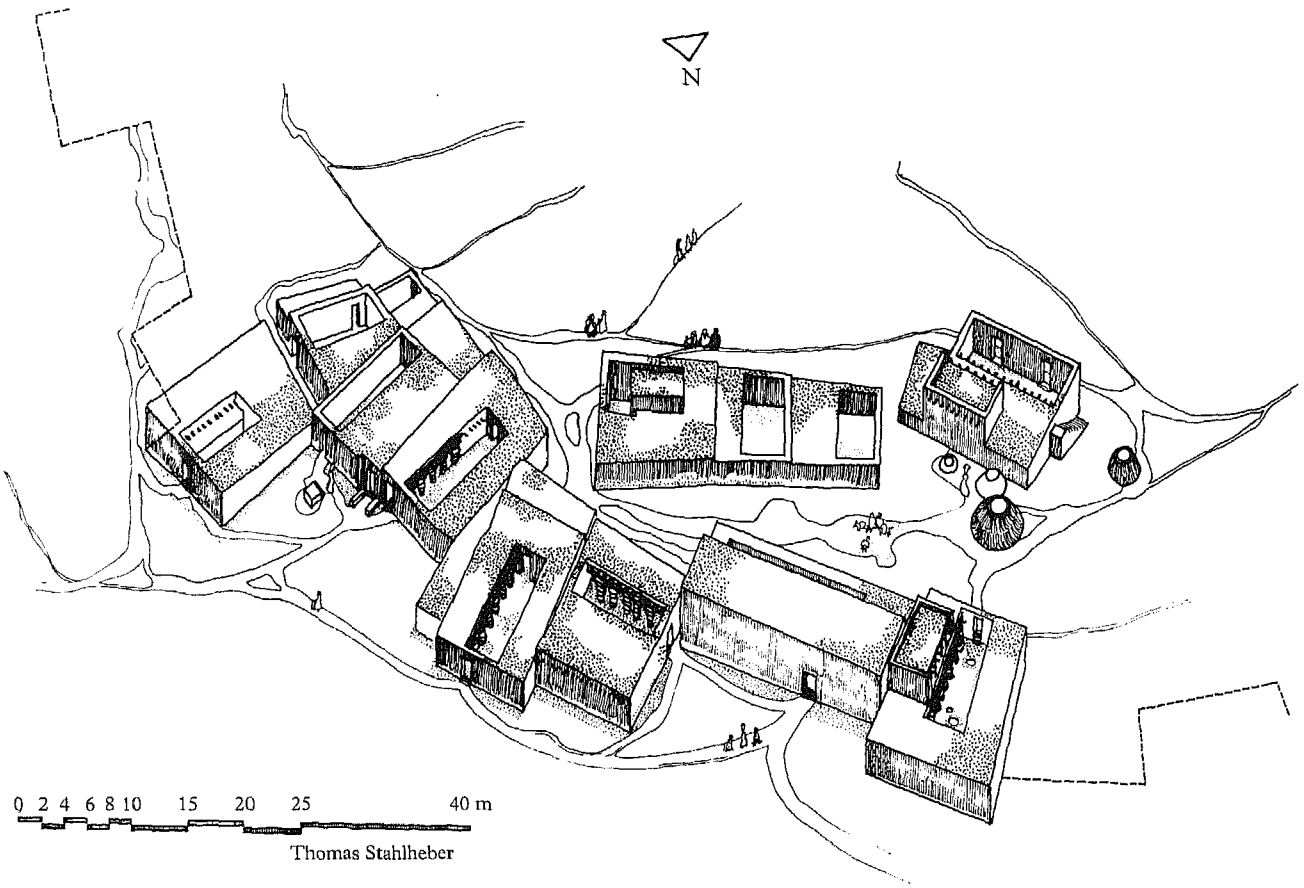
MASOS, TEL (Khirbet el-Meshash), site situated about 12 km (7 mi.) east of Beersheba in Israel's Negev desert (map reference 147 × 069). The name still indicates the areas rich water sources, in which groundwater is easily accessible by means of wells. The site consists of three different components, located on both sides of the wadi: a small tell; and remains of a large village to the northeast; as well as the artificial hills of an enclosure on the southern bank. The tell's existence has been known since the nineteenth century, when it was mapped by Claude R. Conder and H. H. Kitchener in the Survey of Eastern Palestine (1874). The other two sites were discovered during intensive surveys by Yohanan Aharoni (1964, 1967).

In spite of the existence of both the long lists of cities in the Negev in *Joshua* 15:21–32 and Shishak's list, the ancient name of Khirbet el-Meshash has not yet been ascertained. Its identification with Ḥormah by Aharoni (Aharoni et al., 1975, pp. 123–125 in particular) is unlikely because it seems that Ḥormah was a rather important city in the time of the Israelite Monarchy. During that period, except for a few decades at the end of the seventh century BCE, the archaeological record shows that Khirbet el-Meshash was deserted. The same applies to the suggested location of Ziklag by Frank Crüsemann (1973, especially pp. 222–224). The identification by Nadav Na'aman with Baʿalat Be'er, as in *Joshua* 19:8, is entirely arbitrary (Na'aman, 1980, p. 146). Taking into account that the name may have been mentioned in the list in 1 *Samuel* 30:27–31a, dated to the end of the eleventh century BCE, Sifmot and Rachal should be considered possible candidates for the ancient name.

The history of the site was revealed in 1972–1975, during the course of extensive excavations by a joint German-Israeli expedition led by Volkmar Fritz and Aharon Kempinski on behalf of the University of Mainz and Tel Aviv University. Tel Masos was settled only for short periods of time during different periods, with large gaps in occupation, which explains why the several settlements were spread out at a distance from one another.

The tell owes its formation to a settlement dated to the end of Iron II (seventh century BCE); resettlement took place, however, at the end of the Byzantine period. There is a former Iron I village (1200–1000 BCE) situated northeast of the tell, with some remains dating to the Chalcolithic period. The fortified enclosure on the southern bank of the wadi was constructed during the Middle Bronze Age II–III and was abandoned during the same period. Altogether, five periods of occupation can be distinguished: Chalcolithic earth dwellings; a fortified MB II–III enclosure; an Early Iron Age village; a settlement from the seventh century BCE; and a monastery dating from the seventh–eighth centuries CE.

The Chalcolithic material is meager and neither the pottery nor the implements exhibit any peculiarities. The funds come mainly from one subterranean dwelling dug into the



MASOS, TEL. *Reconstructed plan of the village.* (Courtesy V. Fritz)

loess; later, in the Iron I, a house was built on top of it. No exact date within the range of the period from 3600–3200 BCE can be given. The site belongs to the so-called Beersheba culture, known throughout the Negev.

Within the MB enclosure, two fortified settlements can be distinguished, the older of which was demolished when the subsequent one was built. The embankment enclosed a square with sides approximately 100 m in length, but a large part of the site had been washed away by the wadi that runs next to it. These settlements probably represent an attempt on the part of the coastal cities to control the route leading to the east; they yielded homogeneous ceramics that date to the seventeenth century BCE.

The Early Iron Age village covers an area of approximately 200 × 150 m and is the largest known site of this period in the country. Altogether, three strata with a total of five phases can be distinguished; they indicate continuous habitation from about 1200 until the beginning of the tenth century BCE. In the earliest phase, stratum IIIB shows some signs of nomadic occupation; there are floors, pits, and hearths, but no architecture. The building of actual houses begins in stratum IIIA, in about the middle of the twelfth century BCE. During the two phases of stratum II, the site was more densely built up, with a large variety of building types. Besides the dominant four-room house, there are three-room houses, broadroom houses, a courtyard house, and the so-called Amarna house, an Egyptian type of dwelling (cf. Fritz, 1988). Various other buildings had some sort of public function. The large variety of structures indicates that the population was by no means homogeneous. Stratum I is badly eroded but seems to mark a certain decline. The site was entirely abandoned at the beginning of the tenth century BCE.

The finds from Tel Masos include both local and imported ceramic wares; an example of early Phoenician ivory art; and a remarkably large number of copper and bronze objects. The imported ware include bichrome-style vessels from the Phoenician coast; sherds of Philistine pottery from the coastal plain; so-called Midianite ware originating in northwest Arabia; and fragments of Egyptian "flowerpots." The diverse nature of this assemblage shows that the village had wide-ranging connections in every direction. The large quantity of copper and bronze implements indicates that copperworking played an important role. A scarab made of steatite bears the motif of a pharaoh defeating his foes and can be assigned to the reign of Seti II (1204–1194 BCE).

During the second half of the seventh century BCE, a small settlement was constructed southwest of the former village, which had already been deserted for more than three hundred years. At its center stood a large building, whose size and arrangement of rooms suggest that it served as a caravanserai—a station along the trade routes passing through the area. The settlement was probably fortified and existed only for a short period of time. It was destroyed during the Edomite conquest at the beginning of the sixth century BCE.

The last occupation on the mound took place at the end of the period of Byzantine rule in Palestine, when Nestorian monks selected the top of the tell to build a small monastery. The monastery itself was built on the north, while the plateau to the south of it was used as a large courtyard with a surrounding wall. The entrance into the building led from this courtyard into a small hall, from which the central courtyard, around which the various rooms were grouped, was accessible. A chapel was incorporated into the building and could be reached from the entrance hall by a stairway with five steps. The apse was rectangular, a unique occurrence among Nestorian churches that is characteristic of Syrian churches. The altar was discovered in a room next to the chapel, not in situ. East of the chapel a crypt with a separate entrance contained seven graves. Each grave contained either two or three skeletons, all interred facing east. No artifacts of any kind were found, but the rubble inside the graves included pieces of plaster with fragments of inscriptions in Syriac script, which was written by the Nestorians in the eighth century CE. Other inscriptions incised in Syriac on stone were found throughout the building. The monastery was founded in the seventh century CE, but it did not last long. It suffered a sudden and violent destruction during the first half of the eighth century CE.

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VOLKMAR FRITZ

MASPERO, GASTON (1846–1916), great French Egyptologist and most prolific author in the history of Egyptology. Maspero studied hieroglyphs on his own as a youth and then under Professor Emmanuel de Rougé, whose successor he became at the Collège de France in 1874 at the age of twenty-eight. In 1881 he succeeded Auguste Mariette as director of both Egypt's Bulaq Museum and the antiquities service. At this time he copied newly discovered religious texts inscribed inside late Old Kingdom pyramids for subsequent translation and publication.

Circumstances forced Maspero to raise funds in Europe in order to undertake such work as the excavation of the Great Sphinx and the temple of Luxor. He resigned and returned to France in 1886 to produce a number of books including one on Egyptian archaeology and another on Egyptian literature. Maspero's three-volume *Histoire ancienne des peuples de l'orient classique* (Paris, 1895–1899), which appeared in English as *The Dawn of Civilization: Egypt and Chaldaea* (London, 1894), exhibits his masterful broad command of history.

Maspero returned to Egypt in 1899 to become the director of the newly established Egyptian Museum in Cairo and remained in this position until 1915. There he organized its already vast holdings and produced the first guide for visitors. He supervised the conservation of such temples as Karnak, Edfu, Dendera, and Kom Ombo and the archaeological survey of Nubia to the south, threatened by the building of the first Aswan dam. Maspero's most useful archaeological project was undoubtedly his editorial direction of the catalog of the Egyptian Museum in Cairo, fifty volumes of which appeared during his tenure as director.

Maspero expanded and reorganized the Egyptian antiquities service into five inspectorates. His appointments and honors from the scientific and scholarly worlds were numerous. His English knighthood was a response to his unqualified support for the fledgling Egypt Exploration Fund in London, which went on to do so much important excavation in Egypt under Flinders Petrie, Édouard Naville, and others.

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MAṬARA, site of an Axumite urban center, located at the eastern edge of the northern Ethiopian escarpment about 3 km south of the modern town of Senafe, Eritrea (14°43′ N, 39°26′ E). It sat beside the route that once led from Adulis, a port on the Red Sea, to Axum on the western side of the Ethiopian plateau. This unwalled provincial center was abandoned sometime after the early seventh century CE, although there is no evidence of fire or massive destruction to suggest a violent end to inhabitation.

Excavations conducted by the Ethiopian Institute of Archaeology uncovered several typical Axumite mansions (similar to the great structure of Dungur at Axum) and a section of densely built popular housing, the latter datable to the sixth century CE.

The site has only one dressed (finished) monolithic stela (about 5 m or 16.4 ft. high), the original position of which is uncertain. Its rounded top is decorated with the disk and crescent, the religious symbol of pre-Christian Axumite coins. (Axum's King Ezana converted to Christianity about 333 CE.) Its brief inscription in unvocalized Ge'ez script may date to the end of the third century. Although its sense is not clear, it refers to a military victory. Stelae at Axum are uninscribed.

The mansion of Francis Anfray's complex A is datable to the third century. Its remains exemplify the Axumite building style. The square central pavilion, which is 12.6 × 11.2 m (41.4 × 36.7 ft.) sits upon a stepped podium (platform) of stone-faced, mud-mortared rubble. Walls and podium have projecting and re-entrant sections, and corners are reinforced with dressed-stone blocks. The pavilion, reached by a flight of stone stairs at the center of the west facade, sits within a courtyard. It may be compared with the contemporary complex C and the somewhat later complex B of Maṭara. Additions to complex A are post-Ezana in date, as indicated by the associated cross-marked pottery.

The mansion complexes at Maṭara are aligned along the cardinal compass points. Complex C, a central pavilion raised on a stepped platform and with surrounding annex rooms, is partially overlaid by complex D. The central pavilion is subdivided into nine square sections, creating eight rooms and a staircase that led to upper story.

Complex B, which is larger in size (59.5 × 49 m or 195 × 161 ft.) and later in date, is more regular in plan. The rubble-stone and mud-mortared fabric of the central pavilion's podium includes reused stone fragments from the Ethio-South Arabian period. The central pavilion with monumental stairs on its north, east, and west sides is divided into nine "rooms"; stairs at two corners indicate an upper story. The surrounding rectangular courtyard is shaped by an exterior wall to which is attached a string of rooms opening off the courtyard. Associated finds included red pottery marked with a cross and Axumite coins of silver and bronze ranging in date from the reigns of Ezana to Gersem (seventh century).

Architectural complex D presents a new scheme. Although its general plan—central pavilion within a courtyard shaped by an enclosure wall lined with annex rooms—resembles the typical Axumite mansion, the central pavilion with grand western staircase has a crypt built of large, dressed-stone blocks. Above the lintel stone is a stone block carved with a cross. This chapel with subterranean tomb chamber is similar to the two subterranean tombs with superstructure at Axum, the so-called tombs of Kaleb and Gabra Masqal, which appear to date to the mid-sixth century CE.

Maṭara's complex F includes a typical, probably galleried Christian basilica, which was built in Axumite style. Immediately to the east of the church is a characteristic "keyhole"-shaped baptistery basin.

Axumite structures of Maṭara were built upon earlier constructions. Anfray found evidence of four levels. The lowest of them, which was associated with objects of a marked South Arabian character and pottery, belongs to the Ethio-South Arabian period (fifth–fourth century BCE). The next, his period II, belongs to the intermediate period and is characterized by schist walls and pottery similar to that found at Yeha, a major Ethiopian pre-Axumite site located east of Axum. It is unclear whether Maṭara was totally abandoned at the end of this intermediate period. Monuments of complexes A and C belong to Anfray's period III, the pre-Christian Axumite period with which is associated red and black Axumite pottery with no Christian symbols. Monuments of complexes B and D belong to his period IV (fifth–seventh century CE).

[*See also* Axum.]

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MARILYN E. HELDMAN

MATARIA BOAT. In 1987 excavations for utility construction in Mataria (ancient Heliopolis or On), a suburb of Cairo, Egypt, exposed the remains of a boat, which dates to the fifth century BCE about 10 m (39 ft.) below ground level. Archaeologists recorded the existing 8 × 4 × 1.2 m (26 × 13 × 4 ft.) after about one-third of the hull was destroyed by heavy machinery. In addition, despite the efforts of the Conservation Department of the Egyptian Museum, Cairo, to record and preserve the fragments of the shallow, broad rivercraft, many of the planks of the surviving hull section broke apart. Most of the extant fragments today are 35–50 cm long. Barren sand immediately beneath the hull suggests that the craft was beached near an old river channel. Roman artifacts were found in the layers above the boat, but archaeologists discovered nothing directly related to the boat. Wood samples from the hull components include sycamore fig, sidder, acacia, and tamarisk, all local Egyptian woods.

The boat from Mataria is the latest-known Egyptian hull. Its builders lived in a prosperous, yet unstable time when Egypt was ruled by the Persians (twenty-seventh dynasty, c. 525–404 BCE). A Greek colony at Naukratis in the Nile Delta dates to the sixth century, and increasing numbers of foreigners came to Egypt thereafter, providing the opportunity for Egyptians to observe different technologies. The Mataria hull reflects Egyptian nautical traditions that incorporated a feature of Mediterranean shipbuilding found in boats dating from the Late Bronze Age to the Byzantine period but never seen in the older Egyptian hulls: the occasional use of pegs driven perpendicularly through tenons to lock mortise-and-tenon joints. Although this type of fastening is known as early as the Egyptian first dynasty (c. 2920–2770) in the manufacture of furniture, coffins, and statues, the Mataria boat marks the first recorded use of pegged mortise-and-tenon joints in Egyptian shipbuilding.

The mortises were up to 3 cm thick and 14 cm deep, larger than those of the seven known earlier Egyptian hulls. The use of treenails or pegs may reflect shipbuilding techniques adopted by the Egyptians about 1250 BCE. As the Mataria boat indicates, however, Egyptian shipbuilders did not imitate the practice followed elsewhere in the Mediterranean of locking every joint in place with pegs on either side of a plank seam. Not all mortise-and-tenon joints were pegged, and the current condition of the planking fragments prevents an analysis of the relation of the pegs to the construction. Because the peg length was greater than plank thickness, however, we must consider the possibility that the pegs functioned as treenails for fastening now-lost frames to the hull.

As for other important technological features, the planking of the Mataria boat continues the Old Kingdom and Middle Kingdom traditions of hull construction. In the Mataria boat planks of .8–6.0 × .2 × .08 m (2.5–19.5 × .65 × .25 ft.) were edge-joined to create a shell. Plank ends appear to have been butted against each other to form lines of planking called *strakes*, each side having about fifteen of them. Although the Mataria vessel traveled on the Nile about the time that the fifth-century Greek historian Herodotus described Egyptian boat construction (Haldane and Shelmerdine, 1990), the Mataria planks are much longer than those of his account. The basic method of construction, however, was the same. Interestingly enough, planks of the same dimensions as those of the Mataria boat were recorded for Upper Egyptian watercraft of the 1950s.

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MAURITANIA. *See* North Africa.

MAUSOLEUM. The term *mausoleum* refers to a type of sepulchral monument that takes its name from the tomb of Mausolus of Halikarnassos, a Carian king who died in 353 BCE. The exact reconstruction of the mausoleum at Halikarnassos (modern Bodrum in Turkey) is disputed because of its poor state of preservation and the different descriptions given by ancient sources. However, all the evidence indicates that it consisted of a rectangular building surrounded by an Ionic colonnade on a base that may or may not have been a stepped pyramid. The building was capped by a stepped pyramid bearing a sculpted quadriga group. Mausolus commissioned some of the most famous artists of the fourth century BCE, including Scopas, Leochares, Bryaxis, and Timotheus, to sculpt the frieze that decorated the monument.

The Mausoleum at Halikarnassos was ranked among the seven wonders of the ancient world. It provided the inspiration and model for other highly decorated monumental tombs, especially in Asia Minor. One characteristic of these structures is the arrangement of a square base (or podium) that supports a building (or cella) that is surrounded by a colonnade and surmounted by a pyramidal roof. One such tomb was erected at Belevi near Smyrna, perhaps for Antiochus II of Syria, who died there in 246 BCE. The marble monument has a square podium with a Doric entablature containing the tomb chamber. The building on the podium was surrounded by Corinthian columns, between which stood larger-than-life-sized statues. The roof was probably

pyramidal. Another tomb of this type, though smaller in size, is preserved at Mylasa in southwestern Turkey.

Mausolea are also found in the Syro-Phoenician realm. The tomb of Hamrath, at Suweida in Syria's Hauran, erected in about 75 BCE, has a square base with engaged Doric columns capped by a stepped pyramidal roof and is constructed of stone. The sepulchral monuments at Hermel and Kalat Fakra in Lebanon are two-storied structures with smooth-sided, pyramidal roofs, also constructed of stone.

Flavius Josephus (*Antiquities* 13.6.6) describes a mausoleum made of "polished white marble" erected in the second century BCE by Simon the Hasmonean at Modi'in (near modern Lod in Israel) for his father and brothers. Although this monument no longer exists, two Jewish mausolea of the first century BCE and first century CE still stand in Jerusalem's Kidron Valley. The so-called Tomb of Zechariah and the Tomb of Absalom are monoliths cut out of the limestone of the rocky hillside. Each has a cubic central portion encircled by engaged columns. The Tomb of Zechariah has a smooth pyramidal roof, while the Tomb of Absalom is capped by a cylindrical "tholos." A Roman mausoleum built of rough stone dressed only on its outer face of the third or fourth century is located at the site of Mazor, also near Lod. Its lower part, which still stands virtually intact, has two burial chambers and a front porch with Corinthian columns. A mausoleum of the same date was found next to catacomb 11 in the Jewish necropolis at Beth-She'arim. It was constructed of ashlar masonry and decorated with a carved animal frieze.

[*See also* Burial Techniques; *and* Tombs.]

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JODI MAGNESS

MAZAR, BENJAMIN (1905–1995), Israeli historian and archaeologist. Born in Cechanovitz, Poland, Mazar (originally Maisler) studied Assyriology at the University of Giessen, Germany, and received his Ph.D. in 1927. In 1928 he moved to Jerusalem. His research interests covered wide-ranging aspects of the history, archaeology, and historical geography of the land of Israel and of the ancient Near East. In the years before World War II he was inspired by William Foxwell Albright, with whom he worked at Tell Beit Mirsim. From 1936 to 1939 he undertook excavations for the Israel Exploration Society at Beth-She'arim, where he uncovered a Jewish necropolis of the second–fourth centuries CE. In 1943 he became a member of the academic staff of the Hebrew University of Jerusalem, where he established a department for the Historical Geography of the Land of Israel. He excavated at Beth-Yerah (1945), Tell Qasile (1949–1951, 1956), and 'Ein-Gedi (1961–1964). His largest and most important enterprise was the excavations south and west of the Temple Mount in Jerusalem (1968–1978), where he uncovered public architecture from the Iron Age, Second Temple Period, and the Early Islamic period. His publications, teaching, and work over many years as editor in chief of the Hebrew *Encyclopedia Biblica* combined his broad knowledge and ability to synthesize data from the various fields of ancient Near Eastern studies, biblical studies, and archaeological research. This synthesis of disciplines was his main legacy to three generations of scholars in Israel, and many of his students became scholars in his numerous fields of interest.

From 1952 to 1961, Mazar was rector and president of the Hebrew University. Under his leadership the university overcame the crisis of the 1948 War of Independence, when the campus on Mt. Scopus was detached from the western part of Jerusalem, and entered a period of rapid academic development. He was also involved for many years in determining the general direction and quality of academic life in the State of Israel. Mazar earned many prizes and honorary degrees, among them the Israel Prize.

[*See also* Beit Mirsim, Tell; Beth-She'arim; Beth-Yerah; 'Ein-Gedi; Israel Exploration Society; Jerusalem; Qasile, Tell; *and the biography of Albright.*]

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AMIHAI MAZAR

MAZAR, TELL EL-, site located in modern Jordan in the middle of the Jordan Valley, approximately 3 km (2 mi.) north of Tell Deir ʿAlla and 6.5 km (4 mi.) south of Tell es-Saʿidiyeh (32°13′20″ N, 35°36′22″ E; map reference 1812 × 2074). The mound is relatively small (.75 acres) but rises an impressive 24 m above the surrounding plain (the elevation of the summit is 228.67 m below sea level). The site does not appear to have been founded on a natural hill but is comprised strictly of accumulated occupational debris. The absence of major fortifications strongly suggests that throughout its history, Tell el-Mazar was dependent on the larger villages in the region for both its security and economic prosperity.

Associated with Tell el-Mazar is a small mound—referred to as mound A in the excavation reports—located 220 m northwest of the main tell (map reference 1813 × 2073). Mound A rises only 1.8 m above the plain, has a maximum elevation of 249.10 m below sea level, and covers an area of just over an acre. The name *Mazar* (Ar., "place of visitation or pilgrimage") may be derived from the nearby mosque and grave of Abu Obeidah, an early Islamic general. Tell el-Mazar is not attested in ancient sources, including the Hebrew Bible.

Tell el-Mazar was noted and briefly examined by Nelson Glueck (1951) in 1942 and by Moawiyah Ibrahim, James Sauer, and Khair Yassine (1976) in 1975. These surface surveys collected pottery from the tell proper dating to the Middle and Late Bronze Ages and Iron I–II, Persian, Early Roman, Byzantine, and ʿAbbasid periods. Glueck (1951) refers to mound A as Tell el-Ghazala (his site no. 177) and collected LB, Iron II, Roman, and Byzantine pottery from the surface.

The first excavations at the tell and on mound A were initiated by Yassine for the University of Jordan in 1977. A total of four, two-month seasons were conducted on the tell (1977–1979, 1981). Mound A was also investigated during the 1977–1979 campaigns.

Stratigraphy. Although both surface surveys found MB and LB pottery, the earliest stratified material discovered thus far dates to Iron I. Five distinct strata have been identified on the summit of the main tell, covering an occupational sequence from the eighth through the late fourth centuries BCE, as follows:

Stratum I: fourth century BCE (Late Persian/Early Hellenistic)
Stratum II: fifth century BCE (Persian)
Stratum III: sixth–seventh centuries BCE (Late Iron II)
Stratum IV: seventh century BCE (Iron II)
Stratum V: eighth century BCE (Early Iron II)

Because of successive episodes of destruction, rebuilding, and pitting, architectural plans for the five strata at Tell el-Mazar are incomplete. Nevertheless, the overall occupational sequence is relatively clear. Mound A yielded evidence of an eleventh–tenth-century BCE occupation followed by a four hundred-year hiatus and then a reuse in the fifth century BCE as a cemetery.

Major Finds. The earliest occupational layer uncovered thus far (stratum V) consists of a large, flagstone-paved courtyard surrounded by rooms that contained loom weights, storage jars filled with grain, a beer mug, and a variety of animal bones. The excavator suggests that the fiery destruction at the end of the eighth century BCE may be attributed to Sennacherib's invasion of the region in 701 (Yassine, 1983, pp. 510–512).

In the early seventh century BCE a series of domestic structures (stratum IV) was built on the debris of stratum V. The modest walls and the rooms, which contained domestic utensils, suggest that the structures were private houses rather than part of a public or military installation. The stratum IV occupation appears to have ended peacefully. A large structure, designated the palace-fort, was built on top of the stratum IV houses. Its central portion consisted of a raised platform, or podium (10 × 15 m), surrounded by a thick (1.70 m) mud-brick wall and was divided into three large rooms. To the east, a stairway led to rooms at a lower level. Those rooms were used for a variety of domestic activities, including cooking, meat processing, food storage, and weaving. The stratum IV courtyard located north of the palace-fort is at the same elevation as the lower rooms and was reused in stratum III (Yassine, 1983, pp. 507–510).

Shortly before an intense fire destroyed the palace-fort, a series of partition walls was added in the podium rooms in an extensive remodeling. These newly formed rooms were the scene of increased domestic activity in this part of the structure. The excavator suggests that the destruction of the palace-fort in the early sixth century BCE may be attributable to Nabuchadrezzar II's campaign in 582 (Yassine, 1983, pp. 503–507).

The beginning of the fifth-century BCE occupation (stratum II) is marked by massive filling and leveling over the destruction debris of stratum III. A number of poorly constructed mud-brick rooms and adjoining courtyards appear to be modest private houses built roughly on the same orientation as the stratum III structures. The stratum II inhabitants of Tell el-Mazar used mound A as their cemetery. Objects from both the tell and the cemetery display a distinctive Archaemenid Persian influence (Yassine, 1983, pp. 501–503).

The Tell el-Mazar settlement seems to have slowly dwin-

dled during the early fourth century BCE. By late in that century, the summit of the mound was covered with numerous pits and silos measuring up to 2 m in diameter and 4 m deep. [*See* Granaries and Silos.] The absence of any architectural remains from this phase (stratum I) indicates that the tell was then used exclusively as a granary (Yassine, 1983, pp. 498–500).

The earliest stratum on mound A revealed the fragmentary remains of a large (24 × 12.60 m) tripartite structure with stone foundations, mud-brick walls 1.20 m thick, and an associated courtyard 16 m wide. Constructed in the eleventh century BCE and destroyed in the late tenth century BCE, the building contained a variety of ceramic vessels (including storage jars, kraters, bowls, and chalices) and a fenestrated incense stand. Although no contemporary occupational layers have been found on the summit of main tell, it seems probable that they might be encountered beneath stratum V. Iron I layers and architecture have been uncovered on the tell's south slope. Citing parallels from Beth-Shean, Lachish, Megiddo, Ta'anach, and Deir 'Alla, the excavator has interpreted this structure as an open-court sanctuary with seven distinct phases of use, corresponding to phases F–K at Deir 'Alla (Yassine, 1984b). [*See* Beth-Shean; Lachish; Megiddo; Ta'anach; Deir 'Alla, Tell.]

In the fifth century BCE, mound A was used as a cemetery, apparently by the people who occupied the homes of stratum II on the tell. Eighty-five graves have been excavated (Yassine, 1984a). Three main types of burials are represented: simple interments (pit graves); pits lined with mud bricks; and pits lined with stones on one side. In addition, there was one infant jar burial (no. 47) and one larnax (clay coffin) burial (no. 23). The graves were approximately 1 m deep, .70 m wide, and 1–2 m long, each containing a single burial. Most, but not all, of the burials were oriented east–west, with the head at the east end of the grave, facing south. Males were buried in an extended position, whereas females were placed in a flexed position. Typical female grave goods consisted of silver and copper earrings, kohl sticks, shells, and beads. Males were often buried with iron arrowheads, spearpoints, and knives/daggers as well as stamp and cylinder seals made from limestone and such semiprecious stones as marble, agate, jasper, and lapis lazuli. Copper and ceramic vessels and copper/bronze pins, rings, and fibulae were found with both males and females. The cemetery was used throughout the fifth and possibly into the early fourth centuries BCE. [*See* Burial Sites; Tombs; Grave Goods; Jewelry; Weapons.]

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DAVID W. MCCREERY and KHAIR YASSINE

MCFADDEN, GEORGE (1907–1953), pioneer of American archaeology in Cyprus. A graduate in architecture from Princeton University, McFadden was deeply interested in the broad span of classical Greek civilization from literature to archaeology. He inspired, supported, and co-directed the first major field project from the New World to excavate on Cyprus.

The University of Pennsylvania Museum (now the University Museum) had previously sponsored a brief excavation on Cyprus in 1931 directed by Bert Hodge Hill, but it lacked the means to underwrite more fieldwork. With McFadden's generous contribution the museum's Kourion Expedition was established to trace the history of human occupation in the area from earliest times through the breakup of the Roman Empire. Beginning in 1934, McFadden and Hill directed extensive excavations at several localities; at the city-site of Kourion they uncovered the theater, basilica, stadium, and temple of Apollo, now regarded as some of the island's most spectacular archaeological discoveries.

The expedition also sponsored an archaeological survey of the region and the excavation of and the publication by the Cypriot Department of Antiquities of Sotira *Teppes,* a Ceramic Neolithic settlement north of Kourion.

McFadden would have been well pleased to know that the archaeological tradition he established was to thrive after his accidental death. His fine house in the village of Episkopi, a short distance from Kourion, was partially converted into a museum displaying local archaeological finds, and the rest of the building has accommodated, over the years, expeditions associated with a wide range of sites. Some projects investigated the earliest human occupation of Cyprus on the Akrotiri peninsula, and others, at the far end of the chronological spectrum, have explored the medieval origins of Episkopi, McFadden's adoptive village, overlooking the bay where he drowned. Since 1969, the American School of

Classical Studies at Athens has offered many fellowships in McFadden's memory.

[*See also* Cyprus; Kourion.]

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STUART SWINY

MECCA (more properly, Makkah), city located in an arid valley in al-Hijaz in western Saudi Arabia (21°27′ N, 39°39′ E) and about 73 km (45 mi.) from the Red Sea port of Jeddah, which serves the pilgrims to Mecca. To the southeast is the town of Ṭa'if, 88 km (55 mi.) away. Mecca must have existed since ancient times as the Ka'bah (see below) was established in the nineteenth century BCE (Salama, 1994); it has been known by different names, such as Bakka, Umm al-Qura, Makkah, al-Balad al-Amim (surah 95.3 in the Qur'an), or "the safe land." The climate is very hot. Around the Mecca Valley are mountains and wadis. The famous Mecca mountains, which have been frequently mentioned in autobiographies and geographical sources are Jabal Abi Qobais on the east, Jabal Qunaiga' on the west and Jabal Ḥira'. A few of the main antiquities of Mecca and its environs are mentioned below.

Both Bakka and Mecca are mentioned in the Qur'an. The holy mosque *(al masjid al-Ḥaram)* with the Ka'bah at its center is the holiest place of Islam for Muslims. It is the first house of worship that Allah appointed (3.96; 48.24). During ancient times Mecca was famous for Arabia's foremost sanctuary, the Ka'bah, which was built by Ibrahim (Abraham), and pilgrims thronged to it from distant places. The building of the Ka'bah by Abraham and Ismail is mentioned in the Qur'an (2.125–127, 119–121). Local clans, such as the Jurhom, Khuzaa', and Quraysh, controlled it from time to time. All Muslims face the Ka'bah for prayers. It was rebuilt several times. Mecca was the birthplace of the prophet Muhammad, and the Qur'anic revelations were originally addressed to the people of Mecca to reform them socially and morally. It was at Jabal Ḥira' on which the angel Gibril (Gabriel) descended from heaven and revealed Islam to the prophet Muhammad and directed him to spread it. Jabal Ḥira' is located some 6 km (3.7 mi.) to the northeast of Mecca. Jabal Thawr is also situated at the same distance to the southeast. In this mountain Muhammad hid himself before his migration to Medina.

When Caliph Umar made a pilgrimage to Mecca in AH 17/638 CE, a wall was built around the Ka'bah. This was enlarged by Caliph 'Uthman in 26/646 and arcades were built. Since then the holy mosque has been under constant expansion and rebuilding and has achieved the current extent under the government of Saudi Arabia.

The names of the extant old quarters are Ajyad, al-Mesfala, al-Shubaika, al-Hojon, al-Ma'abida, Shi'b-'Ali, Shi'b-'Amir, and Kudai. Of the several cemeteries in Mecca, al-Ma'lat, north of the Ka'bah, contains the burials of several venerable companions of the Prophet as well as of other followers and Muslim scholars; it has numerous inscribed tombstones, which provide important biographical information.

Because of Mecca's strategic location, it developed into an important commercial center where all principal trade and pilgrim routes, both internal and external, converged, linking Arabia, Egypt, Syria, Yemen, and the cities of Basra, and Kufah.

Since antiquity quarrying and masonry have been known at Mecca. Mecca has long accommodated markets, mosques, baths, and different industries. The valleys near Mecca have been exploited for farming; the most important are Wadi Fatimah, Wadi Nu'man, and Wadi 'Oranal.

During the twentieth century, Mecca has expanded considerably, becoming a cosmopolitan city. Millions of pilgrims and other visitors arrive annually. Because of the continuous structural expansions for al-Ḥaram mosque, many of the cultural landmarks have disappeared from the center of the holy city. However, some of the remains still reflect ancient architecture of mixed elements, both local and foreign.

Islamic antiquities at Mecca and its vicinity are numerous. The two ancient mosques associated with the Ka'bah and pilgrimage rites are Namira at Arafat and al-Khaif at Mina. During the cleaning of the Zemzem well in 1979, which springs from the eastern part of the Ka'bah area a large number of antiquities were recovered, such as pottery vessels, ceramics, metal objects, and Islamic coins (some of them are dated to the Ottoman era and the beginning of the modern Saudi state).

Some Kufic inscriptions on columns in the al-Ḥaram mosque dated to the reign of the 'Abbasid caliph al-Mahadi (158–169/775–785) survive. These texts document the comprehensive expansion of the al-Ḥaram mosque during al-Mahadi's rule. Some inscriptions of the Mamluk and Ottoman periods are also found in the mosque, recording the expansion and amendments of al-Ḥaram by other caliphs and sultans. Various ancient reservoirs and dams re-

main in and around Mecca. Near Mina three dams were erected by al-Hajjaj ibn Yusuf al-Thagafi, who ruled the Mecca emirate on behalf of the caliph Abdul Malik ibn Marwan for three years (73–75/692–694). Sad Athal, the biggest dam, which is built in stone, is about 140 m (460 ft.) long, 5.6 m (18.4 ft.) high, and 6 m (19.6 ft.) wide. One of the surviving water structures to date is at ʿAin Zobaida, which was financed and erected by al-Sayida Zobaida, the wife of Caliph Harun al-Rashid. It covers an area of 40 km (24.8 mi.) southeast of Mecca, extending to Arafat and Mina as well. It was used until the beginning of the twentieth century.

[*See also* Medina.]

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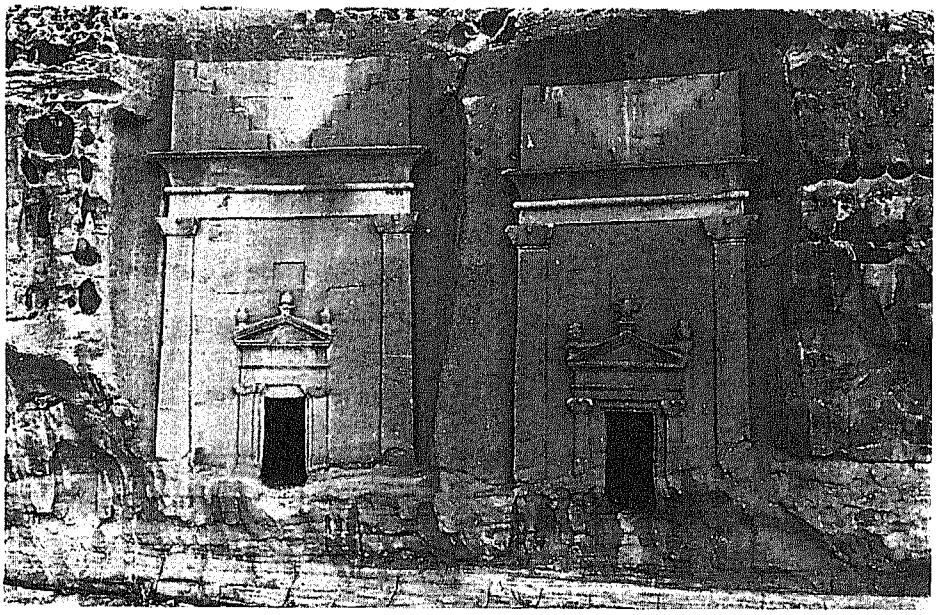
SAʿAD ABDUL AZIZ AL-RASHID

MEDA'IN SALEH ("cities of Saleh"), site located in northwestern Arabia (26°51′ N, 37°58′ E), directly on the caravan route between Syria and Yemen. The site is universally identified with Hegra (or Egra), the Nabatean administrative and military center in the southern part of their kingdom, second in importance only to their capital, Petra. It is mentioned by Strabo (16.4.24) and also by Pliny (6.32.156) and Stephanus of Byzantium (*Ethnika* 260, 11–12). In Islamic tradition, as al-Hijr, it is associated with the Thamud, one of the early peoples of Arabia, whom God sought to convert from polytheism by sending the prophet Saleh to them. When the Thamud rejected him, their town was destroyed. Meda'in Saleh lies in a spectacular setting of isolated sandstone stacks, weathered into fantastic shapes, surrounding a broad, sand-filled basin. The basin is fed by winter storms and flash floods which provide ample supplies of water easily tapped by wells and cisterns. The site was familiar to thousands of Muslim pilgrims traveling to Mecca, and it is mentioned by many of the medieval Arab geographers. It was not until 1888 that it was brought to the attention of the Western world, however. Charles M. Doughty wrote about it in *Travels in Arabia Deserta* (Cambridge, 1888); however, it was not until 1909 that Antonin Jaussen and Raphael Savignac's very full description of the monuments and the inscriptions was published, with many photographs, drawings, and a sketched plan (*Mission archéologique en Arabie,* 2 vols., Paris, 1909 and 1914). More recent work has added a little to their account, but it remains basic for any consideration of the history of the site.

The earliest datable archaeological evidence appears to be seven monumental South Arabian inscriptions on reused building blocks, presumably the work of the Minean merchants established at Dedan, some 20 km (12 mi.) to the south, in about the fourth–third centuries BCE. [*See* Dedan.] There are also some Lihyanite graffiti from about the same period. The kingdom of Lihyan, based at Dedan, probably fell to a Nabatean adventurer, Masʿudu, in the second or early first century BCE. It must have been at this time that Meda'in Saleh was chosen by the rulers of Petra as the site for their southern base. The earliest datable pottery lying on the surface of the site—the distinctive fine Nabatean painted ware—dates to this time. Nothing more is known about this early period of occupation and development; Strabo's reference relates to about 24 BCE and alludes to the site as a village in the territory of King Obodas II. Judging from the inscriptions on the tombs (see below), the site flourishes in the first century CE, when its principal role was to collect payments from the Arabian trade caravans and protect the routes. When the Nabatean kingdom was annexed by Rome in 106 CE, it is unlikely that Hegra's strategic position was forgotten. Epigraphic evidence points to both a section of the Third Legion and a number of local auxiliary troops being stationed there during the second and possibly the third centuries CE. Nothing is known after that, and by the time of the Muslim conquest in the seventh century CE the "cities of Saleh" were the subject only of pious speculation.

Very little is visible on the surface of what was probably a prosperous and cosmopolitan town. The most striking remains are the approximately eighty Nabatean tomb facades carved in the sandstone cliffs (see figure 1). The facades are very similar to those at Petra, although the very ornate "classical baroque" tombs at Petra are absent at Meda'in Saleh. [*See* Petra.] They range in style from relatively plain, flat, vertical surfaces surmounted by one or two rows of crenel-



MEDA'IN SALEH. Figure 1. *Tomb facades.* (Courtesy P. J. Parr)

lations carved in low relief, to more elaborate facades with deeply cut moldings, pilasters, capitals, architraves, and pediments. They reproduce in the living rock the appearance of the entrance to a freestanding building. This architectural ornamentation is derived from a wide variety of sources, including ancient Mesopotamia, Egypt, and the classical world; it demonstrates that eclecticism which is the hallmark of Nabatean art and which makes it unique. Unlike the tombs at Petra, almost half of those at Meda'in Saleh bear inscriptions over their doorways, in the Nabatean script. The inscriptions are essentially legal texts, copies of which seem also to have been deposited in a temple. The inscriptions give the epitaph of the owner, the date of construction (in the form of the regnal year of the Nabatean king), and, in some cases, the occupation of the owner and the name of the stonecutter employed (interestingly not called an architect). The importance of these inscriptions is twofold: they prove that the types of Nabatean facades represented here were being carved contemporaneously between 1 and 76 CE (the varying degrees of embellishment primarily reflect social status, and thus the wealth of the owner). They also demonstrate a concentration of high-ranking military personnel in the city, presumably on account of its importance for guarding the southern limits of the Nabatean realm.

[*See also* Nabatean Inscriptions; Nabateans.]

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PETER J. PARR

MEDEINEH, KHIRBET EL-, site located on the eastern bank of Wadi al-Mo'arradjeh, branch of the Mujib River, 7 km (4 mi.) east of Smakieh and about 16 km (10 mi.) from Qaṣr, a village situated on the Madaba-Kerak road in modern Jordan. The site was only recently identified with the Moabite cities attested in the Hebrew Bible and the historical records. Excavations were undertaken by Emilio Olávarri for the Casa Santiago in Jerusalem in 1976 and 1982.

The ruins cover a town surrounded by a solid wall that conforms to the oval configuration of the surface of the hill. A single wall 4 m wide defended the steep slopes to the north and south. The eastern slope, whose gradient is softer and more vulnerable, had a double parallel defense wall. In the town, the residential structures were attached to the inner face of the defense wall, leaving open space, perhaps a small plaza, in the center. One of these houses, which measures 10 × 6 m, was excavated in the 1976 campaign. Its four rooms are separated longitudinally by eight monolithic pillars on which the poles that held up the roof were probably

affixed. Regular stone benches are attached to the walls of the rooms. In the 1982 campaign, another house was cleared with the following interior distribution: an open court at the entrance whose door is on the north wall; two rooms separated by three monolithic stone pillars that supported a terrace; an interior room with a window opening to the court; and a triangular enclosure with a staircase leading up to the terrace. This house clearly resembles the four-room Iron Age I pillared houses found elsewhere in the area. [*See* Four-room House.]

On the eastern side of the hill, the outer defensive wall was reinforced with two rectangular towers, one in its northern corner and the other in the middle of its course. A third tower at the southern corner, detached from the town wall, defended the main entrance. Near it, the doorway consisted of two rectangular towers delimiting an interior hall (2 × 10 m) in which stone benches were attached to the towers' interior walls. At the farthest end of the hall, a staircase with three steps served either as a place to dismount or as the presidential seat during the city's senate assembly (cf. *Gn.* 23:10, 34, 20 ff.; *Prv.* 31:23).

The pottery is a uniform repertoire assignable to a brief, single period of occupation (twelfth–eleventh centuries BCE). Predominant are the fragments of large jars with collared rims, craters, and characteristic cooking pots. The domestic housewares generally have a white slip. No remains of painted decoration or red-slipped burnished sherds were found.

Khirbet el-Medeineh, then, was small town, strongly fortified, belonging to the old kingdom of Moab. It was founded in the twelfth century BCE and abandoned in about 1075–1050 BCE. Its structures and pottery indicate a clear affinity with the contemporary urban environment in Canaan in the first phase of Iron Age I. Its strategic placement echoes the pressing interest with which the kings of Moab defended their eastern frontier from nomadic incursions coming from the eastern plateau. It was during this time that the Israelite tribes, bound for Canaan and sharing a vaster and increasing movement toward sedentarization, passed Khirbet el-Medeineh, on Moab's eastern frontier (*Nm.* 21:11; *Jgs.* 11:18).

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EMILIO OLÁVARRI

MEDES. The heartland of ancient Media is located in the central Zagros Mountains of western Iran. The Medes first appear in Assyrian cuneiform sources in the middle of the ninth century BCE. These early sources speak of many Median tribes and Median kings. Eventually, possibly late in the seventh century BCE, a unified Median state was formed. Allied with the Babylonians, the Medes captured Nineveh in 612 BCE, which led to the collapse of the Assyrian Empire in 610 BCE. [*See* Nineveh.] Median power then stretched from the Halys River in Anatolia to perhaps as far east as northeastern modern Iran. They are said to have ruled over the Persians, another Iranian tribe. They were conquered by Cyrus the Great of Persia in 550 BCE, and throughout Achaemenid times they were the second-most important people in the empire after the Persians themselves.

Median history and culture are complex. Herodotus (1.95–130) recounts that originally the Medes were village dwellers. They were united, at their request, under the kingship of one Deioces, who founded the capital city of Ecbatana (modern Hamadan). [*See* Ecbatana.] He then reigned for fifty-three years. Deioces was followed on the throne by his son Phraortes, who conquered the Persians, ruled for twenty-two years, and died fighting the Assyrians. His successor, Cyaxares, ruled for forty years and reorganized the Median army, separating spearmen, archers, and cavalry into separate units. In 612 BCE, in alliance with the Babylonians, Cyaxares conquered Nineveh. He was succeeded by his son Astyages, who reigned for thirty-five years and was overthrown by Cyrus in 550 BCE.

Herodotus (1.103–106) also recounts that Cyaxares's attacks on Assyria were interrupted by the conquest of Media by the Scythians, who ruled "Upper Asia" for twenty-eight years until they were finally driven out by Cyaxares. [*See* Scythians.] Herodotus's story may be a true account of a Median national epic history. Other written and archaeological sources on Median history, however, confirm Herodotus only in part. There is no record of either Deioces or Phraortes independent of Herodotus, and convoluted efforts by imaginative scholars to prove otherwise have failed. Astyages, on the other hand, is clearly the Ištuwigu of the cuneiform Babylonian chronicle and probably came to the throne of Media in 585 BCE. Cyaxares is the Umakištar of an earlier Babylonian chronicle that tells of the fall of Nineveh and the collapse of Assyria. Using Herodotus's chronology, Cyaxares came to the throne in 625 BCE. Thus, the latter half of Herodotus's story of the Median royal house is, in part, corroborated.

From archaeological and Assyrian cuneiform sources it is possible, independently of Herodotus, to reconstruct something of the early history of Media. The Assyrian sources give a clear picture of the Medes as an important people widespread throughout the central western Zagros from the

mid-ninth to the mid-seventh century BCE and ruled by numerous "kings." Not all Medes lived in what, in these early times, can be called Media. The geographical Media, as known to the Assyrians, seems to have been located along the so-called High Road in the neighborhood of modern Kermanshah and eastward. Other peoples, some Iranian, some not, also lived in this area, but the sources suggest that, once as far east as the Hamadan plain, there were only Medes. Thus, the heartland of geographic Media would seem to lie east of Mt. Alvand (the mountain against whose eastern flank the city of Hamadan/Ecbatana lies). The people called Medes in the Assyrian texts are clearly a very diverse people in terms of culture and social and political organization.

The archaeological sources, such as they are, tend to confirm this picture. This is the Iron Age III period in Iranian archaeology (c. 850–500 BCE in central western Iran). The principal sites that can be considered Median are Tepe Nush-i Jan, Godin period II, and Baba Jan. Nush-i Jan was apparently primarily a religious establishment; Godin II the fortified palace of an important Median khan or tribal chief, such as are often mentioned in the Assyrian sources; and Baba Jan may have been the seat of a lesser tribal ruler. [*See* Godin Tepe.] Though broadly similar in many cultural characteristics, there are nevertheless marked differences among these sites that are in part the result of chronology and in part of functional variation, but that may also represent the diversity among the so-called Medes found in the Assyrian sources.

Herodotus's story of the earliest Medes living in "villages"—meaning, to the Greeks, that they had no cities and no central government and were, thus, uncivilized—appears, then, to be partially corroborated. On the other hand, there is no evidence for a unification of the Median state under Deioces or anyone else as early as the late eighth century BCE, as Herodotus recounts. There is also no evidence outside of Herodotus for a Scythian interregnum in Median history, although there is abundant evidence in Assyrian sources for the presence of Scythians in western Iran in the seventh century BCE.

The Assyrian sources fall silent on western Iran in about 640 BCE. Because Hamadan remains unexcavated, there is no available archaeological evidence of any centralization of the Median state. It is possible to conclude, however, that such a central state came into being sometime in the reign of Cyaxares, prior to the Median participation in the collapse of Assyria. In dealing with Cyaxares and Astyages, the Babylonian chronicle speaks of only one Median king. Cyaxares was clearly a powerful figure. Under him the Medes are reported to have sacked Harran in north Syria in 610 BCE and are at war with the Lydians deep in Anatolia in 585 BCE. The situation clearly changed markedly from the picture received from the texts of Sargon II of Assyria (721–705 BCE) of a Media of many tribes and many kings. Thus, some kind of Median political unity was created late in the seventh century BCE, possibly as a case of secondary state formation under pressure from Assyria.

This undoubted political unification of Media also had important cultural implications: it led to the "iranianization" of the central and northern Zagros Mountains. The Assyrian records speak of many ethnic groups and polities beside Medes in these regions in the eighth century BCE. Among other non-Iranian people were the Namrians, Ellipi, and Manneans. Yet, by the time the Babylonian chronicler is writing, all these people had disappeared from the written record and he knew the area simply as Media, occupied by Medes. The Manneans, as allies of the Assyrians at the seige of Nineveh, are, in fact, the last people from central western and northwestern Iran, other than Medes, mentioned in cuneiform sources.

By the end of the seventh century BCE, Media had emerged as one of the four principal powers of the ancient Near East, alongside Babylonia, Lydia, and Egypt. Cyrus the Great, by conquering Astyages and the Medes, thus, in one stroke, brought the other major Iranian group, the Persians, to world power. As noted above, however, the Medes remained a privileged group in the Persian Empire as the second-most important people ruled by the "king of kings." Indeed, these two Iranian groups were so identified that the Greeks spoke sometimes of Medes and sometimes of Persians when referring to the Achaemenid Iranians. For a Greek to become too closely associated with Iranian culture was to become medianized, not persianized. Medes played an equal role in the imperial guard with Persians and were equally responsible for the defense of the Achaemenid Empire.

It is also clear that Median culture, perhaps particularly in matters of religion, became thoroughly embedded in broader Iranian culture. The Median language, Old Northwest Iranian (as reconstructed by certain loanwords in Modern Persian such as *sag,* the word for "dog"—there are no texts in Median), is very likely the ancient form of modern Kurdish. If this is true, then part of ancient Media is still occupied by the descendents of the Medes.

Median art and architecture remain subjects of some controversy. Assuming that Godin II and Nush-i Jan were indeed Median sites, they provide in their architecture a clear link between the tradition of columned audience halls first documented in Iran at Hasanlu IV in Azerbaijan and the great columned audience halls of Achaemenid Persia at Pasargadae, Persepolis, and Susa. [*See* Hasanlu; Pasargadae; Persepolis; Susa.] In origin, the concept of the columned audience hall may not have been Iranian, but the concept certainly became thoroughly imbedded in Iranian architectural traditions, probably because the Medes adopted it. (A more recent manifestation of the tradition can be seen at

Chehel Situn, "the hall of forty columns," built in Isfahan in the seventeenth century CE.)

The Median contribution to the small arts of Iran is more problematical. Numerous objects in museums and private collections throughout the world have been ascribed to the Medes. Yet, not one comes from an archaeological excavation. All, if genuine, are the products of antiquities looting. Thus, the very existence of Median art, as opposed to architecture and ceramics, is a construct of the imagination and cannot be given scholarly credence.

In sum too little is known of Median history and culture. From both textual and archaeological bits and pieces, it is clear that it is much more than just a history of the Medes: it is a history of many peoples, Iranian and non-Iranian. From this mosaic came the first Iranian state, the kingdom of the Medes. The evidence is that this state rose to world power in the late seventh century BCE. As a young state it soon succumbed to the power of Cyrus the Great of Persia, but it nevertheless made a profound, and lasting, contribution to the greater world of Iranian culture.

[*See also* Assyrians; Persians.]

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MEDICINE. As a general reference to healing practices, medicine has a long and complex history in the ancient Near East. It is useful to think of healing practices as part of a healthcare system that includes, but is not limited to, beliefs about the causes of illness, the options available to patients, and the role of governments in healthcare.

Public hygiene, which refers broadly to the organized efforts of a community to promote health and prevent disease, is also part of any healthcare system. Brief synopses are provided here of the healthcare systems in the major geocultural areas of the Near East (see below) from earliest times to the Early Islamic period (c. 1250 CE).

Prehistory. Little is known about the treatment of illness during the Paleolithic, the first period of human material culture, which ended approximately between 20000 and 16000 BCE in the Near East. By the end of the period, it is speculated, humans practiced therapeutic rituals and may have recognized the medicinal value of some plants. At Shanidar I (c. 45000 BCE), a rock-shelter in Iraq, the skeleton of a "Neanderthal" adult male suggests that he had received substantial care from his community because he had lived for years with osteoarthritis and other serious injuries. [*See* Shanidar Cave.]

In the Neolithic (c. 8500–4300 BCE) period, the domestication of animals introduced some new pools of diseases into human populations. Thus, bovine tuberculosis may have become more prevalent in human beings after cattle began to be kept for milk and food. Human tuberculosis is reflected in skeletal material from Egypt and Bab edh-Dhraʿ (Jordan) as early as the fourth millennium.

Some researchers conclude, on the basis of comparisons in dental attrition (among other features), that hunter-gatherers (e.g., Natufians at el-Wad, Jordan) in some Epipaleolithic cultures (c. 19000–8000 BCE) were generally healthier than agriculturalists at places such as Jericho and Tell Abu Hureyra, a large settlement in northern Syria. Yet, some studies of the Levant estimate the average life-span in the Neolithic at thirty-four years, compared to thirty years in the Epipaleolithic period. At Çatal Höyük, a large Neolithic town in Anatolia, skeletal remains of some individuals were estimated to be more than sixty years old. [*See* Çatal Höyük.]

Because many diseases need relatively high population densities in order to thrive, a number of diseases that were insignificant in hunter-gatherer bands became significant with the rise of urbanization. Other serious threats to public

health in most cities of the ancient Near East probably included the unequal distribution of food and the contamination of food and water supplies by the inadequate disposal of human and animal wastes. Increases in trade, military expeditions, and migration helped to spread diseases among populations.

The frequency of enamel hypoplasia (thin enamel) and other skeletal features in the urban populations of the Early Bronze Age (c. 3300–2300 BCE) in the Levant may indeed indicate a decline in health status relative to the Epipaleolithic and Neolithic. High rates of hypoplasia are also found at Azor (near Tel Aviv) and elsewhere in the Chalcolithic period (4300–3300 BCE).

Throughout all prehistoric periods the family was probably the main caretaker for the ill. The appearance of survivable surgical procedures on the skull (trephination) is already evident in the Pre-Pottery Neolithic at Jericho (c. 8500–6000 BCE). The reasons for trephination are still unclear, but if it is a medical procedure, it may be one of the earliest representatives of the development of specialized healing crafts. The most effective treatment, however, was probably simple rest.

A discussion of the major geocultural areas in the Near East follows for the periods prior to the Islamic conquest in the eighth century CE. We shall proceed alphabetically: Anatolia, Cyprus and the Aegean, Egypt, Mesopotamia, and Syria-Palestine.

Anatolia. By the Neolithic period various groups had already built impressive towns (e.g., Çatal Höyük) in Anatolia. It is the Hittites, a group of Indo-European speakers, who are perhaps the best-known residents of the region, especially in the Late Bronze Age. The Hittite healthcare system is difficult to reconstruct because sources are very fragmentary. However, extant sources show that Hittite medicine included Luwian and Hurrian traditions. Many of the best-known Hittite medical texts are translations or adaptations of Mesopotamian models. [*See* Hittites; Luwians.]

The inadequate disposal of waste was probably a major public health problem, especially in urban areas. Concern with public health may be partly responsible for the clay pipes and drainage channels found at Boğazköy, Alaca Höyük, and other LB cities. Some of the wealthier households in Boğazköy and other cities were apparently equipped with toilets. [*See* Boğazköy.]

Illnesses mentioned in Hittite texts include disorders of the eyes, mouth, throat, and intestines. There are reports of illnesses afflicting King Šuppiluliuma (who died in about 1335 BCE of a plague brought back by his soldiers after a campaign in Syria) and King Ḫattušili III (c. 1278 BCE). The Plague Prayers of Muršili II (c. 1335–1308 BCE), which refer to an unidentified epidemic lasting some twenty years, recognize that diseases could affect the socioeconomic stability of an entire empire.

For Hittites, illnesses could be caused by numerous factors, including the sins of past generations. Evil and illness could resemble physical substances that needed to be removed by washing and other methods. Known therapeutic rituals emphasize an analogy between ritual actions, especially the act of speaking itself, and the effects on an illness. Many gods and goddesses (e.g., Išḫara, Šaušga, Kamrušepa) could be healers. There are no known Hittite temples that were used as sanitoria, but prayers and divinatory rituals related to illness may have been performed at temples.

Hittite physicians are already attested in the Old Hittite period (c. 1700–1500 BCE), and at least some probably were pupils of Assyrian healers. The materia medica included various plants and minerals. Hittite kings, like many sovereigns in the Near East, attempted to maintain a reliable and efficient organization of healers. Various texts also attest to the importance of female midwives and healers/diviners, some of whom had their own organizations. Hittite letters also mention the importation of professional healers from Egypt and Mesopotamia, especially in the fourteen–thirteenth centuries BCE. The general population, however, probably consulted a variety of folk practitioners who were not organized.

Cyprus and the Aegean. Although it is difficult to determine the earliest instances of healing activities in the Aegean area, some scholars argue that female figurines on Cyprus indicate the possible existence of fertility therapy by the Chalcolithic period (c. 3800–2500 BCE). Various Middle and Late Minoan period sites (e.g., Mt. Jouktas, Traostalos) on Crete have produced figurines of body parts that may have been associated with healing cults.

According to Vassos Karageorghis (*Cyprus*, London, 1982), medical activities may be detected in at least some LB temples at Kition on Cyprus. [*See* Kition.] At Mycenae, skeletal remains show that in the fourteen–thirteenth centuries BCE the elite were probably better fed and healthier than the general population.

Greeks generally believed that illness could be sent by a large number of deities who also could heal. Such deities included Apollo, whose arrows could cause epidemics (à la Resheph in the Levant), and Artemis, the goddess of women. The most famous healing god, Asclepius, who had the dog and serpent as emblems, was regarded as the patron of all physicians. Unlike most other gods, Asclepius rarely sent illness.

By the late first millennium BCE there is ample textual and archaeological evidence for the use of *asclepieia* (temples of Asclepius) as healing centers, particularly in Athens, Cos, Pergamon, and Epidauros. Patients usually were believed to be healed in a night's stay at the *asclepieion*. Figurines of afflicted (or healed) body parts were left in these temples. Probable scalpels and other surgical instruments have been discovered at the *asclepieion* in Pergamon.

City-states invested in the care of the chronically ill by building *asclepieia* and other healing temples. Community

investments in *asclepieia* in Athens and Rome may be linked to local epidemics in 429 BCE and 292 BCE, respectively. Patients, especially wealthy ones, also supported the temple with thanksgiving offerings and other donations.

Hierarchies in healing options are attested in some Greek texts. For example, patients might first attempt to pray to a god at home. If that did not bring relief, a local physician might be consulted. If the latter was unsuccessful, the patient might go to the *asclepieion.* Comparable therapeutic hierarchies were probably used in most areas of the ancient Near East.

By the third century BCE, Hippocrates and other figures are credited with developing the first systems of "rational" medicine. For example, the Hippocratic treatise "On Airs, Waters, and Places" links climate and environment, not gods, with illness. Yet, such natural explanations can be found alongside supernatural ones in *asclepieia.* The Roman Empire helped to spread Greek concepts of healthcare throughout the Near East.

Egypt. Egyptian medical texts were among the first discovered and published by modern Near Eastern archaeologists. The Ebers papyrus (c. 1550 BCE), which contains a general collection of remedies, was published in 1875. Mummies from Egypt began to be studied medically as early as 1820. The thousands of skeletons from Egypt provide examples of various illnesses, including mandibular abscesses, skeletal deformities, and likely cases of tuberculosis.

Private tombs, especially in the Old Kingdom (c. 2575–2134 BCE), depict people with dwarfism, scoliosis, and other physical deformities. Some scholars argue that excavated human remains reflect a life expectancy of forty–fifty years and high infant mortality, regardless of social level.

Herodotus speaks of the scrupulous personal hygiene of the Egyptians, but Egypt probably suffered from poor public sanitation. Latrines existed in at least some upper-class households (and even in some second dynasty tombs, c. 2700 BCE), but excavations at Tell el-Amarna and elsewhere indicate that even some of the most luxurious homes were surrounded by heaps of garbage and open sewers.

Although the Ebers papyrus and other texts reflect the notion that irregularities in the system of vessels that carried air and fluids within the body could cause illness, Egyptians believed that illness could be sent and/or cured by a large number of deities, including Heket, Hathor, Imhotep, Isis, and Sekhmet ("the lady of pestilence"). Some temples specialized in healing, a notable example being the sanitorium established in the Ptolemaic period (304–30 BCE) at Deir el-Bahari on the site of the "birthing temple" (where royal women gave birth) of Queen Hatshepsut (1473–1458 BCE).

Medical professions and skills may have developed quite early in Egypt. Probable dentists (known as "toothers") appear in about 3000 BCE. One of the earliest known physicians, Hesy Re of the third dynasty (c. 2600 BCE), is described as the "chief of the dentists and physicians" to the pyramid builders in a wooden panel found in his tomb at Saqqara. Two bodies from tombs from the fifth dynasty (c. 2465–2323 BCE) attest to the setting of fractured limbs by means of splints and bandages.

Scholars usually identify the *swnw,* attested in the main medical papyri and in other texts, as the principal type of healing practitioner. The Edwin Smith papyrus indicates that medical examinations were simple, direct, and meant to determine, among other things, whether patients would benefit from treatment. Most treatments probably used incantations along with drugs and physical procedures. In some periods, Egyptian practitioners were valuable commodities exported to Anatolia and other lands of the Near East.

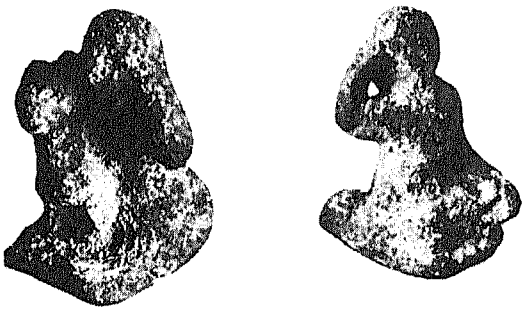
In at least some periods the state seems to have invested in medical care in order to ensure the maintenance of a healthy labor force. Some records noted illness-related absences from state projects, and physicians (e.g., Hesy Re) were assigned to particular groups of laborers. Of course such investments probably varied with time and circumstance. For the majority of Egyptians, however, healthcare was probably provided by folk healers and administered in the home.

Mesopotamia. As elsewhere in the Near East, healing practices in Mesopotamia probably predate writing. Mesopotamian healers are mentioned in texts by the middle of the third millennium. As indicated by the earliest attested collection of medical prescriptions (Ur III period, c. 2050 BCE), the development of writing created new systems of collecting, storing, and distributing medical information.

Diagnostic manuals, letters, and other types of texts speak of the threats to public health posed by dirty water, urban epidemics, and famine (see Martinez, 1990). Some texts speak of taboos against contacting persons with certain skin diseases. Malaria and other diseases probably posed constant problems for people living near canals or near areas with poor water drainage. Eye ailments, impotence, and digestive problems are among the most frequent problems mentioned in Akkadian texts.

Marduk, Ea, and Ishtar were among the deities consulted for illness. Recent excavations at Isin and Nippur have renewed attention on the importance of Gula (Ninisina), a healing goddess associated with dogs (see figure 1). Dogs probably had a role in Gula's therapeutic rituals, and a dog cemetery, dated to about 1000 BCE, is associated with her temple at Isin. Although no known Mesopotamian temple functions as a large sanitorium, various temples (e.g., the temple of Gula at Isin in various periods) may have stored medical information, and priests may have performed therapeutic and diagnostic rituals in them.

Many Assyriologists have followed Edith K. Ritter (1965) in positing two main healing specialists in Mesopotamia, the *āšipu* and the *asû* (see figure 2). In this scheme, the former uses magical means while the latter does not. An alternative



MEDICINE. Figure 1. *Figurine from Isin of a patient and dog.* This may depict a ritual mentioned in texts in which a dog, associated with Gula, is touched by the patient for medicinal purposes. (Courtesy H. Avalos)

MEDICINE. Figure 2. *A panel of an Assyrian bronze plaquette, probably showing a healing ritual.* Note the figure on the couch and healers, perhaps *asipus* dressed in fish-garb, attending to him. (Musée du Louvre/Antiquités Orientales)

view argues that both professions operated within a framework that assumed magical causation. The distinction was rooted in the simple distribution of labor in the healthcare system—namely, the *asû* specialized in the direct application of herbs and bandages and the *āšipu* in contacting and appeasing the divine beings deemed responsible for the illness.

Intensive therapeutic labor resulted, in part, from polytheism itself. For example, a single illness might require the assembly of paraphernalia, plants, and incantation texts for each of the numerous supernatural beings that might be entreated or repelled. Complex therapeutic rituals could even leave kings waiting days without the desired treatment. Diagnostic manuals may have helped to set labor priorities by identifying patients who were expected to die regardless of therapy.

Patients chose consultants on the basis of availability, economics, and a host of other factors. Kings could affect the distribution of physicians by monopolizing their services or sending them to other lands. Kings and town officials could also help to manage the distribution of materia medica.

Some Mesopotamian laws reveal the state's efforts to set prices for medical services and malpractice (e.g., laws 215–221 of the Code of Hammurabi). Extant laws and contracts also show that the state attempted to place the responsibility for long-term healthcare on the families of the afflicted. In fact, care at home was prevalent throughout the history of Mesopotamia.

Persia. The healthcare systems in ancient Iran, especially in the Achaemenid period (550–332 BCE), are among the most difficult to reconstruct. Excavations of Persian palaces and houses in Persepolis, Susa, Pasargadae, and elsewhere indicate that Persians probably encountered the same urban health problems found elsewhere in the Near East.

Because Old Persian texts are few, the usual sources for the study of Persian medicine include Greek authors and the Videvdad, a Zoroastrian sacred text whose composition is dated by some scholars to within the Arsacid period (224 BCE–224 CE).

Zoroastrianism is a monolatrous religion popularized during the Achaemenid, Parthian/Arsacid, and Sasanian (224–652 CE) periods in Iran. In general, Zoroastrianism ascribed good and evil to two primordial principles: Angra-Mainyu, the principle of evil, is credited with creating thousands of diseases, while Ahuramazda is credited with creating healing substances, including *homa* ("wine").

The Videvdad outlines elaborate codes of purity that viewed physiological processes such as birth, menstruation, and death as generators of impurity that could be transmitted by touch. This theology apparently led to the use of elaborate rituals to purify those afflicted by illness. Various diseases, including chronic skin ailments, rendered the patient an outcast in society.

The Videvdad mentions at least three types of healing specialists (herbalists, surgeons, and incantation priests).

The same work notes procedures meant to certify physicians and outlines fees for various medical services. The medical school founded in the Sasanian period at Gundaishapur (Iran) foreshadowed Islamic hospitals and medical schools.

It is difficult to judge the extent to which Zoroastrian monolatry and purity laws were applied in the Achaemenid period. An Old Persian text does indicate that Xerxes I (485–465 BCE) destroyed the temples of "false gods," a policy that presumably would restrict the options for patients if such gods were healing deities. Yet, Greek reports indicate that Achaemenid kings valued or preferred Greek and Egyptian physicians. Interest in public health reportedly prompted Darius (522–486 BCE) to subsidize the medical professions in Egypt and elsewhere.

Some scholars argue that it was only in the Sasanian period that Zoroastrianism became a state religion. If so, it is only speculation that the state encouraged the removal of various types of patients from society and restricted therapeutic options, insofar as not all deities were seen as legitimate. While the persecution of Christians is attested in the Sasanian period, however, Christianity and many other religions survived and retained their healing traditions.

Syria-Palestine. The trephinated skulls found at Jericho from the Neolithic period and the implantation of a bronze wire in a tooth found at 'Ein-Ziq, a small Nabatean fortress in Israel's northern Negev desert in the Hellenistic era, attest to the long existence of specialized medical consultants in Syria-Palestine. Liver models found at LB Hazor and Megiddo may have been used in medical consultations or in hepatoscopy. The Amarna tablets (fourteenth century BCE) mention epidemics and the traffic of physicians in Canaanite royal courts.

As in most areas of the Near East, the inadequate disposal of garbage and human waste was a threat to public health in Syria-Palestine. City-states (e.g., Gibeon) in areas where rainfall was poor had to construct cisterns, which were vulnerable to contamination. By the Middle or Late Bronze Ages, parts of various cities (Jericho, Tell Beit Mirsim) apparently had drains, some of which may have carried sewage. Recent excavations in Jerusalem have recovered toilet seats, one of which was found in a separate cubicle in a house dated to about 586 BCE. However, it is not certain how widespread such amenities were in the city at the time.

Although there are many textual references to washing and related hygienic activities (*Gn.* 18:4; *Ps.* 60:8), it is likely that personal hygiene was generally poor in the absence of abundant water supplies. In the Bible, bathing was sometimes seen as a significant event (*Ru.* 3:3).

As in many areas of the ancient Near East, insect infestation was probably a significant problem in Syria-Palestine. Incense may have been useful in repelling some insects, and ivory and wooden combs found at various sites from various periods (e.g., at LB Megiddo) may have effectively removed lice. Shaving the body and covering it with oil also may have combatted lice and other ectoparasites. [*See* Incense.]

Archaeoparasitologists recently established the likely existence of certain intestinal diseases (e.g., tapeworm and whipworm infections) in ancient Israel, but the precise identification of most diseases in the Bible has been notoriously difficult, especially in cases of epidemics (*Nm.* 25; *1 Sm.* 5:6–12). Nonetheless, biblical stories recognize that epidemics can alter the course of history (e.g., the plagues on Egypt in *Ex.* 7–10), and many plagues are viewed as the result of Israel's contact with outside groups (e.g., Midianites in *Nm.* 25).

The condition usually translated as "leprosy" (Heb., *ṣāraʿat*) receives the most attention in the Bible (*Lv.* 13–14), but it does not have a simple modern equivalent because it probably encompassed a large variety of diseases, especially those manifesting chronic discoloration of the skin. Infertility was viewed as an illness that diminished the social status of the afflicted woman (*Gn.* 30:1–20).

As the Kirta epic and other Ugaritic texts indicate, El, the supreme god at Ugarit, was concerned with healing, especially infertility. In Tyre, Sidon, and other Phoenician city-states of the early first millennium BCE, Eshmun, who was sometimes identified with the Greek Asclepius, was a healing god whose temples may have provided therapeutic services. Many gods in the ancient Near East, including Yahweh and Resheph, were gods of disease and healing.

The Hebrew Bible has at least two principal explanations for illness. *Deuteronomy* 28 affirms that health (Heb., *šālōm*) encompasses a physical state associated with the fulfillment of covenantal stipulations that are fully disclosed to the members of the society. Illness stems from the violation of those stipulations, and therapy includes reviewing one's actions in light of the covenant. The *Book of Job* offers a contrasting, yet complementary, view arguing that illness may be rooted in divine plans that may not be disclosed to the patient at all—and not in the transgression of published rules. The patient must trust that God's undisclosed reasons are just.

Perhaps the most distinctive feature of the Israelite healthcare system depicted in the canonical texts is the division of the patient's consultative options into legitimate and illegitimate. This dichotomy is partly the result of monolatry, insofar as illness and healing rest ultimately upon Yahweh's control (*Jb.* 5:18) and non-Yahwistic options are prohibited.

Because it was accessible and inexpensive, prayer to Yahweh was probably a patient's most common legitimate option. Petitions and thanksgiving prayers uttered from the viewpoint of the patient are attested in the Bible (*Ps.* 38; *Is.* 38:10–20). Other treatments mentioned in the Bible include "mandrakes" for infertility (*Gn.* 30:14), "bandages" (*Ez.* 30:21), and "balsam" from Gilead (*Jer.* 46:11). The last text shows awareness of the importance of Gilead in the production of medicinal substances consumed in Egypt.

Illegitimate options, which were probably widely used by Israelites, included consultants designated as *rōpĕʾîm* (*2 Chr.* 16:12), non-Yahwistic temples (*2 Kgs.* 1:2–4), and probably

a large variety of "sorcerers" (*Dt.* 18:10–12). Female figurines found throughout monarchic Israel, especially in domestic contexts, may have been involved in fertility rituals. The largest known dog cemetery in the ancient world, recently uncovered at Ashkelon, may be associated with a healing cult of the Persian period. [*See* Ashkelon.]

The foremost legitimate consultants in the canonical texts are commonly designated prophets, and they were often in fierce competition with "illegitimate" consultants. Stories of healing miracles (e.g., *2 Kgs.* 4:8) may reflect an effort to promote prophets as the legitimate consultants. Their function was to provide prognoses (*2 Kgs.* 8:8) and intercede on behalf of the patient (*2 Kgs.* 5:11). Unlike some of the principal healing consultants in other Near Eastern societies, the efficacy of Israelite prophets resided more in their relationship with god than in technical expertise. The demise of the prophetic office in the early Second Temple period probably led to the wide legitimation of the *rōpĕ'îm* (cf. *Sir.* 38). Midwives (*Ex.* 1:15–21) may actually have been the most common healthcare consultants, especially for pregnant women.

Another accepted option for some illnesses, particularly in the preexilic period, was the Temple. In *1 Samuel,* Hannah visited the temple at Shiloh to help reverse her infertility. *2 Kings* 18:4 indicates that prior to Hezekiah the bronze serpent made by Moses as a therapeutic device (*Nm.* 21:6–9) was involved in acceptable therapeutic rituals in the Temple in Jerusalem. Bronze serpents have been found in temples (e.g., the *asclepieion* at Pergamon) and are known to have been used for therapy during the first millennium BCE. Bronze serpents, such as those found in or near shrines at LB Timnaʿ, Tel Mevorakh, and Hazor, may have been involved in therapeutic rituals, but other functions cannot be excluded.

The Priestly code, which may be viewed as an extensive manual on public health that centralizes in the priesthood the power to define illness and health for an entire state, severely restricted access to the Temple for the chronically ill (e.g., lepers in *Lv.* 13–14; cf. *2 Sm.* 5:8 on the blind and the lame) because of fear of "impurity."

The theology of impurity, as a system of social boundaries, could serve to remove socioeconomically burdensome populations, and especially the chronically ill, from society. "Leprosy" alone probably encompassed a wide variety of patients. In effect, the Priestly code minimizes state responsibility for the chronically ill, leaving the eradication of illness for the future (*Ez.* 47:12; cf. *Is.* 35:5–6).

Thanksgiving or "well-being" offerings (*Lv.* 7:11–36) after an illness were probably always acceptable and economically advantageous for the Temple. Offerings after an illness also may have served as public notice of the readmission of previously ostracized patients to the society (*Lv.* 14:1–32).

Relative to the Priestly code, the community responsible for the Dead Sea Scrolls added to the list of illnesses excluded from the normal community and expanded the restrictions for "leprosy," the blind, and the lame (1QSa II.4–9). Socioeconomic reasons, as well as the fear of magical contamination, may be responsible for such increased restrictions.

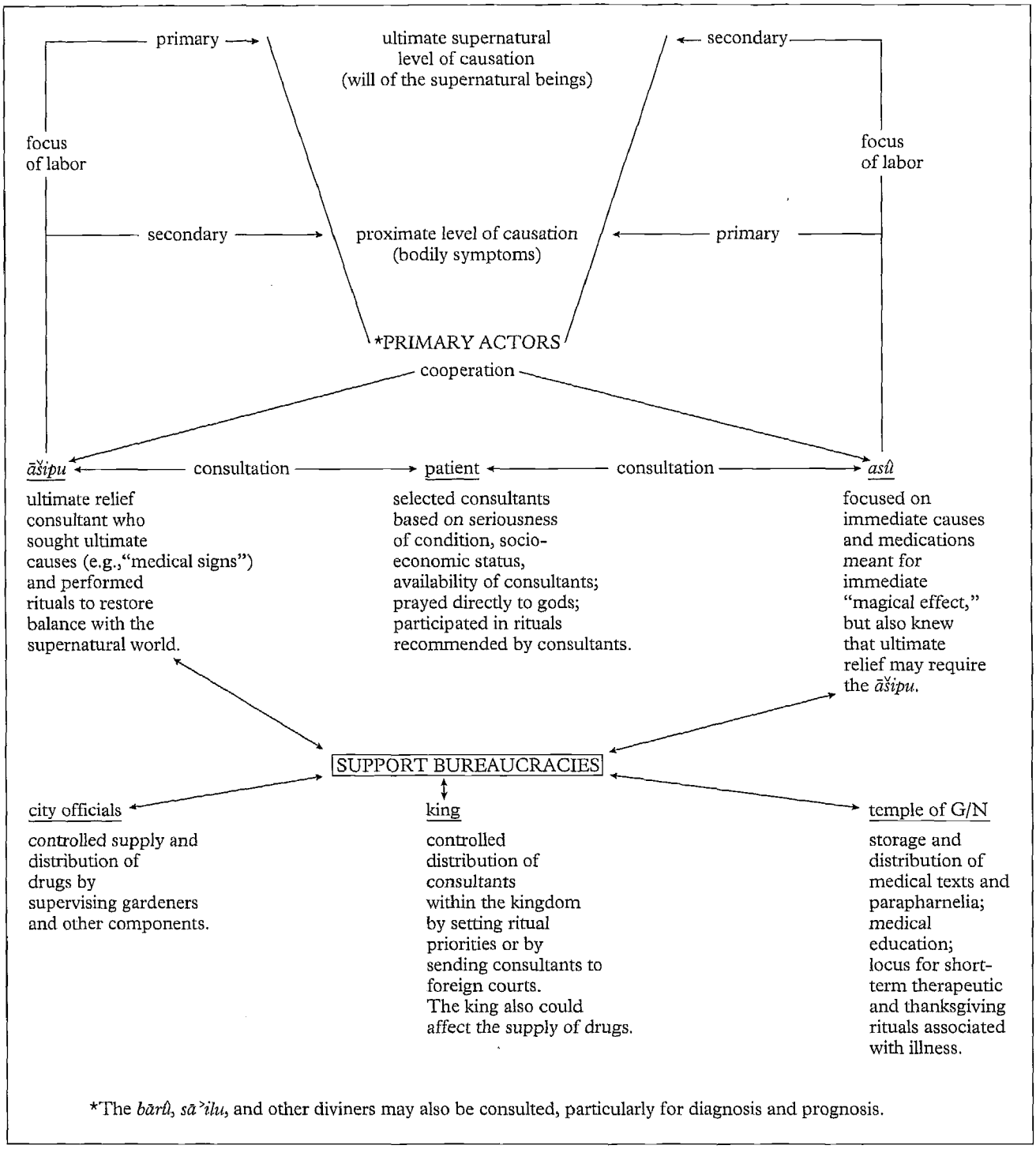
Perhaps the most significant consequence of the Priestly code was the growth of chronically ill populations with little access to the Temple. Because Jesus and his disciples appear to target these populations (*Mt.* 10:8; *Mk.* 14:3), early Christianity may be seen, in part, as a critique of the priestly healthcare system. In early Christianity illness may be caused by numerous demonic entities who are not always acting at Yahweh's command (*Mt.* 15:22; *Lk.* 11:14), and not necessarily by the violation of covenant stipulations (*Jn.* 9:2). Emphasizing that the cure for illness may be found in this world, early Christianity preserved many older Hebrew traditions regarding miraculous healings (*Acts* 5:16, 9:34) and collective health (*Jas.* 5:16), although the influence of Hellenistic healing cults (e.g., the Asclepius cult) also may be seen.

In the Roman Empire, famous therapeutic baths were constructed or enlarged. Near the Sea of Galilee, the large thermal bath complex that thrived from the second century to the end of the first millennium CE at Ḥammath-Gader is explicitly associated in inscriptions with therapy and may have been used by Romans, Christians, Jews, and Muslims. [*See* Ḥammath-Gader.] A mass grave near the Jordan River apparently contains the remains of sick visitors in search of healing (c. 614 CE) in the famous waters (see *2 Kgs.* 5). Ritual bath installations called *miqva'ot* (sg., *miqveh*), dating from the Second Commonwealth onward, have been uncovered in many Jewish communities (e.g., the Jewish Quarter in Jerusalem, Masada), but they probably were not used for ordinary therapeutic reasons. [*See* Ritual Baths.]

In the Byzantine period, and especially under the empress Eudocia (d. 460), various leprosaria were founded in the Judean Desert (e.g., at the Monastery of Theodosius). These leprosaria may reflect the state's attempt to channel populations of chronically ill patients to peripheral areas of the empire rather than simply to the outskirts or to special areas of major cities. In sum, prior to the rise of Islam, Syria-Palestine and most of the Near East already had a wide array of healthcare systems and facilities deriving from Greek, Roman, Jewish, Christian, Persian, and Arab traditions.

Islamic Period. Because Islam encompassed most of the geographic areas under discussion, the Islamic period merits a unified treatment. Between the ninth and fourteenth centuries CE, many of the most important works in medicine by Jews, Christians, Zoroastrians, and Muslims were written in Arabic, a language spread by Islam. Arabic medical texts are abundant, so that archaeology is not the primary source of information about healthcare in Islamic countries.

Little is known of the healthcare systems of the pre-Islamic cultures (e.g., Midianites, Nabateans) associated with the northwestern Arabian Peninsula, the homeland of Islam. It is possible to speculate that some diseases (e.g., malaria)



MEDICINE. Figure 3. *Synopsis of the Mesopotamian health care system.* (Courtesy H. Avalos)

were insignificant in arid regions. Analogies with healing practices elsewhere in the Near East probably existed (e.g., prayer; the use of special consultants). Jews and Christians lived in northwestern Arabia at the time of Islam's rise in the seventh century and presumably had their own healing traditions.

Some scholars argue that Islamic medicine was essentially Greek medicine. Others argue that while the Greek traditions are obvious, Islam synthesized various traditions and made new contributions. The famed Ibn Khaldun (1332–1406), in his *Muqaddimah,* acknowledges that Islam inherited a body of nonrevealed medical tradition from the bedouins, Sasanians, and other sources.

Under the word *salām,* the Qur'an speaks of the broad well-being of a person. Sickness encompassed the whole organism rather than just the soul or the body. Greek influence, however, helped to maintain the soul/body dualism in many Islamic traditions. Thus, Ibn Sina (980–1037), whose *Canon* was, for hundreds of years in the West and the East, one of the most authoritative medical textbooks, thought that the mind could heal or sicken the body.

As a monotheistic religion, Islam resulted in a dichotomous healthcare system insofar as patients could not use options sponsored by gods other than Allah. Although natural causes for illness seem to be recognized, ultimately illness and health are created by Allah's will and purposes. Prevention of illness was an essential component of Islamic medical practice, and a proper diet, which excluded pork, was seen as perhaps the most essential factor in maintaining good health.

The major traditions of Islam (e.g., Sunni, Shi'ah) developed some distinctive notions of treatment. For example, some scholars argue that Sunni tradition encourages patients to seek treatment at any time, whereas Shi'i tradition encourages them to seek treatment only if the illness becomes unbearable. While major traditions prohibit the use of alcohol, other traditions (e.g., the Hanafi school) prohibit only intoxication.

Various Muslim states encouraged heavy investment in public health. For example, a rare, if not unprecedented, healthcare policy was promulgated in Iraq by Walid I (705–715), who reportedly provided stipends and attendants for lepers. In the early tenth century in Iraq special teams were established to visit prisons, and mobile dispensaries brought healthcare to the countryside, where doctors were scarce. The management of lepers during the Umayyad caliphate (755–1031) in Córdoba (Spain) included their segregation in "the suburb of the sick" (Ar., *Rabaḍ al-marḍā*). Endowments (Ar., *waqf*), often by wealthy individuals, for hospitals were generally encouraged.

The most famous general hospitals emerged during the 'Abbasid caliphate (750–1257), especially in Baghdad, Mecca, and Damascus. There were also some hospitals for mental patients. The administrators and medical personnel of the first hospitals were often Nestorian Christians, who translated medical texts from Greek into Arabic (sometimes via Syriac). The principal doctors, who were also teachers, reportedly made rounds within the hospital and visited the court daily. The hospital founded in the twelfth century in Damascus reportedly kept detailed patient records. It also had protocols to separate patients who would be admitted from those who would be sent home after receiving treatment. In general, the Islamic period presents perhaps the best documented examples of how monotheistic societies integrated a variety of approaches to healthcare.

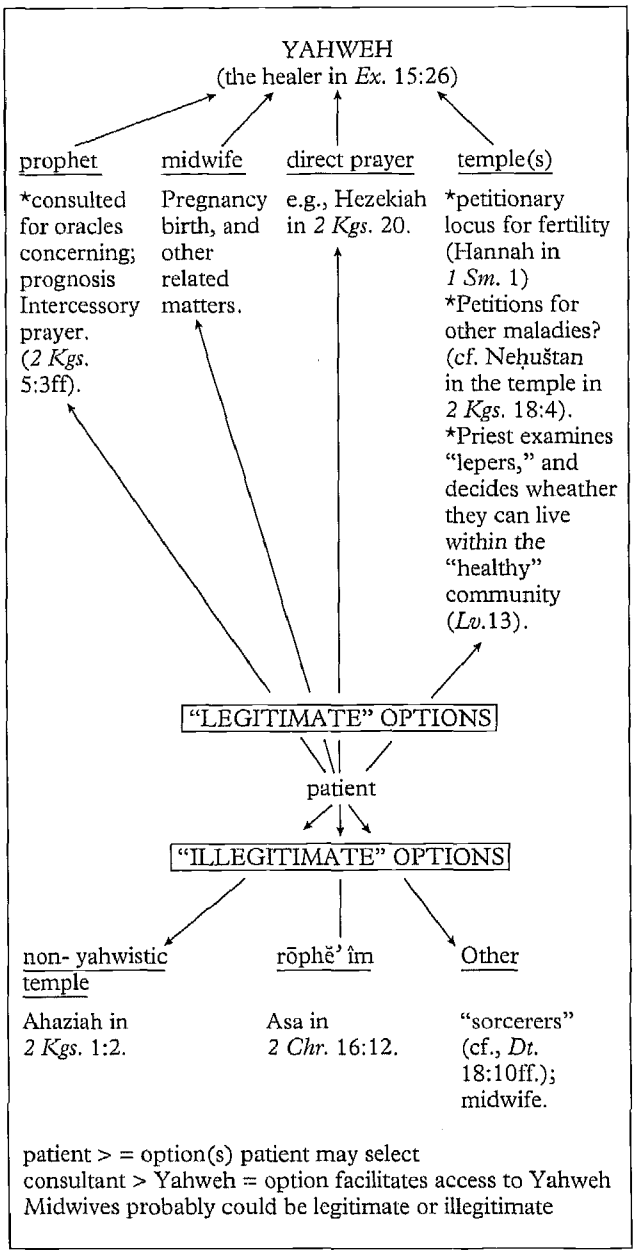
Synthesis. The advance of "civilization," and of urbanization in particular, posed new challenges to human health. Challenges included managing chronically ill populations, determining the level of state investment in public health, and maintaining a supply of consultants and medications, especially for the elite. Ancient governments recognized that epidemics could hasten the demise of an entire city or empire. The parallel and overlapping healthcare systems in the Near East provided a variety of responses to these challenges. In fact, many of the basic problems and responses pertaining to healthcare (e.g., level of state investment, regulation of medical fees) were first articulated in the ancient Near East.

Many aspects of a healthcare system are related to a culture's basic religious framework. Polytheistic systems (e.g., in Mesopotamia, Anatolia, and Egypt) allowed a broader range of alternatives for patients than monolatrous ones (see figure 3). Yet, the large number of gods that could be appeased or repelled could also lead to complex rituals that denied speedy attention even for the elite.

The development or imposition of monolatry tended to bifurcate a healthcare system into legitimate and illegitimate options. Although monolatrous systems (e.g., in Israel and Islam) could simplify the search for a healing deity, other factors could render the therapeutic process as variegated and complex as in polytheism (see figure 4).

Most healthcare systems had a variety of options that were probably arranged hierarchically, depending, in part, on the patient's needs and means. Prayer was probably one of the first, and most economical, options chosen by patients in all systems. Care at home was probably the preferred and most common option, even in cultures that centralized and localized healthcare to some extent (e.g., *asclepieia;* Islamic hospitals).

It is difficult to evaluate one healthcare system as better than another because precise data are lacking with which to measure their effectiveness. Some institutions meant to cure may actually have spread diseases by concentrating sick people in small spaces (e.g., *asclepieia*). The best medical technology (e.g., scalpels, forceps, dental drills, and splints) may have helped only simple problems (e.g., extraction of lodged weapons). In general, in most cultures, trauma (from accidents, strife), malnutrition, and disease maintained life



MEDICINE. Figure 4. *System of consultation options reported in the biblical texts.* (Courtesy H. Avalos)

expectancy to under forty years from the Paleolithic to the Early Islamic period.

Much of the information preserved in archaeological and textual sources pertains to the urban and literate segments of Near Eastern cultures; however, as is the case in many modern nonwestern cultures, the majority of patients lived outside of cities and had as healing consultants midwives and other types of folk healers who were illiterate—and thus did not document their practices.

Nonetheless, archaeology still has much to contribute to what can be known of ancient and modern healthcare. More importantly, by focusing on healthcare as a system that interacts with theology, politics, economics, and the environment, new questions can be posed about the textual and archaeological data already available.

[*See also* Paleopathology; Personal Hygiene. *In addition to the sites cross-referenced above, many others mentioned are also the subject of independent entries.*]

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HECTOR IGNACIO AVALOS

MEDINA (al-Madinah), city located in the Hijaz region of Saudi Arabia (24°28′ N, 39°36′ E), lying about 350 km (217 mi.) north of Mecca (Makkah) and about 425 km (263.5 mi.) from Jeddah.

Before Islam, Medina was known as Yathrib and was famous for its oasis on the trade routes from southern and northern Arabia and its commercial contacts with important trading centers. Around it are mountains and it is famous for its numerous wadis or water coarses across the oasis. According to Arabic sources, it was known by ninety-five names. Apart from Yathrib, the following were the most popular: Ṭaiba, Manzil al-Waḥyi, and 'Ush al-Fuqaha'. The prophet Muhammad named the city Ṭaiba and Medina.

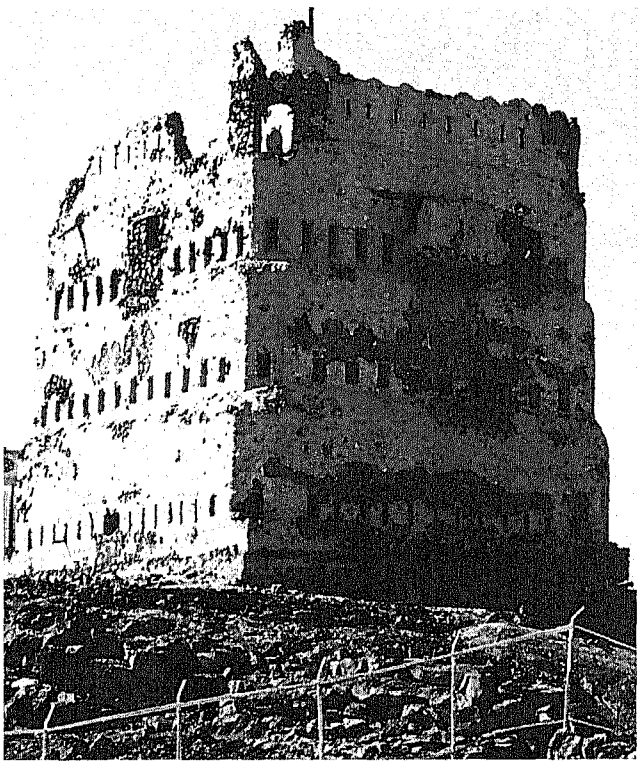
The settlement is spread out in four main areas—Al-'Awali, Quba, al-'Uṣba, and ancient Yathrib. At the time of the prophet Muhammad's Hijrah (pilgrimage) in 622 CE, it was divided into nine independent quarters, which were described as neighboring states like villages. After the Hijrah the quarters expanded, linked to each other. Thus the city of Medina evolved, acquiring political and socioeconomic importance as the capital of the first Islamic city-state.

For this new city-state, Muhammad provided all amenities for the welfare of the people. New commercial specialized markets for different commodities were established. These centers included markets for livestock, grain, fruit, oil, vegetables, meat, perfume, cloth, and second-hand items. There were also auction places. Mosques (including the Prophet's Mosque), residential houses, forts, and rest-houses were constructed. This building activity continued in all directions, involving every aspect of life during the times of the caliphs. It reached its zenith during the Umayyad and 'Abbasid periods, when palatial palaces were built in Medina.

After the assassination of Caliph 'Uthman, 'Ali succeeded him, and to counter the political moves of the opposition he shifted the capital in 651 from Medina to Kufah. Subsequently, the caliph Mu'awiyah made Damascus the capital in 661. Thus Medina lost all its splendor, retaining, however, its importance as a religious and cultural center as well as commercial hub for the trade coming from Yemen, Iraq, Syria, and Egypt.

The city was protected by the erection of a defensive wall, with seven entrances in 876, which was later rebuilt. Under the Ottomans the wall was raised to a height of 25 m (82 ft.). It had forty towers overlooking the outskirts of the city. However, to facilitate the free movement of traffic the wall was demolished in 1948.

During the Hijrah to Medina, the Prophet built the first mosque at Qubba, south of the city. After entering the city, a suitable larger site near al-Baki' was selected and the Prophet's mosque was built.



MEDINA. *The Qal'at Quba.* (Courtesy S. al-Rashid)

Since the Prophet's time, his mosque has been expanded from time to time to meet the growing needs of the ever-increasing number of visitors. Consequently the residential and commercial areas in the vicinity of the mosque were absorbed into its complex.

The number of mosques in Medina multiplied; forty were built during the Prophet's lifetime. Some of the mosques that were built by 'Umar ibn 'Abdul 'Aziz, ruler of Medina during the time of Caliph al-Walid ibn 'Abdul Malik, (AH 86–96/705–715 CE) on spots in which the Prophet prayed survive to this day.

Despite the expansion and rebuilding of the ancient mosques, their distinctive characteristic features have been preserved. The Ottoman additions to the Prophet's mosque are outstanding in their architecture, porcelain arabesque decoration, and Qur'anic inscriptions. One of the most outstanding features surviving is the *miḥrab* (niche) erected by Mehrab al-Suleimany in 948/1541. One of the oldest inscriptions on the wall of the inner *miḥrab* of the Prophet's mosque is dated to 888/1483 in the reign of Sultan Gaitabi. It consists of five sentences written in Mamluk Thuluth script.

Medina was famous for numerous splendid Umayyad and Ottoman palaces, which are located near the Wadi al-'Aqiq. Literary sources mention that there were seventy palaces built of stones and bricks. They were spacious and had high walls. Some of the surviving palaces belonged to the following rulers: Hisham ibn 'Abdul Malik, 'Urwa ibn Zubair, 'Asim ibn 'Umar, Sa'id ibn al-'Aṣ, and al-Marajel. Portions of these palaces are in private collections. 'Abdul Quddas al-Anṣary has described the two-story palace of Sa'id ibn al-'Aṣ as magnificent. Its architectural features resembled the classic Islamic style of Umayyad palaces in Syria, especially the Geran palace of Damascus.

Medina is famous for its many forts. During the Prophet's time they numbered 199. Of these, 127 belonged to Medinite Anṣars (helpers); 11 to the Mahajirs (immigrants from Mecca); and 159 to other tribes of Medina. Remains of many forts survive in good condition. One such example is the fort of Ka'b ibn al-Ashraf in the southeastern part of the city.

Numerous Arabic rock inscriptions, primarily graffiti, are found in and around Medina (al-Rashid, 1993). Some of these texts reveal the urban life and settlement of the people during the early Islamic periods. The most ancient inscription is found on Jabal Sal, northwest of the Prophet's mosque. Inscriptions of the early Umayyad period are located in the vicinity of the palaces. At Ruwawa about 50 km (31 mi.) south of the Prophet's mosque, fifty-five inscriptions have been discovered (al-Rashid, 1993). They are dated to first three centuries of the Hijrah and furnish family details about Caliph 'Umar and others. Five are dated to the Umayyad period and four to the 'Abbasid period.

[*See also* Inscriptions, *article on* Inscriptions of the Islamic Period; *and* Mecca.]

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SA'AD ABDUL AZIZ AL-RASHID

MEGIDDO (Ar., Tell el-Mutesellim; "the tell of the governor"), site located on the western side of the Jezreel Valley (Plain of Esdraelon), not far from the point where the brook of Naḥal Iron (Wadi Ara) crosses Mt. Carmel and enters the Jezreel Valley. In antiquity the main highway (Via Maris) from Egypt to Syria passed the narrow Naḥal Iron, militarily the best point for controlling the road, giving Megiddo special strategic importance. Megiddo is mentioned in the *Book of Revelation* (16:16) as Armageddon (probably Har Megiddo, "the Mount of Megiddo"), where the final battle between the people of God and the gentile armies will take place at the end of days.

Excavations. The first excavations at Megiddo were carried out between 1903 and 1905 by Gottlieb Schumacher (1908), an architect from Haifa, on behalf of the Deutscher Palästina-Verein. An analysis of the finds was later published by Carl Watzinger (1929). In 1925 the Oriental Institute of the University of Chicago began large-scale excavations, aimed at completely excavating the mound by horizontally digging one city level after the other. The program was too ambitious, and they subsequently excavated only parts of the site. The project ended with the onset of World War II in 1939. No attempt was made to correlate the work with the German finds or with Schumacher's crucial architectural data. Clarence S. Fisher (1929) directed the excavations from 1925 to 1927. He concentrated the work on the eastern side of the summit, further uncovering Schumacher's *Tempelburg,* a monumental Iron Age structure. From 1927 to 1934, P. L. O. Guy (1931) cleared more of the area to the east of the site, uncovering remains of early periods (Engberg and Shipton, 1934) and many tombs (Guy, 1938). He excavated the first-millennium BCE levels across the summit, including the city gate, palaces, and stable compounds (Lamon and Shipton, 1939) and cleared the water system (Lamon, 1935). From 1935 to 1939, Gordon Loud directed the work, concentrating on digging the lower strata in limited areas (AA–DD; Loud, 1948). A deep trench that reached bedrock was excavated in area BB at the site's eastern edge.

Between 1960 and 1972, Yigael Yadin (1970) of the Hebrew University of Jerusalem carried out soundings on the northeast and west to clarify the Iron Age stratigraphy and particularly the fortifications. In 1965 Immanuel Dunayevsky and Aharon Kempinski (1973), also of the Hebrew University, studied the stratigraphy of the cultic area in BB, and in 1974 Avraham Eitan (1974) studied, on behalf of the Hebrew University, the Iron Age remains on the eastern slope. A long-term project of systematic excavations initiated by Israel Finkelstein and David Ussishkin of Tel Aviv University and Baruch Halpern of Pennsylvania State University followed exploratory soundings in 1992 and 1993. They carried out a full-scale excavation season in 1994 on the lower terrace, on the summit near the Assyrian palaces, and in the cultic area in BB.

Early Settlement. Remains of settlement of the earlier periods were uncovered on the site in a limited area on the eastern slope, and it is unclear whether the settlement extended over the entire site or not.

Neolithic and Chalcolithic periods. The earliest settlement, on bedrock, was uncovered in area BB. Habitation remains in one cave date to the Pre-Pottery Neolithic (PPN) period (stratum–XX). Remains of stone and brick walls, floors, pits, and fireplaces cut in the surface of the rock belong to the earliest proper settlement here (stratum XX). Toothed flint sickle blades and pottery fragments of the Yarmukian culture date the settlement to the PPNB. Some remains dating to the Ghassulian culture of the Chalcolithic period were uncovered immediately above bedrock in the upper part of the slope in area BB: rock-cut pits, installations, and possibly a curving wall. The pottery contains a relatively large number of cornets and small bowls, a possible indication of cultic activity.

Early Bronze Age I. Remains of the Early Bronze Age I discerned in a surface survey northeast of the mound and on the lower terrace were uncovered in stages VII–IV in the area east of the mound (Engberg and Shipton, 1934) and in area BB (stratum XIX). The remains indicate that a huge unfortified EBI settlement existed there that extended over a large area east and northeast of the mound. The pottery is characterized by gray-burnished Esdraelon ware and grain-washed pottery. Two "curving" buildings—rectangular with a rounded end—and a number of cylinder seal impressions stamped on pottery vessels were uncovered in stage IV. [*See* Seals.]

A temple compound was excavated on the eastern slope of the mound in area BB. It was studied by Dunayevsky and Kempinski (1973) and again examined in the excavations since 1992. The temple was the first of successive sanctuaries built in this general area (the "sacred area") before the Iron Age. The shrine faced east, and a courtyard extended in front of it on the slope. The recent excavations indicated that there were two superimposed temples there, the upper one possibly dating to EB II. A stone pavement along the slope belonged to the earlier structure; some of the stone slabs are incised with figures of men, animals, and decorative patterns.

Early Bronze Age II–III. The EB II–III, are covered by strata XVIII–XV in area BB. Attempts to elucidate their stratigraphy and chronology were made by a number of scholars, in particular Kathleen M. Kenyon (1958), Dunayevsky and Kempinski (1973), and Douglas Esse (1991, pp. 67–90). A massive stone city-wall (about 4–5 m wide) was built in stratum XVIII; it marks the beginning of a smaller, but fortified, settlement. The wall's construction date is not clear; it is preserved to about 4 m in height. It turns inward at the edge of area BB, indicating that it did not surround the site. In stratum XVII it was widened to about 8 m. Kenyon (1958) suggested that it was merely a retaining wall supporting an edifice built higher on the slope.

Altar 4017, apparently the focal point of the sacred area, was built on the summit in stratum XVII and was later rebuilt. A circular, stone-built structure (8 m in diameter and 1.5 m high), it has seven steps leading to its top. An enclosure wall surrounded it, and large amounts of bones and pottery were found within it. Three temples, uniform in plan and measurements, were built near the altar in stratum XV. Each consisted of a rectangular cella entered through a porticoed porch and a side room. Two pillar bases were found in the center of each cella, and a raised altar stood against the rear wall. The temples were probably dedicated to three

different deities; with the round alter they formed an impressive cultic compound. Their stratigraphy and chronology are unclear, but it seems they were constructed later than the altar, although they were in use contemporaneously. Loud assigned the temples to the Intermediate EB–MB period. It is now generally assumed that temple 4040 is earlier than the other two and that they all date to EB III. Excavations in 1994 revealed an EB III domestic layer beneath temple 4040, which needs to be factored into the dating.

Intermediate EB–MB period. During the EB–MB period, settlement continued but declined. Temple 4040 was reused: the cella was largely filled with rubble, leaving a small cultic cell in the center. A pavement with cultic vessels was found above the earlier round altar. A number of rock-cut tombs were uncovered to the southeast (Guy, 1938), many of them characterized by their plan: a vertical shaft leads into a central chamber surrounded by three smaller chambers. [*See* Tombs.] The pottery in the tombs represent wheel-made, gray vessels decorated with wavy white bands, defined by Ruth Amiran (1960) as Family C and by William G. Dever (1980) as Family NC in their classifications of the period's pottery.

Canaanite City. The beginning of the Middle Bronze Age (twentieth century BCE) marks the development of Megiddo (in stratum XIII) as an urban settlement—the center of a Canaanite city-state that existed, without interruption, until its destruction (in stratum VIIA) at the end of the Late Bronze Age (twelfth century BCE). The entire period was affected by Egyptian interests and influence, whose domination of Megiddo was a strategic prerequisite for hegemony in Canaan.

The custom then of constructing tombs within the city limits, the difficulty in clarifying the tombs' association with city levels, the site's continuous occupation, and the near absence of destruction by fire makes interpreting the stratigraphy and finds difficult. Many scholars have attempted to elucidate the stratigraphy, in particular Claire Epstein (1965), Kenyon (1969), Dunayevsky and Kempinski (1973; Kempinski, 1989), Patty Gerstenblith (1983, pp. 23–28, 114), and Rivka Gonen (1987). It seems that the settlement was extended during this period by the addition of a large area to the northwest. The lower city, demarcated by steep slopes, is clearly discernible today. In 1994 excavations were begun in the lower city (area F); whose uppermost level dates to the Late Bronze Age, indicating that the lower city was abandoned at the end of this period.

Middle Bronze Age. The MB I parallels the Middle Kingdom period in Egypt, when the twelfth dynasty renewed Egyptian interest in Syria and Canaan. The nature of the relationship between Egypt and Megiddo then is not clear. The Execration texts do not mention Megiddo (interpreted as an indication of Egyptian domination). Part of a stone statuette of Thuthotep, a contemporary high Egyptian official, was found—with two other broken statuettes—embedded in the raised platform of the stratum VIIB temple 2048. It is assumed that the statuettes stood in an earlier temple built at the spot and were broken when the temple was plundered; they may also have been buried later as an act of reverence. The historical implications of this find are similarly unclear. Some scholars assign strata XIII–XII to MB I (e.g., Kempinski, 1989), while others (e.g., Gerstenblith, 1983; Graham Davies, 1986) assign stratum XII to MB II. During MB II–III (strata XI–X), the Second Intermediate period in Egypt, Egyptian associations with Megiddo weakened, and scarabs are the main expression of Egyptian influence.

Massive fortifications characterize the MB city. At least three phases were uncovered at the north edge of the mound in area AA. In stratum XIII a city gate was uncovered with a stepped approach, narrow doorways, and an indirect passage (indicating that it was planned for pedestrians). The gatehouse and associated city wall were built of bricks on stone foundations and were supported on the outside by a glacis of limestone chips. In stratum XII the city gate must have been moved and a new wall supported by a glacis added. In stratum XI a new massive glacis was laid against the earlier fortifications, extending the mound on the north. The glacis leaned against a wall with buttresses constructed along its inner face. On the east, this wall segment ended in a tower that apparently either formed part of the city gate or flanked a monumental road leading to the upper city.

A continuation of the area AA strata XIII–XII walls was found in areas BB and CC, also of bricks on stone foundations. The unplastered brick walls were preserved to a considerable height, indicating that they were supported by a glacis and a constructional fill and were hidden from view. Schumacher uncovered remains of one or more glacis along the slope that supported massive brick walls, probably associated with the same fortification systems, in seven narrow trenches in different parts of the mound (Schumacher, 1908, pp. 23–36). Significantly, the lower city was apparently also fortified; the 1994 excavation revealed the existence of a massive city wall built of large stone blocks that probably dates to this period.

The MB royal acropolis at Megiddo was probably located at the center of the site. It included the *Nordburg,* a large building Schumacher uncovered in his main trench (1908, p. 37–66), and a building with thick stone walls uncovered in strata XI–X in area BB. Adjoining the southern side of the *Nordburg* Schumacher uncovered another building, the *Mittelburg,* which contained three unique stone-built tombs, apparently belonging to royalty or nobility. The largest was empty and hence was not considered by Schumacher to be a tomb. All the chambers are vaulted by fine stone rudimentary corbeling—an early example of this building technique.

The EB sacred area in BB continued to function. Loud (1948) uncovered buildings of strata XIII–IX around the sacred area but did not identify any contemporary building

in the sacred area itself. He assigned an area with standing stone stelae (above altar 4017) to stratum XII and a series of superimposed rubble pavements to stratum IX. The new temple (no. 2048) was assigned to the Late Bronze Age. It is now generally agreed that this temple was founded in the Middle Bronze Age, in stratum X or even later. Temple 2048 has three superimposed phases. The earliest structure was preserved at foundation level only. It is a massive rectangle (21.50 × 16.50 m) containing a single hall with a niche opposite the entrance; two towers flanked the entrance. The temple is tower temple or fortress temple type and can best be compared to the contemporary temple at Shechem. [*See* Shechem.]

MB domestic buildings were uncovered in the various strata in areas AA and BB, indicating that Megiddo was densely populated then. The custom of intramural burial, inside and outside the houses, in graves and in stone-built tombs, was very common. [*See* Burial Sites; Burial Techniques.] Typical of the end of the period and of the beginning of the Late Bronze Age is bichrome ware—decorated pottery either imported from Cyprus or locally made.

Late Bronze Age. The expulsion of the Hyksos from Egypt and the campaign of Ahmose to Canaan in about 1550 BCE mark the beginning of the Late Bronze Age and the renewal of Egyptian influence in the country. It seems that Megiddo was not destroyed but was conquered in about 1479 BCE, during Thutmosis III's first Asiatic campaign. Events at Megiddo were recorded in detail in Thutmosis's monumental inscription carved on the walls of the Temple at Karnak and can be reconstructed (Davies, 1986, pp. 51–56). While the Egyptian army progressed northward along the coastal highway, the army of the Canaanite kings, led by the king of Qadesh on the Orontes River, concentrated near Megiddo. They prepared to challenge Thutmosis where the pass leading through the narrow Naḥal Iron opens to the Jezreel Valley (see above). Thutmosis III learned of his opponents' plan, but decided to follow the direct route and took the Canaanite armies by surprise. The Egyptians won the ensuing battle, and the Canaanites fled to Megiddo, which Thutmosis conquered after a seven-month siege. The battle established Egyptian domination over Megiddo. It probably continued until the end of Canaanite Megiddo, which is marked by the destruction of stratum VIIA (twelfth century BCE).

Megiddo is not mentioned in the descriptions of the campaigns of Amenhotep II (1427–1401 BCE), apparently because the city was already dominated by Egypt. One of the Taʿanach letters mentions the Egyptian commander at Megiddo. [*See* Taʿanach.] Papyrus Hermitage 1116A, dating to the reign of Amenhotep II, records presentations by Egyptian officials of grain and beer to envoys of various Canaanite cities, including Megiddo. Eight letters found in the el-Amarna archive and dating to the reigns of Amenhotep III (1391–1353 BCE) and Amenhotep IV (1353–1335 BCE) were sent from Megiddo. [*See* Amarna Tablets.] Six letters were sent by Biridiya, the ruler of Megiddo, who expressed his loyalty to the Egyptian pharaoh and discussed his struggle with Labayu, the ruler of Shechem, and the cultivation of estates in Shunem by forced labor. Egyptian domination probably continued into the thirteenth century BCE, but there is no documentation other than Papyrus Anastasi I, in which Megiddo appears as a place name in Canaan. Of particular interest is a fragmentary cuneiform tablet that includes the Epic of Gilgamesh; although found on the surface beyond the site (Goetze and Levy, 1959), it may derive from a scribal school at Megiddo.

A new royal palace was built in stratum IX on the north, probably replacing the earlier royal acropolis at the center of the settlement. Four successive palaces were excavated (area AA) in strata IX–VIIA. Particularly impressive is the stratum VIII palace. The stratum VIIA palace was decorated with wall paintings, an indication of Egyptian influence. [*See* Wall Paintings.] According to Loud (1948), the strata VIIB and VIIA palaces met with violent destruction; however, it seems possible that only the latest palace was destroyed by fire. A second palatial complex was built farther east, in area DD, but the relationship between the two is unclear.

The stratum VIIA palace included an annex—a three-chambered cellar. In its rear chamber, sealed by destruction debris, an assemblage of ivory objects and other precious items was found (Loud, 1939). The assemblage included 382 carved ivories of assorted types in the locally carved Canaanite style and imported Egyptian, Aegean, Assyrian, and Hittite examples. It is the richest assemblage of Bronze Age ivories found in the Near East.

A wide, paved roadway supported by a retaining wall led to a city gate near the palace. Built in stratum IX (or even stratum X) and used until stratum VIIA, it was a three-entry monumental gatehouse built with ashlars but without foundations. The gatehouse is not connected to a city wall and was probably erected where the stratum XI roadway or gatehouse was, incorporated in the line of the MB glacis. In 1993 the gatehouse, which the Chicago expedition had partially blocked after its excavation, was recleared, further excavated, and then restored by Israel National Parks Authority. The Chicago excavators believed that the gate had two floors, representing two phases, but the recent excavation has not verified this conclusion. Three large ovens where found on the floor, indicating that in its latest period of use it did not function as a gate.

The absence of a Late Bronze Age city wall has puzzled scholars, particularly because Thutmosis III laid a siege to the city (Gonen, 1987, pp. 97–98). It seems that the glacis of the previous period continued to function also in the Late Bronze Age. Also, houses built along the upper periphery of the mound may have formed a defense line around the city.

Temple 2048, uncovered in Area BB, which was probably founded in the Middle Bronze Age, continued to be in use. It was destroyed by fire at the end of the period. A number

of valuable objects, including bronze figurines and two clay liver models, probably originate in the temple.

An ivory object bearing a cartouche of Rameses III was found in the assemblage of ivories in the stratum VIIA palace. It proves that stratum VIIA was not destroyed prior to the reign of that pharaoh (1182–1151 BCE; low chronology of Wente and Van Siclen). A statue of Rameses VI (1141–1133 BCE; low chronology), found buried in a pit in Area CC was probably placed in a temple; it indicates the continuation of Egyptian domination of Megiddo during Rameses VI's reign. The destruction of stratum VIIA probably occurred shortly afterwards, in about 1130 BCE. As it seems this destruction coincides with the end of Egyptian rule in Canaan, and the two events may well have been connected.

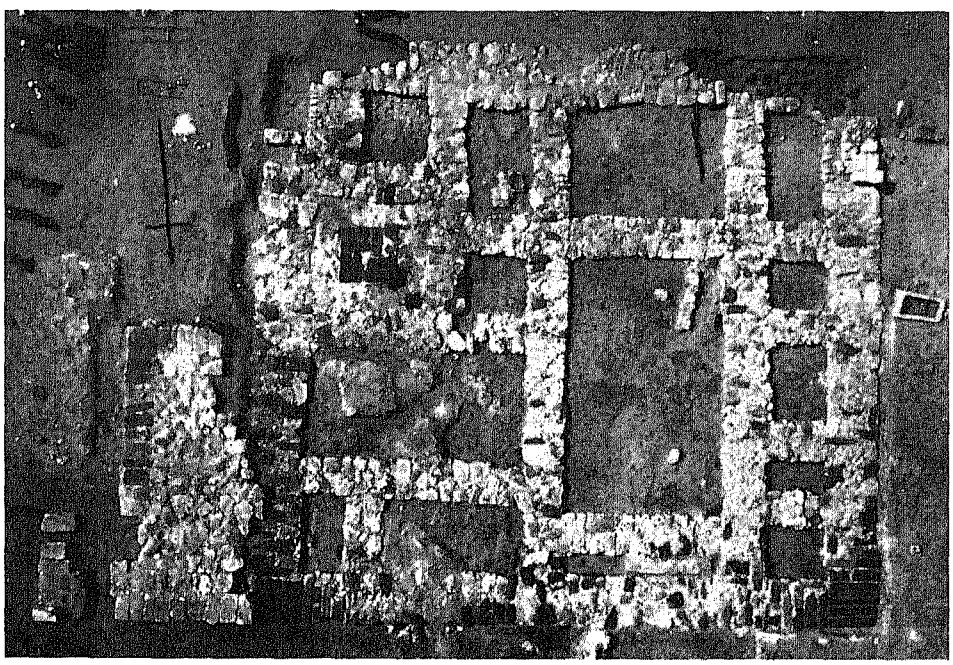
Strata VIB–A. Following the destruction of the Canaanite metropolis, a poor settlement was built in stratum VIB that was subsequently replaced by a larger, richer settlement in VIA. It was unfortified, but the excavators believed the later stratum VA/IVB (see below) city gate to have originated there. The buildings, mostly domestic in nature, were built of bricks on stone foundations. The sole public structure is building 2072, near the site's northern edge. Metal objects, mostly of bronze, reflecting a long tradition (probably Canaanite) of bronzework, are typical of this settlement; of particular interest are a number of bronze stands and iron blades uncovered by Schumacher (1908, pp. 84–87). The settlement was destroyed by fire.

Historical correlations. The Philistine bichrome pottery uncovered in stratum VI suggests a Philistine presence or influence. Albrecht Alt (1953), Mazar (1976), and Yadin (1970) believed stratum VIA represented the eleventh-century Canaanite-Philistine city David conquered, and Trude Dothan considers the fragments of Philistine pottery reported from that stratum to be an early indication of the Sea Peoples' presence; however, they are more likely merely stray sherds. [*See* Philistines, *article on* Early Philistines.]

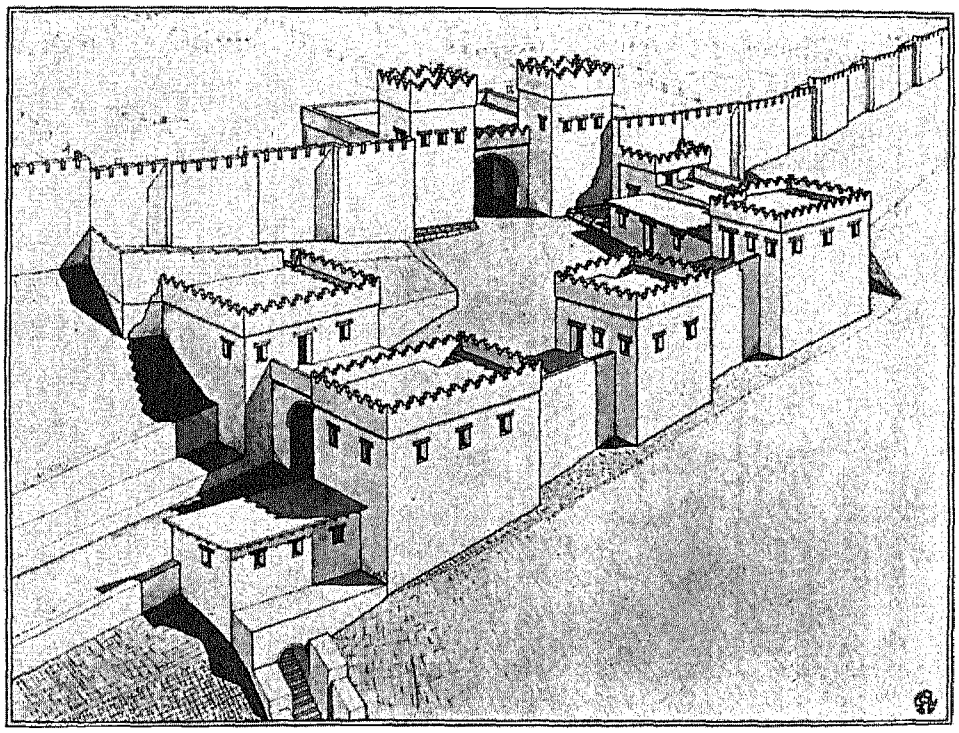
The king of Megiddo is mentioned in *Joshua* 12:21 in the list of kings defeated by Joshua. *Joshua* 17:11–12 and *Judges* 1:27 record that the Canaanites continued to live in Megiddo until their later subjugation by the tribe of Manasseh (cf. *1 Chr.* 7:29). Albright (1936) believed that the expression "in Ta'anach, by the waters of Megiddo" (*Jgs.* 5:19) in the Song of Deborah refers to a time when Megiddo was not settled, assigning the poem and the events described in it to the period immediately following the destruction of the stratum VIIA city. Aharoni (1982) suggested that the Israelites destroyed the stratum and that stratum VIB was a small Israelite settlement. His view was supported by the presence of Collared-rim storage jars, usually associated with the Israelite conquest of Canaan, in stratum VIA.

Israelite City. Remains of domestic buildings of stratum VB were uncovered in various parts of the site. The stratum VB settlement was unfortified, except for one building, possibly a fort. It is usually considered to be Israelite, dating to the reign of David.

Solomonic city. Megiddo was included with Ta'anach and Beth-Shean in the fifth administrative district of Solomon (*1 Kgs.* 4:12). Apparently the district governor, Baana son of Ahilud, resided at Megiddo. [*See* Beth-Shean.] Megiddo is mentioned with Jerusalem, Hazor, and Gezer in *1*



MEGIDDO. Figure 1. *Aerial view of the southern Solomonic palace at the time of its excavation.* (Courtesy The Oriental Institute, University of Chicago)



MEGIDDO. Figure 2. *Suggested reconstruction of the stratum VA-IVB city gate.* Dated to the ninth century BCE. (Courtesy The Oriental Institute, University of Chicago)

Kings 9:15 as a central city built by Solomon and financed by levies. [*See* Jerusalem; Hazor; Gezer.] Monumental Solomonic remains were uncovered in all the excavations. Their interpretation is not easy and is, in many ways, controversial. Of special importance is Yadin's work (1970), which resulted in redating city wall 325 and "Solomon's stables" to the ninth century BCE.

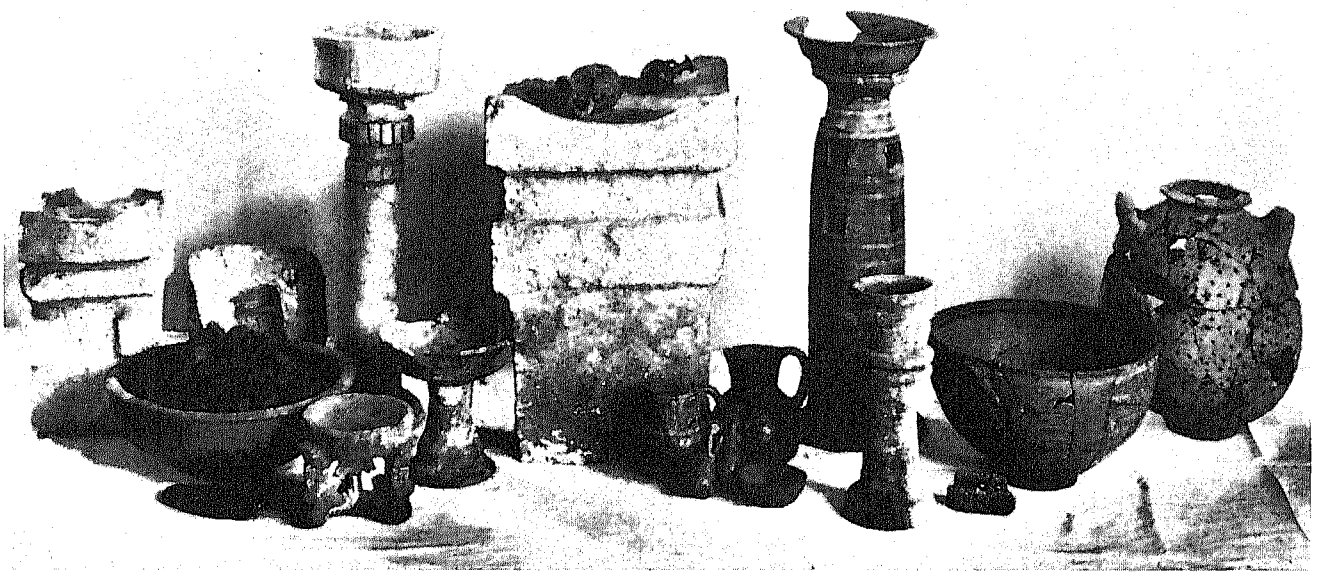
Stratigraphically, the Solomonic city level includes the structures located above the stratum VB building remains and immediately beneath city wall 325 of stratum IVA and associated structures. Solomonic remains were assigned by the University of Chicago excavators to different strata: V (later VA), IVB, and IV. Albright (1943, pp. 29–30, no 10) observed that the remains of strata VA and IVB belong to a single city level (his VA/IVB), the superimposed stratum was labeled IVA. This terminology is largely used today, but some scholars label these levels VA and IV, respectively. Aharoni (1972; 1982) dated stratum VA/IVB to David's reign and IVA to Solomon's (cf. Kenyon, 1964, and Wightman, 1985).

Stratum VA/IVB includes three palaces (nos. 1723, 6000, 338) built along the upper periphery of the site on the south (see figure 1), north, and east, respectively. Situated in large courtyards, their facades face the center of the site. A large building (no. 1482), interpreted as an administrative in function, was built near the compound of the southern palace (no. 1723). Large quarters of domestic buildings were uncovered along the east and north, including a sanctuary (no. 2081) along the upper periphery on the north.

The buildings on the upper periphery formed a line of defense Yadin (1970) interpreted as a casemate city wall. The city gate, on the north, was a small, two-entry gatehouse, approached by a wide, lime-paved ramp (Loud, 1948, pp. 39–45) (see figure 2); the so-called Solomonic four-entry gatehouse is later in date and belongs to stratum IVA. In addition, a small postern (gallery 629) was built on the west, above the spring. Originally dated to the twelfth century BCE (Lamon, 1935), it was correctly assigned by Yadin (1970) to stratum VA/IVB.

Ashlar masonry was used lavishly in constructing the monumental buildings, both in their foundations and superstructure. Proto-Ionic stone capitals, mounted on pilasters and freestanding pillars, decorated their entrances. Unfortunately, the buildings were mostly destroyed when the ashlars were taken for reuse in stratum IVA. Construction with ashlars originated in Egypt and first appears in Canaan in the LB city gate and temple at Megiddo. It was introduced on a large scale during Solomon's reign. At Solomonic Megiddo, it fits the description of ashlar masonry in Solomon's palace in Jerusalem (*1 Kgs.* 7:9–12) and reflects the Phoenician influence on Solomon's building activities.

Palace 6000, uncovered by Yadin (1970, pp. 73–77), was rectangular (28 × 21 m). Most of its stones were removed following its destruction by fire. It was apparently a cere-



MEGIDDO. Figure 3. *Cult objects.* The objects were found in a cache in small sanctuary no. 2081 of stratum VA–IVB; dated to the reign of Solomon. (Courtesy The Oriental Institute, Univ. of Chicago)

monial palace built as a *bit-ḫilani* (a type of a ceremonial palace typical to North Syria in this period). It contained a porticoed entrance and a large central hall. Palace 1723 (Lamon and Shipton, 1939, pp. 11–24) was built in a spacious courtyard and entered through a monumental gatehouse (no. 1567) that was largely uncovered by Schumacher (1908, pp. 91–104). The nearly square palace (about 22 × 23 m) was mostly preserved at foundation level; hence, its aboveground plan is unknown. It seems probable that it contained both a ceremonial section built as a *bit-ḫilani* and a residential section (Ussishkin, 1966). If so, Solomonic Megiddo contained at least two *bit-ḫilani* palaces as, for instance, on the acropoli of Tell Ta'yinat and Zincirli (ancient Sam'al) in North Syria, which date to this general period. Other scholars restore only palace 6000 as a *bit-ḫilani* (Yadin, 1970; Kempinski, 1989).

Building 338, at the highest point in the city, was constructed on an aboveground foundation podium. It was first excavated by Schumacher (1908, pp. 110–124), who identified it as a sanctuary and associated it with the stratum II fortress (his *Tempelburg*). Fisher (1929, pp. 68–74) excavated it further and identified it as the Temple of Astarte; Guy (1931, pp. 30–37; Lamon and Shipton, 1939, pp. 47–59) interpreted it as the residence of the military commander of the eastern part of the city and assigned it to stratum IV (i.e., IVA). Guy's views are generally accepted today. However, while part of the building probably served a secular function, it seems that Schumacher rightly identified a shrine, characterized by two large stelae, in unit 340, in the southern part of the building (Ussishkin, 1989). Model shrines and stone altars uncovered inside and to the south of the building by Schumacher and Fisher (May, 1935) probably belong to this shrine. A wing of the building uncovered by Schumacher and later destroyed was ignored by the University of Chicago excavators; it apparently antedates city wall 325; hence, building 338 dates to stratum VA/IVB. Sanctuary 2081 contained a cache of cultic equipment (Loud, 1948, pp. 45–46) (see figure 3). Several stones carved in the shape of an eight segment of a sphere found nearby (Lamon and Shipton, 1939, pp. 24) suggest that a large horned altar erected of ashlars, similar to the Tel Beersheba altar, stood in the sanctuary's courtyard. [*See* Altars; Beersheba.]

It seems that stratum VA/IVB was destroyed by fire, but it is presently unclear when and by whom. Indications of destruction were uncovered in a number of places, primarily palace 6000, building 10, the gatehouse to the compound of palace 1723, and structures on the north.

Megiddo is mentioned in the list of cities conquered by Sheshonq I (biblical Shishak) during his campaign to Israel and Judah in about 925 BCE. Furthermore, Fisher (1929) found a fragment of a stone-carved stela erected by that pharaoh at Megiddo. It is estimated that the complete stela was about 3.30 m high and 1.50 m wide; it had stood not far from its findspot on the eastern side of the site. Albright (1943, p. 29, no 10) proposed that Solomonic Megiddo was destroyed by Sheshonq I, but it seems more likely that the pharaoh erected his stela in an existing city with the intention

of holding it in the future (so that stratum VA/IVB must have been destroyed later).

Two decorated seals inscribed in Hebrew were uncovered by Schumacher in gatehouse 1567 in the palace 1723 compound: "(belonging) to Asaph" and "(belonging) to Shema, Servant of Jeroboam." They probably belonged to royal Israelite officials. Two more inscribed seals were found nearby, in Schumacher's dumps. The Shema seal is usually ascribed to the reign of Jeroboam II (784–748 BCE), but some scholars (e.g., Ussishkin, 1994) ascribe it to the period of Jeroboam I (928–907 BCE). If that is so, the compound of palace 1723, and probably all of the stratum VA/IVB city, would not have been destroyed prior to 928–907. [*See* Seals.]

Stratum IVA. The city of stratum IVA differs radically from that of VA/IVB because the role of the city changed with the Divided Monarchy. The city of stratum VA/IVB, a civilian district center characterized by palatial compounds, became a fortified stronghold in stratum IVA. Its date of construction is not clear. In view of the identification of the "stable compounds" as stable for horses (see below), many scholars date this city level to the reign of Ahab (873–852 BCE), known from Assyrian records of the battle of Karkar to have had strong cavalry and chariotry. Ahaziah, king of Judah, may have died at Megiddo in stratum IVA, fleeing before Jehu's men (*2 Kgs.* 9:27).

City wall 325 (about 3.6 m thick), stone built with insets and offsets, surrounded the city. The entrance was through a complex city gate—the so-called Solomonic gate (Loud, 1948, pp. 46–57). A roadway led to an outer gatehouse; the latter opened to an open court, and behind it was the inner, four-entry gatehouse that adjoined the city wall. The inner gatehouse rested on massive foundations built with ashlars in secondary use that were supported by a constructional fill. The foundations and ground plans of the gate complex are similar to the tenth–ninth century BCE gates at Hazor, Gezer, Ashdod, Lachish, and probably Tel Batash (ancient Timnah). [*See* Ashdod; Lachish; Batash, Tel.]

The construction date of the city gate is controversial. Stratigraphically, it adjoins city wall 325 and is contemporary with it—and thus belongs to stratum IVA. A growing number of scholars, notably Aharoni (1972), Ze'ev Herzog (1986), Ussishkin (1980), Kempinski (1989), and Finkelstein, concur. It follows that the gate complex dates to the period of the Divided Monarchy. Yadin (1958, 1970, 1980) believed that the four-entry gatehouse originated in stratum VA/IVB and was built by Solomon's architects. This dating is primarily based on the similarity in plan between this gate and the four-entry gates at Hazor and Gezer. All three were built by Solomon (*1 Kgs.* 9:15). Yadin (1970; 1980) offered a new interpretation of the stratigraphy to explain how the gatehouse antedates city wall 325 (which in fact adjoins it) this stratigraphy and dating are followed by most scholars.

A large water system was built to protect, as well as to facilitate, the approach to the spring at the bottom of the west slope (Lamon, 1935). It was originally assigned to the twelfth century BCE, but Yadin (1970) redated it. Gallery 629 (the stratum VA/IVB postern leading to the spring) and the approach to the spring from outside were then blocked. A vertical shaft was dug from the surface, its lower part hewed out of the rock, and steps were prepared along its sides. A rock-cut horizontal tunnel led from the bottom to the spring. In a later stage the horizontal tunnel was deepened, enabling the water to flow to the bottom of the shaft. [*See* Water Tunnels.]

Two "stable compounds" were uncovered (Lamon and Shipton, 1939, pp. 32–47) and identified by Guy (1931, pp. 37–48) as stables for horses—associating them with Solomon's "cities for chariots and cities for horses" (*1 Kgs.* 9:19). Several scholars (e.g., Lamon and Shipton, 1939; Yadin, 1976; Holladay, 1986; Davies, 1986) supported the identification of the structures as stables, while others (e.g., Pritchard, 1970; Herzog, 1973; Herr, 1988) argued for their different use as barracks, public storehouses, or marketplaces. This discussion assumes that they were stables for horses. The southern compound contains five stabling units. Each unit (about 21 × 11 m) contains a central lime-paved passage and two side, stone-paved aisles. Each aisle is separated from the central passage by a row of stone pillars alternating with stone mangers made of ashlars taken from the Solomonic palaces. The side aisles served as stalls for the horses, each pillar and the adjoining manger marking the position of one horse. Many pillars had holes in their corners for tethering. Each aisle could accommodate 15 horses—hence, each unit contained 30 horses and the entire complex had 150. The stables opened into a spacious, lime-paved square courtyard (about 55 × 55 m). It has been suggested (Lamon and Shipton, 1939, p. 35) that a unit of chariots was stationed in this compound and the courtyard used for its training. The northern complex contained similar stabling units, but they were not built uniformly around a large courtyard. It could hold 300–330 horses; altogether, 450–480 horses were garrisoned at Megiddo.

A large stone storage pit (no. 1414), uncovered midway between the two stable compounds, was assigned to stratum III (Lamon and Shipton, 1939, pp. 66–68). However, it probably belongs to stratum IVA, where it was the central silo for the horses' provisions (Ussishkin, 1994, pp. 424–426). The pit was at least 7 m deep; its diameter at the bottom is 7 m (for a capacity of about 450 cu m). Remains of chaff and grains were found inside. Assuming that each horse consumed about 9.6 l of food a day, the pit could have held supplies for 300–330 horses for about 130–150 days.

Stratum III. In 732 BCE, Tiglath-Pileser III annexed northern Israel to Assyria, and Megiddo became the capital of the Assyrian province Magiddu (stratum III). [*See* Assyrians.] City wall 325 continued in use, but a new city gate was constructed. Remains of one or two gatehouses superimposed above the four-entry inner gatehouse were uncov-

ered. The upper one was a stratum III two-entry gatehouse. To the west of the city gate, two or three public buildings (nos. 1052, 1369, 1853) were uncovered that display Assyrian architectural features, in particular central, rectangular courtyards. It is clear that they were administrative or residential centers. Excavations resumed in this area in 1994 revealed a number of building stages. The buildings had not been destroyed by fire, but few finds were recovered. The absence of finds, in particular of Assyrian objects, is puzzling because the buildings were Assyrian provincial centers. Residential quarters extended over large areas of the city, with houses arranged in blocks separated by evenly spaced and parallel streets.

Strata II and I. Stratum II dates to the seventh century BCE. Its remains, uncovered across the site, include mainly domestic structures that follow the stratum III pattern. The stratum III Assyrian public buildings may have continued in use in stratum II. Remains of buildings uncovered near the site's upper periphery indicate that city wall 325 had fallen into disuse in stratum II or I sometime before the settlement ended.

A large structure (about 69 × 48 m), with a large central court, at the eastern edge of the site, was uncovered by Schumacher (1908, pp. 110–121) as part of the *Tempelburg* and by Fisher, who identified it as a stratum II fortress (Lamon and Shipton, 1939, pp. 83–86). The stone walls are about 2.5 m thick at foundation level. According to Lamon and Shipton (1939), the fortress was built above the disused city wall 325, the settlement's only fortification. (Both conclusions are doubtful.)

In 609 BCE, Pharaoh Necho reached Megiddo on his way to Carchemish to aid Assyria against Babylon. Josiah, king of Judah, met Necho at Megiddo and was executed by him (*2 Kgs.* 23:29–30; *2 Chr.* 35:20–24). Stratum I represents ordinary remains (many small houses, three long storerooms near the city gate, and a number of stone-built cist tombs) of the last settlement in the Babylonian and Persian periods. Tel Megiddo was abandoned in the fourth century BCE, possibly when Alexander the Great conquered the region in 332 BCE.

Later Periods. A Jewish village, Kefar 'Otnay, existed south of the site in about 100 CE. During Hadrian's reign (117–138 CE) the Legio II Traiana was stationed there and was later replaced by the Legio VI Ferrata. Kefar 'Otnay, renamed Legio after the occupying force, became the center of an administrative district whose name is preserved in the name of the later Arab village, Lejjun. Schumacher (1908) investigated extensive remains of the Roman and Arab periods, including aqueducts, a theater, tombs, and a possible site of a Roman camp to the south. He also uncovered some late remains, notably an Ottoman watchtower on the east.

[*See also the biographies of Aharoni, Albright, Alt, Dunayevsky, Fisher, Guy, Kenyon, Mazar, Schumacher, Watzinger, and Yadin.*]

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DAVID USSISHKIN

MEIRON, one of four major villages in Upper Galilee (Tetracomia), located just 1 km (1.6 mi.) north of the closest village, Khirbet Shemaʿ, at 750 m above sea level (33°00′ N, 35°27′ E; map reference 191 × 265). The site lies on the eastern ridge of the Meiron range (Jarmaq) and enjoys a plentiful water supply from rainwater (about 75 cm or 30 in. per year) and from the Spring of Meiron in the wadi to its south. The site is not to be confused with Merot in Josephus (*War* 2.573, 3.39), which is located just north of Safed. Rather, Meiron is to be identified with the Talmudic village associated with Simeon bar Yochai. The ruins of Meiron attracted Jewish pilgrims in medieval times, attention being focused on the traditional grave sites of sages and the ruin of the ancient synagogue. The Jewish feast of Lag B'Omer has been celebrated at the site since the thirteenth century CE.

The synagogue ruin was cleared and surveyed by Heinrich Kohl and Carl Watzinger (*Antike Synagogen in Galiläa,* Leipzig, 1916, pp. 80–88) at the beginning of the twentieth century. However, because the synagogue's western wall and floor are cut from natural rock, not much has survived except one of the southern portals (the others were restored by the Israel Department of Antiquities in the 1950s). [*See* Synagogues.] Excavations were sponsored by the American Schools of Oriental Research from 1971 to 1977, directed by Eric M. Meyers. They represent the only systematic work done at the site, which has suffered greatly from modern construction and pilgrimage during Lag B'Omer. The 1971 and 1972 seasons were conducted concurrently with the excavations at Khirbet Shemaʿ. [*See* Shemaʿ, Khirbet.] After 1972, work at Meiron, Gush Ḥalav, and Nabratein was conducted under the framework of the Meiron Excavation Project. [*See* Gush Ḥalav; Nabratein.]

Soundings made up against the eastern closing wall of the synagogue produced limited results. Several rooms or annexes were uncovered with clear debris of the late third century CE and may be associated with the founding of the synagogue structure. Unfortunately, most of the synagogue's architectural elements had been robbed, so that the expedition was only able to alter slightly Kohl and Watzinger's plan. The building is a standard basilica with a portico with two rows of columns running north–south. [*See* Basilicas.] The facade, with three doorways on the south wall, possibly with a Torah shrine, was certainly the wall of orientation, and a gallery for extra seating can be reconstructed from existing architectural fragments. Significant medieval remains once covered the eastern end of the destroyed synagogue, but their poor state of preservation makes it impossible to identify their purpose.

The main focus of the excavation was the domestic areas located considerably downslope on the east, where preservation was better and the depth of debris considerable (2–4 m). Although pockets of Late Hellenistic and Early Roman debris were found, the major periods of occupation were the second–fourth centuries CE, with a clear floruit in the third–fourth centuries. Of special interest in the lower city was the insula, or block, known as MI. In this area a courtyard served as a major open space; it adjoined an interior space used for chores and specific trades (e.g., carpentry, as evidenced by small finds such as a bronze plane). The second story was most probably used as a sleeping space. An earlier ritual bath and cistern(s) also were discovered in this area. [*See* Ritual Baths; Cisterns.] Important details of everyday life, while ample, are difficult to reconstruct fully because of the poor state of preservation caused by extensive rock tumble.

Several houses in the next insula, MII, provided further details of domestic existence in Late Roman contexts. Of note is that a common space apparently connected two distinct units, both of which utilized the site's natural topography to full advantage. In both dwellings in this area, as in

MI, evidence was recovered of a fourth-century abandonment, especially in a sealed room whose contents were apparently purposely charred and set aside (as *hekdesh,* i.e., for the future Temple). The foodstuffs identified were wheat, barley, legumes, *fûl* beans, and walnuts. The courtyard, with an oven in the larger unit, is particularly well preserved. Soundings to the north of the settlement revealed cultivation areas and small field structures that would have been used to store supplies and for other agricultural activities.

The excavation of a tomb farther up the slope and to the west provided numerous small finds, intact pottery, and skeletal remains from the Late Hellenistic, Early Roman, and Late Roman periods. Secondary reburial of remains from *kokhim* or loculi predominate, while important evidence of endogomy was posited from the skeletal remains, suggesting family continuity over a very long period. Fairly extensive pottery remains were uncovered from the cisterns throughout the site. [*See* Burial Sites; Tombs; Burial Techniques.]

The significance of the Meiron excavations is their concentration on domestic/private rather than public buildings. The picture of everyday life revealed is consistent with life in rural, mountainous Upper Galilee. The large corpus of material culture published is one of the major building blocks available for reconstructing daily life in Roman Palestine.

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ERIC M. MEYERS

MEMPHIS, site located on the west bank of the Nile (29°51′ N, 31°15′ E) some 25 km (15 mi.) south of Cairo; one of ancient Egypt's longest-occupied settlements. According to the fifth-century BCE Greek historian Herodotus, Menes (probably best identified as King Aha, first dynasty, c. 3100 BCE), founded the initial settlement of Memphis. The city's occupation continued well after the dynastic period, although the founding first of Alexandria and then Fustat (an area in Cairo) seriously lessened its significance. Originally the town was called the "white fortress" *(jnb ḥḍ),* but during the late Old Kingdom the city acquired its most widely used name, Mennefer *(mn nfr).* The Greeks called it Menophreos, the derivation of the modern name, Memphis. Mennefer, an abbreviation for "(town of) the pyramid of Pepi Merenre," referred to the settlement housing the builders of Pepi I's pyramid at Saqqara, one of several nearby cemeteries serving the local population. Memphis acquired other names, but they generally refer to specific quarters or structures, not to the entire community. Mit Rahina is the name of the modern village nearby.

Memphis was the capital of the first Lower Egyptian nome (province), and during the Old Kingdom, it was the country's only capital. The city was a primary residence of the king and the seat of a vizier. Throughout Egyptian history, Memphis was a great center of political, economic, and religious prominence, even when the royal residence was located elsewhere. Today the archaeological remains of the city are visible only over 2.5 km (1.6 mi.) of floodplain, but ancient Memphis was certainly much larger. Cemeteries as far north as Abu Roash and south to Dahshur contained occupants who had lived in Memphis. The city encompassed civic structures such as palaces, temples, manufacturing zones, a port, and probably markets, as well as private estates with land and clusters of houses with gardens.

Several factors were responsible for Memphis's dominance over other Egyptian settlements. Its location at the apex of the Delta allowed effective control over communication between Lower and Upper Egypt as well as foreign trade. Archaeological and textual remains indicate that Memphis was a prominent religious site. A temple identified with Ptah, the creator god, is known from the first dynasty, and in later times it was the focal point of Memphis. Ptah was a deity of utmost importance, and during the reign of Shabaka (twenty-fifth dynasty, c. 770–657) a text now known as the *Memphite Theology* documents universal creation through Ptah's speech and thought. The priests associated with the Ptah temple were particularly powerful, having responsibilities that included the coronation, the Apis rites, and maintaining the country's archives, including the flood records. These duties, in conjunction with the potency of the Memphite theology, earned the Memphite priesthood a reputation for wisdom and knowledge.

Ptah was part of a triad that included his consort Sekhmet and his son Nefertum. By the end of Egyptian history, the Apis bull, an animal sacred to Ptah, was highly venerated at Memphis. Other important deities with recorded temples, shrines, or monuments at the site include Hathor, Tatenen, Neith, Amun, Sokar, Imhotep, and the foreign divinities, Baal, Reshep, Astarte, and Qudshu (Qadesh).

Flinders Petrie, working for the British School of Archaeology in Egypt between 1908 and 1913, was the first person to undertake an organized excavation of the site's archaeological remains, although the site's importance had been recognized earlier. His work focused upon the large Ptah temple and the palace of Apries. Clarence S. Fisher of the University Museum of the University of Pennsylvania

worked at Memphis between 1915 and 1923. He discovered a large ceremonial(?) palace with much of the layout and wall decoration still preserved, dating to the reign of Merneptah. Fisher also seems to have excavated extensively (approximately 3000 sq m [32,283 sq. ft.]) among the settlement strata, but little has been published. [*See the biographies of Petrie and Fisher.*]

Rudolph Anthes, also of the University Museum, and John Dimick worked for two seasons at Memphis (1954–1956) and mapped extensively (Anthes, 1959, 1965). The Egypt Antiquities Organization (EAO) excavated the remains of shrines belonging to Sety I and Rameses II, the embalming house of the Apis bulls, and thirteenth dynasty tombs of the high priests of Memphis. Later, between 1982 and 1986, a team from New York University further explored the embalming house.

In 1982 to celebrate its centenary, the Egypt Exploration Society (EES) of London commenced a survey and test excavations at Memphis under the direction of David Jeffreys and Harry S. Smith (Jeffreys et al., 1983–1993). The principal goals of this ongoing project are to produce a detailed map of the city, investigate the site's history, record both new and previously discovered monuments and inscriptions, and develop an understanding of the damage caused to the archaeological remains by the local environment. These excavations have identified settlement strata from the Middle and New Kingdoms, and coring has allowed the archaeologists to develop a better understanding of the eastern shift of the settlement reflecting the Nile's changing course, which is now more than 3 km (2 mi.) away from the site.

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DIANA CRAIG PATCH

MERIMDE. In 1928, archaeological survey along the Nile Delta's western margin northwest of Cairo located a prehistoric site (30°19′ N, 30°51′ E) now known as Merimde Beni Salame, or Merimde. Against a background of small hills, Merimde sits on a low sandy rise overlooking the Delta's floodplain, adjacent to the Rosetta branch of the Nile River. The Viennese Academy of Science sponsored the initial work at Merimde under Hermann Junker (1928–1935); Josef Eiwanger (1977–1983) conducted later excavations for the German Archaeological Institute in Cairo.

The site encompasses a large area, approximately 20–25 ha (50–62 acres) of which only about 7,500 sq m (80,700 sq. ft.) have been exposed. It is unlikely that the entire site was occupied at any one time, making population estimates difficult. A previous estimate of sixteen thousand inhabitants is unlikely, and even a more reasonable estimate of 900–1300 people is still large for a Neolithic village (Hoffman, 1979; Hassan; 1988).

Merimde's roughly 2-meter-deep deposit consists of five levels (I–V), covering at least four hundred years (c. 4800–4400 BCE), and perhaps as much as one thousand years (c. 5200–4100) of occupation. The first two layers are discontinuous; the last three are defined by differences between assemblages. The cultural assemblages found in these layers have not been identified at any other site, although some artifact types have parallels in Faiyum A sites, at el-Omari, and in the earliest levels at Buto.

Merimde's inhabitants practiced a mixed economy of hunting, fishing, and agriculture. Plant remains include do-

mesticated emmer wheat, barley, lentil, and fodder vetch. Individual houses had granaries that were often lined with baskets or matting. Meat came from domesticated animals, especially pigs, and also cattle, sheep, goat, and wild animals including hippopotami, crocodiles, and antelopes (?). Remains of other Nile fauna, such as fish, turtles, and freshwater mussels, have also been recovered.

The earliest occupation (I) produced sparsely scattered, insubstantial structures whose outlines suggest that they may have been houses and windbreaks. In the next level (II), the oval and horseshoe-shaped houses were made from wooden poles, covered by woven materials and possibly skins. The latest levels (III–V) contained small, sturdy, semisubterranean structures of straw-tempered mud. A step, made from a hippo tibia or wooden post, allowed easy access to the interior. These houses also contained a hearth and a large water jar. Placed side by side, these dwellings enclosed the living space, and in some locations, their layout suggests that communal passageways had been included in the settlement's design. Burials, principally of women and children, have been found scattered throughout the site, probably in abandoned sections of the settlement. They have few grave goods.

Polished wares dominate the ceramic finds, although the upper levels produced large quantities of coarse wares. A variety of lithic tools have been recovered, including arrowheads, knives, sickle flints, and axes. Bone and ivory tools are also common, but personal objects, such as statuettes, representing humans or animals, and jewelry are rare.

The earliest level (I), whose most distinctive feature is pottery decorated with an incised herringbone motif, has a blade assemblage corresponding strongly to material found in Pottery Neolithic A sites in Palestine. Pear-shaped maceheads, slings, semisubterranean houses, and flaked axes in later levels may also illustrate Palestinian contact. Other objects, however, suggest early ties to Saharan cultures.

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DIANA CRAIG PATCH

MEROË (ancient Bedewe/Medewe), site near modern Begrawiya (Northern Province, Sudan), the earliest large-scale city known in Africa outside of Egypt (16°54′ N, 33°44′ E). A substantial town under the Napatan rulers of Nubia (c. 760–270 BCE), Meroë became the royal, administrative, and religious capital of the Meroitic kingdom (270 BCE–350 CE). Mentioned by Herodotus and other early writers, Meroë was accurately located by James Bruce (1722) and archaeologically identified by John Garstang's excavations (1909–1914). The only subsequent excavations of significance were Peter Shinnie's (1965–1985), but from 1920 to 1923 George Reisner excavated Meroë's royal cemeteries, lying east of the city. Earlier Giuseppe Ferlini recovered spectacular examples of Meroitic royal jewelry (in gold and semiprecious stones) from one of the pyramids. The treasure was hidden in the upper part of a 31-meter-high stone pyramid, which Ferlini almost completely demolished in a fruitless search for additional treasure. [*See the biographies of Garstang and Reisner.*]

Several factors made Meroë a central place. It lay on the Nile, a major commercial and strategic route and, enjoying significant rainfall, possessed substantial agricultural and grazing lands. Significant local resources included sandstone for buildings, iron ores for the extensive smelting industry at Meroë, and clay deposits for pottery. Most importantly, Meroë was the node for far-flung trade and military routes linking Nubia to Egypt and the Mediterranean; to the Gezira (between the Blue and White branches of the Nile River); and to the wealthy trading kingdom of Axum (in modern Ethiopia) and the Red Sea. [*See* Axum.]

Founded by 1000, Meroë expanded significantly around 590; the earliest-known inscriptional reference dates to the Napatan ruler Iriki-Amanote (c. 431–405). Meroë may have been a—or even *the*—royal residence in Napatan times, but no rulers were buried nearby until Arkamaniqo (Gk., Ergamenes) about 270–260. Thereafter, Meroë flourished, remaining the royal burial ground until the end of the Meroitic state (350 CE); occupation may have continued, but ultimately the site was completely abandoned.

Meroë city occupied about 2.59 sq km (640 acres or 1 sq. mi.). On the west, a large stone-walled enclosure sheltered several palaces and ancillary buildings and abutted on its east a much-renovated and expanded temple to Amun, an Egyptian god long taken over by the Nubians. Extremely large (137 m [450 ft.] long), the temple included a colonnaded court; columned halls; and a sanctuary. A processional route led to a so-called Temple of the Sun outside the city; this temple was an enclosed area containing a single-chambered cult building surrounded by a colonnade. Both

MEROË. Figure 1. *Pyramid field at the site.* (Frédéric Caillaud, *Voyage à Méroë,* Paris, 1826)

stood on a platform. (To the city's southeast was a temple of Apedemak, a lion-headed Nubian deity). Smaller cult-structures flanked the processional route, including a temple that had been perhaps renovated to house a life-sized bronze statue of the Roman emperor Augustus. The Meroites had plundered the statue from Aswan in southern Egypt in 23 BCE.

Sprawling east of the royal enclosure were extensive agglomerations of residential zones and industrial and manufacturing areas. Deposits of slag from iron smelting are conspicuous along the city's eastern edge, and a cavelike quarry produced kaolin for a distinctive, white-fabric pottery. Other typical ceramic types included handmade black wares; a statistically dominant wheel-made brown ware for domestic purposes; and imported fabrics.

Meroë's burial grounds are rich and important sources of information. Immediately east of the city lie three discrete cemeteries; the northernmost dates to about 100 BCE–200 CE. The two others are later. Most graves were marked by a mound of sand or gravel, and were for relatively prosperous people. The commoners' cemeteries perhaps remain to be found.

Farther east, three other cemeteries are arranged in a triangle. The western cemetery (between the others and the city) included pyramid tombs of lesser royalty, and the northern and southern held the pyramid tombs of virtually all Meroë's rulers after Arkamaniqo (see figure 1). Other graves, marked by pyramids, mastabas (benchlike superstructures) or mounds were for queens, princes, and members of the elite. Pyramids, which were built of stone masonry, later of brick or rubble, often had an attached chapel (those of the kings were embellished with a pylon, a double-towered gateway in Egyptian style). Chapels were provided with scenes and texts of a funerary nature. Despite severe plundering, the surviving traces of royal and elite wealth are astounding. Hoards of golden jewelry have been found, as well as a wide range of imported objects (especially from Egypt and the Mediterranean), some of superb quality.

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DAVID O'CONNOR

MERRILL, SELAH (1837–1910), American clergyman, archaeologist, and diplomat; active promoter of biblical archaeology in the United States. Born in Canton Center, Connecticut, Merrill was educated at Yale and ordained at the Yale Divinity School. After service as a Union chaplain in the Civil War and as a minister in New York and California, he studied Semitic languages at the University of Berlin (1868–1870) and traveled widely in Egypt, Syria, and Palestine. In 1874, he was appointed archaeologist for the second expedition of the American Palestine Exploration Society (APES); he assumed command after the resignation of the expedition's leader, James C. Lane.

During three long excursions through Palestine and Transjordan, Merrill supervised the collection of hundreds of archaeological, ethnological, botanical, and geological specimens and directed the preparation of a rough map of ancient sites in the ancient kingdoms of Ammon and Moab. Though this work fell far short of the standard established by the British Palestine Exploration Fund in its Survey of Western Palestine, Merrill's popular account of the American explorations, *East of the Jordan* (1881), was well received by the general public.

After the disbanding of APES, Merrill briefly joined the faculty of the Andover Theological Seminary. Through family connections, he was appointed U.S. consul in Jerusalem in 1882 and served in that position during every Republican administration until his transfer to British Guiana in 1907. In Jerusalem, Merrill continued his collecting activities and became an outspoken critic of the historical traditions connected with the Church of the Holy Sepulchre. His book on the subject, *Ancient Jerusalem* (1908), is an early attempt to reconstruct the topography of Herodian Jerusalem and identify the location of its walls through archaeological finds.

Merrill sold his large collection of Palestinian antiquities and natural specimens to the Harvard University Semitic Museum in 1896. He was also an active supporter of the American School of Archaeology in Jerusalem, established in 1900 as the first major overseas enterprise of the American Schools of Oriental Research.

[*See also* American Palestine Exploration Society; American Schools of Oriental Research.]

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NEIL ASHER SILBERMAN

MEṢAD ḤASHAVYAHU, fort located on the *kurkar* (sandstone) ridge south of Yavneh-Yam, about 100 m from Israel's Mediterranean coast (map reference 1207 × 1462). The site is not identified with any place known from historical records. It received its name in modern times after an ostracon inscribed in Hebrew with the name Ḥashavyahu was found in the first season of excavation at the site. Subsequently, in 1960–1961, Joseph Naveh conducted two seasons of excavations there. A third season, a rescue dig following damage to the site, was carried out in 1986 by Ronny Reich on behalf of the Israel Antiquities Authority.

The fort is L-shaped in outline; its maximum measurements are 77–95 m. It is surrounded by a wall about 3.2 m thick that is strengthened by exterior buttresses. A single gate on the west, protected by two towers, faces the sea. Except for the gate area, the fort represents a single stratum of construction, pointing to a short period of occupation. It is dated by its pottery to the last quarter of the seventh century BCE. Raised floor levels in several rooms in the gate area indicate a second, partial occupation in the Early Persian period, however. The fort's large western area was found to be almost devoid of buildings, except near the gate and abutting it from the inside. This part of the site is situated on a relatively steep slope, and the *kurkar* is exposed over almost all of it, so that it is possible that any early construction was washed into the sea by winter rains. The eastern area is divided into three blocks by two parallel alleys; each block is further subdivided into seven buildings. It seems that the eastern part of the fort was carefully planned to accommodate these blocks of buildings. The perimeter wall and the buildings are of mud brick on a foundation of *kurkar* stones; the gate and towers are constructed entirely of *kurkar.*

Two groups of pottery vessels were found: local Judean pottery (cooking pots, storejars, and juglets) and pottery that had originated in the Aegean world. The latter includes vessels containing a large amount of mica grit, used in the temper mixed with the clay, a characteristic element in Greek pottery. This group also includes typical Greek shapes, such as skyphoi and amphorae, and objects decorated in the Wild Goat style. Chunks of hematite ore, an unusual find, were discovered in several places on the site. Sir William Flinders Petrie reported similar finds in his excavations in the Nile Delta, at Daphne and Naukratis, that clearly belonged to their Greek inhabitants (for citation, see Reich, 1989, p. 232).

The rather large quantity of Greek pottery, relative to the amount of Judean pottery, and the presence of foreign iron ore raise the question of the use of the site and the reasons for a Greek presence here. Although Greeks were active in establishing merchant colonies in the Mediterranean at the time, it seems more likely that the Greeks here were mercenaries hired by the Judean king Josiah. Meṣad Ḥashavyahu would then offer clear evidence of Josiah's successful attempt to enlarge the kingdom of Judah to the west.

Several Hebrew ostraca were found near the gate area. [*See* Ostracon.] As noted above, one bears the name *Hashavyahu,* after which the site was named in modern times. The other names all indicate inhabitants from Judah. A document of special importance is a fourteen-line ostracon, also written in Hebrew, found in the guardroom at the gate. It is a letter or petition written by or on behalf of a worker em-

ployed in the vicinity for the harvest. The worker complains that as a punitive action his garment was confiscated—an action biblical law prohibits (*Ex.* 22, 26–27). An exhaustive bibliography on the reading and interpretation of this document has accumulated since its discovery.

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RONNY REICH

MEṢAD ḤASHAVYAHU TEXTS. During two campaigns in 1960 at the site of Meṣad Ḥashavyahu, located approximately one mile south of Yavneh-Yam, Israel, seven Hebrew inscriptions were discovered: one group of seven ostraca belonging to what was originally a single document, five other individual ostraca, and an inscription originally incised on the shoulder of a jar (Naveh, 1960, 1962). Among the same finds was a stone weight inscribed only with symbols. The modern name of the site was assigned on the basis of the appearance of the name *ḥšbyhw* in the incised inscription.

The most important of these documents is the first mentioned, for it is comparatively well preserved and of great historical interest. Its fifteen lines contain the plea of a harvest worker *(qṣr)* whose garment *(bgd)* has been confiscated by a certain Ḥawsha ʿyahu ben Shobay, otherwise unidentified. The plea is addressed to a local official *(śr)*, who goes unnamed, in standard inferior-to-superior phraseology ("May my lord the official hear the word of his servant . . ."). The worker claims that he has fulfilled his quota and that he has committed no wrong; he asks the official to have his garment returned either for these reasons or out of pity. In spite of some difficulties in interpretation, the language of the inscription is essentially that of the Judean Hebrew inscriptions (e.g., those from Arad and Lachish) and is closely related to standard biblical Hebrew.

The primary unresolved questions about the document are literary and sociohistorical. The document was first identified as a letter, but because of the absence of epistolary formulae that identification has either been qualified (Pardee et al., 1982, p. 23) or rejected (Smelik, 1992). There is general agreement on identifying it as a plea; the question is whether the form of the plea is epistolary. If the definition of a letter as "a written document effecting communication between two or more persons who cannot communicate orally" (Pardee et al., 1982, p. 2) be accepted, the document may qualify as a plea in epistolary form. It is in any case doubtful that a plea should constitute a literary category on the same level as a letter.

Joseph Naveh, the editor of the inscription, hypothesized that all of these documents should be assigned to the time of Josiah and be taken as evidence for a previously unrecorded Judean control of the coastal area (Naveh, 1960, p. 139), an opinion that became widespread in works on the history of the late seventh century BCE. In recent years, however, other origins have been proposed for the texts—for example, a Judean occupation under Jehoiakim (Wenning, 1989) or Judean mercenaries serving in an Egyptian fortress (Naʿaman, 1991, 44–47). Tied in with the political question are issues regarding the precise position of the *śr* (local governor or military or administrative official?), of the harvest worker (servant, slave, corvée-worker?), and of the one who seized the garment (directly under the *śr* or in another chain of command?). The biblical parallels for the required return of a confiscated garment (*Ex.* 22:25–26; *Dt.* 24:12–15, 17) raise the question of how widespread the requirement may have been.

[*See also* Yavneh-Yam.]

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DENNIS PARDEE

MESHA INSCRIPTION. *See* Moabite Stone.

MESKENE. *See* Emar.

MESOPOTAMIA. [*This entry provides a broad survey of the history of Mesopotamia as known primarily from archaeological discoveries. It is chronologically divided into four articles:*

Prehistoric Mesopotamia
Ancient Mesopotamia
Mesopotamia from Alexander to the Rise of Islam
Mesopotamia in the Islamic Period

In addition to the related articles on specific subregions and sites referred to in this entry, see also History of the Field, *article on* Archaeology in Mesopotamia.]

Prehistoric Mesopotamia

The geographical area that will be treated in this article roughly corresponds with the territory of modern Iraq, where in the middle of the fourth millennium the southern part (Babylonia) and slightly later, the northern part (Assyria) became the scene of the emergence and development of Mesopotamian urban civilization. In the earlier periods, however, Mesopotamia was tied to larger developments in the Near East, in particular in Syria, Anatolia, and Iran. For the beginning of the domestication of plants and animals, of sedentary life, the evidence is better documented in other areas. The scant material recovered in Mesopotamia's northeastern mountain zones suffices only to show that people did live there and took part in the general cultural changes.

For the early millennia the carbon-14 dates used for all of the Near East are not always reliable. However, because the many dates available for the end of the Aceramic Neolithic seem to converge at about 6000 BCE, this may be a relatively secure anchor. It is only with the last cultural phase that will be discussed, the Late Uruk period, that through close parallels with early Egypt, dates become more stable, placing the end of the Uruk period at about 3100 BCE. The dates used in this discussion are at present the ones most commonly accepted.

Ecologically, Mesopotamia is highly diversified. The north and northeast share with other regions of the Near East those features that made possible the domestication of plants and animals and the controlled migration patterns that led toward sedentary life: highly adaptable, and thus domesticable, plants and animals and small-scale environments with sharp differences in climate and thus in different exploitable flora and fauna. The region's landscape forms (topography) range from narrow valleys in the high mountains to small plains in the piedmont to the alluvial plain. Thus, each level of agricultural ability found its appropriate landscape: mountain valleys are surrounded by a diversified environment, permitting survival by food gathering when agriculture failed; at the other end of the spectrum, the alluvial plain was open to those agricultural specialists who accumulated profound experience over thousands of years. The existence of an ever more demanding topography to challenge people, whenever their experience and resourcefulness rose to a point where higher social and economic risks could be faced, seems largely responsible for the continuity of early development in Mesopotamia and throughout the Near East.

Life is determined by the accessibility of water. Like hunters and gatherers early agriculturalists also depended upon areas with sufficient rainfall. Techniques of supplying additional surface water to enhance the growth of plants became necessary once advanced experience allowed the occupation of areas that were larger and more fertile but had less stable rainfall patterns, or never got enough rain. [*See* Irrigation.] The accessibility of water divides Mesopotamia. While a large part of Assyria lies in an area of sufficient precipitation, agricultural production in Babylonia depends entirely on an artificial supply of water.

The area's paleoclimate has been shown on average to have been similar to today's, but with shorter or longer deviations. While the fifth millennium seems to have been moister than average, another change, resulting in a slightly cooler and dryer climate, seems to have begun in the mid-fourth millennium and probably became influential in the formation of early urban society toward the end of that millennium.

Paleolithic and Epipaleolithic Periods. Evidence for the presence of paleolithic life in Mesopotamia is scarce but exists and, as elsewhere, is restricted to the mountainous zones. Best known is the Shanidar cave, with its burials of Mousterian Neanderthal-type humans. [*See* Shanidar Cave.] Stray finds dating to this period as well as to the Upper Paleolithic (the local name for the period in the Zagros Mountains is Zarzian) attest to its presence throughout the mountain ranges. From about 16,000 BCE onward (the Epipaleolithic period), flint tools tended to become more specialized, while the diet became more diversified perhaps a result of more efficient tools being used in hunting and gathering. In the Zarzian period, at the Shanidar and Zarzi caves, eastern Anatolian obsidian appears, attesting to long-distance contacts.

Aceramic Neolithic (c. 9,000–7,000 BCE). Sites showing the salient features of the Neolithic: incipient domestication and sedentarization, but no pottery, are few in Mesopotamia and lack the sequence of layers that would allow a sketch of the cultural development between the Epipaleolithic and the Pottery Neolithic. There is only Jarmo, with its aceramic layers beneath early pottery ones, that testifies to the latest part of that time-span. By that time, food production was already well advanced, and there is no doubt about an all-season occupation. In every respect, aceramic Jarmo is part of the greater Zagros horizon. [*See* Jarmo.]

Pottery Neolithic (c. 7,000–6,000 BCE). The best representative for the Pottery Neolithic part of the greater Zagros development is also the site of Jarmo. As elsewhere, the

introduction of pottery vessels is not accompanied by major changes in the tool kit or the diet. Pottery, with its ability to adapt to minute changes in taste or needs to differentiate, and its ubiquity, henceforth becomes an indispensable tool in comparing or contrasting temporal and spatial cultural entities through similarities in shape and decoration.

Although basal Umm Dabaghiyeh, southwest of Mosul, seems to be contemporary with Pottery Neolithic Jarmo, other sites, like Hassuna or the lowest levels at Tell Soto, Matarrah, Shamshara, and Nineveh begin later. [*See* Hassuna; Nineveh.] In contrast to the others that still lie in hilly (ecologically diversified) terrain, Nineveh is the first lowland site, settled in the area of rain-fed agriculture. [*See* Agriculture.] Multiple storerooms combined with the evidence from paleobotanical and paleozoological analyses, seem to indicate that Umm Dabaghiyeh was a specialized hunting place; too little is known of the other sites to be more specific.

Ḥalaf (c. 5,500–5000 BCE). While the eponymous site of Ḥalaf lies in modern Syria, the area in which this specific kind of pottery is found also includes the northwestern part of Mesopotamia. [*See* Ḥalaf, Tell.] In fact, the finest specimens come from the site of Arpachiyah, northeast of Mosul. Other sites settled in this period are Yarim Tepe and basal Tepe Gawra. [*See* Tepe Gawra.] Pottery production reveals an advanced technology in the Ḥalaf period: the firing process could be controlled. The result was a firing-induced polychromy and lustre, on complex shapes with carinations and pedestals.

In architecture, besides small, multiroomed dwellings round structures are found that often have a long-rectangular antechamber attached. No public buildings of character can be singled out either by size or plan in this period. In the art of the Ḥalaf period animal figurines seem to strive for realism whereas human figures are abstract in style. Peculiarly shaped clay "counters" and stamps with linear incisions are part of the Ḥalaf cultural horizon. They indicate a kind of economic situation where it was necessary to keep records and mark items as personal property.

Samarra (c. 6,000–5,000 BCE). Unlike Ḥalaf, the Samarra cultural horizon is more confined to Mesopotamia, though Baghouz on the Syrian Euphrates, close to the Iraqi border, and Chogha Mami on the Iranian piedmont zone of the Zagros mountains indicate a possibly larger distribution. The few instances of the overlapping of the two zones do not allow greater specificity beyond indicating that these entities were contemporaneous, at least partially. The Samarra ceramic assemblage shows a matt painting on mostly simple, open shapes. The pottery is completely different from that of Ḥalaf, as is the architecture. Houses that are similar in size and plan prevail; they are large enough to be called dwellings of extended families, which may indicate a higher level of division of labor and social stratification than seen before or at contemporary Ḥalaf. There are again, however, no indications of public buildings. Small decorated statuettes of humans and animals in stone or clay were found both in the houses and private graves. [*See* Grave Goods.] It is only at Tell es-Sawwan in the area of Samarra that a wall and a moat were found surrounding the settlement. However, as yet no other settlement of the period has been explored as extensively as Samarra. [*See* Samarra.]

Eridu and Hajji Mohammed (c. 6,000–5,000 BCE). So far, all cultural developments have occurred either in the mountainous zones or in those areas in which rain-fed agriculture was possible. There is no indication that up to this point the southern plain took part in the steps toward sedentary life. The pottery found on a site close to Uruk (Uruk-Warka Survey no. 298) and matched by pre-Eridu material from basal Tell el-'Oueili, southeast of Larsa, is contemporary with Samarra, as is the material from the lower parts of the sequences at Eridu and Tell el-'Oueili. The corpus is enriched for the later part of the period by pottery from the short-lived Hajji Mohammed, southwest of Uruk. [*See* Uruk-Warka; Eridu; 'Oueili, Tell el-.] Initially using simple, mostly open shapes the phase of Hajji Mohammed pottery adds a sharp carination to deep bowls, reminiscent of Ḥalaf shapes. Patterns of painted decoration, however, differ from both Ḥalaf and Samarra pottery. The Eridu–Hajji Mohammed sequence is seen as contemporary with Ḥalaf/Samarra. To date, the occurrence of Eridu pottery is restricted to the extreme south of Mesopotamia and only the Hajji Mohammed pottery from Ras al-Amiya, south of Kish, suggests a larger distribution.

The areas excavated at Eridu/Hajji Mohammed were too small to reveal any architectural contexts, except in the temple sounding at Eridu where, in the second-lowest layer, a small freestanding square building was found. In the next phase, it received a niche opposite the entrance, which is usual for shrines in later Mesopotamian tradition. Measuring barely 3 × 3 m, it may not be a public building; but neither is it a dwelling. The level of subsistence and the economy more or less equal that of the contemporary periods in the north.

Ubaid (c. 5,000–4,000 BCE). Wares similar to those first identified in southern Babylonia at Ubaid, Ur, Eridu, and Uruk were subsequently found over large areas of the Near East. Simple open and closed forms bear a dark, monochromatic decoration of multiple concentric bands alternating with geometric designs like hatching, wavy lines, and garlands. The patterns were applied to the vessel rotated on a pivotted platform. Early wares with the full range of this complex decoration (Standard Ubaid) are followed by vessels with simplified designs, often restricted to one or two concentric bands (Late Ubaid). Because such elements are already found in the Eridu/Hajji Mohammed assemblages, Ubaid pottery is assumed to be a sequel to those groups, and hence, a native development of Babylonia.

The sequence of temples at Eridu is continued in the

Ubaid period. Temples were set on platforms for the first time. A central space was expanded with subsidiary rooms, indicating a specific order for the rituals conducted in it. Platforms in front of a niche in the rear wall may have served as altars (cf. the similar so-called Anu-Ziggurat at Uruk). [*See* Ziggurat.]

The architecture at Tell Abada in the Hamrin dam salvage area differs markedly from that attested in earlier periods. The houses are of the Central Hall type (irregular smaller rooms attached to an elongated space) beginning a tradition found systematized in the large so-called temples of the Late Uruk period at Uruk-Eanna. A central building with a similar configuration was found, but because of its size and artifacts, a cache of clay counters, it may have been used for economic activities. As in the earlier periods, artistic expression is confined to small figurines of animals and erect humans.

To the north, at Tepe Gawra, east of Mosul, levels containing pottery resembling that of the Ubaid period were found overlying Halaf levels. Although the shapes differ from those found in the south, as do the paste and the basic color, they share the principle of rotary decoration: their Ubaidlike appearance may be the result of a transformation of the local tradition by means of the new technique for applying decoration to a rotating vessel. This development shows a similar problem awareness, as this new technique certainly was an answer to a mutual challenge by the growing division of labor.

The architecture at Tepe Gawra uses the same type of central hall structure as the main component of what seems to have been large compounds composed of sheds and storage facilities. No public building was immediately evident, and a large round structure situated inside the habitation area remains enigmatic.

Early Uruk (c. 4,000–3,500 BCE). Though presumably of major importance, the Early Uruk phase is known only from a deep sounding at Uruk with limited exposures; hence, no broad architectural context was recovered. At first, this phase seems to mark only the rather sudden fading of Ubaid-style painted pottery and the emergence and rapid increase in the use of unpainted pottery made largely on the true potter's wheel, which enabled a different set of vessel shapes.

Late Uruk is the first urban civilization. It features monumental buildings and art, a high level of economic and political organization and the first script. These features were not present in late Ubaid. Yet, when they appear they are fully developed, without a sign of initial hesitation, so that the basic steps must have taken place in the Early Uruk phase.

Although not much has been recovered in excavations, Early Uruk pottery is an established entity identified in archaeological surface surveys, like Late Uruk. Based on such data, a major increase in settlement activity is noted in middle, and probably northern, Babylonia in the Early Uruk phase; the southern region, notably the hinterland of Uruk, remained at the low level of settlement activity of the Late Ubaid. Unfortunately, none of these Early Uruk sites has been explored.

In the northern part of Mesopotamia, the Ubaid pottery tradition passed over into local developments without apparent ties to the south. This is demonstrated by the stratigraphic sequence of Tepe Gawra, which, because it was excavated on a large scale, revealed some interesting architectural features. Of particular importance is a rectangular square surrounded by four public structures, that, on the basis of contemporary structures at Eridu, proved to be temples. Most conspicuously, this square occupies a quarter of the surrounding habitation area. Its size indicates that it was more than the center of the settlement. It is thus assumed that this central feature served a large surrounding area suggesting the existence of a structured settlement system.

Late Uruk (c. 3500–3100 BCE). A full array of archaeological evidence becomes available in the latest phase of the Late Uruk sequence at Uruk, or, in archaeological terms, in level IVa of archaic Eanna. Excavated on a large scale, Eanna features a number of monumental public buildings. Thousands of fragments of clay sealings and written tablets found there proved to be the means of control for an expanding economy. This area is characterized as the seat of a central economic (and political?) administration. [*See* Seals; Tablet.]

In order to provide a growing number of administrators with personalized seals, the stamp seal was replaced by the cylinder seal. Its larger surface increased the artistic range of the designs. Most written documents dealt with the transactions of a powerful economic administration. The complexity of those transactions is amply illustrated in the contents of the tablets: large herds of animals had to be supervised; thousands of units of barley had to be booked as either entering stores or handed over to someone. Monthly and yearly accounts were computed from daily records; there was traffic between various departments, as the brewing department had to calculate how much barley or groats it needed for so many liters of beer in order to place the proper request with the barley and groats store; and thousands of employees received daily rations of barley, using the mold-made bowls, known as beveled-rim bowls, that turn up by the thousands at every site, a usage illustrated by the pictorial sign for "allotment" composed of the bowl's image with its characteristic rim and a stylized human head.

Simpler media had prepared the way for cuneiform script, a versatile means of storing information which turns up by Uruk IVa or slightly earlier. [*See* Cuneiform.] Thus, tablets are found incised with numerical notations that record quantities only—from Chogha Mish in Khuzistan and Jebel Aruda and Habuba Kabira (South) in Syria. [*See* Habuba Kabira.] In addition to the information on numbers, the sealed clay balls yielded information on the individual re-

sponsible via the seal employed. An expanding economy needed a better means of administrative control, which made the rapid disposition of a writing system desirable. [*See* Writing and Writing Systems.]

Lists of words and signs mark the effort to order the universe. They are as much precedents of later Babylonian science as are the calculations of field sizes for later mathematics. The stratification of society in the Late Uruk period is illustrated both by a list of titles and professions arranged in ranking order and in pictorial scenes like the one on the cult vase from Uruk, now in Baghdad. Fragments of major works of art, including nearly life-sized statues of individuals, probably date to the Late Uruk period although they were found in later dumps only. In the shaping of these innovations within the 250–300 years of the Late Uruk period a considerable acceleration of a process can be seen that resulted in the expansion of Uruk to cover an area of at least 2.5 sq km (1.5 sq. mi.), making it the center of a settlement system of more than one hundred settlements in an area that previously had only eleven.

The shift to a dryer climate in the fourth millennium (see above), may have lessened the amount of the flooding of the rivers and the size of the marshes. The opening of the alluvium to large-scale settlement resulted in an unprecedented population density that accelerated the process of developing organizational means to cope with the social and economic problems that ensued. Apparently, one outcome was strict hierarchization, on the level of settlements (centers; settlement systems), of economic and political administration, or on the social level.

Local traditions had prevailed in northern Mesopotamia during the Early Uruk period, until, by Late Uruk, some settlements had adopted the Babylonian Late Uruk set of traditions, its pottery (including the ration bowls) and the use of cylinder seals. Architectural contexts are lacking because of limited excavation and insufficient evidence; yet where there has been a larger exposure at sites as in modern Syria, the architecture exactly matches Babylonian models. This adoption is part of a larger process in which Babylonian urban features spread into neighboring regions. Even Egypt produced cylinder seals and niched facades, like those found in Buto/Tell Fara'in, demonstrating a close link between Late Uruk and predynastic Egypt. Urban civilization was the culmination of a long period of development toward higher forms of social, economic and political organization. The Late Uruk period also marks the beginning of the long life of Mesopotamian civilization, characterized by splendid creations in the fields of art, literature, architecture, and the sciences.

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HANS J. NISSEN

Ancient Mesopotamia

Shortly before 3000 BCE, the first stage of urbanization was completed with the formulation of the innovations and institutions that henceforth would characterize Mesopotamian civilization. Whereas before, Babylonia and Assyria had participated in the cultural development of the larger Near East, including notably the west Iranian (Zagros) mountains, in the Uruk period, Babylonia took a markedly different turn,

eventually followed by Assyria. For some centuries to come, the pace of development accelerated in Babylonia until, in the mid-second millennium BCE, a balance of power was reached again between the various forces in the Near East. As a consequence, Babylonia relinquished its role as the driving agent. By the first millennium, empires were formed that reached even beyond the Near East proper.

While the shift to a slightly dryer climate in the fourth millennium seems to have had no consequences for northern Mesopotamia, the danger of flooding was reduced in Babylonia, in the south. In the large-scale occupation that ensued, daily life came to be described as urban. In the beginning, there was enough water alongside the fields to irrigate without canals; however, the continuing decrease in water for another millennium made it necessary to built canals to feed the areas then left dry. [*See* Irrigation.] However, because increasingly all water was used to irrigate, leaving no excess to wash away the natural salts of water and soil, irrigation had the effect increasing salinization of the soil. By the end of the third millennium, both water shortage and salinization, plus the population increase, had in created an economically tense situation. Ecological conditions seem to have ameliorated in the second millennium. The center of power shifted to northern Babylonia, accompanied by neglect of the hydraulic systems of the south. The result was a permanent loss of power in the south, except for some enclaves along the Euphrates River.

Because ethnic groups in antiquity can be identified only through their language, the bearers of early cultural development in Mesopotamia and the Near East remain anonymous. Early writing does not help identifying ethnic affiliation because texts largely employ word signs that could be read in any language. Not until either grammatical elements are written pointing to a particular language, or signs are used with their phonetical value can there be certainty about the language expressed. This stage was reached in mid-third millennium BCE texts from Babylonia. They represent a language whose main element was Sumerian with an admixture of words from other languages. [*See* Sumerian.] Texts from Ebla from the same period are the first to make full use of the potential of employing signs with their phonetic values. [*See* Ebla Texts.] From this time onward, the representation of bound language enabled the composition of texts other than economic records. [*See* Writing and Writing Systems.] Later in the third millennium speakers of Semitic languages under the various designations of Akkadian, Babylonian, Amorite, Assyrian, and Aramaic dominated the scene. Speakers of other languages, such as Kassite and Hurrian, at times played a greater role in political life, but like the Old Iranian of the Achaemenids, the languages never succeded in matching the political influence of their speakers. [*See* Akkadian; Aramaic; Hurrian.]

Jemdet Nasr/Early Dynastic (c. 3100–2350 BCE). Though additional data come from Jemdet Nasr, Nippur, and the Diyala region, Uruk remains the best source for the turn from the fourth to the third millennia. [*See* Jemdet Nasr; Nippur; Diyala.] There, a huge terrace is built to incorporate the former Anu Ziggurrat while in Eanna, instead of large buildings on ground level, a single platform, presumably surmounted by a temple, surrounded by auxiliary buildings, marks the center. [*See* Ziggurat.] This internal realignment did not affect other aspects of society, such as writing which in the style of the script and arrangement on the tablets, shows that it was responsive to the need for easier usage and fuller representation for more complex problems. [*See* Tablet.] Such tablets were also found in northern Babylonia at sites such as Jemdet Nasr and those in the Diyala region. These discoveries point, at least in this phase, to widespread economic and cultural uniformity in Babylonia.

Within at most two hundred years, by Early Dynastic I, Uruk had more than doubled its size, to cover almost 6 sq km (4 sq. mi.) within the new city-wall and beyond. In general, fewer but larger settlements housed an increased population, until by the later part of the Early Dynastic period, the number of large cities had grown at the expense of rural settlements. This population shift must have enforced pressure to enhance the existing rules of administration and conflict management in order to ensure orderly everyday life. Thus, among the texts, which subsequently were no longer confined to economic data, legal procedures are found treated in a way that presupposes a long consolidation phase. According to royal inscriptions the excessive growth of cities resulted in territorial conflicts between the various city-states ruled by local dynasties. For the first time, the representation of a bound language allows Sumerian to be identified as the language of the texts.

Fabulous wealth, including many exotic materials, is shown by the grave gifts in the royal tombs of the cemetery at Ur. [*See* Ur; Grave Goods.] Prosperity, however, was not confined to the ruling class, as indicated by the find in Eshnunna and Khafajeh of hundreds of stone statues buried alongside small neighborhood shrines, where they originally had been placed in supplication by donors. [*See* Eshnunna; Khafajeh.] Apparently, ordinary people could afford to treat themselves to statues of imported material.

Based on a number of texts, a form of government has been suggested in which the city god was the actual ruler and the king his earthly substitute. Probably, however, this was only a local form since all evidence comes from texts from a single city (Lagash), pertaining only to a limited number of years. Yet, there certainly was more variation, both contemporaneously and before. Increasingly local rulers attempt to control larger parts of Babylonia; none of these efforts, however, survived the reigns of their initiators.

First Empires (c. 2350–1900 BCE). After gaining control over all of Babylonia, Sargon, an Akkadian from preponderantly Semitic northern Babylonia, established a central state, that remained with his dynasty for several generations. Measures to enforce centrality, like monopolizing the sea trade with Oman and the Indus River valley, or keeping a

standing military force at their disposal, help. Apart from being preoccupied with permanent internal rebellions, Sargon and his grandson Naram-Sin campaigned in distant lands, such as Syria and the Iranian highlands. Their fame remained vibrant into much later periods.

The art of the period reflects a profound change in concept: unlike earlier archetypal renderings of the human form, Akkadian art individualizes figures by placing them in front of a background and adding anatomical details, allowing them natural proportions. The outstanding monument in this style is a stela commemorating Naram-Sin's victory over the mountain tribe of the Lullubi (now in the Louvre, Paris).

The Semitic Akkadian begins to appear in official inscriptions, a political decision, not a reflection of a population shift. With the Akkadians stronger in the north and the Sumerians in the south, occasionally signs of both groups' self-awareness are found, but there is no indication of major tensions or even conflicts between them. However, both rebellious cities and attacks by mountain tribes (Guti) caused the Akkadian state to shrink in the end to the size of but one of several city-states, always threatened by the menace of a Gutian foothold.

Ur-Nammu, founder of the Third Dynasty of Ur, capitalizing on the prestige of his father, Utuhegal, as victor over the Gutians, was able to reunite Babylonia by 2100 BCE. Both he and his son Shulgi furthered the kind of organization necessary for a central state, such as creating districts with local civilian and military representatives. They returned to Sumerian as the official language, bringing about the so-called Neo-Sumerian period in the history of Mesopotamian literature. An encompassing reform in Shulgi's twenty-first regnal year ordering that almost all economic transactions had to be recorded, was intended to counter growing economic difficulties. Desiccation, salinization, and a growing population had combined to create serious supply problems. A remedy was sought in the tightening of controls to an extent that nothing would escape the official system of redistribution. The increased need for scribes had the side effect that Ur III became one of the most literate societies in the ancient world, as demonstrated not only by the emergence of new literary genres, but by the fact that on seals, inscriptions partly take over the function of identifying the owner.

Opposition to this omnipresent control combined with old resentments against the central state, started a rebellion in northern Babylonia. The capital was caught at its weakest point: because of its largely salinized fields, Ur depended on shiploads of grain from the north. Decisively weakened, Ur was raided by its eastern neighbor, Elam, and Ibbi-Sin, the last king, was taken prisoner. Once again, like at the end of the Akkadian period, the local element had proven strong enough to thwart a central government (Elamites).

Assyria had always been part of a larger complex with northeastern Syria and, in the first half of the third millennium, had kept its traditional pace in spite of short-term affiliations with Babylonia. This eventually changed. Statues from the late Early Dynastic Ishtar temple at Aššur show close ties with Babylonia, which remained valid through the Akkad and Ur III periods. [*See* Aššur.]

Early Second Millennium. Against measures to stop them, the Amorites had succeeded in invading Babylonia, to an extent that the spokesman of the anti-Ur III forces was the Amorite ruler of the Babylonian city of Isin. [*See* Amorites.] Isin's hope to retain central rule was soon challenged by the Amorite dynasty of Larsa, which in turn gave the Amorite dynasty of Babylon the opportunity to gain power. [*See* Larsa.] Hammurabi, the sixth ruler of the dynasty, finally succeeded in controlling all of Babylonia by starving Rim-Sin of Larsa. By intensifying irrigation schemes in northern Babylonia, and by founding many new settlements, the seat of power irrevocably shifted there. The conquest of Mari on the Euphrates, Eshnunna, and even Aššur, however, proved to be fateful: Hammurabi had destroyed the buffer zones facing the Kassites who were waiting to invade. [*See* Mari.] With the loss of these new possessions during the reigns of Hammurabi's successors in the seventeenth century BCE, Babylon became just another political entity between a dynasty of the Sealand, somewhere in southern Babylonia; Elam; the Kassite foothold-kingdom of Khana close to Mari; Aššur; and, finally, the rising power of the Hittites. [*See* Hittites.] The final blow came when the Hittite ruler Muršili, prolonging his raid on Ḥalab (Aleppo), followed the Euphrates downstream until he sacked Babylon, in 1595 BCE.

Also from this period there are many documents telling us that the despotic rule of Ur III administration had given way to a decentralized form of economic administration though from many letters it is known that politically everything was decided in Babylon; even legal cases of minor importance were brought to the attention of Hammurabi.

Though the older order of the gods still prevailed, there was a tendency to favor the sun god Shamash and to promote the city god of Babylon, Marduk, as head of the pantheon. Particular mention should be made of the many surviving mathematics texts, which show a well-advanced mastery of that field.

While a later king-list begins with "rulers living in tents," unknown otherwise, sources only testify to the existence of a local power in Aššur after the beginning of the twentieth century BCE. Shortly thereafter, Assyrian merchants made Aššur an emporium from which merchandise from several directions was forwarded to other trading partners. This information comes from thousands of tablets from Anatolia, where a network of trading colonies was established. That trade was ended by events connected with the Hittite invasion by 1700 BCE; no accounts exist from Aššur. [*See* Anatolia; *article on* Ancient Anatolia.] Better coverage is available only for the reigns of Shamshi-Adad I and his son Ishme-Dagan. Of Amorite origin, they conquered the are

of Aššur and expanded their territory to include Mari and the Upper Khabur area, where they resided at Shubat Enlil, modern Tell Leilan. [*See* Khabur; Leilan, Tell.] After their expulsion, historical information is resumed only in the fifteenth century BCE. Seen in the light of political development, this is a period when, with Babylonia deposed from the first rank, new powers formed in Syria and Elam and among the Hittites. The stage was set for the next phase of rival territorial states.

Late Second Millennium. The fall of Babylon opened a period of unknown length, the so-called "dark age" for which no details are available except that a later compilation lists Kassite kings supposed to have ruled then. [*See* Kassites.] Only by the end of the fifteenth century BCE is information provided by the so-called Amarna letters found in pharaoh Akhenaten's new capital Akhetaten/Tell el-Amarna. [*See* Amarna Tablets.] A few, addressing the Kassite kings Karaindash, Kadashman-Enlil I, and Burnaburiash II, fix the regnal dates to the first half of the fourteenth century BCE.

Best known of the Kassite kings is Kurigalzu II (1345–1324 BCE) for the building of his new capital, Dur Kurigalzu/ʿAqar Quf, north of Sippar, and for his restoration of temples at the old Sumerian centers. [*See* ʿAqar Quf.] Care for tradition is also shown by the use of Sumerian in Kassite official inscriptions and by the collecting and copying of traditional literature, which survived in that canonized form into the first millennium BCE. Their own language was never written extensively and is hardly known. Kassite rule over Babylonia was never really challenged and was relatively peaceful, except for latent conflicts with Aššur. The Elamite ruler Shutruk-Nahhunte finally put an end to Kassite rule by raiding Babylonia in 1160 BCE. It is, in addition, the first certified case of looting the cultural heritage of an enemy and adorning one's own capital with the booty.

The might of Assyria reappears when the death of the Mitannian ruler Tušratta gave Ashur-Uballit (1365–1330 BCE) the chance to consolidate the independence won by his father, Eriba-Adad. Like him his successors were constantly campaigning in the regions to the east, north, and west. This certainly reflects the necessity of protecting borders, in the absence of natural boundaries, but it also shows the need to secure additional resources for an area devoid of metal or precious stones and with a limited agricultural capacity.

Under Shalmaneser I (1274–1245 BCE), Assyrian imperial ideology became apparent: the city god Ashur was converted into a god of war, who ordered the conquest of neighboring regions and was thought to march in front of the Assyrian army; this represents warfare as a divine decree, legitimizing the atrocities of war, so vividly described in Assyrian royal inscriptions and depicted in their palace reliefs.

Large-scale building activities are known, especially for the reign of Tukulti-Ninurta I (1244–1208 BCE), the first of the Assyrian rulers to build himself a new capital, Kar-Tukulti-Ninurta, opposite Aššur on the east bank of the Tigris River. [*See* Kar-Tukulti-Ninurta.] None of the various main forces of this period in the Near East—the Hittites, the Hurri-Mitanni, Aššur, Babylon, or Elam—outweighed the others. A balance of power prevailed that also prevented Assyria from becoming too powerful.

Neo-Assyrian Empire. From the end of the tenth century BCE onward, Assyria became militarily active again, following a period in which it had been barely able to defend its borders. Ashurnasirpal II (883–859 BCE) resumed campaigning in the west using improved military strategies; he even collected tribute from the Phoenician cities. [*See* Phoenicians.] At the same time, political strategy began to change: the tendency was to turn conquered areas into permanent Assyrian provinces. Assyria's main opponents were the Aramean principalities in Syria, founded there after the fall of the Hittite Empire. [*See* Arameans.] Yet, area after area was added in the west to Assyrian territory until under Sargon II (721–705 BCE) the Mediterranean was reached and part of Palestine turned into the province of Samaria. Egypt was added by Esarhaddon in 671 BCE, but it was lost by 655 BCE during the reign of Ashurbanipal. Assyria's northward expansion was obstructed by the state of Urartu, which, under the impact of constant Assyrian attacks, Sardur I was able to unite in 832 BCE. [*See* Urartu.] Urartu even expanded westward, frustrating Assyrian ambitions. Following raids by the Cimmerians, however, Sargon was able to eliminate Urartu in 714 BCE. [*See* Cimmerians.] The process of rallying took longer in the eastern mountains, however. Though the lands of Parsua and the Medes are mentioned as early as the ninth century BCE it was not until much later that Medes and Persians entered the political arena. [*See* Medes; Persians.]

Because the cultural superiority of the south was recognized, and many gods worshipped in Assyria had their cultic centers there, Assyrian relations with Babylonia were always exceptional. For a long while Babylonia was taboo for Assyrian military aspirations. However, after the Babylonian south fell to hostile Aramean and Chaldean tribes, Assyria's attitude changed, culminating in the sack of Babylon by Sennacherib in 688 BCE. [*See* Chaldeans.] The picture would, however, be incomplete without emphasizing the enormous building activities of nearly every king after Ashurnasirpal, each one erecting a splendidly decorated palace for himself. [*See* Palace.] Sargon even founded his own city, along with a palace, while Sennacherib enlarged the old city of Nineveh to cover 7 sq km (4 sq. mi.), watered by a canal that at one point needed an aqueduct to bridge a valley. [*See* Nineveh.] Apart from superb palace reliefs, certainly one of the lasting Assyrian achievements was the compilation of the library housed in the palace of Ashurbanipal in Nineveh.

Only two years after the first attacks, Aššur fell, in 614 BCE, to the Medes; then Nineveh fell in 612 BCE to a com-

bined Median-Babylonian army. Harran was a last refuge until 609 BCE. Given the formerly unrivaled power of the Assyrian Empire, the end came quickly. The probable explanation is that by this time Assyria was finished economically. As it had been an expansionist empire, its economic balance could be secured only as long as it could tap new resources. When expansion was no longer possible, the system was bound to collapse. That is, when Assyrian expansion reached the Mediterranean coast, and the attempt to circumvent it by conquering Egypt proved to be too costly.

Chaldean Empire. Following the texts called the "Babylonian Chronicle," Kassite rule counts fifty-one kings before the Chaldean Nabopolassar became king of Babylon in 626 BCE, taking advantage of the turmoil following Ashurbanipal's death. Allying himself with Cyaxares of Media, they accomplished the final defeat of Assyria in little time, leaving Nabopolassar with large parts of the Assyrian heritage. His son, Nebuchadrezzar, consolidated Babylon's rule in the west using Assyrian strategies. He is best known for his deportation of the Jews following his conquest of Jerusalem in 597 BCE; his plans to conquer Egypt failed, however. [*See* Jerusalem.]

Immense tributes and booty from conquests enabled Nebuchadrezzar to conduct large building programs in Babylon and other centers. His works include the holy precinct of Babylon, comprising the ziggurat (Tower of Babel), the processional way and Ishtar Gate, and his palace, which was especially famous for its Hanging Gardens regarded as one of the Seven Wonders of the World. Nebuchadrezzar also built the exceptionally high and wide city wall of Babylon.

Following brief reigns by other family members, a former official, Nabonidus, was appointed king in 555 BCE. Barely enough is known to characterize this enigmatic figure who, out of his sixteen-year reign, spent ten years in the Arabian oasis Tayma', far from Babylon. [*See* Tayma'.] His favoring of the moon god Sin over Babylon's Marduk is the only piece of evidence for explaining the opposition of the priests and people of Babylon to Nabonidus. When he returned to Babylon in about 540 BCE, the Persian king Cyrus was already on his way to the city, having defeated the Medeans and the Lydians under king Croesus. [*See* Medes.] On 12 October 539 BCE Cyrus seized Babylon without resistance.

To judge from the number and size of the settlements inhabited under Chaldean rule, it had been a thriving period for all of Babylonia, as well as the highlight of Babylonian culture—in literature, religion, and the sciences. Especially noteworthy are the astronomy texts (diaries) that, in addition to plotting daily observations, give information on weather and the prices of commodities.

Achaemenids and Mesopotamia. Under the Achaemenids, Mesopotamia was only one district in a vast empire; yet, Babylon was highly respected and chosen to be one of the empire's capitals. Under Darius, a large palace was built on top of the ruins of Nebuchadrezzar's palace. Even after Xerxes responded to a rebellion in 482 BCE by destroying the city's walls and holy district, Babylon remained a main center.

Cyrus's proverbial tolerance, best known for allowing the Jews to return to Jerusalem and rebuild their temple, left life in Babylonia largely unchanged, a policy maintained by his successors. Later years, however, witnessed the large-scale decline of Babylonia, caused by paying the enormous yearly tribute demanded by the royal administration and from the resultant neglect of the irrigation systems. Following Alexander the Great's final victory over the Persian army at Gaugamela in 331 BCE, he took residence in Babylon, ordering the temple of Marduk to be rebuilt. Plans to make Babylon the capital of his empire were thwarted as he died on 10 June 323 BCE in the palace in Babylon that Darius had erected over the ruins of the one built by Nebuchadrezzar.

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Mesopotamia from Alexander to the Rise of Islam

The death of Darius III in 330 BCE and Alexander the Great's conquest of the Achaemenid Empire mark the beginning of the so-called late periods in Mesopotamia and the Near East. The combined Seleucid, Parthian, and Sasanian periods lasted almost a millennium, until the Arab conquest in the second quarter of the seventh century CE. These late periods are characterized by the transmission and assimilation of Hellenistic and Persian ideas, fashions, arts, and crafts into flourishing local economies and, in Mesopotamia, the continuity of the long-established indigenous cuneiform recording system as late as the first century CE. [*See* Cuneiform.] The spoken languages included Greek, Latin, Aramaic, Syriac, and Mandaic—although Parthian and Middle Persian became the official languages during the Parthian and Sasanian periods. [*See* Greek; Latin; Aramaic; Syriac; Mandaic.] During these two periods, there were periodic clashes between Rome and Persia, primarily over the control of Mesopotamia and its routes and resources. There is, accordingly, a greater variety and number of historical sources relating to Mesopotamia than, for instance, to many areas of highland Iran (Frye, 1984). Mesopotamia continued to exercise a crucial role in the wider Near Eastern economy throughout these late periods, owing to its rich agricultural resources and strategic position controlling routes from Syria and the eastern Mediterranean to the Gulf and western Iran.

Alexander and the Seleucids. Following campaigns across the Iranian plateau as far east as Central Asia and the Indus River, Alexander returned with his army to Mesopotamia, where he selected Babylon as his capital. [*See* Babylon.] Alexander's earlier triumphal entry into Babylon following the battle of Gaugamela was commemorated on a cuneiform diary of astronomical and meteorological phenomena observed from 331 to 330 BCE. He ordered the restoration of the ziggurat in the central Etemenanki precinct, although this remained unfulfilled after his premature death in Babylon in June 323 BCE. [*See* Ziggurat.] A mound of brick rubble on part of the site known as Homera is thought to represent debris from this project, but only the brick core of the ziggurat itself survives. Nearby construction from this period includes a theater with a Greek dedicatory inscription recording "Dioscurides (built) the theater and a stage." [*See* Theaters.] An adjacent peristyled building may represent a gymnasium. A third-century BCE ostracon also attests a local garrison officered by men with Greek names; other Seleucid finds from the site include stamped amphorae and terracottas (Koldewey, 1914).

After Alexander's death, Seleucus Nicator (321–281 BCE) established himself as "Ruler of the East," ruling over Mesopotamia, Iran, Syria, and Anatolia. He ensured political legitimacy by minting coins at important Achaemenid centers, including Persepolis, as well as at new foundations. [*See* Persepolis.] Seleucus continued Alexander's policy of founding new cities, itself a well-developed ancient Near Eastern royal prerogative. The most important of these was Seleucia on the Tigris, situated on the eastern end of a large canal called the Nahar Malcha ("royal canal"). This canal linked the Euphrates and Tigris Rivers a short distance below the point where they enter the alluvial plains of southern Mesopotamia. [*See* Seleucia on the Tigris; Euphrates; Tigris.] Seleucia remained the eastern Seleucid capital until it was captured by the Parthians in the first century BCE. Thereafter, it continued to be occupied until the Sasanian foundation of Veh Ardashir ("New Seleucia") drew the population away.

The site of Seleucia was said to have a population of 600,000 (Pliny 6.30), appears to have been fortified, and was bisected by two major canals (initially misidentified as roads). The street plan was based on a grid, first revealed by aerial photographs. A depression at the eastern end of the city may represent a harbor, whereas a prominent mound called Tell ʿUmar, at the northern edge of the city, probably represents later Sasanian construction. The mound is located immediately north of a large three- or four-sided agoralike complex referred to by its Italian excavators as the Archives Building (Invernizzi, Negro Ponzi Mancini, and Valtz, 1985). This name reflects the discovery of a hoard of seal-impressed clay bullae; two additional hoards of bullae were recovered from University of Michigan excavations at Seleucia, mostly dealing with the administration of a local salt tax. Other identified public buildings include a theater and two temples. American excavations near the center of the city revealed an insula (a block of housing separated by streets) with remains of painted stuccoes and molded brick decoration (Hopkins, ed., 1972). [*See* Wall Paintings.] Burials were interred within intramural family-sized subterranean brick vaults, a burial method that reflects the continuation of a two-thousand-year-old mortuary tradition in Mesopotamia. [*See* Burial Sites; Burial Techniques.]

Local religious cults enjoyed royal patronage under the Seleucids, with large-scale construction and renovation in the Bit-Resh and Irigal temple complexes at Uruk (now

called Orchoi). [*See* Cult; Uruk-Warka.] Despite the predominant use of parchment, clay tablets written in cuneiform continued to be used at major religious centers in southern Mesopotamia. [*See* Parchment; Tablet; Writing Materials.] The tablets provide the primary dated historical sources for Seleucid history and chronology, in addition to matters relating to temple administration, particularly at Uruk (McEwan, 1981; Sherwin-White and Kuhrt, 1993). More unusual are a small number of Late Seleucid or Early Parthian tablets, known as the Graeco-Babyloniaca series. These were inscribed with Greek transcriptions of cuneiform lexical and literary texts, including incantations and a Description of Babylon (Black and Sherwin-White, 1984).

Little is known in detail about rural settlement in Mesopotamia during this period. However, archaeological surface surveys in the northern Jezireh and excavations for the Saddam Dam Salvage Project at sites such as Tell Deir Situn (Curtis, Green, and Knight, 1987–1988) demonstrate a peak in rural settlement densities during the third–second centuries BCE, plus the appearance of new forms of bell-shaped underground silos and imported basalt grinding stones. [*See* Granaries and Silos.] The impact of Western styles of ceramics and, presumably, cuisine on Mesopotamia are reflected by the appearance of distinctive "fish plates" with overhanging rims, low ring bases, and a central interior depression that was used to contain dressing. Continuing cultural dichotomy between northern and southern Mesopotamia is demonstrated by the different methods of preferred ceramic surface treatment: whereas southern fish plates were either glazed or left plain, northern equivalents were typically decorated with reddish-brown or black slip. Mold-made ceramic lamps, sometimes with palmette handles, and classical styles of molded terra-cotta figurines also appear throughout Mesopotamia during this period, again suggesting a relatively high degree of hellenization (Oates and Oates, 1958; Hannestad, 1983).

Parthians. Seleucid control of Mesopotamia ended with the defeat and death of Antiochus VII Sidetes (138–129 BCE) and the arrival of a Parthian army commanded by Phraates II (c. 138–128 BCE). The Parthians established a garrison town and later a capital at Ctesiphon, opposite Seleucia, on the left bank of the Tigris, thus controlling a major route to western Iran via the Diyala River corridor. [*See* Ctesiphon.] Southern Babylonia broke away under Hyspaosines of Charax, who instigated direct commercial links with Palmyra via the Middle Euphrates corridor. [*See* Palmyra.] Palmyrene-style tombs on Kharg Island, in the Gulf, probably reflect these new ties. Ceramics excavated at Failaka, near the head of the Gulf, are thought to be Characenian products, although the Characenian capital of Charax Spasinu, identified with the site of Jabal Khayabir at the junction of the Karun and Tigris Rivers, remains unexcavated (Hansman, 1967). [*See* Failaka.]

Characene was reduced to vassal status by Mithradates II (c. 123–87 BCE), who also seized Adiabene and established a more secure western Parthian frontier on the Euphrates after capturing the town of Dura by 113 BCE. [*See* Dura-Europos.] This site, also known in antiquity as Europos, provides an important corpus of Parthian architectural remains, sculpture, pottery, glass, and textiles. [*See* Glass.] However, its poorly excavated stratigraphy has resulted in a mixture of Seleucid and Roman material (Hopkins, 1979). Seleucus V (125 BCE) continued to campaign in Babylonia and Media but failed to regain control of those regions. Babylonia was later lost to a usurper called Gotarzes I (c. 91–80 BCE) and the Parthian Empire fell victim to internal struggles until the accession of Vologases I (c. 51–80 CE). During this brief interregnum, the kingdom of Commagene flourished in southeast Turkey before being swallowed by Rome. Rome also attempted to play an important role in Parthian politics until the Parthian general Suren crushed a Roman army commanded by Emperor Crassus at the battle of Carrhae, in southeast Turkey, in 53 BCE.

The first century CE witnessed the emergence of a more distinctive Parthian material culture in Mesopotamia, including the replacement of Aramaic for Greek and a fire altar for the figure of an archer on the coins of Vologases I. Vologases also founded a rival city to Seleucia called Vologesocerta (Vologesias). Its location has been disputed but probably corresponds to a substantial unexcavated site called Abu Halefija, situated due southeast of Seleucia on another junction of the royal canal and the Tigris. In 115 CE, the Roman emperor Trajan succeeded in sacking Ctesiphon before reaching Charax and the head of the Gulf. However, his claims to Mesopotamia were rapidly dropped by his successor, Hadrian. Vologases and Osroes battled for control over southern Mesopotamia. A massive fortress excavated at Nippur may belong to this phase of Parthian history.

Seleucia and Ctesiphon were later captured twice by Roman armies commanded by C. Avidius Cassius in 165 CE and Septimius Severus in 197 CE—although the American excavators of Seleucia reported few traces of destruction that could be associated with these events. Septimius Severus was also responsible for extending direct Roman military control down the Euphrates corridor and establishing a network of forts commanding routes to and from the Tigris, the Jabal Sinjar, and the Khabur basin. Several of these Severan forts have been partially excavated, including ʿAin Sinu-Zagurae, Seh Qubba, Bijan, and Kifrin (Oates and Oates, 1959; Valtz, 1985). This military frontier remained substantially intact until Sasanian military advances during the mid-third century.

Archaeological excavations are providing useful groups of Parthian pottery and other finds. As in Iran, there continues to be marked regional variation in ceramic assemblages from northern, central, and southern Mesopotamia: important groups have been recovered from Dura-Europos, ʿAin Sinu, Nineveh, Seleucia, and Tell Aswad (Oates and Oates, 1959;

Debevoise, 1934). [*See* Nineveh.] Elaborate stuccoes have been recovered from Aššur, Babylon, Seleucia, and Uruk. [*See* Aššur.] Columned architecture has been excavated at Babylon (Tell Amran), Nippur, and Seleucia, but a significant innovation is the large barrel-vaulted iwan architecture found at Aššur and Hatra. [*See* Nippur; Hatra.] Babylonian-style shrines are also attested from Khiut Rabbu'a (on the outskirts of Baghdad) and Nineveh, the latter being dedicated to Hermes. Limestone and bronze statues of Herakles and figurines of Eros have been found at several other sites, including Dura, Aššur, Hatra, Seleucia and Uruk. In addition to pottery, glassware, terra-cottas, and other objects, a limestone statue of a seated Herakles, inscribed "Diogenes made (this). Sarapiodorus son of Artemidorus (dedicated this) in fulfilment of a vow" was excavated at Nineveh (Invernizzi, 1989). A stone lintel showing a pair of sinuous-bodied griffins drinking from a vase, found near the south-east corner of this mound, closely parallels contemporary Parthian temple cornices from Hatra (Curtis, 1989, p. 60).

There is widespread archaeological evidence for Parthian mortuary customs in Mesopotamia. The norm appears to have been intramural burial, the deceased being interred in a ceramic or wooden coffin placed in a vault or in a simple earth-cut shaft. Glazed ceramic "slipper coffins" were a particularly distinctive type that were popular at Babylon, Nippur, and Uruk during the first–second centuries CE (Curtis, 1979). However, large extramural cemeteries with a wide variety of types of burials are also known from Abu Skhair-Umm Kheshm (Negro Ponzi, 1972). Parthian grave goods from these and other sites included gold face masks, eye covers, mouth covers, headbands, funerary wreaths, jewelry, local and imported Roman glassware, bone "dolls," painted alabaster and ceramic statuettes, and blue-, green-, or white-glazed pottery (Curtis, 1979). [*See* Grave Goods.] The statuettes usually belong to nude or partially clothed female figures, either reclining or standing, with one hand holding a veil, or reclining male figures holding a cup in one hand (Van Ingen, 1939; Karvonen-Kannas, 1995). Finally, a rock-cut set of caves at Al-Tar, on the edge of the western Iraqi desert, appears to have been used as a burial place for nomads living on the Arabian fringe of the Parthian state; a large number of textiles are unusually preserved at this site owing to the arid local conditions (Fujii, ed., 1976).

Sasanians. The last Parthian king was Artabanus V. The end of his reign was marked by a nobles' revolt led by Ardashir I (224–240 CE), who came from the province of Fars on the Iranian plateau. In 241 Hatra was sacked and Jovian ceded five trans-Tigridian provinces under the terms of a peace treaty signed between the empires. Henceforth, northern Mesopotamia as far as the Khabur headwaters fell within the Persian Empire, the actual border running from Nisibis to Singara and Bezabde. Ardashir took the throne and adopted the Parthian capital of Ctesiphon. Zoroastrianism was adopted as the state religion, although there were other important religious communities in different parts of the empire. The Byzantine emperor Zeno's expulsion of the "Edessa school" of Christian scholars, in 489, led directly to the founding of the "Persian church" across the border, with an archbishop at Ctesiphon, to urban bishoprics and rural monasteries, and to an influential school of philosophers at Nisibis (Fiey, 1965–1969). [*See* Monasteries.] Between the third and fifth centuries, Jews living in central Mesopotamia compiled the Babylonian Talmud, a fundamental Jewish legal code and a useful historical source for reconstructing details of Sasanian agriculture (Newman, 1932; Oppenheimer, 1983). [*See* Agriculture.] Various Gnostic sects are attested, including the Mesallyene, Manichaeans, and Mandaeans. Several pagan cults are also attested from Syriac sources, who accuse them of worshiping trees and snakes (Morony, 1984).

The Sasanian Empire extended from northern Mesopotamia into the Caucasus, Central Asia, and Pakistan. Frontier zones appear to have been stiffened with Persians drawn from cities such as Isfahan and Istakhr on the Iranian plateau. [*See* Isfahan.] The desert borders were closely guarded through a combination of "long walls," forts, and regular mounted patrols. Official traffic between the Persian and Byzantine empires was restricted to a single route from Nisibis to Dara (Morony, 1984).

Heavy investment in the Mesopotamian irrigation networks was linked to large new trunk canals constructed between the Tigris and Euphrates and a massive canal network linking the Tigris and Diyala known as the Nahrawan/Katuli Kisrawi system. [*See* Irrigation; Diyala.] Surface surveys suggest optimum exploitation of central and southern Mesopotamia during this period (Adams, 1981). Systematic settlement programs appear to have been carried out then, for which possible archaeological evidence has been detected on the Upper Tigris. Several rural settlements have been partially excavated in northern and central Mesopotamia, including Tell Abu Sarifa (Adams, 1970). At the site of Tell Abu Shi'afeh, in the Hamrin basin, a large number of sealed clay bullae were found in a storeroom inside a small administrative building; they had originally probably been attached to parchments, which usually do not survive. [*See* Hamrin Dam Salvage Project; Seals; Parchment.]

Palaces and large private houses were decorated with elaborate stuccoes, wall paintings, and occasionally mosaics; villas have been excavated at Ctesiphon and Kish (Kröger, 1982). [*See* Palace; Mosaics; Kish.] The major military and economic rival of Rome, and later of Byzantium, the Sasanian Empire had contacts with the Far East via overland trade through Central Asia. Far eastern silks and other goods were highly valued, and fine cotton cloth was produced at Merv and possibly in other Sasanian cities. Identifiable western imports are negligible, being limited to a handful of coins and some lamps from Nineveh and Veh Ardashir, thus giving the impression of a well-developed and self-sufficient

Sasanian economy. High-quality cut glassware was manufactured in Sasanian workshops, some of which was traded as far as China, Korea, and Japan. There is evidence from excavation and survey for large-scale industrial development, including glass factories, pottery workshops, and brick industries, some of which appear to have been deliberately sited on countryside canals in order to take advantage of the improved water-borne transport network (Adams, 1981).

Decorative silver vessels, often with partial gilding, were another characteristic Sasanian product, although no examples have yet been excavated in Mesopotamia. Sasanian pottery was mass produced, yet the forms occasionally copy metalwares. A distinctive range of decorative stamp-impressed jars was made and traded in central and northern Mesopotamia. The longest sequence of excavated Sasanian pottery comes from the city of Veh Ardashir/Coche, opposite Ctesiphon (Venco Ricciardi, 1984), but important groups of Early, Middle, and Late Sasanian pottery have also been recovered from Tell Mahuz, Kish, Telul Hamediyat, and Khirbet Deir Situn (Venco Ricciardi, 1970–1971; Moorey, 1978). These suggest a strong thread of cultural continuity from Late Parthian to post-Sasanian periods, with occasional new forms stimulated by developments in contemporary Sasanian metalwork.

Weakened by internal strife and additional wars with Byzantium, the Sasanian Empire finally fell to repeated Muslim Arab attacks, culminating in the Islamic conquest in the mid-seventh century. However, the Sasanian administration served as a model for the new rulers, and Sasanian art and architecture continued to have a profound effect on Early Islamic developments.

[*See also* Parthians; Sasanians; Seleucids.]

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ST. JOHN SIMPSON

Mesopotamia in the Islamic Period

The Sasanian hold on Mesopotamia was broken at the battle of Qadisiyha in 637 CE, a result confirmed at Nihawand in 642. From this time onward, the Arabic term *al-'Iraq* was used to refer to Mesopotamia from the Gulf to Samarra, and *al-Jezireh* ('the island') designated the region from Samarra to Mosul and Aleppo. The Islamic armies, mainly composed of tribesmen from eastern Arabia, were settled not at the Sasanian capital of Ctesiphon, but in two new garrison cities (Ar, *misr;* pl., *amsar*), at Kufah, close to the

pre-Islamic capital of the Lakhmids at al-Hira, on the desert bank of the lower Euphrates, and at Basra, at the head of the Persian Gulf. The type of settlement, with a central mosque and governor's residence surrounded by quarters allocated to each tribal unit, seems to have drawn its inspiration from Arabian multitribal settlements, such as Medina (Yathrib). The practice of founding new garrison cities, established in Iraq, was followed in all the conquered territories except Syria. At Kufah, the mosque of the Umayyad period (661–750) survives in part, and the Umayyad governor's residence *(Dar al-ʿImarah)* has been excavated (Mustafa, 1956). At Old Basra, much has been excavated, but nothing published. Iraq was administered from Kufah until the middle of the Umayyad period, when, in response to the continual rebellions there, the Iraqi army was demobilized, and a Syrian garrison installed at a third new garrison city at Wasit, south of Kut, where only the mosque has been excavated. Finally Mosul was built opposite to Nineveh on the Tigris.

These Arab-Muslim garrisons were supported by the already-existing agricultural economy of the Sasanian period, notably the well-developed irrigation network. Only a little archaeological work has been done on the Umayyad period in Iraq (e.g., Finster, 1976); not even the ceramic typology has been clearly established. What little has been accomplished tends to confirm the picture from Syria and Jordan that new development was largely on the desert edge. However, by the ʿAbbasid revolution in 750 Arab and non-Arab were increasingly integrated, partly by conversion to Islam and partly by Arab ownership of land. The rate of conversion to Islam is shown by the excavations at Ana on the Euphrates, where, in this strongly Christian town, only a small mosque was built in the Umayyad period, replaced by a large congregational mosque in the ninth century.

Real integration of the Mesopotamian state tradition and Islam was achieved by the ʿAbbasids, who settled in Iraq, notably by the second ʿAbbasid caliph, al-Mansur (754–775). A new capital was established at Baghdad in 762–766, only 30 km (18.5 mi.) from Ctesiphon, in the northern part of the alluvial plain, a region with excellent access to routes to Iran, Syria, and the Gulf. The urban type was evolved from the *amsar* with the addition of a fortified palace and administrative quarter, the Round City, with the military cantonments divided ethnically. Robert McC. Adams observes that the striking increase in the proportion of urban to cultivated area in the Diyala basin at this time may be understood as reflecting the metropolitan nature of the Baghdad area, which no longer depended solely on its hinterland (Adams, 1965, pp. 98–99). Although ʿAbbasid Baghdad has disappeared, the character of the architecture can be seen at the sole ʿAbbasid desert castle at Ukhaidir, west of Karbala, a plan based on *iwans* and apartments in the form of houses around courtyards, and more particularly at Samarra, the second ʿAbbasid capital built on steppe land 125 km (77.5 mi.) north of Baghdad by al-Muʿtasim in 836 and abandoned after 892. Here the entire range of ʿAbbasid construction has been preserved, from palaces to small houses and industrial structures, with the exception of the markets. [*See* Baghdad; Samarra, *article on* Islamic Period.]

The success of the ʿAbbasid caliphate led to a cultural dominance of the Iraqi style in the Islamic world, from the spiral minaret of the mosque of Ibn Ṭulun in Cairo, copying Samarra, to the luster tiles on the *miḥrab* (niche oriented toward Mecca) of the mosque of Kairouan (Qayrawan) in Tunisia. The islamization of the pottery typology in Syria and Jordan and possibly in Egypt, represents in fact the introduction of Iraqi types. Although glazed pottery had always been more significant in Mesopotamia, early ʿAbbasid Iraq produced first monochrome glaze over surface decorations and then the first polychrome-glazed wares about 800, stimulated probably by new types imported from China. Cobalt painting on white glaze, splash-lead glaze, and lastly luster painting were produced in southern Iraq, possibly at Basra, and spread rapidly around the Islamic world and beyond. [*See* Ceramics, *article on* Ceramics of the Islamic Period.]

Although the wealth of the ʿAbbasid state was based on the Sasanian irrigation network, the system was developed and extended; in particular two additions were made to the Nahrawan system by Harun al-Rashid (786–809) and al-Ma'mun (813–833), although there was retrenchment of the limits of cultivation, particularly in the south of Iraq, demonstrated by the surveys of Adams (1965, 1981). However, with the slowly cumulating problems of the ninth century and the complete political collapse of the second quarter of the tenth century, a widespread abandonment of the irrigation network occurred, and no new expansion occurred before modern times. Formerly the financial base of the caliphate and its wealthiest province, Iraq became a poor relation of surrounding territories. However, more accurate pottery dating shows that Adams placed this transformation too early (Adams, 1965, p. 103); *sgraffito* ware, which appears in the terminal deposits of many sites, was not introduced until the first half of the tenth century. Although the tenth and eleventh centuries were certainly periods of political instability, the essential problem may have been that the quasi-feudal medieval states, which emerged at this time, were incapable of the organizational and financial effort to maintain or replace the Sasanian canals, which may have been damaged as much by natural as by human agency. For example, movements of the beds of the Tigris and Euphrates could leave whole districts without water.

The political collapse of the ʿAbbasids installed the Iranian Shiʿi Buyids in Baghdad (945–1055) and Arab tribal principalities on the desert edge and in the Jezireh. Although little work has been done on the archaeology of this period,

the regional surveys become less reliable because the areas settled are those still occupied today. The archaeological record becomes more visible again after the twelfth century. Contemporary with the medieval high culture in Syria and Iran, a fine tradition of brick architecture developed at Baghdad (al-Mustansiriyah) and Mosul. An Iraqi fine-glazed ware has been excavated at Wasit, Ana, Samarra, and elsewhere. Metalwork was made at Mosul, and miniatures painted at Baghdad and Mosul. The Mongol conquest of Iraq in 1258 marked the end of Iraqi political independence.

[*See also* ʿAbbasid Caliphate; Umayyad Caliphate.]

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ABBREVIATIONS AND SYMBOLS

ACOR	American Center of Oriental Research
AD	*anno Domini*, in the year of the (our) Lord
AH	*anno Hegirae*, in the year of the Hijrah
AIA	Archaeological Institute of America
AIAR	(W. F.) Albright Institute of Archaeological Research
AJA	*American Journal of Archaeology*
Akk.	Akkadian
Am.	*Amos*
ANEP	J. B. Pritchard, ed., *Ancient Near East in Pictures*
ANET	J. B. Pritchard, ed., *Ancient Near Eastern Texts*
AOS	American Oriental Society
APES	American Palestine Exploration Society
Ar.	Arabic
'Arakh.	*'Arakhin*
Aram.	Aramaic
ASOR	American Schools of Oriental Research
Assyr.	Assyrian
A.Z.	*'Avodah Zarah*
b.	born
B.A.	Bachelor of Arts
Bab.	Babylonian
BASOR	*Bulletin of the American Schools of Oriental Research*
B.B.	*Bava' Batra'*
BC	before Christ
BCE	before the common era
Bekh.	*Bekhorot*
Ber.	*Berakhot*
Bik.	*Bikkurim*
BP	before the present
BSAE	British School of Archaeology in Egypt
BSAI	British School of Archaeology in Iraq
BSAJ	British School of Archaeology in Jerusalem
B.T.	Babylonian Talmud
c.	*circa*, about, approximately
CAARI	Cyprus American Archaeological Research Institute
CAD	computer-aided design/drafting
CAORC	Council of American Overseas Research Centers
CE	of the common era
cf.	*confer*, compare
chap., chaps.	chapter, chapters
1 Chr.	*1 Chronicles*
2 Chr.	*2 Chronicles*
CIG	*Corpus Inscriptionum Graecarum*
CIS	Corpus Inscriptionum Semiticarum
cm	centimeters
CNRS	Centre National de la Recherche Scientifique
col., cols.	column, columns
Col.	*Colossians*
1 Cor.	*1 Corinthians*
2 Cor.	*2 Corinthians*
CTA	A. Herdner, *Corpus des tablettes en cunéiformes alphabétiques*
cu	cubic
d.	died
DAI	Deutsches Archäologisches Institut
diss.	dissertation
Dn.	*Daniel*
DOG	Deutche Orient-Gesellschaft
D.Sc.	Doctor of Science
Dt.	*Deuteronomy*
EB	Early Bronze
Eccl.	*Ecclesiastes*
ed., eds.	editor, editors; edition
ED	Early Dynastic
EEF	Egyptian Exploration Fund
e.g.	*exempli gratia*, for example
Egyp.	Egyptian
Elam.	Elamite
En.	*Enoch*
Eng.	English
enl.	enlarged
esp.	especially
et al.	*et alii*, and others
etc.	*et cetera*, and so forth
Eth.	Ethiopic
et seq.	*et sequens*, and the following
Ex.	*Exodus*
exp.	expanded
Ez.	*Ezekiel*
Ezr.	*Ezra*
fasc.	fascicle
fem.	feminine
ff.	and following
fig.	figure
fl.	*floruit*, flourished
ft.	feet
frag., frags.	fragment, fragments
gal., gals.	gallon, gallons
Geog.	Ptolemy, *Geographica*
Ger.	German
GIS	Geographic Information Systems
Gk.	Greek
Gn.	*Genesis*
ha	hectares
Heb.	Hebrew
Hg.	*Haggai*
Hist.	Herodotus, *History*
Hitt.	Hittite
Hos.	*Hosea*
Hur.	Hurrian
IAA	Israel Antiquities Authority
ibid.	*ibidem*, in the same place (as the one immediately preceding)
IDA(M)	Israel Department of Antiquities (and Museums)
i.e.	*id est*, that is

IEJ	*Israel Exploration Journal*
IES	Israel Exploration Society
IFAPO	Institut Français d'Archéologie du Proche-Orient
Is.	*Isaiah*
IsMEO	Istituto Italiano per il Medio ed Estremo Oriente
Jb.	*Job*
Jer.	*Jeremiah*
Jgs.	*Judges*
Jn.	*John*
Jon.	*Jonah*
Jos.	*Joshua*
JPOS	*Journal of the Palestine Oriental Society*
JRA	*Journal of Roman Archaeology*
J.T.	Jerusalem Talmud
KAI	H. Donner and W. Röllig, *Kanaanäische und aramäische Inschriften*
Kel.	*Kelim*
Ket.	*Ketubbot*
kg	kilogram
1 Kgs.	*1 Kings*
2 Kgs.	*2 Kings*
km	kilometers
KTU	M. Dietrich and O. Lorentz, *Die keilalphabetischen Texte aus Ugarit*
l	liter
l., ll.	line, lines
Lat.	Latin
lb.	pounds
LB	Late Bronze
lit.	literally
Lk.	*Luke*
LM	Late Minoan
Lv.	*Leviticus*
m	meters
M.A.	Master of Arts
masc.	masculine
Mal.	*Malachi*
MB	Middle Bronze
Mc.	*Maccabees*
M.Div.	Master of Divinity
Meg.	*Megillah*
mi.	miles
Mk.	*Mark*
mm	millimeter
mod.	modern
Mt.	Mount
Mt.	*Matthew*
n.	note
NAA	Neutron Activation Analysis
Nat. Hist.	Pliny, *Naturalis Historia* (Natural History)
n.b.	*nota bene*, note well
n.d.	no date
Nm.	*Numbers*
no., nos.	number, numbers
n.p.	no place
n.s.	new series
O.P.	Ordo Praedicatorum, Order of Preachers (Dominicans)
p., pp.	page, pages
para.	paragraph
PEF	Palestine Exploration Fund
Pers.	Persian
Ph.D.	Philosophiae Doctor, Doctor of Philosophy
Phil.	*Philippians*
pl.	plate; plural
PN	Pottery Neolithic
ppm	parts per million
PPN	Pre-Pottery Neolithic
Prv.	*Proverbs*
Ps.	*Psalms*
pt., pts.	part, parts
1 Pt.	*1 Peter*
2 Pt.	*2 Peter*
r.	reigned, ruled
RCEA	*Répertoire chronologique d'epigraphie arabe*
Rev.	*Revelations*
rev.	revised
Ru.	*Ruth*
SBF	Studium Biblicum Franciscanum
SBL	Society of Biblical Literature
SEG	*Supplementum Epigraphicum Graecum*
ser.	series
sg.	singular
Sg.	*Song of Songs*
Shab.	*Shabbath*
S.J.	Societas Jesu, Society of Jesus (Jesuits)
1 Sm.	*1 Samuel*
2 Sm.	*2 Samuel*
sq	square
St., Sts.	Saint, Saints
Sum.	Sumerian
supp.	supplement
Syr.	Syriac
Ta'an.	*Ta'anit*
Th.D.	Theologicae Doctor, Doctor of Theology
Ti.	*Titus*
Tk.	Turkish
1 Tm.	*1 Timothy*
2 Tm.	*2 Timothy*
trans.	translated by
Ugar.	Ugaritic
v.	verse
viz.	*videlicet*, namely
vol., vols.	volume, volumes
vs.	versus
Yad.	*Yadayim*
ZDPV	*Zeitschrift des Deutschen Palästina-Vereins*
Zec.	*Zechariah*
*	hypothetical; in bibliographic citations, English language pages in Hebrew journals
?	uncertain; possibly; perhaps
°	degrees
′	minutes; feet
″	seconds; inches
+	plus
−	minus
±	plus or minus
=	equals; is equivalent to
×	by
→	yields

M

CONTINUED

METALS. [*This entry surveys the history of metal artifacts with reference to the technologies used to create them, the uses to which they were put, and their overall role in the cultures and societies in which they figure. It comprises three articles:*

Typology and Technology

Artifacts of the Neolithic, Bronze, and Iron Ages

Artifacts of the Persian through Roman Periods

The first serves as a general overview, while the remaining articles treat the artifacts of specific periods and regions.]

Typology and Technology

Typological classification, or the ordering of objects into groups and subgroups according to shape, has been the most popular method for studying metal artifacts. Groupings were based on assumed geographical and/or chronological grounds. There are various reasons for this emphasis on typology, not the least of which is that until recently there was hardly any other way to deal with the material. Without the use of modern techniques of scientific analysis, many of which have been applied to the study of archaeological materials only within the last two decades, not much could be said about the materials used or about methods of manufacture. Only the distinction between copper and bronze was emphasized—a difference of real chronological significance as the addition of tin to copper was a relatively late development.

Such basic elemental analyses had been carried out on the metal artifacts excavated at Troy in the late nineteenth century CE as a result of the far-sighted interests of Heinrich Schliemann. [*See the biography of Schliemann.*] Schliemann's conclusion that bronze was used as early as Troy II (EB II) has been confirmed by modern research. That research has also revealed the earlier popularity of an arsenical alloy of copper, beginning at least as early as about 3500 BCE (although not that early at Troy). The use of arsenical copper in the manufacture of metal artifacts in the third millennium BCE had been detected as early as 1906, but it was not until the late 1960s that archaeologists came to appreciate the importance and the extent of the use of arsenical copper. The Early Bronze Age was actually more of an Age of Arsenical Copper (Muhly and Pernicka, 1992).

Another reason for the emphasis on typology in studying metal artifacts was that the vast majority of all surviving pre-Iron Age metal artifacts (in both base and precious metals) came from hoards. Metal, even unalloyed copper, was expensive and metal artifacts were not disposed of. Metal has the property of being endlessly recyclable: broken or worn-out objects were simply melted down and recast. The structure and properties of metal with a long history of reuse are exactly the same as those found in virgin metal just smelted from an ore (and these are the very qualities that have created such problems in using metal analyses to study provenience).

Metal was deliberately taken out of circulation only when metal artifacts were buried with a recently deceased individual as grave goods or when they were buried in the ground as a hoard, a votive deposit, or a foundation deposit (with the last two categories also being designated as hoards). [*See* Grave Goods.] Grave goods can often be dated with some reasonable assurance, especially if a tomb was used for a single burial and also contained datable pottery, but objects from hoards are usually very difficult to date. [*See* Tombs.] Either the pit for the hoard was dug down into earlier strata or else it was dug into sterile soil. An outstanding example of the latter is the Kefar Monash hoard (see below), which was buried in the sand of the Sharon plain in Israel without associated materials either at the findspot or in the immediate area.

In such cases the artifacts from the hoard can only be dated typologically. It is not surprising, therefore, that typology has played such a major role in the study of metal artifacts. As many hoards have been found under less than ideal circumstances, the exact composition of the original hoard is often in dispute, often with serious chronological implications. Again the Kefar Monash hoard provides an instructive example. The consensus of scholars is that the contents of the initial find are most satisfactorily placed in EB I. However, if a crescentic ax found several years later, some 200 m from the original findspot, is considered to be part of the original hoard, it places the entire hoard in EB III (a hoard is dated on the basis of the latest object found in it).

Because so much of the surviving prehistoric metalwork

comes from hoard contexts, the nature of these hoards and the "psychology" of hoarding have been studied intensely by prehistorians, especially by European prehistorians. By studying the metalwork stored in dozens of museums in Europe, the Swedish scholar Gustav Oscar Montelius (1843–1921) was able to work out a comparative typology for the Bronze Age of northern Europe. He worked out a sequence of six periods based on the typological development of bronze tools, implements, weapons, vessels, and ornaments. He later extended it, in both directions, to include four periods of the Neolithic and six periods of the Iron Age. Montelius explained the basis of his typological system in *Die typologische Methode: Die älteren Kulturperioden im Orient und in Europa* (Stockholm, 1903). In a posthumous volume (*La Grèce préclassique,* (Stockholm, 1924), Montelius published drawings of Aegean Bronze Age artifacts that were so good they are reprinted frequently (often without acknowledgment).

Montelius's system was elaborated on by the German prehistorian Paul Reinecke (1872–1958). His four-phase sequential framework for the European Bronze Age, still known as Reinecke A–D (although Reinecke himself never published his system in detail), has long served as the basis for the chronological ordering of the material culture of the European Bronze Age. The sequence was extended into the Iron Age, with Hallstatt A–D, followed by La Tène A–D, which ended with the Roman period. For objects made of base metal, Reinecke's system probably represents the single most successful application of the principles of typological analysis.

One of the main drawbacks of typological analysis is that such work has often resulted in the creation of archaeological cultures having little or nothing to do with historical reality. Present work with metal analyses has created a similar state of affairs, with metal types replaced by metal groups established on the basis of elemental analysis or lead isotope analysis. [*See* Lead Isotope Analysis.]

Scholars not only studied the typology of objects from hoards, they studied the typology of the hoards themselves. European prehistorians came to distinguish between personal hoards (containing the personal property of a single individual), craftsman's hoards (containing the tools used by a particular artisan), merchant's hoards (having freshly made artifacts ready for distribution), and founder's hoards (broken or damaged artifacts destined for the melting pot or crucible).

Although these categories can be extended to the Aegean, they do not seem to work in the Near East. In the first systematic study of hoards from Iraq and Syria dating to before about 2000 BCE, Judith K. Bjorkman concluded that "not a single one can be safely ascribed to a particular occupation" (Bjorkman, 1994, p. 12). The only possible exception would be the Larsa goldsmith's hoard, also the subject of a detailed study by Bjorkman (1993). [*See* Larsa.]

Near Eastern hoards also differ from their European counterparts as regards both size and number. In the hundreds of hoards from the European Bronze Age, many examples have enormous quantities of bronze. In the Cincu-Suseni (Romania) group of seventy hoards, the five largest contained nearly 4,000 kg of bronze. One of the largest of these hoards had 5,812 bronze objects weighing almost 1,100 kg (Sandars, 1983). Nothing like this is known from the Near East, where the largest metal hoard (and also the earliest), from Naḥal Mishmar in Israel's Judean Desert, contained 416 metal artifacts. [*See* Judean Desert Caves.] As to number, Bjorkman, in her catalog of Mesopotamian hoards and deposits, identified only thirty-eight actual hoards from all periods down to about 2000 BCE—most of which are hoards of silver, not bronze.

These figures should be kept in mind in evaluating the role of metals and metallurgy in ancient Mesopotamia. There, metal was never used on anything approaching the scale known from Bronze Age Europe—which must reflect the relative availability of the raw materials, copper and tin, and the accessibility of major ore deposits. The sheer number of artifacts involved is certainly one of the reasons why typological analysis has been carried out with greater success for prehistoric Europe than for ancient Mesopotamia. With more exemplars to work with, it is possible to establish more meaningful categories. The state of preservation of surviving metal artifacts is also a factor: in general, the poor state of preservation of bronze artifacts from the Near East hinders typological classification.

Typology is often used as a means of organizing (and publishing) large bodies of material. This was the case with Jean Deshayes's (1960) two-volume study—the first serious attempt to organize and evaluate a very large number of bronze tools and implements. These volumes were published with boxes containing hundreds of punch cards, eventually either discarded or misplaced by most libraries—an early attempt at the mechanical recovery of data.

The successor to Deshayes's pioneering work is the series of volumes being published under the general title *Prähistorische Bronzefunde,* a monumental research project organized by Hermann Müller-Karpe under the auspices of the Union Internationale des Sciences Préhistoriques et Protohistoriques. Since 1969 a steady stream of volumes has appeared within twenty categories. Eighteen categories are based on type of object: swords, daggers, razors, bracelets, pins, horse trappings—with the nineteenth for specialized bodies of material not otherwise covered; the twentieth is being set aside for general or synthetic studies.

Within each category (or *abteilung*), the material is published geographically. Assembling a complete catalog has meant the inclusion of pieces of questionable context or authenticity, but it does bring together large bodies of material that are otherwise virtually inaccessible. Although the project's main focus has always been prehistoric Europe, there

are volumes dealing with material from Greece, Turkey, Cyprus, Israel, Iraq, and Iran, with volumes by Eva A. Braun-Holzinger (1984) on Mesopotamian bronze figurines and statues and by Michael Müller-Karpe (1993) on Mesopotamian bronze vessels.

The fortunes of archaeological discovery play a defining role in any study of ancient Near Eastern metalwork. Certain sites have produced such enormous amounts of metalwork that virtually every category of object includes examples from them. Pride of place must go to the royal cemetery at Ur, including the graves from the Akkadian and Early Dynastic III periods. [*See* Ur; Akkadians.] Much of the Ur material remains unpublished. The final reports of its excavator, C. Leonard Woolley, for all their admirable qualities, often included little more than perfunctory catalogs of metal finds. [*See the biography of Woolley.*] There are also vast numbers of metal artifacts from Nippur, also for the most part unpublished. [*See* Nippur.]

In the case of Nippur the problem is that most of the finds come from the first seasons of excavation, conducted before World War I, and none have any real archaeological context. There is a large body of unpublished Mesopotamian (and Near Eastern) metalwork in the Istanbul Archaeological Museum from the days of the Ottoman Empire (although this material has been studied typologically in an unpublished Turkish dissertation). All excavated Near Eastern sites have produced a fair number of metal finds, but very little of this material has been published in a usable fashion. Such circumstances have discouraged the serious study of ancient Near Eastern, especially Mesopotamian, metalwork.

Conditions are actually somewhat better in the Levant, where a considerable amount of metalwork has been excavated and published. The metal weapons from EB and MB Syria and Palestine have been the subject of a detailed typological study by Graham Philip (1989) that provides the opportunity to examine both the merits and defects of typological analysis. [*See* Weapons and Warfare.]

Within the category of tanged spearheads, Philip gives seventeen separate types. Type number 7, a spearhead with a tang ending in a tightly closed hook, represents a class of objects with very close Anatolian connections. The same holds for type number 15, a spearhead with two parallel slots on either side of the midrib. In these examples the Anatolian connections are so close Philip regards all Levantine examples as Anatolian imports. The objects are also typologically very similar to contemporary metalwork on Cyprus, there representing the beginning of the Cypriot Early Bronze Age, the so-called Philia culture. [*See* Cyprus.] This has been taken to mean that the bronze industry developed on Cyprus, in the third quarter of the third millennium BCE, under a strong Anatolian influence.

Other types of Levantine spearheads appear to have different foreign connections. Type number 3, a spearhead with a leaf-shaped blade, may have strong North Syrian connections, whereas number 9, with a tapering "poker-butt" tang, is a classic Mesopotamian type whose use spread as far as Transcaucasia. The spearhead soon became the characteristic weapon of Mesopotamia, in contrast to Anatolia where the dagger predominated. Spearhead production also marks the beginning of a major metal industry in Mesopotamia, where the earliest example is one excavated by Woolley from an Ubaid period III (c. 5000–4500 BCE) grave at Ur. By the Jemdet Nasr period, Mesopotamia was using the traditional spearhead with a leaf-shaped blade (Frangipane, 1985).

The Mesopotamian connections are even stronger for all Levantine shaft-hole axes. Although Philip recognizes six different types, his total corpus amounts to only thirty-one exemplars, some of which are odd specimens. His type number 6 consists of a group of objects known only from Mari (the palace of Zimrilim). [*See* Mari.] They were published by their excavator, André Parrot, as door hinges (an identification accepted by P. R. S. Moorey, 1994). Type-2 axes, with lobate blades with the cutting edge on their underside, constitute the classic Mesopotamian type of shaft-hole ax. At Ur alone there are at least ninety eight examples, seventy two from Early Dynastic III contexts and twenty-six from the Akkadian period (according to the dating of the Ur burials proposed by Hans Nissen). This type of ax has a distribution along the Euphrates River, from Ur to Habuba Kabira. [*See* Euphrates; Habuba Kabira.] Examples are known as far south as Byblos, but none has ever been found in Israel. [*See* Byblos.] The same holds true for type-3 axes, with horizontally mounted blades. They are known from Syria (Ugarit, Alalakh), but not from ancient Palestine. [*See* Ugarit; Alalakh.]

This evidence certainly indicates that, in the second half of the third millennium BCE, a north–south trade route ran along the Euphrates valley connecting Sumer with the Mediterranean coast of North Syria. Raw materials were conveyed along this route, including copper from Magan (Oman) and tin and lapis lazuli from distant Afghanistan. [*See* Oman.] Armies also marched along this route; inscriptions of Sargon of Akkad and his grandson Naram-Sin record the conquest of Mari, Armanum, and Ebla. [*See* Ebla.]

In the study of ancient Near Eastern metalwork, the fenestrated ax has received a great deal of attention, for it is a type of object thought to have clear chronological significance. Kathleen M. Kenyon even used the presence of such an ax to date temple 4040 at Megiddo to her EB–MB period (also known as EB IV or MB I), although incorrectly. [*See* Megiddo.]

Philip recognizes five types of fenestrated axes, not including the crescentic ax, which he regards as a separate category (with three different types). The crescentic ax has a blade that was attached to the haft by means of one or more tangs; it seems to be a very primitive, almost useless object but one that enjoyed a fair degree of popularity. Ex-

amples from ancient Palestine (Jericho, Bab edh-Dhra', Tell el-Ḥesi) all appear to date to EB III, as do the more northern examples known from Byblos and Amarna in Syria. [*See* Jericho; Bab edh-Dhra'; Ḥesi, Tell el-.] Byblos produced a mold for casting a crescentic ax, also from the EB III period. The Mesopotamian examples, on the other hand, seem to be somewhat earlier. The examples from the Shara temple at Tell Agrab (in the Diyala region) are Early Dynastic II, while those from the Y cemetery at Kish, found in association with cart burials, could even be late Early Dynastic I. [*See* Diyala; Kish; Carts.]

The classic fenestrated ax is the so-called duckbill ax (Philip, 1989, type 1), which has a narrow, functional blade. An ax of this type is depicted being carried by an Asiatic in an early nineteenth-century BCE painting from Beni Hasan in Lower Egypt, although the ax was foreign to Egypt itself. The date, however, is in keeping with the MB I date suggested for examples from Syrian coastal sites. The best-preserved example of such an ax, which even preserves its distinctive curved wooden handle, comes from the Syrian site of Baghouz and is dated to between 2000 and 1750 BCE (MB I, also known as MB IIA).

Molds for casting duckbill axes are known from Byblos, Ugarit, and Ebla. The Ebla example, from tomb D3712, is made of andesite and is an excellent example of the two-piece, or bivalve, mold. The Ebla mold would have produced a Philip type-2 ax: it has a wider, more D-shaped blade than the narrower type-1 examples. Type-2 axes are known chiefly from the so-called Dépôts des Offrandes at Byblos. These consist of jar deposits containing massive numbers of bronze artifacts, including hundreds of small human figures cut out of thin sheet bronze. Philip convincingly argues that all these hoards are votive deposits, made in association with the Obelisk Temple at Byblos. Similar, though much smaller, deposits at Ugarit are to be associated with the Temple of Baal at Ugarit (Philip, 1988).

The range of metal types in use in Mesopotamia is well indicated by the composition of the Old Babylonian hoard from Tell Sifr. A similar hoard, with hooks, nails, spoons, large rings, needles, tweezers, platters, bowls, mirrors, hoes, sickles, and adzes, is said to have come from Ishchali (Iraq) but was actually purchased in Baghdad in 1930. It is now in the collection of the Museum of the Oriental Institute at the University of Chicago (Moorey, 1994, p. 262).

Vessels were usually made of bronze, but examples in gold, silver, and electrum are also known. A chronological sequence for bronze vessels has been worked out by Müller-Karpe (1993). Statuary in copper and bronze was usually executed on a small scale, as seen in numerous human and animal figurines, usually made of copper (Braun-Holzinger, 1984). The outstanding exception comes in the use of metal for architectural decoration, especially from the Early Dynastic III temple at Tell al-Ubaid, excavated by H. R. Hall and C. Leonard Woolley. [*See* Ubaid.] There, the temple was decorated with large-scale animals—bulls, stags, lions, and leopards—out of hammered thin sheets of copper over a wooden core; the heads (and horns, where present) of the animals were made of cast bronze. This technique of hammering sheet metal over a wooden core was also used in fabricating the lions that guarded the terrace of the Old Babylonian temple of Dagan at Mari.

In the Neo-Assyrian period there was an apparent increase in the use of metal in Mesopotamia, made possible by the tribute in metals paid by vassal states from all parts of the Assyrian empire. The Assyrian kings used some of their newly acquired metal resources to decorate the wooden doors of their temples and palaces with strips of bronze. Such bronze overlays are first mentioned by Adad-Nirari I (1305–1274 BCE) and continued to be used down to the end of the Neo-Assyrian period (late seventh century BCE).

Examples of decorated bronze strips nailed to wooden doors are known from Aššur, Nimrud, Khorsabad, and Tell Hadad (in the Hamrin basin). [*See* Aššur; Khorsabad.] The best-known examples are from the site of Balawat and date to the reign of Shalmaneser III (858–824 BCE). [*See* Balawat.] The bronze bands from Balawat are said to be the earliest examples of true engraving on metal. The cuneiform inscriptions on these bands were cut with steel engraving tools, exactly as they would have been cut into stone. One of the bands shows an Assyrian sculptor cutting cuneiform text on the rock face of a commemorative inscription (Moorey, 1994, pp. 34, 276). The Assyrian king Sennacherib (704–681 BCE) claims that he knew how to melt and cast the metal for making such bronze bands (in his account of the construction of his "Palace without Rival"; cf. Dalley, 1988).

By the tenth century BCE, iron was well on the way to replacing bronze as the basic utilitarian metal. Agricultural tools and implements formerly made of bronze, as documented in cuneiform texts and by the contents of the Tell Sifr hoard (see above), were increasingly made of iron, as documented by the finds from such Palestinian sites as Ta'anach (Stech-Wheeler et al., 1981). [*See* Ta'anach.] The array of iron tools and implements found at Ta'anach nicely parallels the list given in *1 Samuel* 13:19–20. There, in a passage placed in the time of King Saul's wars against the Philistines (c. 1000 BCE), it is stated that "There was no smith to be found in all the land of Israel, for the Philistines had said to themselves, "The Hebrews might make swords or spears!" So all Israel would go down to the Philistines to repair any of their plowshares, mattocks, axes, or sickles." Iron swords were difficult to make and were first found in any quantity on Early Iron Age Cyprus. Spearheads and arrowheads were socketed and, therefore, tended to be made of bronze even in Roman times. It was in the manufacture of objects such as plowshares, axes, adzes, hoes, spades, and shovels, however, that iron soon replaced more expensive bronze.

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J. D. MUHLY

Artifacts of the Neolithic, Bronze, and Iron Ages

In the "Three-Age" periodization of human cultural development, first proposed by the Danish scholar Christian J. Thomsen in 1819 (Daniel, 1981, pp. 58–60), the Bronze Age (beginning c. 3000 BCE), marked the change from stone to metal. The metals in question—copper and tin (the latter alloyed with copper to produce bronze)—then dominated the scene until they were replaced by iron (c. 1000 BCE). The Iron Age represented the culmination of the primitive technology characteristic of the ancient world before the emergence of Greco-Roman civilization.

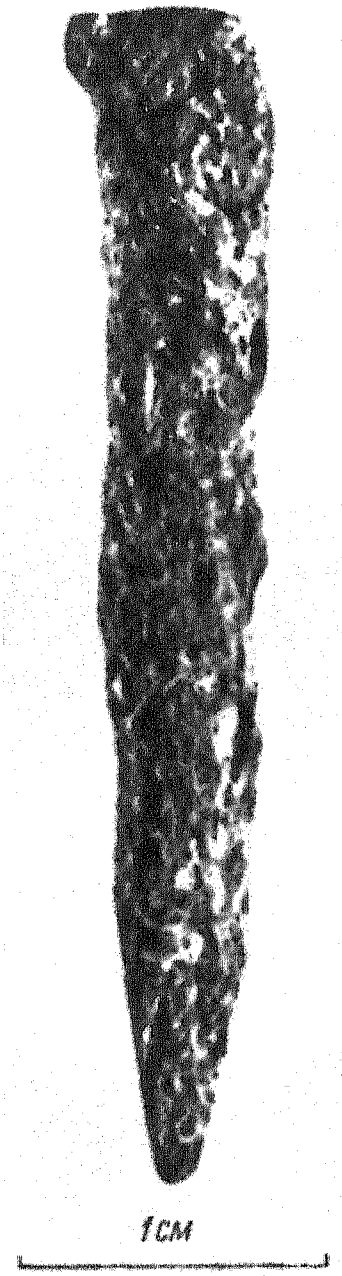
Although world prehistory has largely been rewritten during the last two decades, the three age system is still a useful chronological framework, although it no longer has any technological meaning. Recent advances in what is understood of the beginnings of metallurgy make this very clear: evidence for the first use of metal now goes back to about 8000 BCE. The beginning of the Bronze Age is associated with a series of developments that includes complex political and economic systems requiring stratified societies and systems of writing, international trade, fortified cities, and the use of arsenical copper—not bronze. The alloy of copper and tin, the only copper alloy properly designated bronze, only came into common use during the Middle Bronze Age (c. 2000–1600 BCE). The beginning of the Iron Age has always been put at about 1200 BCE, but only Cyprus and Palestine made any serious use of iron before the first millennium BCE.

Neolithic Period. The first metal used in antiquity was copper, not only because it was a useful metal—being durable, ductile, and easy to work—but also because it exists as a metal in geological context. Nuggets of native copper needed only to be hammered into shape to form the earliest metal artifacts. Small beads, hooks and pins, and reamers/awls of native copper are known from the Aceramic Neolithic site of Çayönü Tepesi in southeastern Anatolia, a site also known for its complex domestic and public architecture (c. 8000 BCE). From a somewhat later period (late eighth millennium) there is a series of copper beads, used in making necklaces, from the site of Aşıklı Höyük in central Anatolia. In about the same time frame, small beads of copper are known from the Iranian site of Ali Kosh and the Mesopotamian site of Tell es-Sawwan. [*See* Ali Kosh.] The earliest substantial copper object is an awl from the northern Mesopotamian site of Tell Magzaliya (see figure 1), dated to the second half of the eighth millennium (Muhly, 1988).

All these early copper finds represent the use of native copper. Quite unexpected is the evidence for the practice of annealing (the heating of copper at low temperatures to prevent cracking during hammering) in the early copper artifacts from Çayönü and Aşıklı. The use of fire (pyrotechnology) was thus employed in working with metal long before it was used with clay, at least in the ancient Near East (in central Europe, animal and human figurines made of fired clay are known from Dolni Věstonice in Czechoslovakia that date to about 24,000 BCE).

The discovery of small pieces of copper smelting slag from level VIA at Çatal Höyük (c. 6000 BCE) suggests the early development of a smelting technology, but there is little other evidence for the use of anything but native copper before about 5000 BCE. [*See* Çatal Höyük.] The lead beads reported from Çatal Höyük VIA are actually made of galena (the lead sulphide ore that would have been smelted to produce metallic lead), and the slags and crucibles from the Anatolian site of Nevalı Çorı are from its Early Bronze I levels—not its Aceramic Neolithic ones—which is apparently true for its small copper objects as well. [*See* Nevalı Çorı.]

The shaft-hole mace-head from level 2b at Can Hasan (c. 6000 BCE), made of very pure copper, with only 0.05 percent silver as an impurity, must also be made of native copper. The copper beads found in graves at the site of Mehrgarh, in Baluchistan, also date to about 6000 BCE and should also be of native copper. They demonstrate that this simple copper metallurgy had spread to South Asia by the late seventh



METALS: NEOLITHIC, BRONZE, AND IRON AGES. Figure 1. *Copper awl from the Russian excavations at Tell Magzaliya, Iraq.* (Courtesy Ralf Munchaev; supplied by J. D. Muhly)

millennium. At present, the massive lead bracelet from level XII at the northern Mesopotamian site of Yarim Tepe I (early seventh millennium), stands alone as a Neolithic object made of metal that must have been smelted from an ore.

Metallurgically, the sixth millennium in the ancient Near East seems to have been an uneventful period. The precocious developments of the previous millennium were, for some reason, not carried forth. The sixth seems to have been but a prelude to the great expansion of the following two millennia (c. 5000–3000 BCE)—in many respects the most creative period in prehistoric metallurgy.

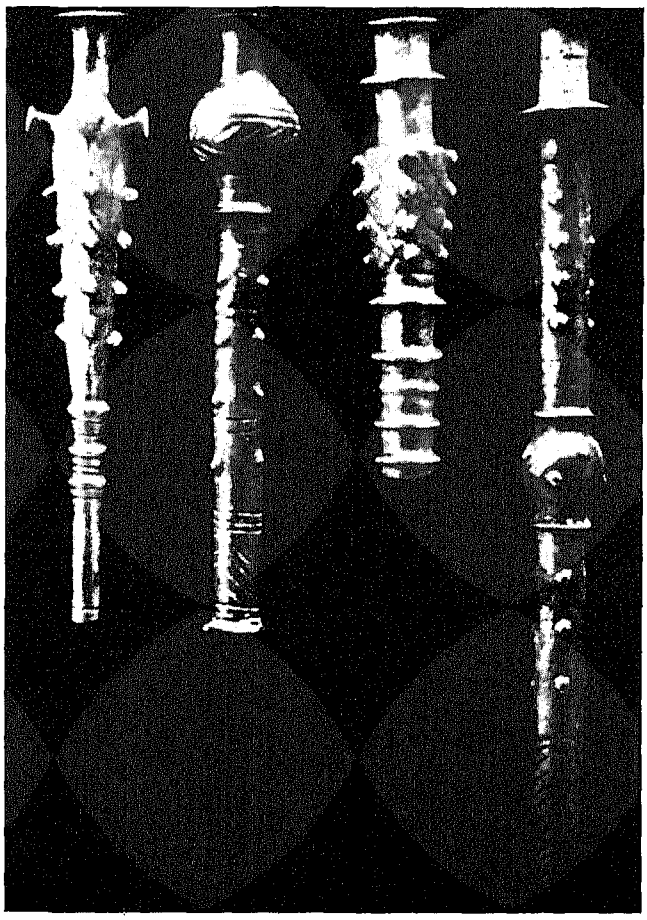
From the fifth-millennium Iranian sites of Tell-i-Iblis and Tepe Ghabristan comes the first clear evidence for a copper-smelting technology and the existence of metal workshops. Tall-i-Iblis produced a large number of crucible fragments, while Tepe Ghabristan had an actual workshop, with crucibles, tuyeres, molds, and some 20 kg of copper ore. Contemporary with these finds (c. 4500–4000 BCE, or Sialk III 4–5) are a number of copper artifacts, including fifty-five copper axes from the Susa I (or A) graves representing the mass burials associated with the city's founding (Moorey, 1982). [*See* Susa.]

The second half of the fifth millennium is also when copper metallurgy expanded into the Aegean, the Balkans, and southeastern Europe. Earlier copper objects are known from all these areas, from Early Neolithic (c. 5900–5300 BCE) and Middle Neolithic (c. 5300–4700 BCE) times, but it was in the Late Neolithic (c. 4700–4300 BCE)—also known as the Eneolithic (or Aeneolithic)—that European copper usage exceeded anything known from the Near East. From this period also, the time of the Gumelnitsa, Karanovo VI, Tiszapolgar, Cucuteni, Tripolje, and Sesklo regional cultures, hoards consist of shaft-hole axes as well as flat axes (or celts) and chisels, all made of unalloyed smelted copper. The copper ore came from at least two mining sites that have been securely dated to the second half of the fifth millennium: Rudna Glava, in eastern Serbia, and Ai Bunar in Bulgaria. It was also during the Late Neolithic that gold made its first appearance. A few gold objects are known from sites in northern Greece, but massive quantities were found in the graves of the Varna cemetery on the Black Sea coast of Bulgaria. Nothing comparable is known from the Near East (although claims have been made for Late Neolithic copper smelting in Wadi 'Arabah, at Timna' in Israel (site F2) and at Feinan in Jordan (site Fidan 4). [*See* Timna' (Negev); Feinan.]

Fourth Millennium BCE. Large-scale metallurgy was developed in the ancient Near East in the fourth millennium, replacing the "trinket metallurgy" (cf. Moorey, 1994) of the earlier periods. The best evidence for these developments comes from the Levant—from Israel and Jordan. A great hoard of more than four hundred copper artifacts from Naḥal Mishmar (on the west bank of the Dead Sea) was greeted with incredulity when it was first discovered in 1961. [*See* Judean Desert Caves.] It was thought to be treasure from the Temple in Jerusalem that had been hidden to save it from destruction by the Romans in 70 CE. Now, some thirty objects in the same style are known from excavated Chalcolithic sites that have also produced evidence for copperworking and the casting of the mace heads, standards,

and "crowns" still best known from the Naḥal Mishmar hoard (see figure 2). It is still possible that this hoard represents cult paraphernalia, but from the Chalcolithic temple at 'Ein-Gedi, not the Herodian temple in Jerusalem. [*See* Cult; 'Ein-Gedi; Jerusalem.]

Evidence for the Chalcolithic mining of copper is known from Feinan in Jordan (and perhaps also from Timna' in Israel). These mines produced a copper ore consisting of chrysocolla and malachite, but the complex prestige or cult objects were made of a remarkable alloy containing more than 20 percent antimony and more than 8 percent arsenic. The copper for such an alloy could only have come from eastern Anatolia, where it has even been found in an archaeological context at the Chalcolithic site of Noršuntepe. The implications of this evidence are still not understood. It could be argued that the evidence for local metalworking, as known from Tell Abu Maṭar and Shiqmim in Israel, comprising simple bowl furnaces, crucibles, slags, and quantities of copper ore, pertained only to the manufacture of the utilitarian axes and chisels made of unalloyed copper. [*See* Shiqmim.] The ore in question could certainly have come from Feinan, where evidence was also uncovered for Chalcolithic and Early Bronze Age copper smelting, but what then of the cult or prestige objects? The problem is that these objects also seem to be of local manufacture, utilizing an iconography also seen in contemporary objects in clay, stone, and ivory. Apparently, metallic copper, rich in antimony and arsenic, was produced in eastern Anatolia and then shipped to Israel's Negev desert, where it was fashioned into the elaborate objects known from the Naḥal Mishmar hoard.



METALS: NEOLITHIC, BRONZE, AND IRON AGES. Figure 2. *Copper Standards from the Naḥal Mishmar hoard.* Israel Museum, Jerusalem. (Courtesy Miriam Tadmor; photograph by Robert Maddin; supplied by J. D. Muhly)

Precious metals are also found for the first time during the Chalcolithic period, in the fourth millennium. A remarkable collection of eight ring-shaped gold objects, with up to 30 percent silver, were found in a cave in Naḥal Qanah, along with prestige objects of alloyed copper. These objects should be described as being made of electrum, as was a remarkable wolf's-head terminal from tomb 114, level X, at Tepe Gawra in northern Mesopotamia (mid-fourth millennium). [*See* Tepe Gawra.] Analysis has shown that many of the objects commonly described in the literature as being of gold are in fact made of electrum, including some of the most famous pieces from the royal cemetery at Ur (see below). [*See* Ur.]

A few pieces of gold jewelry are known from an earlier (level XII) tomb at Tepe Gawra, and more extensive finds, including gold pendants, gold bands, and gold spirals, were found in tombs in levels XI–X. The great age of gold jewelry, however, was the third millennium BCE, a period that, with full justification, could be called the Age of Gold. [*See* Jewelry.]

Electrum normally contains about 60–70 percent gold and 30–40 percent silver. There are examples of high-silver electrum; this so-called aurian silver seems to have been the only type used in ancient Egypt, at least prior to the Middle Kingdom (c. 2000 BCE). In the rest of the ancient Near East, however, silver was extracted from argentiferous galena by a process called cupellation, producing as a by-product a lead oxide known as litharge. The earliest evidence for cupellation comes from the Syrian site of Habuba Kabira (late Uruk period, late fourth millennium). [*See* Habuba Kabira.] The separation of natural electrum into its component parts (gold and silver), a cementation process known as parting, does not seem to have been known before the mid-sixth century BCE.

Silver came into common use in the late fourth millennium. A surprising number of silver objects are known from sites in Anatolia (Beycesultan, level XXXIV; Alişar Höyük, level 14; Arslantepe, level VIA; and from two contemporary rich graves at Koruçutepe), the Levant (especially the rich burials from the Eneolithic cemetery at Byblos), and Egypt (the Predynastic graves at Naqada). [*See* Arslantepe; Grave Goods; Byblos; Naqada.] From the Jemdet Nasr period in

Mesopotamia comes a silver vase and a limestone bull with silver legs (both from Uruk) and, from Proto-Elamite Iran, a magnificent silver kneeling bull holding a vase, an object that, like so many works in precious metal, comes not from a controlled excavation but from the antiquities market. [*See* Jemdet Nasr; Uruk-Warka.] The use of silver inlay in decoration is usually associated with the EB II–III period and is best documented in the inlaid stags from the royal cemetery at Alaca Höyük: the inlaid sword hilts from Arslantepe show, however, that the technique was already in use in the late fourth millennium. Silver is extremely rare from contemporary sites in the Aegean; the only example known to date is a silver pendant from the Alepotrypa cave hoard in Mani, in southern Greece (Muhly, 1985a, p. 112). The lead, produced as a by-product of silver extraction, was also used to make objects, especially a series of vessels from the so-called Jemdet Nasr cemetery at Ur (Moorey, 1994, p. 294).

The prestige objects from Naḥal Mishmar are unusual in their high concentrations of antimony, in addition to the more common arsenic. Arsenical copper was the standard alloy of the fourth millennium, and its use extended into the third as well. The use of arsenical copper is documented in many fourth-millennium copper hoards, including those from Ilipinar, Ikiztepe, Beycesultan, Arslantepe, and Hassek Höyük (in Anatolia), from various sites in Palestine dating to the time of the Naḥal Mishmar hoard, and from late fourth-millennium sites in Mesopotamia, notably Jemdet Nasr and Kish. [*See* Kish.] Arsenical copper was also the dominant alloy in the large hoard of metal objects found at Kefar Monash in Israel that included flat axes, adzes, chisels, large hooked-tang spearheads, and many small, thin copper plates (see figure 3). The hoard also contained some fragments of silver and some carnelian beads and must date to about 3000 BCE (Syro-Palestinian EB I).

METALS: NEOLITHIC, BRONZE, AND IRON AGES. Figure 3. *Copper "scale" from the Kefar Monash hoard.* Israel Museum, Jerusalem. (Courtesy Miriam Tadmor; photograph by Robert Maddin; supplied by J. D. Muhly)

Third Millennium BCE. The use of metal, both precious and base, "exploded" in the entire ancient world during the third millennium BCE, from the Danube to the Indus River. The dominant copper alloy still seems to have been arsenical copper but, as the millennium progressed, the use of bronze steadily increased—in Anatolia, Syria, Mesopotamia, and Iran. The situation in mid-millennium is illuminated by the hoard of metal artifacts found in a large covered and painted clay vessel on the acropolis at Susa in 1907. The entire hoard, consisting of forty-eight (or fifty-seven metal objects, eleven alabaster vessels, six cylinder seals, gold rings and beads, and a tiny frog of lapis lazuli, has come to be known as the *vase à la cachette* ("hidden vase"). It includes objects from the entire first half of the third millennium BCE. Of the forty-two metal artifacts that have been analyzed, only six have at least 2 percent tin, with four of them having more than 7 percent tin. The dominant alloy in use was arsenical copper: thirty-one of the forty-two analyzed objects had at least 1 percent arsenic, including a globular spouted vessel with 6.2 percent; a broad, shallow bowl with 4.7 percent; and a tanged saw with 4 percent arsenic.

The parallel use of bronze and arsenical copper, with the latter predominating, is the technology found across Anatolia, as far as the Troad and the northern Aegean, in the mid-third millennium BCE. Recent analytical work has documented its use at Thermi (Lesbos) and Poliochni (Lemnos). The latter site is of particular interest as the analyses document a gradual but steady increase in the use of bronze, from Poliochni II to V, covering the first half of the third millennium BCE. Arsenical copper was also the predominant alloy in the Cyclades (especially in a hoard thought to be from Kythnos but more likely originating on Naxos) and Crete during the Early Bronze Age. A few bronzes are known from Early Minoan Crete, whose number should increase with the metal finds from the rich cemetery at Ayia Photia. [*See* Crete.]

In Palestine, on Cyprus, and in Egypt, bronze was seldom used before the second millennium BCE. A number of daggers from EB IV tombs in Palestine (Bab edh-Dhraʿ, ʿEinan, Jericho, Motza, Menahemiya) are made of bronze, but the use of this alloy seems restricted to this class of object. [*See* Bab edh-Dhraʿ; ʿEinan; Jericho.] These EB IV bronze daggers have strong Anatolian connections, best seen in the daggers from the hoard found at Soloi-Pompeiopolis. The Anatolian connections could be related to the sources of tin being exploited at the end of the third millennium BCE (see above).

It requires tin to make bronze, and tin deposits are very rare in the lands of the eastern Mediterranean and the ancient Near East. Copper deposits are quite numerous, especially in Anatolia, on Cyprus, and in Iran, but ancient

sources of tin have yet to be identified. Some believe that Bronze Age tin, especially EB tin, came from the Taurus Mountains of southeastern Anatolia. [*See* Taurus Mountains.] Others, not impressed by the quantity of cassiterite (or tin oxide, the main source of ancient tin) from the Taurus put their faith in the tin deposits of Afghanistan and Central Asia, where the geological evidence for alluvial cassiterite is far better than anything known from Anatolia. The hypothesis of a Mesopotamian source for tin in Afghanistan is greatly strengthened by the fact that Afghanistan is also known as a major source of lapis lazuli and alluvial gold: these three materials—tin, gold, and lapis lazuli—appear together in the archaeological record in the mid-third millennium BCE. This is best documented in the finds from the royal cemetery at Ur (Early Dynastic IIIA, c. 2600–2500 BCE).

If Afghanistan were indeed a source of tin for the metal industries of EB western Asia, something of a local bronze industry would be expected in Afghanistan itself, the ancient land of Bactria. Indeed, such an industry did exist, but it is known almost entirely from objects purchased on the antiquities market (and from excavated sites such as Mundigak, in the south). "Bactrian bronzes," looted mainly from cemeteries in northern Afghanistan, flooded the antiquities market in the years following the Soviet invasion of Afghanistan in 1979. From the bazaar in Kabul these bronzes made their way to museums and private collections in the West. In addition to a great number of compartmented stamp seals, at first considered to be the work of Nestorian Christians, there were also vessels (including examples in gold, silver, and electrum) and weapons, notably axes. [*See* Weapons and Warfare; Seals.] The axes often are decorated in high relief, there are even examples in silver, ornamented with gold foil. Insofar as it can be determined, these Bactrian bronzes date to the late third and early second millennia BCE (Potts, 1994).

From the mid-third millennium BCE, deposits of gold jewelry, either as hoards or as grave goods, have been uncovered over a vast area, from Greece to southern Mesopotamia. Although chronological uncertainties have long clouded the issue, it now seems that all of these gold treasures, from the Greek mainland (Thyreatis), the northern Aegean (Poliochni), Crete (Mochlos), northwest Anatolia (Troy), central Anatolia (Alaca Höyük, Eskiyapar), and Mesopotamia (Ur) are from roughly the same chronological horizon. Gold, with the exception of Varna (see above) and, to a lesser extent, Tepe Gawra, was rare in archaeological contexts prior to about 2500 BCE. It then appears in (relatively) large quantities and over a vast area. In almost all cases, it appears in conjunction with tin (used in making bronze). Gold jewelry and bronze tools and weapons seem to have something in common. That commonality must reside in the alluvial nature of gold and cassiterite and in the fact that both alluvial materials occur geologically in association with granite rock (not all granites have tin, but there is no tin without granite). In Mesopotamia (Ur) and Syria (Ebla) gold and bronze appear together with lapis lazuli, and all three materials—gold, tin, and lapis lazuli—are found in Afghanistan. [*See* Ebla.] Moreover, lapis lazuli is known only from deposits in northeastern Afghanistan (save for minor deposits in Pakistan).

This conjunction suggests that the great metallurgical expansion of the mid-third millennium BCE was stimulated, in some very significant way, by the establishment of Mesopotamian contact with lands to the east, contacts that tapped into new sources of raw materials, both metals (gold, tin, and perhaps even copper) and semiprecious stones (carnelian and lapis lazuli). This great influx of material wealth stimulated the growth of trade and a commercial expansion that also had a political component. Lapis lazuli was shipped up the Euphrates River and beyond, as far as northern Syria, where blocks of the raw material have been found in the storerooms of palace G at Ebla. [*See* Euphrates; Palace.] It may even have been shipped as far north as Troy, where a ceremonial axe of lapis lazuli was one of four axes that made up Heinrich Schliemann's Treasure L (mid-third millennium BCE). [*See the biography of Schliemann.*] Apart from being at Troy, lapis is unknown at Anatolian Bronze Age sites.

There clearly was a great increase in the amount of precious metal (and tin) in circulation by the middle of the third millennium BCE. The idea that these raw materials came into the land of Sumer from the east is supported by references in Sumerian literary texts to a trade between Sumer and the land of Aratta, described in a Sumerian literary text from Nippur as being "in the midst of the highlands, where the sun rises." [*See* Sumerian; Nippur.] Associated with Aratta is the land of Tukrish, described in the same text as "the mountain land of great food offerings" and as a source of gold and lapis lazuli. Sumer itself was an alluvial floodplain, possessing virtually no natural resources save for clay, reeds, and the Sumerians themselves. All raw materials, including metals, stone, and wood, came, according to Sumerian literary texts, from the eastern highlands.

Silver also played a major role in this trade with lands beyond southern Mesopotamia. An Archaic Sumerian literary text, known from copies found at Ebla and at Abu Salabikh (near Nippur), says of the god Ea that "foreign trade he gave to the traders. [*See* Abu Salabikh.] The lands yielded lapis lazuli and silver, sissoo wood, cedar, cypress, juniper. . . ." The text dates to the very beginning of the Akkadian period (c. 2400–2200 BCE), or just before. In the Akkadian period there was a great increase in the amount of silver in circulation. Mesopotamia went on the "silver standard" and prices for goods were quoted in terms of shekels of silver. It stayed on this standard except for a brief period during Kassite times, when it shifted to gold. [*See*

Kassites.] Neo-Assyrian texts also sometimes quote prices in terms of shekels of copper. [*See* Assyrians.]

A number of silver hoards are known from Akkadian times, including at least four hoards from Tell Brak, two from Tell Taya, and several from Tell Asmar and Khafajeh. [*See* Akkadians; Brak, Tell; Taya, Tell; Khafajeh.] Many contained rings and coils of silver, which are now seen as a premonetary form of currency. The silver coils and rings from the so-called Treasure of Ur, excavated at Mari, indicate that such objects were in use already during the time of the royal cemetery at Ur.

Silver was also much in use in Anatolia during the third quarter of the third millennium BCE; actual ingots of silver are known from Troy and Mahmatlar. Lead-isotope analyses indicate that at least some of the silver used at Troy, and at Mesopotamian sites such as Telloh and Aššur (and even in one of the silver coils from Khafajeh) came from the Taurus Mountains, an area well known as a source of silver until well into Ottoman times. [*See* Aššur.] The great conqueror Sargon of Akkad states that his military campaigns took him "as far as the Cedar Forest and the Silver Mountains." The first is certainly a reference to the cedars of Lebanon; the second must designate the Taurus. There was also a major increase in the use of silver in the Aegean, especially on the islands of the Cyclades, during the third quarter of the third millennium BCE, documented primarily by a group of silver bracelets from Early Cycladic graves. According to lead-isotope analyses, the earlier silver (Early Cycladic I–II) came from the Ayios Sostis mines on Siphnos. Increased demand for silver led to the opening of the Laurion mines, in southern Attica, at the end of Early Cycladic II. The silver known from Early Minoan Crete includes a silver vase from Mochlos.

Although bronze was certainly being produced during the Akkadian period, many of the most famous pieces of Mesopotamian metalwork have proved to be of unalloyed copper. A striking head dated to the time of Sargon of Akkad, but found in a Neo-Assyrian level at Nineveh (where it had been mutilated in the sack of 612 BCE), is made of cast copper, not bronze as usually stated. [*See* Nineveh.] The large-scale statue of a crouching nude male, "discovered" by a bulldozer at the site of Bassetki in northeastern Iraq, is also made of cast copper. It bears an inscription of Naram-Sin, Sargon's grandson, and seems originally to have guarded the gate of a temple. This use of unalloyed copper for sculpture may represent something of a Mesopotamian tradition. There are many Early Dynastic figurines made of cast copper and, from Early Dynastic III, a number of animal heads and relief panels showing animals, probably bulls, are all of cast copper.

According to Sumerian literary and administrative texts, copper came from the land of Magan, now identified as being roughly equivalent to the modern Sultanate of Oman. [*See* Oman.] The copper mines of Oman have been known for many years, but it has only been possible recently to show that these mines were first worked in the late third millennium BCE. The Sumerians sailed to Dilmun, their name for the island of Bahrain, in order to acquire the copper of Magan and, in some periods, sailed directly to Magan. [*See* Dilmun; Bahrain.] In exchange they brought textiles (produced by the extensive textile industry in Sumer) and silver (perhaps from Anatolia). This seaborne trade developed in the second half of the third millennium BCE, replacing the earlier overland trade route that had brought raw materials, including Iranian copper, from the eastern highlands into southern Mesopotamia. The development of this seaborne trade is in some way related to the rise of the Harappan civilization in the Indus Valley, an area known to the Sumerians as the land of Meluḫḫa. In one of his royal inscriptions Sargon of Akkad claims that he "moored the ships of Meluḫḫa, Magan, and Dilmun at the quay of Akkade" (his capital city). [*See* Akkade.] The Sumerian texts refer to gold, and even to tin, from the land of Meluḫḫa, along with stones and exotic woods (Cleuziou, 1986).

As the Mesopotamians had done earlier, the merchants of Meluḫḫa expanded into Central Asia (ancient Bactria) and seem to have been physically present in southern Mesopotamia, where their presence required the services of a translator. The inhabitants of the Indus Valley established some sort of a colony in Afghanistan, at the site of Shortugai. A complex of trade networks came into existence, linking Mesopotamia, Central Asia, and the Indus Valley. The metalwork that resulted from these cultural connections can be seen in such collections of precious materials as the so-called Quetta treasure. The treasure was discovered during the course of digging the foundations for a hotel in modern Quetta and is dated to about 2000 BCE. It includes gold vessels and small objects (especially two bull pendants), as well as copper/bronze implements and alabaster vessels. There is also a hoard of five gold and seven silver vessels said to have been found in 1966 at Khosh Tapa, north of Kabul, also dated to about 2000 BCE. Khosh Tapa is on the other side of the Anjuman Pass, across from the Sar-i-Sang lapis mines. These treasures must reflect the tremendous wealth generated by the international trade of the day (see articles in Ligabue and Salvatori, 1989).

One of the most distinctive objects in the repertoire of late third-millennium BCE jewelry in gold and silver is the quadruple spiral bead. These beads have an extensive geographic distribution, from Anatolia to the Persian Gulf (with later, related examples known from mid-second-millennium sites in Greece). This very distinctive artifact actually provides an excellent object lesson on the dangers inherent in typological dating. While many examples do date from the second half of the third millennium BCE, including specimens from Troy, Alaca Höyük, Tell Selenkahiyeh, Tell Brak, Ur, and Bahrain, others are from the early second millennium BCE (Old Assyrian Kültepe, Aššur tomb 20) and even the

late second millennium (twelve examples from a tomb at Mari dated to c. 1400-1200 BCE). Moreover, these beads were still being produced in the Iron Age. Eighteen complete examples in silver were found as part of a hoard excavated at the seventh century BCE site of Tepe Nush-i Jan, in western Iran (Curtis, 1984).

It has been argued that the Nush-i Jan beads represent curated heirlooms and were actually manufactured in the third millennium BCE. This seems most unlikely, given the large number of finds (including a number of fragments), but certainty on such matters will probably forever elude researchers. It certainly is significant that the hoard from Nush-i Jan also included five double spiral pendants in silver, a type known in the Early Uruk period and well documented in graves in the royal cemetery at Ur (Early Dynastic IIIA) and from roughly contemporary examples in Iran (Tepe Hissar IIIB).

The Nush-i Jan hoard also contained thirteen silver bar ingots. Such ingots are known from contexts both a thousand years earlier (Tell Asmar, Larsa) and a thousand years later (from the Late Roman period). [*See* Larsa.] Examples in copper are a distinctive feature of the EB IV period in Palestine. Molds for casting such ingots are known from Tell Brak and Chaghar Bazar (and even from sites as early as Tepe Ghabristan and as late as the Early Iron Age site of Koukos in northern Greece). The distribution of such ingots in Palestine, together with the general lack of EB IV settlements, has suggested the existence of a guild of itinerant metalworkers operating throughout Palestine at the end of the third millennium BCE.

Second Millennium BCE. From a metallurgical perspective the second millennium BCE began with the Old Assyrian trade between Aššur and the *karum* Kaneš, covering the nineteenth century BCE (the time of level II in the *karum*). Hundreds of Old Assyrian letters document a metals trade between northern Mesopotamia and central Anatolia. The Old Assyrian merchants brought tin (and textiles) into Anatolia, there to be exchanged for silver (and gold). The silver was used to purchase more tin, in Aššur, and the process was repeated the following year.

The obvious implication of this trade pattern is that silver was available in Anatolia, whereas tin was not. The texts say nothing about the source(s) of this tin, only that it was brought (from somewhere in the east) to Aššur, where it was purchased by Assyrian merchants, along with textiles from Babylonia. [*See* Babylonians.] Both tin and textiles were then brought by donkey caravan (making use of a special breed of black donkey) to Anatolia. The further implication is that the local Anatolian princes had no access to sources of tin themselves—or, at least, found it more desirable to purchase tin (at somewhat inflated prices) from Assyrian middlemen. The copper used by the Anatolian metalworkers must have been of local origin, and the production and utilization of bronze was also carried out locally. A metal workshop has been excavated in the Ib level in the *karum* Kaneš, the time of Shamshi-Adad I of Assyria.

This pattern of an east–west metals trade, bringing tin from the east (Afghanistan?) to sites west of Mesopotamia, is also documented in the Old Babylonian letters from Mari, covering at least the first half of the eighteenth century BCE. Tin came up the Euphrates to Mari, with Susa serving as a vital link between eastern tin sources and the Euphrates valley. Certain merchants (Akk., *tamkārū*) specialized in this tin trade with Elam, especially one named Isi-Dagan. The good graces of local Elamite officials were essential to maintaining access to this tin and so they were ingratiated with gifts of wine and honey. [*See* Elamites.]

The tin came to Mari in ingot form and was stored there for reshipment. From one text, known as the Mari Tin Inventory, it is known that this tin was shipped to various sites in the west, from Carchemish in the north to Hazor in the south. [*See* Carchemish; Hazor.] From Ugarit the tin was further shipped to the land of Kaptaru, the Akkadian name for the island of Crete. Such long-distance trade was justified by the scarcity (and therefore the cost) of the metal. Metal ratios given in the Mari text reveal that tin was considered to be about one-tenth the price of silver, whereas the price of copper was 150 to 180 times cheaper than silver. Lead, on the other hand, was twelve hundred times cheaper than silver. [*See* Mari Texts.]

There are other references to Kaptaru in the Mari texts, as well as to the exchange of "greeting gifts" between the rulers of the Minoan palaces on Crete and the rulers of Mari. Communication between the merchants of Crete and those of Mari required the services of a translator (Akk., *targamannum*, the Akkadian word eventually borrowed by all European languages as *dragoman*), as had earlier contact between Akkadian merchants and the merchants of Meluḫḫa (see above). The Mari texts also refer to copper from Alashiya, a geographic term usually associated with the island of Cyprus. The Cypriot copper industry was certainly well underway by the eighteenth century BCE. The first evidence for actual copper mining on Cyprus, at the site of Ambelikou *Aletri*, dates to this period. Copper from Alashiya is even mentioned in a text from Babylonia, dated to the fifth year of the reign of Samsuiluna, king of Babylon and the successor of Hammurabi.

This was the international world of the Old Babylonian period, illuminated by many references to metalworking and the metals trade in texts from Mari and Ur. The situation at Mari, however, has been greatly confused by mistranslations in the standard editions of the Mari letters. The translators identified references to a process of ore beneficiation and to a copper-smelting installation. In reality, the texts describe the washing and crushing of ice (Akk., *šurīpum*) and to the storage of that ice in an icehouse *(bīt šurīpim)*. A Mari text said to describe the casting of metallic copper actually states that, after the ice freezes, the iceman will send it to Mari for

storage in the icehouse. Equally suspect is the interpretation of rooms 216–218 in the palace of Zimrilim as metal workshops. There are, however, many actual references to metalworking in the Mari texts, especially to the manufacture of military equipment and even to the repair of chariots. [*See* Chariots.]

From Ur a group of texts from the time of Rim-Sin, king of Larsa (1822–1763 BCE) deal with the acquisition of copper from Dilmun (the copper actually coming from Oman, ancient Magan). [*See* Larsa.] A trader named Ea-nasir seems to have played a special role in this trade and, according to the surviving texts, may have been a rather unscrupulous individual, trying to pass off ingots of bad copper as good copper. The nature of the objects being produced from this copper can be seen in a hoard of metal artifacts found by W. K. Loftus at the site of Tell Sifr (Iraq) in 1854 (see below). Loftus described the hoard in 1857 as "consisting of large chaldrons, vases, small dishes, and dice-boxes (?); hammers, chisels, adzes, and hatchets; a large assortment of knives and daggers of various sizes and shapes—all unfinished; massive and smaller rings; a pair of prisoners' fetters; three links of a strong chain; a ring weight; several plates resembling horses' shoes, divided at the heel for the insertion of a handle and having two holes in each for pins; other plates of a different shape, which were probably primitive hatchets; an ingot of copper and a great weight of dross from the same smelted metal" (W. K. Loftus, *Travels and Researches in Chaldaea and Susiana*, London, 1857, p. 268).

Although several of the specific identifications Loftus made could be questioned today, it is clear that the Sifr hoard was basically of agricultural tools and that it demonstrates a basic continuity between the agricultural practices of Old Babylonian Mesopotamia and those in use in present-day Iraq. [*See* Agriculture.] Elemental analysis of a number of pieces from the Sifr hoard indicates that tin was used very sparingly, even in the Old Babylonian period. Most of the tools from the Sifr hoard were made of unalloyed copper. The extensive use of unalloyed copper is distinctive of other analyzed groups of second-millennium BCE metalwork as well, including pieces from Tell er-Rimah, Kar-Tukulti-Ninurta, and Bahrain. [*See* Rimah, Tell er-; Kar-Tukulti-Ninurta.]

Old Babylonian work in precious metal is best documented by the contents of the goldsmith's hoard excavated as a jar burial from the site of Larsa. [*See* Burial Techniques.] This deposit included many pieces of scrap metal, both silver and gold, as well as a copper anvil, three copper design blocks, and more than sixty stone weights for use with a pan balance. Such balance weights, often found in complete sets with one or more pan balances, are quite common in the archaeological record, especially in contexts dating to the mid-second millennium BCE (for Larsa hoard see Bjorkman, 1993).

The French excavators of Larsa believe that the room in which this hoard, as well as two others was found, was actually a metal workshop, the atelier of a goldsmith who can even be identified by name. All of this is most unlikely because, while hoards are buried in very improbable places, they are almost never buried in workshops. The goldsmith's hoards from Geometric Eretria (Greece) and the silver hoard from stratum VI (eleventh century BCE) at Megiddo (Israel) certainly did not come from workshop context. [*See* Megiddo.] The same is true of the gold hoard from Late Bronze Age Tell el-ʿAjjul and Beth-Shemesh (Israel; see Tadmor, 1980) and the silver hoards from LB Ugarit and El-Qitar (Syria). [*See* ʿAjjul, Tell el-; Beth-Shemesh; Qitar, El-.] The goldwork of the Middle Bronze Age, like that of the Early Bronze Age, possessed an international character. A gold pendant from Tell ed-Dabʿa (on Egypt's eastern Delta) is very similar to one that is part of a gold hoard said to come from the island of Aegina (Greece). [*See* Dabʿa, Tell ed-; Delta.] Both date to the seventeenth century BCE. However, such goldwork is also found out of context: a gold pendant very similar to one from the Mesopotamian site of Dilbat (seventeenth century BCE) has turned up in a tenth-century BCE burial at the site of Lefkandi on the island of Euboea (Greece).

Nor was metallurgical paraphernalia always stored in a workshop area. Copper/bronze workshops have been identified at Uruk, Ur, Khafajeh, Kish, and Tell Asmar, but none has proved to be very convincing. The only useful example of an Old Babylonian metal workshop is at Tell edh-Dhiba'i, located in what is now a suburb of Baghdad in Iraq (Davey, 1988). Although excavated under conditions that prevented the proper recording of the finds, this workshop contained a rich assemblage of metalworking paraphernalia, including two clay pot bellows, six crucibles, a tuyere, a clay ladle, and a series of molds. The use of the pot bellows to create a forced draft of air to be directed, via the tuyere, into the furnace, is well illustrated in Egyptian tomb paintings, especially those from the tomb of Rekmire. [*See* Tombs; Wall Paintings.] Such bellows are attested at sites in Anatolia, the Levant, the Sinai (Serabit el-Khadem), and Mesopotamia and on Cyprus from throughout the second millennium BCE. They usually are not correctly identified in the relevant excavation reports. Claude F.-A. Schaeffer, for example, thought that the example from Ugarit had been used in making cheese.

The crucibles from Tell edh-Dhiba'i have a distinctive shape; they are best known from Egypt, where in profile the hieroglyphic sign for *metal* (not for *ingot*, as commonly believed) is formed. C. J. Davey (1988) believes that this combination of crucibles, pot bellows, and molds forms the "southern tradition" of metalworking known from Mesopotamia, inland Syria, Palestine, and Egypt. Metalworking in this tradition is depicted in many scenes from Egyptian New Kingdom tombs and is described in many passages in the Amarna letters.

Many passages from the Amarna correspondence describe the greeting gifts exchanged between the pharaoh of Egypt and the rulers of the Hittites, Assyria, Babylonia, and the kingdom of Mitanni. [*See* Hittites; Mitanni.] Egypt was seen as a land rich in gold but, strangely enough, the gifts of gold received from Egypt were considered suspect. Ashur-uballit I, king of Assyria (1353–1318 BCE), says to pharaoh that "gold in your country is dirt; one simply gathers it up" (*EA* 16:6), but the paltry quantity he was sent did not even cover the travel expenses of his messenger. Even worse was the gold sent to Burna-Buriash, king of Kassite Babylonia (1349–1323 BCE). He claims that "the twenty minas of gold that were brought here were not all there. When they put it into the kiln, not five minas of gold appeared" (*EA* 10:4). The Egyptians seem to have held on to their gold for their own use. It is certainly not reasonable to assume that all the gold known from the ancient world in the second half of the second millennium BCE, including the fabulous treasures of the shaft graves of Mycenae and the tholos tombs of Messenia, came from Egypt.

In this period, some of the most interesting work in copper and its alloys come from Susa. The headless statue of Napir-Asu, wife of Untash-Napirisha, king of Anshan and Susa (c. 1250 BCE) is, at 1.29 m, one of the few near life-sized metal sculptures to survive from the second millennium BCE. What makes this work of special interest is the way it was cast: it consists of a copper outer shell cast over a bronze core (not clay as might be expected). This represents a great waste of (expensive) material: the statue, without its head, represents the use of 1,750 kg of metal.

Of equal interest, but for very different reasons, is the bronze object known as the Sit Shamshi, a twelfth-century BCE votive object from the temple of Ninursag on the acropolis at Susa. Inscribed with the name of Shilhak-Inshushinak, son of Shutruk-Nahhunte, the two human figures and the various objects, including jars and altars, which stand on a flat base—some cast as part of the base, others added—must all be connected with a ceremony that was part of the worship of the rising sun. [*See* Altars.] Unfortunately, the lack of comparative material rules out any detailed understanding of this remarkable object.

First Millennium BCE. It has long been argued that, in the confusion created by the various invasions and migrations at the end of the second millennium BCE, the lands of the Aegean and the Levant were cut off from their customary sources of copper and tin. The ensuing bronze shortage forced metalworkers to look for an alternative to bronze: hence, the shift to iron and the birth of the Iron Age. The actual state of affairs was probably much more complex: the degree of disruption at the end of the Bronze Age was not as severe as once believed; metalsmiths in the Aegean and the Levant do not seem to have experienced any bronze shortage as bronze artifacts from the so-called Dark Age (c. 1200–900 BCE) often have a high tin content. Nevertheless, iron did gradually become the dominant utilitarian metal from about 1200 to 800 BCE, with bronze remaining the metal of choice for statues, figurines, and vessels, as well as for weapons and armor.

The shift from bronze to iron probably came about for very practical economic reasons: bronze was always quite expensive, copper was relatively plentiful; but tin was very rare. After a century of speculation scholars are still very uncertain about Bronze Age sources of tin. What the limited textual evidence does make clear is that tin came into the ancient Near East and the eastern Mediterranean from distant lands whose exact location was probably unknown even to the metalworkers at Ur, Tell Brak, Tarsus, and Troy (as it was unknown to Herodotus in the fifth century BCE).

Almost every country of the world, on the other hand, had local deposits of iron ore. To work in iron was to work with local raw materials. The problem was that making use of this ubiquitous resource required a technology quite different from that known for copper, tin, gold, silver, and lead. Those metals could be cast, using molds, for they were all used in the molten state. However, the high melting point of iron (1,534° C) meant that, in the ancient world, iron was always worked in the solid state—except in ancient China. For special reasons, in China a cast-iron industry developed perhaps as early as the eighth century BCE. The Chinese always had cast bronze; they never developed any tradition of hammering sheet metal or of raising a vessel from a sheet of bronze. It seems to have been necessary for them to approach iron in the same way. For lands west of India, however, iron metallurgy was a smithing, not a casting technology. Working with iron was labor intensive, but labor was cheap and the iron ore, to be converted, by smelting and forging, to metallic iron, was readily at hand.

Cheap iron and the alphabet were, for V. Gordon Childe (see below) two of the main factors responsible for the democratization of Iron Age society. In a work first published in 1942, Childe claimed that "cheap iron democratized agriculture and industry and warfare too. Any peasant could afford an iron axe to clear fresh land for himself and iron ploughshares wherewith to break up stony ground.... Cheap iron tools abolished or at least reduced the dependence of the small producers on State monopolies and great household stores. With the new metal implements for breaking the ground, clearing it of trees, and digging drainage channels, the small farmer might earn independence by reclaiming for himself a piece of waste ..." (Childe, *What Happened in History*, rev. ed., New York, 1954, pp. 183, 191).

Childe's observations have strongly influenced subsequent scholarship, especially in biblical studies, in which iron tools have come to be seen as an important factor in making possible the early Israelite settlement of the central hill country. Yet, the concept of cheap iron really does not explain why iron, as a utilitarian metal, only came into gen-

eral use after 1200 BCE. Objects of metallic iron, often meteoritic iron, were in use in the Early Bronze Age. The best-known example is an iron dagger with a gold-covered hilt from one of the "royal" shaft graves at Alaca Höyük. Numerous iron objects (Sum., AN.BAR; Akk., *parzillu*) are mentioned in Old Babylonian texts from Mari, in mid-second millennium BCE texts from Nuzi, and in Hittite texts from Boğazköy. [*See* Hittite; Boğazköy.] The famous treasure of Tutankhamun contained two ornately decorated ceremonial daggers: one had a gold blade, the other an iron blade. Minoan and Mycenaean tombs have produced a number of iron rings as well as gold rings with an iron bezel. The earliest example of worked iron in the Aegean seems to be the seventeenth-century BCE iron and silver ring from the Anemospilia sanctuary at Arkhanes (Crete).

All this represents the use of iron as an exotic, precious material. To turn iron into a practical metal, possessing properties equal to or better than those found in bronze, it was necessary to develop the techniques of carburization, quenching, and tempering. Simple wrought iron was inferior to bronze, being softer, more subject to oxidation and corrosion, and incapable of taking and holding a decent cutting edge. Quenched, carburized iron (or steel), on the other hand, was superior to the best 10 percent tin-bronze—being harder, more durable, and capable of taking and holding a keen cutting edge. If the steel in question was too hard, and therefore quite brittle from excessive production of martensite, this could be corrected by tempering the metal.

Based on present evidence, the technology of carburization, quenching, and tempering was developed in the eastern Mediterranean, on Cyprus and in Palestine, in the twelfth and eleventh centuries BCE. Various solutions have been proposed, but it is still not clear just why this technology developed where and when it did. Even its localization in the easternmost part of the Mediterranean may reflect nothing more than that region's being where most of the scientific analysis of ancient iron artifacts has so far been carried out. Once perfected, in the eleventh century BCE, the technology spread quickly to other parts of the ancient world. Ideas of a secret technology and of an iron monopoly (exercised by the Hittites and then by the Philistines) are best consigned to the academic dustbin. [*See* Philistines.] Many studies of regional industries have been published recently, including those of Hittite Anatolia, Iron Age eastern Anatolia (kingdom of Urartu), ancient Cyprus, Israel and Assyria.

The emphasis on this new metal and new technology should not be allowed to obscure the fact that bronze continued to be produced in the centuries following 1200 BCE. Indeed, those centuries witnessed the efflorescence of one of the major bronze industries of the ancient world—that covered by the umbrella term *Luristan bronzes*. Although there was an earlier period of bronze production in the Luristan province of the Zagros Mountains, documented by Belgian excavations in western Luristan, the main period covers roughly 1350–750 BCE and is known almost entirely through material illicitly excavated and sold on the antiquities market. The work of the Belgian Luristan Expedition, led by L. Vanden Berghe, has, to some extent, also clarified the chronology of this later period of bronze production in Luristan, as have British excavations at Baba Jan conducted by Clare Goff. The assemblage of bronzes from this period consists of axes, daggers, vessels, and harness trappings for horses, often decorated with contorted animals, principally goats, cast in a fantastic animal style. It is not known how many thousands of bronzes were produced, as Luristan bronzes have found their way into almost every museum and private antiquities collection in the world.

Bronzes inscribed with the names of the later Kassite kings of Babylonia indicate that this period of bronze production began sometime in the fourteenth century BCE. The main period of production seems to have been the Iranian Iron II (c. 1000–800 BCE), contemporary with level IV at Hasanlu. [*See* Hasanlu.] While the nomadic smiths of Luristan worked almost entirely in bronze, a gold bowl also from level IV at Hasanlu helps to date a rich assemblage of gold vessels from Marlik, decorated in high repoussé, to the first two centuries of the first millennium BCE. [*See* Marlik.]

Of the surviving bronzes from the Early Iron Age, the most striking is a series of large bronze cauldrons on iron tripod stands. The rim of each cauldron is decorated with so-called protomes in the shape of griffins, bulls, and sirens (usually four per cauldron). Normally, any one cauldron will have only one class of protome, although the cauldron from tomb 79 at Salamis (late eighth century BCE) has both griffins and sirens—eight of one, four of the other. [*See* Salamis.] Although it was found flattened in the tomb, the Salamis cauldron has been beautifully restored. At 1.25 m in total height, it gives a good idea of the size of such objects that, all too often, are known only from isolated protomes purchased on the antiquities market (Muscarella, 1992).

Once thought to be of Urartian manufacture, such cauldrons are now seen as products of one or more North Syrian workshops, although no examples have yet been found in Syria. [*See* Urartu.] Most surviving examples, in fact, come from sanctuary sites in Greece—from Olympia, Delphi, and Samos. The griffin protomes, of which more than 450 examples are now attested, were either cast or hammered (the cast examples are regarded as being of Greek manufacture). It is possible, however, that all of the cauldrons found in Greece were actually made there. Those who believe otherwise have developed theories of gift exchange, such as is known from the Amarna letters and the world of Homer, with Oriental potentates like Midas, king of Phrygia, sending cauldrons as gifts to Greek sanctuaries (as recorded by Herodotus, 1.14).

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J. D. MUHLY

Artifacts of the Persian through Roman Periods

The metal artifact should be viewed first as a unit of material culture, whereby artifacts themselves—whether a luxury item such as a gold necklace or a utilitarian object such as a corroded iron nail—are seen as equals, in the sense that they illuminate some aspect of daily life in antiquity. Metal objects of the Persian, Hellenistic, and Roman periods served a variety of functions, and the finds themselves number in the thousands. For this reason, this survey relies on a few select examples to suggest the vast corpus of metal artifacts, which are grouped according to cultural function. Gold, silver, electrum, iron, tin, bronze, brass, copper, and lead represent the main metal and alloy types used to manufacture metal objects in the periods under discussion. Major sources of metal ores in the ancient Near East and surrounding regions include the Arabian Peninsula, Asia Minor, Bactria, Cyprus, India, Italy, Lebanon, Nubia, the Sinai Peninsula, Spain, Syria, and Wadi ʿArabah.

Artifacts of Daily Life. Domestic metalwares of the Persian through Roman periods that have come to light in excavations include bowls, plates, cups, goblets, jars, jugs, juglets, pitchers, utensils, lamps, lampstands, pans, strainers, ladles, and trays. Terra-cotta wares were often prototypes for metal vessels. A gold-plated silver bowl with depictions of two elderly Scythian leaders, was discovered with drinking vessels from the Gaymanova Moguila (South Russia). It dates to the second half of the fourth century BCE. (Rolle,

1989). A bronze ladle with a handle decorated with ram heads was recovered from Persian contexts at Gezer (Israel). A sculptured bronze vessel of a seated Nubian boy from Zawiya (Syria) dates to the Early Roman period (Weiss, 1985), and an iron "frying pan" with a folding handle from the Thebes/Luxor region of Egypt is Late Roman (Hayes, 1984).

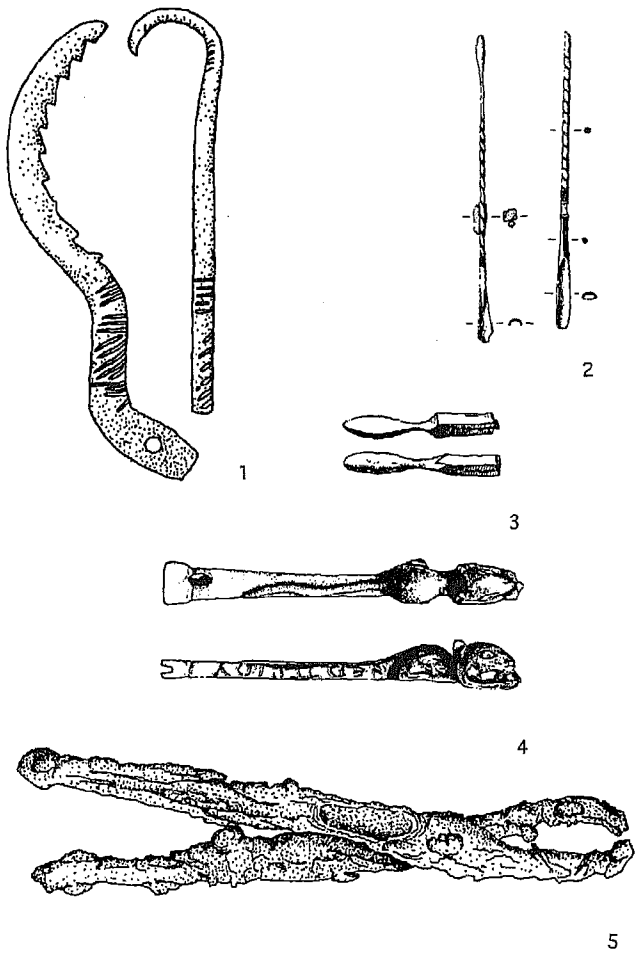
Chief among the metal artifacts of writing is the inkwell. Although inkwells were commonly made of terra-cotta, several Roman examples in metal have been recovered by archaeologists. A bronze inkwell with a tall, cylindrical body that closely resembles its ceramic counterparts was unearthed at Qumran, Israel (Goranson, 1991). At the monastery site at Deir el-Baḥari (Egypt), a lead (or possibly pewter) inkwell with an iron handle and a rounded body that was raised from a single sheet was found (Hayes, 1984). The artifact dates to the first or second century CE. Lead stationery was also common for the writing of curses and of military diplomas in the Roman period. Examples of such lead sheets with inscribed curses were recently found at Caesarea Maritima (Israel).

Ancient artistic representations of musical instruments and their literary mention abound. [*See* Musical Instruments.] A Late Hellenistic Alexandrian terra-cotta figurine of a seated Syrian musician holding a panpipe connected to a bellow, for example, suggests an organ (Gk., *hydraulis*). Two curved metal trumpets (Heb. *ḥăṣōṣĕrâ*) are depicted on a mosaic floor in the fourth-century CE Samaritan synagogue at el-Khirbe near Sebaste/Samaria (Israel). Ironically, few actual musical instruments have survived from antiquity, chief among them having been the lyre, oboe, lute, pipe, bagpipe, flute, cross flute, panpipe, organ, trumpet, drum, cymbal, rattle, and clappers. Of the various musical instrument types, cymbals, clappers, and rattles are probably the most commonly discovered at archaeological sites. Phoenician cymbals cast in bronze have been recovered at Kerkouane (Tunisia) and date to the third century BCE (Moscati, 1988). They resemble small shallow bowls with raised, domelike centers. A bronze finger cymbal excavated in a military context at the legionary fortress at el-Lejjun (Jordan) is dated to 363–502 CE.

Jewelery represents the most commonly found metal artifact of adornment discovered at ancient Near Eastern sites, primarily finger rings (including signet rings), bracelets, pendants and other necklaces, beads, belts, belt ends and buckles, pins, fibulae, brooches, amulets, and earrings. [*See* Jewelery.] Various decorative techniques—repoussé, cutting, piercing, soldering, and granulation—have been employed by the ancient metalworker in the manufacture of jewelery. A Persian pin with a gold pomegranate-shaped bead and a long silver shank from the Tall-i Takht in Pasargadae (Iran) demonstrates the use of granulation as a decorative technique (Stronach, 1978). A cast, silver signet ring whose oval bezel depicts a woman seated in front of an incense altar was found at Tel Michal (Israel) and dates to the fifth–fourth centuries BCE (Muhly and Muhly, 1989). A gold bangle from Tartus (Syria) represents a superb example of the smithing technique of *opus interrasile,* which, by means of piercing, creates a lacelike decoration. This artifact dates to the late fourth century BCE. A unique pendant from Meroë (Sudan), dating to the second century CE, consists of a single gold nugget on which a cylindrical loop for a chain is attached (Ogden, 1982). The emphasis in this piece on the natural simplicity of the raw metal demonstrates an atypical, virtually modern approach to ancient jewelery design.

Metal artifacts that served a religious, political, or magical function include amulets, altars, censers, crowns, incense shovels, candelabra, lamps, bells, and votive items. A Phoenician faience amulet depicting a cat entwined with gold was recovered at Tharros (Sardinia) and dates to the seventh–fourth centuries BCE (Moscati, 1988). A portable Roman imperial bronze altar (Lat., *arula*) from Lower Egypt consists of a shallow square tray with sloping sides supported by a lathe-turned round drum and a square base (Hayes, 1984). A central shaft fragment with attached branches of a cast-bronze menorah was recovered from a Late Roman context at Sardis (Asia Minor), whose corpus of metal objects is one of the largest and most varied for the Roman and Byzantine Near East (Waldbaum, 1983). Bronze incense shovels from the Faiyum in Egypt date to the first and second centuries CE and consist of a square-to-rectangular central pan with a handle attached to one of the short ends (Hayes, 1984). A Phoenician votive razor (third century BCE) from Carthage (Tunisia) cast in bronze depicts Heracles-Melqart and a male figure slaying an enemy (Moscati, 1985). A votive statuette of a cast-bronze bull from Bludan (Syria), belonging to the corpus of military cult items of the Roman East, was offered to the deity Orion by a soldier, as suggested by a single-line Greek inscription engraved on the base (Weiss, 1985). A collapsible gold crown belonging to a Bactrian nomadic princess was recovered at Tillya-tepe, Afghanistan (Sarianidi, 1985). The crown itself consists of five elaborate palmettes and a fillet-base hand-cut from thin sheet gold.

In healing the sick and the injured, doctors made use of a variety of bronze and iron implements (see figure 1). Roman surgical instruments have widespread distribution across the ancient world. The most common types include bleeding cups, scalpels and dissectors, phlebotomes, retractors, embryo hooks, elevators and chisels, spatulae, spoons (cyathiscomele) and ligulae, probes and needles, tubes, forceps and tweezers, specula, and cylindrical medicine cases. A cranioclast reportedly found at Ephesus (Anatolia) represents the only known example from the Greco-Roman period (Bliquez, 1988; Künzl, 1983). This instrument was used to crush the skull of the fetus in cases of abortion. Representative symbols of the healing gods Hercules (a knotted club pattern), Aesculapius (a snake or head of a snake), and Sminthian Apollo (a mouse) frequently decorate metal surgical instruments. The end of a handle belonging to a sur-



METALS: Persian through Roman Periods. Figure 1. *Near Eastern Roman surgical instruments.* (1) Embryo hooks from Ephesus in Anatolia; (2) spatulae from North Syria; (3) late nineteenth-century illustration of scalpels from Idalion, Cyprus; (4) instrument handle fashioned as a mouse symbolizing the healing god Apollo Smintheus from southwest Asia Minor; (5) dental forceps from a tomb at Gadara, Jordan. (Items 1–4 after Künzl, 1983, figs. 20, 97, 23, and 14 respectively; item 5 after Künzl and Weber, 1991, fig. 4)

gical implement from southwestern Asia Minor is rendered in the shape of a mouse, symbolizing Sminthian Apollo (Künzl, 1983). It was reportedly found with grave goods dating to the first half of the third century CE. A collection of Roman dental instruments (i.e., an iron tooth forceps, tweezers, and shears) was recovered from a grave at the Decapolis city of Gadara/Umm Qeis, Jordan (Künzl and Weber, 1991).

Common metal toilet articles found at sites in the Near East include kohl sticks and tubes, ear spoons, combs, pins, rods, unguent spoons, spatulae, mirrors, tweezers, and razors. A slender cylindrical cosmetic tube, most probably dating to the Roman period, was recovered at Sardis. Although similar to a surgical-probe case, the presence of a black residue inside this artifact of copper alloy suggests that it contained either medicine or cosmetics (Waldbaum, 1983). A collection of bronze kohl tubes and sticks dating to the Persian period was discovered in a tomb at 'Atlit, Israel (Stern, 1982). The sticks are flat on one side and twisted on the other. A pair of Phoenician cast-bronze tweezers from Kerkouane dates to the fourth century BCE. Bronze tweezers belonging to a military toilet kit were recovered from a Late Roman context at el-Lejjun. In addition to tweezers, the military toilet kit of the Roman period included an ear scoop and nail cleaner. The design and decoration of many cosmetic articles are simple while others are crafted in precious metals with ornate patterns: a gold comb whose handle is fashioned into a dramatic battle scene involving three Scythian warriors was uncovered in a royal tomb of the Solokha kurgan, South Russia (Rolle, 1989). It represents one of the finest pieces of metalwork from the late Persian period (first half of the fourth century BCE).

The range of tools used by the miner, builder, sculptor, artisan, and carpenter in antiquity was not unlike that of today. Metal tools from the archaeological record include planes, hammers, folding rules, plumb bobs, anvils, masons' chisels, compasses, calipers, masons' squares, picks, sledgehammers, punches, and chisels. A Roman iron chisel was recovered by archaeologists from the waste dump of a mine shaft in Wadi Khalid (Jordan). Chemical analyses revealed that its ends are composed of a eutectoid steel with a carbon concentration of about 0.7 percent. Drills used by artisans in antiquity possessed capabilities of the utmost precision, as revealed by microscopic impressions of spiraling grooves left by the head of a very fine iron drill in amber beads from Hajjar ar-Rayḥani (Yemen) dating to the fourth–third centuries BCE (Gwinnett and Gorelick, 1991). Metal spikes, nails, tacks, rivets, wires, staples, and clamps were used in construction, and plows, spades, sickles, pruning hooks, adzes, augers, awls, and axes were commonly used in agriculture. A Late Roman iron pruning hook and sickle were uncovered at Jalame, Israel (Berry, 1988).

The major metal artifacts of trade in antiquity include coins, tesserae, ingots, weights, and weighing instruments, with coins being the most widely circulated. A series of silver coins depicting a dolphin above a murex shell was minted at Phoenician Tyre (Lebanon) in the Persian period. (The Murex shell and its coveted purple dye were closely associated with the international commerce of the city.) Coins also depicted architectural elements of the urban landscape unique to their city of origin. For example, the flight of steps ascending to the Temple of Zeus on Mt. Gerizim is often depicted on coins minted at Neapolis/Nablus (Palestinian Authority), as is the nymphaeum (public fountain) at Pella that appears on coins from this Decapolis city (Jordan). [*See* Coins.]

Cast ingots of gold, silver, iron, or copper further represent a type of metal artifact. They were traded extensively throughout the ancient Near East and provided the metal-

worker with the core material from which to manufacture objects. A Roman cast-gold bar with Latin stamps originates from Abukir (Egypt).

Persian-period bronze, cube-shaped, as well as zoomorphic weights (e.g., ram, donkey, calf) are known from Ashkelon (Israel). Weights from the Roman East include a rectangular example with beveled edges used with a scalepan balance (Lat., *libra*) and a biconical version used with a steelyard (Lat. *stratera*). Examples of each include the bronze artifacts found at el-Lejjun and Jbail (Syria). In 1985 a unique square lead weight was discovered by archaeologists at Sepphoris (Lower Galilee, Israel). Noteworthy is the mention of Simon, a Jewish *agoranomos,* or "market inspector," in the five-line inscription on the reverse side of the artifact. [*See* Sepphoris.] Weighing instruments, such as a late fourth-century CE bronze steelyard from Jalame or the Roman steelyard from Jbail, are based on the principle of the lever. The Jbail example (and others like it) consists of a central rod with a weight and two hooks—one to support the instrument and the second attached to the end of a chain from which a chosen object is weighed.

Not all metal artifacts served a terrestrial function. Anchors, spikes, nails, staples, hull casings, rams, and sinkers are among the many metal objects associated with ancient seafaring. [*See* Seafaring.] Late Hellenistic hourglass-shaped lead stoves whose broad bases provided considerable stability on rolling seas attest to the ancients' fear of on-board fires (Bass, 1972). With respect to ship construction, copper spikes found at the late fourth-century BCE Kyrenia shipwreck off the northern coast of Cyprus had secured the wooden frames of the ship to its keel. Unlike the Kyrenia wreck, the frames of the Persian shipwreck from Ma'agan Mikha'el (near Haifa, Israel) as well as the Early Roman Kinneret (Sea of Galilee) fishing boat were secured to the hull with iron nails rather than copper spikes. [*See* Ma'agan Mikha'el; Galilee Boat.] Chemical analyses of the Kinneret nails revealed that they are composed of 0.4 percent carbon steel, not unlike present-day steel. A sheathing of lead attached to the Kyrenia vessel's hull by copper tacks—a method commonly used during the Roman period—protected the ship from marine borers. Hundreds of anchor parts made of lead or iron have been recovered in the Mediterranean. [*See* Anchors.] The majority of finds from the Late Persian, Hellenistic, and Early Roman periods suggest that most anchors were made of wood with either lead or stone. After the first century CE, however, anchors were constructed exclusively of iron. One such example of a first-century iron anchor was found in the ancient harbor at Dor (Israel).

Artifacts of War, Oppression, and Death. Important metal weapons and associated equipment recovered from Persian- through Roman-period contexts include swords, daggers, dagger sheaves, penknives, spearheads, arrowheads, javelin heads, bolts, dart points, helmets, breastplates, and chain mail. The arrowhead is perhaps the most commonly found weapon type from archaeological deposits. Specific arrowhead finds include triangular barbed examples from Tell el-Ḥesi, Tel Michal, Gezer, Ḥesban, 'Ein-Boqeq, Masada, and Ḥorvat Eqed (Israel), Pasargadae, Dura-Europos (Syria), and el-Lejjun.

A Late Hellenistic helmet made of two parts, the headpiece and visor, was found at Emesa/Homs (Syria). Both components are cast in iron, but the mask itself is sheathed with solid silver. The thick visor, narrow eye slits, ear guards, and the heavy weight of the helmet attest to its function: protecting its owner in a tournament or battle. A Late Roman bowl-shaped helmet constructed with two iron pieces was recently recovered from the grave of a Roman soldier at el-Haditha (Jordan).

Metal artifacts of oppression include fetters, chains, crucifixion nails, and slave collars. In 1906, a lead collar bearing a single-line Latin inscription was excavated beneath the pavement of the Temple of Apollo area at Bulla Regia (Ḥammam Darradji, Tunisia). The collar was found still attached to the skeleton (neck) of a female who apparently died in midlife. The inscription not only describes the woman as a fugitive, but as a prostitute and as adulterous. The artifact may date to the fourth century CE (Ben Abed Ben Khader and Soren, 1987).

The right heel bone of a crucified male was recovered from a Jewish cemetery at Giv'at ha-Mivatar located north of Jerusalem. It was found in an ossuary engraved with the name of the victim himself, a young man by the name of Yehohanan ben Hagkol, who apparently died sometime in the first century CE. An iron nail 11.5 cm long had penetrated the specimen medially. The find is important, for it is the only known archaeological evidence for crucifixion, a widespread form of execution in the ancient Near East (Zias, 1991).

Examples of metal artifacts commonly associated with death and burial include coffins, jewelery, weapons, cosmetic equipment, bells, funerary masks, and metalware. [*See* Grave Goods.] A gold funerary mask from Phoenicia, for example, dates to the fifth–fourth centuries BCE (Moscati, 1988). Lead sarcophagai first begin to appear in the archaeological record in about the first century CE. [*See* Sarcophagus; Burial Sites; Tombs; Burial Techniques.] The base and sides of coffins were often cast in a single mold and their edges further strengthened with lead bars. The lead coffins tend to be long and rectangular and are often decorated with floral and vine patterns. An early Christian coffin of lead has been uncovered at Caesarea Maritima (Israel) and several are known from the Jewish catacombs at Beth-She'arim (Lower Galilee, Israel). [*See* Beth-She'arim.]

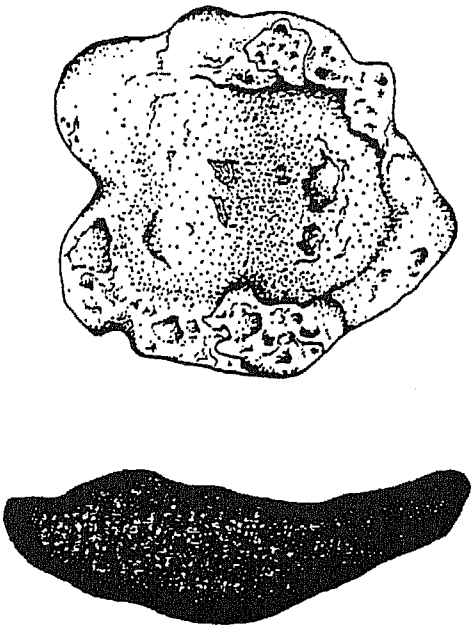
Metal objects not only played a role in the customs surrounding death; certain metals even caused it. Lead poisoning was especially widespread in the Roman period. Although miners and metalworkers of lead were most vul-

nerable, poisoning would also have resulted from nonoccupational exposure to objects either made of lead or containing it. Examples include coins, cosmetics, toys, yarns, drinking vessels, paint pigments, medicines, and water pipes (Nriagu, 1983).

Artifacts of Waste. Slags represent the molten by-product of smelting practices. They are a significant group of metal artifacts because their subsequent chemical and metallographic analyses yield important information about ancient metallurgical techniques (e.g., temperature of the smelting). Depending on the chemical composition of any given slag, the archaeologist can determine the kind of metal smelted at a site. Analysis may even pinpoint the primary source of the ore used in a smelting operation. [*See* DCP Spectrometry; Magnetic Archaeometry.]

Slag heaps often consist of pronounced layering, each stratum of which represents a period of chronologically defined production. By examining layers, the development of technological practices can be traced. On Cyprus alone, seven slag types have been identified and classified (Koucky and Steinberg, 1989). Cypriot slags dating to the Persian through Hellenistic periods include the crucible and blocky shaped varieties. Crucible-shaped iron slags dating to the Late Roman–Early Byzantine periods (see figure 2) were recovered in a barrack at el-Lejjun and suggest a small-scale metalworking operation, substantiating the Roman military author Vegetius's claim that soldiers were skilled in various crafts (Koucky and Lapp, forthcoming). Metal slags also served a secondary use as building blocks in the construction of walls, as is evidenced at Be'er Ora in Wadi 'Arabah, where Roman stores and workshops were erected with large copper slags (Rothenberg, 1972). In his *Natural History,* which contains important passages regarding the use of metals in antiquity, Pliny notes that both copper and silver slag were considered useful for their medicinal properties, the latter being particularly savvy for closing wounds and remedying sores caused by chafing (33.35.105; 34.24.107).

[*Most of the sites mentioned are the subject of independent entries.*]



METALS: Persian through Roman Periods. Figure 2. *An iron slag from the legionary fortress of el-Lejjun, Jordan.* (Drawing by Eric C. Lapp)

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ERIC C. LAPP

MICHAL, TEL, site located on the southern part of the Sharon coastal plain, on a *kurkar* (sandstone) cliff overlooking the Mediterranean Sea, about 6.5 km (4 mi.) north of the Yarkon River estuary. The site consists of several areas: a main settlement area, a small high tell (0.3 ha or .75 acre) rising 30 m above sea level; a slightly lower hill to the north that covers about 4 ha (10 acres) and descends toward the north; and three isolated hillocks east of those hills. The site's ancient name is unknown.

The region's sandy soil makes it suitable for cultivating cereals and viticulture. Numerous wine presses were recovered, but wine production alone does not justify occupation of the site or explain the frequent settlement gaps. Rather, the archaeological data show a clear correlation between the periods of occupation and phases of maritime activity; combined with its location, they corroborate the site's *raison d'être* as a coastal trading post. Anchorage for small crafts was possible in a 2-meter-deep and 30–40-meter-wide channel recorded near the mound in an underwater survey conducted in 1978 by Avner Raban of the Center of Maritime Studies, University of Haifa.

In 1958 and 1960 the northeastern hillock was partially exposed by Nahman Avigad, revealing the remains of a ceremonial cult place known as Makmish (Avigad, 1977). The Hebrew name given to the main mound is Tel Michal (or Tel Mikhal). From 1977 to 1980 an expedition from Tel Aviv University, directed by Ze'ev Herzog, conducted a large-scale exploration of the site, in cooperation with the University of Minnesota, the University of Pennsylvania, Brigham Young University, Wisconsin Lutheran Seminary (USA), and Macquarie University (Australia). Several graves were exposed in 1993 at the northern end of the northern hill, during a salvage excavation directed by Herzog and Yossi Levy.

Bronze Age. The first occupation of the site was in the Middle Bronze IIB (stratum XVII, late seventeenth century). To this period, found only on the high tell, belong the

remains of an artificial platform that raised and leveled the top of the natural *kurkar* hill. Most of the platform and all the structures built on it are no longer intact, as a result of the collapse of the western seaward side of the site, apparently caused by tectonic shocks. A large amount of Cypriot ware, many "Hyksos"-type scarabs, Egyptian alabasters, and Tell el-Yahudiyeh juglets were collected from the fills on the platform. The construction of this trading station is therefore determined to be connected with the maritime activities of the Hyksos kingdom. [*See* Hyksos.]

The sudden destruction of the settlement, as well as part of the natural hill, forced the planners of the next occupation phase (stratum XVI, Late Bronze Age I) to extend the mound on the east. This was achieved by constructing a tremendous earthen rampart out of alternative layers of debris from the previous settlement, sand, and *hamra* (red sandy soil) in a strip 30 m wide. The scant architectural remains preserved from this period consist of several thick walls found at the northern end of the high tell. These walls were reconstructed in the form of a small rectangular fort. To stratum XVI belongs a group of rare kraters with a single horizontal handle, some decorated in brown and red. In stratum XV (LB IIA) additional earthen fills, supported by solid retaining walls, were laid on the eastern side. In this period the center of the high tell was occupied by domestic structures, and the amount of imported ware decreased. The site was abandoned in the thirteenth century BCE.

There was no occupation at Tel Michal in Iron I (twelfth–eleventh centuries BCE), indicating that Philistine settlements did not cross the Yarkon River valley. After a gap of three hundred years, the site was resettled, in the tenth century BCE (strata XIV–XIII). During this phase, occupation expanded beyond the high tell: all three of the eastern hillocks were occupied for the first time, and the earliest wine presses were constructed. Large domestic units were built on the high tell, some reused in both phases.

The finds on the eastern hillocks for the tenth century were related to ceremonial/cultic uses: an enclosure on the northeastern hillock; and a small chapel with an internal altar and external *favissae* on the eastern hillock, from which large chalices with fenestrated feet and small chalices were recovered. Remains of houses with benches along their walls, which also suggests ceremonial/cultic use, were excavated on the southern hillock.

Two winepresses were found near the eastern hillock, each consisting of two pressing surfaces flanking a storage compartment, a pair of large vats, and a pair of small ones (see figure 1). These plastered installations are a rare example of Iron Age wine presses. The production of wine for the site's ceremonial chapels could have developed into a commercial enterprise. The site was settled as part of the expansion of Phoenician traders along the coast of the eastern Mediterranean, and the cultic chapels may reflect the traders' ceremonial needs. Tel Michal was not settled during the rest of the Iron Age, except for some minor use in the eighth century, indicated by scattered pottery and occupation of the southern hillock (stratum XII).

Persian Period. The most prosperous chapter in the history of Tel Michal began in the late sixth century BCE. In addition to those parts of the site previously occupied, the large northern hill was settled. Six architectural phases (strata XI–VI) were recorded on the high tell covering the period between 525 and 300 BCE (with no cultural break at the beginning of the Hellenistic period). On the high tell a

MICHAL, TEL. Figure 1. *Iron Age wine presses.* (Courtesy Z. Herzog)

large fort or administrative building was constructed with a few residential units to its south. Grain pits dug in the settlement's early phases and a round brick silo from a later stage support the assumption that Tel Michal was one of the stations along the coast that supplied the Persian army on its campaigns against Egypt. Wine production surely played an important role in the economy. A winepress dated to the Persian period was found east of the southern hillock and a smaller one was found on the northern hill. A storeroom with twenty-seven storage jars may have been used as a wine cellar. The jars used in producing and distributing the wine were made locally: similar jars were found in one of the three pottery kilns exposed on the northern hill, which indicates that the kilns had collapsed at the end of the firing process.

The center of the northern hill was densely filled with domestic buildings, a few of which were exposed in excavation. An industrial area was excavated at the edges of the settlement that produced evidence of pottery kilns, wine presses, and metalworking. The northern slope of the northern hill had been used exclusively as a cemetery. In a trench that covers about 10 percent of the area 120 burials of various types were uncovered: cist tombs, pit graves, and infant jar burials. The grave goods included jewelry, bronze bowls and fibulae, and iron tools; bronze and iron nails from wooden coffins also were found. The skeletons had deteriorated from the salty and wet conditions, but from a study of the preserved remains it was concluded that population's lifespan was a low average age of thirty years (Herzog et al., 1989). [*See* Burial Techniques; Grave Goods.]

On the northeastern hillock Avigad exposed a temple in which dozens of clay and stone figurines were found. Trade on an international scale was well attested there by an abundance of luxury goods made of pottery, alabaster, glass, and bronze imported from Cyprus, Egypt, Persia, and Greece. The archaeological data corroborate the political and commercial control of the region by the Phoenicians under Persian hegemony, as recounted in the inscription of Eshmunazar, king of Sidon. [*See* Phoenicians; Eshmunazar Inscription; Sidon.]

Hellenistic, Roman, and Early Arab Periods. The nature of the site changed drastically at the beginning of the third century BCE. Occupation was concentrated again on the high tell, which then housed a large fortress. Three such fortresses were built in consecutive stages in the Hellenistic (strata V–IV) and Hasmonean (stratum III) periods. To the earliest stratum belongs a hoard of forty-seven Ptolemaic silver coins (Kindler, 1978). A large winepress was constructed on the northern hill, cut into the remains of houses of the Persian period. The main vat of the winepress has a capacity of 7,000 l, which demonstrates its role as part of a centralized production system. The northeastern hillock retained its ceremonial function, but the cemetery was not utilized. To the Hasmonaean period are attributed a smaller fort on the high tell and a small winepress, both dated by coins to the days of Alexander Jannaeus.

Following a gap of about fifty years, Tel Michal was reoccupied by a large fortress (37 × 30 m) in the first half of the first century BCE (stratum II). It consisted of rooms arranged around a central courtyard, in the center of which was a massive tower, undoubtedly a lighthouse. This is the only known Roman fortress along the coast of Israel. Its construction may be explained as a measure against Jewish piracy from Jaffa. [*See* Jaffa.] Indeed, the fortress was abandoned when Jaffa was conquered and a Roman camp was built there. After another gap of eight-hundred years, a small watchtower was built on the mound (stratum I), in the ninth–tenth centuries CE.

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ZE'EV HERZOG

MICROSCOPY. The light microscope, invented in about 1600, became a useful analytical tool in the nineteenth century. Microscopy is a "mature" technique that is invaluable for studying archaeological artifacts. It is usually the first physical technique employed in investigating material culture. A binocular microscope with a magnification of up to 20 × has a depth of focus large enough to provide three-dimensional vision useful for studying surface details or selecting certain mineral grains from a powder.

Higher magnifications require a special sample preparation that depends on the type of material being studied. Transparent materials are usually examined as thin sections of about 0.03 mm thickness in transmitted light, which may be polarized. To prepare a thin section for petrographic analysis, the sample is mounted on a standard-size glass slide (50 × 25 mm) so that a relatively large area can be studied. Mineral grains are identified by their shape (or cleavage pattern), color, and pleochroism (the differential absorption of polarized light in different directions). Rocks are composed of minerals, whose morphologies, relative abundances, and intergrowth may be characteristic of a specific occurrence of a certain rock type. It is therefore possible to relate the raw material of stone artifacts or of rock fragments in coarse-grained pottery to their original source, providing evidence for the transport of raw materials, be it by trade, human

migration, or natural events. A classic example is the petrographic study of the bluestones erected at Stonehenge that derive from Pembrokeshire, some 150 miles away. Major applications of this method, often in combination with chemical analyses, have been reported on the provenance of the limestones of Egyptian monuments and on millstones from the eastern Mediterranean. The diorite statues of Manishtushu and of Gudea, the ruler of Lagash, are said to originate in Oman. In pottery, the mineral assemblage can also provide information about firing temperature. [*See* X-ray Diffraction Analysis.]

Organic materials are also regularly studied with this technique. Various sorts of wood differ in their microscopic structure and can therefore be identified from small samples of about 1 mm in diameter. Similarly, textile fibers can be unequivocally identified.

Opaque materials, such as metals, are examined in reflected light. For sample preparation a piece is cut from a metal artifact, embedded in a resin, and polished. The sample can be small (less than 1 cu mm), but larger samples (ideally a thin slice providing a cross-section through the artifact) are easier to work with and yield more information. Often, the polished surface is etched with suitable reagents to enhance the internal structure. Because thermal and/or mechanical treatment like cold-working, annealing, or hot-working results in different microstructures, considerable information on the techniques employed in the fabrication of nonferrous metal artifacts can thus be obtained. Identifying the various phases in iron-carbon alloys sheds light on the processes used in the manufacture of iron and steel artifacts (e.g., carburization, quenching, and tempering) and the progressive evolution of iron metallurgy. Because many ore minerals are also opaque, ores and slags are also often examined using this technique.

As a result of diffraction effects, the limit of resolution of light microscopy is in the order of 1 μm (i.e., 0.001 mm), corresponding to magnifications of about 500 times. Still higher magnifications are obtained in electron microscopes with a resolution of less than one manometer (i.e., 0.000001 mm), which approaches the size of single atoms. For archaeological material, the most useful and widely employed form of electron microscopy is the so-called scanning electron microscope (SEM). A beam of high-energy electrons (up to 100 keV) is focused by a series of magnetic lenses so that the illuminated area of the specimen is about 0.02 μm in diameter—which is also the typical resolution obtainable with this instrument. Additional magnetic coils allow the beam to be deflected so that it scans, in a regular manner, over the surface of the specimen. The primary electron beam stimulates, among other effects, the emission of secondary electrons from the surface of the specimen. These are collected and converted into an electric signal. Because the number of secondary electrons ejected on each spot depends largely on the tilt angle, a grazing beam produces more secondary electrons and, hence, a greater signal than a beam at right angles. The detector is used to modulate the brightness of a display cathode ray (television) tube that has its line scan driven in synchronism with the probe beam in the microscope column. There is a one-to-one correspondence between the brightness of each point on the display tube and the number of secondary electrons emitted from any spot on the surface of the specimen. In this way, a map of a large number of single points (between 50,000 and 100,000) of different brightness is built up that yields a picture of the surface topography of the specimen with a large depth of focus.

The electron beam has to be operated in a vacuum because electrons cannot travel any appreciable distance in air. Therefore, the sample must not contain any substances that are not stable in a vacuum. Otherwise, the requirements for specimen preparation are minimal. Most SEMs have relatively large sample chambers, so that even bulky samples can be accommodated. It is desirable that the specimen be rendered electrically conducting. This is usually achieved by evaporating a thin (10–20 nm) layer of metal or elementary carbon onto the specimen in the vacuum.

Another important feature of the interaction of the electron beam with the sample is the excitation of X-rays characteristic of the chemical composition at the illuminated spot. Hence, it is possible to obtain information on the distribution of certain elements on the sample surface in addition to the topographical picture. However, such analyses can only be considered semiquantitative because of the variable self-absorption of the X-rays in the sample as a result of surface roughness. For quantitative analyses, the electron probe microanalyzer is used. [*See* Analytical Techniques.] The SEM has frequently been used to study the surface microtopography of archaeological materials, especially in investigating ceramic and metal technology and identifying pigments and lime plaster.

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ERNST PERNICKA

MIDDLE EASTERN CULTURE CENTER IN JAPAN. At the initiative of Prince Takahito Mikasa, and with the close cooperation of the late Sazo Idemitsu, the Middle Eastern Culture Center in Japan was established in October 1979. The first center of its kind in Japan, it provides both researchers and students with a place to conduct intensive studies in various spheres, such as the history and culture of the Near East, and with a forum for exhibiting the results of their work.

A key aim in creating the center was to collect study materials and to design activities that would make the institution inviting to specialists and to the general public. The center is thus furnished with exhibition halls, a library, auditoriums, and research facilities. Among the center's main activities are lectures delivered by foreign scholars and specialists and lectures that supplement special exhibitions of artifacts.

The center sponsors the Biannual Colloquium for Ancient Near Eastern Studies, of which Prince Takahito Mikasa is the honorary president. The center also holds an international Annual Symposium on Anatolian Archaeological Studies.

The center's current overseas projects, both of which were initiated in 1986, are an excavation at Kaman-Kalehöyük in Kirşehir, Turkey, and a general survey of Anatolia. The excavation has unearthed new information regarding the Chalcolithic and Early Bronze periods.

The centers' publications include the *Bulletin of the Middle Eastern Culture Center in Japan* (seven volumes); *Acta Sumerologica* (thirteen volumes); and the *Proceedings of the Anatolian Archaeological Symposium in Japanese* (two volumes). Final reports for the excavation and for the Anatolian survey are published intermittently. The center is a unique institution in Japan because of its area of specialization, the wealth of periodicals in its library, and the opportunity it affords students and researchers to gain first-hand archaeological experience.

SACHIHIRO OMURA

MIDDLE EAST MEDIEVALISTS (MEM) is a professional nonprofit association of scholars interested in the study of the Islamic lands of the Middle East in the medieval period. The organization defines "medieval Middle East" to include northern Africa and Islamic Spain in the period between 500 and 1500 CE. MEM was founded in 1989 and incorporated in the state of Illinois in 1992. Its main goals are to encourage the presentation of panels and papers on subjects relating to the medieval Middle East at scholarly conferences; to support the academic study of the medieval Middle East; and to foster communication among individuals and organizations interested in the medieval Middle East. Membership is open to individuals of all nationalities. In 1995, MEM's membership was about 225 and growing; about 75 percent of its members reside in the United States. The association's first president was Sam I. Gellens (1989–1991). He was succeeded by Fred M. Donner (1992–1994); the current president is R. Stephen Humphreys (1995–1997).

As part of its effort to foster communication among its members, MEM publishes *Al-'Usur al-Wusta* (The Bulletin of Middle East Medievalists) semiannually; it contains short articles, reviews of books from the Middle East of interest to MEM's membership, and news of the organization. Exchange programs and summer workshops are planned.

MEM is loosely affiliated with the Middle East Studies Association of North America (MESA) and the American Oriental Society (AOS). It holds its annual business meeting at MESA's annual meeting.

FRED M. DONNER

MIDDLE EAST STUDIES ASSOCIATION. In 1966, a group of American and Canadian scholars founded the Middle East Studies Association (MESA) to promote high standards of scholarship and instruction in the field of Middle East studies, to facilitate communication among scholars through meetings and publications, and to foster cooperation among individuals and organizations concerned with scholarly study of the Middle East. The organization covers the geographic area from the Atlantic to, and more recently including, Central Asia, as well as those lands in Europe once under Islamic political control. The chronological period covered by MESA begins with the rise of Islam. However, most scholarly activities focus on contemporary developments.

MESA publishes both the *International Journal of Middle East Studies* and the *MESA Newsletter* four times a year; the *MESA Bulletin* appears twice a year. Topics of archaeological interest, announcements of conferences, and calls for papers are listed in the Newsletter. The names of those who participate in professional meetings and the titles of the papers presented at those meetings appear in an electronic form. Articles and book reviews related to Islamic archaeology are sometimes included in the *Bulletin.* Tables of contents, notes research and teaching resources, lists of recent conferences, and books in Middle East studies are available on the *MESA Bulletin* gopher site (at gopher.cua.edu) or via World Wide Web connection to URL:gopher://vmsgopher.cua.edu.:70/11gopher_root_mesabul:[000000].

Presentations related to Islamic archaeology are often delivered at the annual MESA meeting. Many of the archaeological sessions at the meeting are sponsored by the North

American Historians of Islamic Art (NAHIA), an organization affiliated with MESA. All of the papers presented at the annual MESA meeting are listed in the *Newsletter*'s fall issue; those papers available for purchase are listed in its winter issue. MESA does not sponsor either archaeological excavations or publications.

JERE L. BACHARACH

MIDIAN. The extreme northwestern corner of the Arabian Peninsula, immediately east of the Gulf of ʿAqaba, was associated by the classical and medieval Arab geographers with the place name Madian or Madiama. It is generally agreed that these preserve the name of Midian, the son of Abraham and Keturah and the ancestor of the Midianites of the Hebrew Bible. It was to Midian that Moses fled after murdering an Egyptian overseer, and it was Zipporah, the daughter of a Midianite shepherd and (possibly) priest, variously named Jethro, Reuel, or Hobab, whom he subsequently married (*Ex.* 2–4, 18; *Nm.* 25, 31). According to one tradition (*Nm.* 10:29–32), Jethro helped guide the Israelites through the desert after their exodus from Egypt. The good relationship initially enjoyed by the two peoples is illustrated by the fact that Moses invited the Midianites to join in the journey to the Promised Land—an offer which was, however, declined. Relations soon deteriorated and, following an incident at Baʿal-Peor in Moab, when an Israelite zealot killed some Midianite princes apparently involved in a fertility rite, the two groups became implacable foes. In *Judges* 6–8 an account is given of an unsuccessful attack by Midianite raiders on the Israelite tribes in northern Canaan led by Gideon, followed by further military action in Transjordan. These events are conventionally dated to the eleventh century BCE. The last mention of the Midianites as a people probably refers to an episode a few decades later, when they are said to have been defeated by the king of Edom (*Gn.* 36:35). After this, the name occurs in the Hebrew Bible only as a geographical expression; it does not appear, either as a gentilic or a locality, in any other ancient texts prior to the classical period.

The Midianites are portrayed in these traditions as nomadic sheep and camel herders, caravaneers, and raiders, ranging over a wide territory to the south and east of Canaan. There is no reason to suppose that this portrayal is not essentially correct, at least in part. However, recent archaeological survey in northwestern Arabia—the heartland of Midian—has indicated that this is not the whole story. There also existed, during the final centuries of the second millennium BCE, sedentary communities that should, in all probability, be included among the Midianites. The evidence lies in the discovery at a number of sites of a distinctive type of painted pottery, stylistically related to certain types of Late Bronze Age pottery of the eastern Mediterranean region. The pottery may ultimately be derived from the Mycenaean pottery of the Aegean, by way of Canaan or Egypt. At the site of Qurayyah a number of kilns used in the manufacture of this pottery have been identified. [*See* Qurayyah.] There is also strong evidence at this site of fortification walls and an irrigated field system contemporary with the pottery. Identical pottery has been excavated at the copper mining and smelting installations at Timnaʿ, in the southern Wadi ʿArabah north of modern Eilat in Israel. That pottery is dated by inscribed Egyptian objects to the nineteenth dynasty (thirteenth–twelfth centuries BCE)—precisely the time to which most authorities ascribe the Hebrew traditions mentioned above. [*See* Timnaʿ (Negev).] There can be no doubt that the Egyptians were engaged, presumably in a controlling capacity, in the ʿArabah mines and that they employed workers from Qurayyah and perhaps from elsewhere in Arabia. There is no evidence for metallurgical activities at Qurayyah itself, however, or at Tayma', where sherds of the same pottery have also been found. [*See* Tayma'.] This suggests that other activities, perhaps the incense trade with Southwest Arabia, played a part in Midian's economy. The field system at Qurayyah indicates that agriculture was also economically important.

It has been suggested that the development of what has been termed oasis urbanism in Midian at this time was largely the result of Egyptian involvement in the economy of the region. This interpretation is controversial, primarily because of the complete lack of evidence in Egyptian texts for such involvement, other than at Timnaʿ. For the Egyptians, the inhabitants of the arid regions of Sinai, the Hijaz, and Transjordan seem to have been subsumed under the term *shasu* and depicted as pastoralists and raiders, much as the Midianites are depicted in the Hebrew Bible. In the present state of research, all further attempts to reconstruct the history of Midian must remain speculative.

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PETER J. PARR

MILETUS, the southernmost settlement of Ionia, originally situated on the coast with four harbors but now, as a result of the silting of the Maeander River, in the middle of a plain 3 km (5 mi.) from the sea (37°30′ N, 27°18′ E). A prominent hill several miles to the west of the present theater was, in antiquity, the island of Lade, where the Persian fleet destroyed the Ionian navy in 494 BCE

The site has a long and complex history. Surveys around Miletus conducted under the direction of Volkmar von Graeve have located more than one hundred sites that date from the Neolithic to Byzantine periods. Minoan settlement of the area may date to the sixteenth century BCE, perhaps as part of their maritime expansion throughout the Mediterranean. A city wall and some houses found near the theater date to the Mycenaean period (c. 1400 BCE) and indicate that displacement of the Minoan settlement roughly coincided with the establishment of Mycenaean power on the island of Crete, formerly the center of Minoan power. E. O. Forrer first suggested that Aḫḫijawa in Hittite texts was equated with the Mycenaean Greeks and that Millawanda, also mentioned in the texts, was Miletus. That interpretation has been disputed. James G. Macqueen, for example, argues that Millawanda lay on the shores of the Sea of Marmara in northwest Anatolia (1986, pp. 40–41). The debate continues.

According to literary sources, Miletus (Ionic), or Milatos (Doric), was also known as Pituousa and Anactoria (Herodotos 1.17–20, 141; 6.6; Arrian, *Anabasis* 1.18). In the twelfth century CE, the site was called Balat (from the Greek Palatia) because the inhabitants, then residing upon the completely covered Roman theater, thought they were over a palace.

Scientific excavation of the site (primarily by German archaeologists) began in 1899 under the direction of Theodor Wiegand but were discontinued after the start of World War I. Carl Weickert's excavations, begun in 1938, were halted during World War II. More recently, excavations have been conducted by Gerhard Kleiner, Wolfgang Müller-Wiener, and Volkmar von Graeve. As part of this project, the prehistoric levels are being investigated under the direction of W. D. Niemeier.

Between the ninth and sixth centuries BCE, the city established numerous colonies (ninety, according to literary sources) in lands around the Black Sea (notably Olbia, Sinope, Panticapeion, and Amisos) and around the Mediterranean Sea. At the time, it was the most powerful city in the Ionian world. The Black Sea colonies in particular provided large supplies of needed wheat. Miletus also gave rise to a number of famous philosophers and scientists, including Anaximander, Thales, Anaximenes, Aspasia, and later, Isodoros, the builder of the magnificent Hagia Sophia in Istanbul/Constantinople. [*See* Constantinople.] In addition, according to Greek tradition, Hippodamos, who reconstructed Miletus and other cities after their destruction by the Persians, created a city plan that connected streets at right angles (the Hippodamian plan).

The Milesian alphabet served as the basis for the unification of the Greek states after it was adopted by Athens in the fifth century BCE. Some of the earliest coins were minted at Miletus, including an electrum coin with a lion on one side and three ornamental notches on the other. After the city was demolished by the Persians in 494 BCE, its principal leaders were removed to the mouth of the Tigris River and the rest of the populace enslaved. From that point onward, the city had little influence in the region until the Hellenistic period, when it became an important commercial center. It then had close relationships with the various Hellenistic kings who ruled after the death of Alexander. It became a part of the Roman province of Asia in 129 BCE

The religious center of the town was Delphinion, where Apollo was worshipped. Originally established in the archaic period, the current temenos was enclosed on three of its sides by stoas in the Hellenistic period and further expanded in the Roman period. Other buildings from the Hellenistic period include a gymnasium whose palaestra and propylon have been located. The propylon that leads to the gymnasium is similar to ones encountered at Pergamon and Priene and may have been built as a result of the influence of King Eumenes II of Pergamon. [*See* Pergamon; Priene.] A bouleuterion, also from the Hellenistic period, contains a colonnaded courtyard, an auditorium, and a propylon; it seated approximately fifteen hundred people. An inscription associated with the bouleuterion indicates that it was constructed under the sponsorship of two Milesian brothers, Timarchos and Herakleides, at the behest of Antiochus IV Epiphanes.

An agora in the southern part of the city has been partially excavated and is possibly the largest ever found in the Greek world (about 33,000 sq m). Founded during the Hellenistic period, the stoa on its east had thirty-nine pairs of shops back to back and the one on its south had nineteen. A large stadium was apparently erected during this period, as it is aligned with the bouleuterion and is at right angles to both the south and north agoras. Its gateway is Hellenistic in design.

The Roman theater (built over the earlier Hellenistic one) was one of the largest and most elaborate in Asia, capable of holding upward of fifteen thousand people. [*See* Theaters.] A Jewish presence in the city is confirmed from a second- or third-century CE inscription on a seat in the theater mentioning "the place of the Jews who are also called God fearing." The inscription sheds some light on the current debate over the make-up of the God-fearers (converted Gentiles, pious Jews, etc.) and the degree to which the category is simply a literary creation as Thomas Kraabel has argued. At the least the inscription along with important in-

scriptions from Panticapaeum and Aphrodisias confirm that such a group existed and was possibly distinct from natural-born Jews (Reynolds and Tannenbaum, 1987, pp. 54–55; see also *Biblical Archaeology Review* 12.5 [1986]: 44–69). The location of the inscription in the fifth row suggests a degree of prestige attributed to the Jews (Paul Trebilco, *Jewish Communities in Asia Minor,* Cambridge, 1991, p. 162). Jews apparently resided in the city beginning in at least the first century CE. Josephus (*Antiq.* 14:244–246) mentions a decree from the Roman proconsul Publius Sevilius Galba who restored the rights of the Jews that had been revoked by the city (e.g., observance of the sabbath, practice of rituals, and collection of tithes). A Roman basilica with an adjacent courtyard was identified by Von Gerkan as a synagogue. [*See* Basilicas; Synagogues.] It was built in the late third or early fourth century but had no Jewish symbols associated with it. The identification, which was based on its architectural similarity to synagogues found in Palestine, is suspect: one column had a decree from Helios Apollo commanding that an altar to Poseidon be built.

A monument with a rounded base near the harbor was apparently set up by the Milesians in honor of an emperor, probably Augustus. Another edifice north of the monument was set up by Grattius, a Roman, and is similar in structure. A large sixteen-harbor gateway with sixteen columns was built in the first half of the first century CE. A processional way flanked by sidewalks went through it. Baths were built by Vergilius Capito, a procurator of Asia Minor under Claudius. A stoa erected by Tiberius Claudius Sophanes lies opposite the north agora and west of the baths. [*See* Baths.] The very well-preserved Faustina baths from the Roman period were sponsored by the wife of Marcus Aurelius (161–180 CE), as was the theater. Other remains of buildings include a temple to Serapis and a *heroon.* The northern gateway of the southern agora has also been reconstructed and is in the Berlin Museum.

A provincial cult, one of three in Asia, was established at Miletus under Caligula. Such a cult indicated that the city was seen as wealthy and of impeccable heritage. It also reveals the political bond that existed between the demos of the city and Rome. The cult lasted only a few years, however. An inscription mentioning it has been found at nearby Didyma, in its Apollo temple, an important cult for Miletus. [*See* Didyma.] The inscription talks about a statue of the emperor Gaius Caesar Germanicus at the time a certain Gaius Vergilius Capito "was high priest of the temple in Miletus of Gaius Caesar for the first time, . . . and (when) Tiberius Julius Menogenes, son of Demetrios the *nomothete* [legislator] was high priest the second time and *neokoros* [cult official] of the temple in Miletus . . ." (Steven J. Friesen, *Twice Neokoros: Ephesus, Asia and the Cult of the Flavian Imperial Family,* Leiden, 1993, p. 22). Capito also had a cult established in his name at Miletus, purportedly the last such cult for a Roman who was not the emperor. When Gaius died, Miletus's provincial cult was discontinued. The cult had been unusual for a provincial cult in not mentioning the senate or Rome or referring to Gaius as divine.

Miletus had close connections with the Temple of Apollo in Didyma, approximately 6 km (10 mi.) to the south. A Sacred Way connecting the two sanctuaries was paved with large limestone slabs sometime during the reign of Trajan—a pattern found in many locations throughout the eastern empire. Fountains, a large gate, and halls with colonnades are associated with the road. Miletus experienced several significant building periods: during the time of Eumenes II, ruler of Pergamon in the second century BCE; and under the emperors Trajan (who also dedicated a monumental nymphaeum to his father) and Marcus Aurelius, primarily through the benefactions of his wife, Faustina (see above).

The site also flourished during the reign of Diocletian, when a good deal of building took place. Shortly afterward, however, buildings fell into disrepair and small, poorly and haphazardly built structures ignored the previous city plan. A modest revival occurred during the reign of Justinian I, in the Byzantine period, when a new cathedral and baths were built and the harbor was dredged. The city also had an archbishop in 536. The exquisite mosque, Ilyas Bey, completed in 1404 is still standing. According to *Acts* 20:15–38, Paul addressed elders from Ephesus here before his return to Jerusalem (cf. 2 *Tm.* 4:20).

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MINES AND MINING. *See* Metals.

MINḤA, ḤORVAT. *See* Munḥata.

MINOANS. Sir Arthur Evans (1851–1941) gave the modern name Minoan to the Aegean Bronze Age (c. 3000–1100 BCE) inhabitants of the island of Crete. We do not know what they called themselves, or if indeed they were a single ethnic group. They may have been known to their contemporaries in Egypt as *Keftiu* and in Syria as *Kaptarites.*

Systematic excavation of the principal town and palace site at Knossos began in 1900 by Evans under the auspices of the British School at Athens, who used the findings as the basis for his re-creation of Crete's early civilization. In the absence of written history, he devised a tripartite system of relative chronology based on the Egyptian kingdoms but named for the monarch and lawgiver associated with early Crete in later Greek tales, Minos; hence, we speak of the Early, Middle, and Late Minoan periods (EM, MM, and LM, respectively, with divisions of I, II, and III and further subdivisions of A, B, and C). An alternative chronology uses the broad terms *Prepalatial* for EM I to MM IA (c. 3000–1910 BCE), *Protopalatial* for MM IB to MM IIB (c. 1910–1780 BCE), *Neopalatial* for MM III to LM IB (c. 1780–1450 BCE), and *Postpalatial* for LM II and III (c. 1450–1100 BCE). A radiocarbon-based chronology has yet to be widely accepted; the above dates are derived from synchronisms with Egypt and the Near East.

Minoan society before the Postpalatial period is studied on the basis of surviving material culture and the interpretation of complex and detailed iconography in the minor arts, such as on ceramics, seal stones and metal ring bezels, relief carvings on stone vessels, and in wall painting. The absence of obvious political propaganda—for example, there are no representations of named individuals—and an abundance of images, apparently representing ritual behavior, have led to a belief the Minoans were ruled by a priestly class. The frequency of mature women in the iconography has prompted the suggestion that one or more goddesses were the focus of the Cretans' religious beliefs, with a minor emphasis on her youthful male consort.

The earliest inhabitants of Crete seem to have arrived during the Early Neolithic period (c. 6000 BCE). Continuous migration over the next three thousand years must be responsible for the introduction of olives and vines as well as domesticated cattle and sheep and goats. The island's initial attraction may have been its temperate climate and comparative wealth of water and forests. It became densely populated by the Late Bronze Age, with an economy that continued to be based primarily on agriculture but that no doubt took advantage of its median position in the developing east-west Mediterranean trade in metals that preoccupied the Aegean and Near Eastern states in the Middle and Late Bronze Ages. During the palace periods, the Cretans became the producers of luxury goods based on raw materials, both local (ceramic, stone, and textile) and imported (gold, ivory, silver, copper, and semiprecious stones), thereby gaining a reputation abroad as creative artisans.

Settlements seem to have begun as small households in EM I–IIA, for example, at Myrtos-Fournou Korifi and Palaikastro-Roussolakkos. Evidence for substantial structures with possible public functions in EM IIB has been found at Vasiliki, Palaikastro, Knossos, and Phaistos, but later construction has made it difficult to identify the structures clearly. The EM III and MM IA periods are poorly represented, but evidence from Knossos and Mallia—in the form of wall foundations used in the later palaces—may indicate that the planning, at least, for the palaces may have started in EM III or MM IA. Funerary ritual during the Prepalatial period took place in rock shelters and caves throughout the island, and circular stone-built communal monuments, called tholoi, chiefly in south-central Crete, and in rectangular stone-built communal ossuaries, called house tombs, in north-central and eastern Crete. The confusion of bones and grave offerings over long periods may indicate multiple inhumations or the secondary placement of bones following excarnation. Exceptions are rock-cut single inhumations at Aghia Photia in eastern Crete that resemble those at Kouphonisi in the Cyclades.

The palaces at Knossos, Phaistos, and Mallia were built early in the MM IB period. They were erected in prominent positions in their respective towns, which display urban planning, as evidenced by the formal road systems at all three sites; the most impressive example is the Royal Road at Knossos. The palaces themselves incorporated innovations such as facades of quarried and dressed blocks with incised mason's marks, stone pillars and wooden columns, stone-built and ceramic drains and waterpipes, and pattern-painted lime plaster. A formal administration is indicated by the Cretan pictographic, or hieroglyphic, script—as yet undeciphered—that came into use along with a sealing system based on Near Eastern models. An adaptation of the pictographs into the Linear A script, also undeciphered, had taken place by the MM IIA period.

The rectangular complex at Chrysolakkos (Mallia) may represent a new type of civic scale funerary installation near

the urban environment, as the tholoi and house tombs of the villages and countryside gradually go out of use during this period, perhaps due to a movement of the population into the emerging palatial centers. Secondary burials in ceramic jars, or pithoi, and ceramic boxes, or larnakes, are found at Ailias near Knossos, and Fourni near Archanes.

The foundation of the palaces coincides with the establishment of remote shrines, including peak sanctuaries and sacred caves, and an elaborately built road system in the countryside, with associated sturdy rectangular structures called watchtowers. It may be that the Early Palace period was a time of emerging competitive states centered on the palaces. Evidence for elaborate protective walls along the north coast at Mallia, Myrtos-Pyrgos, Palaikastro, and in the passes entering the Kato Zakros and Karoumes Bays may confirm this view of formal protection of territorial interests. By the end of the Early Palace period, the preeminent state seems to have been Knossos. The urban defensive works, rural road systems, and towers seem to go out of use, as do most of the remote shrines.

The change from the Old to the New Palace period is not clear. At Knossos, there seems to have been an earthquake in about 1780 BCE that forced the rebuilding of the palace with some architectural innovations—example, the "Minoan Hall" with *polytheron* (multiple doorways); otherwise, the material culture shows little evidence of abrupt change. At Phaistos, the Early Palace shows traces of destruction by fire at roughly the same time, but the palace seems to have been rebuilt in stages and may not have regained its administrative power. A major change may be seen in the appearance of new palaces at Kato Zakros, Archanes-Turkogitonia, Galatas, and most likely Khania, as well as what may be public architecture at numerous coastal sites such as Kommos, Aghia Triadha, Gournia, Mochlos, Palaikastro, and Petras. The countryside during the course of the Neopalatial period filled with rural establishments that may have been centers for localized agricultural and manufacturing concerns responsible, perhaps through taxation, to the palace. The pictographic script was entirely abandoned in favor of Linear A, and the clay roundel became an important administrative device.

The ossuary at Myrtos-Pyrgos and the Temple Tomb at Knossos indicate the continuity of funerary ritual in built civic structures, although these have not been found at other centers. An apparent change in burial practices is indicated by the rock-cut chamber tombs filled with Cretan LM I finds on the island of Kythera. Similar tombs at Poros, the port of Knossos, were reused into the Postpalatial period but certainly were first dedicated in the MM III.

The Neopalatial period fostered the emergence of a lively artistic style that abandoned the codified symbol systems of previous stages and experimented with realism in human and natural representations. The favored group scenes of athletic contests and bull leaping may be related to the social importance of male and female rites of passage and initiation into the social and political elite. By the end of the LM IB period (c.1450 BCE), artists attempted to show depth in their work by sculpting and constructing wall murals in low relief of overlapping subjects with open mouths and exaggerated veins, intended to show the figures' vitality. The close contact of the Mineans with their Near Eastern contemporaries can be seen in the Cretan influences in the representational arts of Syria and perhaps of Egypt during the Hyksos period.

The LM IB ends with clear evidence for burnt destruction throughout Crete and in the Aegean towns that prospered under Cretan influence and control. The subsequent Postpalatial period is marked by the introduction of the Mycenaean Greek language used in an adaptation of Linear A into the Linear B script. Also known as the reoccupation period, many of the oldest settlements were rebuilt, often reusing material from earlier buildings; rarely is there evidence for new quarrying or architectural innovation. Knossos was the main political center, as suggested by the archives there, with secondary centers at Kydonia (modern Khania) and Phaistos. The economy, as understood from the archives, was securely based on the exploitation, in great quantities, of sheep for wool. Early in the period, a new form of burial, primary inhumation with weapons or the warrior grave, appears at Knossos; and large cemeteries of rock-cut chamber tombs appear at a number of locations throughout the island, for example at Armenoi, heralding a major change in funerary ritual. In the arts, a return to flat iconographic representations primarily depicting stationary ritual scenes was witnessed.

A major fire at Knossos in the LM IIIA or Early LM IIIB (c. 1300 BCE) destroyed the majority of the Linear B archives. Tablets found in LM IIIB contexts at Khania and the continued use of the script on transport containers (stirrup jars) may indicate a swing of power to the western town, which now had links with the western Mediterranean. Late in the LM IIIB or early in the LM IIIC there was a gradual move away from the coastal sites to mountaintop areas with access to upland plains—such as Kavousi-Kastro and Karphi-Lasithi—no doubt in response to the general collapse of authority in the Aegean states and the rise of piracy. The material culture of these Postpalatial Cretans was less luxurious than in previous periods, but the iconography of the mature woman as goddess prevailed and continued throughout the subsequent Protogeometric periods, albeit in crude versions.

[*See also* Crete; *and the biography of Evans.*]

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MIQNE, TEL (Ar., Khirbet el-Muqanna'), site located 35 km (22 mi.) southwest of Jerusalem, on the western edge of the inner coastal plain (the frontier zone that separated Philistia and Judah), overlooking the ancient network of highways leading northeast from Ashdod to Gezer (map reference 1356 × 1315). One of the largest Iron Age sites in Israel, Tel Miqne is identified with biblical Ekron, one of the capital cities of the Philistine Pentapolis. The site is composed of a 40-acre lower tell, which in Iron II expanded to 65 acres, and a 10-acre upper tell. William Foxwell Albright (1924) identified Muqanna' with biblical Eltekeh, but Joseph Naveh (1958), who subsequently surveyed the site, identified it as Ekron. The current excavations support the latter conclusion.

Written Sources. Ekron is mentioned in the Hebrew Bible in *Joshua* 13:3 as part of "the land that yet remains"; in 15:11 in reference to the northern border of the tribe of Judah running through "*ketef* Ekron northward"; in 15:45–46 in the list of the cities of Judah; and in 19:43 as part of the territory of Dan. In *Judges* 1:18 it is a city conquered by the tribe of Judah; in 1 *Samuel* 5:10 the Philistines take the Ark of the Covenant to Ekron; in 17:52, in the story of David and Goliath, the Philistines are pursued to "the gates of Ekron"; in 2 *Kings* 1:2 King Ahaziah of Israel (ninth century BCE) sent messengers to consult "Baal Zebub, the gods of Ekron"; in *Amos* 1:5 (eighth century BCE) the destruction of Ekron is prophesized, as it is in *Jeremiah* 25:20, *Zephaniah* 2:4, and *Zechariah* 9:5–6 (second half of the seventh century BCE).

In the Assyrian sources the 712 BCE siege of *'amqar(r)una* (Ekron) is depicted on a wall relief in Sargon II's palace in Khorsabad. The 701 BCE conquest of Ekron is described in the royal annals of Sennacherib, and, in first half of the seventh century BCE, in the annals of Esarhaddon, Ikausu, king of Ekron, supplies materials for the construction of the palace in Nineveh, and in 667 BCE, in his annals Ashurbanipal is quoted as ordering the vassal king Ikausu to support his military campaigns against Egypt and Cush. The Babylonian chronicles describe Nebuchadrezzar's campaign against a Philistine city in 603 BCE that may be Ekron.

In the Apocrypha, Ekron appears in 1 *Maccabees* 10:89 and in 14:34 as a toparchy torn from Ashdod. The Roman Jewish historian Josephus (*Antiq.* 13:4:4) reports that in 147 BCE Ekron was given by Alexander Balas to Jonathan the Hasmonean. In the fourth century CE, Eusebius (*Onomasticon,* ed. Klostermann, pp. 22, 11.9–10) mentions "a very large Jewish village called Accaron."

Excavations. The Tel Miqne/Ekron excavation is a joint American-Israeli project directed by Trude Dothan (director, Berman Center for Biblical Archaeology, Hebrew University) and by Seymour Gitin (director, W. F. Albright Institute of Archaeological Research in Jerusalem). Twelve excavation seasons were conducted from 1981 to 1995, exposing 3.5 percent of the site. The primary goal is to examine the process of urbanization of a Philistine city and the geopolitical, economic, cultural, and environmental elements that influenced its development.

A continuous stratigraphic profile of the tell appears only on the acropolis in the upper city (field I), beginning with stratum XI (Middle Bronze Age IIB) and extending through the end of stratum I (Iron IIC). In the lower city (fields III, IV), following stratum XI (sixteenth century BCE), there was a four hundred-year occupational gap until its resettlement in stratum VII at the beginning of Iron I (c. 1200 BCE). Following the Iron I period (end of stratum IV, c. 1000 BCE), there was approximately a 250-year occupational gap in the lower city until it was again resettled at the very end of the eighth century BCE, expanding to its greatest extent in stratum I (seventh century BCE). Both the Iron I and II cities were well designed, with zones of occupation primarily for fortifications, industry, and elite habitation.

Middle Bronze Age. The tell apparently was shaped by the fortifications that encompassed both the upper and lower cities in the Middle Bronze Age. MB II ceramic and fragmentary architectural evidence was found throughout the tell; in addition, three infant burials were found in field IV.

Late Bronze Age. The apparently unfortified LB settlement (strata X–VIII) was confined to the upper city. It contained Cypriot and Mycenaean imports and Anatolian gray-slipped ware, attesting to international maritime trade. The Egyptian impact is evident, inter alia, in a burial containing a nineteenth-dynasty seal and scarab and a fourteenth-century BCE scarab bearing the name of the Egyptian king Amenhotep III and dedicated to the "lady of the sycamore

tree," usually associated with the foundations of Egyptian shrines. This scarab was an heirloom found in a later Iron I phase. Stratum VIII, representing the last Canaanite city, was totally destroyed by fire; the destruction was dramatically illustrated by a severely burned storeroom complex with jars containing carbonized grains, lentils, and figs.

Iron Age I. The fortified Iron I settlement (strata VII–IV) encompassed the upper and lower cities. It is characterized by a new material culture introduced by an ethnic group of Aegean origin: the Philistines, one of the Sea Peoples. One of its special features is a megaron-type building with a hearth as its central architectural component. While locally made Mycenaean IIIC:1b pottery (see figure 1) predominates in the earliest phase of occupation (stratum VII), Philistine bichrome pottery with red and black decoration on white slip is predominant in the strata VI–V city. In stratum IV, the material culture reflects the influence of Phoenician culture, with its predominant red-slipped and burnished ceramic vessels.

Upper city (field I). Next to the stratum VII mud-brick city wall was an industrial kiln area and, at the very top of the acropolis, in strata VII–VI, a cluster of large pits. Stratum VI had a large building complex with a cultic room that, in stratum V, became its most prominent feature. It contained votive vessels and incised scapulae, like those from twelfth-and eleventh-century BCE shrines at Enkomi and at Kition on Cyprus. [*See* Enkomi; Kition.] Concentrated in an open activity area to the west were twenty-five circular pebbled hearths—thirteen in stratum VI and twelve in stratum V. Also found in strata VI–V were two infant jar burials.

Stratum IV was attested at the top of the acropolis by the reuse of some stratum V architectural elements and two pebbled hearths. The stratum IV street, with two parallel stone walls, initiated a plan that continued into the Iron II period.

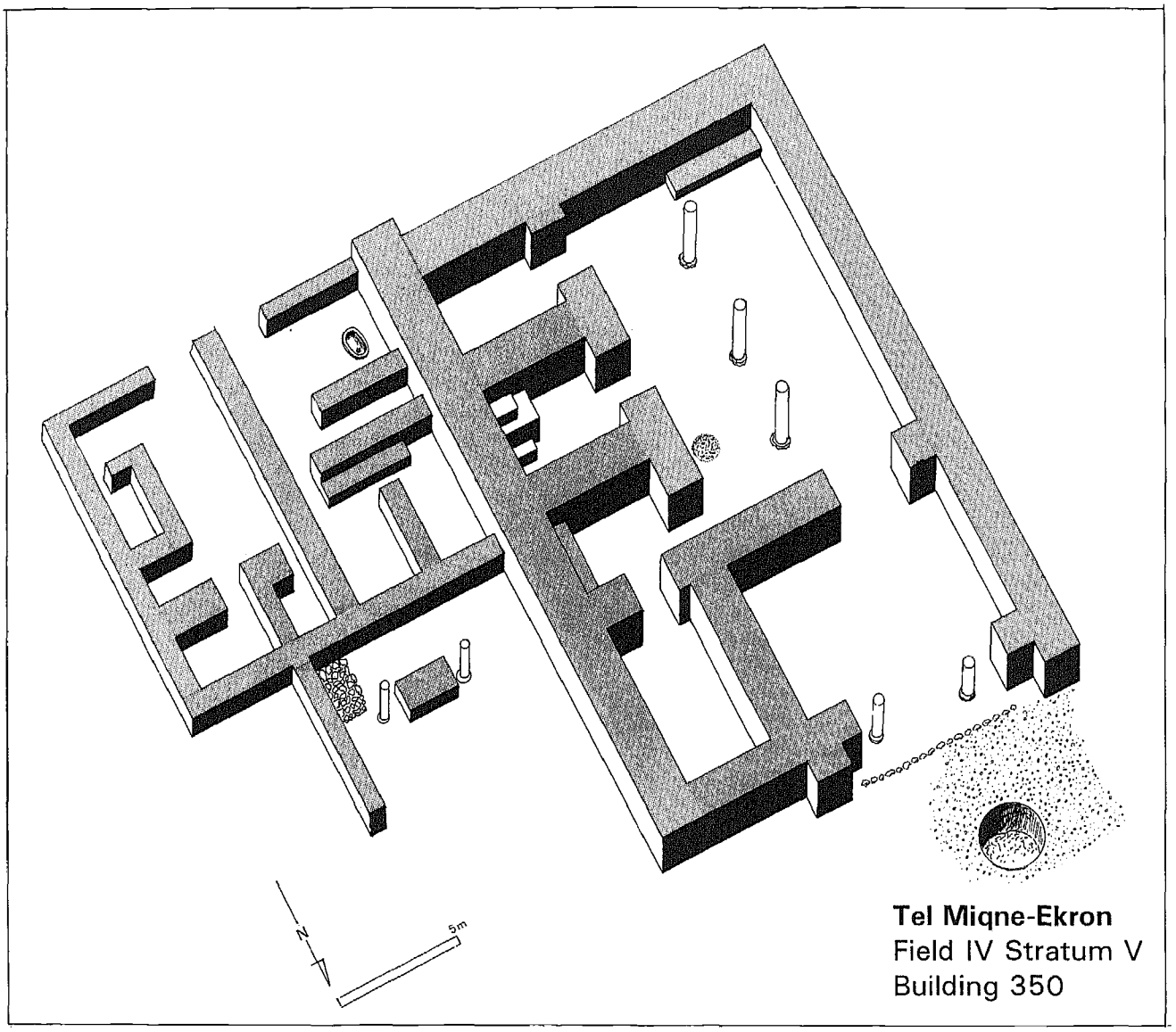
MIQNE, TEL. Figure 1. *Mycenaean IIIC:1b bowl with antithetic tongue motif.* From the initial Philistine (Sea Peoples) settlement of the early twelfth century BCE. Found in the "elite" zone of occupation. (Courtesy Tel Miqne-Ekron Excavations)

Lower city (field III). Well behind the city wall, stratum VI was represented by a building complex, over which the stratum V monumental building was constructed. Both mud-brick structures had two large units in which were found a mud-brick firebox, a bull-shaped zoomorphic vessel, an incised ivory tube, a conical stamp seal depicting two prancing gazelles, a bronze pin and needle, and two goat skulls. Stratum VI had two examples of the circular pebbled hearths known from fields I and IV. In the stratum V building, a large flagstone pavement formed a monumental entrance with matched wall insets in front of a mushroom stone pillar base. This design is similar to the monumental entrance of the megaron building in field IV. The artifacts, many of which represented a continuation of Aegean traditions, included a rectangular bone plaque painted blue and incised with the back end of a horse, a Mycenaean-type female figurine, a gold spiraled hair ring, an iron knife with an ivory handle, and a pebbled hearth.

Stratum IV consisted of two building complexes and an extended platform that supported a large number of plastered installations. These were in part built over the deep backfill covering stratum V, as in field IV, and in part reused the plan of stratum V. Continuing the Aegean tradition were two pebbled hearths. Immediately behind the fortifications, a large installation of red earth (Ar., *hamra*) and a crucible were found, indicating metal production. Special finds include a gaming piece, copper pins and needles, and an incised scapula similar to those found in field I.

Lower city (field IV). Because of the special nature of its architecture and finds, field IV in the lower city is considered the elite zone. Stratum VII was represented by the earliest appearances of rectangular hearths. In Stratum VI, the western building complex was composed of a temple/palace in the form of a megaron whose central feature was a circular hearth. The origin of the hearth is well attested in megaron buildings of Mycenaean palaces in the Aegean. In stratum VI, the western building complex produced special finds, including a round ivory lid decorated with scenes of animals in battle—gryphons, lions, and bulls—in a distinctly Aegean style.

Stratum V building no. 350 of the western complex, also with a megaron plan, had a main hall with superimposed pebbled hearths, three rooms with benches and *bamot* (altars), one room with twenty clay "lump" loom weights in the Aegean tradition, and a monumental entrance hall with two mushroom-shaped stone pillar bases (see figure 2). This building also produced three miniature bronze wheels from a cultic stand, known from Cyprus and reminiscent of the biblical description of the laver stands (Heb., *mechonot*) in Solomon's Temple in Jerusalem, and a bronze Janus-faced linchpin of a chariot wheel, which can be associated with Cyprus and the Aegean. In addition, it contained an iron knife with a pierced, spool-shaped ivory handle attached by three bronze nails—one of four such handles found at Ekron



MIQNE, TEL. Figure 2. *Megaron style building 350 in field IV, stratum V.* To the left are adjacent buildings 352, 353, 354. (Courtesy Tel Miqne-Ekron Excavations)

and similar to cultic knife handles known from Tell Qasile, Cyprus, and the Aegean. [*See* Qasile, Tell; Cyprus.]

In strata VI and V, the eastern building complex had extensive living quarters featuring a large stone bath, a monolith, two stone pillar bases, and several hearths, some pebbled. In Stratum IV, the stratum V temple/palace of the western building complex was backfilled, like the stratum V building in field III. Its plan was reused and its cultic functions continued. Its finds include a cache of ivory, faience, and stone objects—decorated earplugs, and a ring depicting the Egyptian goddess Sekhmet. The destruction and abandonment of the lower city of stratum IV marked the end of the early Philistine city and the end of the Iron I period at Ekron.

Iron Age II. In the Iron IIA–B period, strata III–II (c. 1000–700 BCE), Ekron only occupied the 10-acre upper city. Its coastal plain traditions of architecture and pottery evidenced continuity with stratum IV. In stratum IC, the first three-quarters of the seventh century BCE, Ekron became a vassal of the Neo-Assyrian Empire. Its upper and lower cities, which were rebuilt, contained the largest olive oil production center in antiquity. The stratum IB city of the last quarter of the seventh century, which was under Egyptian hegemony, was destroyed in 603 BCE by the Babylonians. Afterward, the site was resettled only sporadically.

Upper city (field I). In strata III–II, Ekron was reduced in size to the area of the acropolis, which was refortified with a new mud-brick city wall and a 7-meter-wide mud-brick

tower faced with ashlar masonry. The new Iron II city on the top of the acropolis was built over a series of monumental stone foundations that ran east–west up and across the top of the acropolis, forming part of a huge system of terraces and platforms. Some of these walls contain large ashlar masonry similar to that of the facing of the mud-brick tower.

The central architectural feature of stratum III was a repaved stratum IV street with flanking walls. The monumental architecture of stratum II continued the general plan of stratum III. The two main new elements are a series of rooms, probably shops or market stalls, which opened to the repaved stratum III street, and a stone-lined central drainage system. The ceramic evidence of strata III–II indicates a continuation of the red-slipped and burnished tradition of stratum IV and the introduction of several new forms with red wash and slip. The pottery of stratum II included Judean forms typical of the eighth century BCE, Phoenician-type forms, and local types well known in the eighth-seventh-century BCE coastal ceramic assemblage, best defined in stratum IB. Associated with the end of the eighth century BCE were three *lmlk* stamped jar handles. One, reading *lmlk ḥbrn* ("belonging to the king of Hebron"), is a four-winged type; the others are two-winged, dating from the brief period when Ekron was ruled by Hezekiah, king of Judah. [*See* Judah.]

Lower city (field III). In stratum I, the city was expanded following Sennacherib's conquest in 701 BCE. The Assyrian annals cite Ekron as a vassal city-state of the Neo-Assyrian Empire. The new fortifications of stratum I on the south of the reoccupied lower city included a double system of stone city walls, a line of stables or storehouses, and a three-pier gate protected by a gatehouse, similar to those at Tell Batash, Gezer, Lachish, and Ashdod. [*See* Batash, Tel; Gezer; Lachish; Ashdod.] On the acropolis, the strata III–II mud-brick city wall was rebuilt, and a series of citadel towers was erected.

The most outstanding phenomenon of this new city was the olive-oil industrial zone laid out in a belt along the interior face of the city wall. [*See* Olives.] It was composed of rectangular factory buildings with a tripartite division, including an oil-production room, a room for processing and storage, and an anteroom opening to the street. The oil installation had a large rectangular crushing basin and pressing vats, one on each side of the basin. Other equipment included a stone cylindrical crushing roller and eight 77-kg (170-lb.) stone pressing weights.

Each factory building room produced an average of one hundred restorable ceramic vessels. Special finds include a cache of seven well-preserved large iron agricultural tools and four-horned limestone altars. [*See* Altars.] In all, eighteen altars of this type, usually considered incense altars, were discovered at Ekron. Large numbers of loom weights and installations not associated with the oil-manufacturing process were found throughout the industrial zone, suggesting the presence of a secondary textile industry. [*See* Textiles, *article on* Textiles of the Neolithic through Iron Ages.]

The 115 oil presses thus far found at Ekron have a production capacity of at least 500 tons. To date, Ekron is the largest industrial center for the production of olive oil known from antiquity. This huge industry prospered because of the commercial needs of the expanding Assyrian Empire. [*See* Assyrians.] In the last third of the seventh century (stratum IB), a diminution in olive-oil production is attested by the discarded parts of oil installations. This phenomenon is associated with the end of Assyrian rule (stratum IC) and the establishment of Egyptian hegemony in Philistia in about 630 BCE (stratum IB).

Lower city (field IV). The elite zone had a complex of eight courtyard-type buildings, comprising twenty-one rooms that contained a large percentage of fine and decorated wares (including Assyrian-type and imported East Greek vessels), fourteen inscriptions on storejars, including, among others: *qdš* and *l'šrt*, "dedicated" and "for the goddess Asherah"; *lmkm*, "for the shrine"; the letter *ṭet*, with three horizontal lines below it, probably indicating the allocation of thirty units of produce for tithing; *bt*, designating a storejar capacity of probably 33 l; and inscriptions indicating storejar contents, such as *šmn*, "oil", and *dbl*, "cluster of figs."

These building complexes also produced three caches comprising 157 pieces of silver jewelry, cut pieces of silver—*biṣzê kesef*—and silver ingots. [*See* Jewelry.] Another cache from the acropolis had thirty one pieces, among which was a silver medallion depicting the goddess Ishtar standing on a lion (see figure 3). A fifth cache was found in field III. Together, these caches represent the richest assemblage of its kind yet found in Israel. The large amount of silver reflects its use as currency, which was an important element in the Assyrian economy and in Phoenician maritime trade.

North of the courtyard building complexes of the elite zone was a monumental Neo-Assyrian-type building. Its front and side entrances each had a single-stone, 4-meter-long threshold. Its special finds include a stela incised with a rosette, a royal Neo-Assyrian emblem, a curated carved elephant tusk with the image of an Egyptian goddess associated with the nineteenth dynasty, a golden cobra, a ureaus, part of the headdress of a statuette of Egyptian royalty or a deity, and a faience amulet of Ptah-patecus, the Egyptian god of craftsmen.

Ekron was destroyed at the end of stratum IB, during Nebuchadrezzar's campaign to Philistia in 603 BCE. Sealed beneath the massive meter-thick layer of destruction debris were thousands of mostly coastal and some inland late seventh-century BCE whole ceramic forms. In stratum IA, apparently only the lower city was occupied. One structure was well preserved, an "Assyrian courtyard" type building that produced typical seventh-/sixth-century BCE coastal ceramic

MIQNE, TEL. Figure 3. *Silver medallion showing a figure praying to the goddess Ishtar, who is standing on a lion.* From a jewelry cache, dated to the end of the seventh century BCE. (Courtesy Tel Miqne-Ekron Excavations)

forms. Thereafter, the city was abandoned until the Roman period. Evidence of Roman, Byzantine, and Islamic settlements was found only at the northern edge of the tell.

Conclusion. The excavations have produced ceramic data indicating that the site was settled almost continuously from the fourth through the third millennia; and stratigraphic, architectural, and artifactual evidence that indicates continuous occupation from the seventeenth through the early sixth centuries BCE. Thereafter, there was sporadic settlement from the Roman through the Islamic periods. The excavations highlight the process of growth, diminution, renewal, and partial abandonment that, during the Iron Age, was the fate of Ekron, a frontier city on the border between Judah and Philistia.

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MIQVA'OT. *See* Ritual Baths.

MISHRIFEH, ruin located about 18 km (11 mi.) northeast of Homs and about 35 km (22 mi.) southwest of Salamiyah, on the east side of Wadi Zora, in Syria (34°30′ N, 36°55′ E). The wadi flows from south to north and runs into the al-'Asi (Orontes) River. Opposite the southwest corner of the tell is a spring. The houses of the village of Mishrifeh once covered the tell, but in 1980 the inhabitants were removed to a new village along the west side of the tell.

Mishrifeh, a 100-hectare (247 acres) ruin has been identified as Qatna. However, when Robert du Mesnil du Buisson began excavating there, the identification was not yet definite. During his second campaign (1927) many cuneiform tablets were found referring to the site as *alu kat-na, ki, alu kat-na,* and in the Amarna tablets as *alu kat-na, katna ki.* In the hieroglyphic texts it was written as *kdn3* by Thutmosis III; *kdn* by Amenhotep II; *kdyn3* by Amenhotep III; *kdn3* by Seti I and Rameses III; and *k3dn3* by Rameses II.

The initial settlement at the site is obscure. In the Paleolithic period it seems to have been a stopping-off place for nomads. Archaeological materials indicate that Qatna played a pivotal role in the trade between Mesopotamia and the Syrian coast at the beginning of the third millennium. A Mesopotamian influence in the period of the third dynasty at Ur appears, particularly in the pottery of tomb IV. [*See* Ur.] Qatna's copperworks demonstrate contact with the Syrian coastal cities. The discovery of Egyptian sculptural fragments and the sphinx of Ita, the daughter of Amenemhat II (1929–1895 BCE) indicate that Qatna had good relations with Egypt in the first two centuries of the second millennium BCE.

Documents from the Mari archive reveal that an Amorite dynasty reigned in Qatna in the first half of the second millennium BCE. [*See* Mari Texts; Amorites.] It also had good relations with Shamshi-Adad of Aššur and his son Ismah-Adad of Mari, as well as with Alalakh, at the time of Alalakh (stratum VII). [*See* Aššur; Alalakh.] However, Qatna's relations with its neighbors were not always good.

At the end of the sixteenth century BCE, the Mitanni spread their control over the kingdom of Aleppo and then in all directions including Qatna in the south, where Hurrian immigrants already lived. [*See* Mitanni; Hurrians.] During the reign of Thutmosis I and Thutmosis III, Qatna was under Egypt's control. To all appearances there was a struggle between Egypt and the Mitanni to pull Qatna into the political sphere of one or the other. The struggle continued between Egypt and the Ḫatti. It is not entirely clear if the Ḫatti or another power destroyed Qatna. Some scholars believe that Šuppiluliuma (1380–1340 BCE) plundered the city. There is, however, evidence that the city was settled by the Arameans in the first half of the first millennium BCE, and that in the Neo-Babylonian period it was an important trading center. [*See* Arameans.]

The Temple of Nin-Egal was identified when cuneiform tablets with an inventory of the temple of the goddess, the lady of Qatna, were discovered. The goddess was worshiped in southern Mesopotamia and the name is Sumerian. [*See* Sumerians.] The plan of the temple is like the court of a palace of the period with a cella in its northeast corner. The palace itself was situated to the east of the temple, opening to the west. It contained a central court; an expanded courtyard; a throne room, whose main entrance is in the south; and two small, square rooms for the toilet. The royal apartment for the habitation of the king's family was situated opposite the north corner of the throne room. It was entered through a door that led to a waiting room. On the west side of the throne room is the royal residence. [*See* Palace.]

The city plan shows Qatna girdled by imposing, approximately square ramparts. Their average height is 15 m and they are constructed of tuff and soil, rather than mud bricks. There are four city gates, one on each side of the wall. The plan of the western and eastern gates, which consists of two pairs of flanking buttresses, resembles those excavated at Gezer in Israel and at Ebla and Tell 'Aṭchana (Alalakh) in Syria. [*See* Gezer; Ebla.]

The so-called inventory of the Temple of Ninegal was found in 1927. It mentions objects, accounts, and administrative arrangements, as well as the names of kings and personal names. The majority of the names are Canaanite and Hurrian, and the syllabary is of a Hurrian type. The archive belongs to the fifteenth century BCE. According to the tab-

lets, Qatna was ruled by Canaanite kings and its population was Canaanite and Hurrite. Besides this inventory, five other tablets were found: a contract, two economic texts, an astrological text, and a fragmentary economic text.

[*See also* Temples, *article on* Syro-Palestinian Temples; *and* Fortifications, *article on* Fortifications of the Bronze and Iron Ages.]

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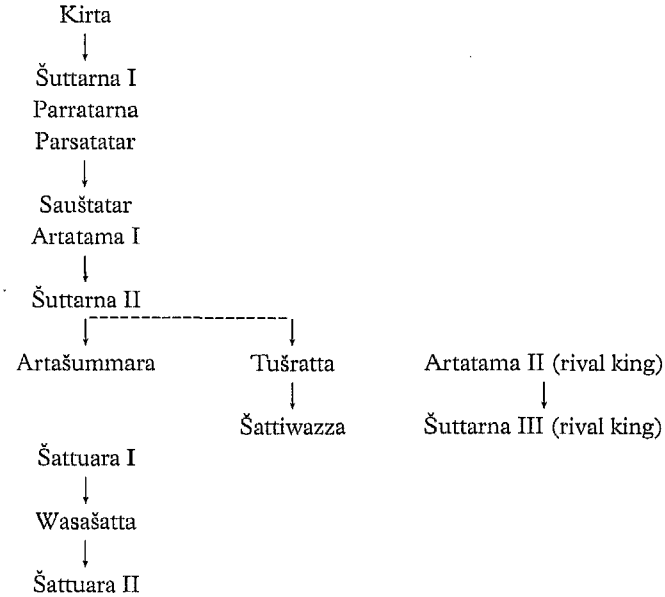
MITANNI. Probably first attested during the reign of Thutmosis I (1494–1482 BCE), and last mentioned during the reign of Tiglath-Pileser I (1114–1076), Mitanni is the name of a land also known as Hurri, "land of the Hurrians" in Hurrian, Ḫanigalbat (etymology unknown) in Assyrian and in the documents of Nuzi and Arrapḫa, Ḫabigalbat in Babylonian, and Naharina or Nahrima in Egyptian (from the Semitic *nhr,* "river"), the Aram Naharayim of the Bible (*Gn.* 24:10). In about 1450 BCE, the boundaries of Mitanni stretched from the region of modern Kirkuk (Iraq) in the east, to the upper reaches of the Euphrates River in the north, and to the Orontes River and the Mediterranean Sea in the west. Its heartland was the Khabur valley in northern Syria, where its capital, Waššukanni, was located. The exact location of Waššukanni is not known, and its identification with Sikani, modern Tell Fakhariyah is open to question. Mitanni's other important centers were Alalakh (modern Tell Atchana on the Upper Orontes), Nuzi (Gasur) and Arrapḫa in the region of Kirkuk, and Tell Brak in the Khabur, where two tablets recovered in 1984 and 1986 mention the names of two kings of Mitanni.

Mitanni was largely inhabited by Hurrians, an ethnic group attested in cuneiform sources since the third millennium. [*See* Hurrians.] They had migrated from the mountainous areas north and northeast of Mesopotamia into Mesopotamia and Syria, where they were heavily influenced by the local Sumerian and Semitic cultures. They spoke Hurrian, an agglutinative language, which is related to the Urartian language attested during the first millennium BCE. [*See* Hurrian.] Both of these languages are thought to be connected to Caucasian languages. In general, the Hurrians wrote in the Akkadian language, using the cuneiform script, but they also left a few documents written in Hurrian. [*See* Akkadian; Cuneiform.] In about the middle of the second millennium BCE, the Assyrians, a Semitic people who spoke and wrote in Akkadian, were subjects of Mitanni, as were the West Semitic people of the Syrian city-states, such as Aleppo. A group of people speaking an Indo-European dialect also inhabited the land. They had migrated into the area from the east Anatolian mountains at an unknown date, bringing with them Indo-European names of men and gods, as well as Indo-European technical terms related to the breeding and training of horses. The names of the gods whom they worshiped were Mitra, Varuna, Indra, and Nasatya, all known from the Veda. Their onomastica also suggest that they worshiped the *vāyu,* "wind," and *svar,* "heaven." Their term *marijanni-na,* "chariot driver," contains the Old Indian element *márya-*, "young man"; their numbers from one to nine are Vedic. When these speakers of Indo-European ruled Mitanni during the second millennium BCE, they used Hurrian as their official language. A few royal letters written in this language have been found in el-Amarna in Egypt; a few members of the royal family had Hurrian names, such as Gilu-Hepa and Tatu-Hepa, names borne by two princesses. [*See* Assyrians; Indo-European Languages; Amarna, Tell el-.]

The Indo-European speakers ruled over northern Mesopotamia and Syria, playing an important role on the international scene from the seventeenth to the fifteenth centuries BCE. Because the capital and other important Mitanni centers had not yet been discovered, little is known about the beginning of their rise to power. Figure 1 is a list of kings of Mitanni attested by the sources.

The first two kings of Mitanni, Kirta and his son Šuttarna I, are known from a dynastic seal rolled over two documents from Alalakh. Parratarna is known from a tablet from Nuzi and the inscription of Idrimi, king of Ḫalab/Aleppo, accord-



MITANNI. Figure 1. *Kings of Mitanni.* The downward arrows indicate descent from father to son.

ing to which, Parratarna had imposed his hegemony over the king of Ḫalab. Sauštatar and his father Parsatatar are known from a cylinder-seal impression on a letter from Nuzi. The first ruled both Alalakh and Kizzuwatna (later Cilicia), as well as Assyria and Nuzi, thus unifying the kingdom of Mitanni from west to east. According to the treaty between Šuppiluliuma of Ḫatti and Šattiwazza of Mitanni, Sauštatar took away a door of silver and gold from Aššur and installed it in his palace in Waššukanni. Thutmosis III (1478–1424 BCE) and Thutmosis IV (1400–1390 BCE) of Egypt campaigned against Mitanni, aiming at imposing their hegemony over Syria. These campaigns were eventually followed by a peace treaty that was confirmed by diplomatic marriages. Artatama I of Mitanni married his daughter to Thutmosis IV; Šuttarna II married his daughter Gilu-Ḫepa to Amenophis III (1390–1352 BCE); and Tušratta married his daughter Tatu-Ḫepa to the latter, as well as to the latter's successor, Amenophis IV (Akhenaten, (1352–1336 BCE).

Mitanni also faced a new threat to the north, from the Hittites, who later so weakened the land that it was engulfed by its former vassal Assyria. [*See* Hittites.] In a letter from el-Amarna, Tušratta informed his brother-in-law, Amenophis III of Egypt, of a victory over Ḫatti. But after three "Syrian wars," Šuppiluliuma of Ḫatti replaced the Mitanni federation in Syria with a Hittite federation and confined Tušratta and his son Šattiwazza to the Khabur valley in northern Syria. Moreover, he concluded a treaty with a "king of Ḫurri," Artatama II, while Tušratta was still on the throne of Mitanni. The final phase of Mitanni's political survival was marked by Assyrian interference. Ashur-Uballit I (1363–1328) supported Šuttarna III against his enemy Šattiwazza and the latter's Hittite allies and probably annexed Nuzi and Arrapḫa to Assyrian territory. Adad-nirari I (1305–1274) and Shalmaneser I (1273–1244) dealt with the last royal clan of Mitanni: Šattuara I, his son Wasašatta, and his grandson Šattuara II. After the defeat of Šattuara II by Shalmaneser I, very early in the latter's reign, Mitanni was annexed to Assyria and ceased to exist as a political entity.

Mitanni's main cities have not yet been located, and this land's material culture is evidenced only at eastern and western provincial sites, where architecture and sculpture are relatively rare compared with the minor arts (e.g., cylinder-seals, figurines, wares). Mitanni's culture appears essentially to have been eclectic, involving mainly Mesopotamian and Old Syrian traditions. The palaces at Alalakh level IV (from the time of Parratarna and Sauštatar) and at Tell Brak area IV (the time of Tušratta and Artašummara) share such un-Mesopotamian features as a northern location for the major reception rooms and an upper story approached by two stairways. The entrance hall of the palace at Alalakh had a monumental columned portico, a reminder of the *bit-ḫilani*, an architectural style adopted by the Assyrians for their palaces and temples during the Neo-Assyrian period. This architecture was once thought to be of Hurro-Mitannian origin, but recent studies suggest a western, possibly Aegean, influence. The temple at Tell Brak with its broad-room cella and shallow rabbet niche to the north, almost opposite the door, follows an Old Syrian plan known since the third millennium; the inset panels of engaged half columns in the southern and eastern facades reflect the religious architectural tradition of Mesopotamia. The one and only sculpture from Mitanni, a small statue of fine-grained white or gray limestone found at Tell Brak, represents a seated male figure wearing a togalike garment and holding what may be a vase in front of him. The statue shares features with the larger statue of Idrimi of Alalakh, which itself has Egyptian and Old Syrian characteristics. Syro-Mitannian glyptic uses two unequal registers of scenes that depict ritual, hunting, and ceremonial themes. Many other themes found in the glyptic, including winged disks, palmette trees, winged nude females, the storm god, and composite monsters, derive from Mesopotamian, Egyptian, Syrian, Cappadocian, and Aegean repertoires. The heavy use of the drill, a practice known since the third millennium, characterizes Syro-Mitannian seals produced in mass quantities. Nuzi ware, a luxury ware commonly found in temples and palaces, associates Mesopotamian ceramic traditions with western elements of design. It is also attested at Alalakh and Tell Brak, although there local designs were also used. Glass and glazed wares, also luxury products, were produced in large number and widely distributed during the Mitannian period.

[*See also* Alalakh; Brak, Tell; Khabur; Mesopotamia, *article on* Ancient Mesopotamia; *and* Nuzi.]

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AMIR HARRAK

MOAB. Two inscriptions from Luxor, both dating to the reign of Rameses II (c. 1304–1237 BCE), provide the earliest certain epigraphic references to Moab. One of these inscriptions, which apparently commemorates an Egyptian campaign into Moab, is presented with scenes in relief depicting Egyptians attacking fortifications and mentions three towns by name: *b(w)trt, yn(?)d,* and *tbniw*. Both inscriptions render the name *Moab* with the hieroglyphic determinative that indicates a land or a region; other ancient sources verify that Moab was the region immediately east of the Dead Sea. Specifically, the Hebrew Bible refers to the people who lived in that area as Moabites, and two royal inscriptions found there, the Mesha inscription and the Kerak fragment (see below) use the title "king of Moab" for local rulers. The *tbniw* of the Luxor inscription probably is to be identified with Dibon (present-day Dhiban), known otherwise from the Hebrew Bible and the Mesha inscription. The Balu' stela also suggests an Egyptian presence in Moab at the end of the Late Bronze Age.

The most important epigraphic source for ancient Moab is the famous Mesha inscription discovered at Dibon/Dhiban in 1868. Written in Canaanite (or Moabite) script on a basalt stela, the thirty-four lines identify Mesha as the king of Moab and report the major deeds of his reign. Those deeds include his successful struggle to "liberate" the region north of Dibon from Israelite control; numerous building projects, such as the temple to Kemosh, where the stela was erected; and the construction of a road across the Arnon River (Wadi el-Mujib). The Hebrew Bible also reports Mesha's successful rebellion against Israel and states that this occurred following King Ahab's death (*2 Ks.* 3:6–27), which would place Mesha's reign in the second half of the ninth century BCE. Parts of only four lines of the Kerak fragment survive, but it is enough to reconstruct the name of one *[K]mšyt,* also identified as king of Moab. It has been suggested that this *[K]mšyt* was Mesha's father, whose name is partially preserved (*Kmš[..]*) in the Mesha inscription. This is what speculative, however, because the theophoric element *Kmš* was typical of royal Moabite names.

Of the few archaeological sites excavated in Moab, most are situated north of the Arnon/Wadi el-Mujib. The following have produced Late Bronze and/or Iron Age remains (listing from north to south): Khirbet el-'Al, Hesban, Dhiban (Dibon), Lehun, 'Ara'ir, Balu', and Khirbet el-Medeineh (i.e., Medeinet el-Mu'arrajeh, overlooking Wadi el-Lejjun). Especially for the area south of the Arnon/Mujib, therefore, the available archaeological evidence derives largely from surface surveys. It seems clear that the region had a rather sparse sedentary population during the Middle and Late Bronze Ages, but experienced a significant increase in the number of settlements during the Iron Age. This trend probably began near the end of the Late Bronze Age and reached a high point in Iron II. Early in the Iron Age some small but strategically located fortifications already appear—Khirbet 'Akuzeh, on the southern rim of the Kerak plateau; ed-Deir on its western edge; and the two Khirbet Medeinehs on the eastern side, overlooking Wadi el-Lejjun. These suggest the beginnings of an organized defensive strategy early in the Iron Age, although not necessarily a unified territorial state encompassing the whole area east of the Dead Sea, as the Hebrew Bible seems to presuppose.

Specifically, the Hebrew Bible speaks of a race of giants, the Emim, who occupied the land of Moab before the Moabites (*Gn.* 14:5; *Dt.* 2:10–11). It identifies the Moabites themselves as descendants of Lot's eldest daughter (*Gn.* 19:30–38) and presupposes a unified Moabite kingdom with fixed boundaries already in place when the Israelites passed through Transjordan during their exodus from Egypt (e.g., *Nm.* 21:26; 22:4). The Hebrew Bible is not a firsthand source, however, and the picture it presents of ancient Moab clearly is legendary, as well as influenced by theological and ideal notions regarding early Israel. The various Moabite kings mentioned in the Bible (to the extent that they are in fact historical people), as well as the Shasu king (?) featured in the Balu' inscription, may have been tribal chieftains or lords over local city-states. Among the former are Balak, who is said to have engaged the prophet Balaam to curse the Israelites while they were camped in the plains of Moab (*Nm.* 22–24); Eglon, who is reported to have oppressed Israel during the time of the Judges (*Jgs.* 3:12–30); and Mesha, who reportedly paid an annual tribute to Israel of a hundred thousand lambs and the wool of a hundred thousand rams but rebelled after Ahab's death.

The Mesha inscription provides a firsthand look at political circumstances in Moab during the ninth century BCE. The kingdom Mesha inherited from his father seems to have consisted essentially of the city-state of Dibon, for which Wadi el-Mujib and Wadi el-Wale would have provided natural boundaries. From this base he claims to have expanded his domain northward as far as Madaba, fortified 'Aro'er

('Ara'ir), presumably to protect the road he built across the Arnon/Mujib, and conducted at least one military campaign into the region south of the Arnon (depending on the location of Ḥoronaim mentioned in line 31). However, the geographic range of his building activities as reported in the inscription implies that, except for possible military excursions, the Moabite territory south of the Arnon was beyond the limits of his domain. Mesha credited his successes to the Moabite god Kemosh, and the inscription stood in a temple dedicated to Kemosh.

Assyrian texts indicate that Moab, along with the other peoples of Transjordan, became Assyrian vassals following Tiglath-Pileser III's western campaigns in 734–732 BCE. This status involved payments of heavy tribute to Assyria, but also Assyrian protection, which seems to have been needed primarily against the nomadic Qederites, who roamed the desert regions east and southeast of Damascus. Also learned from these Assyrian texts are the names of four additional Moabite kings and other bits of information about Moab's involvement in international affairs. A fragment of a clay tablet discovered at Nimrud lists Salamanu of Moab among the kings who paid tribute to Tiglath-Pileser shortly after 734 BCE. A prism fragment from the reign of Sargon II suggests that Moab was implicated in an anti-Assyrian revolt led by Ashdod in 713 BCE. A Kammusunadbi of Moab is mentioned among local Palestinian kings who sent presents to assure Sennacherib of their loyalty when he marched against Philistia and Judah in 701 BCE. In addition, a King Musuri of Moab appears in a list of kings who transported building materials to Nineveh during the reign of Esarhaddon, as well as in another list of local rulers who sent presents to Ashurbanipal and supported his wars against Egypt. Two more texts from Ashurbanipal's region report Assyrian military action against the Qederites. One of these texts mentions a King Kamashaltu of Moab, who seems to have played a major role in the action. (For documentation of the Assyrian references to Moab, see J. Maxwell Miller, "Moab and the Moabites" in Dearman, ed., 1989, pp. 1–40.)

Josephus (*Antiq.* 10.9.7) states that Nebuchadrezzar made war on the Ammonites and Moabites and brought them under Babylonian control. Presumably, the peoples of Transjordan submitted to Persia as well, but there is no specific evidence of this.

[*See also* 'Ara'ir; Balu'; Central Moab; Dibon; Kerak; Lehun; Medeineh, Khirbet el-; *and* Moabite Stone.]

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J. MAXWELL MILLER

MOABITE STONE. The inscription of Mesha, king of Moab, known both as the Moabite Stone and as the Mesha Stone/Inscription, was the first (1868) of the major epigraphic documents discovered in either Cis- or Transjordan and couched in a language closely related to Hebrew (see figure 1). More than a century later, it is still one of the most important of the Canaanite inscriptions, providing data on the religion, history, geography, language, and thought of the Moabite people.

The discovery did not take place in the course of regular excavations, and attempts by Europeans to obtain the stela from local inhabitants resulted in the inscription being broken into pieces. Many fragments were recovered, but our knowledge of approximately one-third of the text rests on a partial and inexpert copy of the intact stela and on a squeeze hastily taken before the stone was broken. As is often the case with antiquities discovered at the dawn of modern scientific archaeological research, there is no readily identifiable *editio princeps* (on matters of discovery and early publications, see Clermont-Ganneau, 1887, and M. P. Graham in Dearman, 1989, pp. 41–92).

The text deals with the deeds of Mesha, the defeat of his enemies, and the construction projects his new glory permitted (on the questions of text structure and literary genre, see Smelik 1990, 1992). The greatest of these projects was designated by the term *qrḥh,* apparently a quarter of the capital city of Dibon, wherein Mesha erected a *bmt,* a type of sanctuary (cf. Hebrew *bāmâ*), in which the inscription itself was deposited (1.3). He (re)built the walls, the gates, and the towers of the *qrḥh,* as well as a palace within, and installed waterworks (ll. 21–26). For the correlation of archae-

MOABITE STONE. Figure 1. *The Moabite Stone.* (Courtesy ASOR Archives)

ological data from Dibon with the text of the Moabite stone, see A. D. Tushingham (1990). The (re)building activity extended beyond Dibon, to other towns (ll. 26–28).

The enemy was the Israelite Omride dynasty, which had occupied Moab "for many days" (1.5), indeed "forty years" (1.8). Both the Omride occupation and the defeat of the occupiers is described as the work of the deity Kemosh, who had first "been angry with his land" (ll. 5–6) and then "restored it" (ll. 8–9). The interpretation of particular details is uncertain, as is any correlation with data from other sources—for example, the chronology of the Omrides or the geography of both the Israelite occupation and of the Moabite borders with Ammon to the north and Edom to the south (on these matters, see Timm, 1989; Smelik, 1992; and the bibliographies therein).

This text constitutes the primary source for the Moabite language, for most other inscriptions identified as Moabite belong to the category of minor inscriptions, such as seals (Israel, 1987; 1992, pp. 105–110). The primary isoglosses are monophthongization of *-ay-* and *-aw-* diphthongs and *-n* as the plural marker of masculine nouns and adjectives (for details, see Israel, 1984; and K. P. Jackson in Dearman, 1989; pp. 96–130). A fragment of another monumental inscription providing the name of Mesha's father, Kemoshyatti, was published in 1963 (Reed and Winnett, 1963; Swiggers, 1982); more recently, a brief text on papyrus appeared that was identified by its editors as belonging to a dialect of Moabite (Bordreuil and Pardee, 1990).

[*See also* Dibon; *and* Moab.]

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DENNIS PARDEE

MOCHA (Ar., al-Mukha), city located in the harbor of a natural lagoon on the Red Sea coast of the Republic of Yemen (13°19′ N, 43°15′ E). The name of the port is synonymous with coffee. Legend attributes the invention of coffee drinking and, hence, the foundation of the town to a local fifteenth-century CE hermit, Shaykh ʿAli ibn ʿUmar Shadhili, who died in 1418 (AH 821). Mocha was the sole port for the shipment of coffee during the Yemeni monopoly on production of the crop (c. 1550–1725 CE). The city was linked by road with Bayt al-Faqih, to the north, which was the emporium for collecting the bales from the mountainous interior where the coffee grew.

Before the arrival of European traders (i.e., before the seventeenth century CE), Mocha served as a small port in the Egypt-India trade. It grew in importance after Ottoman Turkish measures against the Portuguese restricted trading activity at the port of Aden. English and Dutch factories were established first under Ottoman authority in 1618; the height of the coffee trade was reached between about 1660 and 1780. The French did not establish a factory until 1713, but they successfully transplanted coffee bushes to Réunion, breaking the Yemeni monopoly.

There have been no excavations at Mocha. The city's archaeological history is mostly derived from European descriptions, including lithographs. Mocha had no city walls until shortly after 1700. Eighteenth-century descriptions are consistent in their disparaging remarks about the flimsiness of the masonry—too thin to resist canon shot and a suitable deterrent only for cavalry or those without artillery. Aerial photographs taken in the 1970s show the position of the walls and the defensive bastions. The two most significant monuments are the tombs of Shaykh al-Shadhili and Shaykh al-Amudi. The settlement was severely damaged by offshore bombardment during Italian-Turkish engagements before World War I. Worse devastation was inflicted by a flash flood from the mountains that sent a wall of water 1 m deep as far as the sea.

The name of Mocha is inextricably linked with that of Muza, the pre-Islamic port listed in the *Periplus of the Erythraean Sea,* which describes it as a station between Berenice in Egypt and Barygaza in India. The archaeological quest for the location is hampered by the similarity of the names of Muza, Mukha, and Mawzaʿ—the latter located 25 km (15 mi.) inland, which Ptolemy describes as the town associated with the port of Muza. Numerous, mostly informal expeditions have tried to locate Muza, but to no avail. In an analogy with the coastline at Faza, to the north, the harbor of Muza should be sought at least 5 km (3 mi.) south of Mocha and inland: at Faza, early medieval port sites are found stranded to the south and east of present-day lagoons. Prevailing onshore winds and tides have a tendency to create sand bars which form natural anchorages for shallow-drafght boats. In time, the lagoons silt up, and another natural harbor forms farther north.

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E. J. KEALL

MONASTERIES. The foundation of a monastery was preceded everywhere in the Near East by individual anchorites, whose fame attracted pious individuals to settle near them to benefit from their experience and counsel. It was in this way that communities of monks came into being. Although Eusebius does not mention monasticism in his *Ecclesiastical History,* which was written before 325 CE (suggesting that monasticism was not yet considered a significant trend within Christianity), the first monasteries in Egypt, Syria, and Palestine had already emerged by that time. By the middle of the fourth century the movement had spread, and by the last quarter of that century monasteries were common throughout the Near East. During the fifth and sixth centuries, the movement became strong and wealthy and was a dominant factor in the Christian church and in Byzantine society.

In different parts of the Christian world, depending on local cultural and social and national affinities, there were diverse answers to the question "What is the proper way to conduct monastic life?" The variety of monastic systems gave rise to the emergence of several types of monasteries with particular architectural plans. The design and construction of monasteries were also determined by regional building traditions.

Once the movement had grown and taken shape, two main types of organized monastic life emerged. In each the monks were subordinate to an abbot or priest and their life was regulated by rules, either oral or written. In the ceno-

bium (from the Greek *koinos bios,* "common life"), monks lived within a walled compound; the laura (Gk., "alley") was a community of anchorites in which each monk lived alone in his cell or with one or two fellow monks or disciples. The cells were dispersed around core buildings—a church, kitchen and bakery, storerooms, and other communal buildings. A network of constructed paths communicated between the cells and the core. Cenobitic monks met each other daily, during common meals and prayers. In the laura these encounters occurred only on weekends and at feasts. The framework of the laura can therefore be considered to have been semicenobitic. Cenobia were found everywhere in the Near East, while laurae were restricted mainly to Egypt, Palestine, and Sinai (although they were known in Cappadocia, on Mt. Olympus in Bithynia, and on Mt. Latros [Latmos] in Caria). [*See* Cappadocia.] There were significant differences in the life-styles between the Pachomian cenobia (see below) in Egypt and the Syrian ones, on the one hand, and the Basilian cenobia (see below) of Asia Minor and Palestine on the other hand. There also were differences between the vast anchorite colonies at Nitria, Kellia, and Scetis, where several thousand monks lived in each, and the modest Palestinian laurae or the tiny, remote colonies of Sinai. By the sixth century, a composite institution was also found throughout the Levant: a cenobium with a few anchorites or recluses living within its wall or in immediate proximity to its walls. Almost all of the communal buildings found in a cenobium were also present in the core of a laura, except that the latter had no walls or gates. Typologically, both kinds of monasteries were constructed either on a plain, a moderately hilly area, or steep cliffs.

Egypt. Because, in Egypt, brick was the common building material, the state of preservation of monastery buildings is much poorer than in Syria and Palestine. In the inhabited monasteries, like those in Wadi 'n-Naṭrun, or like St. Antony and St. Paul, medieval and recent reconstruction work masks the original layout.

Two main monastic systems were born in Egypt: one, propagated in Lower Egypt by Antony (251–356 CE) and his disciples, was semicenobitic; the second, founded by Pachomius (c. 290–346 CE) in Upper and Middle Egypt, was a true cenobitic system. The best-known Antonian colonies were those on Mt. Nitria (founded c. 315), in Kellia (established in 338), and in Scetis (established between 330 and 340). The monks in these colonies numbered several thousand. Other communities of this type were the Mustafa Kasif at el-Khargah; Der al-Dik, Der Sombat, and Der Abu Henes in the region of Antinoe (Martin, 1971); and perhaps also the early phases of the excavated Monastery of Apa Apollo at Bawit and Apa Jeremias at Saqqara (Clédat, 1904–1916; Quibel, 1912; Grossmann and Severin, 1982). [*See* Nitria; Saqqara.]

Pachomius founded his first monastery in about 323 in Tabennesi. His second foundation, Phbow (in 329), became his largest and most important. At the time of his death, nine monasteries and two nunneries were united in his community, the Pachomian federation *(koinonia).* They later increased to twenty-four, comprising several thousand monks. A Pachomian monastery was also established in Metanoia, not far from Alexandria. Shenoute, who headed the White Monastery (Deir el-Abiad) near Sohag in the first half of the fifth century, modified the Pachomian system by not advocating extreme asceticism. He permitted a monk to withdraw to the desert after a few years of cenobitic life, without completely cutting ties with the community. Such was the life-style of the cell dwellers associated with the Monastery of Epiphanius near Thebes in Upper Egypt and of the monks who inhabited the cells west of Esna. Egyptian laurae such as these reused the burial caves from the pharaonic and Roman periods that are found along many stretches of the Nile Valley as well as in the Delta (Martin, 1967). [*See* Delta.] Such anchorite settlements had a nearby cenobium serving as its core.

The core buildings at each of the four communities in Scetis included a church; a tower of refuge, or keep (Ar., *qaṣr*); a kitchen, bakery, and dining room; and storehouses for food. The monks' cells were scattered at short distances from each other in unwalled colonies. Unlike Mustafa Kasif and St. Antony, where perimeter walls were built in the fifth and sixth centuries, the core buildings at Scetis were not surrounded by a wall until the ninth century, and in the fourteenth century monks were no longer permitted to dwell outside the walls (Evelyn-White, 1932–1933; Walters, 1974).

The sixth-century laura at Der el-Dik consisted of fifteen rock-cut cells, two churches similarly constructed, and presumably also a *qaṣr.* A large walled structure (146 × 92 m) nearby that might have served as a cenobium was constructed after the cells were abandoned.

Kellia (Gk., "cells") is identified with the sites of Quṣur al-Ruba'iyyat, Qaṣr Waheida, Quṣur 'Isa, Quṣur el-'Izeila, Quṣur el-'Abid, Quṣur Hegeila, and Quṣur 'Ereima. The colony extended for more than 22 km (14 mi.). The collapsed cells, built of mud bricks, created more than fifteen hundred mounds, which are clearly visible on the ground. The mapping of Kellia was done with the aid of aerial photographs, and each mound *(kom)* was given a separate number (Daumas and Guillaumont, 1969; Kasser, 1967, 1972, 1980, 1983, 1984; Bridel, 1986).

The earliest hermitages in Kellia were modest in scale and lacked an encircling wall. However, those built in the late fifth–early sixth centuries were more spacious and elaborate. A typical spacious Kelliot hermitage, dated to the sixth century, is the early phase of *kom* 167, whose rectangular, walled area is about 15 × 27.5 m in size. The *kom* was composed of a spacious dwelling with many rooms; its water-supply installations included a well, a pool, channels, and a toilet; a courtyard area contained a garden. [*See* Pools.] The dwell-

ing (10.30 × 9.70 m) was in two parts, each with several rooms: the larger area included a kitchen and food storerooms and was occupied by the senior monk; the smaller one, attached to it on the south, was used by a disciple or an attendant. Each section had its own chapel (oratory), a spacious room whose walls were ornamented with frescoes. [*See* Wall Paintings.] The ceilings were of brick vaulting.

From the first quarter of the seventh century onward, instead of isolated hermitages dispersed throughout the desert, at Kellia hermitages were grouped into a compound surrounded by a shallow wall. The result was a cenobiumlike construction, a *ma-nshubeh* (Copt., "dwelling"). A *qaṣr* was built later. However, the monks continued to maintain the daily life of hermits, not of cenobites. Such a monastery can be found in the final stage of *kom* 219, excavated by the French expedition (Daumas and Guillaumont, 1969). Within the wall about ten hermitages are each comprised of several rooms. The communal structures included a kitchen, latrines, the courtyard, and cisterns. [*See* Cisterns.] However, isolated hermitages persisted even side by side with these monasteries. There were many churches at Kellia. The main and most ancient church appears to have been the one discovered at Quṣur ʿIṣa (South 1) and excavated by the University of Geneva (Kasser, 1983, 1984). The second ecclesiastical center was at Qaṣr Waheida (= *kom* 34), excavated by the French Institute of Oriental Archaeology at Cairo (Descoeudres, 1988).

The nine cells excavated to the west of Esna, dated to 550–650, are spacious subterranean complexes cut to a depth of about 3.5 m below the surface. The walls and floors were plastered and whitewashed. The simpler type had a single prayer chapel, courtyard, bedroom, and storeroom. The kitchen was equipped with elaborate cooking devices, including a stove and a baking oven with an improved air-circulation system. The second type had two chapels and two courtyards (Sauneron and Jacquet, 1972).

At the Apa Jeremias monastery at Saqqara, the dwellings had three components: a small courtyard, an outer room that served as a living room, and an inner room with a niche in the eastern wall that served as an oratory. It seems that there was also a second story (Quibel, 1912). The structure of the cells at Bawit is similar (Clédat, 1904–1916). At both sites, and near Esna, the rooms also had air shafts.

The Pachomian cenobium, inhabited by several hundred monks, was surrounded by a wall; its plan resembled that of a military camp, although the wall was not a fortification wall. The best-preserved example of a Pachomian cenobium is Deir al-Balaiza near Asyut (Grossman, 1993). It is constructed on a moderate slope that descended eastward; its walls encircle a trapezoidal area (200 × 50–250 sq m). Many of its structures are preserved to two or three stories: three or four churches, a bakery, two refectories, and several dormitories. Its estimated population was about one thousand monks. The wall had a gatehouse on the east, with a guesthouse next to it, on the outside. The entire layout and structure parallel the literary sources (Patrich, 1995, pp. 17–22), according to which a Pachomian monastery included an assembly hall (Gk., *synaxis*) for prayer, a community dining hall, a kitchen, a bakery, a hospital, and storehouses for agricultural produce and other foodstuffs and work tools. There were various workshops and folds for pigs and animals used for plowing and for transport. (Camels and boats were used for transportation.) [*See* Pigs; Camels; Transportation.]

The literary sources report that the monks in each monastery were divided into houses (Gk., *oikoi*) comprised of twenty to forty men. Each three or four houses constituted a tribe. The dwellings created a barracklike structure. Each house was to include an assembly hall for lessons, discourse, and prayer as well. Initially, one monk lived in each cell, but in a later period three monks are known to have lived in a single cell. Such cells were found in the excavations of the sixth-century Monastery of St. Simeon (Anba Hadra) near Aswan. The cells in the monastery's keep opened onto a central corridor (Monneret de Villard, 1927). The cells at Deir Fakhoury near Esna were similarly arranged (Walters, 1974, p. 110). However, at Deir al-Balaiza the monks lived in dormitories (Grossman, 1993).

The refectory at the Apa Jeremias monastery at Saqqara measures about 22 × 10.5 m. Three rows of columns divide the room along its longitudinal axis. Six windows were set in the north wall; traces of stone benches along the eastern wall indicate that the dining tables were long (there are also indications of a round table). Another hall (10 × 20 m) has been identified by inscription as an infirmary (Quibel, 1912; Grossman and Severin, 1982). Niches and cupboards were built in its walls. At Anba Hadra the refectory is also a rectangular hall divided along its axis by a row of four columns. On the stone floor are traces of eight circular brick tables; water tanks were built near the walls. Another refectory with a central row of columns was found in *kom* 34 (Qaṣr Waheida) at Kellia.

Monastic churches are rectangular, oriented to the east, and have straight, outward walls—no apse protrudes. Generally, there were two entrances—on the north and on the south. Where there was a narthex, a third entrance was set in the western wall. The numerous entrances of the White Monastery (Monneret de Villard, 1925–1926) are rare. Churches were basilical in design, with the nave much wider than the aisles. [*See* Basilicas.] Occasionally, galleries are seen. The sanctuary was generally single apsidal or trifoliated, with two sacristies—one on the north and one on the south. On the west there was an endo- and/or an exonarthex. The "southern narthex" in the White and Red Monasteries near Sohag is an unusual feature in its placement. The main building material for churches was brick. Stone was used only for the more important churches, at least in their lower courses. The White Monastery is remarkable because it was

built of white limestone, including its floors, doorframes, and decorated architectural members.

The main center of pilgrimage in Egypt was the shrine of St. Menas at the town of Abu Mina (Mareotis; Grossman, 1986).

Sinai. The small monasteries and hermitages in the Sinai desert have been studied extensively in recent years (Finkelstein, 1985; Tsafrir, 1993; Dahari, in press), as has the St. Catherine Monastery (see below). Uzi Dahari (Tsafrir, ed.; 1993) recorded seventy monastic sites in the high mountains of Sinai, seventeen of which appear in the literary sources. He estimates the population of monks in Sinai to have been about six hundred at the apogee of monastic life. A second monastic center, at Rhaithou, was identified by Dahari (Tsafrir, ed., 1993) at modern Sheikh Raia, near the western shore of the peninsula.

The cells discovered in the monastic centers on Jebel Safsafa and Jebel Sirbal in Sinai are generally small, narrow alcoves built under large boulders or in overhangs, with at least one masonry wall. Complex 250 on Jebel Safsafa is unique in that it is more spacious and is composed of a courtyard, vestibule, and a living room; site 2 there, which is a narrow alcove, is the prevalent type of cell (Finkelstein, 1985). The cells at Bir Abu-Sweira, a monastic site near Rhaithou, are also small. Partially rock cut, each cell is a room with several niches in its eastern wall that served as a private chapel. The monks in the high mountains constructed gardens and irrigation systems near their hermitages. Each monk cultivated an average plot of 325 sq m for his livelihood.

The fortified St. Catherine monastery was both a monastic center and a pilgrimage site (Forsyth, 1973; Grossmann, 1988). Most of its structures were two to three stories high and were constructed along the circumference walls (about 75 × 85 m): dwellings, a refectory, a kitchen and a bakery, and storerooms. The magnificent basilical Church of Justinian (20 × 37 m) inside the compound, was built sometime between 548 and 565, next to the "burning bush." Its east–west orientation is askew to the wall lines. A guesthouse and fourth-century tower of refuge are alongside it. The "Well of Moses" is located to the north of the church. The rest of the area inside the walls is free of constructions.

Ancient Palestine. The first monks known by name are Hilarion (291–371) of Tabatha (near Gaza), who started his monastic career about 308, and Chariton, a native of Iconium (Konya) in Asia Minor, the founder of monasticism in the Judean Desert. In the beginning, the laura was the most common type of monastic settlement in the Judean Desert. Chariton established his first monastery, Pharan, there in about 330. At that time anchorites also lived among the reeds of the Jordan River. Chariton later established two other monasteries: Douka, overlooking Jericho, and Souka, not far from Tekoa. [*See* Jericho.] Monasticism spread throughout Palestine during the fourth century, and monasteries—mainly cenobia—were established in Jerusalem, Bethlehem, and in other holy places connected with Jesus' life, as well as in the lowland (Shephelah) and Gaza. [*See* Bethlehem.]

Unlike in Egypt and Syria, Palestinian monasticism was not an indigenous movement; it was mainly a Greek-speaking one, with a cosmopolitan flavor. Influences were introduced both from Egypt and from Asia Minor, from whence most of the Palestinian monastic leaders came. The outcome was something original, however, and in the mid-fifth century Palestine became a monastic center on its own, attracting monks and admirers from the entire Christian world.

The most comprehensive archaeological and historical studies refer to monasticism in the Judean Desert (Hirschfeld, 1992; Patrich, 1995). The ruins of some sixty monasteries and monastic installations were explored in this area, some of which (Khirbet el-Murasas, Khirbet el-Kiliya, Khan el-Ahmar, Khirbet ed-Deir) have been excavated completely (Bottini et al., 1990). All others were surveyed comprehensively. Five monasteries on the fringes of the desert, adjacent to Bethlehem, were excavated by Virgilio Corbo (1955). Information from other regions of the country is more fragmentary.

The sixth-century Monastery of Martyrius (Khirbet el-Murasas) is the best representative among the cenobia. The compound is rectangular (78 × 68 m) and surrounded by a 0.7-meter-thick stone wall preserved to a height of 1–2 m. It originally was about 4 m high. The main entrance was in the eastern wall and had stables next to it. The church, a typical monastery chapel (29.5 × 6.60 m), had a narthex on the west, an elongated diaconicon (15 × 4.6 m) on the south, and a mortuary chapel on the north. The northern wing included the dwelling cave of the founder monk, which later served as a burial ground. [*See* Burial Sites.] The vast refectory (31 × 25 m) was basilical in shape, with galleries on three sides. Adjacent to it was the kitchen, with a cellar and an upper floor. The dwelling areas, with two other chapels, were on the southwest, on the second floor of the structures that surrounded a central courtyard. An exceptional structure, a small bathhouse (9 × 13 m), was located on the west. The monastery was equipped with vast underground cisterns and drainage channels, as well as with storerooms. The floors of all the structures were decorated with colorful mosaics, large portions of which are preserved. [*See* Mosaics.] Open spaces and passages were paved with flagstones. On the exterior, near the northeast corner, was a hostel (28 × 43 m), including a stable and a chapel. Nearby, on the outskirts of the complex, three gardens had been irrigated by stone-cut channels. [*See* Irrigation.]

Generally, monks were interred in the burial chapels and the common cemeteries according to their hierarchy in the monastery: abbots; priests and deacons; and unordained monks. The tomb of the founding father was sometimes marked by a special building, or he was buried in the cave in which he had spent his life. The tomb could become a

focal point for veneration by monks and pilgrims. [*See* Martyrion; Tombs.] Monks usually lived alone, but two or three might share a cell or there might have been dormitories, in accordance with the regulations for monks legislated by Emperor Justinian.

The Great Laura of St. Sabas (Mar Saba) is the most elaborate example of a laura (Patrich, 1995). Its remains are distributed along 2 km of the Kidron ravine. There was more than one type of laura hermitage. The simplest cells consisted of a single room and a courtyard; the complex ones consisted of several rooms, including a private chapel or a prayer niche. Most hermitages were intended for a single monk, but there are several dwelling complexes that might have served two, or even three monks. Private chapels were a common feature. Each hermitage had its own water supply provided by drains and cisterns to catch rainwater.

Syria. From the literary sources about eighty monasteries are known to have existed in the sixth century on Syria's limestone massif (the agricultural regions between Antioch and Apamea), with the most important ones being Deir Tell Ade, Qal'at et-Touffah, Deir Tormanin, and Deir Batabo. [*See* Antioch on Orontes; Apamea.] More than fifty of these monasteries were identified in the surveys of Melchior de Vogüé, Howard C. Butler (1929), Georges Tchalenko (1953–1958), and others. Ten monasteries have been explored in northern Apamene, and still others to the west of Antioch. Ten have been explored in the Hauran and more in the region of Ṭur ʿAbdin. Most monasteries were small, with seven to fifteen monks. Of the fifty-seven cenobia explored by Ignace Peña, P. Castellana, and R. Fernandez (Peña et al., 1983) on Jebel Baricha (northern Syria), thirty-four are small, fifteen medium sized, and only eight are large.

In most regions of Syria monasteries were built of ashlars and, because those communities were deserted by the end of the Byzantine period, the state of preservation of many of them is excellent. Most are known only through an architectural survey; only a few have been excavated. Therefore, information regarding their early stages (fourth–early fifth centuries) is meager, but presumably the earliest structures were humble. The transition from anchoritism to cenobitism passed through the stage of *hîrtâ* (cells arranged irregularly around the cell of the head of the community).

By the first half of the fourth century there were organized monasteries at Osrhoene, Euphrathesia, and Antiochene. Additional centers developed in the second half of the century in the desert of Chalcis, in Cilicia, and in the districts of Apamea, Zeugma, Cyrrhus, and Phoenicia. [*See* Cilicia.] The first known anchorite was Juliana Saba, who lived in the early fourth century in Osrhoene. His disciple, Asterios, had already erected a cenobium. The first anchorite at Antiochene was Ammianos, and his monastery, Teleda (Deir Tell Ade), took the lead in the region. Eusebius, who headed the monastery after 360, promoted monasticism in Antiochene; it was spread from there to Apamene by Agapetus and Symeon, who founded to two monasteries at Nikertai, where the rules of Marcianus, their spiritual father, were implemented.

During the fifth and sixth centuries, the spread of cenobitism was on a large scale: monumental and elaborate communal buildings were arranged efficiently, unlike the unorganized *hîrtâ*. In the larger cenobia, the communal buildings were arranged around a central courtyard and were surrounded by a fence built of unhewn stones. Many cisterns were dug within the enclosure and plots of land were cultivated. Most monasteries were located in the countryside, alongside roads, in agricultural areas, at some distance from villages.

The Antiochene cenobia were comprised of a church; a communal tomb with a burial chapel and underground arcosolia in which the monks were buried according to their monastic rank; a tower used for surveillance or seclusion inside or outside the walls, but nearby; and a monumental communal building of two or three stories that was rectangular, oriented north–south, and surrounded on three or four sides by porticoes of square, plain monolithic pillars supporting an undecorated architrave. There is a debate among scholars about the function of this building (Butler, 1929, Lassus, 1947; Tchalenko, 1953–1958; Peña et al., 1983; Sodini, 1989). It seems that it served as a dormitory for monks and novices, as is recommended by the Justinianic legislation for monks (see above) and by some monastic regulations. Additional use of the ground floor may have included a refectory, house of assembly, infirmary, halls for charitable activities, or workshops. Examples of this type of building, peculiar to monasteries, are preserved at Deir Tell Ade, Deir Turmanin, Deir Simʿan, and Qalʿat Simʿan, as well as at the smaller monasteries of Qaṣr el-Brad and Kimar. The character of the accommodations of the abbot, priest, and other leaders of the community was more private. Those structures may have had more than one story and they lacked porticoes, they were a separate component in the complex.

Early monastic churches in Syria are basilical (e.g., Qaṣr el-Banat, Deir Turmanin, Deir Simʿan [Northwest]), while the late ones are small chapels (Deir Simʿan [Southeast]). The Apamene monastic chapels (e.g., at Dana [South], Btirsa, Shinshara, and el-Breiğe) are of a transverse type, with a rectilinear sanctuary and a narthex. Those at Ṭur ʿAbdin are of the same type but have an apsidal or triapsidal sanctuary and are roofed with a brick barrel vault rather than with timber (Bell, 1982; Fourdrin, 1985). Monastic churches lack the horseshoe bema, or ambo, located in the central nave in parish churches.

Towers of seclusion and the columns of stylite monks were very common in Antiochea (at Kafr Derian, Kimar, el-Brad), following the habits of the renowned monk Symeon Stylites (d. 459). The monastery built around his col-

umn of seclusion between 473 and 491 (Qal'at Sim'an) became a center of pilgrimage. [*See* Qal'at Sim'an.] A sacred road led there from Deir Sim'an, and three smaller monasteries and several hostelries for pilgrims were found in that village. The architecture of the Monastery of Symeon Stylites the Younger on Mons Admirabilis, southwest of Antioch, with its cruciform martyrion, is quite similar (Mécérian, 1948, 1965; Lafontaine-Dosogne and Orgels, 1967; Djobadze, 1986). [*See* Martyrion.]

Fifty towers of seclusion were explored on northern Syria's limestone massif (Peña et al., 1975, 1978). The phenomenon of these towers was a late development in Antiochene monasticism (some are dated by inscriptions to the sixth century). The towers are generally spacious hermitages that consist of two, three, and even six stories, each with a single room. The cell on the ground floor was used by the attendant or disciples, while the cell on the upper story served as living quarters for the recluse or as a private chapel. In a two-story hermitage known as the Cell of Gabriel, which was explored in the Abbey of Qartmin near Ṭur ʿAbdin, at the border of the Tigris River, the lower story served as a prayer chapel and the upper one as a living room. A hermit tower of three stories with single rooms is located at a distance of 250 m to the west, outside of the monastery (Palmer, 1990). Each of these towers is generally surrounded by a stone wall enclosing a courtyard and forming a *mandra,* "a fold."

The Apamene monasteries, ten in number, are all located in the northern part of that region; they display a common plan that differs somewhat from those in Antiochea. They appear to have been implemented by a central authority, as a means of disseminating Christianity or Monophysitism. They were isolated from the outside world by a wall and a gate. Except at Frikya, there is no hostel in these monasteries. The collective tomb is located under the church or in a special structure. The absence of traces of cells implies a collective dwelling. In the monasteries of southern Syria, as at ed-Deir, south of Bosra, and in northeast Syria, a symmetrical plan was followed in monasteries. In them, the communal structures were arranged around the atrium of the church, located to its east.

[*See also* Churches.]

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JOSEPH PATRICH

MONTET, PIERRE (1885–1966), Egyptologist and archaeologist, born at Villefranche-sur-Saône in 1885. Montet studied Egyptology under Victor Loret at Lyon University. In 1910 he was appointed *pensionnaire* ("fellow") at the French Archaeological Institute in Cairo, where he published, with J. Couyat, *Les inscriptions hiéroglyphiques et hiératiques du Ouâdi Hammâmât.* He was drafted in 1914, and earned medals for distinction during the war. In 1919 he was appointed lecturer and then professor at Strasbourg University. In 1920 Montet excavated Jbail (Phoenician Gebal; Greek Byblos; Crusader Giblet) in Lebanon. He uncovered several royal tombs contemporary with Egypt's Middle Kingdom, along with artifacts that provided evidence for repeated contacts between Byblos and pharaonic Egypt as early as the Old Kingdom. Also found at Byblos was the sarcophagus of Ahiram, which bears the earliest known Phoenician alphabetic inscription. [*See* Ahiram Inscription.]

Montet's work at Byblos between 1920 and 1924 was published in *Byblos et l'Égypte* (1929). He earned his doctorate in 1925 with the thesis "Les scènes de la vie privée dans les tombeaux égyptiens de l'ancien empire." From 1928 onward, he focused on Tanis in Lower Egypt, publishing several monographs. Additional observations on contacts between Egypt and the Levant appear in his 1937 work *Les reliques de l'art syrien dans l'Égypte du nouvel empire.* In 1948 Montet became professor of Egyptology at the Collège de France and in 1953 was appointed a member of the Académie Française des Inscriptions et Belles-Lettres. His two volumes on the *Géographie de l'Égypte ancienne* (1957–1961) serve to summarize his extensive scholarship on ancient Egypt. Pierre Montet bequeathed his Egyptian collection to Strasbourg University, whose Institut d'Égyptologie is named for him.

[*See also* Byblos.]

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HAFEZ K. CHEHAB

MONTGOMERY, JAMES ALAN (1866–1949), one of the central figures in the early development of the American Schools of Oriental Research (ASOR). Montgomery was the director of the Jerusalem school (1914–1915), chairman of ASOR's board of trustees (1918–1921), and its first president (1921–1934). He was also the first editor of the *Bulletin of the American Schools of Oriental Research (BASOR),* a position he held from 1919 to 1930.

By education and training Montgomery was a biblical scholar and an Orientalist. He held undergraduate (1887) and graduate degrees from the University of Pennsylvania (completing his Ph.D. in 1904). He received his theological training at the Philadelphia Divinity School, graduating in 1890, and subsequently studied at the Universities of Griefswald and Berlin (1890–1892). Montgomery taught Old Testament literature at the Philadelphia Divinity School (1899–1935) and Hebrew and Aramaic at the University of Pennsylvania (1910–1938). During the time he was elected president of the Society of Biblical Literature (in 1918) and the American Oriental Society (1926–1927). He edited each society's journals for extended periods: the *Journal of Biblical Literature* (1909–1913) and the *Journal of the American Oriental Society* (1916–1921, 1924).

Montgomery wrote widely on Semitic philology, Israelite religion, archaeology, Jewish-Christian relations, the history of Israel, Ugaritic, Ethiopic, South Arabian inscriptions, the Hebrew Bible, and the New Testament. He wrote nine full-length books, more than 126 scholarly articles, twenty articles for religious publications, and more than forty-five book reviews. His two contributions to the International Critical Commentary series (on *Daniel* and *Kings*) remain classics, demonstrating his command of Semitic linguistics, textual criticism, and literary genres. Montgomery advanced the study of Biblical and Classical Aramaic significantly. He advocated widespread use of the Aramaic Elephantine texts and various Aramaic inscriptional materials in biblical scholarship. His *Aramaic Incantation Texts from Nippur* (Philadelphia, 1913) is still widely used as the introductory work on these texts. The *Ras Shamra Mythological Texts,* written with Zellig S. Harris (Philadelphia, 1935), represents an early attempt to make use of Ugaritic texts to broaden the understanding of biblical and Canaanite religion.

Montgomery was, however, interested in more than linguistics, literature, and religion. His scholarly breadth allowed him to examine the historical, geographic, and socioeconomic settings of the entire ancient Near East. Two of his works explored these issues. *The Samaritans: The Earliest Jewish Sect* (Philadelphia, 1907) traces the history of Samaritan culture from its origin to the early twentieth century. *Arabia and the Bible* (Philadelphia, 1934), despite some revisions necessitated by recent discoveries (see Van Beek, 1969) remains a sound introduction to the history, geography, and religious and ethic backgrounds of the Arabian Peninsula.

Montgomery became emeritus professor at the University of Pennsylvania and the Philadelphia Divinity School in 1938. His commentary on *Kings,* edited by his student Henry S. Gehman, was published posthumously in 1951.

[*See also* American Oriental Society; American Schools of Oriental Research; Society of Biblical Literature.]

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CHARLES E. CARTER

MOORTGAT, ANTON (1897–1977), a founder of Near Eastern archaeology as an academic discipline, along with Ernst Herzfeld and Henri Frankfort. The field comprises the investigation of material remains in Asia Minor, Syria, the Arabian Peninsula, Mesopotamia, and Iran from the Neolithic period to the time of Alexander the Great.

Moortgat left his native city of Antwerp, Belgium, for Germany, where he earned his doctorate in classical archaeology at Berlin University in 1923. Following a period of activity at the German Archaeological Institute in Rome, he worked under Walter Andrae in the Near Eastern division of the Berlin museums (1930–1945). As custodian, he held an honorary professorship at the Archaeological Institute of Berlin University in 1941. After World War II, Moortgat accepted the chair of ancient Near Eastern studies at the newly founded Free University of West Berlin (1948), a post he held until his retirement in 1965. Moortgat's chief accomplishment proved to be the working out of a chronologically reliable sequence of styles in the southern Mesopotamian corpus of artistic monuments; at the same time, he investigated artistic activity in this core area's peripheral provinces, with respect to their mutual dependency upon Mesopotamia. It was this schema of cultural groups and his generally reliable system of time periods in the central area that first provided the indispensable prerequisite for further meaningful work in Near Eastern archaeology. Moortgat published his foundational work primarily in *Frühe Bildkunst in Sumer* (Early Imagery in Sumer, 1935); *Vorderasiatische Rollsiegel* (Near Eastern Cylinder Seals, 1940); two articles on Assyrian glyptics (1942, 1944); and *Die Entstehung der sumerischen Hochkultur* (The Development of Sumerian High Culture, 1945).

Because Moortgat based his work on the assumption of ethnically determined artistic regions, he neglected the determining effects of the state on artistic production and ethnological development. Therefore, some of his numerous students rejected aspects of his work and modified and developed his chronological system. Handbooks of art history based on Moortgat's pioneering work are still used as basic texts; examples include Eva Strommenger's *5000 Years of the Art of Mesopotamia* (London, 1964), Barthel Hrouda's *Vorderasien* (Handbuch der Archäologie, vol. 1, Munich, 1971), Winfried Orthmann's *Der alte Orient* (Propyläen Kunstgeschichte, vol. 14, Berlin, 1975), Wolfram Nagel's *Bauern und Stadtkulturen im vordynastischen Vorderasien* (Berlin, 1964), Rainer Boehmer's *Glyptik der Akkad-Zeit* (Berlin, 1965), Peter Calmeyer's *Bronzen aus Luristan* (Berlin, 1969), Ursula Seidl's *Babylonische Kudurru-Reliefs* (Berlin, 1968), and Jutta Börker-Klähn's *Altvorderasiatische Bildstelen* (Berlin, 1982).

[*See also the biography of Frankfort.*]

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WOLFRAM NAGEL

Translated from German by Susan I. Schiedel

MOR, TEL (Ar., Tell Mura), a small mound about 1.5 acres in area near the mouth of the Naḥal Lachish, about 2 km (.5 mi.) from the Mediterranean coast in Israel (map reference 1175 × 1368). The site may be ancient Ashdod-Yam, "Ashdod of the Sea." It served as the port of nearby Ashdod in the Bronze and Iron Ages. Tel Mor was excavated in 1959–1960 by Moshe Dothan on behalf of the Israel Department of Antiquities.

Twelve strata were distinguished, extending from the late Middle Bronze Age through the Hellenistic period. The MB remains were scant but included Cypriot and Egyptian imports, as well as local cultic vessels. The Late Bronze Age levels (strata 11–7) indicated a flourishing seaport, especially during the fourteenth century BCE (stratum 9), when a large fortress/storehouse demonstrates that Tel Mor was an important site on the Via Maris. This settlement was destroyed in about 1300 BCE, perhaps during the campaigns of Seti I in Canaan.

The strata 8–7 resettlement, dating mainly to the thirteenth century BCE, saw the construction of another large multiroomed fortress with a courtyard, built on an Egyptian plan. Substantial amounts of Egyptian, Mycenaean, and Cypriot pottery were found in this fortress, which may have been destroyed by fire in the time of Rameses II, or in his son Merneptah's raid in about 1207 BCE. A small tower or fort *(migdal)* in strata 6–5, on the ruins of the fortress, belongs to the late thirteenth–early twelfth centuries BCE. The

pottery is transitional LB/Iron I, including local imitations of Cypriot styles. Some Egyptian pottery and scarabs suggest that here, as elsewhere in Canaan, an Egyptian governor was in residence as late as the period of Rameses III.

Strata 4–3 represent the post-Egyptian era, when Philistine material culture dominates, as at other coastal sites. Tel Mor was destroyed again at the end of stratum 3, perhaps in the wars of David against the Philistines. The small resettlement of stratum 2 belongs to the eighth century BCE, with some remains of a casemate-walled fortress. It may have been destroyed by the Neo-Assyrian king Sargon II, who, in the Assyrian annals, is said to have taken Ashdod-Yam and turned the entire territory of Ashdod into an Assyrian province. Following a long abandonment and the transfer of Ashdod's port to a site known later as Hellenistic Azotos (Minet Isdud), only a large public building and a dye-extraction facility were constructed on Tel Mor (stratum 1).

[*See also* Ashdod; Philistines, *article on* Early Philistines.]

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WILLIAM G. DEVER

MOSAICS. In antiquity polychrome mosaic pavements were a conspicuous feature of interior decoration in public and domestic buildings. They survive in great abundance where corresponding wall and ceiling decoration has largely vanished. The earliest floor mosaics were made of small, smooth pebbles, but these were soon replaced by tesserae (small, evenly cut cubes of stone). There are two types of tesserae, each used to achieve different effects: *opus tessellatum* consists of square, or nearly square, stones set in rows and *opus vermiculatum* ("worm-shaped work") are very small tesserae cut in irregular shapes and laid in patterns dictated by a pavement's design. *Opus tessellatum* was used to execute geometric patterns or figures, whereas *opus vermiculatum* was usually reserved for fine details. Tesserae (of local limestone; marble and glass for highlights) were available in a wide range of colors, and several shades of a single color were often used to achieve subtle modeling effects. In Roman mosaic decoration, the average number of colors in the mosaicist's palette was thirty; in Byzantine mosaics the average palette consisted of from ten to twelve colors. Mosaic floors are typically laid on a three-layer foundation consisting of the *rudus* (a bed of packed earth or debris with large stones); the nucleus (several centimeters of mortar made of lime and ash or pottery dust and chips); and the setting bed (a layer of 2–4 cm of limestone plaster into which the tesserae are set).

Although ancient authors (e.g., Vitruvius) mention mosaic pavements, there are no extant texts that describe the making of a mosaic. The process must have involved several specialized craftsmen to prepare the setting bed, to cut the tesserae, and to design and execute the figures. Piles of precut tesserae, sorted according to color, along with the waste stones from which they were cut, have been found at some sites, indicating a degree of industrialization. While even the most complicated geometric patterns could have been executed merely with string and compass, the repetition of nearly identical figural compositions over several centuries and in widely separated geographic areas indicates that some sort of model "books" were used.

Early Pebble Mosaics. The first differentiated floor designs were pebble mosaics. Although some scholars have placed the invention of this technique in the Near East, the most recent studies suggest that pebble mosaics originated in Greece, where they existed as early as the Late Bronze Age. At Gordion, in Asia Minor, three buildings were discovered with multicolored pebble floors that are dated to the eighth century BCE. These Phrygian pavements are composed of scattered geometric motifs with no overall order.

Hellenistic Mosaics. In the Hellenistic period, pebble mosaics were elaborate and representational, often featuring mythological characters (the Scylla mosaic from Nea-Paphos on Cyprus). Floors that incorporate both pebbles and tesserae illustrate the transitional phase in the development of tessellated mosaics (from Alexandria, Egypt: a warrior surrounded by a frieze of griffins; a Hunt with erotes attacking a stag [both now in the Greco-Roman Museum in Alexandria]). As mosaic compositions became more pictorial and dependent on paintings for models, the cutting of the tesserae became more refined. These changes can be charted in the *emblemata,* or portable tray, compositions executed in *opus vermiculatum.* Two very similar mosaics from Thmuis (Tell Timai), with female busts that represent either the city of Alexandria or a Ptolemaic queen (Berenike II?) are striking examples of this technique; their superb execution attests to the virtuosity of the Alexandrian workshops, which some scholars believe specialized in the production of *emblemata.* Close parallels between Alexandrian works and those found in the House of the Faun at Pompeii suggest the influence of Alexandrian artists abroad.

Mesopotamian Mosaics. The art of mosaics was never popular in Mesopotamia. Although the Standard of Ur (in the British Museum) is sometimes described as executed in the mosaic technique, it is not; it is executed with inlay of shell, lapis lazuli, and red limestone. Only four sites with pavements executed in *opus tessellatum* are known from the region, and all date to the third century CE. A personification of the Euphrates River between personifications of Syria and Mesopotamia found at Mas'Udiye has inscriptions in Greek and Syriac that give the name of the artists and the date 539 of the era of the Seleucids (227–228 CE). A well-known mo-

saic of late Severan date, with the personified provinces, was excavated at Zeugma (Belqis). Better known than either of these are the funerary mosaics at Edessa and the mosaics in the Palace of Shapur I, erected in 260 CE, after his victory over Valerian. In the palace mosaics, geometric panels alternate with figural scenes of dancers, courtesans, musicians, and portraits.

Roman Mosaics. The earliest tessellated mosaics from the Near East follow the compositions of the pebble mosaics of the Hellenistic period (e.g., at Delos and Alexandria)—namely, multiple bands framing a central *emblema* that was usually filled with a geometric design (at Arsamea in ancient Commagene in Turkey). Similar pavements with central designs were found in Israel, on Masada in the Judean Desert and in the Herodian quarter of Jerusalem. They are securely dated to before 70 CE, the year Titus destroyed Jerusalem.

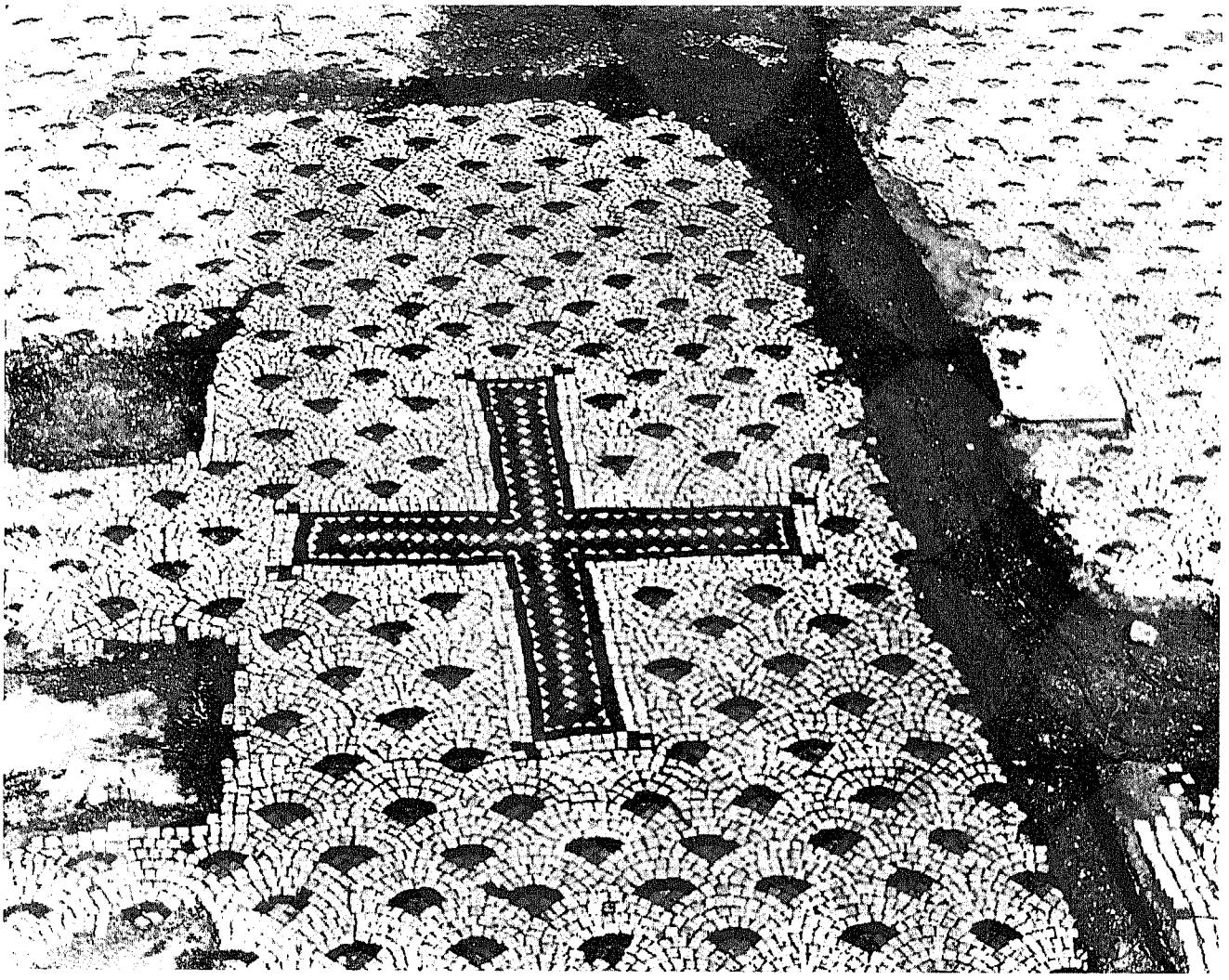
The majority of mosaics from the imperial period are from the private sphere of the Roman house. These are best represented by the extensive series of floors excavated at Antioch in Syria. The taste for illusionistic picture panels arranged within a single composition can be seen in the earliest houses of the first century CE, those constructed before the earthquake of 115 (e.g., the triclinium mosaic in the Atrium House, with its Judgment of Paris, Drinking Contest, and Adonis and Aphrodite). Aside from a rich selection of mythological scenes, apotropaic symbols are introduced at the entrances to rooms and houses (the evil eye or ithyphallic dwarfs). Representations of the months and seasons (House of the Calendar) and personifications of rivers (House of the Porticoes) and provinces (House of Cilicia) also reflect the expansion of the repertoire of mosaic images beyond the narrative models of Greco-Roman painting. Episodes drawn from literary (Greek novels in the House of the Man of Letters, now in the Princeton Museum and the Worcester Art Museum) and theatrical (House of the Red Pavement; House of Iphigenia, now in the Antakya Museum) sources reveal the cultural milieu of Roman cities in the eastern Mediterranean. Sometimes the themes reflect the function of the particular room they decorate—for example, an elaborate table setting replete with foods frames a central medallion with Ganymede serving the Eagle in the apsed triclinium of the House of the Buffet Supper.

This fashion for allegorical and mythological compositions is demonstrated throughout the eastern Mediterranean in the second and third centuries CE. Where entire houses have been excavated, as in the case of the House of Dionysos at Nea-Paphos, there is evidence for reading the selection and placement of certain themes as programmatic. Dionysiac themes (Vintage and Triumph) are typically set into reception rooms or near them (Dionysos's Gift of Wine to Ikarios), while salutatory motifs such as the frontal peacock or Four Seasons are found at or near the house entrance. Often, several themes are incorporated into one grand design, as is the case with the mosaic, reconstructed from numerous fragments, originally found in Gerasa/Jerash (Transjordan): several Dionysiac friezes are stacked vertically and framed by a garland border accented by busts of the Seasons, Muses, and Authors (Homer and Thucydides are extant), each identified by a Greek inscription. The combination of themes in this mosaic, dated on stylistic grounds to the mid-second century CE, may be intentional: they evoke the processions and cult festivals associated with the theatrical guilds of Dionysiac artists. (Most of the mosaic is in the Staatliche Museum in Berlin.)

An equally grand and unusual floor with Dionysiac scenes was produced in the first half of the third century CE for the triclinium of a house in the theater district at Sepphoris in the Galilee. The central composition consists of fifteen panels, each labeled with a Greek inscription, that depict aspects of Dionysiac mythology and ritual. The whole is enclosed by a frame of lush acanthus foliage inhabited by animals and hunters; the bar of the T-shaped mosaic contains a continuous procession of Dionysiac cult followers bearing various gifts and offerings.

Throughout the Near East there was a pronounced taste for mosaic compositions steeped in classical learning. The didactic nature of such displays is emphasized by the popularity of Greek labels. Busts of the Seven Sages (accompanied by their maxims and titles in Greek) and Socrates surround Calliope in a mosaic of Severan date from Baalbek/Suweida in Lebanon. Mythological scenes are also accompanied by inscriptions, and their selection often reflects local lore and interests (the Beauty Contest between Cassiopeia and the Nereids found at Apamea, Palmyra, and Nea-Paphos). The display of philosophical notions of time (*Chronos,* "time"; and *Aion,* "the ages") and the representation of nature by personifications (*Ge,* "earth"; *Georgia,* "agriculture"; and *Tropai,* "turning points of the seasons") are masterfully set out in a mosaic produced in the second half of the third century CE in the city of Shahba/Philippopolis in southern Syria. The discovery of many mythological and allegorical mosaics in Shahba/Philippopolis indicates that a workshop was active there from the second half of the third century through the first half of the fourth.

Late Roman Mosaics. Hellenism continued as a significant force in the cultural life of the Near East through the Late Antique period, as evidenced by the influence of Neoplatonism, especially in Syria. Several of the mosaics found at Apamea, an important Greek city, bear eloquent testimony to the continuation of pagan beliefs and myths. A group of pavements (most are in the Apamea Museum), dated to the reign of Julian the Apostate (360–363 CE), were found in a single building near the Cathedral of Apamea. Among them is a remarkable scene of Socrates seated among the Seven Sages (as well as the Return of Ulysses, with the "Servants" labeled, and the Judgment of the Nereids). The very ambiguity in the scholarly interpretations



MOSAICS. Figure 1. *Mosaic from Shavei-Zion.* (Courtesy Lucille A. Roussin)

of Socrates as a Christlike teacher or a pagan emperor-type implies the degree to which both paganism and Christianity drew inspiration from Platonism. The interpretation of the recondite myths and personifications set out in six elaborate panels in a room from the House of Aion at Nea-Paphos suggests a pagan response to the rise of Christianity. Securely dated to the second quarter of the fourth century, these mosaics include the Childhood and Triumph of Dionysos who, it would appear, is presented as a universal savior. In the adjacent Governor's Palace (House of Theseus), renovations in the fifth century included a grand mosaic with the Birth, First Bath, and Education of Achilles. Scenes from the Life of Achilles are featured on a mosaic from Nablus in Israel, dated to the third/fourth century. The iconography demonstrates the widespread popularity of the myth cycles and the common repertoire of the Near East. Original compositions are rare, but there is an exceptional case from Mariamin (in the Hama Museum in Syria), where the mosaic features a concert with six female musicians, seemingly a record of an actual event.

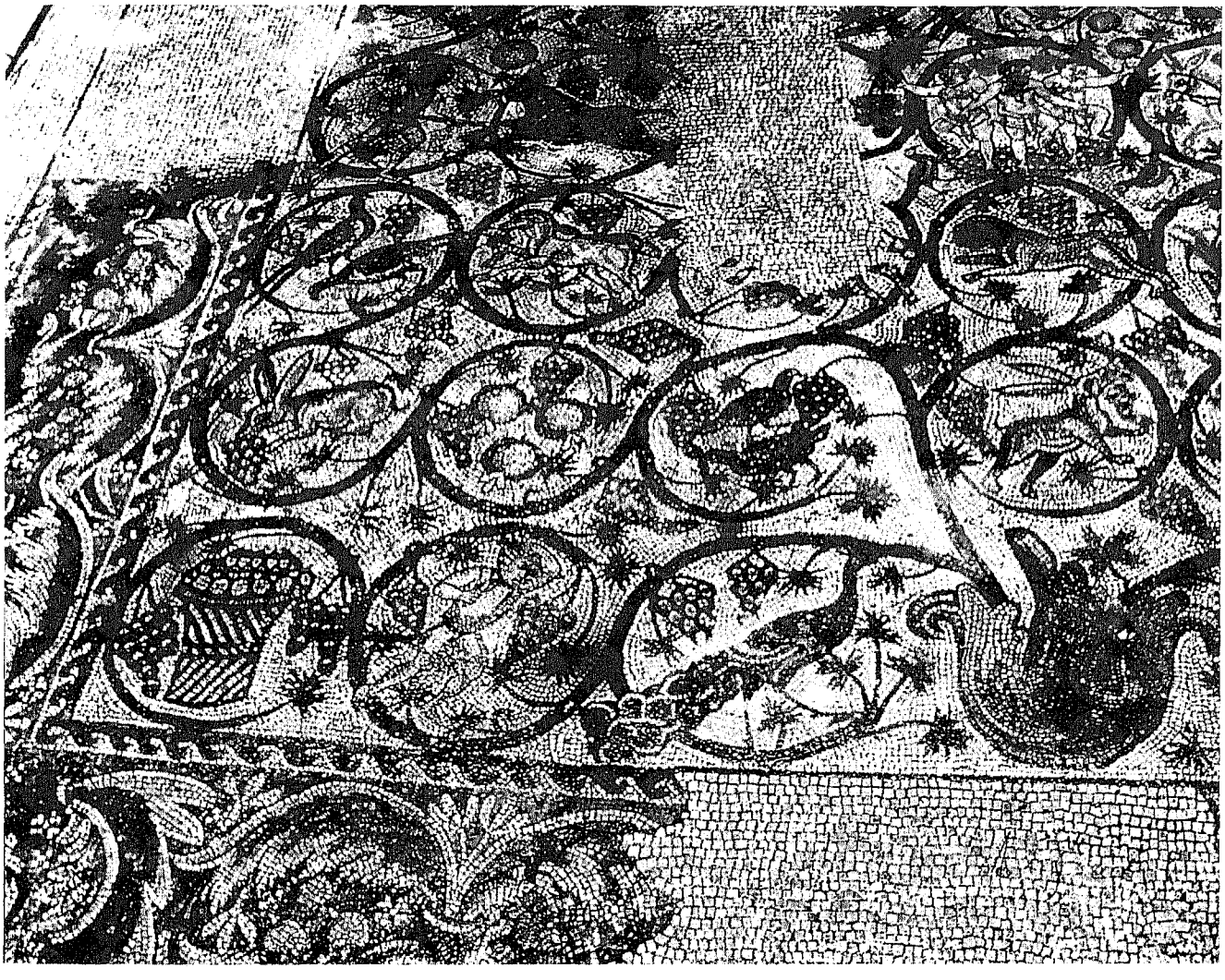
In the course of the fourth century, figural compositions begin to shift away from pictures in stone to be viewed from a single vantage point to pavements composed of several scenes or single scenes broken up into multiple parts. This change is illustrated by the triclinium pavement in the Constantinian Villa at Antioch (now in the Louvre), where the entire field is divided into a series of irregular panels: sacrifice and hunt scenes fill trapezoidal panels with full-length female Seasons set in the diagonals between them.

Early Christian Mosaics. Although the promulgation of the Edict of Toleration by Constantine in 312/13 CE meant that Christians were free to construct houses of worship, it is not until the third quarter of the fourth century that church building and decoration appear on a large scale in the eastern provinces. The most prolific center for mosaic production was Syria, where the "rainbow style" emerged

in the second half of the fourth century. This new style is characterized by complex geometric designs executed in multicolored bands that can be extended in all directions (e.g., the Kaoussié Church in Antioch; the church in Zahrani, Lebanon; and the basilica in Salamis/Constantia, Cyprus). Such designs suited the need for aniconic decoration necessitated by the prohibition against images contained in the Second Commandment.

The increase in mosaic production throughout the Near East in the fifth century is a sign of the region's general prosperity and political stability. Mosaic workshops in Turkey, Syria, and Cyprus continued to flourish, and mosaic production in Lebanon and Palestine increased, especially in the first half of the fifth century. At this time church pavements are decorated with the cross and Christogram (in ancient Palestine at Nahariya, Shavei-Zion (see figure 1), and 'Evron; on Cyprus there is a mosaic representation of a jeweled cross set into the pavement in the church at Tremithus). The practice continues into the late sixth century, despite the prohibition in the edict of Theodosius II in 427 CE. The crosses and Christograms in these pavements usually mark entrances, altars, and places of special veneration within the churches and may have served an apotropaic function. Specifically religious themes are found in a group of pavements from Cilicia (at Ayas, Karlik, and Korykos) in which the iconography of the Peaceful Kingdom (*Is.* 65:25) is illustrated. This theme continues in popularity in the sixth century in the mosaics from the Madaba region (Baptistery of the Cathedral; Churches of Sts. Lot and Procopius; and the Memorial of Moses on Mt. Nebo). At the same time, the natural world is also brought into the sacred space through the insertion of a great variety of plant and animal motifs into the geometric patterns (in ancient Palestine at the Church of the Nativity, Bethlehem; in Syria at Dibsi Faraj and Khirbet Mouqa; and on Cyprus at Soloi and at the Kourion Baptistery and Basilica).

The most significant development of the latter half of the fifth century is the reintroduction of large-scale animal and



MOSAICS. Figure 2. *Mosaic from Beth-Shean/El-Hammam.* (Courtesy Lucille A. Roussin)

hunt carpets. The camel caravan and animal chase mosaic in the portico of the Great Colonnade at Apamea (469 CE) may be the earliest of this type (also at Apamea are mosaics of Amazons hunting and of Atlante and Meleager). The most dramatic and monumental examples of hunt pavements are those discovered at Antioch (the Megalopsychia Hunt from Yakto now in the museum at Antakya, Turkey, and the Worcester Hunt in the Worcester Art Museum). The mosaic of Adam enthroned in Paradise surrounded by wild beasts from the nave of the North Church at Huarte, Syria, is an example of the adaptation of a popular Roman theme—Orpheus charming the beasts—to Christian iconography.

A taste for the personifications of abstract ideas and the elements of nature remain popular from the Late Roman period through the sixth century; for example, *Ananeosis,* or "Renewal," and *Ktisis,* or "Foundation," occur at Antioch (*Ktisis* also appears in the frigidarium of the Baths of Eustolios at Kourion, Cyprus); personifications of the seasons (at Deir es-Sleib, Syria), *Ge* (at Beth Guvrin?), and *Thalassa,* or "Ocean" (at the Church of the Apostles, Madaba). Calendar mosaics expand on the seasons imagery with illustrations of the agricultural labors of each season and month (at Beth-Shean in Israel and el-Ḥammam in the same locale).

In the sixth century, Palestine and Arabia are the most important provincial centers of mosaic productivity. The most popular pattern was the medallion style of the inhabited vine or acanthus scroll rinceaux, which was used for border and field compositions. Within the scrolls of church pavements are miniature versions of hunting themes and pastoral and vintaging scenes (Beth-Shean (see figure 2) and Madaba). Elements of the natural world—flowers (rosettes), animals, birds, baskets of fruit—fill the intervals formed by grid patterns composed of small four-petalled flowers; these petalled trellis designs are widely found—at Antioch, in the House of the Green Carpet; in Lebanon at the church of Khalde; and in Syria at the church at Dibsi Faraj. Classical myths continue to be represented at Madaba with the Dionysiac *thiasos* (revelry) and with Achilles and Patroclus; in Jerusalem, with Orpheus; and at Erez, in Israel, with the Triumph of Dionysos.

Topographical subjects, introduced in the fifth century in the cityscape border of the Megalopsychia Hunt from Antioch and in the Nilotic pavement of the transept of the Church of the Multiplication of Loaves and Fishes at Tabgha, in Israel, are a particularly rich subject for sixth-century mosaicists. The Madaba Map represents the principle cities of Palestine and the Nile Delta, as well as prominent pilgrimage sites. In the borders of the mosaics at Maʿin (719 CE) and Umm er-Rasas (765 CE), in Jordan walled cities and churches represent the principle cities of the patriarchates of Jerusalem, Arabia, Alexandria, and Memphis.

The monumental peristyle (1,900 sq. m) mosaic in the Great Palace in Constantinople provides a rare example of a sixth-century mosaic in an imperial context. Recent excavation has clarified the dating of this monument, which previously ranged from the fourth through the seventh centuries: pottery finds below the mosaic indicate a date in the first half of the sixth century. More than seventy scenes are extant and illustrate heterogeneous episodes drawn from the repertoire of the hunt (outdoors and staged in an amphitheater), rural life, and animal combats, against a neutral white ground.

MOSAICS. Figure 3. *Lion mosaic.* From Byzantine church at Magen in the Negev. (Courtesy ASOR Archives)

Synagogue Mosaics. The majority of synagogue mosaics are found in Israel, where they present iconographic programs distinctly different from those in the Diaspora. The mosaic pavements of the synagogues at Sardis (dated by numismatic evidence to c. 350 CE) and Apamea (dated by inscription to 391/92) are geometric carpets with framed panels of donors' inscriptions interspersed with geometric designs. In contrast, synagogue pavements in Palestine from the fourth through the sixth centuries show a richly developed iconography with representations of the Torah shrine and menorah and other Jewish ritual objects (shofar, lulav, ethrog, incense shovel) used in the liturgy. Signs of the zodiac and personifications of the seasons frame Helios in the mosaics at Hammath Tiberias, Sepphoris, Khirbet Susiya, Naʿaran, Beth-Shean, Beth Alpha, Ḥusifah, and Yafia. Biblical scenes are illustrated in the floor mosaics at Gerasa (Noah's family and the animals leaving the Ark), Beth Alpha (the Sacrifice of Isaac), and in Naʿaran and Khirbet Susiya (Daniel in the Lion's Den).

The political unrest produced by the war between the Byzantine and Persian empires and the Arab invasion of 640 brought about a general decline. Mosaic production in Tur-

key, on Cyprus, and in Phoenicia came to a halt. The discovery of the Church of St. Stephen at Umm er-Rasas, dated to between 756 and 785, indicates that church building in Palestine did not cease. At least some mosaic workshops in Palestine and Arabia flourished long after the Arab conquest.

The Umayyad caliphs employed Byzantine craftsmen to decorate their buildings with mosaics in Syria and Palestine. The most spectacular early Islamic pavement is preserved in the large bath hall at Khirbat al-Mafjar, near Jericho, dated to the second quarter of the eighth century; it consists of thirty-one individual panels filled with geometric designs. A figural mosaic with lions hunting gazelles on either side of a fruit tree is found in the small private room off the hall. Whether this scene can be read as an allegory is debated.

[*See also* Churches; Synagogues. *In addition, many of the sites mentioned are the subject of independent entries* (*see especially* Madaba).]

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CHRISTINE KONDOLEON and LUCILLE A. ROUSSIN

MOSQUE. To the beginning of the eleventh century CE in the Near East, mosque typology is dominated by the plan of the hypostyle (many-columned) courtyard, which in this context is sometimes also referred to as the "Arab" plan. Numerous models from the pre-Islamic period had this layout, but there is little doubt that the Prophet's house in Medina played a key role. This building was not designed to be an exclusive place for prayer. It contained rooms for Muhammad and his wives, and its large open courtyard was used for various social, political, and military functions of the whole Muslim community.

The Prophet led the faithful in prayer on the southern side of the courtyard, facing the shrine at Mecca (that is, the *qiblah*). Here there were two rows of palm tree columns covered with a palm-thatched roof. The collective memory of the significance of this may be thought sufficient for the form's later popularity. Two additional factors may well have contributed to its pervasiveness. The first was its technological simplicity. Trabeated structures (featuring beams or lintels) required little in the way of masonry skills, and reused columns provided a further saving of labor. The second was the flexibility of the hypostyle plan, which permitted expansion in any direction without necessarily altering the overall character of the building.

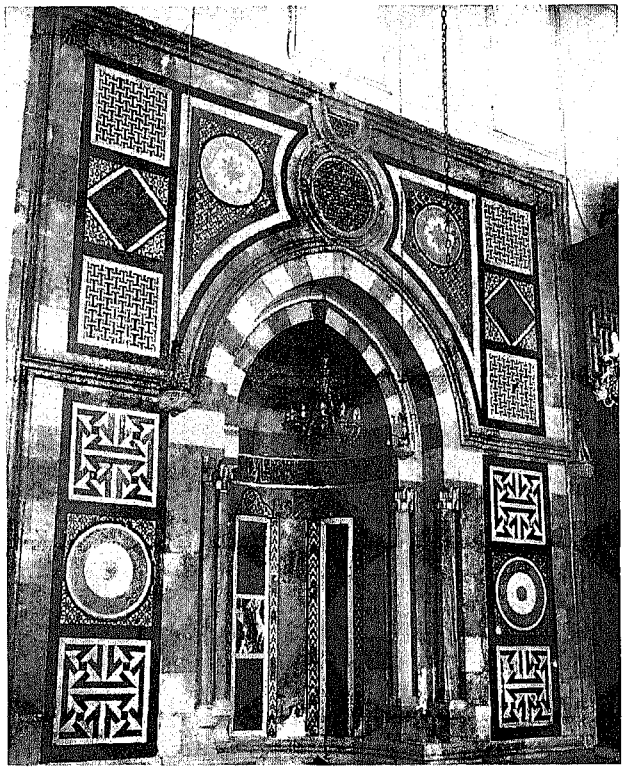
The expansion of the Prophet's house to become the Great Mosque of Medina shows this process in action. It was one of three major mosques (the others being those of Damascus and Jerusalem) which were built or expanded by Caliph al-Walid (705–715). The Medina mosque was the first to incorporate a *miḥrab* (concave niche), which was situated not at the center of the *qiblah* wall but to one side, corresponding to the axis at which Muhammad led the prayers in the original building. Its first appearance at this site, where it was richly decorated, and its ubiquity in subsequent mosques are strong arguments that it should be seen as a commemoration of the place where the Prophet led the prayers as the first imam. The more frequent explanation, that it indicates the direction of prayer, is less likely for two reasons. First, the *miḥrab* is usually invisible from a substantial portion of the interior of the mosque. Second, the *qiblah* is normally immediately apparent from the direction of the largest roofed area, which is the main prayer hall.

The mosque at Medina was also the first to be provided in al-Walid's rebuilding with tall towers at its corners. These have normally been considered minarets, places from which the call to prayer was given, although recent work by Jonathan Bloom (*Minaret: Symbol of Islam,* Oxford, 1989), has argued that this is a problematic interpretation, and that the minaret did not become a standard feature of mosque architecture until the ʿAbbasid period. Two other features of al-Walid's works at Medina were also widely imitated in other mosques: a finely decorated axial nave and a domed ante-*miḥrab* bay. The rebuilding of the Aqsa mosque in Jerusalem by al-Walid is now thought to have included these two features, although it differs from all early congregational mosques in its lack of a courtyard. This configuration is to be explained by its location within the Ḥaram (the former Temple Mount), where its forecourt could easily have served the same purpose.

Unlike other major early mosques, the Great Mosque of Damascus is essentially basilical in plan rather than hypostyle. The prayer hall has three bays parallel to the *qiblah* wall, interrupted by a transverse nave. It is not certain whether there was originally a dome within this nave; if so, it may have been above the bay in front of the *miḥrab,* rather than the central bay where it is today. The gable that rises

above the nave on the courtyard facade is possibly derived from Byzantine palaces. The courtyard is surrounded by one arcade on each side; the combination of basilica and adjacent peristyle courtyard was also common in Roman forums. The Roman temple enclosure, which bounded the mosque, prevented it from being subsequently enlarged. Its already massive size and sumptuous decoration of mosaic landscapes, however, enhanced its prestige and led to frequent copies, the mosques in Khirbet al-Minyeh and the *medina* of Qaṣr al-Ḥair ash-Sharqi being two Umayyad examples.

Smaller Umayyad Mosques. Although it is clear that the prestigious congregational mosques of the Umayyads set the fashion both for later periods and for lesser mosques within their own period, the variety of smaller mosques that has survived has not been fully appreciated. At its simplest the place of prayer could be indicated by a niche in the wall facing Mecca. This *miḥrab* is found, for instance, in the entrance corridor of the caravanserai at Qaṣr al-Ḥayr ash-Sharqi. A passageway also used by animals is an unlikely setting for prayer, but there is a tradition that a mosque is formed wherever one prays, and therefore blocking off this area to other traffic would have been sufficient to form one. The larger enclosure at Qaṣr al-Ḥayr ash-Sharqi has a more substantial courtyard mosque; the mosque of the caravanserai was never designed for many people. In the contemporary caravanserai at Qaṣr al-Ḥayr al-Gharbi the mosque is only slightly more formal, consisting of a wing projecting from the entrance facade. [*See* Qaṣr al-Ḥayr ash-Sharqi; Qaṣr al-Ḥayr al-Gharbi.]



MOSQUE. *Marble mosaic coating of a miḥrab (niche).* Zaynabiyyeh Mosque, Damascus, fourteenth century. (Courtesy K. Toueir)

The mosque at Jabal Says is of the simplest type—a single room—although a central pier awkwardly interrupts the axis between the mihrab and door opposite. Single rooms fronted by a larger courtyard are found at Qastal and Qaṣr Muqatil; the latter is distinguished by a triple entrance to the prayer hall. A possible prototype for these examples or an example that may have occurred concurrently with them is seen at Qaṣr Burquʿ, which consists now only of a low stone wall, but which may well have had a tent erected over it to provide the covered space for prayer. [*See* Qaṣr Burquʿ.]

Three Umayyad mosques, at Khan al-Zabib, Umm al-Walid and Qaṣr al-Ḥallabat, contain the germ of the nine-bay plan, which was to become widespread under the ʿAbbasids. They are square, with an interior whose roof is supported by four piers, although the irregular spacing of the piers and the roofing, either flat or barrel-vaulted and parallel to the *qiblah* distinguish them from the later examples. [*See* Qaṣr al-Ḥallabat.]

ʿAbbasid Congregational Mosques. The major mosques of the ʿAbbasids continued to be courtyard hypostyle buildings, but several features appeared or became standard at this time. The first is the minaret, which usually took the form of a single tower in the middle of the wall opposite the *qiblah* (Siraf, Harran, Samarra). The examples at Samarra are helicoid (spiral shaped), most likely inspired by the then more numerous and better preserved ziggurats of Mesopotamia. The minaret of the mosque of Ibn Tulun in Cairo was probably of the same shape.

The second feature is the *ziyada,* a space that surrounded the mosque on all sides except the *qiblah.* Its purposes are not yet fully understood, especially when to judge from the aerial photographs of the Great and Abu Dulaf Mosques of Samarra, it more than doubled the size of what were already enormous buildings. It is difficult to imagine that these huge buildings (the Great Mosque remains the largest ever built) could ever have been filled for Friday prayers, but recent excavations at Abu Dulaf have shown that double arcades were added to most of the outer walls to accommodate the overflow. The mosque was abandoned before it had been in use for one year. Therefore, these additions must have been a response to a contemporary need. The *ziyada* of Ibn Tulun's mosque is much smaller, but there at least we have some indications of how it was used. The sources mention facilities for ablutions and a small clinic for those attending Friday prayers. The *ziyada* may also have functioned to isolate the prayer area from the noise of the urban surroundings.

The third feature was the use of stucco as a decorative medium. Although this was found on Umayyad palaces, the

'Abbasid use of brick rather than stone as the medium of construction must have encouraged its proliferation. The poor state of preservation of the Samarra mosques means that the Ibn Tulun mosque is the place where its effects can be best admired. The soffits (undersides) of the arches each have a different pattern based on abstract vegetal ornament within simple geometric frameworks of intersecting circles and squares, the so-called Samarra B style. The painting which would have adorned these and the friezes that run continuously around the arcades would have made the patterns even more striking.

The state of preservation of the mosque of Ibn Tulun also makes it one of the best places to assess the spatial qualities of the large hypostyle mosque. The repetition of the basic building unit, the arch on piers, allows endless vistas through the arcades to spring up simultaneously in multiple directions. The hypnotic effect that this repetition induces results in the sense of quiet contemplation which pervades the building.

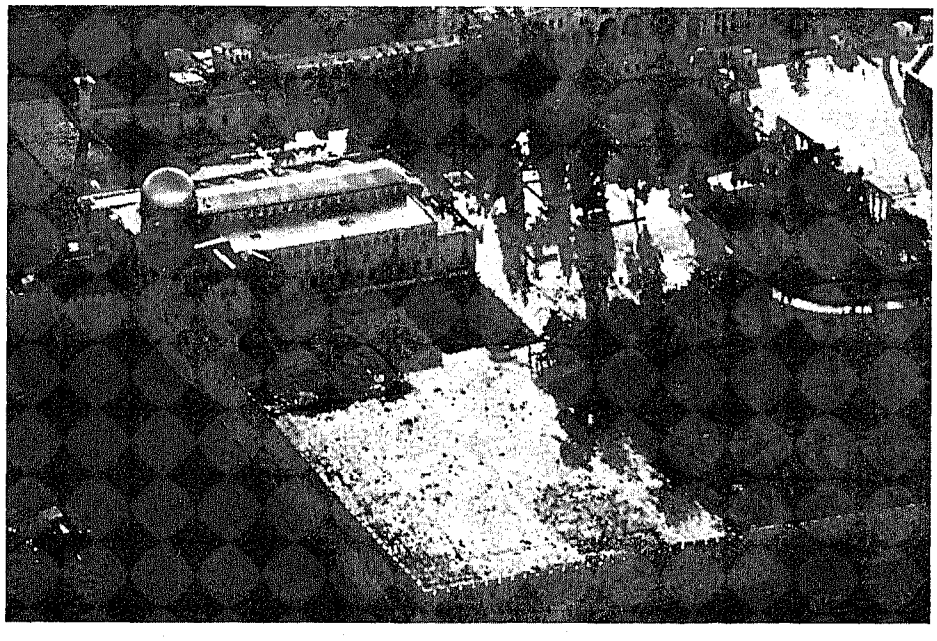
Smaller 'Abbasid Mosques. The largest corpus of smaller 'Abbasid mosques is those of the stations of the Darb Zubaydah, the pilgrimage route from Kufah to Mecca which was endowed by Zubaydah, the wife of Harun al-Rashid. More than twenty-five mosques have been recovered in excavations. The simplest plan, as expected, is an undivided room, which occurs both as a single component of a larger building (al-'Amya') and in several instances as an isolated rectangular structure, usually with three entrances on the side opposite the *qiblah* (e.g., al-Makhruqa). In other cases courtyards have also been preserved, at least in part, in front of this room (al-Kharaba) and the piers of the wall opposite the *qiblah* show that the three entrances clearly correspond to a division of the interior into three bays (al-Saqiyya).

The most common mosque plan which was added to the *qaṣrs* on the route was a nine-bay type, possibly related to those of Khan al-Zabib, Umm al-Walid, and Qaṣr al-Ḥallabat mentioned above. In five of the *qaṣrs* the nine-bay plan is well-preserved, although in none of them to the extent that the elevation can be deduced. Three of these are roughly square (e.g., Umm aḍ-Ḍamiran), and two are distinctly basilical with engaged piers to either side of the four central ones emphasizing the division into a wider nave and two aisles (al-'Aqiq).

It is worth noting the resemblance that many of the Darb Zubaydah mosques have to the basilical audience hall of the Dar al-'Imarah at Kufah, one of the towns on the Darb Zubaydah itself. Rather than necessitating a ceremonial link between these structures, however, it serves to underline the blurring of the meanings of forms which naturally arose from the reuse by Islam of earlier prototypes.

The later 'Abbasid period sees widespread diffusion of the nine-bay plan. Three Persian examples are known at Balkh, Hazara, and Tirmiz. These were all vaulted; the Hazara example resembles a quincunx (which has central and four corner domes plus four barrel-vaulted bays). That of Balkh is impressive for its stucco decoration. Like the adornment of the mosque of Ibn Tulun, the stucco at Balkh is in Samarra B style, its most easterly diffusion.

Persian Variations. The only well-documented example of a Sasanian four-arched building, that is, a *chahartaq*, being converted into a mosque is that of Yazd-i Khvast. A



MOSQUE. *The al-Aqṣa mosque in Jerusalem.* (Courtesy Pictorial Archive)

similar history has been postulated for several others, raising the question whether dome chambers were later built to stand alone as mosques (i.e., "kiosk" mosques). Most of the discussion has centred around Seljuk monuments, although one ʿAbbasid possibility is the mosque of ʿAli Qundi in Fahraj, a small town that also possesses an ʿAbbasid hypostyle congregational mosque. Whether converted or built anew, it is likely that the presence of these dome chambers stimulated one of the most radical developments in later mosque plans, the incorporation of very large dome chambers in the mihrab area of the hypostyle mosque.

The other radical development of Persian mosques was the incorporation of another pre-Islamic form: the *ayvan*. The Friday Mosque at Nayriz has a large *qiblah ayvan* whose stucco *miḥrab* indicates that it replaced a tenth-century predecessors. It has been suggested that this *ayvan* originally stood alone, although it may be more likely that it was inserted into a hypostyle plan. The real revolution came later, in the eleventh or twelfth century, when the ʿAbbasid plan of the Isfahan Friday Mosque was transformed by the addition of four *ayvans* around its courtyard and became the model for countless others.

At another mosque in Isfahan, the Ḥakim, the remains of an entrance portal decorated in brick and stucco were uncovered in 1955. The style of its inscriptions accords with the textual evidence identifying this as the portal of the Jurjir mosque built by a Buyid vizier about 960–985. Its significance lies in its role as advertising the presence of the mosque through both its elaborate decoration and the multiple reveals of its architecture. This is one of the earliest monumental entrance portals of any Near Eastern mosque.

Fatimid Cairo. The monumental portal soon became widespread. The late tenth-century mosque of al-Ḥakim in Cairo has a projecting axial portal, itself modeled on the earlier mosque in the previous capital of the Fatimids at Maḥdiyya. The early Fatimid mosques in Egypt also borrow some features from other North African prototypes, such as the T-plan and the ante-*miḥrab* dome chamber. However, those features in turn may have been inspired by our first example, the Great Mosque of Medina as restored by al-Walid, where it will be recalled that a shallow dome stood in front of the *miḥrab* and that the arcades were arranged to emphasise the aisle leading to the *miḥrab*.

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BERNARD O'KANE

MOSQUE INSCRIPTIONS. Inscriptions were used in mosques from the earliest times. One of the first congregational mosques, the Umayyad mosque at Damascus built by al-Walid I (r. 705–715 CE), had an extensive epigraphic program in blue and gold mosaic. Although destroyed, the text can be reconstructed from medieval descriptions. It included pious phrases, Qur'anic citations, and the foundation inscription with the caliph's name. Throughout the Islamic world, mosque inscriptions were almost invariably written in Arabic. Although Persian was introduced for commemorative texts and foundation inscriptions in tombs as early as the eleventh century, Arabic remained the primary language for mosque inscriptions, presumably because of the sanctity Arabic was accorded as the language in which the Qur'an was revealed.

The information contained in mosque inscriptions falls into two broad categories, historical and religious. Because each text reads continuously in a single language and script, however, such a division of subject matter is basically a convention of modern scholarship. The standard text begins with the Basmala or invocation to God, followed by Qur'anic citations mixed with the foundation inscription. The basic form was so-and-so ordered the construction of this mosque (Ar. *amara bi-binā' hadhā al-masjid*) at a certain date, but the texts can provide the names of the supervisor and craftsmen and other information about specific parts built or restored. The mosque of Ibn Tulun in Cairo is a good example of the standard text in the early Islamic period: in addition to several Qur'anic citations (among them 9:18, 3:106, 48:29, 2:256, and 24:36–38.) the inscription contains the Basmala, the name of the patron, Ahmad ibn Tulun, and the date AH Ramadan 265 (May 879 CE).

Like inscriptions on other types of buildings and objects, those in mosques became longer and more elaborate over time. Ahmad ibn Tulun is identified by his title *(amir),* his *kunya* or patronymic (Abu'l-ʿAbbas), his *nasab* or genealogy (Ibn Tulun), and his relationship to the ʿAbbasid caliph, client of the commander of the faithful (Ar., *mawlā amīr al-mu'minīn*). Two centuries later when the mosque at Da-

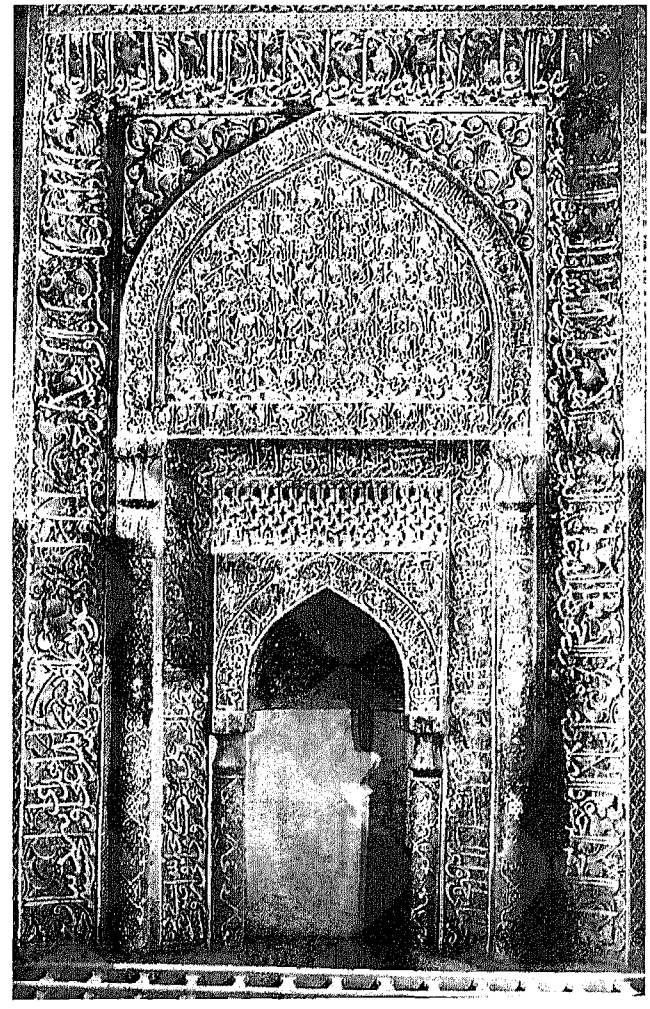
mascus was restored, the inscription records that the work took place during the caliphate of the 'Abbasid al-Muqtadi, commander of the faithful, the empire of the Seljuq sultan Malik Shah, the governorate of his brother Tutush, and the vizierate of Nizam al-Mulk, all of whom are identified by several names, titles, and epithets. By the fourteenth century under the Mamluks, these titles had doubled in length. Thus, the inscriptions in mosques are useful historical documents to measure political allegiance, for just as the *khutba* or sermon in the congregational mosque was a sign of authority, so the inscription there was a testament to official policy. The inscription served as a legal document of ownership until all work on the building was finished and the endowment deed (Ar., *waqf*) could be drawn up.

The most common Qur'anic text used in mosques is surah 9:18, which says that God's mosques should be reserved for good Muslims who believe in God, pray, pay alms, and worship God alone. One of the few Qur'anic texts to mention mosques (Ar., *masājid*) and the activities associated with them, the text quickly became standard for congregational mosques. Other common Qur'anic citations on mosques include the so-called Throne Verse (2:255) extolling God's majesty, the Light Verse (24:36–38) in which God is eloquently described as the light of the heavens and the earth, and verses from the victory Surah (48) about God's granting a manifest victory. Some Qur'anic verses became associated with parts of mosques because of individual words referring to specific practices: verses 17:78–79 about prayer and vigil, for example, are often found on *miḥrābs* (niches in the wall that indicates the direction of Mecca).

Mosque inscriptions were composed as coherent programs. Those in the earliest mosques seem to illustrate universal or general themes. The Qur'anic inscriptions from the mosque of Damascus, for example, contained eschatological texts about the day of judgment (surahs 79–81). Similarly, the verses carved in stucco on the arcades of the Azhar mosque in Cairo (AH 363/972 CE) described paradise (e.g., 21:101–107). Medieval sources assert that the entire Qur'an was inscribed around the interior of the mosque of Ibn Tulun. Although patently untrue, the report shows that the text was meant to be inclusive. Similarly, the inscriptions around the interior of the mosque of al-Hakim in Cairo, founded in 989 (AH 379), contain the opening verses of various surahs, probably used as synecdoches to suggest the presence of the whole.

With the breakup of the Islamic community in the tenth century, the Qur'anic verses decorating mosques were selected to illustrate specific ideological points. The Fatimids, for example, seem to have chosen verses with key phrases about the Shi'i *da'wah* (the call to accept members of the Prophet's family as his rightful successors). A now-lost marble inscription from the exterior of the mosque of al-Hakim, completed in 1010–1011 (AH 401) contains surah 28:4 with the word *a'imma* (leaders), the plural of *īmām*, the title used by the Fatimids. The western minaret of the mosque is inscribed with surah 11:73; it contains the coded phrase *ahl al-bayt* (people of the house), taken by the Fatimids as a direct reference to themselves as descendants of the Prophet's son-in-law 'Ali. Such pointed use of Qur'anic inscriptions only increased with the growing sectarian struggles: the foundation inscription for the mosque of al-Aqmar, dated by inscription to AH 519 (1125–1126 CE) mentions victory over all infidels, referring the Fatimid caliph al-Amir's struggles against either the Crusaders or the recalcitrant Nizaris. The inscription also contains surah 33:33, addressed to the people of the house, a verse which became a code for the Shi'is who considered it a vindication of their legitimacy.

In addition to Qur'anic citations, *ḥadīth* were also inscribed on mosque furnishings and furniture from the eleventh century. Although a less reverent source of authority than the Qur'an, these prophetic traditions have the advantage of being more diverse and adaptable and could be cited



MOSQUE INSCRIPTIONS. Figure 1. *Isfahan stucco miḥrab.* (Courtesy S. S. Blair)

to support a particular sectarian point of view. The splendid stucco *miḥrāb* added to the congregational mosque at Isfahan in AH Safar 710/July 1310 (see figure 1) just after the Il-Khanid Öljeitü's conversion to Shiism, for example, is inscribed with a tradition of 'Ali ibn Abi Talib that whoever frequents a mosque will receive one of eight benedictions. It was undoubtedly invoked to win over the population in this troublesome sectarian city.

[*See also* Inscriptions, *article on* Inscriptions of the Islamic Period; Mosque.]

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SHEILA S. BLAIR

MOZAN, TELL, site, now positively identified as Urkeš, located in Syria, on the Khabur plains, near the headwaters of Wadi Dar'a, one of the streams feeding the Khabur River, just south of the Mardin pass leading to the Anatolian plateau (37°02′ N, 41°0′ E). The site, with its commanding position, was the major gateway to the copper mines in the north and was a hub in the communication network to the south, along the Khabur, and on the east–west road that flanks the Taurus range. [*See* Taurus Mountains.]

The central High Mound measures 18 ha (45 acres) and stands 25 m above virgin soil. The Outer City extends for 400 m, for a total surface of 135 ha (334 acres). Tell Mozan has been identified as the site of ancient Urkeš, the mythical city of Hurrian mythology and one of the major third-millennium capitals that had so far escaped identification. It is described in later Hurrian myths as the residence of Kumarbi, the major god of the Hurrian pantheon. As such it plays a prominent role in the mythical geography of ancient Syria. The famous bronze lions of King Tish-atal of Urkeš, which had been sold on the antiquities market and are now exhibited in the Louvre and the Metropolitan Museum, are thus to be reinterpreted as having come from Tell Mozan. [*See* Hurrians.]

Tell Mozan was first surveyed and briefly excavated by Max Mallowan in 1934. He dug three trenches (R0, G0, H0) and noted some surface remains, identified as N0. Mallowan first assumed that the site was Roman, which was one reason he chose Chaghar Bazar for his excavations. (The most detailed report is to be found in his wife's autobiography: Agatha Christie, *Come Tell Me How You Live,* New York, 1977, p. 72ff.). [*See the biography of Mallowan.*]

Regular excavations, under the direction of Giorgio Buccellati and Marilyn Kelly-Buccellati, began in 1984; by 1995 eight seasons were completed. The long-term research strategies, favored by the fact that the site has almost no modern occupation, have taken three major directions: extensive surveys (topographic, geophysical, and artifactual) of the entire area; distinct operations on the High Mound, with a view toward obtaining an understanding of different functional units (the city wall in KW; the temple, BA; the royal storehouse, AK; a private house, F1) and different periods (the stepped trench, AS; the deep sounding, S2; the later occupations in BH and C1); and, preliminary soundings in the Outer City, indicating that it was utilized both for burials (OA4, OB1) and domestic structures (OD2, OE1).

The chronological distribution of the occupation of Mozan began in the Halaf period, on the basis of ceramic evidence found on the surface of the Outer City and from the lowest levels of deep sounding S2, just above virgin soil. [*See* Ḥalaf, Tell.] No early third-millennium strata have yet been excavated, but in deep sounding S2 three small pointed-base Ninevite V cups were found in stratum A12 next to a carbon sample for which the calibrated date 2920 ± 170 BCE was obtained. The surface ceramic survey suggested that early-third-millennium sherds were more prevalent on the northern portion of the mound.

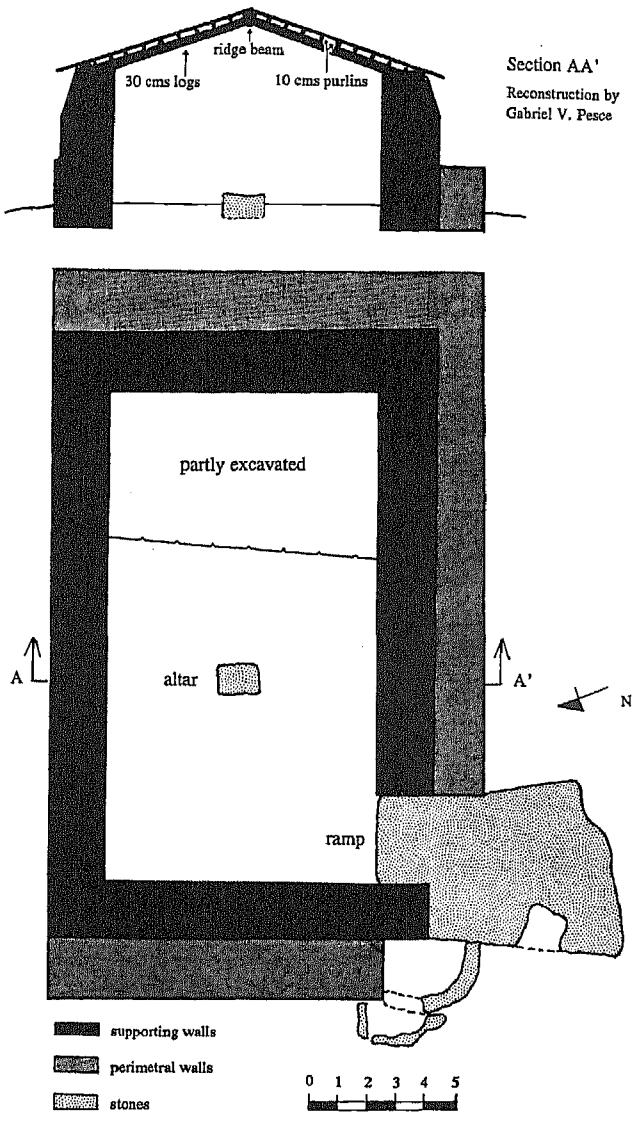
The major occupational strata at Mozan and the largest component in the buildup of the high mound can be dated to the second half of the third millennium (a calibrated C-14 date of 2435 BCE ± 60 has been obtained for phase A1 of temple BA). It is remarkable to find structures from this period not only at lower elevations (city wall KW, storehouse AK), but also at middle (private house F1) and topmost elevations (temple BA). This suggests that the city's skyline in the mid-third millennium was already similar in its general outline to the profile of the tell today.

From the initial ceramic survey it appeared that second-millennium BCE occupation was centered on the highest portion of the mound. This was verified in a small sounding (Q1) and in the upper strata of the step trench AS, where traces of a large building have been partially uncovered. The latest levels above temple BA dated to the Khabur period, but no building remains were found. On a lower portion of the high mound, area C1, a single Khabur-period grave was excavated. The latest occupation dates to the Nuzi period and is characterized by private houses (AS, BH) containing very few small finds. Even the ceramics are of the coarser variety, with only portions of two painted goblets found in the excavations.

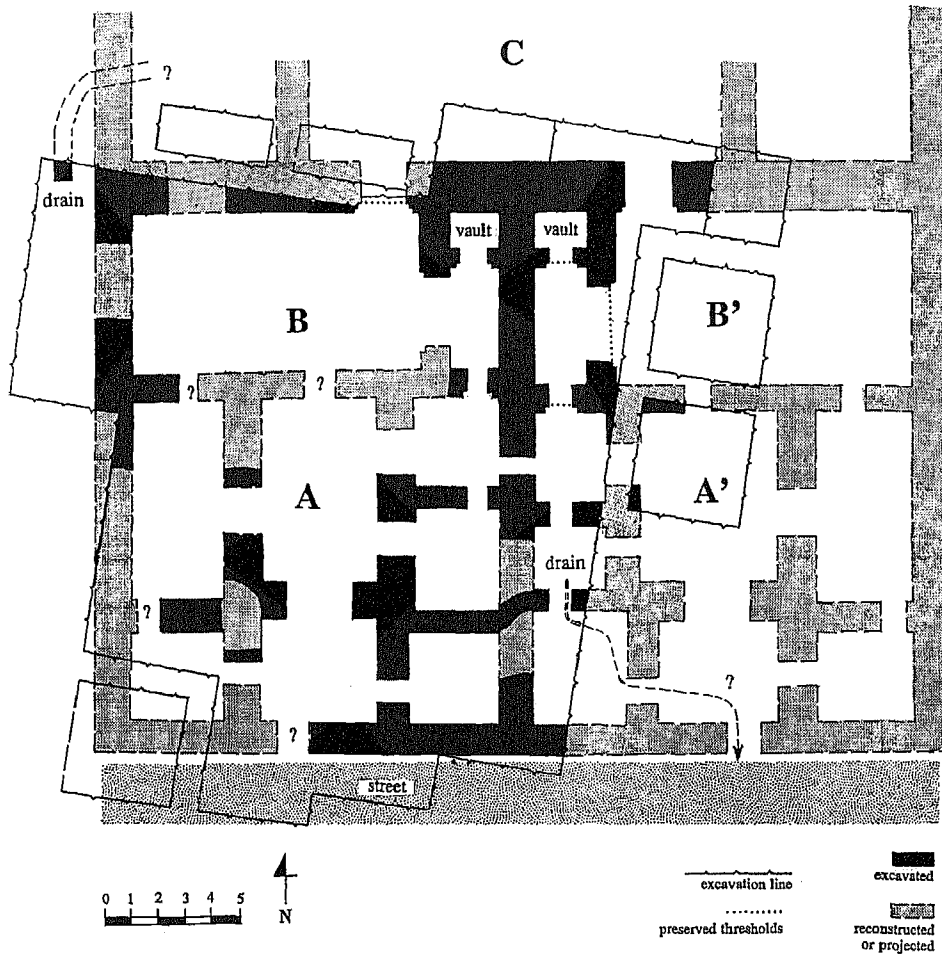
The earliest phase of temple BA is the best preserved (see figure 1). It had a large interior space (9 × 16.5 m) with a monumental entrance accessed by a long (8 m) stone ramp. The foundations were constructed of large and roughly hewn limestone blocks with mud-brick walls resting immediately on stone foundations. The plan and the exterior dimensions are similar to those of temple G at Ebla and the "Aussenbau" at Chuera (which, however, have an access in antis, as opposed to the Mozan bent-axis approach); at Ebla the walls are twice as thick, which means that the interior space is considerably smaller. [*See* Ebla; Chuera, Tell.] A thick, cementlike pavement covered the entire interior space; it is assumed that, in spite of its large size, this room was roofed and that the roof was pitched.

At the base of a stepped trench on the western side of the tell, portions of a large storehouse have been excavated. Judging from the layout of the excavated portion, this is the southwestern corner of a building that, once excavated, may be three times as large as the present exposure. The plan (see figure 2) consists of an accession suite, a large hall with a closet or vault, and probably a courtyard and an interior storage area behind. The sectors to the east appear to have a plan that is the mirror image of the western half. The lower courses of the walls are stone, up to about 1 m high, with mud brick on top, but they are not plastered. The vault in sector B is a small closet (1.8 × 1.3 m) with thick walls and an anteroom. The notching, or rabbeting, in the doorways is for the most part structural, in that it must have held a door panel—the location of the door coincides in many cases with a strongly marked threshold.

More than six hundred seal impressions, all dated to the early Akkadian period, came from a floor deposit associated with the vault in sector B (stratum B12). More than 150 of these were inscribed: these legends give the name of the king (*endan* in Hurrian) of Urkeš and of the queen, plus other members of the royal court. It appears therefore that this was a royal storehouse, where goods were stored in boxes, baskets, and jars on which the seals were rolled; there were only two door sealings. Since the majority of the seals belonged to the queen, the western wing of AK must have been reserved for goods belonging to her. The iconography and style of the seal impressions are, for the most part, in striking contrast with the more formal early Akkadian glyptic of the south. The seals carved in Urkeš have a unique stylistic vigor that can be traced to the production of different workshops. Distinctive aspects include: the close correlation between the scenes and the individuals mentioned in the legends; the fact that several different seals were used by the same person; various depictions of the royal family with the king, the queen, the crown prince and a smaller child seated on the lap of the queen; the realistic rendering of animal figures, which include a lion crouching under the throne of the king; the extremely fine and naturalistic definition of the figures, resulting in what appears to be portraitlike representations of the queen and the prince.



MOZAN, TELL. Figure 1. *Plan of temple BA, phase B1A.* (Courtesy G. Buccellati)

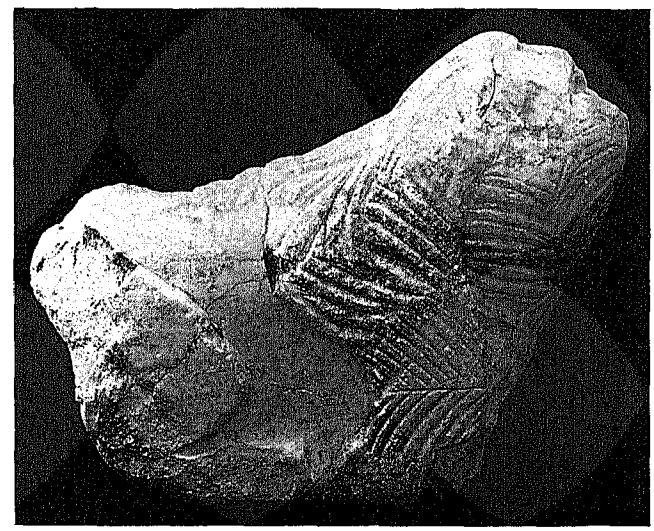


MOZAN, TELL. Figure 2. *Plan of storehouse AK, stratum B12.* (Courtesy G. Buccellati)

Two administrative cuneiform tablets dating to the Late Sargonic period (c. 2250–2000 BCE) were found in F1; they are written in Old Akkadian, but with several Hurrian personal names. A school tablet from AK contains an excerpt of six lines from a list of professions also known from Abu Salabikh and Ebla. [*See* Akkadian; Abu Salabikh.] With it were found one lentoid tablet and fragments of some thirty additional administrative tablets, all from the Early Sargonic period. About eighty seal impressions from AK bore cuneiform legends from the same period. [*See* Seals; Cuneiform.]

More than forty seal impressions were found in KW—mostly door sealings dating to the Early Dynastic III period, some possibly even Early Dynastic II. While some motifs continue into the Early Akkadian period, there are no clearly recognizable Akkadian sealings in the deposit. Prominent among the designs are the nude hero motifs and animal and human combat scenes.

Typical Early Dynastic III ceramics include medium jars with grooved rims, Simple-ware conical cups, and Metallic-ware jars with rounded or ring bases. Akkadian ceramics are characterized by a later variety of metallic ware and a con-



MOZAN, TELL. Figure 3. *Small statue of a lion found in temple BA.* (Courtesy G. Buccellati)

tinuation of the Simple-ware tradition. One tomb with more than fifty vessels excavated in the Outer City (OB1) exhibits the transition between the Late Ninevite 5 tradition and the use of early Metallic ware. During this transition, painted Scarlet-ware stands were utilized at Mozan; they appear to have been manufactured locally because both painted and unpainted examples were found at the site.

From third-millennium contexts a large number of metal objects have been excavated and analyzed—mostly points and pins, but also spears, daggers, and one scraper. A range of metal alloys was used—relatively pure copper, copper alloyed with arsenic, or low-tin bronzes. Some recycling of metals is indicated. The majority of these objects were cast, annealed and finished by cold working.

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GIORGIO BUCCELLATI and MARILYN KELLY-BUCCELLATI

MUNḤATA, site located in the northern Jordan Valley, near the outlet of Naḥal Tabor, 215 m below sea level. Excavations were conducted over a surface area of 2,000 sq m by Jean Perrot (1966) in the 1960s.

The earliest layers (6–3B) are dated to Pre-Pottery Neolithic B (PPNB) period. In layer 6 remains of isolated houses were identified, with foundations built of undressed stones and bricks. In the southern portion of the excavated area, remains of special activities were identified. Five large basalt slabs with wide grooves were uncovered, adjacent to a pavement of large pebbles and a floor with a few fireplaces. In layer 5 the remains of a brick building with a wall more than 20 m long were uncovered. The houses in layer 4 were rectangular, with foundations built of a single course of undressed stones and sun-dried bricks, sometimes containing lime-plaster floors. In layer 3 a large rounded building with pebble flooring was uncovered, as were several rounded, plastered installations, perhaps used for storage.

The lithic industry of the PPNB is characterized by spear points and arrowheads, made mostly from long blades removed from bipolar (naviform) cores and by elongated sickle blades, burins, and retouched blades. The assemblage also includes a large collection of ground-stone tools, including flat bowls, querns, and rubbing stones (Gopher, 1989). Other artifacts recovered include small clay figurines representing both males and females. Among the imports to the site were obsidian from central Anatolia and marine shells. Of the faunal remains, two thirds are of ovicaprids; the rest are pig, cattle, gazelle, and deer. From this evidence, the economic basis seems to have been a mixed strategy of agriculture, herding, and hunting.

Following a short occupational gap (layer 3a), layer 2b belongs to the Pottery Neolithic (PN) period, known as the Yarmukian culture (including both the Shaʿar ha-Golan and Munḥata phases as originally defined by the excavator), tentatively dated to 5500–5000/4800 BCE (uncalibrated). [*See* Shaʿar ha-Golan.]

The Yarmukian habitations are in large pits with numerous underground bell-shaped storage facilities. At least some of these dwellings contain a floor, a fireplace, and a bench-like structure around the walls. The often bell-shaped storage pits are about 1 m deep and 1–1.5 m in diameter at the base.

Recently studied by Yosef Garfinkel (1992), the Yarmukian pottery, the earliest at the site, is characterized by pithoi, holemouth jars, and decorated bowls, as well as handleless jars. Large open bowls are interpreted as food trays, while miniature ones are seen as cosmetic or spice containers. Considered the hallmark of the Yarmukian culture, the incised herringbone pattern, always enclosed by painted lines, is a common decoration. Another pattern is a combination of zigzag and undulating lines. Early assemblages contain pottery decorated with incision and paint.

The objects that most distinguish the Yarmukian culture are the seated female figurines. They are usually represented wearing a conical mask; they have "coffee bean" eyes and their hands are folded under their breasts.

The lithic industry of layer 2b contained denticulate sickle

blades, awls and perforators, scrapers and burins, and a few arrowheads and bifacials. The Yarmukian arrowheads are often ʿAmuq and Byblos points, although the smaller type appear in low frequencies. The assemblage resembles that at Shaʿar ha-Golan and may indicate that the sites were occupied by the same people.

Most of layer 2a is related to the Wadi Rabbah phase (4800–4000 BCE), often considered Early Chalcolithic, and reflects Halafian connections. Layer 2a contains the remains of large rectangular structures with mud floors. The lithic industry consists of smaller versions of the same forms as the Yarmukian. Common types of Wadi Rabbah pottery were holemouth jars and pithoi. Slightly less common were bow-rim jars, chalices, and stands.

The stone tools from layer 2 were made using unidirectional cores, a feature that distinguishes them from the PPNB industry, and include sickle blades and scrapers. Layer 1, which was disturbed by agricultural activities, contained remains from the Early Bronze Age.

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OFER BAR-YOSEF

MUNSELL CHART. An internationally recognized set of charts that arrange colors on a series of standardized color chips and named for its originator, Albert H. Munsell (1858–1918), is known as the Munsell soil-color charts. In this handbook each chip is identified with a verbal description and a numeric code.

The colors are arranged according to a theoretical three-dimensional cylinder according to three intersecting variables: hue, value, and chroma (or brightness). Hue defines the position of the color in the spectrum arranged around the circumference; the circumference is divided into ten colors that are then subdivided into another ten. Value defines the darkness or lightness of a color along a vertical axis, which is then divided from 0 to 10, with 0 representing black and 10 representing white. Chroma (or brightness) defines the purity or intensity of the color as it radiates from the vertical axis of value (a grayer representation) to its purest state (or brilliance) at the spectrum's outer circumference (usually to 10, but sometimes to an intensity of 16).

Colors represented by these three variables are then given standardized names and numeric codes: for example, yellow 5Y 8/8. The 5Y indicates the hue name—Y for yellow—while the 5 defines the position in the hue range. The 8/ identifies the value of the color on the scale of 0–10 (black–white). The /8 identifies the chroma (or intensity) of the color—hence indicating a fairly pure representation. The numeric code allows a more precise color identification than simply by name; even in the Munsell charts the name *yellow* describes several different color representations—the reason for combining the color name and the code.

The color charts provide more precise color differentiation for both natural and artifactual materials. With soils and sediments, color variations may not only differentiate strata and loci, but may also indicate the presence of organic materials that might prompt further investigation. For artifacts, the most common use of the Munsell charts is in identifying ceramic colors. Their value, however, is not just in color identification (even though the charts provide standards to identify colors beyond such often arbitrary and subjective designations as "burgundy" and "sky blue"): ceramic color, for example, results from a combination of factors, so that assessing color in ceramics can help to identify clay types and technical production procedures.

Although the Munsell charts provide a relative standard of color identification, limitations in their use still exist. Colors ideally should be measured in daylight and preferably at the same time each day, to minimize lighting variations. It is preferable (but usually impossible in the field) to have the colors read by the same person each time because color perceptions vary from person to person.

Despite these limitations, the Munsell soil-color charts are so far the best source of standardization for color identification and are an essential basic tool of modern archaeology.

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DALE W. MANOR

MURABBAʿAT, a wadi descending from the Judean Desert to the Dead Sea. The wadi's steep slopes contain numerous caves, in four of which were found remains dating from the Chalcolithic period and later. The caves are located about 18 km (11 mi.) south of Qumran and about 25 km (16 mi.) southeast of Jerusalem. Like several of the caves associated with Qumran, those at Murabbaʿat were located by the Taʿamra bedouin searching for written materials they could sell. Because such material began to surface in Jerusalem late in 1951, an archaeological expedition was mounted to explore the wadi and its caves between 21 January and 21 March 1952.

Taking the materials discovered during formal explorations together with what the bedouin had found and sold, the results were considerable: along with various biblical manuscripts, documentary autographs were discovered written in Hebrew, Aramaic, Greek, and Arabic. These materials spanned the period from the first century CE to the tenth century. By far the most important texts dated to the time of the Second Jewish Revolt against Rome, led by Shim'on Bar Kokhba (132–135 CE). In addition to a number of letters Bar Kokhba sent to his lieutenants (in them his name is revealed to be Simeon b. Kosiba), the Murabba'at finds include contracts written during his regime or just prior to it.

At about the same time, bedouin had discovered and were offering for sale additional materials related to this revolt. A proper appraisal of the Murabba'at texts requires the use of these related documents. They come from one or more caves in the Wadi Seiyal (Naḥal Ṣe'elim), and the nearby caves of Wadi Ḥabra (Naḥal Ḥever). After the bedouin pilfering, Israeli archaeologists explored Naḥal Ṣe'elim between 24 January and 2 February 1960; the documentary finds were fragmentary in the extreme. Archaeologists also investigated Naḥal Ḥever for two weeks in 1960 and a second time in the spring of 1961. It was then that their efforts reaped rich rewards.

One of the Ḥever caves, known as the Cave of Letters, yielded three different collections of documents. The first was a packet of fifteen letters to military leaders in charge of 'Ein-Gedi, an important military supply site during the Second Revolt. Many of these letters were from Bar Kokhba himself, while others had been sent by subordinates. A second group of documents, known as the Archive of the 'Ein-Gedites, consists of six Hebrew and Aramaic contracts leasing state lands. Apparently, like the Roman administration he sought to replace, Bar Kokhba claimed ownership of vast tracts of land, which he leased to tenant farmers. The third collection of documents from the Cave of Letters was the archive of Babatha daughter of Simeon. This group numbered about forty and deals with property and litigation involving Babatha and her family. The texts are inscribed in Aramaic, Nabatean, and Greek; the earliest Babatha text dates to 93/94 CE and the latest to 132 CE.

All of the Murabba'at texts have been published in volume 2 of the series Discoveries in the Judaean Desert (Benoît, Milik, and de Vaux, 1961). Texts 42–48 are Bar Kokhba letters; 49–52 may also be Bar Kokhba letters but are too fragmentary to permit certainty even about their genre. The Greek materials in the Babatha archive are also now available (Lewis, Yadin, and Greenfield, 1989). The fifteen letters from Naḥal Ḥever are still unpublished, as are the Semitic portions of the Babatha archive. For these texts there are prepublication descriptions that contain significant excerpts.

Many lacunae exist in the scholarship of the Second Jewish Revolt. The most basic questions—the causes of the outbreak, its geographic extent, and even its dates—cannot be answered with any certainty because of lack of evidence. The Murabba'at and related materials do not make it possible to write a history of the revolt, but they do shed important light on limited aspects of it. The materials illumine the course of the war, administration under Bar Kokhba, and the prosopography of those involved in the revolt. They contain precious information on legal and religious practice, the economics of second-century CE Palestine, Jewish literacy, and onomastics. The linguistic information they supply is very considerable and has yet to be fully exploited: the form of both the Hebrew and the Aramaic languages is somewhat different from that known from the Dead Sea Scrolls and later rabbinic literature.

[*See also* Bar Kokhba Revolt; Dead Sea Scrolls; *and* Masada.]

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MICHAEL O. WISE

MUREYBET, Neolithic site located on the left bank of the Euphrates River, prior to its innundation by the Thawra (Tabqa) dam (36°04′06″ N, 38°05′26″ E). Mureybet is a key site for the Epipaleolithic and Early Neolithic in Syria because its continuous sequence from the Natufian to the Pre-Pottery Neolithic B periods (PPNB) charts the transition

from hunting and gathering to agriculture and the passage to a sedentary lifestyle. In-depth studies of the site provide the fullest picture of the Pre-Pottery Neolithic A (PPNA) in the northern Levant.

Salvage excavations were conducted by Maurits N. van Loon in 1965 for the Oriental Institute of the University of Chicago and by Jacques Cauvin from 1971 to 1974 for the Centre National de la Recherche Scientifique. Cauvin found four phases of occupation that incorporate and supercede van Loon's stratigraphy. The earliest is phase I (8500–8200 BCE), in which the semisedentary occupation of a hunting-gathering community was represented in a small excavated area of 35 sq m by a semisubterranean round house, fire pits, and a microlithic tool assemblage, including geometrics. This material culture is considered to be Natufian, thus greatly extending its geographic range beyond the southern Levant. In phase II (8200–8000 BCE), a transitional period that corresponds to van Loon's levels I–VIII, semisedentary occupation continued with monocellular round houses, firepits, and a lithics assemblage with Khiamian arrowheads that, although common, first appeared in phase Ib.

Phase III (8000–7600 BCE; van Loon's levels IX–XVII) represents the Mureybetian, or Middle Euphrates, variant of PPNA culture. At that time innovations in architecture and changes in symbolic representation and an expansion of the settlement to an estimated 2–3 hectares (5–7 acres) took place. Multicellular round houses are internally divided by half-height partition walls that formed storage compartments. Late in phase III, van Loon found multicellular rectilinear structures built with distinctive loaf-shaped cut limestone blocks embedded in a matrix of red clay mortar. The structures were subdivided into compartments thought to be too small for human habitation, and the buildings are believed to have functioned as storehouses. Lithics are characterized by Khiamian and Helwan (notched and tanged) arrowheads. The appearance of rectilinear architecture and Helwan points at Mureybet much earlier than in the southern Levant may indicate their origin on the Middle Euphrates and later diffusion to the southern Levant. Crude female figurines of clay and stone were found. Several ceramic vessels mark an early abortive attempt at pottery manufacture. Subsistence continued to be largely based on hunting and gathering, but there is evidence of some cereal cultivation. Thus, the changes noted above indicate significant transformations in social organization prior to the emergence of a full agricultural system.

In phase IV (7600–6800 BCE) of the PPNB period, the area (28 sq m) excavated included portions of a large rectangular house. Under it were buried several detached skulls, reflecting funerary customs well known in the southern Levant. Lithics are marked by the appearance of Byblos points. Cereals were cultivated and steps were taken toward the practice of animal herding. The occupation of Mureybet from about 8500 to 6800 BCE, during which there were no major cultural breaks, indicates that the trend to sedentism and the emergence of agriculture developed with the same basic population.

[*See also* Euphrates; *and* Euphrates Dams, Survey of.]

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THOMAS L. MCCLELLAN

MURRAY, MARGARET ALICE (1863–1963), first professional woman Egyptologist. Born in Calcutta to English parents who held liberal views concerning female education and non-Christian religions, Margaret Murray earned her doctorate at University College, London, under Flinders Petrie, James H. Walker and Francis Llewellyn Griffith. She was hired 1899 as a junior lecturer and taught elementary Egyptian hieroglyphs, which resulted in a grammar (1905).

Murray's first field experience was with Flinders Petrie at Abydos (1902–1903), when they excavated the mysterious Osireion (thought to be a simulation of the tomb of Osiris or a cenotaph of Seti I). From 1903 to 1904, Murray worked at Saqqara as part of a three-woman team, copying relief scenes in the mastabas. This work resulted in the first and only volume of *Saqqara Mastabas* (1905).

Returning to teaching at University College, Murray organized a comprehensive program in archaeology and continued the language courses. She produced an elementary Coptic grammar in 1911. After Walker's death, she and Flinders Petrie constituted the Department of Egyptology. As he dug in Egypt every winter, starting in November, Murray carried the full burden of teaching but was not appointed an assistant professor until age sixty-one in 1924.

Only summer vacations allowed Murray time for excavations, which she carried out in Europe because of the heat and inundation in Egypt. She spent five seasons investigating megalithic sites on Malta and Minorca. Coincidentally she began studying European folklore and witch cults, publishing *The Witch-Cult in Western Europe* (Oxford, 1921)

which won her acclaim among folklorists and the presidency of the Folk Lore Society from 1953 to 1955. Her last field expeditions were at Petra (1937) and at Tell el-'Ajjul near Gaza with Flinders Petrie and E. J. H. MacKay in 1938.

Murray's bibliography includes more than eighty books and articles. Her best-selling popular book *The Splendour that was Egypt* appeared in 1949. Her last and hundredth year saw the publication of two books, *The Genesis of Religion* and her memoirs, *My First Hundred Years*. Murray's greatest contribution to Egyptology may well have been her dedication to teaching, which resulted in the first integrated program of studies in Egyptology in England, and in training subsequent generations of British archaeologists.

[*See also* Abydos; 'Ajjul, Tell el-; Petra; Saqqara; *and the biography of Petrie.*]

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BARBARA SWITALSKI LESKO

MUSEUMS AND MUSEOLOGY. It is often assumed that a fascination with the past is a preoccupation of the modern era, born of a time when the luxury of leisure could permit the retrospective perusal of earlier peoples and cultures. In point of fact many earlier civilizations demonstrated the same curiosity in their ancient antecedents; "museums," in the sense of collections of curios and relics illustrating the past, have existed, in some form, since well before classical times. Nabonidus, the sixth-century BCE ruler of the Neo-Babylonian Empire, is thought to have had a museum, containing ancient inscriptions and other artifacts, at Ur, and possibly another at Babylon. The Greeks also frequently adorned their temples and shrines with statues, paintings, and, in addition to aesthetically interesting artifacts, unusual geological and natural history specimens. Indeed, it was the Greeks who first devised the word *museum,* although the building first named as such, erected by Ptolemy Soter in Alexandria in the third century BCE, was, in reality, more akin to a modern university research institute.

Museums in the currently accepted sense of the term trace their origins to the Renaissance, when an interest in the ancient world was rekindled, and wealthy individuals began to assemble extraordinarily rich and varied collections of art treasures. Nowhere was collecting artifacts and works of art more vigorously pursued than in Italy: in the fifteenth century the Medicis were particularly active in Florence, and in 1471 Pope Sixtus IV established a museum of antiquities on the Capitoline Hill in Rome. More museums were built in the following century. The Belvedere Gardens in Rome became the setting for a fine collection of classical statuary, and the Uffizi Gallery was founded in Florence.

These early museums were essentially private collections, accessible only to their owners; in the seventeenth century, however, it became customary to grant access to learned travelers and educated members of the public, sometimes on receipt of an admission fee. It was out of the tradition of those private collections that the concept of the public museum was born—the creation often inspired by the bequest of the collection to the nation following the death of the owner. Thus it was that the physician Hans Sloane's extensive and diverse collections of antiquities, natural history, and geological specimens, drawings, books, and manuscripts came to form, after his death in 1753, the basis of the first real public museum, the British Museum in London, which first opened its doors to the general public in 1759.

The two hundred years or so following the foundation of this great institution saw the rapid development and proliferation of museums throughout the world; not only museums to serve antiquities and works of art, but museums to document almost every aspect of human experience as well as the natural sciences. As museums have both diversified in terms of their subject matter and specialized with regard to their various points of focus, there has arisen the need for an all-embracing discipline to cope with the numerous aspects and demands of collection curation. The name given to this multifaceted discipline is *museology,* which may be defined as the study of aspects relating to museum collections (in this respect, therefore, the term *museum studies* is to be much preferred because museology might otherwise be taken to indicate a study of museums or even a study of the muses). Clearly, the parameters of this study are variable, depending upon the nature of the collections: the problems facing a museum of philately will not be the same as those confronting a museum of marine transport. In general terms, however, the broad categories of collection care and management are applicable to almost any museum. Restricting the discussion to archaeological museums, the principal subject areas subsumed under the heading of museology or museum studies are display and presentation, conservation and storage, documentation and cataloging, public relations and education, management and policy, and, in the case of some of the larger museums, research.

The issue of display and presentation is perhaps one of the most complex areas of museology, involving, as it often does, a balance between aesthetic values and technical restrictions. The overall design of a particular room or gallery, the arrangement and style of showcases, and the positioning of freestanding exhibits have to be weighed against such factors as access, anticipated number of visitors, and security.

Aesthetically pleasing light levels, both external and in-case, may have to be tempered by consideration of the nature of the objects displayed. Organic materials, textiles, manuscripts, and paintings are light-sensitive, and the level of illumination must consequently be kept low in their display cases. The choice of gallery display materials, again, is a matter to be determined by more than mere physical appearance. In particular, fabrics for case interiors need to be tested rigorously for acidity and sulphide levels, an excess of either being potentially detrimental to the condition of objects placed in close proximity. Control of relative humidity is essential for metal and organic objects, and because the optimum value varies for different materials, it may not be possible to display certain items in the same case. For example, a composite object, such as a bronze daggers with an ivory hilt, would require especially sensitive treatment because the range of relative humidity, acceptable for both materials, may be very narrow indeed. The in-case relative humidity level is normally adjusted by the simple method of inserting a concealed tray of water (to raise the level) or a desiccant such as silica gel (to lower the value). The level is monitored by means of an instrument known as a hygrometer, placed as unobtrusively as possible inside the showcase. Changes in temperature are generally less critical than those in relative humidity. Nevertheless, extremes and large short-term fluctuations must be guarded against if problems such as the stress fracturing of glass and metal artifacts or the softening of materials used in conservation and restoration are to be avoided. It is important, therefore, that the overall design of a gallery incorporate some provision for temperature regulation.

Special attention must also be paid to mounting objects within cases. Mounts to support objects or hold them at particular angles must both protect the item in question, free from stress, and be as unobtrusive as possible. Steel pins, used to mount metal objects on vertical display panels, must be fitted with plastic sleeves to prevent corrosion from the electrochemical reaction contact between the two metals causes.

The layout of a gallery is of prime concern. Archaeologists are notoriously chronologically oriented, an obsession not necessarily shared by the visiting public. While it may seem logical to present archaeological materials chronologically—Chalcolithic, Early Bronze Age, Middle Bronze Age, and so on—thematic presentations may be equally meaningful to the visitor. A gallery could, for example, be organized geographically, or be divided into sections entitled daily life, religion, or weapons and warfare.

The arrangement of objects within cases is largely a matter of taste. Fashions change, and there has been a general tendency in recent years to make displays sparser and more intimate, although there are always instances where greater impact can be gained by presenting objects en masse. Attention should be paid to correct representation: a museum may have a fine collection of, say, unusual Early Bronze Age Syrian terra cottas and jewelry, but to show great numbers of them at the expense of more mundane items would obviously misrepresent the culture. A balance needs to be found between exhibiting objects which are unusual or special and those which are more truly representative.

The provision of labels and information panels constitutes another area of museology for which there are no hard-and-fast rules. Many museums adopt a "house style" to provide a uniformity of in-case labels and information panels throughout their various galleries. Some larger museums, which have their own design department, will be able to produce professional standard panels and labels themselves. Otherwise, this work has to be contracted out, an expensive procedure, especially where graphics or photographs need to be incorporated. Information panels should be exactly that: they should be informative, concise (250 words is the maximum attention limit for most people), and should help to put the exhibited artifacts into context. In-case object labels, similarly, should be clearly and simply worded. Small, unobtrusive numbers, placed next to each item, provide the easiest means of keying the labels to the objects. Labels should, in any event, always include the museum's registration number to assist possible further requests for information. Technical terms should be avoided as much as possible (both on labels and information panels): there is simply no point in specifying the date of an object as "Middle Bronze IIA" (or worse, abbreviated MB IIA) when the vast majority of visitors will barely have grasped the "three ages" system, let alone its idiosyncratic subdivisions. If such terms cannot be avoided, it is essential that a chronological chart with explanatory text be incorporated into the gallery information. Similarly, a map should appear somewhere in the gallery to show the geographic parameters of the exhibits and location of sites.

While display and presentation are arguably the most obvious side of museology (the side seen by the public), there are behind-the-scenes aspects of museum work that are equally important. Storage is often a major problem for museums, especially for those long-established institutions whose space is finite but whose collections continue to grow. Museums that are involved in active fieldwork projects frequently have to resort to outstations in order to cope with processing finds. Their reserve collections, in other words, the items not on permanent exhibition, must be stored following a well-organized system, to keep them accessible to the museum's curators and visiting scholars. Damp, subterranean basements, often the popular image of museum storerooms, are unacceptable. The environmental and climatic control of storage areas is every bit as important as that of the galleries and showcases. This often requires the installation of sophisticated and expensive equipment to handle dust extraction, temperature control, and dehumidification.

Conservation, the preservation of cultural heritage, is an immense subject in itself, covering a wide range of skills and disciplines. At its most basic, "passive conservation" may be seen as the manipulation or control of the environment in order to inhibit the deterioration of an object's condition. A heavily corroded iron dagger placed in appropriately dehumidified storage may not look very attractive, but it will not corrode further. "Active conservation," on the other hand, seeks to arrest and reverse the processes of deterioration by the application of mechanical, chemical, or, in some cases, electrolytic treatments. A bronze bowl, for example, which is found to be deteriorating through the condition known as bronze disease (caused by the presence in the corrosion layer of cuprous chloride) can be mechanically treated using a scalpel. Sites of active bronze disease will be removed, and the overall surface of the bowl will be "cleaned" down to a level within the corrosion layer which is judged to represent the object's original surface. The bowl can then be stabilized using a corrosion inhibitor such as benzotriazole and will then be lacquered to add further protection.

Restoration is the stage beyond conservation, by means of which missing elements of an object are replaced using synthetic materials. A pottery storejar which has been conserved by cleaning and desalinating the individual sherds, and then assembled using an appropriate adhesive, may be found to be missing part of its rim, or to have a broken handle or gaps or holes in the body. Through the process of restoration, these deficiencies can be made good, using a material such as fine dental plaster, which is subsequently painted to provide a near-perfect match.

All three aspects of conservation are relevant to museum collections. The importance of climatic and environmental regulation has already been stressed. In a situation in which this type of control is perfect, the need for active conservation would be minimal beyond the appropriate treatment of new acquisitions. In reality, of course, conditions are never perfect: accidents occur in handling, and many of the materials used in conservation have a finite life-span and may need to be periodically renewed. Small museums may incorporate a laboratory employing one or two conservators who are trained to cope with the full range of materials, or may instead subscribe to a service which provides conservation cover for a number of similar museums in the same region. For large national and international museums, such as the British Museum in London or the Louvre in Paris, both of which have vast and diverse permanent collections, as well as a constant input of archaeological materials from their various field projects, the scale of the operation is much greater. Conservation, in such cases as these, constitutes an established department within the museum, with many laboratories providing facilities for a large number of specialist conservators responsible for individual materials (ceramics, stone, metals, textiles).

A controversial aspect of museology, which draws together display and conservation, lies in the degree to which objects are restored for exhibition. Techniques are so highly refined that it is certainly possible to take, for example, twenty sherds which make up half of the profile of a bowl and produce a complete vessel without even a crack showing. Such a procedure would be seen by most museums as unethical, as would the practice of "completing" an object solely by reference to external evidence. It would not be acceptable, for example, to restore, using a synthetic material, the missing head of a bronze statuette, based on an illustration of a generally similar piece. It would, on the other hand, be perfectly in order to fill in an unsightly gap in the rim of a Greek black-figure vase, or to manufacture the missing second wheel of a terra-cotta chariot model by making a cast of the existing one. While the limits of acceptability vary from museum to museum, most archaeological museums accept a responsibility not to restore beyond what is known or can be established beyond doubt. It is also generally held that the restored elements of an object should be unobtrusive at a distance, but obvious on close examination, leaving no question as to what is original. If an overall trend can be observed in this area, it seems to be one of moving away from restoration. With the viewing public's greater awareness of the processes of archaeology, there is a much greater tolerance and acceptance of artifacts "as found"—pots with gaps and all the breaks showing or animal figurines with missing legs—a recognition of the essential integrity of the objects themselves.

Documentation and cataloging lie at the very heart of any museum's collections. Systems vary, of course, from museum to museum, but whatever method of cataloging is adopted, whether it be on computer, on index file cards, or in bound ledgers, the objective is always the same: to provide for each object in the collection a discrete and specific identification which can be physically applied to the object itself. Catalog entries, whether for Assyrian reliefs or humble potsherds, must be as full and exhaustively documented as possible. This is especially important for archaeological materials where original excavation numbers may have to be removed in favor of the museum's registration number. Clearly, such objects would become utterly meaningless if the catalog entry failed to preserve all details of the context. For any object, the museum's registration entry becomes the primary and fundamental source of information and, as such, should contain the total "profile" of that object. Beyond a physical description (type, material, dimensions, and cultural attributes), each entry should record context details for excavated items and acquisition details for purchased or presented pieces (donor or vendor, source, and price paid). Other relevant information includes publication references, references to any scientific analyses undertaken, details of conservation treatments, references to photographs taken (including appropriate negative numbers), and most im-

portantly of all, an indication of the current location of the object (whether on display or in storage).

Most major museums have adopted computer registration as their normal procedure, opening the way for an international exchange of collections data. Some controls are necessary, however: although it may be extremely convenient and valuable for a curator at the Louvre, for example, to be able to know, at the touch of a button, exactly which bronze items from Beth-Shean stratum VI are held in the collections of the University Museum of the University of Pennsylvania, it may not be appropriate or desirable for, say, the Metropolitan Museum of Art in New York City to know how much the Vienna State Museum paid for a particular Egyptian statuette. Some fields of information may, therefore, need to be restricted, bringing into question ethical issues concerned with freedom of information and access to documentation.

More serious ethical problems have to be addressed with regard to museums' acquisitions policies. Most museums follow ethical codes of practice to ensure that objects illegally exported from their country of origin are not acquired. Regrettably, the guidelines are not followed universally or consistently, and many objects of questionable title find their way into museum collections. It is an unfortunate reality that the trafficking in cultural property involves as much deviousness, misrepresentation, and criminality as the trafficking in drugs. In the case of antiquities, however, the resource is finite; despite claims to the contrary by the so-called legal trade in antiquities, it is undeniably true that any move to purchase items from what is now an international market has a direct, almost proportionate consequence in the looting and destruction of archaeological sites.

In this respect, museums of integrity must adopt the moral high ground. It is becoming increasingly unacceptable for museums to be involved, on any level, with the antiquities trade, either directly through the purchase of objects, or indirectly by offering gallery space to temporary exhibitions of private and often dubiously acquired collections. Such a viewpoint is not incompatible with the desire of museums to add to their collections. National archaeological museums can obviously exploit their own heritage resources through the initiation of home-based field projects.

The international collections of the large multicultural museums, such as the Louvre or the British Museum, need not be static in this respect either. Many countries, in return for the research input, allow a division, or "partage," of excavated finds. Quite apart from the benefits of international cooperation gained through undertaking scientifically controlled research abroad, the objects added to a museum's collections through the process of a legal division will be of immeasurably greater value than the overpriced trinkets of the antiquities market.

The modern archaeological museum has moved a long way from the nineteenth century "cabinet of curiosities." Many of the larger institutions function very much as university faculties, with an overall director or directorate overseeing a number of geographically or chronologically differentiated departments. Each department is staffed by a number of curators responsible for specific and specialized areas; it is their brief not only to superintend the objects within their remit, but more generally to represent their area to the public and to the scholarly community.

Public accountability is of serious concern in state-funded museums, and curators involved in research or field projects must acknowledge an obligation to present the results of their work in exhibitions, public lectures, and publications. These activities may be coordinated through an education department, which not only serves to disseminate the work of the curatorial departments to a wider audience, but also provides guidelines and instructions for teachers and educators.

The modern archaeological museum is, above all, a research institution, often at the very forefront of archaeological and scientific investigation. Many of the larger museums include extensive facilities for scientific analyses, including C-14, neutron-activation, metalography, and petrography—indeed, the full range of analytical techniques designed to complement the work of museum-based excavators and researches and to assist archaeologists from external, often overseas, institutions.

[*See also* Analytical Techniques; Artifact Conservation; Ethics and Archaeology; *and* Restoration and Conservation.]

JONATHAN N. TUBB

MUSICAL INSTRUMENTS. The understanding, sociohistorical interpretation, and research of musical instruments (sound tools) as part of human culture is a *conditio sine que non* of modern scholarship. Modern musicologists define music as a pattern of human behavior in a relevant cultural context, in which sound-producing tools undergo changes based on changes in culture. Musical instruments and their iconographic representations are the only available material evidence from preliterate societies and are the primary source of investigation for societies that have an oral musical tradition. An interdisciplinary approach, combining archaeological, sociohistorical, musicological, and ethnographic-comparative analysis, has turned archaeomusicology (a field established as an independent branch of scholarship only in the late 1970s–early 1980s) into a most effective tool of study of music in ancient cultures.

While archaeological finds of musical instruments may make it possible actually to hear "historical sound," and provide information on the audial ecology of the past, archaeological iconography is more helpful in studying sociocultural matters, performance practices, the social performance

environs, and the body language of performers. The central tool of organological research (typological analysis) raises the question of classification (Kartomi, 1990, pp. 12–13). It is assumed that each culture has both its own "culture-emerging," or "natural," musical instrument classification (which scholarship does not necessarily always discover—e.g., Phoenician instruments) and an "observer-imposed," or "artificial," one created for a particular research scheme. Certain Near Eastern cultures (e.g., Sumerian) appear to tend to a natural model guided by the construction material of the musical instrument itself (e.g., determinatives are *giš,* "wood"; *gi,* "cane"; *si,* "horn"; compare Sachs, 1940, p. 164); some (e.g., Hittite) combine this with the method of sound production (*hazzik,* "strike"; *pariparâi,* "blow"; Turnbull, 1980, p. 391); others (Israelite/Judean), divide instruments into sacred (horn, trumpet), levitic (lyre), and secular (reed pipes) (Braun, 1994, col. 1512). On the other hand, since the early days of organology, artificial classification systems have been used, although natural systems sometimes contribute more to understanding a certain culture. At present, Erich M. von Hornbostel and Curt Sachs's artificial classification (*Zeitschrift für Ethnologie,* 46 [1914]: 553–590) appears to be the most functional system for ancient cultures. It is based on the source of sound, or the nature of the vibrating body: idiophones, membraphones, aerophones, and chordophones (see below).

The names of the musical instruments are in most cases highly uncertain. Contrary to the conditions in Egypt, where iconographic sources frequently are accompanied by texts bearing the name of the depicted instrument, other Near Eastern archaeological finds lack written comments, and the preserved texts with names of musical instruments include hardly any information on the type of instrument. Only as late as the third century BCE–third century CE do the first known parallels of iconographic and written sources appear (*lilissu,* Akkadian, "kettle drum": Rashid, 1984, p. 140; *zmr,* clarinet-type double pipe with one long pipe and one short one: Braun, 1993, p. 176). Most names of musical instruments have to remain in the realm of suggestions (e.g., *GIS gù-di/dè,* "lute": Anne Kilmer and Dominique Collon, 1980–1983, vol. 6, p. 512), but there are several exceptions (Old Sumerian *balag,* "harp"; Bib. Heb. *ḥăṣōṣĕrâ,* "trumpet"). In certain cases one name is used for different instruments of one type (e.g., *tp,* different drums, most Semitic languages).

The primary importance of ancient Egyptian, Hebrew, Greek, and Roman music cultures has been acknowledged since the beginnings of modern (eighteenth century) music historiography. Carl Engel's study of the music of ancient cultures was the first to focus on archaeological sources (Engel, 1864). The first clear statement on the decisive significance of Near Eastern musical instruments for world music culture was made by the founder of contemporary organology, Curt Sachs (1940). The linguistic approach, which dominated studies of ancient Near Eastern musical instruments, and proved to be insufficient, dominated the period following World War II but was more and more replaced by a combined interdisciplinary approach.

Since World War II, the study of ancient musical instruments has focused on three areas:

1. *Musical instrument types.* Based on a typological approach to musical instruments, the study of instrument types mostly strives for an organological-ergological and historical classification. Its aim is to produce a "history" of the type (see the classical examples of lasting value in Hickmann, 1949–).

2. *Musical instrumentarium of certain cultures or geographic areas.* Socioanthropologically oriented, studies of instrumentarium strive to incorporate archaeomusicological research results into the general framework of historiography. (For Egypt, Mesopotamia, Rome, Greece, Central Asia, and Islam, see the series *Musikgeschichte in Bildern;* for Anatolia see the encyclopedia entries in Max Wegner (1949–) and Harvey Turnbull (1980); for the Sasanian period see Marcelle Duchesne-Guillemin, 1993; and for Israel/Palestine see Joachim Braun (1996).

3. *Artifacts.* Nearly the broadest, in terms of quantity, and developed along with musicologists by archaeologists, historians, and art historians, the study of individual artifacts recovered in excavations stresses the organological-ergological, or socioanthropological, approach.

The few studies designed with a comprehensive Near Eastern approach, continue the approach of Engel and Sachs. However, the discussions of the different Near Eastern areas and cultures are individual and not synthetic. Wegner defends the position that "the ancient Oriental world does not present a unity also in its musical culture" (Wegner, 1950, p. 50), which is especially true, according to the author, of the opposed nature of Near Eastern and Hellenistic musical instruments: the former are changeable and irregular and the latter are stable and invariable. This disputable theory was developed based on Sachs's thesis on the "classical" and quite solemn character of Egyptian Old Middle Kingdom musical instruments, as opposed to the orgiastic, noisy, and savage character of the New Kingdom/Near Eastern sound tools (Sachs, 1940, p. 98). This popular theory was proved wrong by Hickmann (1961b) on the basis of later archaeological discoveries.

The only attempt to discuss Near Eastern musical instruments comprehensively was made by Hickmann (1957, 1961b). His central conclusions are still unchallenged: in certain cases the Egyptian music instrumentarium (e.g., rattles, sistrum, concussion sticks, flute, trumpet) influenced Babylonian cultures; in others primacy belonged to the Sumerians (e.g., lyre, angular harp, cymbals, frame drums); and in still others the development was parallel but independent (e.g., the harp; Hickmann, 1961b, pp. 23, 35). As regards the provenance of the Western instrumentarium, "certain is the Oriental provenance . . . of a number of mu-

sical instruments, which are adequate to the common sound-ideal of the Mediterranean countries" (Hickmann, 1957, p. 35). The central Phoenician and Israel/Palestine area of the eastern Mediterranean coast from the Sinai desert to Anatolia was considered to be a transit channel only; its significance as a center with an indigenous culture was ignored, even though a number of musical instruments, and especially new instrumental performance traditions, originated there (see Caubet and Braun in Homo-Lechner, 1994, pp. 129–147).

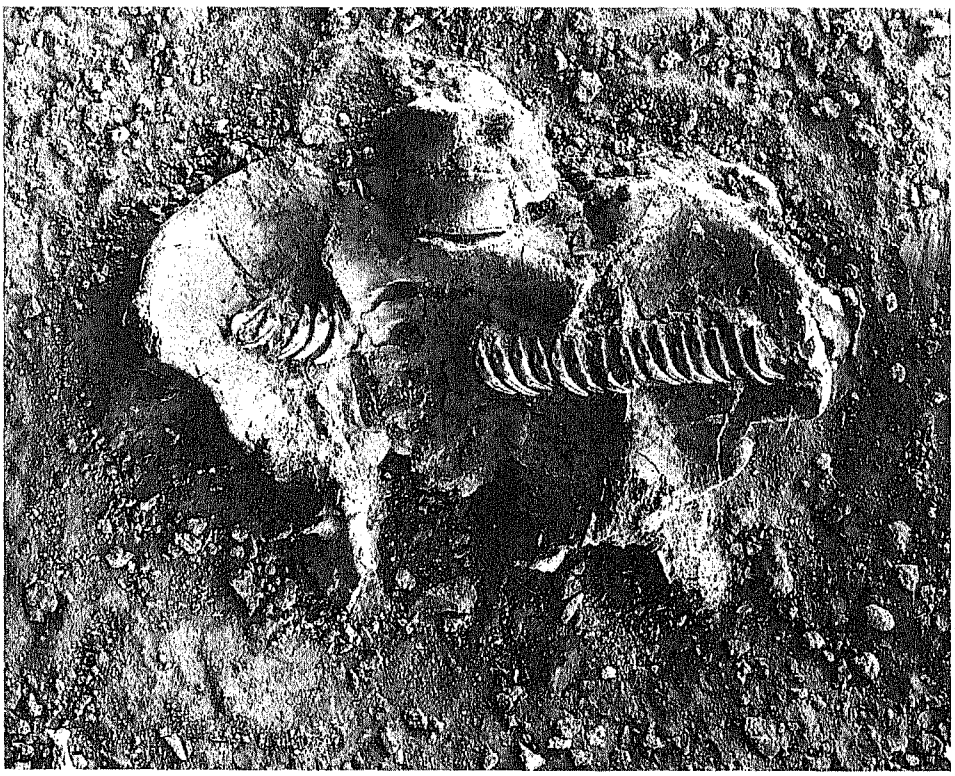
Idiophones. Self-sounders, or sound produced by vibrations of the substance of the instrument itself (e.g., rattles, cymbals), are known as idiophones.

Natufian strung rattles. Rattles from modern Israel's Carmel range (11,000–9,000 BCE) are the earliest attested sound tools in the Near East (see figure 1). This type of syncretic jewelry/sound cult object, often disregarded by researchers, exists in various forms and has probably always been an artifact of culture.

Concussion sticks. Pictograms from Uruk (Uruk IV period, 3000–2900 BCE) and a carved shell from a burial (no. PG789) at Ur show concussion sticks. A bronze sound tool also was found at Kish from the Jemdet Nasr period (2900–2800 BCE) (Rashid, 1984, ill. 8). Egyptian ivory concussion sticks appear somewhat earlier (first dynasty, 3300–3000 BCE).

Sistrum. In the middle of the third millennium, the sistrum (a type of rattle) appears in both Sumer and Egypt; the Sumerian examples are U-shaped and are open at the top (Rashid, 1984, ills. 8, 42), and the Egyptian examples are rectangular, in the shape of a temple naos, a Hathor image, or a horseshoe (Hickmann, 1961a, p. 160, ills. 26–27). Only two or three centuries later, rectangular metal sistra, ornamented with animal figurines, appeared at the Anatolian sites of Horoztepe, and Alaca Höyük (Turnbull, 1980, p. 388). In all cultures, sistra were cult instruments.

Clay rattles. The most popular Near Eastern idiophones are clay rattles. Among those preserved are egg-shaped examples from the fifth-millennium Lower Egyptian Merimde culture (Hickmann, 1949, p. 70, pl. XLIII); these are the oldest examples and were in use at least until the eighteenth dynasty. Zoomorphic and piecrust shaped clay rattles from the Old Babylonian period (1950–1530 BCE) have been found at nearly every Mesopotamian site (Rimmer, 1969, pl. III), and from the Middle Bronze Age IA–II in ancient Israel/Palestine, some one hundred items in zoomorphic, anthropomorphic, and geometric forms are preserved—the spool shape being the most popular. On Cyprus, the Late



MUSICAL INSTRUMENTS. Figure 1. *Female thigh bone with a fox tooth rattle.* From Hayonim Cave (Mt. Carmel, Israel); early Natufian period. Rockefeller Museum, IAA 79.536. (Courtesy Israel Museum, Jerusalem)

Bronze zoomorphic forms, especially of birds, are found frequently (Cyprus Museum, no. A-990). The quantity, dispersion, and archaeological context of the Near Eastern clay rattles, which preserve an indigenous artistic form in every local culture, confirm their plural function as a cult implement, amulet, sound tool, and game—rather than solely as a child's toy, and substantiates it as a mass produced music, cult, and culture commodity.

Bells. From the early first millennium BCE, bronze bells appear—mostly the sound tool itself (from Nimrud alone there are some one hundred bells that are the property of the British Museum)—that are rarely represented iconographically: the first representations are horse bells on Assyrian bas-reliefs (Rimmer, 1969, pls. XVII, XVIII). Bells are first attested in the tenth century BCE in northern Persia, at Amlash (Rimmer, pl. XIXc–d) and a century later in Assyria, at Nimrud (Rimmer pl. XIXa), and in Israel/Phoenicia, at Megiddo (Oriental Institute, no. M936); two centuries later they are found on Cyprus and in twenty-third-dynasty Egypt at Tell Basta (Hickmann, 1949, pl. XXIIIA). A dispersion from east to west and a Caucasian or Asian provenience are thus plausible. Bells in various sizes (2.5–12 cm) and forms were designed for animals and humans, mostly probably with an apotropaic function (a supposition based on *Ex.* 28:35 and questioned for its uniform interpretation by Peter Calmeyer, (1966, vol. 3, p. 431). Bell-shaped clay rattles and clay bells (Rashid, 1984, ill. 131, Hebrew University, no. 9245; also on Cyprus: Limassol District Museum, no. T474) may indicate a continuity of the social and acoustic function of the two idiophones.

Scrapers. Notched implements, such as scapulae, were scraped with a rigid object to produce sound. Scrapers are known throughout the world from prehistoric times. While they do not appear with any frequency in the Near East, there are examples from Ugarit, thirteenth century BCE (Caubet, 1987, figs. 1, 2) and eleventh century BCE Ekron (Trude Dothan and Seymour Gitin, "Tel Miqne (Ekron) 1982," *Israel Exploration Journal* 33 [1983]: 127–129). A concentration of some ten items was discovered at Kiton, from the twelfth–fifth centuries BCE (Vassos Karageorghis, *Excavations at Kiton,* vol. 5.2, 1985, p. 317); however, the identification of these artifacts as sound tools, based on the presence of trails of erased patina, is doubtful (Karageorghis, 1985 pp. 327–328).

Bronze cymbals. Among the best-attested musical instruments for the entire Near East are bronze cymbals. The earliest representations are on bas-reliefs from southern Babylonia at the end of the third millennium (Rashid, 1984, pp. 70–73). These rather large (some are 20 cm in diameter) cymbals, however, disappeared in Neo-Assyrian times; at Nimrud (ninth century BCE) true cymbals (some 10 cm in diameter) were discovered (Rashid, 1984, p. 110). More than twenty pairs of cymbals (12–8 and 6–4 cm in diameter) dated at least four hundred years earlier have been found at Late Bronze Canaanite/Phoenician sites (Tell Abu Hawam, Hazor, Megiddo). Already mentioned in fourteenth-century BCE sources from Ugarit (Caubet, 1987, p. 734), and frequently encountered in the Hebrew Bible *(mĕṣiltayim),* cymbals disappear from the archaeological finds of Israel/Palestine between the Early Iron Age and the Hellenistic period. Figurines of cymbal players were popular in the Neo-Babylonian kingdom (Rashid, 1964, p. 134), and on Cyprus (Hickmann, 1949, fig. 29; Israel Antiquities Authority, no. P1823); cymbals appear in Anatolia (Bittel, 1968) and Egypt (Marcuse, 1975, p. 10) from the seventh century BCE onward. Cymbals and forked crotala (see below) were widely used at Cybele and Dionysian cult events in Palestine, Anatolia, and Syria, as well as in the Sasanian kingdom.

Forked crotala. Small cymbals attached to a forked handle (forked crotala) and larger cymbals were among the most popular instruments in the Hellenistic–Roman Near East (Farmer, 1966, pp. 18, 23, 27). A frequent combination of instruments seems to be the crotala and the organ (Braun, 1994, p. 142).

Membranophones. Instruments that produce vibrations from a tightly stretched membrane, such as the drum, are known as membranophones. Drums belong to the most ancient and popular category of musical instruments attested in the Near East, where they are the main membranophone. They were made with one or two membranes and in various sizes (20–150 cm) and forms (round and square frame, cylindrical, hourglass, kettle, goblet, and bowl shaped). They were held in several positions (in front of the chest, above the head, under the arm) or placed on the ground. Wall paintings of a hunting shrine at Çatal Höyük in Anatolia (level A.III. 1, seventh millennium) shows men dancing and beating small round-frame drums with a stick (see Doris Stockmann in Lund, 1986, pp. 12–14). This drum (with one or two skins?) appears again at the beginning of the second millennium BCE in a scene of dancing etched on a rock in Israel's Negev desert (Anati, 1963, p. 211) and remains the main membranophone of the Near East. It seems that beginning in the Chalcolithic/EB terra-cotta goblet-, cornet-, chalice- (Ghassulian culture: e.g. IAA, no. 36.66, 36.97) and hour-glass-forms (Gilat, in the Negev: IAA, no. 76.54) were used. In the late third millennium the Mesopotamian giant drum, probably in bronze, or with a bronze frame (Schmidt-Colinet, 1981, ills. 71–75), and in the early second millennium BCE the bronze goblet form, *lilissu* (Schmidt-Colinet, 1981, ills. 76, 77), appeared. A barrel-shaped drum with two skins and a rectangular drum are attested in Middle Kingdom Egypt (Hickmann, 1961a, pp. 28, 106). With rare exceptions, the entire corpus of pre-Iron Age drum iconography shows the instrument in a cultic context.

In the first half of the second millennium BCE in Old Babylonia and later, but especially in the Iron Age, in other Near

Eastern areas, two forms of the female drum player, the most notable indigenous type, appear on deep-relief terracotta plaques. The figures are naked but adorned with a wig or headcover and a disk (drum) is pressed against the chest with both hands (Rashid, 1984, ills. 91–95); and as bell-shaped figures dressed in a long gown, beating the drum, which is in a position perpendicular to the body (Meyers, 1987). Preserved only in Israel/Palestine, there are more than forty items of the first type and some fifteen of the second extant. Mixed types appear on Cyprus and in Syria: pillar figurines with a disk pressed against the chest and figurines on votive stands. It is probably at this time that the drum (*tōph* in the Hebrew Bible) acquired a function in both the cultic and everyday life of the lower strata of the population. The function of this type—homogeneous in its Near Eastern unity and autochthonous—is not yet clear: the range of use is from *dea nutrix* and amulet to apotropaic object and toy; even the identification of the disk type is questioned (drum, solar disk, bread?). The hourglass drum (*darabbuka,* also a popular drum among modern Arabs and Druze), characteristically held under the arm, appears once in the Negev and more frequently in finds from Old Babylonia between the Iron Age and Hellenistic periods. Excavations from the Hellenistic-Roman period confirm the appearance of the Greco-Roman frame drum (mostly on mosaics—e.g., at Sepphoris in Israel; see Meyers, Netzer, and Meyers, 1992, p. 49). In the earliest drum iconography, the membranophone-chordophone in duet is considered to be a typical Near Eastern ensemble (cf. Anati, 1963, p. 211, for Negev rock-etchings; Rashid, 1984, p. 76).

Aerophones. Vibrations of air enclosed in an instrument, produced by wind or breath across its edge (flute), via a reed (clarinet), a double reed (oboe), or the performer's lips (trumpet) distinguish the category of instruments known as aerophones.

Bullroarer. A slab of wood 10–20 cm long, rhomboid in form and frequently carved and ornamented, with a small hole at the end for a cord, is a bullroarer. It is a noisemaker used at ritual and magic events that produces a roaring sound through circular movement. Probably one of the earliest aerophones, it is attested by the finds from the Natufian Kebara cave in Israel's Carmel hills (IAA, no. 13.85) and the Neolithic Nahal Hemar cave (*Treasures of the Holy Land,* Metropolitan Museum of Art, New York, 1986, fig. 17). In Egypt, the bullroarer appears in predynastic times (Hickmann, 1961a, p. 157).

Flute. The first archaeological evidence for flutes is not earlier than the late fourth millennium in Egypt, (Hickmann, 1961a, ills. 1, 4); this flute type, the *nay* (60–90 cm long) is still in use and is usually held at an oblique angle. The flute is also attested in third millennium-Mesopotamia (Rashid, 1984, p. 50). The single flute, however, either was not popular in the ancient Near East, or was not frequently depicted in the Bronze and Iron Ages because of its low status. A corpus of some ten short (7–12 cm) whistles with a single side opening has appeared in areas of Canaan/modern Israel, the earliest dated to the third millennium (Megiddo: IAA, no. 39.680) and the latest to the seventh century BCE. In the first-dynasty royal cemetery at Ur, fragments of silver tubes were discovered that have been interpreted as flutes or other reed instruments.

Double pipe. The most typical aerophone in the ancient Near East was the double pipe (two tubes) with a single or double reed (i.e., a clarinet or an oboe type, not a flute), which produces a rich, harsh, penetrating, and sensual timbre. While the single flute was still in use during the Old Babylonian period (Rashid, 1984, ills. 85, 86), the divergent double pipe with cylindrical tubes, of Cycladian provenience (Aign, 1963, ill. I/5), permeated musical life. The double pipe has been discovered in excavations in contexts from the middle of the second millennium BCE up to Byzantine times; mostly, however, it appears in iconographic material both as a single instrument and in ensembles. The differences in representations are mainly in the degree of divergence of the pipes: length of the longer pipe (possibly a drone), how it is held (horizontally or vertically, together or apart), performance style (position of the hands), and type of reed. Finds from the ninth–seventh centuries BCE (e.g., from Achziv: IAA, no. 44.56; Karatepe: Schmidt-Colinet, 1981, no. 89) show that the double-pipe performer—mostly female—had become a popular Near Eastern terracotta figurine type, along with the drum player (see above.)

The instrument acquired all the signs of the classic aulos; in Greece itself, however, the instrument does not appear prior to 700 BCE. After the seventh century BCE, the *phorbeia* (a leather band passed over the lips and cheeks to secure stability while blowing) appears on Cypriot and Anatolian (see figure 2) figurines (e.g., Schmidt-Colinet, 1981, no. 90; Hermary et al., 1989, no. 578.579), but is absent from Neo-Assyrian examples and in material from Israel/Palestine. The double pipe is frequently part of the Neo-Assyrian orchestra (e.g., the Elamite orchestra, Niniveh, seventh century BCE; see Rashid, 1984, ill. 151), or the membraphone-aerophone-chordophone "Phoenician orchestra" (ninth–seventh centuries BCE: Aign, 1963, figs. 89, 90, 91) that can be traced back to Philistia/Israel ensembles from the eleventh to the tenth centuries BCE (Braun, 1994, p. 143; Ashdod: IAA, no. 68.1182). In Hellenistic-Roman contexts, finds of actual aulos instruments are frequent and seem to indicate microtone scales (e.g., Gezer: IAA, no. 81.1839). In that period, also for the first time, the double pipe with a short melody pipe and long drone (*arghul* type) can be attested with certainty (Safaitic basalt etching: Jordan, J. 1886). Mosaics and other artifacts from the Hellenistic–Roman period show the double pipe both as a musical instrument of lament (e.g., in a wall painting in the Idumean necropolis at Marisa/Mareshah, (in situ) and of orgiastic joy (in a Dionysian context: Braun, 1995).

MUSICAL INSTRUMENTS. Figure 2. *Bell-form figurine with double pipe.* From Achziv, Israel. Dated to the ninth-eighth century BCE. Rockefeller Museum, IAA 44.56. (Courtesy Israel Museum, Jerusalem)

Zamr. A new period in the history of the double pipes, and especially single pipes, began with the use of conoid reed pipes. The *zamr* type of double flute from the seventh century BCE is still dominant in the Near East. Among the first examples to attest this aerophone type is one from Tel Malḥata, in southern Israel: a terra-cotta figurine of a man blowing a divergent conical double pipe (IAA, no. 94.3393); bronze figurines from Anatolia should be associated with this type of aerophone rather than with trumpets (cf. Turnbull, 1980, fig. 8). Single *zamr* instruments appear on numerous artifacts, mostly in pastoral surroundings (Beth-Shean, sixth century, Lady Mary Monastery mosaic, in situ: Farmer, 1966, ill. 5).

Panpipe. The earliest evidence of panpipes *(syrinxes)* in the region is probably from Anatolia (seventh century BCE: Turnbull, 1980, fig. 7). It has been one of the most popular instruments in the Near East since Seleucid times (Rashid, 1984, p. 142) and has kept its autochthonous peculiarities in every area. In the second century CE the panpipe was accepted as a symbol on the city coins of Paneas/Banias in northern Palestine (in the second–third centuries called Caesarea Philippi; see Israel Museum no. 2883). Representations of *zamr* instruments appear on other coins from Paneas, the oldest of which in the Near East is the depiction of a cross flute (Meshorer, 1984–1985, figs. 6a, 27).

Organ. In the third century BCE the organ, based on the panpipe *(hydraulus),* was invented in Alexandria, Egypt. The first iconographic evidence of this instrument are terra cottas from Alexandria (second–first centuries BCE: Perrot, 1971, pl. V), Tarsus (pre-Christian: Perrot, 1971, pl. XVI/1), and Carthage (second century: Perrot, 1971, pl. XII). The most significant example has come to light in a Hamath (Syria) mosaic that depicts a third-century ensemble performance (organ, crotals, lyre, double aulos, bells, sounding bowls). Attention has been drawn to the Samaritan terra-cotta oil lamps, that depict an organ (again with crotala; see Braun in Homo-Lechner, 1994, p. 142); it seems that this instrument was used in both liturgical and secular life.

Animal horns. Comparatively scarcely attested, animal horns may have been used in Anatolian Neolithic cultures (Lund, 1986, p. 20), but they undoubtedly appear in only two finds: in an early second-millennium BCE drawing from Mari (Perrot, 1961, ill. 389) and in a ninth–eighth century BCE stone relief from Carchemish (Schmidt-Colinet, 1981, ill. 75). There is evidence as well of the use of oxhorns in fifteenth-century BCE Egypt during the reign of Amenhotep IV (Marcuse, 1975, p. 747).

Shofar. The ram's horn, or shofar, is the most frequently mentioned music instrument (seventy-two times) in the Hebrew Bible. However, it does not appear in archaeological contexts until the third century (among the earliest appearance is in the Hammath Tiberias synagogue mosaic, in situ): the shofar is always part of a group of synagogue symbols (menorah, shofar, lulav, etrog).

Shell horn. A different type of horn, the shell horn, was used in Israel/Palestine beginning at least in the late second millenium BCE (Tell Qasile: Hebrew University no. 2968:227).

Trumpet. The elite music instrument the trumpet descends from the animal horn and is similar to it. It appears rarely, however. Besides the two famous Tutankhamun trumpets (one silver, 58.2 cm, and the other bronze, 49.4 cm), there are only some fifteen representations of the trumpet from Egypt. Among them, the first certain depiction (sixteenth–fifteenth centuries BCE), shows a clear cultic and military affiliation (Manniche, 1975, pp. 33–35; Hickmann, 1961a, p. 74). Mesopotamian cultures show extremely little evidence for this instrument: there are only two between the Mesalim and Neo-Babylonian periods (Rashid, 1984, ills. 37, 143). The situation is similar in Israel/Palestine, where, contrary to its significance in the Hebrew Bible (e.g., *Nu.* 10:2–10), and in the Dead Sea Scrolls from Qumran (1QM II.15 and VII.9), the only iconographic evidence for the trumpet is on the wall paintings in the Idumean necropolis

near Beth-Guvrin (in situ, third–second centuries BCE). There, for the first time in trumpet iconography, the instrument—an early example of the Roman tuba—is part of a hunting scene. The aerophones depicted on the coins minted by Bar Kokhba in 132–135, frequently defined as trumpets, can hardly be considered as such (Sachs, 1940, p. 120), and the two trumpets depicted among the booty from the Jerusalem Temple on the Arch of Titus in Rome may not necessarily be the Temple instruments but, rather, copies of the Roman tuba. There are only isolated instances of trumpet representations from later periods, such as the pair of trumpets on the rock carving at Tak-i-Bostan from the Sasanian period (Behn, 1954, p. 77). In spite of the early appearance and significance of the trumpet in Egypt, and the importance attached to it in Near Eastern written sources, this instrument may actually have been used very little in the Levant.

Chordophones. An instrument in which a stretched string vibrates is known as a chordophone. Its subgroups are the zither, lyre, harp, and lute. The phenomenon of the appearance of sophisticated string instruments at very early stages in the history of music without evidence of earlier rudimentary forms is clearly manifested in the Near East.

Harp. The oldest archaeological document of a chordophone is a stone from Megiddo, strata XIX (figure 3) etched with a female figure with a triangular, fully developed harp. The instrument appears again in Cycladic culture (Aign, 1963, figs. 1–3) but was not witnessed again in the Near East. While other forms of the harp have been attested since the early third millennium in Mesopotamia and the fourth dynasty in Egypt, the harp itself is absent from the central areas along the eastern Mediterranean coast from the Sinai to Anatolia (Caubet and Braun in Homo-Lechner 1994, pp. 132, 141; Turnbull, 1980, p. 388). This strongly questions the popular interpretation of *nēbel* in the Hebrew Bible as the "harp" of ancient Israel.

The early Sumerian harp (Uruk IV and Mesalim periods), a small (50–70 cm), arched instrument, is depicted mainly on seals in a cultic context, frequently being played by animals (Rashid, 1984, pp. 52–59). At the beginning of the second millennium BCE, the arched harp was replaced by the angular harp, which was held vertically or horizontally (Rashid, 1984, figs. 42–49); while the horizontal harp was known only in Mesopotamia, the vertical one was used to the west, especially on Cyprus (Rashid, 1984, fig. 51). Toward the first millennium BCE, the size of the instrument and the number of strings increased. The horizontal harp (eight–twelve strings) was plucked with a plectrum and the vertical harp (eighteen–twenty-two strings) with the hand, which suggests a basso function for the first and a melodic function for the second. The placement of the hands on the strings allows some conclusions about the style of the music being played (Sachs, 1940, p. 82). A new small rectangular vertical

MUSICAL INSTRUMENTS. Figure 3. *Stone etching from Megiddo, showing a figure with a harp.* Dated to the late fourth millennium. Israel Museum, IAA 38.954. (Courtesy Israel Museum, Jerusalem)

harp with upright resonator on the side of the frame appeared during the Seleucid period (Rashid, 1984, p. 150; Behn, 1954, pl. 55; Dor, Exp. no. 61378); in Roman times this type *(sambyke?)* became popular throughout the Near East, Greece, and Rome. The first Egyptian harps, also arched, are dated somewhat later (fourth dynasty; Hickmann, 1961a, pp. 20–27) than the Sumerian but are much larger (150–180 cm); they appear in sophisticated forms, some richly ornamented, with a developed tuning system (up to thirty-six pegs), and others nearly angular (e.g., an example from the tomb of Rameses III: Hickmann, 1961a, pp. 44, 64, 128). There are representations since the eighteenth dynasty of the vertical angular harp, which is considered an import from elsewhere in the Near East (Hickmann, 1961a, pp. 30, 130); smaller harps are depicted as well—the portable "shoulder harp" (Hickmann, 1961a, ill. 95) and the "ladle harp" (Hickmann, 1961a, ills. 93, 94). All of these instruments, mostly built from expensive wood from Lebanon and designed as works of art, seem to have been used only in the highest circles of society. In terms of chronology, the Egyptian harps followed in the footsteps of the Mesopotamian harps but developed greater sophistication in con-

struction. In Hellenistic-Roman times, in both the Ptolemaic and Seleucid Empires, the smaller, simply worked, angular harp (Hickmann, 1961a, ill. 109) was played.

Lyre. The primary musical instrument in the Near East was the lyre. From its first appearance on Sumerian seals in the first half of the third millennium, where it is depicted as a perfect chordophone (Rashid, 1984, p. 50), the lyre dominates the musical scene of the region until the Early Byzantine period. The elaborate Sumerian asymmetrical lyres have a resonator in the form of a bull (upright it is some 150 cm high) or are ornamented with a bull's head (portable, 100–120 cm), and have eight–twelve strings. The instruments recovered in excavation and supplemented by iconographic material (Hickmann, 1961a, ills. 11, 28–39) show a royal context for lyre music. The smaller, vertically held, asymmetrical lyre with two unequal side-arms appeared in Akkad and was played also in Carchemish and Babylon (Hickmann, 1961, ill. 43; Aign, 1963, figs. 78, 79). In the late third–early second millennium BCE, when large standing lyres were still in use (in Babylon: Rashid, 1984, ills. 79, 80; in Anatolia: Turnbull, 1980, p. 388), and the first modified forms appeared in the hands of naked dancing women (Negev rock etching, nineteenth century BCE: Anati, 1963, p. 210), dramatic changes took place nearly simultaneously in several places in the Near East. The Sumerian grand royal lyre was replaced by a simply built, small (some 40–50 cm), portable, symmetrical, and sometimes asymmetrical, instrument. For the first time it was held horizontally, in front of the musician; it was played mostly by musicians of low social status, Semitic traveling merchants, and women—the latter often depicted naked (Rashid, 1984, ills. 47, 59, 76, 80; Behn, 1954, pl. 85; Porada, 1956, figs. g–j). The new lyre type entered Egypt from Syria and Canaan. It took root there in its horizontal asymmetrical form and was played only by women. In Late Bronze Age Canaan, a new way to hold the asymmetrical lyre, with the sound box under the arm, can be seen from Megiddo (IAA, no. 38.780). This change significantly increased performance possibilities, and in its new capacity the lyre became the main instrument of priests and musicians in holy places, courts, and elite military orchestras (Rashid, 1984, ills. 120, 142, 145, 148, 150). This new playing technique migrated to Assyria, partly with musicians-prisoners from Judah (Rashid, 1984, ill. 142). The first half of the first millennium BCE is marked by a multitude of lyre forms, demonstrating both the autochthonous creativity of different groups and certain common Near Eastern tendencies. The most common forms follow:

U form. Examples of a U-shaped form with parallel strings can be seen from the eleventh century BCE on Cyprus at Palaipaphos-Xerolimni; in Israel/Palestine at Ashdod; and in Anatolia at Karatepe (Porada, 1956).

Symmetrical square form. Examples of a symmetrical square form with a parallel, or fanlike, arrangement of its strings appeared mainly in Assyria and Israel/Palestine (Rashid, 1984, ill. 150; Braun, 1990–1991, figs. 1, 3; Behn, 1954, fig. 19; Kamid el-Loz excavations, no. 78:504).

Asymmetrical square form. Examples of an asymmetrical square form appear with differently arranged strings throughout the Near East, including Egypt (Hickmann, 1961a, p. 138; Rashid, 1984, pp. 126, 134; Braun, 1990–1991, figs. 4–6).

In Israel/Palestine and Assyria, the preference seems to have been for a parallel string arrangement. In the Hellenistic-Roman period the lyre tended to be the symmetrical Roman type with a rounded or square sound box, animal-horn side arms, and mostly parallel strings; this instrument is often represented in a stylized form (Hickmann, 1961a, ills. 110, 111; Braun, 1994, cols. 1509–10; Rashid, 1984, pp. 152–153; Behn, 1954, pl. 48) and appears in nearly every social context.

Lute. Instruments of the lute type are the most mobile, dynamic, and subject to change among all chordophones. By permitting the performance of a nearly unrestricted number of sounds from one string, they can be adjusted to any kind of tonal system and music style. Their inexpensive and simple construction, as compared to harps and lyres, and their rustic, entertaining, and erotic performance context made them popular among the common people, which may also may explain the comparatively rare depictions of the instrument. The question of the origin of the lute remains unanswered—theories range from the Caucasus and Central Asia (Marcuse, 1975, p. 406), to Syria and Babylon (Turnbull, 1972; Rashid, 1984, p. 92). The first iconographic evidence for the long-necked lute appears on seals from Akkad, probably in a cultic context (Rashid, 1984, ills. 38, 39).

In the Old Babylonian period, the musicians are often naked men and women (Rashid, 1984, pp. 75–76, 81–84); the lute rarely appears then in connection with a cult or temple service, although later it does, in Anatolia (Schmidt-Colinet, 1981, figs. 60, 62). In the middle of the second millennium BCE, probably via Canaan (male terra-cotta figurine, sixteenth century BCE: IAA, no. 33.1567) the lute reached Egypt. While attested in Canaan in two more finds (naked female bronze statuette: IAA, no. M969; dancing minstrel on a terra-cotta plaque: Hebrew Union College, no. 23.095), the lute does not appear in Israel/Palestine again until the Hellenistic period. In Egypt the instrument became very popular and was played by naked females (Hickmann, 1961a, p. 98) and on some occasions by men, possibly in a cultic context (Hickmann, 1961a, ill. 101).

In the earliest depictions, lutes are generally shown with two–three strings marked with decorative tassels at the tuning box. A long, frequently fretted neck emerges from a small, resonator out of wood or tortoise shell and covered with animal hide. Mostly plucked with a plectrum, fastened

by a cord to the body of the instrument, the form of the lute has not changed significantly over the centuries. How it was held, however, has changed constantly, and there have been attempts to create a lute chronology according to the playing position: Old-Babylonian period, horizontal; Kassite–Neo-Assyrian period, lute neck at an oblique angle, pointing upward; Seleucid period, lute neck at an oblique angle, pointing downward (Rashid, 1984, p. 146). The short-necked lute with a broad, pear-shaped body, perhaps of Central Asian origins, appeared only rarely in the ancient Near East (it appeared for the first time in the Egyptian nineteenth dynasty: Hickmann, 1961a, ill. 104). In Hellenistic times the instrument is represented on terra cottas from Egypt and Palestine (Hickmann, 1961a, ill. 105; Marisa/Mareshah excavation, no. 1386), and it acquired great popularity in the Sasanian period (Farmer, 1966, ill. 4; Duchesne-Guillemin, 1993), when it developed into one of the most popular traditional instruments of Islamic countries, the *'ud,* predecessor of the European lute.

Zither. The zither type is actually nonexistent in the Near East, and information on this chordophone type, often also called psaltery (*psalteria,* from Gk., *psalmos,* "finger," because in antiquity their strings were plucked with bare fingers) is scarce and confused. The only known example, also interpreted by some scholars as a xylophone (Wegner, 1950, p. 36), is a beautiful carving on an ivory pyxis (BM, no. 118179, ninth–eighth century BCE), where as part of a small Phoenician orchestra two persons are plucking(?) square stringed frames (nine and ten strings) or boxes (Aign, 1963, pp. 158–159)

[*Most of the sites, peoples, and cultures mentioned are the subject of independent entries.*]

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MYRES, JOHN L. (1869–1954), British archaeologist and historian. Myres was a pioneer in applying anthropological techniques to archaeology. His approach was to link history, geography, archaeology, and classical studies. He first visited Greece in 1891 and thereafter traveled widely in Mediterranean lands. In 1893 Myres went to Crete where he recognized the importance of the prehistoric site of Knossos later excavated by Arthur Evans. He established a correlation between the so-called Kamares ware pottery that he had sketched in the Heraklion Museum and the comparable vase fragments found by Flinders Petrie at Kahun in Egypt, dated to the twelfth dynasty. Myres traveled with Evans in Crete and later excavated at Palaikastro and the nearby mountaintop sanctuary at Petsofas. His most profound influence was on Cypriot archaeology. In Cyprus, which he first visited in 1894, he was the first to excavate, particularly at those sites associated with ancient Kition, in a scientific manner in order to reconstruct the island's history. With Max Ohnefalsch-Richter, with whom he conducted an uneasy relationship, he published *A Catalogue of the Cyprus Museum* (1899), which made possible a framework of absolute chronology. In 1914, Myres extended his ideas in the *Handbook of the Cesnola Collection of Antiquities from Cyprus.*

Myres's interest and influence on Cypriot archaeology continued long after he ceased excavating. Instrumental in establishing the Cypriot Department of Antiquities in 1935,

he insisted on the proper training of Cypriot archaeologists, most notably Porphyrios Dikaios. In 1910 Myres was elected Wykeham Professor of Ancient History and a fellow of New College, Oxford, a post he held until he retired in 1935. He was knighted in 1943. Although his writings had been mainly in the field of ancient history, Myres again turned his attention to the archaeology of Crete shortly before his death and edited Evans's notes and drawings for *Scripta Minoa* II (1952).

[*See also* Crete; Cyprus; Kition; *and the biographies of Dikaios, Evans, and Ohnefalsch-Richter.*]

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N

NABATEAN INSCRIPTIONS. The Nabateans are of Arab descent, as their personal names, certain Arabic words incorporated in their vocabulary, and a recently discovered inscription found in the vicinity of Oboda (Avdat) reveal. The Oboda inscription is written partly in Aramaic and partly in Arabic but rendered entirely in Aramaic letters. The earliest inscriptions written with certainty by Nabateans are in Aramaic, the official language of the Persian Empire. Almost all of the Nabatean-Aramaic inscriptions deal with matters of religion. The earliest inscription, in archaic Aramaic script, dates to 168 BCE and comes from Elusa (Ḥalusa) in Israel's central Negev desert. It refers to a shrine in honor of Aretas, king of the Nabateans. The Aslah inscription (c. 90 BCE) found at Petra, in Jordan is also in archaic script and mentions a shrine dedicated to Obodas I, son of Aretas II. It dates to about 67 BCE and was engraved on the base of a statue of King Rabel I.

The bulk of the Nabatean inscriptions come from the vicinity of Petra, the capital of the Nabatean kingdom; Egra (Meda'in Saleh) in northern Arabia; and the Hauran, in southern Syria. Most belong to the reigns of Aretas IV (9 BCE–40 CE), Malichus II (40–70 CE), and Rabel II (70–106 CE). Very few of the texts found at Petra are of any length. The longest is an undated epitaph referring in detail to components of a large funerary monument. Another fairly long and detailed inscription is engraved on what was apparently the base of a statue dedicated to Rabel II. It provides a detailed genealogy of the Nabatean royal house. Most of the inscriptions found in the region of Petra are, however, brief invocations by pilgrims that are engraved along paths leading to open-air high places. In one of these the names Garshu and Raqmu—the Semitic names of Gerasa (Jerash) and Petra—are mentioned.

The northern Arabian group of Nabatean inscriptions comprises some thirty lengthy epitaphs and hundreds of rock inscriptions engraved by pilgrims and soldiers (Cooke, 1903; Jaussen and Savignac, 1909). The detailed funerary inscriptions, written in an elegant cursive script, were engraved on the facades of monuments (there is a direct relationship between the architectural quality of the monument and the length of the inscription). The funerary inscriptions were copies of documents deposited in an office or temple; copies were also distributed among members of the family who had the right of burial. The epitaphs (and the documents) contain the name or names of those who had the monument made, the names of those with the right of burial; a date by regnal years (most monuments were made in the reigns of Aretas IV, Malichus II, and the first five years of Rabel II); a curse on anyone who desecretes the monument; and the amount of the fine to be paid by violators—either to the treasury of a temple or temples or to the treasury of a secular authority (the king or regional governor), and the name or names of the sculptors who made the monument.

The shorter inscriptions were engraved either on the rocks surrounding Petra, where funerary feasts took place, or in the vicinity of Egra, at a place called the Tombs of the Soldiers. Numerous inscriptions were written by soldiers—mostly cavalrymen—in Greek and Latin. The Aramaic-Nabatean inscriptions mention generals in the cavalry and infantry and other military officials.

The inscriptions found in the Hauran were probably engraved by members of the tribe of Obaishat (Gk., Obaisenoi). They consist of dedicatory inscriptions from the temple of Baʿal Shamin at Seeia (built between 33/32 and 2/1 BCE) that mention the building's architectural features, shrines, statues, and other cult objects. One epitaph (c. 270 CE) is for Fero, the teacher of Gadimat, king of Tanuh.

A small group of inscriptions comes from the central Negev, mainly from the religious center at Oboda (Avdat). Some were dedications of the temple and one mentions descendants of Aretas IV. Of special interest is a group of mason's marks engraved by the temple's builders.

The rock inscriptions of southern Sinai (some three thousand graffiti), constitute a discrete group. Most are short invocations containing the word *šlm,* "peace," or a short blessing; the name of the engraver; sometimes also the name of the deceased's brother or brothers, father, and, more rarely, grandfather and ending with another blessing. Only a few are dated (the dates range from 150/51 to 267/68 CE. In a group of inscriptions found at Jebel Moneija, near the oasis of Feiran, the officials of a temple are mentioned (two

classes of priests, supervisors of animal victims sacrificed in Nabatean temples, and a scribe).

A few Nabatean inscriptions were found in Wadi Tumilat, in eastern Egypt; a few others were found at various sites within the boundaries of the Roman Empire.

[*See also* Aramaic Language and Literature; Avdat; Ḥaluṣa; Jerash; Nabateans; *and* Petra.]

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AVRAHAM NEGEV

NABATEANS. During the late Hellenistic and Early Roman imperial era, an Arab kingdom centered at Petra in Edomite Transjordan established itself as one of the prominent native independent political powers in the region of the Levant. The territory under its control extended from southern Syria through most of Transjordan, the Negev of Palestine, the Sinai, and the northwestern part of the Hijaz. Strabo, the Roman geographer, and the Jewish historian Josephus offer the fullest discussions of Nabatean history and culture, in the absence of any indigenous Nabatean literary sources. More than four thousand Nabatean Aramaic inscriptions do offer valuable direct testimony from the native population, but the majority are laconic graffiti containing mere stereotyped formulae at best; the few lengthier texts are mostly funerary. Archaeological remains of the material culture suggest that the Nabateans possessed accomplished technical skills. Especially of note is their distinctive hellenized architecture, reflected in rock-cut tombs and temples; peculiar eggshell-thin ceramics of exceptionally high quality; and the hydrological techniques they employed in developing agriculture in the extensive desert landscape they occupied.

Origins. The view that the Nabateans of the classical era are related to the Iron Age people known as the Nabaioth in the Hebrew Bible or the Nabatu of Assyrian texts remains controversial, but linguistic and historical evidence suggest the identification is not without some basis. These indications suggest their homeland was in the region of northeastern Arabia, adjacent to the Persian Gulf. They appear to have migrated westward in the Achaemenid Persian period to settle finally in Petra. [*See* Petra.] The movement was along the North Arabian trade route that connected Babylonia and Egypt and proved to be a vital commercial link even in the Roman era. Of more entrepreneurial importance was their control of the valuable commerce of the frankincense and myrrh of South Arabia transported to the Levant by Minaean and Gerrhean merchants. By 312/11 BCE, the fortune and reputation of the Nabateans were already well established, attracting the interests of Antigonus the One-Eyed, one of the successors of Alexander the Great, who sent his army to Petra in hope of confiscating its wealth. The enterprise failed. According to the Zenon papyri of 259 BCE, the Nabateans also resided in the neighborhood of the Hauran in Syria and were merchants of aromatics with Ptolemaic agents in Moabite Transjordan. By the second century BCE and afterward, they had spread into the Hijaz, the Negev, and Sinai to the borders of Egypt. Their expansion is best perceived as an extensive political alliance of various peoples united under the rule of the Petraean dynasts. [*See* Negev; Sinai.]

Royal Dynasty. During the Hellenistic era, a series of kings is known from literary and epigraphic sources beginning with Aretas I (c. 170 BCE), Rabel I (?), Aretas II (c. 100 BCE), and Obodas I (93–85). Under Aretas III (85–62), Nabatea became a Roman client-state and Malichus I (62–30) was involved with such notable figures as Caesar and Mark Antony. His successor, Obodas II (30–9), was the ally of Augustus, and these relations were continued by the later kings until the reign of the emperor Trajan. Under Aretas IV (9 BCE–40 CE), the Nabatean kingdom flourished and reached its zenith; his reign remains the best known of all the Nabatean dynasts. The reigns of his successors, Malichus II (40–70 CE) and Rabel II (70–106 CE), are more obscure, but the common depiction of this period as one of political and economic decline remains at issue. Because the period between Pompey and Augustus is the best known, the formative character of the monarchy has been seen as a result of Roman rule. However, the Nabatean dynasty reflects all of the aspects of a typical Hellenistic Macedonian monarchy of the Egyptian Ptolemaic type. The kings adopted the traditional titulary slogans of their Hellenistic counterparts on coins and inscriptions: Aretas III was known as *philhellenos;* Aretas IV as "friend of his people," or the equivalent in Greek of *philodemus,* but perhaps better understood as *philopatris;* and Rabel II as "the one who has given life and deliverance to his people," or the *sōtēr,* "savior," of his people. The monarchs also adopted royal consanguineous marriages, typical of the Ptolemaic kingdom of Egypt; intermarriage with the Herodian dynasty is also known. Evidence for a royal dynastic cult is clear from the known apotheosis of Obodas and Malichus; that of the other kings can be inferred from the pseudotheophoric "servant" names combined with the names of the kings and queens and used by many court officials, military personnel, and artisans. After the Roman annexation in 106 CE, the royal family faded from existence and the Nabatean realm was integrated into the new province of Arabia. The Babatha

family archive from the Dead Sea documents the transition from the reign of Rabel II to Roman rule. [*See* Dead Sea Scrolls.]

Settlement Pattern. From the royal capital at Petra and the Edomite heartland, Nabatean settlements radiated in all directions. To the south, the port at Leuke Kome on the Red Sea in Midian and inland settlement at Hegra (Meda'in Saleh) in the Hijaz provided bases for transporting South Arabian aromatics on to Petra and elsewhere. [*See* Meda'in Saleh.] From Aila (ʿAqaba), routes led northwest to Gaza and north to the Petra. [*See* ʿAqaba.] For the latter, Nabatean road stations and settlements at Khirbet al-Kithara, Khirbet al-Khaldeh, Quweira, Ḥumeima, and Sadaqa sustained traffic to the royal capital. [*See* Khaldeh; Ḥumeima.] The Nabatean temple at Wadi Ram in the Ḥisma was also the center for Nabatean settlers in the desert region. From Petra, another route led west through the Negev via the cities of Oboda/Avdat, Mampsis/Kurnub, Neṣṣana, Sobata/Subeita, and Elusa/Ḥaluṣa; it formed the basis for trade at the ports of Gaza and Rhinocorura on the Mediterranean coast. [*See* Avdat; Kurnub; Subeita; Ḥaluṣa.] Numerous Nabatean inscriptions in the Sinai and the eastern desert of Egypt attest to a substantial Nabatean presence in the area. To the East, a route through the Arabian desert, via the oasis at Dumah al-Jandal (modern Jawf), led to the Persian Gulf and the emporium at Charax Spasinou. To the north through Transjordan, the Nabateans also had a string of settlements in Edom and Moab that extended to Bosra and Damascus, where goods could be transported to the ports along the Phoenician coast. [*See* Edom; Moab; Bosra; Damascus; Phoenicia.] While the Nabatean presence in the hellenized Decapolis region was not substantial, they neither excluded nor avoided the region. [*See* Decapolis.] Both Philadelphia (Amman) and Gerasa/Jerash were the locations of Nabatean communities, and the Hauran of southern Syria has yielded numerous inscriptions and sporadic finds of Nabatean pottery. [*See* Amman; Jerash.] Safaitic inscriptions also attest to Nabatean influence in the region, suggesting that the indigenous population was under the sway of the Nabatean kingdom. [*See* Safaitic-Thamudic Inscriptions.]

Political and Military Organization. The titles of civil and military officials are borrowed from Greek (strategos, chiliarch, and hipparch) and Latin (centurion) and reflect the development of the military system along the lines of a standard professional army of the Hellenistic type. The strategoi were regional district governors and military commanders. Such officials are attested at Sidon in Phoenicia, Dmer and Canatha in southern Syria, Madaba and Umm er-Rasas in Moabite Transjordan, and Hegra (Meda'in Saleh); the Nabatean communities in Edomite Transjordan, the Negev, and perhaps the Sinai, must have been organized in similar fashion, but the evidence is lacking. [*See* Sidon; Madaba; Umm er-Rasas.] There are suggestions that the position was hereditary. For example, the sons of Damasippos at Hegra, Rabîb'el and Ganimu, and his grandson Maliku, were all strategoi at Hegra; another grandson, Damasi, led a revolt later against the ruling dynasty in Petra in the early years of Rabel II's reign. The chiliarchs must have been in charge of infantry units of approximately a thousand men. The hipparchs were commanders of cavalry units of approximately five hundred horsemen. Almost all of the officials with this title are concentrated near Bosra in the far north and Hegra in the far south of the kingdom, but an individual designated the chief of the cavalry *(rb pršy')* is known from Petra. The title may represent the Semitic equivalent of the hipparch or an official of inferior rank in the cavalry unit. Two individuals are designated by the Latin title of centurion, one at Hegra and the other at Leuke Kome, evidently in charge of protecting officials charged with collecting tariffs on trade. In addition, several individuals are designated the chief of the camp *(rb mšryt')* at Petra, Dumah al-Jandal, Luhita, and Abarta', officials perhaps comparable to the *stratopedarch* or *praefectus castrorum* of the Roman army. [*See* Meda'in Saleh.]

In conflicts with Hellenistic armies and the Hasmonean and Herodian dynastic forces, the Nabatean royal army performed fairly efficiently, despite the castigating remarks of Strabo and Josephus about their effectiveness. After the Roman annexation of the kingdom in 106, most of the Nabatean army was transformed into regular Roman military units, comprising at least six regiments of *cohortes Ulpiae Petraeorum* and perhaps several alae regiments of cavalrymen and dromedarii, sometime between 114–116, in connection with Trajan's Parthian campaign. Afterward, these units served in Cappadocia, Syria, and Palestine, and probably their homeland of Arabia as well. [*See* Cappadocia.]

Language and Script. Of the more than four thousand published Nabatean Aramaic inscriptions, the oldest are from the Late Hellenistic era, from Petra (96/5, 70/69), Bostra (51–47) in the Hauran, and Tell el-Shuqafiya (77) in Wadi Tumilat between the modern Suez Canal and Nile River in Egypt, where a recent text is dated to 35/4 BCE, to the reigns of both the Ptolemaic ruler Cleopatra VII Philopater and Malichus I. [*See* Aramaic Language and Literature; Nabatean Inscriptions.] The largest concentration of dated texts is from the tombs at Hegra, which provide important insights as well for the architectural analysis of the tombs at Petra, which have only a single dedicatory inscription. Ironically, the largest concentration of inscriptions is in the forlorn and desolate area of Wadi Mukatteb in the Sinai, where thousands have been recorded. No Nabatean text exists at Petra after its annexation by Rome in 106, although a number of texts dated to the Roman provincial era of Arabia are known from the periphery of the old Nabatean kingdom. The latest dates to 356, from the Hijaz. Although the language of these texts is Aramaic, there are a number of Arabic loanwords utilized for political and religious institutions; the vast majority of personal names in the Nabatean

onomasticon are also Arabic, spelled according to the peculiar orthographic practices of Imperial Aramaic of the earlier Persian era. The paleography of the script, with its peculiar ligatures and style, eventually develops into that of the Classical Arabic script. [*See* Arabic.] It is also apparent that some Nabateans used the North Arabian scripts and dialects known as Safaitic and Thamudic (see above). Recent bilingual texts in these pre-Islamic Arabic dialects and Aramaic indicate the Nabatean community was complex, diverse, and basically polylingual, providing a substantial basis for understanding Aramaic as only the formally adopted language of a largely Arabic population.

Economy and Society. Of primary importance for the Nabatean economy was the commerce in aromatics from South Arabia and spices from the Far East. Their activities and fame as traders and merchants extended across the Mediterranean and as far east as Han dynasty China, which knew Petra as Rekem (Chinese, Li-kan). In the fourth century BCE, the Nabateans were already profiting greatly from this exotic commerce, and their activities as merchants in these goods was still recognized by Roman writers in the second century CE. Finds of their typical painted eggshell fineware have been found along the eastern coasts near Bahrain, the ports of Oman and Yemen, and at sites such as Qaryat al-Fau in Saudi Arabia, along the incense route leading north to Petra. [*See* Bahrain; Oman; Yemen; Qaryat al-Fau.] Their Aramaic inscriptions have been found scattered across the Mediterranean at such places as Tenos, Rhodes, Cos, Delos, and Miletus in the Aegean, and Puteoli and Rome in Italy. [*See* Miletus.] The development of agriculture in the Nabatean realm has been viewed as a late development resulting from a decline in commerce when Rome absorbed much of the Red Sea traffic. It is also a product of the social evolutionary anthropological model that characterizes the transition from nomadic pastoralism to sedentary life as a gradual and late development. [*See* Pastoral Nomadism.] In contrast to this cultural scheme, the earliest descriptions of the Nabateans indicate that they possessed advanced technical ability and ingenuity. Their engineering skill is revealed in their developing hydrological systems to support settlements on the desert fringe. [*See* Hydrology.] Such achievements at Ḥumeima in the Ḥisma desert of southern Jordan are particularly impressive and date to the first century BCE, rivaling the later developments in the Negev. In similar fashion, horse breeding must have been a necessity for maintaining the cavalry of the Nabatean army as early as Aretas III—both Petra and Amman seem to have been prime regions for these activities in the Hellenistic era. Furthermore, the art and architecture of the Nabatean realm also reveals creative adaptations of classical styles.

Religion. The principal national god of the Nabateans was Dushares ("belonging to Shara," Edom's mountain range). Other divinities in the pantheon included the goddess Allat, al-Uzza, al-Kutba, Shai al-Qaum, and Baʿal Shamin. Their representations normally were in the betylic form of a rectangular stela (albeit with stylized eyes, nose, and mouth), rather than anthropomorphic form, suggesting to some that there was a cultural inhibition or even prohibition against depicting divinities in human fashion (Patrich, 1990). Other sculptural representations in Hellenic iconographic form suggest the practice was not uniform. Some of the best-preserved sanctuaries are at Petra, Khirbet et-Tannur, and Wadi Ram in Edom; Qaṣr Rabba and Dhat Ras in Moab; and Si in the Hauran. Shrines and cultic centers are abundant throughout the realm, indicating that the Nabateans absorbed the indigenous cults of the Edomites, Moabites, and Syrians into their pantheon. Even the Egyptian cult of Isis flourished at Petra from at least the Augustan era into the later Roman imperial period. Although there is evidence that Petra came increasingly under the sway of Christianity by the fourth century, there are no traces of the new religion in the Nabatean Aramaic inscriptions.

[*See also* Arabian Peninsula, *article on* The Arabian Peninsula before the Time of Islam; Palestine, *article on* Palestine in the Persian through Roman Periods; Syria, *article on* Syria in the Persian through Roman Periods; *and* Transjordan, *article on* Transjordan in the Persian through Roman Periods.]

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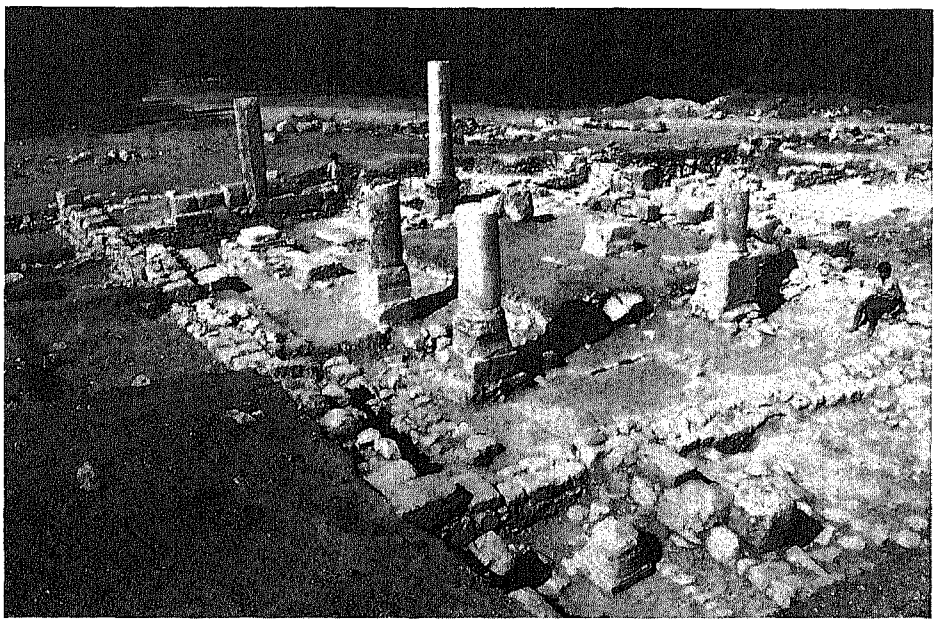
DAVID F. GRAF

NABLUS. *See* Shechem.

NABRATEIN (Ar., "two hills; also known as Kefar Neburaya), site located 4 km (2.5 mi.) north-northeast of Safed in Upper Galilee (33°2′ N, 35°30′ E; map reference 197 × 267). Situated at 650 m above sea level on the summit of a small hill opposite Moshav Dalton, Nabratein lies along a deep ravine on its north side (Naḥal Dalton, or Wadi 'Ammuqa) that empties eastward into the Hulah Valley at 0.5 km south of Hazor. A perennial spring flows some 250 m southeast of the ruin. Another small site, Khirbet en-Nabrah, which has not been excavated, lies close to the spring and no doubt accounts for the dual form of the name *Nabratein* (Frowald Hüttenmeister and Reeg Gottfried, *Die antiken Synagogen in Israel;* Tübinger Atlas des vorderen Orient, Beiheft B11, vol. 1, Wiesbaden, 1977, pp. 343–347).

Nabratein's ruins were first discovered by the British explorers Claude R. Conder and H. H. Kitchener, who noted the inscription on the synagogue's lintel, which is decorated with a menorah in a wreath. The inscription was deciphered and published by Nahman Avigad in 1960 (see Naveh, 1978, p. 31). It is unique in Hebrew epigraphy because its date, 564 CE, is reckoned from the destruction of the Second Temple in 70 CE: "(According) to the number four hundred and ninety-four years after the destruction, the house was (re)built during the office of Hanina son of Lezer and Luliana son of Yudan." The inscription is incised on a Roman-period architectural fragment. Its decipherment led to a great deal of confusion until recent excavation could demonstrate that a resettlement and rebuilding occurred at the site in the late Byzantine–Early Arab period.

Excavations conducted in 1980 and 1981 were sponsored by the American Schools of Oriental Research and directed by Eric M. Meyers. They focused on the synagogue and its building context, on areas to the northwest presumed to be domestic or agricultural/industrial, and on a smaller area to the southwest in front of the synagogue entryway that did not appear to be a "public" space. Very little debris had accumulated on the site, which is located in a very isolated spot in a reforested area of the Safed mountains. Avigad had



NABRATEIN. Figure 1. *General view of the synagogue.* (Courtesy E. M. Meyers)

removed the incised lintel to the Israel Museum, but its findspot was known; the central portal of the synagogue on the south side was visible.

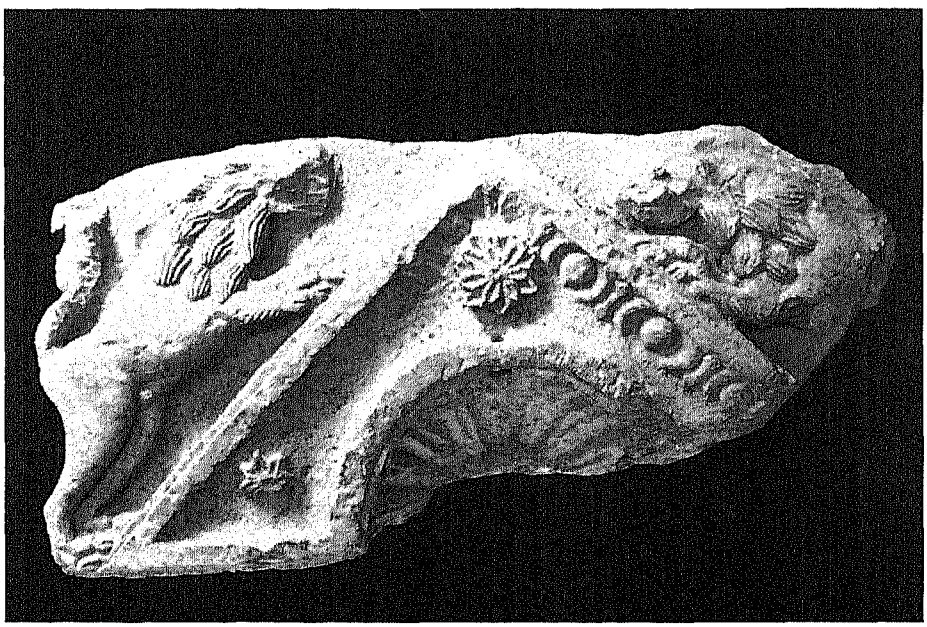
Results of the excavation of the synagogue area were surprising and significant. A series of increasingly larger buildings had been built there, which stratigraphic excavation revealed. The oldest and smallest building, synagogue I, dated to the second century CE (c. 135–250), is the oldest post-70 CE, securely dated synagogue in Israel. [*See* Synagogues.] Its dimensions are 11.2 × 9.35 m; its entrance is in the southern wall; and it is a broadhouse building. Benches along its eastern and western walls utilized elements of the older structures below it. It probably had four internal columns, but there is no solid evidence for them in this period. The roof span, however, is sufficiently long to suggest columns. Two stone bemas, or platforms, adorned the southern wall, and the possible imprint of a reader's platform was detected in the plastered floor.

Synagogue II (c. 250–363) was converted to a basilica with six columns (11.2 × 13.85 m), increasing the internal space of the building by 48 percent (see figure 1). The twin bemas were extensively decorated in this phase. The bema at the southwest is adorned with a beautiful Torah shrine whose gabled roof was supported by two rampant lions with a niche for the eternal light carved as a half dome or shell in the key of the pediment. This unique discovery resolved the long-standing question about where in ancient Sacred Jewish architecture the Ark of the Law had been placed (see figure 2). The second bema, in the southeast corner, may have held a menorah or served as the reader's platform.

It is clear that the site was abandoned in about 350–363 as a result of economic hardship and the earthquake of 363. The synagogue was rebuilt in the final phase of occupation, as is demonstrated by the inscription on the lintel (i.e., 564), which lasted into the eighth century, or about 700, when synagogue III was enlarged to an eight-column basilica (11.2 × 16.8 m), 21 percent larger than in the previous phase. A portable wooden Ark of the Law was used in this final phase of the synagogue. This surprising rebuilding, after an abandonment of almost two hundred years, suggests that there was some sort of communal remembrance of the synagogue ruin, which is in keeping with Jewish custom.

The best-preserved Early Roman remains from the site came from the large structure attached to the perimeter wall on the northwest of the synagogue and some 15 m beyond the western areas adjacent to the synagogue. The bedrock installations suggest that the rooms there were basements remodeled and reused in the late second–third centuries. It is not clear whether the area was industrial or domestic. The site's relatively small size (less than a hectare) suggests that the village was not much more than a way station connecting inland Upper Galilee with the nearby Jordan Valley via Wadi Dalton.

The area southwest of the synagogue produced a unique Late Byzantine ceramic piece that depicts the Ark of the Law with the eternal light. The room in which it was found may have served some liturgical function in connection with the synagogue: it may have been where the washing of the feet of the priests took place. The area immediately to the west of the synagogue produced several architectural frag-



NABRATEIN. Figure 2. *Fragment of the Torah Shrine ("Ark").* (Courtesy E. M. Meyers)

ments of interest: part of a lion's body, a lamb's head, and a bird's head, suggesting a loosening of the conservative Jewish attitude toward representational art in the Byzantine period. Numerous impressed sigillata bowls with animals were found in a Late Roman or Byzantine context.

The results of the Nabratein excavations modestly revised views regarding conservatism in Upper Galilee in the Roman through the Byzantine periods, with respect both to art and trade. Because of its location so close to the Jordan Valley, it would not have been oriented to trade with the Phoenician coast. The material culture of the site reflects all of the changes above. Surface sherds, which may have been washed in from the hills above, indicate the presence of an earlier occupation in the area in the Early Bronze Age II–III, Iron II, Persian, and Hellenistic periods. Medieval sherds, from after 700, were found at the second site, some 250 m to the southeast, and dated to the early and late Arab periods.

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NAG HAMMADI, city in southern Egypt near discovery site of important Coptic Gnostic texts (26°03′ N, 32°15′ E). The name *Nag Hammadi* has become popular in New Testament studies through its association with the Nag Hammadi Papyri, a collection of Gnostic documents found some miles from Nag Hammadi in Upper Egypt. Being the major urban center in the area, however, Nag Hammadi has been identified as the site of discovery. This small city is located on the west bank of the Nile River, 51 km (32 mi.) northwest of Luxor by a direct route. The discovery was made at the base of Jebel et-Tarif, the high desert cliff face on the north side of the Nile River. Villages in this area between the Nile and the cliff are (from west to east) el-Kasr, el-Busa, Hamra Dom, Sheikh Ali, and Abu Manaa.

In 1945, while digging near Hamra Dom for *sebakh,* a soil mixture used as fertilizer in the Nile Valley, a farmer found a grave containing a skeleton and a jar containing thirteen codices with 1,153 surviving pages, which are now known as the Nag Hammadi papyri (also called the Gnostic papyri). El-Kasr is the ancient site of Chenoboskion, hence the earlier association of the find with this name. Chenoboskion was the site where St. Palamon established one of the first monasteries in Upper Egypt. In the early fourth century CE Pachomius, after a brief association with Palamon, founded his own monastery at Tabennese and later his larger monastery at Pabau (modern Faw Qibli), located about 17.6 km (11 mi.) east of Nag Hammadi on the north side of the Nile. A major phase of the Nag Hammadi excavations focused on this Pachomian monastic complex at Pabau.

Four major seasons of work were conducted from 1975 to 1980. The excavations were organized by James M. Robinson; Torgny Säve-Söderbergh and Bastiaan Van Elderen were the field directors in 1975, and in succeeding seasons Van Elderen served as head. Peter Grossmann of the German Archaeological Institute in Cairo joined the staff in 1976 as chief architect.

The work of the first season was located in the area of Jebel et-Tarif where local people indicated the discovery was made. A major part of this season involved the clearance of six of the more than 150 caves at the middle or top of the cliff face of Jebel et-Tarif. One (T73), a previously published sixth dynasty (c. 2300 BCE) tomb of the provincial governor Tjauti, proved to have lower chambers, previously unknown, with extensive reliefs and hieroglyphs. Some smaller tombs also high up on the cliff face belong to the first centuries CE. A burial cloth found in T117 was dated to the fifth century CE by Carbon-14 testing. Some caves were occupied, presumably by anchorites, during the early Christian centuries. One cave (T8), with the opening lines of the *Book of Psalms* in Coptic inscribed on its walls, was dated to the late sixth or early seventh century by the evidence of coins, epigraphy, and ceramics. In none of these excavations, however, was there clear evidence for the findspot of the codices.

In the second season (1976) the major activity was the excavation of the large monastery-basilica complex of Pachomius in Faw Qibli. The proximity of this complex to the area where the papyri were found suggests that it could throw some possible light on the early Christian movements in this area. Over a wide area on the edge of the village lie the architectural remains, chiefly pillars, of a large building. Seven trenches or squares were sunk in various parts of the site to ascertain the stratigraphy of the area and the dimensions of the major structure.

These probes revealed that the structure was a very large five-aisle basilica. Below these fifth-century ruins two earlier occupation levels were identified: one was a smaller building dated to the fourth century and the other a large late third-century storage room. In addition, in a stratum below this building traces of another building complex, possibly dating from the third century, were found in various parts of the site. The destruction of the basilica, as attributed in literary

sources to Khalif el-Hakim in the eleventh century, was confirmed by a destruction level with an ash layer on which architectural members had toppled and building debris had accumulated. This layer was dated by its pottery to the eleventh century.

In the third season (1977–1978) ten new trenches or squares were opened at the site of the basilica of Pachomius. The uncovering of the foundations and lower courses of the north wall, the south wall, and the east wall including the northeast corner provided the dimensions of the basilica—75 m (246 ft.) long and 37 m (121 ft.) wide—which proved to be the largest ancient church in Egypt identified to date.

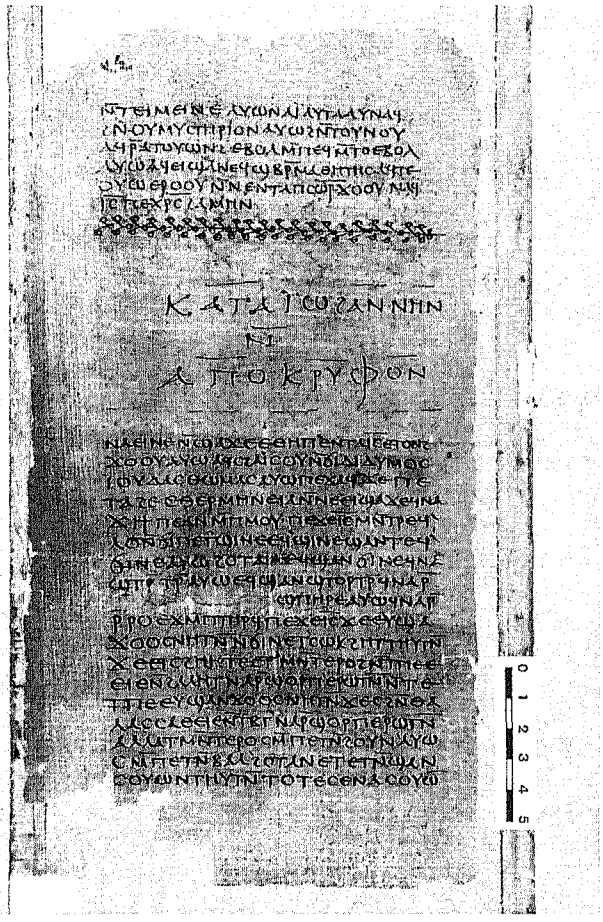
In the fourth season (1979–1980) eleven new trenches or squares provided additional and new information about the fifth-century basilica and fourth century-building below. Ceramic evidence dated the latter to the fourth century. Correlated with the literary evidence, this building would be the structure built by Pachomius, and the fifth-century basilica would be the structure built by his followers.

In 1980 a team under the direction of H. Keith Beebe as field director conducted a survey of the village of el-Kasr (ancient Chenoboskion) and environs to assess the archaeological remains and the feasibility of further archaeological work. The team identified extensive remains dating from the Roman and Byzantine times.

In addition to a survey of the nearby monastery of St. Palamon, the team also investigated the Wadi Sheikh Ali. In this wadi was located a site with numerous graffiti-like inscriptions. Dozens of Coptic inscriptions were found and additional pharaonic drawings and inscriptions even yielded a cartouch of Menkaure, pharaoh of the fourth dynasty.

The Bodmer papyri were found about the same time as the Nag Hammadi papyri. This collection, named after Martin Bodmer of Geneva, Switzerland, who acquired most of the codices, contains biblical texts, classical texts, early Christian literary texts, and some non-literary texts. Among the biblical texts are some of the earliest sizable copies of New Testament books—*Luke* and *John* (P^{75}), *John* (P^{66})—dating from about 200 CE. The precise provenance of this collection is not known, but local tradition places it near the Pachomian monastic complex, possibly in the Wadi Sheikh Ali.

The findspot of the Nag Hammadi papyri was not verified by the excavations and surveys discussed above. In fact, subsequently in 1988 and 1990 Mohammed Ali suggested another site as the findspot, located approximately one mile northeast from the previous suggestions. This latest suggested site has not been excavated, although its environs are intriguing. Nevertheless, the excavations have set some parameters regarding the findspot and the local Gnostic movement. There is no evidence of a community, settlement, or cemetery in this area. It appears that the grave found in 1945 was a single burial in the low desert. Any suggestion of the size of the Gnostic movement in this area is speculation.



NAG HAMMADI. *The opening page of the Coptic Gospel of Thomas.* (Courtesy ASOR Archives)

Furthermore to claim that the Pachomian monastic compound was Gnostic ignores the close relationship between Pachomius and the Egyptian archbishop Athanasius, who at one time was hiding at the Pachomian complex. Furthermore, the suggestion that the Bodmer papyri were found in this area (possibly in the nearby Wadi Sheikh Ali) implies that there was a strong anti-Gnostic spirit in this vicinity because there are works such as *The Apocryphal Correspondence between the Corinthians and Paul* of this sentiment in the collection of the Bodmer Library. The convergence of the Bodmer Papyri (as early as late second century), the Pachomian monastic complex (fourth century), and the Gnostic papyri in close proximity provides some challenging and interesting problems of integration and historical sequence. Judgment about the Gnostic movement in Upper Egypt must take into account the above data.

The large size of the Pachomian monastic complex confirms the allusions in literary sources to the extent of the monastic movement in Upper Egypt. Along with the contemporaneous extensive rise of monasticism in Lower Egypt (as developed by St. Antony and in the settlements in Wadi

'n-Natrun), this further confirms the major role that monasticism played in Egyptian Christianity.

In view of Athanasius' contacts with the Pachomian monastic movement, the issuance of his canonical list in the Easter letter of 367 may have occasioned the removal of the extracanonical Gnostic papyri and their owners from the Pachomian community. This library may then have been buried with its exiled owners who had settled in the cliff area of Jebel et-Tarif. This hypothesis must await additional surveys and excavation of sites in the vicinity of Nag Hammadi for further confirmation. This area has not been systematically and scientifically surveyed nor additional sites stratigraphically excavated.

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BASTIAAN VAN ELDEREN

NAHAL OREN, prehistoric site located south of the Carmel ridge, close to the outlet of the Oren valley onto the coastal plain. Excavations at the site were begun by Moshe Stekelis in 1942 and were continued from 1954 to 1960 by him and Tamar Yizraeli-Noy, and in 1969–1970 by Noy, Eric Higgs, and Anthony Legge. Because the cave floor is buried under large limestone boulders, the main archaeological operations were conducted on the terrace, over an area of about 400 sq m. Nine layers were uncovered: IX–VII, Kebaran; VI–V, Late Natufian; and IV–I, Pre-Pottery Neolithic A (PPNA) and Pre-Pottery Neolithic B (PPNB).

The Kebaran layer has been radiocarbon dated to 18,250 ±350 to 15,800 ±300 BP. Although a small stone wall was exposed in this layer, most of the remains were animal bones and lithic industries. The Kebaran industry is dominated by microliths, the most common types of which in the lower levels are the obliquely truncated backed bladelets and micropoints. In the uppermost levels, triangles and backed lunates predominate. Among the animal species represented are fallow deer, which indicates that the immediate environment of Mt. Carmel was still covered by oak forest; and gazelle, which were probably hunted in the parkland of the coastal plain. As a result of the lowering of the sea level during the glacial age, the coastal plain was at least 10 km (6 mi.) wide.

Nahal Oren was unoccupied during the Early Natufian period. The Middle and Late Natufian are represented at the site by flimsy house foundations, well-built terrace walls, small installations, postholes, and a large cemetery. Most of the occupational deposits abut three terrace walls, which were erected in a west–east direction. Deep mortars, also known as "stone pipes," were imbedded in secondary positions in these walls. Small mortars, stone bowls, and numerous pestles, as well as decorated basalt shaft straighteners, were found. The cemetery contained numerous flexed burials with the remains of forty-five humans, ten of which were children. In a central area a large hearth, more than a meter in diameter, was uncovered, surrounded by flat limestone slabs. Three postholes were uncovered nearby around the fireplace.

The Natufian lithic industry is dominated by backed lunates, many of which were made by the microburin technique. Sickle blades, burins, endscrapers, and perforators comprise the rest of the assemblage.

The few art objects recovered include a long bone depicting an ungulate on one end and a human head on the other; a limestone piece interpreted as depicting the heads of a dog and an owl; a gazelle head carved in bone; and a stone figure smeared with red ocher, representing an unidentified animal head but resembling a baboon. Among the objects used as body decorations were bone pendants and numerous dentalium shells.

Layers IV and III contained assemblages associated with the PPNA. The nature of layer IV is unclear but may be related to the Khiamian, the earliest phase within the Neolithic sequence. Layer III contained the remains of twenty domestic structures, often attached, arranged on four terraces. The houses/rooms are 2.5–4.0 m in diameter, with entrances facing south. On the well-preserved floors, rounded hearths surrounded by small stones were uncovered, and next to each was a limestone slab with two to four cup holes. Large, flat, and round grinding stones, as well as rubbing stones, were found, as were two schematic figurines

interpreted as representing humans. PPNA burials were rare at Naḥal Oren. Of those burials found, in only one was the skull removed. In this way, the PPNA here differs from contemporary farming communities in the Jordan Valley. [*See* Jericho.]

The layer III lithic industry is comprised of a few arrowheads, ax/adzes, sickle blades, perforators, retouched blades, and a considerable amount of debitage. The Tahunian axes are characterized by a working edge shaped by transverse removals. Among the sickle blades, Beit Ta'amir knives should be noted, as well as el-Khiam arrowheads. Small obsidian blades originated in central Anatolia. It is, however, extremely difficult to determine what part of the microlithic tool assemblage belongs to the PPNA because the leveling of the terraces caused the mixing of Natufian and PPNA artifacts.

Layers II and I contain the remains of small rectangular houses. The remains of six rectangular buildings were exposed, with very few finds. Among the most important objects were querns and rubbing stones. The lithic assemblage includes arrowheads of the Helwan types, Jericho points shaped by pressure flaking, elongated sickle blades with short tangs, and Tahunian axheads, as well as some polished bifacials. The burials are mostly of adults, from which the skulls have been removed. Among the animal remains are ovicaprids, probably domesticated goats, wild boar, gazelle, and some deer.

It seems that Naḥal Oren represents the spreading in the process of acculturation of cultural traits that had originated in the "corridor" of Jericho to the Damascus basin. The small village or hamlet in Naḥal Oren kept its traditional Natufian structure during the PPNA and only modified its architectural forms later, during the PPNB.

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OFER BAR-YOSEF

NAJRAN (ancient South Arabian, NGRN; also identified in pre-Islamic literature as Ra'ma), also known as al-Ukhdud ("pit," or "trench") in reference to the Qur'anic surah and the Christian martyrdom (see below), a modern oasis located on the fringes of the Arabian shield and on the drainage network of Wadi Najran, which permits large-scale agriculture to the west and south (17°32′ N, 44°12′ E). The wadi disappears eastward into the Rub al-Khali sands. Currently in Saudi Arabia, its ancient historical ties and ecological orientation lie within the framework of ancient South Arabian civilization. Writers from Strabo, Pliny, and Ptolemy (who called it Nagrana) to al-Hamdani, al-Istakhri, and Carsten Niebuhr (1792) have remarked on the area's agricultural and commercial wealth.

Arab travelers referring to the site in 1070 (al-Bakri) and 1230 (Ibn al-Mujawir) suggest the ancient site was abandoned by the early second millennium CE. Niebuhr was the first Westerner to mention the site (1792, p. 61), but it was not visited by a western explorer until Joseph Halévy (1872) in 1870. The next formal investigation of the site was in 1936: St. John Philby described the central walled area, the palatial buildings, the surrounding moats, the cemetery on the south side of the walled area, and the numerous inscriptions in Epigraphic South Arabian (1952, pp. 265–266). His comments on a possible earlier domed structure being a Christian church tied into earlier accounts of the presence of "Omar's mosque" and even the famous Ka'ba of Najran (Shahīd, 1979, pp. 70ff; Zarins et al, 1981, pl. 9). In 1951, Philby revisited the site with the Philby-Ryckmans-Lippens expedition and a more detailed plan of the site was made (Ryckmans, 1981, p. 63). The site was briefly examined in 1967 by Gus Van Beek.

In 1980, the Comprehensive Archaeological Survey of Saudi Arabia, led by Juris Zarins, visited the site to determine the cultural sequence and site layout. A composite section suggested more than 8 m of deposit. In one small sounding, more than 3 m of stratified materials was excavated. Carbon-14 dates from the sounding indicate a range of occupation from 535 BCE to 250 CE for the central citadel area (Zarins et al., 1981, pp. 23–24, pl. 7). Fragmentary Neolithic material was found, but no clear evidence of the Bronze Age (Zarins et al., 1983, p. 36 n. 1). The team revisited the site in 1982 to examine the area in more detail.

Based on the comments and plans of earlier researchers (Philby, 1952; Ryckmans, 1981; Van Beek, n.d.; Zarins et al., 1981; Doe, 1983, pp. 150–152), the site can be divided into several subareas. The citadel area (240–250 m on a side, covering 12.8 acres) is defined by walls of fitted and cut masonry. Its uneven bastions and recesses are typical of South Arabic building (e.g., at Shibam). The straight-axis gate is on the west. The house layout is also typical of South Arabian types (Zarins et al., 1983, pls. 20–21), and their hammered, marginally drafted masonry with inscriptional materials is also well attested (Zarins et al., 1983, pls. 17–20, 34). The moat on at least two sides of the area may be associated with the modern arabic name (al-Ukhdud). The cemetery area noted by others and mapped in 1982 (Zarins et al., 1983, pl. 22) may be the internment area for the Ukhdud settlement (Shahīd, 1979, p. 42), based on the presence of Byzantine period ceramics. Ukhdud (South), a defined area of South Arabic houses, also contained the remains of a seil dam (i.e., for control of flash-flood waters) with accompanying Epigraphic South Arabian inscriptions. The bulk of the site is on the northeast, as the town expanded in the South Arabic, Byzantine, and Islamic periods (Zarins et al., 1983, pp. 22–27, pl. 16).

The excavation area was expanded in 1982 (Zarins et al., 1981, pl. 7; 1983, pl. 23) and a total area surface-collection project begun. The project revealed that the area's South Arabic wares could be divided into at least three subperiods between 500 BCE and 300 CE (Zarins et al., 1981, pp. 28–32), followed by a recognizable Byzantine corpus from between 300 and 700, an Early Islamic (Umayyad/ʿAbbasid) corpus, and, finally, a post-ʿAbbasid corpus of minor importance (Zarins et al., 1981, pp. 32–35; for drawings, cf. Zarins et al., 1981, pls. 22–25; 1983, pls. 24–28). Industrial activities were carried out at the site: copper and iron metallurgy and casting, flint hoe production, steatite working, ceramic production (kilns), and production of huge grinding stones for use in presses and mining (Zarins et al., 1983, 35–36).

Najran was an important commercial center and the northernmost major South Arabian center for transporting incense north along the western Arabian road (Mecca, Yathrib Medina, al-ʿUla/Dedan, Hegra, Tayma', Gaza) and northeast along Jebel Tuwayq (Qaryat al-Fau, Ayun/Layla, al-Yamama, Thaj/Hina). [*See* Mecca; Medina; Dedan, Tayma'; Qaryat al-Fau; Thaj.] Incense burners and inscriptions, particularly the use of the *WD'B* formula praising the deity Wadd at Najran, confirm that Najran was a major handling post for incense, particularly in association with Minaean activities (Doe, 1979; Zarins et al., 1983, pl. 29; Pirenne, 1977). Obsidian was also traded there.

The site became associated with the growth of strong Monophysite Christian belief and their martyrdom, under the Jewish Yemenite king Dhu Nuwas, in 523 CE, is reported in *Martyrium Arethae* (Shahīd, 1971, 1979, 1994; Trimingham, 1979, pp. 287–307; De Blois, 1990). The Qur'anic verse (surah 85.4–7) referring to al-Ukhdud, is taken to refer to these events: the bodies of the victims were thrown into a large trench or pit. Examination of the moats, tumuli, and associated possible Christian-period buildings in the area (Zarins et al., 1983, p. 27), coupled with the strong Byzantine-period ceramic corpus (see above), suggests that future archaeological work may confirm the historical accounts.

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JURIS ZARINS

NAMES AND NAMING. Names are personal (anthroponyms), geographic (toponyms), or divine (DN). They are recorded in various scripts and languages. Most ancient Near Eastern names are Semitic. The remainder are Hamitic (notably Egyptian) and Indo-European (Anatolian and Indo-Iranian) or belong to unclassifiable languages (e.g., Sumerian, Elamite, Hurro-Urartian.).

In antiquity a personal name is not merely a means of identification, but is also considered to be an expression of its bearer's character. Generally, a male is known by his name and patronym. Only rarely is he known by his mother's name. A wife is mentioned in texts together with her husband's name and a slave with his master. Few individuals in Ugarit and early monarchic Israel are known only by their patronyms. Several Israelite personalities, whose names are known, are addressed only by their patronyms—a derogatory usage on the part of their adversaries. In a few cases in the Hebrew Bible, a person is introduced by his full name at the beginning of the narrative and by a short form of his name (a hypocoristicon) in the rest of the story. Many individuals are listed without their genealogy. Extant Mesopotamian and Levantine genealogies generally consist of two generations. The exceptions are Chaldean and Achaemenid Babylonia, where most urbanites are listed with their patronyms and their ancestors' names. Elsewhere, long genealogies are reserved mostly for important personalities. Genealogies are rare in the Old and New Egyptian kingdoms but are common from the Saitic period onward (the longer ones are probably unreliable).

Generally, the newborn is given his name shortly after birth by his mother (Israel and Egypt) or father (Sumer). During his lifetime an individual may acquire an additional name, usually motivated by his extraction, occupation, personality, or physionomy; throne names were current in certain ancient kingdoms. A personal name can be theophoric or "basilophoric" (containing a numen or a royal name, respectively) or profane. From a structural point of view it can be either compound, noncompound (including hypocoristica), or abbreviated. All but atypical names belong to cer-

tain languages with various degrees of probability. Almost all the ancient textual corpora contain a small percentage of "atypical" names of various patterns (monosyllabic and reduplicated, anthroponyms including names with identical two final syllables).

Naming (name giving) may be motivated by the circumstances of birth (exclamation names on the one hand, and certain theophoric names invoking a deity with regard to the birth and the newborn on the other), as well as by the unity and succession of the lineage. Naming a child after a grandfather (papponymy) appears in the ancient Near East as early as the first half of the second millennium BCE. The practice became more frequent in the ancient Near East after the second half of the first millennium BCE. It is not documented among preexilic Israelites and, strictly, not among postexilic ones, either, if the highly elaborate genealogies (in all probability invented by the Chronicler or his circle) are ignored. At most, few postexilic Israelites are named after their grandfathers.

Most Mesopotamian individuals are recorded in juridical, administrative, and epistolary documents, whereas the prosopographical Levantine documentation is mainly from seal impressions, bullae, graffiti, ostraca, and votive inscriptions (in Egypt it is mainly from papyri). In order to ascertain ethnolinguistic distributions, not of the number of individual names of a given dialect, but of the number of persons bearing names in that dialect should be calculated. If the name of an individual is indicative of his or her ethnolinguistic affiliation, these statistics are the closest approximations achievable regarding the relative percentage of the ethnolinguistic groups in a given region. However, in most cases it is impossible to draw conclusions on the level of the individual, as relatively few people are listed with their gentilic or place of origin. A prosopographic sampler from a given site does not refer exclusively to residents, but also to visitors and foreigners (especially in capitals and centers of international trade). Except for a very few special cases (such as Puzrish-Dagan—that is, modern Drehem), most individuals were residents of the site in question or its region. The overwhelming majority of the individuals mentioned in a given corpus belonged to the local group, unless there is clear evidence to the contrary. For instance, no more than 10 percent of the more than ten thousand individuals recorded in Babylonia between 580 and 480 BCE were strictly non-Babylonians (actually it was much less than 10 percent, as the Arameans were local). Most individuals in the Hebrew Bible were Israelites.

Like anthroponyms, toponyms (including microtoponyms), or place names, are a rich and enduring source of ethnolinguistic, historical, and folkloristic information. Place names, especially those referring to geomorphologic features like hydronyms and oronyms (e.g., Jordan and Tabor, respectively)—but hardly microtoponyms—are generally more archaic than personal names. They often preserve otherwise unretrievable information concerning early—and often extinct—linguistic strata.

The structure of place names resembles that of personal names, but the distribution of their various patterns is different. Because they have a special function, their topics also generally differ. The following short description is based mainly on the toponymic inventory of Syria-Palestine where the relevant ancient documentation (about one thousand pre-Hellenistic toponyms) is especially abundant and shows a high degree of diversity. Moreover, the later and even modern toponymy of the Syro-Palestinian limestone massif has a sizable hard core of ancient survivals. This is in sharp distinction to the Mesopotamian alluvium, where ecological (the ever-changing arable terrain) and historical factors resulted in much toponymic discontinuity.

Some sentence names are anthroponyms used as unmodified toponyms: *ʿm ʿd* and *Yqmʿm* in the Hebrew Bible. Relatively few sentence toponyms describe configurations of the terrain. Most composite toponyms are genitive compounds in which the *nomen regens*, or essential name, is a "ground word" functioning as a geographic definer and followed by a *nomen rectum*. The latter can be an appellative, anthroponym, or divine name. The most frequent ground word is the common Semitic term *byt:* "house;" "temple," "domain." The other ground words (e.g., *ʿyn*, "source" and *bny*, "sons of"—originally a tribal name) are much less common. Noncompound toponyms are, like the corresponding anthroponyms, of various nominal formations. Many noncompound toponyms end in the plural suffixes *-ā/ōt* (even of DN: *ʿntwt, ʿštrwt, Bʿlwt*), and *-īm/n*, as well as in the locative suffix *-aym/n* and *-āʰ*. These suffixes are very rare in genuine anthroponyms. All the toponyms can belong to the following semantic-topical categories:

1. Topographic feature (e.g., *gbʿ(h)*, "hill") or position (e.g., *mṣph* "watchtower," "lookout point"; *byt hʿmq*, "house/domain of the valley"), nature of the soil (e.g., *ṯwb, špyr*, "good"), watercourses and sources (e.g., *'bl, 'pq, ḥmt*)
2. Buildings and installations (e.g., *gdr, ḥṣr'dr/'sm*), "fortifications" (e.g., *bṣr, šʿrym*), and worship sites (open or built up, e.g., *bmwt, glgl, qdš, mš'l, 'št'l* [cf. Punic for beg and beseech])
3. Flora (e.g., *bṭnym*)
4. Fauna (e.g., *ḥṣr swsym*)
5. Anthroponyms (many second components of ground words).

Moreover, numbers 3–4 may not be primary in many cases but simply an anthroponym deriving from a plant or an animal—as in *(byt) ḥglh* and *ḥṣr (šwʿl)*.

A comparison of the percentage of each category in later toponymic documentation groups—namely, those of Hellenistic-Roman (more than 140 new toponyms) and Late Ottoman Palestine—reveals only relatively small differ-

ences. These differences are mostly in the realm of human activity as well as in theology. Many fewer place names contain divine names after the Hellenistic period, as a result of the diffusion of monotheism; this is partly remedied by the abundance of saints' toponyms in Byzantine and Islamic Palestine. The toponymy of Palestine the late Ottoman period shows a higher percentage of anthroponyms—an accumulation of ancient layers and a great number of tribal names—as a result of a continuous and massive penetration of seminomads. Thus, the abundant documentation (of about six thousand toponyms) of Palestine in the 1870s can be used as a legitimate comparable corpus for clarifying the functions of ancient Palestinian toponymy.

Theophoric, or divine, elements in names can identify specific deities (Marduk, Sin, Shamash); can be general, using the appellative *ilum*, "god" (pl. *ilū;* or *ilī, ilšu* as a protective deity); can express terms of kinship; or can include other numina (toponyms including temples and sacred objects, for example). In several names the theophoric element is replaced by a personal pronoun (you, he, she, him). Most intelligible personal names in the ancient Near East are theophoric, expressing religiosity and the popularity of the cult of certain deities. It is plausible that bearers of theophoric names were under the protection of the respective deity, but the issue is complicated.

Individual onomastica (corpuses of names) can be described in terms of linguistic affiliation. The discussion that follows is arranged accordingly.

Semitic Onomasticon. The most important Semitic language from the onomastic point of view is Akkadian. The only assured representative of the East Semitic subgroup, its onomasticon has the longest duration—from about 2500 BCE down to the beginning of the Christian era (with later survivals).

The most important type of names in Akkadian are verbal sentence names. The order in early Akkadian (Old Akkadian through Old Babylonian [OB]) is normally verb (imperfect ["preterit"]) as predicate followed by DN as subject. The inverted order occurs only if the verbal form is a ventive. This position (predicate-subject) accords with West Semitic onomastica of the same period (see below). The position changes in post-OB times when there are more Akkadian names with the order subject-predicate (imperfect verb). Again, this tendency is shared by most of the later West Semitic onomastica. Abbreviated names are shortened from compounds. Contrary to male names, most female names in Akkadian and other ancient Semitic onomastica are profane (some based on jewels and related items as a kind of endearment), with a fair percentage of "substitute" names. Several female anthroponyms are genitive compounds, like *Amat/Mārat*-DN ("maid/daughter of [Divine Name]"). Many compound names borne by Semitic females are grammatically masculine; instances of gender congruency are rare. (Note the Septuagent's Elizabeth for *'lyšb'* in the Hebrew Bible.) Compound names with two predicates are common in Akkadian but extremely rare in West Semitic.

Eblaite, the second oldest Semitic language, has a considerable number of names, but its classification within Semitic is not yet established. All the texts are from Ebla (Tell Mardikh). Their geographic horizon is roughly between Byblos in the south, Harran in the north, and the Trans-Tigridian regions in the east. Eblaite in this context is necessarily a rather vague designation: the names may belong to several different early and as yet ill-defined Semitic dialects. Names with a verbal form of the prefix conjugation + subject (DN or, conceivably, a divine epithet) are much more common than the inverted order, resembling the situation in early Akkadian and West Semitic. Other Semitic languages belong to the West Semitic subgroup.

Amorite is the earliest West Semitic dialect. It is recorded from about 2100 to about 1180 BCE. Most names are contained in Old and Middle Babylonian texts from Babylonia, the Jezireh, and northeastern Syria. There is not a single Amorite text. The huge Amorite onomasticon (about ten thousand names) is recorded in cuneiform, a writing system that inadequately transmits the inventory of early West Semitic consonantal phonemes. In most cases, cuneiform does not indicate either vowel length or consonant gemination. This is only partly remedied by Egyptian transcriptions (beginning in c. 1800 BCE) of names and words from Canaan.

Early Canaanite can barely be separated from Amorite before the Amarna age because the only criterion—the Canaanite shift of *a* to *o*—was not completed much before 1400 BCE. It is therefore used here only for the sake of convenience. The handful of Late Old Babylonian texts from Palestine contains West Semitic names that cannot be distinguished from Amorite names. The very restricted onomasticon of the Proto-Sinaitic and Proto-Canaanite inscriptions is of the same type. However, the early Canaanite alphabet—and to a great extent Egyptian script—cannot express vowels. Canaanite names in the Amarna correspondence are recorded in Peripheral Middle Akkadian.

Ugaritic was recorded in the fourteenth–thirteenth centuries BCE in the small kingdom of Ugarit on the northwestern coast of Syria. It is written in an invented cuneiform alphabet that transmits the consonantal phonemes adequately, but the vowels only very partially. As far as the abundantly documented local onomasticon is concerned, the alphabetic limitations are in part palliated by the presence of a large corpus of Akkadian texts there. Ugaritic is not a straightforward Canaanite dialect but can be regarded as belonging to the northwestern end of the Amorite dialectal continuum. A small percentage of the names refer to people from Canaan and other Syrian regions. Many of the texts unearthed in the course of controlled excavations belong to archives, which facilitates prosopographic research.

Following a gap in documentation for Syria-Palestine, a negligible number of names are recorded in early Phoenician

alphabetic script from the turn of the first millennium BCE. This alphabet was later adopted by both the Arameans in the Jezireh and Syria and by speakers of Canaanite-Hebrew dialects in Palestine and southern Transjordan. Individual scripts do not begin to differentiate until the mid-ninth century BCE. Presumably, script originally expressed the consonantal phonemes of a certain Phoenician dialect, whereas other Northwest Semitic dialects probably had additional consonantal phonemes. These additional phonemes remained unexpressed in script but occasionally occur in transcriptions. All the Canaanite-Hebrew dialects have more or less distinctive onomastica.

Phoenician names are recorded in Phoenician, Akkadian, Greek, and Cypriot transcriptions from about 1000 BCE to the beginning of the Christian era (with some isolated occurrences as late as c. 200 CE). The language later died in the mother country, but Punic, which was spoken by descendants of Phoenician colonists in the western Mediterranean, was still alive as late as the Byzantine period (as Neo-Punic; Phoenician names also appear in Latin transcription). The Phoenician-Punic onomasticon contains hundreds of names referring to thousands of individuals. The poorly documented onomasticon of Philistia is probably very close to Phoenician.

(North-)Israelite and Judahite Hebrew have the largest Canaanite corpus and the richest and most diverse source of data for the Northwest Semitic onomasticon. The first occurrence of the name Israel itself is from 1207 BCE. However, the ensuing documentation is very sparse until the beginning of the eighth century BCE (mostly in the Samaria ostraca). [*See* Samaria Ostraca.] The documentation in Israelite Hebrew ceases after 720 BCE. (The later material from Samaria cannot, strictly speaking, be regarded as an uninterrupted continuation of the North Israelite tradition.) The documentation from Judah is very poor before 720 BCE, but it becomes abundant after the destruction of Samaria. It reaches its peak just before the destruction of Jerusalem in 586 BCE. At least 2,500 individuals, bearing hundreds of different names, are recorded, most of them in late preexilic Judah. The sizable Jewish onomasticon from Achaemenid Egypt and Babylonia is in the same onomastic tradition. The maximum number of Israelite individuals mentioned in the Hebrew Bible is 1,947. Most of them may have lived between 1000 and 300 BCE, and they bore hundreds of different names.

Ammonite, Moabite, and Edomite refer to restricted textual corpora of Canaanite-Hebrew ("fringe Canaanite") from southern Transjordan. Ammonite is written in a variant of Aramaic script, whereas Moabite and Edomite had their own variants of the Phoenician script. There are nearly one hundred Ammonite names (mostly on seals); Moabite has fewer than fifty and Edomite even fewer. The chronological range of these dialects is between about 800 and 500 BCE. Only Edomite survived any later, but merely in the Achaemenid northern Negev and Hellenistic Idumea ("Idumean").

Early Aramaic texts contain a restricted number of anthroponyms. Aramaic texts after 720 BCE and imperial Aramaic documents contain many non-Aramaic names because Aramaic became the language of communication in the vast territories of the Late Assyrian, Neo-Babylonian, and Achaemenid empires. The main sources of the Aramaic onomasticon are the Neo-Assyrian and Neo-Late Babylonian documents and, after the Macedonian conquest, the Greek and then the Latin transcriptions. Altogether there are several thousand names.

Several thousand names are recorded in various ancient Arabian dialects—roughly, from north to south, Safaitic, Thamudic, Taymanite, Lihyanite, Dedanite, Hasean, Minean, Sabean, Qatabanian, Ausanian, and Ḥadhrami, as well as in pre-Islamic classical Arabic. Most of the pre-Islamic Arabian texts consist of graffiti (mainly from the Achaemenid period down to the diffusion of Islam). Earlier Arabian names (no more than one hundred) are recorded in "Proto-Arabian," Assyro-Babylonian, Aramaic, and, later on, Greek and Latin sources. The Ethiopian onomasticon is late (from the Byzantine period onward) and is therefore beyond the scope of this discussion.

West Semitic names are usually transparent as to meaning, for they consist either of a full sentence (e.g., *ntn'l*, "God has given [this child]") or of single-element names, many of which can be identified as abbreviations of sentence names (e.g., *ntn*, "has given"). These single-element names may or may not show a syllable in place of the omitted element, the so-called hypocoristic ending. The sentence names express explicitly various relationships between the deity and the name bearer, while in the single-element names the relationship is not expressed, as in the name *ntn*, historically a verbal form of which any divine name could be the subject. Because any verbal form may in theory be used for the verbal element (though in practice the perfect and the imperfect of the Qal stem are the most common), because any of a great number of nominal patterns may appear, because the order of the elements in sentence names may be reversed or one element may be omitted, and because sentence names may be either declarative or interrogative, the attested number of individual structures is immense (see Zadok, 1988, for an exhaustive listing of the structures attested in Israelite personal names). Finally, though it may be granted that most names were meaningful, one wonders how well names of which the structure is clear but which consist of an archaic element were understood (e.g., Zimri, "my protection [is (in) X-deity]," from an old root ḌMR, meaning "to protect," that was no longer current in biblical Hebrew).

The semantic-topical and theological-ideological evaluation of the ancient Semitic onomastica is necessarily based mainly on the huge, diverse, and fairly well-established Ak-

kadian documentation and much less on the West Semitic (notably Israelite) one. The chronological-historical and social backgrounds of the Akkadian onomasticon are also well known. For many Akkadian names, even the situations and scenarios (concerning mostly the childbirth naming and relationship to deities and relatives) can be reconstructed. The main theological-ideological categories of Akkadian names follow:

Forms of greeting are included in either profane sentence names spoken at the time of birth by a parent (*Balṭu-kašid,* "A healthy one has arrived") or by an older sibling (*Aḫam-aršī,* "I have acquired a brother") or theophoric names expressing joy (for the newborn). They are directed to a deity: example, *Sîn-kašid,* "O Sin; he (the newborn) is (here)." In thanksgiving names, such as the latter (generally in the third-person singular), the deity is thought of as having given the child. A name expressing a request (imperative/precative, and generally second-person singular) is *Marduk-iqišanni,* "Give me (a son), O Marduk." The request was uttered by the father before the birth and was eventually fulfilled. A wish (on behalf of the child; imperative) is expressed in *Ilī-uṣuršu,* "O my god, protect him." A complaint and a trust are expressed by *Atanah-Ištar* ("I have become tired, O Ishtar") and *Ana-Sîn-taklaku* ("I trust in Sin"), respectively. The former is motivated by an illness; the latter is placed in the child's mouth. Attribute names refer to characteristics of deities. Praise and endearment names are *Mannum-kīma-*DN ("Who is like DN?") and *Šī-ṭābni,* "She is our (spoken by parents/siblings) joy." "Substitute" names, in which the child is named after a deceased or living relative, are *Ali-ummī,* "Where is my mother?," *Erīb-Sîn,* "Sin has compensated," and *Aḫu-waqar,* "My brother is precious."

Slaves and maids were probably named (in certain cases renamed) by their masters and mistresses, respectively. Many slaves' names contain praises, wishes, and requests for their masters or mistresses, as well as expressions of trust in them. In the same manner, many names of public officials contain praises, wishes, and requests for the king, as well as expressions of trust in him. Priestesses bore more theophoric names than other females. A wide range of occupational terms is attested in anthroponyms, mostly as surnames in Babylonia (especially during the first millennium BCE). Anthroponyms denoting mental characteristics, physical traits, plants, animals, and other realia, as well as gentilics, are well represented in all the Semitic onomastica.

Hamitic Onomasticon. Egyptian, which is written in hieroglyphs and later in derived scripts, has a huge onomastic documentation from about 3000 BCE to the Byzantine period. Very few Libyan and Nubian names are recorded in Egyptian sources. The main Egyptian name types are sentences with finite verbs (in certain tense categories). The second person (singular and plural) is reserved for the imperative. Certain names contain more than one predicate. Nominal sentences contain a substantival, adjectival, or adverbial predicate. There are compound abbreviated names. Short names may or may not bear a hypocoristic suffix.

Indo-European Onomasticon. Hittite, during most of the second millennium BCE, and Luwian for the same period, but continuing into the first half of the first millennium BCE, are written both in cuneiform and hieroglyphs and contain a sizable number of names. Clear compounds are, for example, *piya-,* "give" (preceded or followed by a DN, as in Arma-piya-), the Hittite *asi-,* and the Luwian *wasu-,* "good," "dear" (preceded by DN as in *Laknasu* < *Lak(a)n-asu-*). Both name-types (sequence: subject-predicate) have Indo-European semantic-structural parallels (Greek *Theodoros/Dorotheos* and *Theophilos,* respectively). On the other hand, no such parallels are known for the many names with -ziti-, "man" (Luwian; follows theophoric elements, toponyms, or appellatives); *-muwa-* (signifying "descendance," race; possibly borrowed in Hittite from Luwian), and *-nani,* "brother" (preceded by a DN or an appellative). The fact that Hittite and Luwian stay outside the mainstream of the Indo-European onomastic tradition may be the result of the great antiquity of the Anatolian group and its relative structural isolation within Indo-European. Noncompound names end in various suffixes (either found only in anthroponymy or denoting participles) or are originally appellatives without any modification. Not a few names are originally gentilics in Hittite, Luwian, or Hattic (a non-Indo-European Anatolian language).

Other members of the Indo-European family are Indo-Aryan and Old Iranian. Indo-Aryan has left only remnants in foreign languages—primarily written in cuneiform during most of the second millennium BCE—from Mesopotamia, the Levant, and southeastern Anatolia. The Old Iranian onomasticon (c. 880–330 BCE, and 330 BCE–700 CE, Middle Iranian) is recorded on the Iranian and Armenian plateaus and, during the Achaemenid periods, in other parts of western Asia and Egypt. Indo-Aryan and Old Iranian are an important segment of the rich and well-explored Indo-European onomastic tradition. Two-stem compounds are common in both. The most common type is *bahuvrīhi:* for example, *Miθra-bānu-,* "with Mithra's brilliancy of light." A determinative compound is *Baga-dāta-,* "Created/Given by God," and related names. Compounds with a verbal form are *Dāraya-vahu-,* "He who holds firm the good."

Unclassifiable Onomastica. Sumerian has a very rich onomastic documentation from about 2500 (if not earlier) to the first half of the second millennium BCE. Many genitive compounds start with the initial component *ur,* which looks like the Sumerian appellative for "dog" but is of unknown denotation (perhaps meaning something like "belonging to [DN]"). Other initial components (all like *ur* followed by a theophoric element; the genitive postposition is generally not marked) are, for example, *ir/ir*$_{11}$ "servant," *geme,* "female servant," and *lú,* "man." Genitive constructions without "dependence terms" are ^{d}*En-lil-lá* '("the child belong-

ing") to Enlil' and *Inim-^{d}Utu,* "the word of Utu (is true)." Sentences with a predicate can contain an attribute: *Lugal-ad-da,* "the king is a father" (with a nominal predicate), *Lugal-dingir-mu,* "the king is my god" (with a possessive suffix), *Nanna-lú-du$_{10}$* "Nanna is a good man" (with an adjective as epithet). The predicate can be verbal. Sentence names can express wishes and questions. Hypocoristica are abbreviated from sentence names with omission of the subject, as in *Ma-an-si* < *Dingir-mu-ma-an-si,* or by retention of the participle only (*Du$_{10}$-ga*). Several hypocoristica end in *-mu: A-kal-la-mu,* "my dear Akalla." More than two hundred elements (mostly predicative) are contained in Neo-Sumerian names or serve as such. Flora and fauna are virtually absent in the Neo-Sumerian onomasticon.

Elamite has a sizable number of names from about 2400 BCE to the second century CE. Most compound names consist of two elements and can contain more than one theophoric element. Names with three elements are much less common than those with two. Classification is necessarily tentative. Nominal sentences may consist of substantives, substantive + adjective or vice versa *(^{f}Ri-ša-ap-^{d}la),* substantive + passive participle *(^{d}Sa-ti-šil-ha-ak)* or vice versa *(Šilhak-Inšušinak),* substantive + personal pronoun first person singular *(At-ta-u-ri),* and personal pronoun + passive participle *(Um-mu-ur-da-ik).* A present passive participle follows a substantive (theophoric element as subject) in *At-ta-me-te-en. Hu- ba-nu-du-uk* may consist of a theophoric element plus personal pronoun (*-u-*) plus passive participle (*-k*) of *tu-,* "receive," "take." Verbal sentence names consist of substantive (theophoric element as subject) and verb (mostly ending in *-s,* which marks the personal pronoun third singular: *Hu-pan-mi-ri-iš*). Many names start with *kuk,* "protection," which is followed by a theophoric element. The names look like genitive compounds (if not nominal sentences). Elamite has a sizable number of suffixed hypocoristica, short and atypical names in various patterns.

Kassite and other dialects were spoken in the Iranian plateau and its piedmont before the diffusion of the Old Iranian dialects. Because of the paucity of the material and the lack of any texts in these dialects, no coherent classification of their onomasticon is possible.

Hurrian and Urartian are related to one another. There is a relatively rich Hurrian onomasticon from the Fertile Crescent, the Armenian plateau, parts of Anatolia and the Zagros (predominantly from the second millennium BCE). The Urartian onomasticon has a rather meager documentation and is restricted to the Armenian plateau and adjacent regions during the first half of the first millennium BCE. Most Hurrian names are theophoric compounds. The most common pattern is predicate + theophoric element: *Ehli-, Eni-, Ewri (Ibri), Hišmi-, Taki-, Talmi-, Urhi-Teššup* ("*Tešup* [is] salute/god/lord/brilliant/sure/great/true; *Una-p-Teššup* [with "asservative" -p-], "Teššup [is] surely coming," *Urha-l-enni* [with "superlative" -l-], "the god [is] very steadfast"). Other well-documented elements are *ak (akai,akap),* "to bring," "to guide"; ar- "to give"; *tan-,* "to do"; *tad-,* "to like," "to love"; *hubiti,* "calf"; *keldi,* "peace" (*kili-,* "be in good state," or "peace"); *kiaše,* "sea"; *papa(n),* "mountain"; *pur(u)li,* "house" or "temple"; *šenni,* "brother;" and *wanti,* "just." They form both compounds and single-element names. Hypocoristic suffixes are *-ya* and *-uya.* There are various suffixal formatives.

[See also entries on specific languages and language families.]

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NAMI, TEL, peninsula situated 15 km (9 mi.) south of Haifa, Israel, and 4 km (2.4 mi.) west of the Carmel ridge (32°39′ N, 34°55′ E). The coastal strip west of the Carmel mountain range is characterized by wavelike parallel series of low sandstone ridges separated by basins filled with clayey alluvium. Tel Nami is part of the westernmost ridge, which

is partially submerged. On another ridge, 1 km to the east, a Middle Bronze IIA settlement (c. 2000–1700 BCE) was noted (sites 104–106). Another habitation site, Nami East, was found under the sand dunes 75 m east of the peninsula. Like Tel Nami, it has remains of MB IIA and Late Bronze IIB habitations.

The area's important feature—archaeologically, hydrologically, and geomorphologically—is the course and outlet of Naḥal Meʿarot, which originates in the Carmel ridge, crosses an eastern *kurkar* ("sandstone") ridge, and discharges into the sea in the vicinity of Tel Nami. Ship representations dating to the end of LB II have been observed there. The location of its estuary in antiquity is crucial to understanding the site. Of equal interest is a marshy basin lying between Nami East and another of the *kurkar* ridges. This basin must have been a natural swamp, a shallow or brackish lake, or a lagoon that could have been used in antiquity as a natural anchorage before artificial harbor construction was developed. The site was noted by the Israel Survey in the 1960s and explored in 1975; since 1985 a Land and Sea Project has been carried out by the University of Haifa under the direction of Michal Artzy.

The broadest latitudinal MB IIA exposure thus far was in area D on the tell. There are signs at both Nami East and on the tell that the area was abandoned at the end of MB IIA or the first part of MB IIB. At least two clear architectural phases are apparent, each of which is dictated by the topography, as was a retaining wall that follows the contours of the *kurkar*. At Nami East a possible granary and an unidentified industrial area were excavated. A stone-lined well, already in disuse in MB IIA, has contributed data on sea level for the period. The international character of the anchorage site is demonstrated by imported legumes from the Aegean world, White-Painted ceramics from Cyprus, ʿAmuq/Cilician and Levantine Painted Wares, and a scarab seal weight dated to the milieu of the Egyptian twelfth dynasty. [*See* ʿAmuq; Seals.]

A layer of sand accumulated between MB IIA and the LB II layers. A rampart was constructed at the end of the thirteenth century BCE, probably to combat rising sea levels. On the summit (area G), a cultic precinct was excavated. The finds include kernoi, a seven-spouted lamp, conical cups, pumice, and numerous pieces of metal, including bronze, silver, and gold, which had been prepared for recycling, as well as metalworking tools such as chisels. Part of the floor was paved with sherds of incense burners. Nami East became a necropolis with diverse forms of burials: box and pit, as well as built graves and jar burials. [*See* Tombs; Burial Techniques.] Cypriot, Mycenaean IIIB, and other imported ceramics were noted. The bronze objects recovered include weapons, knives, armor scales, lamps, bowls, strainers, a wine set, incense burners, and scepters. Gold, silver, faience, and ivory objects were also found. For a short time, until its destruction and final abandonment sometime in the first years of the twelfth century BCE, Nami served as an etrepôt for a larger trade network (for incense, among other commodities) that combined maritime and desert routes via the valleys to Transjordan and beyond.

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MICHAL ARTZY

NAQADA, important predynastic site in Upper Egypt. The archaeological remains from the Naqada region (Nakada, Negadah; 25°58′ N, 32°44′ E) extend for approximately 8 km (5 mi.) along the desert edge on the western side of the Nile near the modern towns of Naqada and Zawayda and from the Paleolithic to Roman periods. They include scatters of stone tools representing ancient living or working areas, numerous cemeteries, several habitation sites, the ruins of a temple dedicated to the god Seth, and a structure identified by the excavator as a pyramid.

Objects from the area began appearing in museums and private collections in the mid-nineteenth century. The first systematic archaeological investigations were conducted by Flinders Petrie and James E. Quibell in 1894–1895 in the area between Naga Kom Bilal and Zawayda: the archaeological sites of Naqada and Ballas. Two years later, Jacques de Morgan, working on behalf of the Egyptian Antiquities

Service, excavated two cemeteries closer to the village of Naqada. Since that time several surveys and minor excavations have been conducted in the region by various researchers.

The oldest significant remains from the region date to the Predynastic period (c. 3900–3100 BCE). Petrie reported three Predynastic cemeteries near Naqada. He excavated about two thousand graves from the "Great Cemetery." Cemeteries T(umuli) and B(ilal) were significantly smaller. One habitation site of the same period, which Petrie named South Town, and several small predynastic settlements were located nearby. Many pit graves and a number of mastabas of the Early Dynastic period (c. 3100–2700) were also found. The earliest levels of the ancient town of Nubt (classical Ombos), which name probably derives from the ancient Egyptian word for "gold," and the temple of Seth were found to date to the Old Kingdom (2700–2250). Middle and New Kingdom (2050–1050) remains were also recovered from the town and nearby graves. The greatest building phase of the Seth temple dated to the New Kingdom.

To the south of Petrie's excavations, de Morgan found other habitation remains, lithic scatters, and two cemeteries containing predynastic and early dynastic graves. In his southern cemetery, de Morgan uncovered the graves of what he called "indigenous tribes." The northern cemetery contained Early Dynastic burials. The so-called royal mastaba of Naqada is 100 m (328 ft.) north of the northern cemetery. Inscribed objects from this tomb bore the name of the first dynasty ruler Aha and queen Neithhotep. De Morgan thought this was the actual burial place of the ruler, but the current interpretation is that it belonged to an important official.

The predynastic evidence from the Naqada region has been critical to our understanding of developments in Upper Egypt in the fourth millennium. Petrie himself did not initially recognize their significance but thought that the strange objects and burial positions he encountered belonged to invaders, whom he called the New Race and dated to the First Intermediate Period (2250–2050). It was only after the publication of Petrie and Quibell's *Naqada and Ballas* (London, 1896) that de Morgan recognized the true significance of these remains and assigned them to their proper place in history—prior to the beginning of dynastic civilization.

Petrie and Quibell's excavations were the first to bring to light the full complexity of predynastic material culture from mortuary contexts. This inventory included ceramics, stone cosmetic palettes in geometric and animal forms, stone vessels, jewelry of local and imported stones (such as lapis lazuli), and weapons and tools of stone, metal, ivory, and wood. Their work also revealed the increasing sophistication of predynastic tomb architecture, which began with small round or oval holes dug into the ground and developed into large, rectangular pits, some with more than one chamber, lined with wood or mud brick. To deal with the ceramics that he found, Petrie developed a still-used typology of predynastic pottery. He divided the predynastic ceramic corpus into nine classes: B (black topped red), P (polished red), F (fancy), C (white cross-line), N (black incised), W (wavy-handled), D (decorated), R (rough-faced), and L (late).

Petrie and Quibell were the first to note the variation in wealth among the graves at Naqada. Recent anthropological interpretation has posited the development of a stratified social hierarchy, the local elite being buried in Cemetery T. Petrie's theories of ritual cannibalism of the dead and the invasion of a dynastic race have been abandoned by most scholars. It has also been proposed that South Town, with its nearby cemeteries, may have been the center or capital of one of three late predynastic kingdoms or chiefdoms in Upper Egypt.

[*See also the biography of Petrie.*]

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PATRICIA V. PODZORSKI

NAQSH-I RUSTAM, a precipitous cliff at the south side of the Husain Kuh, located north of Persepolis, Iran, with rock reliefs ranging from Elamite (second millennium BCE) to Sasanian times (fifth century CE). Surrounding it are other rock installations and some Achaemenid and Sasanian architecture, most of which lies under several meters of debris and has not yet been excavated.

Elamite Periods. The only surviving monument from the pre-Achaemenid period is a relief that was mostly obliterated when the court scene of Bahram II (designated NRm 2) was carved over it. The surface of the original relief curves toward the left and slants back at the right end. The remnants of the scene show an attendant standing behind two seated deities, faced presumably by a standing worshiper, and a head with a mural crown. Only the attendant

at the right is preserved in its major features. The bearded face is turned in the direction of the deities, and the hair, projecting in front, is covered with a cloth fastened by ribbons. The view of the body is frontal with the hands clasped at the waist. Only the lower portions of the seated deities are barely discernible. They wear flounced garments and sit on layered thrones representing coiled snakes. To the left of the later carving of Bahram the partially visible feet of a standing figure point toward the deities. The crowned head preserved on the left belongs to a shorter figure whose preserved feet are correspondingly smaller. Another figure stood between this person and the worshipper next to Bahram, as evidenced by the remnants of some curls and a heel. The original height of this figure cannot be reconstructed.

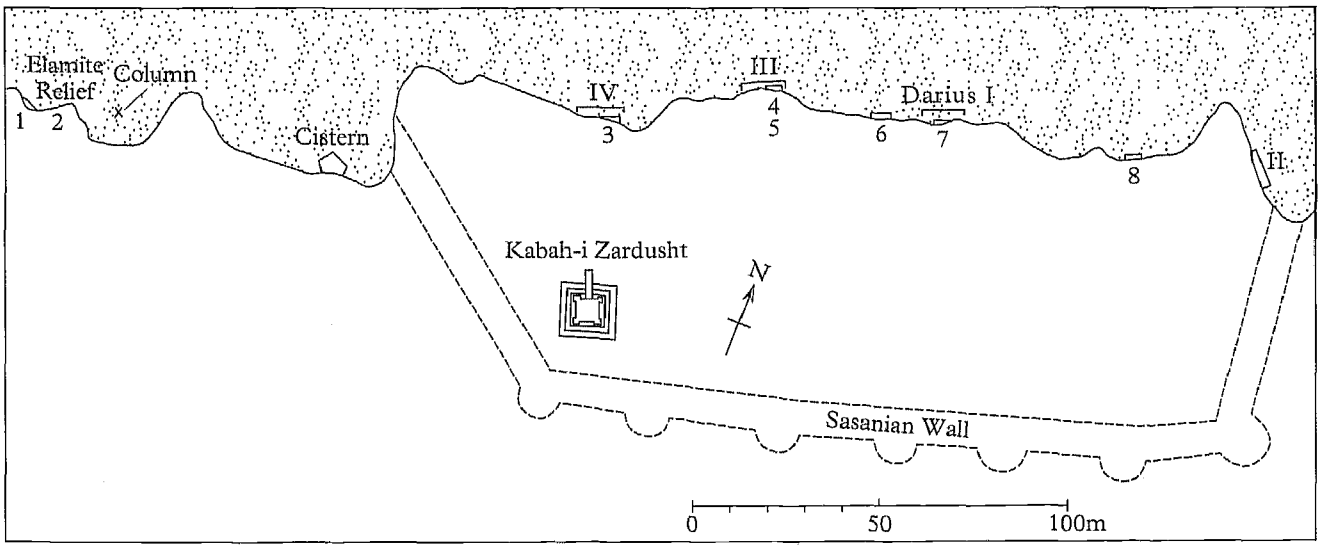
The main part of the relief resembles the central part of the rock sculptures at Kurangun, which can be dated to the late Old Elamite period (c. seventeenth century BCE); however, differences in the shape of the thrones and the slenderness of the figures point to a somewhat later date. The figure with the mural crown at the left may have been added in the early first millennium BCE.

Achaemenid Period. Four tombs of Achaemenid monarchs are cut into the rock of the cliff (Schmidt, 1970). A square tower erected in stone blocks (Kabah-i Zardusht) stands in front of the cliff, and some minor walls of built structures were detected in trenches dug there.

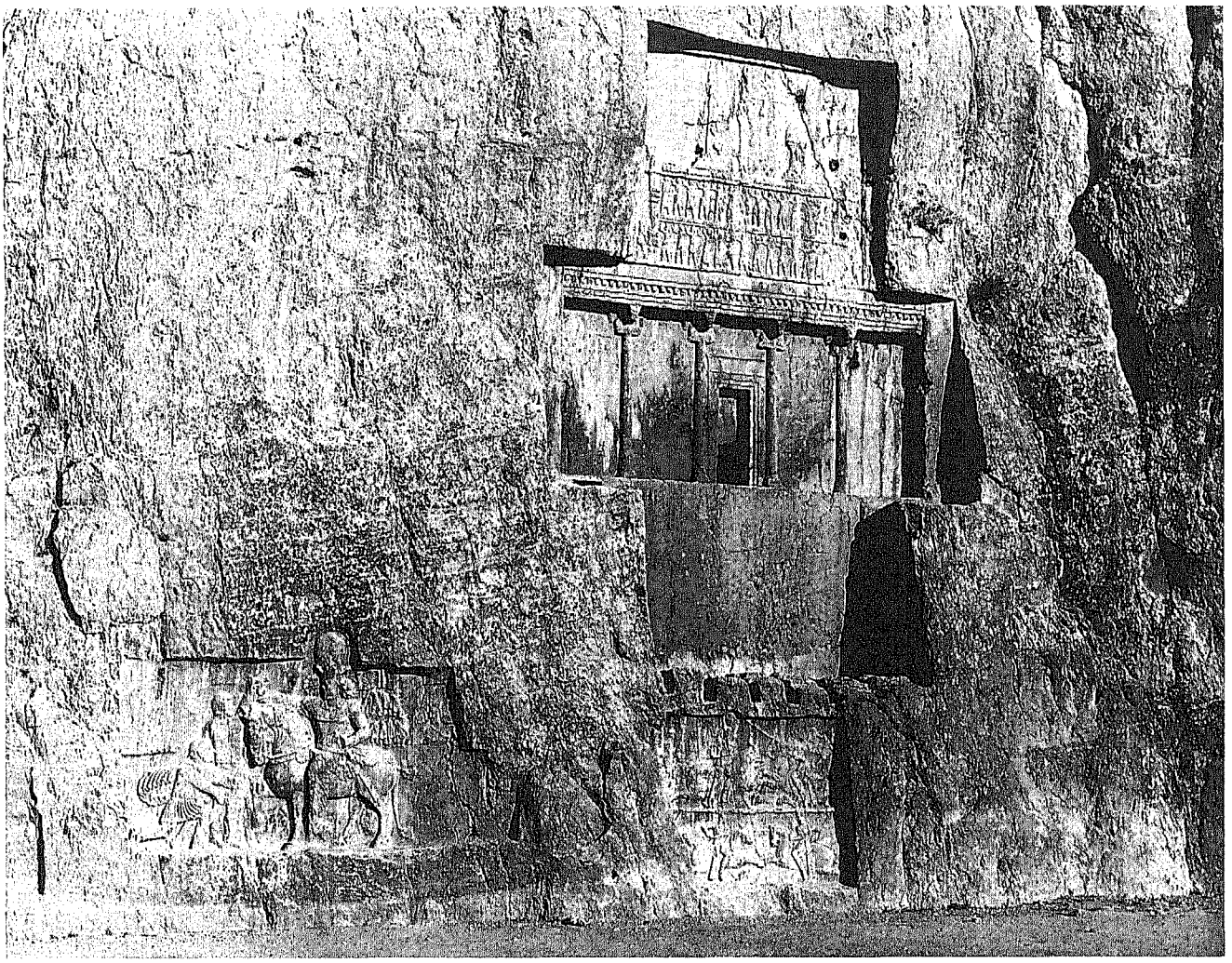
The sepulchral compartments tunneled into the rock differ in plan and in the number of burial cists, but their facades are essentially alike. The oldest (no. I) is dated to Darius I (521–486 BCE) by his inscriptions; the other tombs (nos. II–IV) can be assigned to his successors only through iconography and style (see figure 1).

The facade of tomb I, which faces southeast, lies about 15 m above the surface (see figure 2). Its total height is 22.93 m, but a vertical enlargement toward the bottom may have been intentional as the quarrying slots at the base suggest. The facade is divided into three registers: the bottom register is blank, the middle is sculptured to imitate the front of a palace, and the top shows the monarch at worship on the top of a piece of furniture that is supported by representatives of the nations in his realm.

The middle register, which gives access to the burial chamber, is adorned with a relief representing a building facade. Erich F. Schmidt (1970, p. 81) has shown that the model for it was the facade of the residential palace of Darius at Persepolis (*tačara*: a portico with two rows of four columns *in antis*). In addition to the architectural similarities, Schmidt notes that the principal dimensions are identical (length, height, distances between the centers of the columns, width of the doorway), except for the height of the columns (the lost palace columns are computed from the steps in the antae). This difference arises from a common misunderstanding resulting from the transposition of three-dimensional architecture into two-dimensional relief, however: the capitals, in the shape of addorsed bulls carrying the stepped architrave between their heads, are turned 90 degrees, to be seen in profile; the architrave is consequently shown in cross section and looks instead like small roof beams. If the palace columns are reconstructed with the architrave placed between the bulls' heads of the capitals, they have the same height as the relief columns carved at the tomb. The panels between the columns bear a trilingual cuneiform inscription of Darius I (designated DN b); an Aramaic inscription was added later.



NAQSH-I RUSTAM. Figure 1. *Plan of the site.* Achaemenid tomb facades are numbered in Roman numerals. Sasanian reliefs are numbered 1-8. (Courtesy U. Seidl)



NAQSH-I RUSTAM. Figure 2. *View of Naqsh-i Rustam cliffs.* The entrance to the tomb of Darius I is shown above two Sasanian reliefs. The relief of Shapur I (NRm 6) is at the lower left, and a relief of two jousting scenes (NRm 7) is directly below the tomb entrance. (Courtesy DAI)

The top register is adorned with a framed relief panel showing an imposing estrade (or dais) supported by thirty representatives of the nations of the empire, identified by cuneiform captions. They are arranged in two tiers of fourteen people with raised arms between the legs, and two people on the outside support the feet of the estrade. Unlike the sculptured supporting figures on Assyrian or Urartian furniture, the figures here are actually lifting the dais, and, as they are all facing right, they appear to move it in this direction. On the top, the king, standing on a three-stepped pedestal, faces a fire altar. A figure in a winged disk hovers above, between king and altar, and there is a moon symbol farther to the right. Since the last century, the man in the winged disk has usually been called Ahuramazda, but Shapur Shahbazi (1974) has shown that this interpretation is mainly based on a circular argument. On the tombs and in the Persepolitan palaces, the figure is not only related to the king by his position, he also wears the royal garment and crown; this, along with some written sources, and the Assyrian prototype, points to his being a royal daimon or daimon of kingship. Behind the king is a second inscription of Darius I (DN a). The frame of the relief panel and the projecting side walls are adorned with reliefs. Behind the king stand his spear bearer, the bearer of his battle-ax and bow, and several anonymous spear-bearing Persians. On the opposite strip of frame and wall, several Persians, with their left hands raised to their mouths, face the king.

Three copies of Darius's tomb facade (tombs II–IV) were cut into the same cliff by his successors, but definitive attributions to individual Achaemenid kings have not yet been reached.

The Kabah-i Zardusht is a square tower (12.50 m high

and 7.32 m wide) with reinforced corners that stands on a three-stepped base. It is built of light-colored stone with false windows in dark stone. Most of the tower is solid, but in the upper half a small room with a door facing the cliff can be reached through a stone staircase. An identical monument was built at Pasargadae (Zendan-i Sulaiman). The purpose of these towers is not known, but it has been proposed that it was either a royal tomb, a depository for objects of dynastic or religious importance, or a fire sanctuary. The third can be ruled out because there is no ventilation or outlet for smoke or gases. In the Sasanian period inscriptions of Shapur I and Kerdir the high priest were cut into the tower (see below).

Sasanian Period. Apart from the Aramaic inscription on the tomb of Darius I, presumably cut in the Seleucid period, nothing is known that can be dated to the time between the Achaemenid and the beginning of the Sasanian periods.

Eight rock reliefs were carved on the cliff by Sasanian kings (numbered from west to east NRm 1–8). Although most of the reliefs are difficult to date, they are discussed here in their assumed chronological order.

The oldest relief (NRm 1) was carved at the west end, near the Elamite relief (see above). It shows the investiture of Ardashir I (224–241 CE) by the god Ahuramazda. Both the king and the god are mounted. On the ground under or beside their horses lie their slain enemies, respectively the last Parthian king, Artabanus V, in his royal dress, and Ahriman, the evil genius in the shape of a naked man whose legs end in snakes and whose head is encircled by snakes. The nearby Elamite relief, with its snake throne and perhaps with snake attributes of the gods, was still clearly visible at the time of Ardashir's carving and could have inspired the fashioning of Ahriman.

Ardashir's son and successor, Shapur I (241–272 CE), was the next to carve a relief (NRm 6). He placed his "Victory over the Romans" relief near Darius's tomb (see figure 2). It shows Shapur I on horseback grasping the wrist of a standing Roman (Valerian ?) with his extended right arm. Another Roman emperor (Philip the Arab ?) is kneeling before the Sasamian King. Later, during the reign of Bahram II, the High Priest Kerdir added his picture and a lengthy inscription.

The third relief (NRm 2) shows Bahram II (276–293 CE) with members of his family and court. In carving over an Old Elamite relief (see above) Bahram II made apparent his program to persecute all religions other than Mazdaism. Kerdir, the high priest of Bahram II, writes in his inscriptions, of which two copies are carved on Naqsh-i Rustam monuments (NRm 6 and Kabah-i Zardusht) section 11. "and idols were destroyed and the abode of the demons disrupted. . . ." Was it only the negligence of the sculptor that the portion with the snake thrones remained visible, or was it the intention of a dissident sculptor?

Narseh's (253–302 CE) investiture relief (NRm 8) was never finished. In the main part that is shown, the king receives the ring from the hands of a goddess (Anahita?).

In the fourth century and perhaps also at the beginning of the fifth century reliefs with jousting scenes were carved below the Achaemenid tombs: Hormizd II (302–309) vanquishing his adversary (NRm 5), placed below tomb III; two jousts in two registers below the tomb of Darius I (NRm; see Figure 2), attributed to Bahram IV (388–399) by Hubertus von Gall (1990); the latest joust (NRm 3), dated by von Gall (ibid.) to the fifth century placed below tomb IV; and a relief of a seated king (NRm 4) that is too eroded to be dated. The area of the carvings, excluding the reliefs of Ardashir and Bahram II (NRm 1 and 2), was enclosed by a wall sometime in the Sasanian period. Outside this wall are Sasanian installations that, according to Dietrich Huff (forthcoming), are related to burials: the column on the Husain Kuh, and the so-called fire altars are interpreted as *astodans* (burial urns for the bones of the dead).

[*See also* Elamites; Parthians; Persians; *and* Sasanians.]

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URSULA SEIDL

NAṢBEH, TELL EN-, site located 12 km (8 mi.) north of Jerusalem (31°53′ N, 35°12′ E, map reference 1706 × 1436). The mound is approximately 260 m long by 130 m wide and about 7.7 acres in size. It is usually identified with biblical Mizpah of Benjamin (*Jos.* 18:21–27). The American scholar Edward Robinson traveled past the site but did not

connect it with Mizpah, which he located at Nebi Samwil, an identification some still maintain. It was A. Raboisson, in 1897, who first proposed equating Mizpah with Tell en-Naṣbeh. Before the excavation of Tell en-Naṣbeh, those who supported this identification were Gustaf Dalman, Albrecht Alt, Eberhard Baumann, Paul Lohmann, W. Y. Pythian-Adams, and L.-H. Vincent. William Foxwell Albright opposed this view, however, holding to Nebi Samwil instead, and proposing to place Be'erot at Tell en-Naṣbeh; later he contended that Tell en-Naṣbeh was 'Ataroth (Adar) because the Arab village of 'Aṭṭara was located just south of the tell. Alt twice changed his views; he first proposed to locate Gibeon at Tell en-Naṣbeh, with el-Bireh for Mizpah; subsequently, he suggested that Tell en-Naṣbeh was at first called 'Ataroth and after its fortification by Asa was renamed Mizpah. From the time of the excavations to the present, the major supporters of the Tell en-Naṣbeh–Mizpah equation have been F.-M. Abel, William F. Badè, and James Muilenburg.

Tell en-Naṣbeh was excavated in five campaigns between 1926 and 1935 by William F. Badè of the Pacific School of Religion. He uncovered approximately two-thirds of the site, even though the central part was severely eroded, and few occupational deposits, except for rock-cut installations, were recorded. The site's significance today is in the information it provides on town planning in the Iron Age, especially during the little-known Babylonian period. [*See the biography of Badè.*]

The remains uncovered at Tell en-Naṣbeh correlate with what is known of Mizpah. The Mizpah traditions that have the earliest setting revolve around the prophet Samuel, battles with the Philistines, and the election of Saul as king—although not all scholars accept these as early traditions. Mizpah next appears in the reign of Asa of Judah, who fortified the site during his conflict with Baasha of Israel. Its next, and most important, role is as the capital of the Neo-Babylonian province of Judah during the period of the Exile. Inhabitants of Mizpah helped in the restoration of Jerusalem after the Exile. Finally, Judah Maccabee assembled his troops at Mizpah to face the Seleucids.

The earliest remains are from the Late Chalcolithic and Early Bronze I periods: three tombs and two caves on the tell contained ceramics and other material. Early pottery is also found in cavities in the bedrock and scattered in later debris, mainly in the northwest corner of the tell. Other caves used as dwellings and/or tombs were found in the low ridge northwest of the tell.

Tell en-Naṣbeh was uninhabited from the end of EB I to the beginning of the Iron Age. Philistine bichrome pottery and local forms such as collar-rim jars attest to the site's occupation in this latter period. Architectural remains are harder to identify, but many of the rock-cut cisterns and silos were dug then, and many of the houses that were used in Iron II may have been built then as well.

Large parts of the Iron II town were uncovered. Because Tell en-Naṣbeh was not destroyed during that period, many buildings continued in use, with modifications, for more than four hundred years. The Iron II town was protected by a casematelike wall. Later, a wall (4–6 m wide) reinforced by towers and a glacis were built and in places a fosse was erected around the casemate wall, but downslope from the original town. Entrance to the town was through an inner and outer gate complex. (These fortifications are probably the work of Asa.) There were storage bins in the intramural space on the south, and channels to drain off water crossed the northern and western sections. The dwellings usually contain two or three parallel long rooms, with a broad room across the back. The back rooms of the outermost belt of buildings are arranged to form the casemate-like wall and follow the natural oval shape of the mound. These buildings opened onto a ring-road that, with interruptions, circles the site. Facing them across a narrow street is another group. Occasional streets branch off toward the center of the town. Six olive oil presses also belong to this phase. Fragments of contemporary dwellings and agricultural installations were uncovered outside the town wall, in the suburbs of the walled settlement. The Iron Age cemetery was located on the ridge north and west of the tell.

In the Babylonian period, the inner gate and many of the earlier houses went out of use. They were replaced by more spacious houses of the same four-room type, as well as by other, even larger structures whose plans are fragmentary. One may be a palatial building with a large paved central court. The orientation of all of these buildings is completely different from that of the buildings of the previous stratum. It reflects a change in the settlement's purpose from that of a border fortress to a minor provincial capital.

Fragments of walls built over the town wall, isolated walls and rooms scattered across the tell, and two kilns built in front of the outer gate, along with finds of Attic pottery and seal impressions from the Persian period, indicate continued settlement in the Second Temple period. Coins, fragments of Roman pottery, and a possible watchtower attest to at least a minimal late occupation on the tell. The cemetery remained in use until the Byzantine period, and settlement continued in the vicinity, as affected by remains of a church near the western cemetery.

Tell en-Naṣbeh was rich in epigraphic finds. These include private seal impressions and seals; noteworthy is the seal of Jaazaniah, whose title is "the servant of the king." This seal bears one of the earliest representations of a rooster found in Israel. A full range of government seals was uncovered, including *lmlk*, rosette, *mṣh*, and *yhd*. Seven inscribed ostraca were found, as well as an unusual bronze circlet bearing a dedicatory cuneiform inscription.

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NATIONALISM AND ARCHAEOLOGY.

Consciously or subconsciously, archaeological interpretation and the public presentation of archaeological monuments are used to support the prestige or power of modern nation-states. Although nationalism is only one of several modern ideologies that have sometimes subtly influenced archaeological interpretation, it is often the most visible, well supported, and socially pervasive. This is the result of the dominating role played by national governmental bodies, such as departments of antiquities, universities, and ministries of tourism and education, in the funding, legal oversight, and logistical support of archaeology. Indeed, national institutions often determine which of a nation's archaeological monuments will be preserved and presented to the public (through special legal decree or inclusion in national park systems) and often approve the contents of widely distributed interpretive information about them (in the form of school textbooks, on-site signage, and promotional tourist brochures). Although scholarly literature is, in most countries, less subject to direct government control, the political context of archaeological work is often unmistakable to academics and to members of the general public. In the Near East—as elsewhere in the world—archaeological finds, interpretations, and hypotheses are often woven into overarching narratives of progress and transformation, used to explain how the particular modern nation's peoples, lifeways, technologies, religions, and even forms of government have roots in a distant past.

Despite bureaucratic apparatus and governmental resources, however, control of archaeology by nation-states has never been either uniform or uncontested. In the Near East, archaeological exploration was long the exclusive province of foreign archaeological expeditions, whose members' direct involvement with particular nationalist ideologies in the region varied from outspoken commitment and political activism to neutrality to open hostility. Because the expansion of archaeological activity in the Near East has long been connected with general religious attachments, resource exploration, and economic development, rather than with specific nationalism, some of the major themes of archaeological interpretation have always highlighted such universal themes as religious evolution, ecological adaptation, and technological innovation, rather than particularist histories. Also working against the power of archaeological nationalism are internal political factors. In recent years, dissident minority and political opposition groups within Near Eastern nations have inspired alternative archaeological interpretations that directly expose or challenge the validity of "official" nationalistic archaeology. Thus, the importance of an examination of the interplay of nationalism and archaeology is not simply one of direct correspondence between a particular political ideology and archaeological interpretation, but rather the illumination of archaeology's relevance to ongoing and often acrimonious philosophical and political discussions about the legitimacy of the modern state and its relationship to the wider world.

In terms of a general definition, nationalism may be described as the philosophical belief in the historical and political legitimacy of territorially circumscribed, often culturally or ethnically homogeneous polities. The conception of the nation-state as the most coherent form of large-scale political organization emerged in Europe in the eighteenth century, when earlier empires based on religious authority or dynastic connections (such as those of the Hapsburgs, the Bourbons, and the Ottomans) had begun to disintegrate. Economic change was also an important factor in the emergence of the modern nation-state in Europe: in place of hereditary aristocracies whose power was largely based on the agricultural surplus of feudal landholdings, there arose urban elites whose power was based on commerce and large-scale production. The new elites became the spokesmen for, and leaders of, territorially and ethnically defined polities of a fairly uniform type. Yet, nationalism cannot be described merely as support of an abstract political formation. Nationalism's potency lies in the concrete manifestations of the patriotism—or chauvinism—of particular nation-states. When taken to extremes in the elevation of the glory of the

nation above every other cultural value, nationalism can mobilize citizens to violent action in the pursuit of internal order or external war. Even in its most innocuous manifestations, however, modern nationalism is based on the presumptive antiquity and historical coherence of the boundaries, traditions, customs, and culture of the modern nation. In this respect, archaeology and the other historical disciplines are instrumental in bolstering and legitimizing what might otherwise be considered a thoroughly modern ideology.

Modern nation-states often construct historical narratives that are vividly illustrated by archaeological monuments and bolstered by archaeological interpretations that celebrate the very elements—centralized administration, organized religion, military power—most prized in the modern society (see below). Because these achievements are selectively identified in the archaeological record, the national "spirit" or "character" of the particular modern nation are made to seem timeless, inevitable, or, in some unfortunate and extreme cases, the result of unchanging racial attributes. Although some archaeologists and other scholars have occasionally utilized archaeological data to challenge the basis of modern nationalistic assertions, most scholars have chosen to restrict their interest to narrowly circumscribed research questions, rarely occupying themselves with the possible political implications of their findings. This generally leaves the business of public interpretation and presentation to others—often to officials of the interpretive branches of the national government itself. This sociopolitical phenomenon is strikingly uniform (both in the Near East and throughout the world), despite the antagonism that often arises between competing nations over the interpretation of the same types of artifacts or concerning the same set of historical events.

Archaeological projects, finds, and interpretations serve to legitimate the political power of nation-states in several standard ways. By helping to construct a narrative of the human settlement in the territory of the nation from prehistory to the present, distinguished primarily by the transformation of material culture, archaeology often reinforces the timelessness of modern geographic perceptions and highlights the importance of economic development and technological change. While the sites and archaeological periods of a given nation may be superficially linked to unique historical events or personalities, an equation or correspondence can be made with the historical development of neighboring nation-states or regions using anthropological concepts, Stone/Bronze/Iron Age terminology, or carbon-14 dates. Thus, in providing both a particularistic biography for the nation and in demonstrating that the nation has undergone a development as complex and as lengthy as that of any other nation-state, archaeology provides both a pedigree and a curriculum vitae for the nation's full-fledged participation in the fraternity of modern sovereign states.

While many of the more virulent forms of archaeological nationalism and conflict were abandoned or diluted after the end of the Cold War and its surrogate regional conflicts, the continuing struggle for self-determination by minority ethnic communities throughout the Near East still sometimes finds its symbolic expression in a connection between archaeology and militant nationalism. In this period also, new, more subtle forms of political image making emerged. In a world of transnational economies and worldwide tourism, national identity could sometimes be achieved through the excavation and presentation of archaeological monuments selected for their presumed attraction to foreign visitors rather than for their importance in elaborating a particularistic nationalist ideology.

European Nationalism and Near Eastern Archaeology. The religious and emotional attachment of the various peoples and polities of Western Europe to the antiquities of the Near East can be traced to the early centuries of the Christian era. The discovery and "translation" of relics of saints and biblical figures from the lands of the Bible to European cities established specific geographic and commercial connections. While the Muslim conquests of the early seventh century changed the region's political conditions, the continued European practice of pilgrimage and relic collection served to further the commercial interests of rival European centers under the guise of antiquarian interest or popular piety. The political dimension of the European attachment to Near Eastern relics and ruins was intensified with the establishment of the Crusader kingdoms in the twelfth and thirteenth centuries and the subsequent struggle for power within them by representatives both of church and various European principalities.

Even after the destruction of the Crusader kingdoms, European financial support and religious patronage of Christian shrines and holy places throughout the Near East were sources of political and diplomatic prestige. Yet, the Reformation in Europe in the sixteenth century brought about a significant split in the character of European attachments to Near Eastern antiquities. While the pope and the Catholic powers continued to encourage pilgrimage to the traditional holy sites, the early European Protestant explorers of the region—freed from, and often antagonistic to, the pilgrimage traditions of the Catholic church (and, for that matter, of the Eastern Orthodox churches)—sought to locate what they believed were the "true" locations of the biblical events. Although this antiquarian movement was a manifestation of European theological conflict, it can also be seen as part of an intensifying effort by representatives of trading nations such as England, France, Denmark, and Holland to widen their presence in the region and to contest the long-standing commercial hegemony of Venice and other Italian cities in the Levant.

The political dimension of antiquarian conflict intensified in the seventeenth and eighteenth centuries, as the Ottoman Empire became a tempting target for commercial and ultimately territorial penetration by European powers—notably

England, France, and Prussia, and to a more limited extent Austria, Holland, and Russia. Scholarly pursuits and geographic exploration could not be easily separated from diplomatic, commercial, and religious initiatives at a time when the various nations were attempting to increase their influence in the region. In the field of antiquities and antiquities collection, the acquisition of movable relics began to be seen as an index of national prestige—particularly in Egypt, Asia Minor, and the Aegean—as resident European consuls competed to purchase and remove the most impressive or unusual antiquities.

The first truly national endeavor, however, occurred during the ill-fated Egyptian expedition of Napoleon Bonaparte (1797–1799), when the specially recruited Scientific and Artistic Commission undertook, under French auspices, a comprehensive cartographic and archaeological survey of the Nile River valley and, later, of Palestine. The surrender of one of the commission's prize finds—the Rosetta Stone—to the victorious British forces who supervised the French evacuation from Egypt in 1801 made the political and nationalistic value of the possession of Near Eastern antiquities unmistakable. The Rosetta Stone soon took its place in the British Museum with the Parthenon marbles brought back by Lord Elgin from Greece. In the following decades of the nineteenth century, the competition for antiquities was to become increasingly the activity of national bodies, both scientific and diplomatic, rather than of private individuals. In Egypt, the race for movable inscriptions and statuary intensified between the British and French consuls, and in Syria and Palestine, wide-ranging geographic explorations were undertaken by Ulrich J. Seetzen, on behalf of the Russian government, and Johann Burckhardt, on behalf of the British African Association. In Mesopotamia, in the 1840s, the conflict to excavate and export impressive remains of the Neo-Assyrian palace complexes, waged between the French consul in Mosul, Émile Botta, at Kuyunjik and Khorsabad, and the British consul, Austen Henry Layard, at Nimrud, brought the political competition to a fever pitch. [*See* Nimrud; *and the biographies of Botta and Layard.*]

In fact, the prominent display at the 1851 Crystal Palace exhibition in London of the monumental sculpture recovered by Layard at Nimrud and the conspicuous placement of an Egyptian obelisk in the Place de la Concorde in Paris marked the beginning of an era in which Near Eastern antiquities came to be seen as national trophies, symbols of modern European nations' pretensions to inherit the imperial mantles of the great nations of antiquity. Eventually, permanent national institutions and academic organizations were founded in nearly every European nation to direct and oversee its ongoing exploration of the Near East. Though European scholars of various nations periodically met, debated, and exchanged information, it is significant that the funding and directorship of the early archaeological undertakings in the region were restricted almost entirely to scholars of the same nationality. Thus, for British scholars, the Assyrian Excavation Fund (founded in 1850), the Palestine Exploration Fund (founded in 1865), and the Egyptian Exploration Fund (founded in 1883) became their main practical conduits for Near Eastern archaeological research. For the French, research was done primarily through the Académie des Inscriptions et Belles-Lettres and, in the Holy Land, by the Dominican École Biblique et Archéologique française (founded in 1891); for the Germans, it was through the Deutsche Orient-Gesellschaft (founded in 1898) and, in the Holy Land, by the Deutscher Palästina Verein (founded in 1877); and for the Americans, through the American Palestine Exploration Society (1870–1884) and the American Schools of Oriental Research (founded in 1900). [*See* Palestine Exploration Fund; École Biblique et Archéologique Française; Deutsche Orient-Gesellschaft; Deutscher Palästina Verein; American Palestine Exploration Society; American Schools of Oriental Research.]

European archaeological nationalism was also manifest in the manner in which the monuments were administered and excavation sites were selected. From the 1850s onward in Egypt, French economic and political influence resulted in the customary appointment of a French scholar as director-general of the antiquities service. Regulations enacted at the time of the 1882 British occupation of the country decreed that henceforth a British scholar would serve as deputy director, with extensive powers of his own. While fierce competition for museum-quality antiquities continued (in such cases as the bitter fight between British, French, and Prussian scholars for the famous Moabite Stone in Transjordan in 1868–1870), the claim to rich excavation sites—rather than individual relics—became paramount. [*See* Moabite Stone.] Indeed, with the various European powers preparing to partition the Ottoman Empire toward the end of the nineteenth century, territorial spheres of archaeological influence were established in Asia Minor, Mesopotamia, Palestine, and Egypt. Certain antiquities sites, and indeed entire regions, were regarded as the exclusive provinces of European scholars of particular nationalities. Thus, British predominance in southern Palestine, Sinai, and Lower Egypt; German predominance in central Asia Minor; and French predominance in Lebanon and Syria came to reflect those countries' larger territorial ambitions.

Aside from foreshadowing the direction of future European imperial expansion, nineteenth-century archaeology in the Near East institutionalized a distinctively European approach to the region's past. In former Ottoman provinces, such as Cyprus and Egypt, that came under direct administration by the British, archaeological interpretation began to absorb modern social concepts that far transcended the earlier classicism and historicism of biblical and classical archaeology. Although religious and literary interest continued, the conceptual framework for archaeologically based interpretations of both Near Eastern prehistory and of the

later historical periods came increasingly to center on such secular concepts as ethnogenesis, ethnic migrations, state formation, religious evolution, technological development, and military tactics. [*See* Eugenics Movement.] Indeed, the archaeological interest in and elaboration of these concepts occasioned a subtle, yet far-reaching transformation in the modern social implications of the Near Eastern antiquarian enterprise. From passive veneration of religious scriptures, relics, and monuments, European scholars had, by the late nineteenth century, begun to weave a new, material narrative of the rise of the economic, political, and technological institutions of the Western world.

Naturally, the narratives were expressed in terms that were the most congenial to the specific storyteller: the British and American archaeologists in the region, exemplified by William M. Flinders Petrie and George A. Reisner, working under the influence of the generally progressivist model of material culture pioneered by Augustus L.-F. Pitt-Rivers, tended to see the sweep of history as one of increasing technological refinement, characterized by the adoption of ever more efficient and complex military and administrative systems, roughly dated by a regionwide Stone/Bronze/Iron Age scheme. [*See the biographies of Petrie and Reisner.*] In contrast, German and Austrian scholars, such as Friedrich Delitzsch and Hugo Winkler, often preferred to seek origins of cultural and racial characteristics, rather than their outcomes. They attempted to chart the interactions of the world's great cultures: to describe the dynamics of history as the encounter over the millennia of the world's passive peoples with more creative and active ones. This approach became particularly evident in the historical reconstructions of the followers of Delitzsch's *Babel und Bibel* school of the turn of the century, when racial and linguistic theories positing the primacy of the Indo-Aryans finally overcame the apparent Semitocentrism of the Noahide biblical genealogies. Archaeology and indeed Near Eastern historiography as a whole were now resolutely pointed westward. Although Western scholars of varying nationalities might now debate specific chronological and stratigraphic issues, few disputed the mostly unspoken assertion that they—not the local peasants who served them as domestics and excavation laborers—were the true cultural and spiritual heirs of the great empires of the ancient Near East.

A decisive turning point in the political and archaeological history of the region—and in the impact of European-style nationalistic concepts on its peoples—came in the years immediately following World War I. With the final partition of the Ottoman Empire by the victorious allies, the establishment of the Turkish Republic, the granting of at least nominal autonomy to Egypt, and the creation of League of Nations mandates in Palestine, Syria, and Iraq, the future political landscape of the region was envisioned as one of independent nation-states. Under the tutelage of British, French, and Italian administrators, local populations were taught the techniques of self-determination; along with modern finance, education, public works, and public safety departments, archaeological administration in each of the mandated territories was organized as an embryonic national department of antiquities. The Cypriot and Egyptian antiquities services, under direct colonial control, had long been run in this manner, but new archaeological bureaucracies were established in Syria, Palestine, Transjordan, and Iraq. Local participation was, for the most part, restricted to the lower bureaucratic levels of clerks and subregional inspectors. However, for the representatives of the various European powers who served at the higher levels, the period between the two world wars in the Near East was recognized as an archaeological golden age.

Rarely facing effective local political opposition to the expropriation of antiquities sites from the inhabitants of nearby villages, and with the forces of the mandatory regimes cooperating to ensure security and logistical support, massive excavation programs were begun by the various Western institutions in the region. Activities ranged from those of the Oriental Institute of the University of Chicago in Upper Egypt and at Megiddo in Palestine, to the British Museum excavations at Carchemish in Syria, to the French excavations at Ras Shamra/Ugarit, to the continuing German activity in Anatolia and Mesopotamia. The earlier national competition of rival Western archaeological powers continued on an even larger scale. Although some early echoes of local nationalist opposition to foreign expeditions began to be heard in this period, especially in Egypt, the main political context for archaeological activity in the region continued to be primarily that of the scholarly pride and territorial interests of competing European states. Indeed, it was not until after World War II and the end of the colonial era that the peoples of the modern Near East themselves made powerful connections between Near Eastern archaeology and their own emerging national identities.

Archaeological Nationalism and the Rise of Near Eastern Nation-States. Until well into the twentieth century, the empirical archaeological study of Near Eastern antiquities was pursued almost exclusively by visiting or resident European scholars and the few local scholars they had directly educated and trained. For the vast majority of the local population, older traditions of reverence remained potent; remnants of the past such as tombs, ruins, and natural formations ascribed to the activities of legendary or biblical figures were an integral part of a living landscape. They were sites of prayer, pilgrimage, and ritual in which modern peoples drew continuous blessings and inspiration. They were certainly not conceived as discrete research locales. Even the impressive ruins of Egypt and Mesopotamia were woven into Muslim, Jewish, and Christian traditions as the scenes of stereotypical biblical events. Their present ruinous states

had clear significance to the larger narrative. The idea of digging up the ruins and removing any interesting artifacts found there clashed directly with time-honored local traditions.

In fact, when European explorers of the late eighteenth and early nineteenth centuries began excavating in the region they were often greeted with horror and outrage by local religious authorities. Excavation was considered to be, at best, a destructive and greedy search for buried treasure, or, at worst, the desecration of sacred sites. For centuries, the interpretation of the past had been the exclusive province of duly ordained religious authorities, guided by traditions and Scripture, be it the Hebrew Bible, New Testament, or Qur'an. The idea that anything meaningful (or previously unknown) could be divined through an examination of fallen stones, broken pottery, or the exhumed bones of the ancients seemed both foolish and heretical. Yet, with the gradual assimilation of the peoples and economies of the Near East into the European world system—and with the concomitant acceptance of European concepts of time, space, and empirical observation—the region's antiquities began to take on a new meaning and a new political significance.

The gradual spread through the region of the modern European-style concepts of nation and national destiny (particularly among Western-educated, urbanized, commercial, or intellectual elites in every region of the former Ottoman Empire) provided the basis for a continuing political struggle for independence. As had already occurred in Europe, images of the past, when loosed from traditional religious moorings, proved to be powerful vessels in the service of modern nationalism. Through the nineteenth century, particularly in Egypt, an entirely new school of nationalist historiography grew up that was not content to dismiss the country's impressive ancient remains as mere biblical relics or ruins of the "time of darkness," the *Jahiliyah*, the era before the rise of Islam. Instead, they attempted to draw a lesson from the entire narrative of Egypt's history, stretching from the time of the pharaohs to the present. It was almost inevitably concluded that the new awareness of Egypt's great past precluded its continued subjugation by foreign powers. Egypt's ancient past and its modern destiny as an independent culture and an independent polity were therefore seen as essentially parallel.

The rise of political Zionism in the late nineteenth century similarly encouraged a growing number of Jews educated in European universities or otherwise exposed to European political ideologies to see Jewish history as finding fulfillment in the modern world only in the form of a culturally homogeneous, territorially based, modern nation-state. The novelty and potential power of this political conception can be gauged by the initial hostility of both orthodox religious officials and the Ottoman authorities. Yet, the general acceptance of the political program was eventually to be bolstered by assertions about the centrality of Jewish political independence, as suggested by archaeological monuments and finds from the time of Israelite and Judean kings.

The process was similar, if not completely simultaneous, among many of the nationalities and ethnic and religious communities of the region. In Syria, Arab Palestine, Cyprus, Turkey, and Iraq, ancient monuments, landmarks, and decorative motifs began to take on new meanings as symbols of the past greatness of the particular people and sure signs that the greatness could be achieved again. While local Ottoman administrators (or, in the case of Egypt, the only nominally autonomous khedives) had been content to allow Western scholars to excavate and remove antiquities from the country in return for bribes or political favors or in response to diplomatic pressure, the possession and local study of archaeological remains became a matter of national honor in some circles, especially when political independence loomed.

Until the post–World War I era, the notion of archaeological nationalism within the Near East was restricted almost entirely to small circles of intellectuals and often mixed inextricably with uncompromising, often radical, political ideologies. That peripheral status, and the hostility of the authorities, is illustrated by the fact that the members of one of the earliest of the nationalist organizations primarily devoted to archaeology, the Jewish Palestine Exploration Society (founded in 1912), felt it necessary to destroy all of its organization's records at the outbreak of the war. Yet, with the defeat and dismemberment of the Ottoman Empire at the conclusion of the war, and with the declaration of the allies at the San Remo Conference in 1920 that the destiny of all Near Eastern peoples should be one of self-determination, both nationalism and nationalistic archaeology acquired a certain political legitimacy. In Egypt the publicity surrounding the discovery of the tomb of Tutankhamun in 1922 by an English expedition sparked parliamentary protests by the Wafd party. It also led to the enactment of a ban on the export of Egyptian antiquities, a measure designed to end the officially sanctioned plunder of the modern Egyptian people's material patrimony. Although this regulation did not end European hegemony in Egyptological matters, it occasioned a profound shift in the local political context in which it was done.

An even more dramatic change came in Turkey in the 1920s, when the Kemalists began to construct a new, secular history for the republic. They downplayed Turkey's Islamic heritage, stressing instead its historical and ethnic links to the Indo-European Hittites of the second millennium BCE. In Palestine also the continued interest in archaeological remains by the Jewish community began to focus on concrete embodiments of earlier periods of independence and cultural creativity—primarily the tombs, fortifications, and for-

tresses of the Second Commonwealth and the synagogues of the Byzantine period. Such perceptions would only gradually spread throughout the region. As long as the administration of antiquities remained in the hands of the occupying or colonial powers, ultimately subject to their approval and academic standards, the pursuit of the nationalistic significance of archaeological remains could not always be actively pursued. With the gradual granting of independence to the various countries of the region during World War II, however (in the case of Syria and Lebanon), or in the years that immediately followed (as in the case of Egypt, Israel, and Jordan), the bureaucratic structures of antiquities administration were turned over to newly established governments. Although Western expeditions continued to work in the region, national priorities and nationalist ideologies played increasing roles in determining the pace and progress of Near Eastern archaeology. [*See* Ideology and Archaeology.]

The rise of modern nation-states in the Middle East (as elsewhere) brought about a dramatic shift in the social significance of archaeological work. The region was no longer seen exclusively as the "Fertile Crescent" or the "Cradle of Western Civilization," but was divided into the homelands and autonomous domains of independent peoples. The connection for those people to the land and its archaeological monuments was immediate, not abstract. In each nation, the elaboration of "national" histories was being used as a tool in maintaining the new nation-states' social solidarity. It interpreted archaeological finds as evidence of timeless national character, precocious technological advancement, or as validation of the historicity of prized national myths. In Israel, for example, the emotional connection between the modern Jewish population and the ancient Israelites and Judeans was made explicit through the excavation of biblical sites and their incorporation into a national park system. The much-publicized excavation of the desert palace-fortress of Masada in the 1960s provided the modern nation with a powerful symbol and political metaphor. [*See* Masada.] At the same time, the Hashemite Kingdom of Jordan celebrated images and protected the archaeological remains of the trading Nabateans, the urban populations of the country's Late Roman cities, and the Umayyad caliphs. In Anwar Sadat's Egypt of the 1970s, the power and grandeur of the pharaohs was stressed, while in Iraq in the 1980s, the restoration of Neo-Babylonian monuments was conspicuously associated with the imperial pretensions of Saddam Hussein. Indeed, the establishment of modern nations throughout the region occasioned the adoption of symbolic ancestors and their archaeological monuments. In the Yemen Arab Republic they were the Sabaeans; for the Lebanese Maronites, the Phoenicians; for the Syrians, the Umayyads and, after discoveries in the 1970s, the Early Bronze Age Eblaites.

The list of archaeologically "chosen peoples" and "golden ages" was eventually extended to every country in the Middle East and the eastern Mediterranean basin as traditional religious veneration of the past began to give way to European-style historiography. Despite the distinct images and sites celebrated by each of the nations of the region, the phenomenon was strikingly uniform. It reflected, ironically, the abandonment of time-honored national traditions in preference for the universal celebration of the power of modern archaeology. Thus, throughout the region, national parades and celebrations, postage stamp and banknote symbols, even the rhetoric of newspaper articles and political slogans memorialized and romanticized the symbolic significance of archaeological remains. Archaeological nationalism in the postcolonial period was not, however, restricted only to ideological exploitation of preexisting archaeological images. Ancient ruins, once mute elements of the landscape, became potentially transformable into national shrines and popular tourist attractions. Furthermore, they became the focus of intensifying excavation, following the lead of the earlier European scholars, in the thoroughly empirical study of the material remains of the past.

Departments of antiquities, university archaeology departments, and national museums became the established institutions of historical investigation and instruction, replacing the traditional religious authorities, whose authority became fairly narrowly circumscribed to matters of ritual. The secular institutions were, moreover, entrusted with protecting the nation's sovereignty over its own archaeological heritage. International legal claims began to be expressed for the "repatriation" of antiquities removed during the colonial era: Greek claims for the restoration of the Elgin marbles from England; Egyptian claims for the restoration of the Nefertiti bust from Germany; and Turkish claims for the restoration of the "Treasure of Priam" from the former Soviet Union were merely the most highly publicized.

Here, too, the specific claims should not be permitted to obscure the shared character of a regional phenomenon. Foreign expeditions continued to come to excavate ancient tombs, temples, and cities, but they did so with the express permission and often active cooperation of the local archaeological authorities. Criteria for supervision and control were broadly the same in every country. The conceptual, methodological, and often theoretical frameworks established for archaeology by scholars in the West were closely followed. From a politicosociological perspective, the only elements that differed from nation to nation were the specific sites and cultures selected as the main subjects of research. In this respect, and despite the military and diplomatic enmity between various nations of the region, the symbolic prominence of such archaeological monuments as Masada, the Ishtar Gate, and the Temple of Karnak represented the transformation of Near Eastern regional polities into European-style nation-states. At its core, then, archaeological nationalism in the Near East, as elsewhere, is some-

thing of a contradiction in terms. It was only in abandoning traditional national approaches to the past and adopting a more universal conceptual apparatus that the historical inevitability and legitimacy of modern, technologically based nation-states could be historically maintained.

Archaeological Nationalism and "Counterhistories." The establishment of modern nation-states in the Near East and the consequent authority bestowed on national departments of antiquities throughout the region gradually focused scholarly and popular attention on ever-more-tightly bounded areas. Terms such as "the archaeology of Israel" (or of Jordan, Syria, Lebanon, Iraq, or Bahrain) became common, often existing alongside and sometimes even supplanting the archaeological use of such terms as "the Fertile Crescent" and "the Levant." Indeed many important archaeological sites excavated and/or preserved under national auspices became symbolically identified with the modern nation and its ideological interests—by both its most fervent supporters and its external enemies. In this regard, the association of certain Iron Age sites in Israel such as Hazor, Megiddo, and Beersheba with the Early Israelites was both a source of considerable official pride within the country and a source of political criticism by its opponents, who challenged the specific "Israelite" character of the remains (Baramki, 1969). Similarly, the celebration of the grandeur of Persepolis by the shah of Iran (Lewis, 1975) and the attention lavished on pharaonic remains by Sadat in the 1970s (Reid, 1985) were both supported by government resources and condemned and eventually muted by internal Islamic opposition movements. In a more symbolic—if no less direct—manner, archaeological sites in northern Cyprus that had been of considerable ideological importance to the Greek-dominated government of the Republic of Cyprus were subject to plunder and neglect during the years immediately following the Turkish invasion of the island in 1974.

Acts of intellectual, rhetorical, and sometimes physical opposition to "official" national archaeological monuments and narratives are, however, usually underpinned by counternarratives that are no less coherent or politically self-justifying. In none of the cases mentioned above was the critique of a particular nationalist reading put forward in the interest only—or even primarily—of a more scientific or "objective" reading of the past. The critiques are themselves part of an ongoing political struggle for ideological legitimation and political power that frequently cloaks itself in archaeological and historical terms. The source of these counterhistories can be rival governments, opposition political parties, international bodies (whose interests are global rather than national), and—often most powerful and persistent of all—the emerging political elites of ethnic groups or communities struggling for their own statehood or autonomy. These fragmented, subnationalisms have, by their very existence, posed a threat to the coherence of the modern nation and have usually been ignored or moved to the margins of the state's official archaeological history.

In this connection, it is important to note that one of the most pervasive legacies of early European archaeology in the Near East was its chronological imbalance. Because the scholarly representatives of the Western nations saw themselves as the true inheritors of ancient Near Eastern civilization, their interest in the region's material remains extended only to the point where the economic, political, or religious developments they represented were directly relevant to them. Therefore, the eras after the "end of antiquity"—that is, after the seventh-century Muslim conquests, were of relatively less concern that those that preceded them. However, this was ethnocentrism rather than pure nationalism. The nationalistic aspect was emphasized after the end of the colonial period, when new chronological boundaries were determined by every nation-state. As mentioned above, each nation-state saw itself not as a modern political innovation, but as the political resurrection of a long-oppressed people and the fulfillment of that people's history. In that sense, the rise of the modern state was seen to mark the end of the period of cultural subjugation that had followed antiquity, or the people's cherished golden age.

Although the dates and cultural associations for the period of desolation varied with each nation (Islamic, Crusader, Ottoman, or European colonial), the negative associations evoked by the historical period led to a general neglect of its archaeological remains. Except for the interest of art historians and occasional epigraphers, the vast majority of nonmonumental, archaeological remains of the medieval and postmedieval periods in the region were consigned to ignorance and oblivion. In practical terms, the otherwise fairly strict archaeological laws of most countries of the region mandated that the material remains of the later periods (with the exception of human remains and impressive standing architecture) were not protected and therefore considered to be removable debris, even by archaeologists undertaking the excavation of important sites.

As a result, a vast discrepancy arose between the scholarly knowledge of the material culture of those periods considered to be truly ancient (Stone, Bronze, and Iron Ages) and those considered to be fairly recent. That differential had a great impact on the nationalistic understanding of history. Because practically no archaeological evidence of material culture change and economic adaptation had been collected from the remains of the periods immediately preceding statehood, the reasons for that political change and resulting modern struggles had to be explained through traditional textual sources. In other instances, those modern developments could be romantically retrojected onto a distant past and be ascribed to inherited traditions or national "character." Whether the neglected archaeological remains came from the time of Ottoman domination (the *Turkokratia* in Greek-speaking countries), the time of Muslim domination

in Israel, or the colonial domination of a given region by any and all outsiders, certain material remains were seen as being outside the purview of legitimate archaeology—and thus of little relevance for reconstructing the nation's "real" history.

In other parts of the world, however, such chronological and ideological barriers began to break down during the 1970s and 1980s with the spread of anthropologically oriented historical archaeology. This development would pose an eventual challenge to traditional archaeology in the Near East. Beginning with the theoretical work of James Deetz and Stanley South in the archaeology of colonial North America, it began to be clear that analysis of the material remains of recent or superficially familiar historical periods could provide some striking correctives to conventional understandings. Though the theoretical orientation of historical archaeologists varied from processualist, through structuralist, through neo-Marxist, implicit in the work of all of them was a desire to deepen accepted historical understandings. They wished also to discover some of the underlying causes and contexts for the European commercial and, ultimately, industrial expansion all over the world. In the recognition that material remains permitted analysis of the reality that underlay imperial expansion and the formation of modern nation-states, the historical archaeology of plantations, factories, ghettoes, and workers' housing proved congenial to the antiauthoritarian political reflections of feminism, labor history, social history, the antiapartheid movement in South Africa, and North American African-American history.

Thus, in the early 1980s, when the techniques and theoretical approaches of historical archaeology began to be applied—albeit on a tiny scale—in the Mediterranean basin and the Near East, archaeologists began to recover a material reality that had long been subsumed under the patronizing ethnological rubric of "traditional" everyday life (Ziadeh, 1987; Kardulias, 1994). In the excavations and material culture studies that began to be undertaken at Ottoman-period sites in Israel, Jordan, Syria, Cyprus, Greece, and Turkey, the very act of filling out the archaeological record and demonstrating that every part of the nation's history possessed dynamism, vitality, and complexity helped to undermine the basis of romantic, chronologically imbalanced, nationalistic archaeology.

In the closing decades of the twentieth century, the increasing internationalization of archaeological research in the prehistoric and early historic periods—both in field methodologies and theoretical interpretations—also served to counteract the classical nationalistic archaeology. The adoption of such scientific innovations as radiocarbon dating; chemical provenance studies; geological, botanical, and faunal analysis; and increasingly complex data processing had, by the 1960s, made the ongoing excavations in the Near East among the most technologically sophisticated in the world. The earlier tendency of Near Eastern archaeologists to identify migration and diffusion as the main mechanisms of culture change in the region gradually gave way to a variation of the American "New Archaeology," in which emphasis was placed on the larger systemic concepts of ecological adaptation, resource exploitation, and technological efficiency. [*See* New Archaeology.]

This intellectual development had an unmistakable political context in the post–World War II period, as the Near East underwent unprecedented economic development. In an era when transnational corporations and international development agencies began to devote substantial resources to the study of the environmental, geological, and demographic potential of the various nations of the region, the objectives of Near Eastern archaeology began to reflect a more instrumental, functionalist view of ancient cultures. Particularistic historical questions were being supplemented—and to a certain extent supplanted—by new research questions about agricultural efficiency, economic profits, specialized production, and regional population growth. It was no longer enough merely to describe archaeological remains and link them to historically attested peoples and events. Process and systemic interaction became central. This change in emphasis so neatly parallels the imperatives of modern economic development in the region that it is difficult to ascribe the correspondence to mere coincidence (Miller, 1980; Patterson, 1995). Far more persuasive in its explanatory power is the recognition that the universalist, processualist archaeology was, like the nationalist archaeology it often replaced, a style of historical investigation that had its own implicit ideological subtext: retrojecting into the distant past late-twentieth-century concepts of efficiency, resource extraction, environmental balance, and of the inevitability—or at least imperative—of economic development in all human societies.

In this light, it may be legitimately asked whether archaeological nationalism is a discrete and identifiable—yet ultimately curable—intellectual malady, or whether it is merely one of a limited number of general political assertions that archaeology, throughout its history, has routinely been used to express. The development of new pictures of the past and new technological means of obtaining them have always been tied to economic and cultural change and the emergence of new intellectual and political elites. In the Near East as elsewhere, the acceptance of archaeology has required the abandonment of traditional means of history making—be they legendary, scriptural, or ritual—with all the social and cultural consequences that such an intellectual transformation entails. Whatever the specific nation of the region or the specific subject of archaeological research, politically powerful narratives can make the present seem natural and inevitable. They can also be used to support the power and authority of organized religions, transnational corporations, national liberation movements, and international development agencies—as well as established nation-states.

However, any review of the long history of the interconnections of archaeology and nationalism will demonstrate the particular power and pervasiveness of the nation-state. Although the international legal and scholarly communities have in recent years cooperated to protect and preserve endangered archaeological resources, and to internationalize both the theory and practice of archaeology (Trigger, 1986), conflicts between rival nations in the Near East over control of archaeological remains in disputed territory are seemingly beyond the power of international agencies or individual scholars to discourage or control. As long as control over the practice of archaeology in the Near East remains within the legal purview of national governments, with national departments of antiquities empowered to permit or prevent excavation at certain sites and to provide or withhold funding for public presentation, there is little that international bodies can do to adjudicate conflicting historical claims.

Through the force of archaeological tradition and practice, and through the very structure of modern nation-states in the region, it has become each nation's accepted right to determine the pace and location of excavations within its borders. It has become their right, through national park systems and tourist facilities, to highlight their own chosen peoples and golden ages. Moreover, to interfere with the archaeological agenda of a modern nation—so long as it is conducted along internationally accepted academic standards—is to risk a bitter protest against a violation of sovereignty. Thus, no international scholarly organization has so far been able to formulate and gain acceptance for an enforceable statement of global archaeological rights and obligations that can, when necessary, contest or overrule the narrow pursuit of particularistic national interests. Such an ethical hope may appear quixotic in a world composed of, and ultimately controlled by, nation-states. However, the ethics of the preservation and study of the archaeological remains of the widest possible range of human communities is an essential political and intellectual challenge. It needs to be met if archaeology is ever to be precluded from use primarily as an instrument of nationalism, or ever to serve meaningfully in the resolution—rather than in the promulgation and perpetuation—of national conflicts.

[*See also* Biblical Archaeology; Ethics and Archaeology; Museums and Museology; *and* Tourism and Archaeology.]

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NEIL ASHER SILBERMAN

NAUKRATIS (modern Kom Ge'if), site located in the Behera province of the western Nile Delta, about 80 km (50 mi.) southeast of Alexandria, to the west of the Canopic branch of the Nile River. Although Herodotus claimed that it was Pharaoh Amasis (Ahmose, 570–526 BCE) who first allowed Greek merchants to settle and trade at the site, earlier Greek pottery indicates a Hellenic presence in the second half of the seventh century BCE, possibly during the reign of Psamtik (Psammetichus) I (664–610 BCE). Amasis may have simply codified a de facto situation when he made Naukratis the only legal outlet for Greek wares in Egypt. During his reign the city flourished, and nine eastern Greek cities combined their efforts to build the famous Hellenion, described by Herodotus as the "best known . . . most used . . . and . . . largest" of all of the temene, or "sacred precints" at Naukratis.

Naukratis continued to be the foremost commercial city in the Delta for the next few centuries, and when Nectanebo (Nekhtnebef) came to power in 380 BCE, one of his first official acts was to build a temple there. He decreed that 10 percent of the existing levies on "gold, silver, timber, worked wood, and everything coming from the Sea of the Greeks" would be used to provide for its upkeep.

Although the early period of commercial exclusivity ended when Alexander the Great conquered Egypt (332/31 BCE) and founded the Mediterranean port city of Alexandria, the town continued to function as an important transshipment point for goods coming from the Mediterranean to the capital at Memphis, or eastward to Pelusium and beyond. Under the Ptolemies, Naukratis continued (with Alexandria and Ptolemais) to be one of the three major Greek cities in Egypt. The situation becomes less clear during the later Ptolemaic period, as Egypt fell steadily under Roman control.

The events that surrounded the final incorporation of Egypt into the Roman Empire by Octavian (30 BCE) do not seem to have left their mark on Naukratis, but we do know that the old Greek trading center continued to govern itself through the elected members of its own council *(boulē)*. Subsequent documentation for Naukratis, however, is slight, and the date and cause of the city's final demise are unknown. Coptic records sporadically mention bishops from Naukratis through the fourteenth century CE, but by that time the name Naukratis may have been transferred to the neighboring village of Neqrash, where some late artifacts have been recovered.

In 1884, William Flinders Petrie identified the ancient city of Naukratis with the extensive mounds near the village of Qom Ge'if. His excavations (1884–1885) were continued by E. A. Gardner in 1886 and by D. G. Hogarth in 1899 and 1903. Their work uncovered the remains of four Greek sanctuaries (to Apollo, Aphrodite, Hera, and the Dioscuri) that had been founded during the seventh and sixth centuries BCE. In addition, Petrie identified the Hellenion with a large structure (about 260 × 300 m) that he called the Great Temenos, in the southern part of the town. Hogarth, however, found no trace of such a monumental building, he excavated a building in the northern part of the site that he claimed was the Hellenion.

Unfortunately, these early excavators paid little attention to the ancient city's domestic and mercantile character and almost totally ignored the later Ptolemaic and Roman periods. In an attempt to rectify this situation, renewed investigation was conducted from 1978 to 1983 by Albert Leonard, Jr., and W. D. E. Coulson that combined the vertical control of the excavation at Naukratis/Kom Ge'if with a program of regional survey and sounding in an area of 25 sq km around the ancient city. A small mound in the area of Petrie's Great Temenos still survived, and Leonard's excavation produced 6 m of vertical stratigraphy, indicating ten phases of (apparently domestic) occupation, all of which dated to the Ptolemaic period. This argues in favor of Hogarth's identification of the Hellenion. Excavation was also conducted at Qom Hadid, originally part of the Naukratis mounds, where Petrie had recorded Roman structures with painted frescoes. In the reexcavation, however, contiguous architecture was rare, and the artifactual material (almost all of it from secondary deposits) ranged from Ptolemaic times into the Roman period.

Coulson's survey of the area recorded an artifact scatter extending 2 km. to the north and south of the early excavations. The distribution of this material suggests that between the fourth and first centuries CE the city expanded to the north and east, whereas during the Roman period, expansion and growth were to the west. This, too, supports Hogarth's placement of the Hellenion in the northern part of the city.

At present, little survives of the ancient site of Naukratis, and the Delta's high water table persists as a severe obstacle to reaching the early strata of this unique Greco-Egyptian trading center.

[*See also* Delta; *and* Egypt, *article on* Postdynastic Egypt.]

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ALBERT LEONARD, JR., and WILLIAM D. E. COULSON

NAUTICAL ARCHAEOLOGY. *See* Underwater Archaeology.

NAVILLE, ÉDOUARD (1844–1926), Swiss Egyptologist; specialist in archaeology and philology. Professor of Egyptology at the University of Geneva, his birthplace, Naville was first interested in philology and religious texts. His great four-volume edition of the *Book of the Dead* appeared in 1886, but by then he had begun a long career of excavating on behalf of London's Egypt Exploration Fund (now Society). Hoping to find evidence for the Exodus, Naville first worked in the eastern Delta site of Tell el-Maskhuta. His excavation resulted in *The Store-City of Pithom and the Route of the Exodus* (1885). Further exploration in the Wadi Tumilat, a region in the eastern Delta that includes Tell el-Maskhuta, appeared as *The Shrine of Saft el-Henneh and the Land of Goshen* (1887). Expeditions to Herakleopolis, Mendes, and Tell Muqdam followed, but then Naville turned south to finish the excavation (begun by Auguste Mariette) of Hatshepsut's mortuary temple of Deir el-Baḥari, on the west bank at Thebes. Clearance (1893–1896) was followed by careful epigraphic work, which was published in large folio volumes. In 1903 Naville attacked the mounds to the south of Hatshepsut's temple, discovering tombs and the temple of King Mentuhotep II of the eleventh dynasty.

Unlike Flinders Petrie, Naville found no interest in small antiquities and left this site after the 1907–1908 season, considering it completed, although it would yield still more to the later expedition of New York's Metropolitan Museum of Art in the 1920s. In 1909, Naville was at Abydos, where he cleared the Osireion (presumed to be a cenotaph of Seti I) discovered by Petrie and Murray in 1902. Although Naville had an impressive publication record, his archaeological methodology belongs to the "old school" of Heinrich Schliemann and Mariette, in contrast to Petrie's careful sifting and study of small finds. Undoubtedly much significant material was lost, and Naville's strongly held opinions also tended to color his conclusions.

[*See also* Abydos; Egypt Exploration Society; Maskhuta, Tell el-; *and the biographies of Mariette and Petrie.*]

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BARBARA SWITALSKI LESKO

NAZARETH, the town of Jesus' youth, located just west of Mt. Tabor, immediately north of the Jezreel Valley, and 25 km (15 mi.) west of the Sea of Galilee (32°42′ N, 35°18′ E). Nazareth exhibits archaeological remains from the Middle Bronze II, Iron II, and late Hellenistic periods, but its heyday was in the Early Roman period. Judging from the locations of its Early Roman (Herodian) tombs (which must have been located outside the village according to Jewish law), its size then must have been about 900 m from the southwest to the northeast and 200 m southeast–northwest. The total area comes to fewer than 24 ha (60 acres) and reflects a population of some five hundred. It stood in a natural bowl within what is today called the Nazareth Fault, which divides the Jezreel plain from Lower Galilee. Based on its size and locations, Nazareth was surely a dependency of ancient Sepphoris, the capital of Lower Galilee in the Roman period; in the Byzantine period it was the seat of a bishop and an independent city.

Benedict Vlaminck, under auspices of the Custodia Terra Sancta, excavated Nazareth from 1890 to 1910 within the grounds of the Latin churches of St. Joseph and of the Annunciation. In 1889 and then from 1907 to 1910, Prosper Viaud excavated within the same area and published a volume on the two churches. In 1955, Bellarmino Bagatti excavated beneath the Church of the Annunciation, which had been built in 1730, enlarged in 1877, and then demolished to make way for a new church.

Beneath the Church of the Annunciation Bagatti found extensive remains from the Roman–Byzantine village. Cisterns, rooms, chambers, work and storage spaces, tunnels, and other rock-cut areas and installations are evidence that the inhabitants of ancient Nazareth, as of many other Galilean localities, utilized the soft limestone bedrock to increase their living and work spaces.

In two caves beneath the church several layers of plaster were found. Beneath a coat of undecorated white plaster, painted plaster featured a cross in a wreath, some floral designs, and prayers to Jesus in Greek. The prayers are most conservatively dated to the early fourth century CE. These

two small caves had been incorporated into the north end of a building whose facade evidently pointed south. The building had a mosaic floor with a large chi-rho cross that pointed north, into the two caves. The excavator interpreted this building as having originally been a Jewish-Christian synagogue because it was oriented south, toward Jerusalem, and because he recovered about seventy architectural fragments nearby that resemble elements of third- or fourth-century Galilean synagogues (e.g., two simple capitals, five column bases, voussoirs of arches). The fragments were found beneath the mosaic floor of a Byzantine (fifth century) monastery.

A Jewish ritual bath, or *miqveh,* from the Roman period was found beneath the mosaic floor with the chi-rho cross. Many plaster fragments had been dumped into the bath when it went out of use and the mosaic floor with its chi-rho cross was installed. Several of the fragments were scratched with graffiti in Greek and Syriac and are Christian in character. They may be remains of a church built over the caves that were seen by the Christian Pilgrim Egeria in the late fourth century CE.

The sequence of occupations at Nazareth follows: (1) Middle Bronze tombs; (2) scattered Iron II remains; (3) Late Hellenistic to Early Roman caves with domestic installations, some used as late as the Byzantine period; (4) a third-century CE, or later, ritual bath; (5) a large public structure, interpreted by the excavator as a Jewish-Christian synagogue; and (6) a fifth-century church with a monastery attached, perhaps the structures seen by the Piacenza Pilgrim in 570 CE.

Nazareth is mentioned in the poem *Mishmaroth* (l. 18; see Michael Avi-Yonah, "A List of Priestly Courses from Caesarea," *Israel Exploration Journal* 12 [1962]: 137–139, pl. 13) as the settlement place of the priestly course of Hapizez, following the destruction of Jerusalem and the Temple in 70 CE. This is repeated in a Byzantine inscription found at Caesarea that contains the priestly courses.

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JAMES F. STRANGE

NEBI MEND, TELL, site located on the Orontes River in Syria, about 25 km (16 mi.) southwest of the city of Homs (34°33′ N, 36°32′ E). Its identification with Qadesh, the location of the battle between Egyptians and Hittites (early thirteenth century BCE) depicted by Rameses II on the walls of his temples at Karnak and Luxor, was first suggested in 1848 and is universally accepted. The Hittites knew the town as Kinza, and this name appears on an inscribed tablet found in recent excavations at the site. In the late fourth or early third century BCE, the town was refounded, under the Seleucid rulers of Syria, are called Laodiceia-ad-Libanum.

Qadesh is mentioned initially in the textual sources on the occasion of Thutmosis III's battle at Megiddo, when its ruler led the coalition of Canaanite princes attempting to block the Egyptian advance into Syria. It figures in other Egyptian and Hittite texts, including the Amarna letters and the campaign reliefs of Seti I, who captured the city in about 1300 BCE. Its location in the fertile Orontes valley, on one of the few major routes which cross the Levantine coastal mountains to link inland Syria with the Mediterranean, explains its strategic importance. Its siting on the fork of the Orontes and one of its tributaries provides it with natural defensive strength on three sides. Although at about 10 hectares (25 acres) it is not one of the largest of Syria's ancient mounds, it is one of the highest, its summit being 30 m above the surrounding plain. To the south of this mound is an area of comparable extent—with fragmentary remains of walls and column drums—the site of Greco-Roman Laodiceia.

The mound was excavated in 1921–1922 by a French Mandatory government expedition under Maurice Pézard. Large areas on the northeast summit and flanks were investigated and monumental remains uncovered, but the work was entirely devoid of stratigraphic control and was published only in a preliminary manner. Enough was recovered, however, to show that important levels from the Middle and Late Bronze Ages, the Iron Age, and the Greco-Roman period existed. Perhaps the most striking find was part of an Egyptian stela recording Seti I's seizure of the town.

Renewed excavations by an expedition from the University of London, under the direction of Peter J. Parr, commenced in 1975 and is still underway. As a result of the work completed so far, the site's occupational history is postulated as follows.

The earliest settlement took place in the sixth millennium, in the Pottery Neolithic period. The settlers were farmers and lived in houses built of poor mudbrick or *terre pisée,* but with good white plaster floors. After an unknown period of time, and for unknown reasons, this settlement was abandoned (there is no evidence of occupation in the fifth and fourth millennia).

The site was reoccupied in the third millennium, the Early Bronze Age. The substantial and spacious houses uncovered suggest that this settlement was something more than a village, although there is no evidence for urban fortifications. A decline in architectural standards is apparent toward the end of the millennium, however, and the site may have been abandoned again, apart from squatters. A period of vigorous urban growth began in about 2000 BCE, with a new style of architecture and, soon after, massive casemate defensive walls with, in one place at least, a massive, artificial sloping rampart. The site seems to have flourished during this, the

Middle Bronze Age. The settlement came to an end in about 1600 BCE, with the destruction of the fortifications and associated buildings, and there may have been another short period of desertion. The Late Bronze Age (the period of Qadesh's recorded history) is represented archaeologically by remains of large public buildings, none yet sufficiently exposed to provide evidence of their function. Sherds of Cypriot, Mycenaean, and Egyptian pottery show the extent of the city's contacts, as do the few tablets found (letters addressed to its ruler by the prince of Ḫalab [Aleppo]). There is no archaeological record in the areas excavated either of Seti's capture of the city or the battle waged by Rameses II.

Whether, and how, Qadesh was affected by the disturbances which brought the Bronze Age to a close in the Levant is not yet determined. There is significant occupation in the Late Iron Age (eighth–seventh centuries BCE), when an Assyrian garrison was probably stationed at the site. There is nothing to indicate settlement during the Persian period, and the mound may well have been deserted when Laodiceia was founded there. This seems to have been a town of middling importance, judging from surface indications and its virtual absence from the written sources. During the Byzantine period it was the seat of a suffragan bishop, however. The few archaeological finds indicate that the site did not survive beyond the fifth century CE, and that it remained abandoned until the modern village was founded in the early nineteenth century.

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PETER J. PARR

NEBO, MOUNT, site rising from the Transjordanian plateau 7 km (4 mi.) west of Madaba, bounded on the east by Wadi ʿAfrit (which extends into Wadi al-Jadidah, Wadi al-Kanisah, and Wadi al-Hary farther south) and on the north by Wadi Abu al-Naml, which extends into Wadi ʿAin Musa. Mt. Nebo's highest crest reaches an altitude of 800 m above sea level. Its other peaks are only slightly lower; of them, the two most important historically are the western peak of Siyagha and the southeastern peak of al-Mukhayyat (map reference 2218 × 1315).

In the Hebrew Bible Mt. Nebo, part of the Abarim Mountain, was located east of the Jordan River, opposite Jericho. It was also known as Pisgah (*Dt.* 34:1; *Nm.* 21:20, 33, 47). As a Christian sanctuary dedicated to Moses, Mt. Nebo was known by scholars and visited by Byzantine pilgrims. Eusebius (*Onomasticon* 136.6) wrote: "Nabau, which in Hebrew is called Nebo, is a mountain beyond the Jordan, in front of Jericho in the land of Moab, where Moses died. Until this day it is indicated at the sixth milestone of the city of Esbus [which lies] to the east." The Roman pilgrim Egeria (381–384) and the bishop of Maiumas of Gaza, Peter the Iberian (fifth century), relate in great detail their visits to the Memorial Church of Moses on Mt. Nebo in Arabia. Egeria, after having crossed the Jordan on her way from Jerusalem, stayed at Livias and then took the road to Esbus. At the sixth Roman mile she took a detour to the Springs of Moses and from there climbed to the summit of Mt. Nebo (*Itinerarium* 10–12). The pilgrim Theodosius (first half of the sixth century) relates that not far from the city of Livias, east of the Jordan River, pilgrims could visit "the water made to flow from the rock, the place of Moses' death and the hot springs of Moses where lepers come to be cured" (Theodosius 19). The pilgrim from Piacenza (second half of the sixth century), adds: "From the Jordan to the place where Moses died, it is eight miles" (*Itinerarium* 10.5).

Moreover, in the Bible, as on the inscription of Mesha, king of Moab, Nebo is a city listed among the Cities of the high plateau of Moab, in the territory of Madaba (*Nm.* 32:3, 38, 33:47; *1 Chr.* 5:8; *Is.* 15:2; *Jer.* 48:1, 22; *1 Mc.* 9:37). The Mesha inscription records that King Mesha conquered the town, killed the inhabitants, and "took from thence the vessels of Yahweh and dragged them before Chemosh" (1. 14–18). [*See* Moabite Stone.] Eusebius (*Onomasticon* 136.9ff.) knew the locality of Nebo as a desert 13 km (8 mi.) from Esbus. The biographer of Peter the Iberian, in the second half of the fifth century, knew Nebo as a village on the mountain inhabited by Christians (*Life* 85). The survival of the name *Nebo* in the region was discovered in 1838 by Edward Robinson and Eli Smith (Robinson and Smith, 1941, vol. 2, p. 307). The local bedouin also know the mountain as Jabal Nabo or Jabal Musa in homonymy to Wadi ʿAin Musa located on the northern slope of the mountain (Saller, 1941, vol. 1, p. 72).

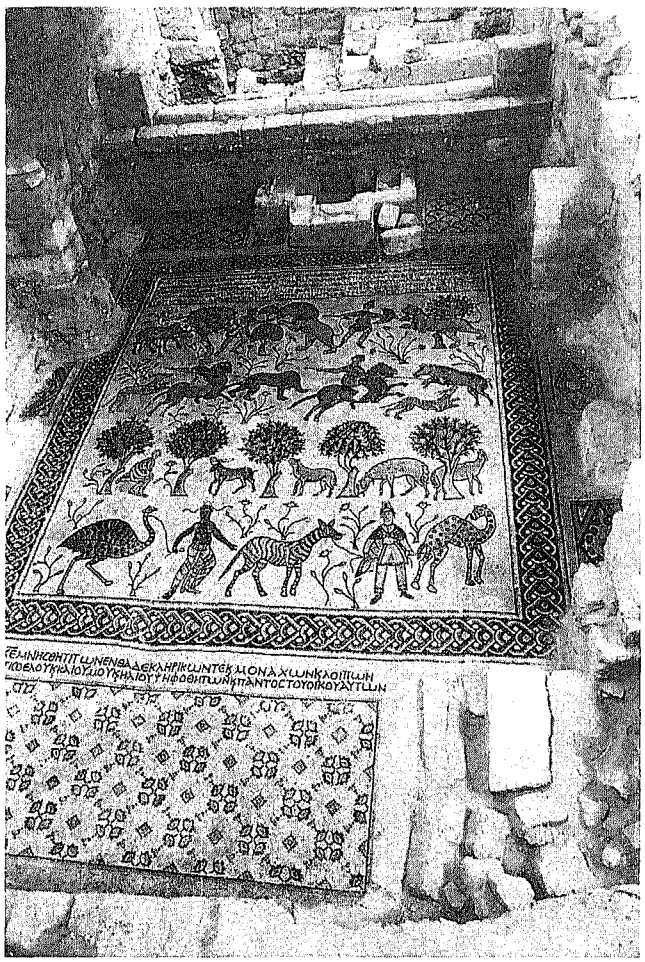
The discovery in Arezzo, Italy, of Egeria's memoirs (edited by Francesco Gamurrini in 1886), and the subsequent discovery of the biography, in Syriac, of Peter the Iberian in 1895 (see above), were decisive in identifying the Memorial of Moses with the ruins at Siyagha on the northwest spur of Mt. Nebo. The ruins were first visited and described in 1864

by the French explorer the Duke de Luynes (1874, vol. 1, pp. 148ff.). In 1933, archaeologists from the Studium Biblicum Franciscanum (SBF) in Jerusalem began exploring Siyagha. Sylvester Saller directed three lengthy excavations, in 1933, 1935, and 1937 that resulted in the discovery of the basilica and of a large monastery that, in the Byzantine period, had grown up around the sanctuary. In 1963, Virgilio Corbo began the restoration of the basilica. Michele Piccirillo has directed the project since 1976. [*See the biographies of Saller and Corbo.*]

The ridge of Mt. Nebo has been inhabited since remote antiquity, as the dolmens, menhirs, flints, tombs, and fortresses from different epochs testify. However, its real fame is derived from the death of Moses described in *Deuteronomy* 34. In the fourth century, the Christians in the region constructed a memorial church in honor of Moses on the Siyagha peak, an obvious effort to perpetuate the memory of the biblical episode. It was a triapsidal church (a *cella trichora*) with a vestibule in front of it, tombs covered by its mosaic floor, and two funeral chapels on each side. An open court in front of the sanctuary's facade was bordered on the north by a covered passageway leading to the diaconicon chapel, including a cruciform baptistery basin (see figure 1). The chapel was lavishly decorated with offerings from the officials of the Byzantine government by a team of three mosaicists: Soelos, Kaiomos, and Elias. The work was completed in August 531, in the time of Bishop Elias of Madaba and of the Roman consuls Lampadius and Orestes.

In the second half of the sixth century the three-nave basilica was built, in the time of Bishop Sergius of Madaba and of Abbott Martyrius. The primitive church Egeria and Peter the Iberian visited became the presbytery of the new sanctuary. The basilica had a long diaconicon on its north side, on a higher level, and a new baptistery chapel (a *fotisterion*) on the south side, with a narthex at the facade. The first stage of the work was completed in 597, as stated in the mosaic inscriptions in the baptistery chapel. The sanctuary was decorated with wall and floor mosaics. At the beginning of the seventh century, in the time of Bishop Leontios and Abbott Theodore, the Chapel of the Theotokos (of the Mother of God) was added on the southern wall, covering two rooms of the monastery. In front of the altar, in the area of the presbytery, a rectangular panel can still be seen of mosaic flowers, gazelles, and two bulls standing before an alter with a ciborium on it. The mosaicist intended to depict the altar in the Temple in Jerusalem.

While the sanctuary was undergoing its various stages of architectural development, the adjacent monastery gradually expanded. Dayr Siyagha reached its maximum size during the sixth century. The monastery, dominated by the Memorial Church of Moses, presents itself as a complex of different, yet interrelated, sectors, composed of several rooms that open into a central courtyard. The sectors seem functionally specialized: community rooms in the atrium of the basilica and living quarters or cells in the southern sector.



NEBO, MOUNT. Figure 1. *The old Diakonikon-Baptistery at Siyagha with mosaic floor.* Dated to 530 CE. (Archive Studium Biblicum Franciscanum; photograph by Michele Piccirillo)

From the archaeological research underway, it appears that the monastery developed from monastic units more or less isolated and situated on the top of or on the slopes of the mountain as the so-called hermitage of Procopius on the west slope (Piccirillo and Alliata, 1990). When the three-naved basilica was completed in 597, the size of the monastery was probably reduced, for unknown reasons, to the area of the atrium in front of the church facade and to the southern sector; the other sectors were abandoned. Archaeological research into the ecclesiastical edifices in the valleys around Mt. Nebo support Saller's conclusion that the superior of the main monastery also had jurisdiction over the monks living in the valleys near the water supply, where the monastery may have had its orchards and vegetable gardens (Saller, 1941). The monastery was completely abandoned in the ninth century.

Khirbet el-Mukhayyat. The fortified place of Khirbet el-Mukhayyat, on the southeast spur of the mountain, with an attested continuity of settlement from the Early Bronze Age to the Roman-Byzantine period, according to its Franciscan

excavators, fits well with the locality of Nebo mentioned by ancient sources (Saller and Bagatti, 1949, pp. 207–217). In 1863 the French explorer Félicien de Saulcy listed the name of the tell, but the ruins were not visited until 1881, by Claude R. Conder of the Survey of Eastern Palestine. [*See the biographies of Saulcy and Conder.*] In 1901 Alois Musil visited the site, described it, and was the first to propose its identity. In 1935, the Franciscan Custody of the Holy Land acquired the acropolis. The following year Jerome Mihaic improved the road leading to the ruins and began a program of archaeological research. Saller and Bellarmino Bagatti (1949) published the results. In 1962 Julius Ripamonti of the University of Caracas, Venezuela, undertook a systematic study of the necropolis and at the same time excavated a small monastery and an Iron Age tower (see below). Saller subsequently studied the pottery found in the tombs, which furnished excellent points of reference for establishing a chronological sequence of human habitation at el-Mukhayyat. Bedouin excavated an Early Bronze III tomb on the southwestern slope of the acropolis; Ripamonti excavated several Iron II tombs (Saller, 1966) on the north side of the tell; and Saller (1967) published the tombs of the Hellenistic–Roman period. The Iron Age tower Ripamonti excavated is unpublished.

Three churches and a monastery have been excavated at Khirbet el-Mukhayyat: the Church of Saint George built on top of the acropolis in 536, in the time of Bishop Elias of Madaba and decorated with mosaics by a team of three mosaicists—Nahum, Kiriakos, and Thomas; the Church of Sts. Lot and Procopius built in the time of Bishop John of Madaba (sixth century) on the lower terrace of the acropolis; the Church of Amos and Casiseos on the west slope of Wadi ʿAfrit; and the small monastery on the opposite side of the same valley. [*See* Madaba.]

Recent excavations have proven that the Church of Amos and Casiseos is the oldest in the village (Piccirillo, 1984). It takes its present name from its benefactors, whose names were carved on the chancel posts. The church, poorly paved with stone blocks, may have been built in the second half of the fifth century; it was flanked on the north by a room near a water cistern hewn in the rock of the mountain. In the time of Bishop Phidus of Madaba, under the direction of the priest John and the deacon Silvanus, the area was transformed into a chapel with a mosaic pavement and a square presbytery, preceded by a vestibule also decorated with a mosaic under the deacon Kaiomos. In the time of Bishop John, the chapel was enlarged and rebuilt on higher ground. Based on the style the same team of mosaicists responsible for the mosaic floor in the Church of the Sts. Lot and Procopius executed the mosaic in the new apsed chapel.

The small monastery of al-Kanisah, built following the contours of the terraces of the mountain on the eastern slopes of Wadi ʿAfrit, is composed of a chapel, with a mosaic, on the highest point with respect to the rooms to the south; several rooms are constructed along the slope of the mountain going north. A cave runs underneath the monastery that was used for storage. To the south of the chapel, at a higher point, a wine press was found hewn in the rock, which is typical of agricultural monasteries.

ʿAin Musa Valley. Archaeological exploration of the valley of ʿAin Musa, the toponomic point of reference for the identification of the nearby ruins of Siyagha with the Memorial of Moses, following Egeria's journey, began in 1984. During her visit to Mt. Nebo, the pilgrim Egeria met many monks in the valley near the "springs of Moses" and saw their cells and a tiny church. "Between the church and the cells was a plentiful spring which flowed from the rock, beautifully clear and with an excellent taste," she wrote (*Itinerarium* 11.2).

Before the discovery of Egeria's manuscript, the first account by a modern visitor to the ʿAin Musa was written in 1864 by the Duke de Luynes, who noted the nearby Christian hermitage hewn in the rock (see above). In 1934, Nelson Glueck surveyed the fortress of al-Mashhad near the spring, collecting Iron Age and Nabatean sherds and a number of contemporary clay figurines (see *Annual of the American Schools of Oriental Research* 14 [1933–1934]: 24–27, 15 [1935]: 110). Saller and Bagatti (1949) identified several Byzantine ruins along the path leading to the Roman road on the Mushaqqar ridge, a road with its milestones already known from the survey carried out by J. Jermer-Durand in 1884 ("Voie de Hesban au Jourdain," *Revue Biblique* [1895]: 398–400, [1896]: 613–615). Saller and Bagatti (1949) provided a general sketch of the region with its dolmens, circles, tombs, fortresses, and Byzantine buildings. A more detailed map of the Roman road from Esbus to Livias taken by pilgrims to reach the Memorial of Moses was drawn in 1973 by the members of the Hesban (Esbus) expedition, who surveyed and mapped the Roman-Byzantine fortress of al-Mahatta near the sixth Roman milestone.

A rescue excavation by the Studium Biblicum Franciscanum (SBF) under Michele Piccirillo in 1984–1985 in a farmhouse among the vineyards revealed the church of a small monastery, named the Church of Kaianos, with two superimposed mosaic floors: the "upper church," like the "lower" one, had a slightly raised, square presbytery. Iconographically, a unique motif in the mosaic of the upper church is an anonymous Arab camel driver depicted with a loincloth and a mantle over his shoulders. The lower church was built in the time of Bishop Cyrus of Madaba, at the beginning of the sixth century, on top of two tombs. In the area of the presbytery, a bilingual inscription, funerary in character, in Greek and in Christo-Palestinian Aramaic, the language spoken by ordinary people in the region, was recovered (Puech, 1984).

A second church is located along the path connecting the spring with the Roman road. It was part of a small monastery built on the slope of the mountain. It was excavated by the SBF in 1986–1987. It is square and includes a room on the south with a mosaic and a paved courtyard. The

church's mosaic floor is nearly intact and is one of the best-preserved works of the local workshops of mosaicists.

In 1994 the SBF excavated a small monastery east of the spring in the Wadi 'Ain al-Kanisah south of the mountain. The chapel was dedicated to the Theotokos as stated in the mosaic inscriptions. It was repaired in 762 at the time of Bishop Job of Madaba (Piccirillo, 1994).

[*See also* Churches; *and* Mosaics.]

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NECROPOLIS. Literally meaning "city of the dead" in Greek, a necropolis is a cemetery of some size exhibiting uniform modes of interment, and usually, though not always, associated with a contemporary settlement. Necropoleis were also used by nonsedentary peoples to bury their dead, as attested, for example, by the Early Bronze Age (EB) IV subterranean charnel houses at Bab edh-Dhra' in Jordan. In necropoleis interments took various forms: simple cist graves dug into earth, natural caves or rock-cut chambers, decorative facades hewn into cliff faces, and structures (ranging from simple to grandiose) above or below ground. Necropoleis were normally separated from settlements in order to maintain an acceptable degree of physical and psychical distance between the living and the dead. Intramural interments, as practiced in the Neolithic period, were not, strictly speaking, necropoleis.

Necropoleis first appear in fourth-millennium BCE Egypt (Predynastic Naqada) and Mesopotamia (Ubaid Eridu) during the earliest period of urbanization and state formation. Dolmen fields around the northern Jordan Valley, possibly funerary in character and Chalcolithic in date, may likewise constitute early necropoleis. By the third millennium, the practice of burial in necropoleis was well established, with royal tombs at Ur in Iraq, pyramids and associated elite cemeteries at Giza in Egypt, and typical urban necropoleis as at EB Bab edh-Dhra'. With few exceptions (e.g., MB Ebla, LB Ugarit) extramural interment continued throughout the Bronze Age (e.g., MB Jericho, MB/LB Megiddo, LB/Iron Tell es-Sa'idiyeh) and into Iron Age (Tell el-Far'ah [South], Megiddo, Beth-Shean [northern cemetery]).

Necropoleis yield various archaeological data. Undisturbed, they contain quantities of intact objects, mostly pottery vessels, which can be dated using other artifacts such as scarabs found with them or by statistical techniques like seriation, which W. M. F. Petrie applied to Predynastic Egyptian necropoleis. Even necropoleis with no contents, as in Nabatean Petra, can be dated by the styles of decoration on elaborately built or carved burial monuments whose forms offer clues to chronology and cultural associations (McKenzie, 1990). So-called burial customs, the distinctive character of interments within necropoleis, have long been regarded as ethnic indicators. Differences in factors such as tomb size and shape, variety and quality of contents, and disposition of human remains were thought to betoken ethnically distinct peoples, as Kathleen Kenyon assumed for Middle Bronze Jericho (Kenyon, 1979). Alternatively, differences in tomb size, shape, location, and in quantity and quality of contents may reflect the stratification in the society of the living. Old Kingdom Egyptian necropoleis are blatantly stratified: pyramids were the prerogative of pharaohs, nonroyal elites built mastabas, and commoners dug cist graves (Lehner, forthcoming). Burial customs may also reflect kinship structures. Multiple interments accumulated in a single large chamber over a long time span may indicate an extended family resorting generation after generation to an ancestral tomb (Bentley, 1991; Bloch-Smith, 1992). Necropoleis also often contain large numbers of human skeletons that can be analyzed forensically, yielding information about ancient diet, diseases, causes of death, and overall demographic trends.

[*See also* Burial Sites; Catacombs; Pyramids; Skeletal Analysis; *and* Tombs. *In addition, most of the sites mentioned are the subject of independent entries.*]

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NEDERLANDS HISTORISCH-ARCHEOLOGISCH INSTITUUT TE ISTANBUL.

The Netherlands Historical-Archaeological Institute in Istanbul, Turkey, is an affiliate of the Netherlands Institute for the Near East in Leiden, the Netherlands. Founded in 1953, the Istanbul branch became more fully operational with the opening, in 1958, of an actual institute in the building that had formerly been occupied by the Dutch embassy (Palais de Hollande). While the institutes' financial resources are provided by the Dutch government through Leiden University, individual researchers are often funded independently by the Netherlands Organization for Scientific Research.

The purpose of the institute is to promote research on the archaeology, history, and languages of the countries and cultures of the Near East and to provide logistical support for scholars specializing in Near Eastern studies. In addition, it seeks to foster cultural relations between the Netherlands and various countries in the Near East. The Institute sponsors the publication of the annual *Anatolica* (since 1967), which serves as an international forum for examining the history and archaeology of the Near East in general and of Turkey in particular. Since 1956, the institute has also published a series of monographs in English, German, and French, *Publications de l'Institut Historique-Archéologique Néerlandais de Stamboul.* By 1992, sixty-nine volumes had appeared. In them, individual scholars present the results of their research on various aspects of Near Eastern history and archaeology, from prehistoric to modern times. Since 1979, the institute has participated in the archaeological rescue excavations at Hayaz Höyük and at Kumartepe, both in southern Turkey. In 1985, the institute initiated a major, long-term archaeological project at Ilipinar, in northwestern Anatolia, south of Istanbul.

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the results of the Dutch excavations at Ilipinar, with special emphasis on the prehistoric period.

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NEGEV. The Negev comprises several different geographic regions, each with climatic, geologic, and topographic peculiarities that influenced the type of settlement it attracted and the course of its history. The regions are the northern Negev, whose most prominent area is the Beersheba basin, which prospered in the Chalcolithic period; the Negev highlands, an area in which settlement flourished in the Early Bronze Age, the Iron Age, and the Nabatean, Roman, and Byzantine periods; and the ʿArabah, the eastern Negev, which flourished principally in the Iron Age and the Nabatean, Roman, and Early Arab periods.

The first periods in the history of the Negev can be characterized as alternating between prosperity and scarcity and abandonment. The region's varied topography, semiarid climate, proximity to Egypt and Sinai as well as the Levant, and its geographic placement at the crossroads between East and West all contributed to the movement of people in and out of the area. It is only since the mid-twentieth century, as a result of numerous archaeological surveys and excavations of the region's major sites—conducted by Nelson Glueck, Yohanan Aharoni, Beno Rothenberg, and Rudolph Cohen—that some of the Negev's ancient history has been recovered. The broadest of the surveys, the Negev Emergency Survey, was carried out by the Israel Department of Antiquities and Museums between 1978 and 1988. [*See the biographies of Glueck and Aharoni.*]

Prehistoric Periods. Surveys in the western Negev sand dunes, the Negev highlands, and the southern Negev have mapped 320 sites, with remains representing all of the prehistoric periods. A connection can be drawn between environmental changes and ongoing geomorphological processes, population growth, and settlement patterns in these periods. The region was extensively populated during the Epipaleolithic (18000–8000 BCE) and, to a certain degree, in the Pre-pottery Neolithic B (Neolithic 2). Avdat, Naḥal Ḥemar, Har-Ḥarif, Naḥal Neṣṣana, Naḥal Issaron, and the ʿUvda Valley are among the important prehistoric sites.

In the Chalcolithic period, a continuous chain of settlement existed from the Beersheba and Arad basins and Naḥal Besor to the interior of the Negev highlands. In the east, sedentarization reached the fringes of the ʿArabah and, in the south, the Timnaʿ region. The focus of settlement, however, was the Beersheba basin. [*See* Timnaʿ (Negev).]

During the course of the Chalcolithic period, groups of pastoralists and possibly hunters, originating in the Beersheba basin and Naḥal Besor, penetrated the Negev highlands. There and in the ʿArabah they established small, unwalled villages and utilized the region's natural caves as dwelling places. In addition, temporary campsites and tent encampments were set up by nomadic or seminomadic tribes who traversed this district, apparently engaged in seasonal animal husbandry and the transport of copper. Major Chalcolithic sites include Beersheba, Gilat, Shiqmim, Naḥal Yattir, Arad, ʿEin-Gedi, and the caves at Naḥal Mishmar. Of special note are the buildings that are probably temples or cultic places, such as those at ʿEin-Gedi and Gilat. [*See* Gilat; Shiqmim; ʿEin-Gedi.]

Early Bronze Age I–III. Widespread sedentarization characterizes the Early Bronze Age in the Negev. The most important Negev site to enjoy significant expansion in this period was the large walled city of Arad. Included among its several public buildings are a sacred area (EB II) with at least one structure its excavator, Ruth Amiran, identified as a temple. Contemporary settlements flourishing in the highlands were unwalled and can be classified as central (upward of 5 acres in area); large (2–4 acres); small (including 2–8 buildings); or temporary. The central and large settlements were located near permanent water sources. Characteristic EB II dwellings are structures with several rooms arrayed around a central courtyard, one-room structures, and round buildings. [*See* Arad, *article on* Early Bronze Age Period.]

The EB II–III population of the Negev highlands included groups of immigrants from the urban culture that had developed to the north. These settlers preserved the pastoral way of life that had flourished in the Chalcolithic period. The Beersheba basin, the previous period's settlement and cultural center, was almost totally abandoned in favor of more southern locations—reaching the southernmost boundaries of the Negev highlands—where the economy was based on agriculture, husbandry, and hunting, as at sites in the Sede Boqer, Ramat Maṭred, and Miṣpe Ramon areas, the ʿUvda Valley, Har-Ḥorsha, and Naḥal Mitnan.

Early Bronze IV. Hundreds of EB IV settlements have been recorded, primarily in the Negev highlands and ʿUvda Valley. None were found in the Beersheba and Arad basins. Excavations at Be'er Resisim, an important EB IV site, were conducted during three seasons by a joint American-Israeli expedition headed by William G. Dever and Cohen. New archaeological techniques focusing on a holistic approach to examining the site were employed. These techniques included climatic, geological, paleozoological, and paleobotanical studies. [*See* Be'er Resisim.]

Arad, which had flourished during EB II, was destroyed and abandoned sometime after the mid-third millennium BCE, as were other larger centers in the Shephelah and southern Transjordan. Most of the population of the Negev highlands and bordering areas, however, was not displaced. In addition, a new ethnic group penetrated the Negev in EB IV. This population established large, dense villages near permanent water sources and lived alongside the settlements of the earlier inhabitants. The social and organizational

makeup of the new population differed from that of the earlier Bronze Age people, and its material culture was somewhat more complex.

EB IV settlements fall into three categories: central settlements of 1–5 acres (e.g., 'Ein-Ziq, Mash'abbe Sadeh, Be'er Resisim, 'Atar Har-Yeruḥam); medium-sized settlements of up to half an acre (Ḥorvat Be'er Ḥayyal, Ramat Boqer, Naḥal Sirpad, Ḥorvat 'Avnon); and small settlements (Naḥal Revivim, Ḥorvat 'Aḥdir, 'Atar Har-Ramon). Central settlements can be further divided into those characterized by round residences of one to five rooms that share small courtyard; by a coterminous series of rectangular or circular houses whose continuous outer walls served as a parapet for the site; and by residences made up of irregularly shaped rooms built around a large open courtyard.

Far fewer large settlements have been uncovered than small, temporary settlements, perhaps because of the nomadic and seminomadic lifestyle of the region's inhabitants. Most of the small, more distant settlements were occupied periodically, primarily during grazing season, when residents of the larger, more permanent settlements would migrate there with their flocks but return home to the central centers at the end of the season.

Iron Age. The Iron Age was a period of settlement expansion in every area of the Negev. The fortified city of Beersheba was an important site, as was the settlement at Tel Masos and the fortress at Arad. In addition to numerous Hebrew ostraca found in the Arad fortress, the remains of a Judean shrine were uncovered by Aharoni in his excavations there. [*See* Arad Inscriptions.] In the tenth century BCE, following a period of abandonment that lasted almost a millennium, a series of fortified cities came to characterize the Negev highlands, the result of the building programs of David and Solomon. These military installations, surrounded by agricultural settlements, dominated the Negev. The "four-room house," the most prominent dwelling type in the Sede Boqer and Ramat Ma̱tred areas, became a distinctive feature of the settlements. [*See* Four-room House.]

Many Iron Age sites have been excavated, most of them fortresses of three main types: oval (the most common, built on axes 15–70 m long), such as those at 'Atar ha-Ro'a and Ḥorvat Ḥaluqim; rectangular (ranging from 78 × 32 to 17 × 15 m), as at Har-Reviv and Naḥal Zena'; and fortresses (from 17 × 11 to 7 × 5 m), such as those at Ḥorvat Ramat Boqer and Be'erotayim. Their common plan was casement rooms around a central courtyard. After these fortresses were destroyed or abandoned—probably in 918 BCE, during Pharaoh Sheshonq's (biblical Shishak) campaign into Judah—the Negev highlands were uninhabited for about four centuries, until the Persian period. [*See* Masos, Tel.]

During the eighth–sixth centuries BCE, the Beersheba basin reached the zenith of its Iron Age occupation, with the establishment and efflorescence of three additional walled cities, at Tel 'Aro'er, Tel Malḥata, and Tel 'Ira, and the important site of 'Ein-Ḥaṣeva in the 'Arabah. Additionally, many fortresses and forts (e.g., at Arad, Ḥorvat Ṭov, and Qadesh-Barnea) sprang up along the highways of the northeastern Negev. [*See* 'Aro'er; 'Ira, Tel; Qadesh-Barnea.]

Persian Period. Square fortresses from the Persian period were recently excavated at Meṣudat ha-Ro'a, Ḥorvat Ritma, and Ḥorvat Mesora. Numerous Aramaic ostraca attest to the status of Beersheba as an administrative center and Arad as an important way station. Other centers of note during this period included Tell Jemmeh, Tell el-Far'ah (South), and Gaza. Persian period remains have also been uncovered at Ashkelon by the Leon Levy Expedition headed by Lawrence E. Stager. [*See* Jemmeh, Tell; Far'ah, Tell el- (South); Ashkelon.]

Nabatean, Roman, and Byzantine Periods. Important Nabatean remains lie along the main route traversing the Negev, the "frankincense and myrrh road" leading from Petra to Gaza. These include way stations, forts, towers, and agricultural settlements: Mo'a, Ḥorvat Qaṣra, Meṣad Neqarot, and 'Ein-Saharonim. Significant Nabatean remains were also uncovered during Avraham Negev's excavations at Avdat, Mampsis (Kurnub), and Elusa (Ḥaluṣa). [*See* Avdat; Kurnub; Ḥaluṣa.]

The Roman period is characterized by square fortresses with four projecting corner towers and single square towers erected along roads. 'Ein-Ḥaṣeva, Meṣad Tamar, 'Ein-Boqeq, Yotvata, Meṣad Zohar 'Illit, and the towers along the Scorpion's Pass are among this period's sites. [*See* 'Ein-Boqeq.]

The Byzantine period represents the Negev's settlement efflorescence. Scores of agricultural settlements have been uncovered, including the cities at Avdat, Mamshit, Reḥovot, Shivtah, and Neṣṣana. Among the most impressive of the remains excavated are several Byzantine churches. These sites apparently constituted the agricultural hinterland of the region's large urban centers and facilitated their economic prosperity. [*See* Reḥovot; Neṣṣana.]

Early Arab Period. While several Byzantine settlements continued to exist after the Arab conquest in the seventh century (at Neṣṣana and Shivtah, to name two), sedentarization in the region declined ending eventually, in the middle of the eighth century CE. A few of the surviving villages and mosques, as well as new settlements, have been excavated (including Sede Boqer, Kefar Shaḥaq, Kibbutz 'Eilot, 'Ein-Yaḥav, 'Evrona, and Har-Nafḥa). In the Negev highlands, these new sites follow the distribution of Byzantine-period settlements. This is not the case in the central and southern 'Arabah, however, which witnessed unprecedented settlement in Byzantine times. Both regions experienced an interruption in sedentarization in the fifth–sixth centuries CE.

The sedentary Negev population in this period resided in small villages and on farms, practicing agriculture in the wa-

dis, where seasonal rainwater was collected and utilized for irrigation.

The period's numerous rock inscriptions are mostly graffiti of the type found in abundance in the deserts of northern Arabia, Transjordan, and Sinai and are usually accompanied by engravings of animals. The inscriptions are primarily in Nabatean and Arabic and provide valuable information on the customs and beliefs of the period.

From the inscriptions, as well as from the abundant archaeological remains of settlements, farms, and agricultural installations, it is clear that the semiarid Negev supported a considerable population—partly nomadic and partly sedentary—between the first and seventh–eighth centuries CE.

[*See also* Beersheba.]

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RUDOLPH COHEN

NELSON GLUECK SCHOOL OF BIBLICAL ARCHAEOLOGY.

Located in the Skirball Center for Biblical and Archaeological Research on the campus of Hebrew Union College–Jewish Institute of Religion (HUC-JIR) in Jerusalem, the Nelson Glueck School of Biblical Archaeology is an academic institution with an active field research program focusing on the archaeology of the land of Israel and the world of the Bible. The campus, initially called Hebrew Union College Biblical and Archaeological School, was opened in 1963 by Nelson Glueck, then president of HUC-JIR. The intention of its founders was to provide, among other community services, a base for American scholars and researchers engaged in Near Eastern studies. At the time, some were unable to visit East Jerusalem, where the American School of Oriental Research (now the Albright Institute) is located, then under Jordanian control. At the outset an American scholar was appointed director annually, but in 1968 William G. Dever became its first permanent director; he was followed by Joe D. Seger.

The school began a long-term archaeological project at Gezer in 1964 under the direction of G. Ernest Wright. The enterprise contributed to the school's rapid development into a major archaeological center. In addition to introducing new excavation methods, the Gezer project inaugurated the use of student volunteers in the field. The school also undertook excavations at Jebel Qaʿaqir and Khirbet el-Qom. Final reports of the Gezer excavations appear in the school's Annuals; a *Manual of Field Excavation* was published in 1978.

Following Glueck's death in 1971 and the election of Alfred Gottschalk as president of HUC-JIR, the name of the school was changed to the Nelson Gleuck School of Biblical Archaeology. In 1974 Avraham Biran was appointed director, at which time the school took over the excavation at Tel Dan, which became its major project and is the longest ongoing excavation in Israel. Other excavations were carried

out at ʿAroʿer, Yesud ha-Maʿalah, Ras el-Kharrubeh, Deir es-Sid, Telʿ Ira, Shiqmim, Gilat, and Nahal Tillah.

An integral part of the school is its Skirball Museum, which exhibits material from the school's archaeological projects. The exhibits are based on specific subjects with an emphasis on archaeological objects as works of art and as expressions of the cultural and historical processes that affected the biblical world.

An International Colloqium on Temples and High Places in Biblical Times was held in 1977 and its proceedings published (1981). Congresses, seminars, and lectures complement the school's research activities.

[*See also the biography of Glueck. In addition most sites mentioned are the subject of independent entries; see especially* Dan; *and* Gezer.]

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AVRAHAM BIRAN

NEMRUD DAĞI, Late Hellenistic site on the summit of the mountain of the same name, located in southeastern Turkey (36°38′ N, 38°40′ E), in the new (as of 1954) province of Adıyaman, formerly the province of Malatya. Nemrud Dağı is one of the highest mountains of the Anti-Taurus range within the region known in Turkish as the Ankar Dağları. Although some of the neighboring mountains are higher, Nemrud Dağı is unique in that its summit is clearly visible from all directions and the sanctuary on its peak must have been a prominent landmark in antiquity, as it is today. The Turkish Aerial Geodetic Survey in 1954 reported an official height of 2,150 m above sea level for Nemrud Dağı. The elevation was verified in 1986 by the Ministry of Culture and Tourism. More precise data for the coordinates of the peak and the number of the geodetic benchmark on top of the site are not available because Nemrud Dağı lies within a military zone.

The name *Nemrud Dağı* seems to have been first brought to the attention of the West by Charles Sester, a German road engineer and surveyor, when he reported his discovery of the monument to German and Ottoman authorities in 1881. Subsequently, the site was explored briefly and then published by two separate teams. In 1882 and 1883, German teams recorded the major sculptural, epigraphic, and architectural remains, which were published amid descriptions of the team's travels throughout Asia Minor and North Syria (Humann and Puchstein, 1890, pp. 97–406). Also in 1883, O. Hamdy Bey, director of the Imperial Ottoman Museum of Constantinople, and Osgan Effendi, an Armenian technician, made the difficult ascent to Nemrud Dağı and spent five days studying the remains (Hamdy Bey and Osgan Effendi, 1883). Complete investigation of the site's abundant sculptures and inscriptions did not occur until the mid-twentieth century, when an international team, directed by Theresa Goell between 1953 and 1973, carried out thorough excavations, pioneering geophysical explorations, and partial restorations. Other sporadic investigations and reconstructions continued during the late 1980s.

Although Nemrud Dağı is the name used today for the site and the mountain peak, it is uncertain whether this is merely one name among others. For example, William Ainsworth, an English traveler who journeyed through the region in 1839, described the scenery and mentioned an outstanding high conical peak that he called Assur. Later, Humann and Puchstein identified the mountain of Assur as Nemrud Dağı. However, Ainsworth referred also to a more remarkable cone called Ura Baba, which could equally well be the mountain now called Nemrud Dağı.

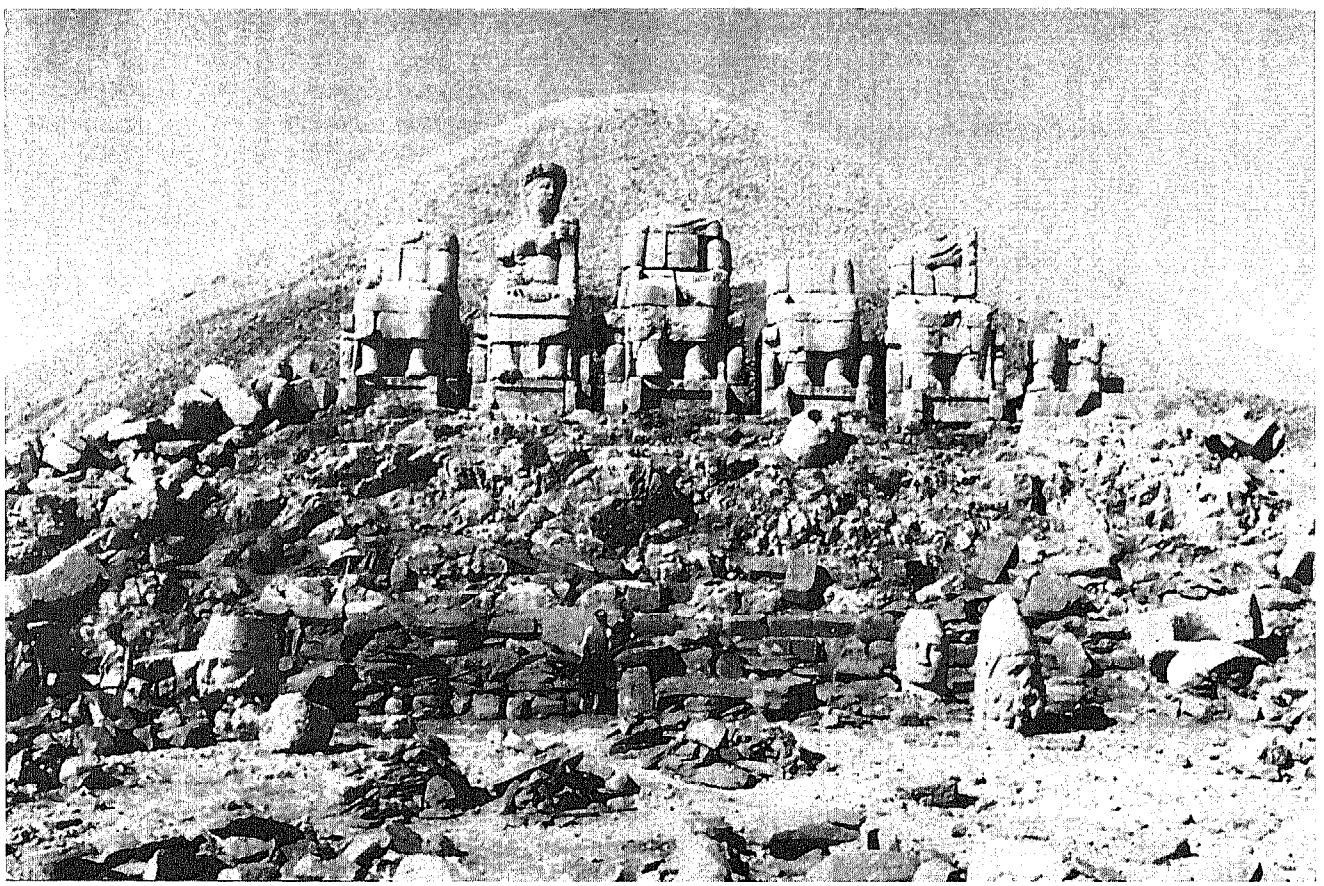
On top of the mountain peak of Nemrud Dağı is the *hierothesion,* or temple-tomb and common dwelling place of all the gods, of the Late Hellenistic king Antiochus I of Commagene (c. 69–34 BCE). The term *hierothesion* seems to appear only on monuments erected by Antiochus I and at the burial places of his immediate family, at the sites of Nemrud Dağı, Gerger, Karakuş, and Arsameia on the Nymphaios. The numerous inscriptions at Nemrud Dağı do not furnish any precise historical or chronological data regarding the date of the site or the life of its creator. The king's alleged genealogies, carved on the backs of stelae throughout the site, provide a chronological position relative only to two dynastic lines. The site does, however, provide the earliest known extant Greek calendrical horoscope, in the form of a monumental stela depicting a striding lion and a scattering of stars. Representing the constellation Leo and other celestial elements, the particular configuration of astronomical symbols presents a date equivalent to 7 July 62 BCE (for an alternative interpretation of the stela and its date, see Tuman, 1984).

The complete excavation and site clearance led by Theresa Goell finally revealed the true nature of Antiochus's tomb-sanctuary, which his workers had hewed directly from the living rock of Nemrud Dağı. The monuments are made from and rest directly on the peak's limestone; there are no remains of previous occupation. Nevertheless, certain iconographic and architectural similarities between the layout and design of the *hierothesion* and some Hittite and late Hittite monuments in the region hint at the prospect that this prominent summit may once have been a sacred high place. Any remains of such an ancient ritual location are currently buried deep beneath a roughly 50-meter-high conical tu-

mulus that is the focal point and dominant feature of the *hierothesion.*

The whole complex is constructed on a cyclopean scale. Three rock-cut terraces flank the tumulus on its northeast, southwest, and north; each is a terminus for separate sign-posted Processional Ways leading up to Nemrud Dağı from the valleys and towns below. On the East Terrace, the largest and most spacious of the three, the central court is lined on all four sides by a vast array of ritual accessories. Along the west side of the terrace, colossal enthroned statues (originally about 8–9 m high) of Antiochus and his syncretized Greco-Persian tutelary deities rise high above the court on a two-tiered podium cut from the mountain limestone, with the massive tumulus as a backdrop. The seated gods, mostly preserved intact except for their heads, which have fallen to the ground, include a centrally positioned Zeus-Oromasdes, flanked on the north by Apollo-Mithras-Helios-Hermes and Artagnes-Heracles-Ares and on the south by the goddess Commagene and Antiochus himself (see figure 1). The deities are bounded at each end by a pair of guardian figures, an eagle and a lion. Carved on the back of the colossal thrones are monumental Greek inscriptions (*nomos,* or "sacred laws") prescribing the rituals pertaining to the cult of Antiochus and the eternal maintenance of his sanctuary.

Parallel to the colossal statues, but located below, on a lower tier set closer to court level, was a row of four colossal stelae, each depicting Antiochus being greeted by one of his tutelary gods in an act of deification. The lion horoscope stela stood as the northernmost stela in this row; the set was also bounded by guardian animals. These stelae survive only in fragments. A row of contiguous orthostats set into sockets on low plinths define the north and south limits of the East Terrace. The northern stelae depict, on the side facing the court, full-length, overlifesize portraits of the Persian and Commagenian ancestors of Antiochus, beginning with Darius the Great and ending with Antiochus's father. The southern row of stelae portray Antiochus's Macedonian ancestors, from Alexander the Great through Antiochus's mother. On the backs of the ancestor stelae, genealogical inscriptions identify each royal relative on the obverse. Be-



NEMRUD DAĞI. Figure 1. *Antiochus's pantheon.* View across the East Terrace toward the Double Podium, as of the 1954 excavation season. The rubble tumulus rises in the background. (Used with permission of the Nemrud Dag Publication Project)

hind and parallel to each line of ancestors is a shorter, second row of orthostats depicting miscellaneous lesser figures, including Antiochus's children. Only a few stelae survive in large, recognizable pieces.

On the east side of the terrace stands a low, square, stepped platform, now fully restored. The remains lying around the platform suggest that it supported a Persian fire altar and sets of guardian eagles and lions. Other, smaller altars are scattered throughout the terrace: in front of each ancestor stela, by the deification sequence, and at the southwest corner, near a subsidiary collection of carved stelae depicting the investiture of Antiochus.

The West Terrace contains the same set of sculpted features, but they are arranged a bit differently because of the shallow and cramped available floor space. Thus, the West Terrace lacks the stepped platform and high double podium prominent in the East Terrace's grandiose layout. The colossal gods are less well preserved than those on the East Terrace, but the ancestor stelae survive somewhat more completely. The magnificent monumental deification stelae and lion horoscope, which are preserved nearly intact, were recently restored to their original positions. The North Terrace contains only a guardian eagle and a long wall of uncarved orthostats forming one side of the court. A rubble walkway rings the base of the tumulus, connecting all three terraces. If Antiochus's tomb chamber exists within the tumulus, no entrance to it has been detected, despite numerous test trenches and geophysical probes into the mound.

The site's design, use of guardian animals, profuse statuary, and ritual symbols set within a cultic context perpetuate long-established local traits dating from the period of the Hittite Empire. Late Hellenistic architectural vocabulary and contemporary Persian religious iconography were integrated with indigenous features into an elegant and coherent statement of power and piety.

The site is important because (1) it is the most striking and informative monument of the Hellenistic ruler cult; (2) it presents an excellent reflection of the fusion of Anatolian, Persian, and Hellenistic cultural and artistic conventions; (3) it provides telling testimony to the manner in which Mithraism, a new agrarian religion sweeping across borders from east to west, permeated long-established Hellenistic beliefs (the sculpture and inscriptions illustrate remarkably the regional tendency toward religious syncretism in the crucial decades just preceding the Christian era); and (4) the exact date provided by the astronomical data on Antiochus's horoscope stelae furnish a monument firmly placed in the mid-first century BCE, from which to study other Hellenistic monuments that lack fixed dates.

At Antiochus's *hierothesion* the separate elements of architecture, sculpture, inscriptions, and the natural landscape are intertwined in a complex and delicate balance that recalls and reflects the king's immersion in a Greek, Roman, and Parthian military and cultural environment. The total effect of the sanctuary at Nemrud Dağı is unique, as a result not only of Antiochus's syncretistic proclivities, but ultimately of an underlying tenacity of indigenous Anatolian traditions.

[*See also* Hittites.]

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Goell, Theresa. "The Excavation of the 'Hierothesion' of Antiochus I of Commagene on Nemrud Dagh, 1953–1956." *Bulletin of the American Schools of Oriental Research,* no. 147 (October 1957): 4–22. Review of the author's first excavation seasons, including a survey of previous scholarship, the site's regional context, the importance of the site for late Hellenistic scholarship, and problems still to be resolved.

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Hamdy Bey, Osman, and Osgan Effendi. *Le tumulus de Nemroud-Dagh: Voyage, description, inscriptions* (1883). Istanbul, 1987. Remarkable work—given the authors' brief stay at the site and the 4m of snow covering some of the monuments—attributing the site to Antiochus IV, mid-first century CE. The publication was rushed to press to counter preliminary analyses offered in 1882 by Otto Puchstein. Contains numerous illustrations, particularly of the inscriptions.

Humann, Karl, and Otto Puchstein. *Reisen in Kleinasien und Nordsyrien.* 2 vols. Berlin, 1890. The fundamental publication of the site and region, upon which all subsequent interpretations have been based until Goell's excavations dramatically altered our understanding of Nemrud Dağı's design, date, heritage, and art historical significance

(see Goell, Sanders). Contains numerous errors in analysis and transcription of the inscriptions, primarily the result of limited excavation time, lack of knowledge regarding the yet to be discovered indigenous Anatolian cultures, and an overwhelming tendency to judge remains against an ideal Greek model. The authors present a date of 17 July 98 BCE for the Lion Horoscope.

Sanders, Donald H., ed. *Nemrud Dağı: The Hierothesion of Antiochus I of Commagene; Results of the American Excavations Directed by Theresa B. Goell.* 2 vols. Winona Lake, Ind., 1995. Final and comprehensive excavation report, including all the work of Goell and her collaborators (most data heretofore unavailable) on the geography of the region, its architecture, sculpture, inscriptions, and small finds, with a synthesis of the geophysical probes. Important as a corrective to the numerous errors and misstatements in previous publications about the site. Lavishly illustrated.

Tuman, V. S. "The Tomb of Antiochus Revisited: Planetary Alignments and the Deification of the King." *Archaeoastronomy* 7.1–4 (1984): 56–69. Suggests an alternative interpretation of the Lion Horoscope stelae, giving a date of 4–5 February 55 BCE on which occurred a significant alignment of planets. The author posits a direct relationship between this event and the selection of Antiochus's pantheon. Although weak on art historical analysis, the reassessment of the site's iconography merits consideration in all future studies.

DONALD H. SANDERS

NEO-HITTITES. The term used to designate the Iron Age states that succeeded the Hittite Empire in southeast Anatolia and North Syria is *Neo-Hittite.* [*See* Hittites.] It reflects the use of the term *Ḫatti* for these peoples by their neighbors, principally the Assyrians. These states no longer used the Hittite language written in cuneiform on clay tablets (like those in the Ḫattuša archives); instead they continued the practice of the Hittite kings in writing monumental inscriptions in the hieroglyphic script and Luwian language. [*See* Luwians.] Evidence suggests that they also wrote their everyday texts on perishable materials that have not survived. The bulk of the population as well as the rulers appear to have been Luwian speaking, which implies a migration of this people from the Anatolian plateau into Syria at the fall of the Hittite Empire.

The Neo-Hittite states seem partly to correspond to old centers and provinces of the Hittite Empire and partly to be new foundations. At the center lay Carchemish, where continuity of occupation from the Hittite Empire is likely. [*See* Carchemish.] Limited excavation of the site by a British expedition (1911–1914) exposed parts of the citadel and fortifications and especially an area of the lower town and recovered a considerable amount of sculpture and inscriptions.

On the east bank of the Euphrates River 20 km (12 mi.) south of Carchemish, Tell Ahmar, ancient Til Barsip, was excavated by a French expedition (1929–1931), revealing a provincial Assyrian palace, under which lay the palace of the earlier rulers (see Thureau-Dangin and Dunand, 1936). [*See* Til Barsip.] Hieroglyphic inscriptions give the history of a Neo-Hittite dynasty of at least four generations. The site, now threatened with flooding by a barrage, is again (1993) under investigation by an expedition from Melbourne University (Bunnens, 1990).

On the west bank of the Upper Euphrates the site of Arslantepe (ancient Melid) was excavated by a French expedition (1932–1933, 1938) that recovered its main Neo-Hittite monument, the Lion Gate, with its sculpture and inscriptions (Delaporte, 1940). [*See* Arslantepe.] A series of royal inscriptions from the valley of the Tohma Su marks the expansion of Melid westward, and a stela from Elbistan records the colonization of that plain by a Melidian king. In 1947, Turkish excavations at the neighboring site of Karahöyük discovered another large stela in situ (Özgüç, 1949). An Italian expedition resumed excavations at Arslantepe in 1961 that are still underway to investigate the mound's levels (for full bibliography, see Frangipane, 1993).

On the Euphrates between Melid and Carchemish lay Kummuh, the Iron Age predecessor of classical Commagene, with its capital at Samsat Höyük on the river. Rescue excavations at sites along the river preceded their flooding by a barrage in 1989, but no very notable Neo-Hittite remains were recovered (see Moore, 1993; Summers et al., 1993). Hieroglyphic inscriptions, the work of a Hittite dynasty, are known from other sites.

West of Kummuh, Marqas (modern Maraş, the capital of the small state of Gurgum), in spite of a complete absence of archaeological investigation, has yielded a series of sculptures and inscriptions. The latter attest the existence of a seven-generation dynasty in the period from 1000–800 BCE; the former are funerary in character, suggesting as provenance the unlocated cemetery.

The Syrian-Hittite Expedition of the University of Chicago (1933–1938) investigated the modern ʿAmuq, the kingdom of Unqi, on the plain of Antioch (Braidwood, 1937; Haines, 1971). [*See* ʿAmuq.] The Iron Age capital at Tell Taʿyinat yielded a typical Neo-Hittite palace-citadel and fortification complex, though the excavated sculpture and inscriptions were badly destroyed, probably in antiquity by the Assyrian conquerors. The Syrian Department of Antiquities has uncovered a massive, early Neo-Hittite temple at ʿAin Daraʿ, another Unqi site (Abou Assaf, 1990). [*See* ʿAin Daraʿ.]

A Danish expedition from the University of Copenhagen (1931–1938) excavated the most southern state with Neo-Hittite remains, Hama, ancient Hamath, which revealed another typical Neo-Hittite citadel of the ninth century BCE, the work of a Hittite dynasty, as its hieroglyphic inscriptions show (Fugmann et al., 1948–1990). [*See* Hama.] By the eighth century BCE, political power had passed to an Aramean dynasty.

In Plain Cilicia another Neo-Hittite kingdom is known, but of its capitals, the site of ancient Adana has not been located, while Tarsus, excavated by an American expedition (1934–1938, 1947–1949) has not yielded substantial remains

of the period (Goldmann, 1956–1963). [*See* Cilicia.] Its civilization is thus represented by the small provincial site of Karatepe in the hills north and east of the plain. There, a hilltop fort, excavated by a Turkish expedition since 1947, has two monumental gateways decorated by sculptured orthostats and a large bilingual inscription in hieroglyphic Luwian and alphabetic Phoenician (for bibliography, see Orthmann, 1980). [*See* Karatepe Phoenician Inscriptions.] This bilingual, which has been of great significance in the decipherment of hieroglyphic Hittite, provides the longest inscription of the hieroglyphic corpus and probably also the latest (c. 700 BCE).

The southeast Anatolian plateau is not well known archaeologically in this period, but it is quite rich in monuments. A western group centering on the mountains Karadağ and Kızıldağ probably date to the twelfth century BCE and provide evidence of continuity from the Hittite Empire. The other two groups, a northern one covering the modern provinces of Kayseri and Nevşehir and a southern one covering Niğde, are both late (late eighth century BCE) and attest the works of Anatolian dynasties of the period.

In addition to the evidence of their own hieroglyphic inscriptions, sources for the history of the Neo-Hittite states can be drawn from the inscriptions of the Assyrians, who attacked, harried, and ultimately destroyed them. In the late eighth century BCE, the Assyrians broke up these states one by one, removing their native populations and constituting the resettled territories as Assyrian provinces. This process proved terminal for Hittite civilization, which finally disappeared from history at this date. [*See* Assyrians.]

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J. D. HAWKINS

NERAB INSCRIPTIONS. Two basalt funerary stelae, inscribed in Aramaic and belonging to two priests of the moon god Śaḥr, were found in 1891 by fellahin digging clay for the walls of their houses on a tell abutting the small village of Nerab (about 7 km, or 4 mi., southeast of Aleppo, Syria). The stelae were associated with an uninscribed sarcophagus hewn from the same material, containing two skeletons. The sarcophagus had been uncovered two years previously in similar circumstances (Clermont-Ganneau, 1897, pp. 183–184). Charles Clermont-Ganneau obtained the stelae for France and had them brought to the Louvre museum, where they remain. He published them in 1897.

Each priest is carved in bas-relief on a stela with a rounded top. In Nerab I (93 × 35 cm), Sin-zer-ibni stands with his right arm raised in a gesture of prayer or adoration. His fringed robe, wrapped around his right shoulder, leaving his left shoulder bare, reaches to his bare feet. He is wearing a round cap and in his left hand he grasps some folded fabric, possibly fringed. The text surrounds his head and then continues across the bottom of his robe from the knee down:

Sin-zer-ibni, priest of Śaḥr in Nerab, deceased. And this is his

image and his sarcophagus (?). Whoever you are, should you carry off (?) this image and the sarcophagus (?) from its place, may Śaḥr and Shamash and Nikkal and Nusk tear out your name and your place from life, and may they kill you with a nasty death and destroy your offspring. But if you guard the image and this sarcophagus (?), afterward, may what belongs to you be guarded.

Nerab II (95 × 45 cm) depicts She'gabbar wearing the same cap and robe worn by Sin-zer-ibni on stela I. He sits before a well-stocked offering table, feet resting on a footstool. His left hand holds a drinking cup close to his lips. Facing him from across the table stands an attendant, carved on a smaller scale, either whisking flies from the table or fanning the priest. The text is inscribed on the flat raised surface above this scene:

She'gabbar, priest of Śaḥr in Nerab. This is his image. Because of my righteous conduct before him he gave me a good name and prolonged my days. On the day I died, my mouth was not stopped from speaking; and with my eyes, what was I seeing? Children of the fourth generation wept over me [or: "and with my own eyes I was witnessing the children of the fourth generation. They wept over me . . ."] and became crazed with grief. They did not set any silver or bronze vessel beside me. They set me (here) with my clothes (only) so that, in the future, you would not carry off my sarcophagus (?). Whoever you are—should you commit wrong and carry me off, may Śaḥr and Nikkal and Nusk make his death odious, and may his posterity perish.

The script of the stelae is fairly conservative (Naveh, 1970, pp. 17–18; Gibson, 1975, p. 94). Virtually every form has a precedent in eighth-century BCE Aramaic inscriptions. A number of these forms, however, are at the innovating pole of the comparable forms *(zayin, ḥet, kaph, samekh, ṣade)*. Assuming that the lapidary style was conservative in its own time, the script fits the early seventh century BCE.

Fortunately for dating purposes, She'gabbar of Nerab II has turned up as "Se'gabbari, priest *(šangû)* of Nerab," in a Neo-Assyrian letter addressed to Sargon II (c. 710 BCE) published by Simo Parpola (1985). The same name is attested in two other cuneiform sources from roughly the same temporal and geographic horizon (c. 721–680 BCE; Parpola, 1985, p. 273, n. 2), allowing a date in the first decades of the seventh century BCE for She'gabbar's funerary stela.

The method of writing is *scriptio continua* throughout, without word dividers or spaces between words. The orthography is conservative and conforms to the practice of the Old Aramaic inscriptions of the ninth and eighth centuries BCE. The language is transitional between the Old Aramaic of the ninth and eighth centuries and the Official Aramaic of the Persian period. Certain consonants later lost through merger in the Persian period are still represented as they are in Old Aramaic (cf., e.g., *l't'ḥz* II:4; *'šrh, 'šrk* I:8, 10; *tnṣr, ynṣr* I:12, 13). The form of the negative in the Nerab stelae (II:4, 6, 8) is simply *l-*, as in Old Aramaic generally (and in the Aššur ostracon), in contrast to *l'* in the texts of the Persian period. [*See* Aššur.] On the other hand, the vacillation between assimilated (*yshw* I:9) and nonassimilated forms (*tnṣr, ynṣr* I:12, 13) falls between the Old Aramaic inscriptions, which generally (outside of the Tell Fakhariyah inscription) assimilate, and the official and literary documents of the Persian period, which do not assimilate these forms. [*See* Fakhariyah Aramaic Inscription.] The form *yktlwk* (I:11) presupposes the **qtl* form of the root for "to kill," widely attested from the Persian period, in contrast to the original **qtl* reflected in the Old Aramaic inscriptions (and in cognate languages). Moreover, the language behind the Nerab inscriptions has already developed the quasi-verbal use of the participle (*mḥzh 'nh* II:5) entirely absent in the Old Aramaic inscriptions of the ninth and eighth centuries BCE, but widely attested in the Persian period.

As funerary texts, the Nerab stelae are unique among early epigraphic Aramaic texts. They share a number of structural features with several Phoenician funerary inscriptions, including autobiographical elements and curses pronounced on the would-be violator of the funerary installations. [*See* Phoenician-Punic.] In both inscriptions, but especially in Nerab II, the deceased speaks from beyond the grave. The curses are comparable to similar curses found in other Northwest Semitic funerary, commemorative, and votive inscriptions (Gevirtz, 1961). Hayim Tawil (1974, pp. 57–65) has demonstrated the traditional character of several motifs in Nerab II by adducing parallels in other Northwest Semitic and cuneiform texts. Most impressive, however, is the sequence of motifs (most in the same order) shared with Nerab II by the Harran funerary inscription of Nabonidus's mother Adda-guppi' (Gadd, 1958, pp. 46–51) cited by Tawil (1974, p. 65).

The Nerab stelae exhibit an Assyrian influence in the names of the priests (Kaufman, 1970), in the formulae of the inscription (Tawil, 1974, pp. 57–65), and in the iconography of the bas-reliefs (Gibson, 1975, p. 94). The gods mentioned—Shamash, Nikkal, Nusk, and Sin (in the Aramaic form of Śaḥr)—are Babylonian. Nikkal is the consort of the moon god Sin/Śaḥr, while Nusk (if not also Shamash) is their son. From the letter published by Parpola (1985) it is clear that Nerab (cuneiform evidence points to a vocalization, *Nēreb*) was administratively dependent on Harran, where the same holy family was worshiped. Theophoric names from cuneiform tablets from Nerab of more recent date (c. 560–520 BCE; Dhorme, 1928; Oelsner, 1989, pp. 68–69, 76) indicate the longevity of the cult of this holy family in Nerab.

[*See also* Aramaic Language and Literature; Imperial Aramaic; *and the biography of Clermont-Ganneau.*]

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DOUGLAS M. GROPP

NESSANA, site located in the western Negev desert, 52 km (32 mi.) southwest of Beersheba (30°53′ N, 34°26′ E). Founded by Nabateans in the Hellenistic period, Nessana was occupied until the Early Arab period. The modern village of Auja al-Hafir is located on the site of the ancient town. It is west of Wadi Ḥafir, below the acropolis where the remains described below are located. The H. Dunscombe Colt expedition excavated the site for two seasons in the 1930s under the auspices of the British School of Archaeology in Jerusalem. Dan Urman (1990–1991) resumed excavations in 1987, on behalf of the Israel Antiquities Authority.

When Nessana was first inhabited is unclear. The earliest remains date to the third century BCE, when Nabateans settled this region of the Negev. Finds from this period include coins from Egypt and Judea (Judah) and imported Hellenistic pottery. The date and function of the earliest building (27 × 25 m) are difficult to determine because in the Byzantine period the North Church was built in the same location. Colt thought the earliest building was a Hellenistic fortress because it had thick walls and towers. Avraham Negev (1993) believes that the walls and towers were Byzantine renovations and suggests that it may have been a Nabatean temple, built between 30 BCE and 60 CE. In the same period, a large staircase was built up to the acropolis.

There is no evidence of new building activity and only a few small finds between 60 and 200 CE. It is possible that the site was abandoned for part of this period. It was occupied after the late third century: a fortress (85 × 35 m) was built adjacent to the south side of the Nabatean temple. It had rooms along the western wall, and, later, rooms were added along the eastern wall. It was probably one of several forts built by Diocletian and Constantine to form a regional defense system in the fourth century. Local troops manned the fort until their unit was disbanded; the building subsequently became part of a monastery.

Not long after the fort was built, a Christian church complex was erected on the foundations of the Nabatean temple. The complex consisted of the church, a courtyard, rooms south of the church, and an atrium to the east of the church. The church is a narrow, three-aisled basilica (19 × 10.7 m). It had a marble floor with opus sectile inlays. West of the nave was a baptistery, and north of it was a chapel. The nave was entered through its south wall, which led into a narrow courtyard. On the south side of the courtyard are several rooms, two of which functioned as a martyrion (a burial chamber with inscriptions to different saints). East of the courtyard and the basilica was an atrium that was connected to the old monumental staircase, the entrance to the complex. Numerous papyri were found in the martyrion, including literary and nonliterary texts. The literary papyri include fragments from classical authors and religious texts. The nonliterary texts are legal documents, such as contracts and receipts or church and military documents. They are written in Greek and Arabic and are dated to between 512 and 689.

In about 601, a second church was built on a hill southwest of the Roman fortress. It, too, was a three-aisled basilica (20.8 × 14.1 m). On the south side of the nave was a smaller chapel (6.22 × 13.2 m), and west of the nave was an atrium. The entire complex was built of well-dressed stone and paved. Nessana flourished after the Islamic conquest until the eighth century. The reasons for its decline are uncertain.

[*See also* Judah; Nabateans; *and* Negev.]

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ADAM LYND-PORTER

NEUTRON ACTIVATION ANALYSIS. The chemical composition, or "fingerprint," of an object can be determined by trace- and major-element analysis. The method, neutron activation analysis (NAA), measures the quantities of a large number of constituent elements from only a small sample of an object (typically 50–100 mg). NAA's widest application in archaeology has been in determining the chemical composition of ceramics in order to establish place of origin. NAA has also been applied with great success to obsidian, flint, glass, jade, marble, and basalt. By applying statistical tests to the composition of a collection of samples, it is possible to determine if the samples come from the same or a different source. It is also possible to determine where an artifact originated by matching its chemical composition to that characterizing a particular site.

However, because the methods employed in ceramic production can change the composition of the clay (e.g., if temper is added or clays are mixed) and because the chemical reference compositions characterizing different pottery-production sites may not be available, tracking the sources of ancient pottery is a complicated task. Reference compositions are usually not based on clay analysis but on the chemical analysis of ceramics that can be unequivocally assigned to a specific site or region. The composition of the ceramic reflects the composition of the clay plus whatever else the potter added to the clay. Wasters are ideal for establishing local compositions. Kiln and *tabun* ceramic linings, mud bricks, footbaths, and loom weights can serve as reference materials to establish a local chemical profile. Ceramic chemical compositions that persist over long time periods at a given site and that represent different types of pottery can also serve as reference groups. The use of ceramic rather than clay compositions in NAA is also preferred because the composition of a given clay bed may not be uniform over a wide area and because it usually is not known where ancient potters got their clay. The availability of chemical reference compositions is a technical problem that is gradually being overcome by judicially selected analysis and interlaboratory calibrations. One of the advantages of NAA over other analytical techniques is that NAA laboratories can be intercalibrated very precisely.

A fairly simple way to uncover similarity between chemical compositions, and hence commonality of origin, is to do a regression analysis, in which a constant relationship between two chemical compositions is sought. If a constant factor is found that connects every element of one composition to every element of the other, the two represent the same clay source, diluted to different degrees. Considering dilution is a common but critical factor in chemical analyses of pottery.

In order to determine the place of manufacture of a collection of ceramic objects sampled, the chemical fingerprint of the clay sources or ceramic compositions at various sites across a wide area is needed. Without such reference groups, NAA, coupled with statistical analysis, can only tell whether the objects measured came from one or more sources—although this information is valuable in itself.

NAA provides precision and accuracy for a large number of elements; the method uses instruments (no chemical preparation of the sample is required; hence, I[nstrumental]NAA is often used in tests in place of NAA); many element abundances are measured simultaneously; measurements can be automated; errors of measurement can be precisely determined; and large numbers of samples can be measured in relatively short time round the clock with little human attendance.

[*See also* Analytical Techniques.]

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JOSEPH YELLIN

NEUVILLE, RENÉ (1899–1952), prehistorian considered, together with Dorothy Garrod and Alfred Rust, to be one of the founders of modern Near Eastern prehistory. Born in Gibraltar, where his father was a diplomat, Neuville was sent to Jerusalem in 1926 as a chancellor of the French general consulate. While in that post (1926–1937), his interest in prehistory emerged under the influence of Father Alexis Mallon when he became involved in Mallon's Chal-

colithic excavations for the Pontifical Biblical Institute in Jerusalem at Umm Qaṭafa in the Judean Desert and at Teleilat el-Ghassul.

His own research concentrated on the Paleolithic sites of the Judean Desert and on the Qafzeh cave, near Nazareth. Among the Judean sites at which he worked are Umm Qaṭafa, where Acheulean industries were uncovered; Abu Sif, with a then new kind of Middle Paleolithic assemblage; and 'Erq el-Aḥmar and el-Khiam, with unique stratifications of Upper Paleolithic, Epipaleolithic, and Neolithic layers. Qafzeh cave is well known for the association of modern humans with Middle Paleolithic industries and is of interest because of the presence of the early Upper Paleolithic at the top of the sequence.

As early as 1934, Neuville proposed a first synthesis of the prehistory of Palestine. Using both his results and those from the Carmel caves, he was able to draw a sketch of human occupation in Palestine. [*See* Carmel Caves.] Drawing from the knowledge he had acquired in Europe as a guide, but identifying some of the main specifics of the local tradition, he subdivided the Upper Paleolithic into six phases, avoiding European nomenclature. This work of the 1930s still underlies scholarly interpretations sixty years later.

Neuville left Jerusalem in 1937 and spent several years in Spain and North Africa. Returning to Palestine in 1946, he prepared a monograph (1951) on his work in the Judean Desert. Through their work Neuville, Garrod, and Rust developed the teaching of Jacques de Morgan, according to whom the biblical record was of no value in understanding the prehistory of the Near East. Neuville was a pioneer in considering Near Eastern prehistory in the context of the worldwide study of the oldest developments of human life and in incorporating Near Eastern materials into the general framework of Quaternary research.

[*See also* Judean Desert Caves; Teleilat el-Ghassul; *and the biographies of Garrod and Mallon.*]

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NEVALI ÇORI, prehistoric settlement site below the village of Kantara Köy (now Gülusağı), in the Hilvan district of the province of Şanlı Urfa, Turkey (37°60′ N, 38°70′ E). Since 1992 it has been covered by the Atatürk Reservoir. Settlement was on a 90-meter-long and 40-meter-wide terrace below the Yangıntepe foothills, 490 m above sea level on the right side of the Kantara Çayı, 3 km (2 mi.) from the southeast bank of the Euphrates River in the foothills south of the Taurus.

Nevalı Çori was discovered in 1980 during a systematic survey carried out by Hans Georg Gebel as part of excavations at Lidar Höyük, 9 km (7 mi.) away. It was excavated in 1983, 1985–1987, and 1989–1991 by the University of Heidelberg, under the direction of Harald Hauptmann, in cooperation with the Archaeological Museum of Şanlı Urfa. The aim of the excavations was to investigate the earliest occupation of the settlement, which is dated to the Pre-Pottery Neolithic B (PPNB; 8800–7600 BCE), the beginning of agriculture and the domestication of animals. [*See* Agriculture.]

Stone cist graves in a small cemetery date from the Roman period. The Early Bronze Age IB level (c. 3000–2700 BCE) contained a terraced limestone building. Pits with copper slag and crucibles were evidence of metallurgic activities. Twenty-three stone cist and pithos graves belong to this period as well. [*See* Burial Techniques.] On the basis of the plain simple ware and reserved-slip ware typically found in such burials in North Syria, this settlement is contemporary with Hassek Höyük 0–2, Kurban Höyük VB and VA–B, Norşuntepe XXVI–XXV, and 'Amuq G. [*See* Grave Goods; 'Amuq.]

A limestone wall surrounding an open area below the limestone hilltop is to be dated to the Middle Chalcolithic Halaf culture of the second half of the sixth millennium. Along its southern length, it consists of a 13-meter-long double wall with a towerlike round building at each end. A small round structure just northeast of the enclosure contained the skeleton of a seated burial. Good parallels for the monochrome and painted ceramics can be found in the Middle Euphrates area at Kurban Höyük VIII, Cavı Tarlasi, and Tell Damisliya on the Middle Euphrates, and in 'Amuq D. The site's special significance, however, is in its Early–Middle PPNB settlement, which in the Taurus and its piedmont are represented by Cafer Höyük near Malatya and Çayönü, north of Diyarbakir. [*See* Çayönü.] The core settlement (Nevalı Çori I) contains five building phases, 2 m thick that, for the most part, was investigated (see below). The opposite, west side of the valley was also settled (Nevalı Çori II); however, it consisted of only two building phases.

The basic construction type for the twenty-three limestone and mud-mortar buildings is a freestanding, long rectangle with regular inner divisions and subfloor channels. This building type, characteristic of levels I–V, has a direct correspondence at Çayönü in the Intermediate level.

Level I. In the lowest level (I) at Nevalı Çori, two channels under a house (no. 21 A) floor ran along its long axis. Outside of the house were cooking areas and roasting pits lined with gravel, as at Cafer Höyük and Çayönü. Only wall fragments remain of a "cult building." [*See* Cult.]

Existing carbon-14 dates give a calibrated age of between 8400 and 8100 BCE for this level, making it contemporary

with Abu Hureyra 2A, Mureybet IV A, and the older levels at Çayönü in the Early PPNB. [*See* Mureybet.] The stone-implement industry (consisting of flint), in which the bipolar striking technique dominates, supports this dating. The two largest groups of implements found are projectile points, including tanged points of the Byblos type (also known from Bouqras, Jericho, and Ugarit), and harvest implements (i.e., blades with silicate luster). [*See* Bouqras; Jericho; Ugarit.] These indicate an economy based on hunting and the already developed agriculture (see above). Gazelle were especially prized as game animals—along with red deer, fallow deer, and wild boar—while sheep and goats were kept as domestic animals. [*See* Sheep and Goats.] There were plantings of einkorn and emmer (*Triticum boeoticum* and *monococcum* as well as *Triticum dicoccoides* and *dicoccum*); barley *(Hordeum spontaneum [distichon]);* legumes such as lentils *(Lens culinaris);* peas *(Pisum sativum);* and other pulses. The food supply was supplemented by gathering pistachios, almonds, grapes, and wild grasses and bearded wheats (*Aegilops squarosa* or *speltoide*). [*See* Cereals.]

Level II. In level II three buildings were situated next to each other (nos. 12, 21B, 26). The remaining buildings (nos. 16, 22, 25) and a sacred building in the west were set off by a ditch leading from the slope. Along the slope a wall formed the settlement boundary with Yangıntepe. The largest house (no. 26) was 19 m long and 6.5 m wide. The building's 16.10-meter-long main portion (toward the northeast) was a long rectangle with eight rooms arranged in two regular rows. The adjoining main building had its entrance on the side facing the Kantara valley. The outer walls were .50 m thick and the inner walls .40 m thick. The construction, which encompassed five building stages, corresponds to the typical schema at Nevalı Çori: the foundation platform, composed of large stone blocks, consisted of six rectangular strips with spaces (0.25–0.30 m) between them. The spaces were covered with stone slabs to produce subfloor channels. The outer walls and then the rooms were set above this continuous foundation platform, which was made even with stone ballast. The floor was covered with a layer of gravel, and it and the stone walls were plastered with mud. The channels, which run through the platform, are left open on the outside, and so provided ventilation or cooling. The exterior of the house was surrounded by a "bench" consisting of one layer of stone. Posts were set along the long sides to support the roof.

The successor to the oldest cult building was well preserved. Its rectangular outline (13.9–13.5 m to a side) covered a surface of 188 sq m. The surrounding walls, still partially preserved to a height of up to 2.8 m, consisted of layers of undressed stone covered with plaster. Inside, a stone bench was positioned in front of the walls on three sides; eleven monolithic pillars with T-shaped capitals were set into the bench. The entrance, flanked by two pillars, lay in the southwest; in the southeast wall there was a niche for a cult statue. The floor was made from terrazzo. Stone sculptures representing birds and human/animal hybrids belong to this building.

Level III. The settlement showed its most lavish con-

NEVALI ÇORI. *Building 3, view from the northeast.* (Archäologisches Museum Şanliurfa)

struction in level III. In the southeast, four houses (nos. 3, 2, 6, 7) were in parallel alignment. House 2 (16 × 6.8 m) and house 7 (14 × 6.10 m) show the same construction: a foundation platform of rectangular strips (eight and nine of them, respectively) with subfloor channels running through them (seven and eight of them, respectively). An open area separated these houses from those with a different orientation in the west and the latest sacred building erected on the spot of previous ones. The settlement was again closed off with a boundary wall toward the slope. Most of the houses contain up to nine small rooms arranged in three rows and seem to have been storehouses; house 6, however, based on its division into large rooms and its furnishings, can be interpreted as a residence and workshop for the manufacture of stone implements and sculpture.

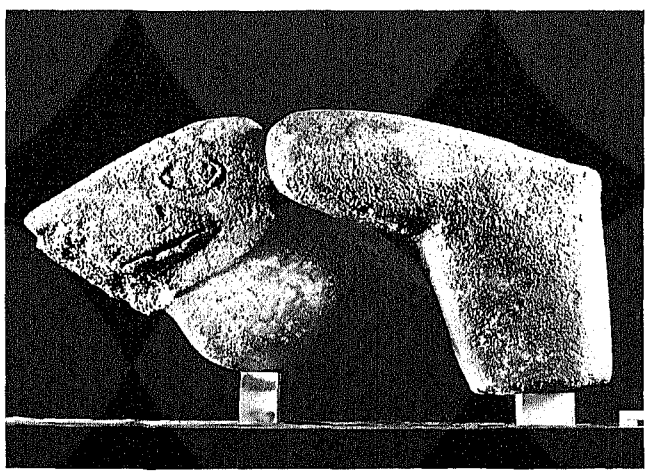
The cult building was set directly into its underlying predecessor from level II, so that its area was reduced to 155 sq m. On the inside a stone bench covered with monolithic stone slabs was set in front of the walls, except on the entrance side. Ten pillars were inserted between the slabs and an additional two pillars were placed at the entrance. The inside of the room, with two 3-meter-high sculptured pillars, was again outfitted with a terrazzo floor, as in the terrazzo building at Çayönü. A small niche for a cult statue was cut in the rear wall opposite the entrance.

Levels IV–V. Several buildings arranged in parallel rows belong to level IV, among them house 4 (12 × 8 m). A break in the continuity of settlement becomes apparent with the most recent level (V). Only one 10-×-6-meter house (no. 1) survives from level V, and it lacks the previously characteristic channels. The division of space—four equally large rooms with a diagonal area in front of them—corresponds to buildings from the cell building phase at Çayönü.

In addition to skeletons from "contracted-position" burials, deposits of skulls and partial burials were also found in the houses, generally below the floors. They provide evidence for the skull cult, or ancestor worship, practiced in this period. Monumental stone buildings outfitted with life-sized limestone figures provide, for the first time, an idea of Early Neolithic worship. A clean-shaven head with a snake coiling itself like a braid, as well as a human torso, must have belonged to a male figure. In addition, there is a sculpture of a bird in flight and one of a hybrid creature with the body of a standing bird with a stylized human head. A composite figure shows two female figures crouching back to back surmounted by a bird. It and another monumental female head were part of a carved column reminiscent of a totem pole. In the world of ideas, these symbol-laden images anticipate the later wall art at Çatal Höyük; however, in their uniqueness they go far beyond the usual ideas of Neolithic communities in the Near East. [*See* Wall Paintings.]

In addition to the large statues, a stone bowl with a relief on its exterior of two human figures framing a turtle (representing fertility) and a limestone plate with an engraved hunting scene are especially fine. The small limestone sculptures include naturalistic and stylized human heads and representations of panthers, lions, wild boars, wild horses, bears, and vultures. There are female and male figures in sun-dried and fired clay, as well as polished-stone objects: axes, clubs, arm rings, and beads with single and multiple holes of the older bar form and the later butterfly form. The advanced technical level at the site is documented by a copper bead—evidence of a preliminary stage of early metallurgy (as at Çayönü, Tell Maghzaliyeh, Tell Ramad, and Aşıklı Höyük).

Settlement Differentiation. Nevalı Çori and neighboring settlements provide a differentiated picture of Early Neolithic forms of organization in the southern Taurus piedmont. The settlements had different subsistence economies, which were already highly specialized because of specific environmental conditions. On the Euphrates plain there was agriculture and fishing, and in the fertile alluvial land of the Harran plain (e.g., Gürçütepe) there was gazelle hunting as well. [*See* Fishing; Hunting.] On the limestone hilltops of the steppe, an additional settlement type appeared, as at Göbekli Ziyaret Tepe, in which flint outcroppings were used to produce implements, and the easily worked limestone promoted the manufacture of small figures and large sculptures. In this settlement system, Nevalı Çori may have functioned as a central site, where a central cult was located, tools and objects of religious significance were produced, and provisions stored. Its organization and coherence as a larger settlement strongly suggest such a role.



NEVALI ÇORI. *Limestone bird sculpture.* (Archäologisches Museum Şanliurfa)

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HARALD HAUPTMANN

Translated from German by Susan I. Schiedel

NEW ARCHAEOLOGY. Originally used by Joseph Caldwell in 1959 to describe the increasing archaeological interest in North America in ecology, settlement patterns, and cultural process (Caldwell, 1959), "New Archaeology" entered the archaeological vernacular in 1962 with the publication of Lewis Binford's "Archaeology as Anthropology" (Binford, 1962). In that landmark article Binford argued that archaeology should be understood as having the same goals as anthropology: the recovery and explanation of patterns of similarity and difference in human cultural behavior. In the 1970s and 1980s, the term became largely synonymous with Processual Archaeology. The interests of the New Archaeology were generally paralleled in England in the work of David Clarke (1968). Many of the same criticisms of the cultural-historical paradigm, and suggestions for a new approach, had been voiced by Walter W. Taylor in his prescient, but neglected 1948 book *A Study of Archaeology* (1948; see generally Trigger, 1989).

The New Archaeology sought to escape historical particularism and address issues of broad comparative and anthropological interest, including subsistence, land use, settlement patterns, demography, and technology. It thus incorporated many of the interests of the cultural ecology approach that had emerged in the 1950s, particularly under the influence of Julian Steward (see especially Steward, 1955). The New Archaeology also incorporated the materialist approach of Leslie White, which saw culture as technological, economic, social, and ideological subsystems determined by the levels of technology and energy capture (White, 1949). These two positions were partially reconciled by the neo-evolutionary cultural anthropologists, such as Elman Service and Morton Fried (Service, 1962; Fried, 1967), whose evolutionary schemes (bands, tribes, chiefdoms, and states) and egalitarian, rank, and stratified societies gave archaeologists fixed typologies with which to theorize and categorize their data. While ahistorical or even antihistorical in practice (Patterson, 1990), New Archaeology therefore had significant interest in social organization and change—which proved especially influential in the emergence of debates over the origins of the state. Discussions over the causes and nature of social evolution, including the origins of the state, had been almost completely ignored by Syro-Palestinian archaeology.

Among the concerns of the New Archaeology were a more rigorous scientific approach to archaeological method, including explicit research design and the use of statistics and computers, sampling strategies, and floral and faunal data. Among the techniques that came into use were flotation of soil samples to recover botanical remains, analysis of animal bones to understand stock raising and utilization patterns, and computers to execute multivariate statistical analyses, especially cluster and regression analyses and tests of significance. An emphasis on explicit research design, which set out the goals and methods of a particular project, was one achievement of the period, though the concept was frequently influenced by a unique epistemological orientation.

The New Archaeology was concerned with more explicit archaeological theory based on scientific reasoning situated broadly within the logical positivist approach. The hypothetical-deductive reasoning espoused by Carl Hempel was most influential. This view held that the only way that scientific explanation could be verified was through the formulation and testing of falsifiable hypotheses (see especially Watson et al., 1971). In this manner archaeologists could generate "covering laws" or "nomothetic paradigms" that would supposedly represent proven patterns of human development and behavior. While possessing an apparent clarity, the hypothetical-deductive approach does not reflect the way "science" is actually done—nor does it account for the inherent limitations, and variability, of archaeological data. The statistical-relevance approach outlined by Wesley and Merrilee Salmon (Salmon, 1982), which accepts a preponderance of affirmative evidence within a contingent context of discovery and analysis as supporting an explanation, more accurately reflects scientific and archaeological reasoning.

Defined as a science, the New Archaeology drew freely from concepts and methods developed in other social sciences, such as economics and political science. The introduction of General Systems Theory, developed originally in evolutionary biology, and systems engineering gave archae-

ology a highly formalized series of concepts with which to explain social structure and change. Negative and positive feedback had the effects of either maintaining a steady state or bringing about change within a system. Decision-making theories developed originally in management science were also applied to explain how change was formulated and effected in human organization. The New Archaeology generally assumed optimizing and maximizing behavior based on least-effort and least-cost principles, which to an extent rendered past decision makers into protocapitalist businessmen. All these approaches deliberately compartmentalized aspects of the past and negated the role of the individual and of human agency and free will in favor of systems of terms and explanatory frameworks that appeared scientific and potentially quantifiable (see Moore, 1983). The generalizing and rationalizing bases of the New Archaeology attempted to situate archaeology within those sciences relevant to society.

Though originally a marginal or fringe approach centered, to a large extent, around Binford and his students, by the late 1960s and 1970s the New Archaeology had become the conventional mainstream, both in terms of method and theory. By the late 1970s and 1980s, however, the approach per se had been surpassed by other developments, particularly in the areas of theory and epistemology. The emphasis on the material, rather than on the symbolic and ideological, and the social and cultural, rather than the individual, was eventually seen as incomplete and antihumanist. The shortcomings of the hypothetical-deductive approach were also highlighted, though the heightened interest in the philosophy and epistemology of archaeology was a positive outgrowth of the New Archaeology's search for clarity and rigor (Redman, 1991; Watson, 1991; cf. Wylie, 1989). While the theoretical or philosophical underpinnings of the New Archaeology (empiricism and objectivity, scientism, and hypothetical-deductive reasoning) have fallen away, the most significant and enduring legacies have been heightened concern for careful research design, data recovery, and analysis using scientific techniques. In the 1980s and 1990s, American and European archaeologies have to an extent retained rationalist and empiricist practices while hotly debating a variety of theoretical approaches—including some that are explicitly relativistic, antiscientific, and political in orientation (e.g., Shanks and Tilley, 1987a, 1987b; cf. Watson, 1990).

In terms of theory, the New Archaeology, as with previous and subsequent trends in anthropological archaeology, had little impact on Syro-Palestinian archaeology. Outside of the study of prehistory there was little interest in the comparative study of human behavior and societies, and little understanding of how to gain insights through the integration of a variety of archaeological data. In Near Eastern archaeology as a whole, however, the New Archaeology had a significant influence in the 1960s and 1970s on research in Iraq and Iran. Particularly important to the discussion were Robert Braidwood and Robert Adams of the University of Chicago. Braidwood was vehemently opposed to the rhetoric of the New Archaeology, which he viewed as a humorless cult (Braidwood, 1971). His approach was nevertheless congruent with the scientific and problem orientation of the New Archaeology. Adams was heavily influenced by the evolutionary approach of Julian H. Steward and the settlement-pattern techniques that had been used in New World archaeology. He has also been an acute and influential commentator on trends in archaeology and an advocate of bridging the humanities and social sciences (Adams, 1968, 1983). Adams's work on Mesopotamian settlement patterns and social evolution provides some of the best examples of New Archaeology-influenced research in the Near East (e.g., Adams, 1968, 1981). New Archaeology orientation is also reflected in the work of Kent Flannery, Frank Hole, and others on early village life and the origins of food production (Hole et al., 1969) and that of Gregory Johnson on settlement patterns and the rise of the state in southwestern Iran (Johnson, 1973). With the exception of Adams, however, the influence of the New Archaeology has been largely restricted to prehistory and the early historical periods in the Near East.

The positive impact of the New Archaeology on archaeology in the Levant was methodological. A variety of new techniques was eventually incorporated into standard practice, such as animal bone archaeology, paleobotany, geology, and a regional orientation. The most intense internal debates, however, remained parochial and emphasized local issues of philosophy and practice. These included whether archaeology in the southern Levant should be construed as "biblical" or "Syro-Palestinian," whether excavations should emphasize broad horizontal exposures or vertical depth, the relative stratigraphic control involved in these strategies, and the usefulness of section drawings (see Aharoni, 1973; Dever, 1973; 1981). The American Syro-Palestinian archaeology position stressed independence and professionalization over the traditional secondary position of archaeology to biblical and historical studies; it sought to connect with the main stream of anthropological archaeology. Israeli archaeology has tended to absorb methodological innovations and eschew overt theoretical orientations (see generally Bar-Yosef and Mazar, 1982; Glock, 1985; 1986; Broshi, 1987). Jordanian archaeology remains oriented toward cultural resource management issues, and its research agenda is dominated by foreign archaeologists. The development of a local Jordanian school of archaeology continues, with predictable nationalistic and legitimizing orientations. British, French, and German approaches to archaeology in the southern Levant do not appear to have been significantly influenced by the New Archaeology.

Several examples trace the incorporation of new methods into American Syro-Palestinian archaeology (see generally

Dever, 1985; 1988). The excavations at Gezer, in Israel, in the mid- to late 1960s employed a field geologist and also used the then-new flotation method to recover botanical materials. The project also hosted a British team that conducted a site catchment analysis, examining regional pedology and vegetation. The project, however, placed more emphasis on integrating the American orientation toward detailed ceramic typology with the then also new Kenyon-Wheeler, or balk-to-locus, approach to digging (Dever and Lance, 1978). The Gezer final reports emphasize ceramics and stratigraphy rather than an integrated view of the site and its setting through time.

The Gezer project was also the progenitor of a number of projects in the 1970s and 1980s that were executed by former staff members. These include Be'er Resisim, Tell el-Ḥesi, Meiron, Tel Ḥalif, Tel Miqne, and Ashkelon in Israel; Idalion on Cyprus; and the Wadi Tumilat project in Egypt. Each of these projects has also sought explicitly to incorporate new methodologies into its repertoire and has been, to greater and lesser degrees, self-conscious of developments in archaeological theory. These developments have come in part as a response to the institutionalization of the New Archaeology materialist orientation in the United States—and by accompanying changes in the political economy of archaeology. The latter include the need to demonstrate legitimacy through explicit research designs in order to receive funding from agencies such as the National Science Foundation, the Wenner-Gren Foundation for Anthropological Research, and the National Geographic Society (Yellen and Greene, 1985).

The most self-conscious emulation of the New Archaeology appears in the Tell el-Ḥesi project (Worrell, 1989; Rose, 1989). Two of the innovations the project attempted to integrate were an explicit research design, with strong ecological and philosophical components, and a multidisciplinary staff. The staff included a geologist, paleoethnobotanist, and cultural and physical anthropologists. In reality, however, the project had difficulty translating abstract concepts into practical goals for fieldwork. Testing ecological hypotheses became exercises in collecting more and diverse information, rather than specific and constrained investigations. Interest in "lifeways," such as food and craft production, became merely the rationale for careful digging. While admirable in its multidisciplinary orientation, and for its early experimentation with computers, the project was ultimately unable to integrate goals and methods. The project fell prey to lack of direction, and to the formidable challenges of excavating and eventually publishing a large multicomponent tell site. The example demonstrates the difficulty of applying or modifying a methodological program and scientific paradigm originated by and for archaeologists studying small, single-component sites. It further points out inadequacies in the New Archaeology paradigm itself: that of structuring research designs to address highly abstract questions of "evolution" and "process" for the purposes of defining "laws." The Tell el-Ḥesi project has begun to publish its results in a highly traditional fashion, emphasizing stratigraphy, architecture, and material culture.

The most successful examples of the incorporation of methodological advances into archaeological practice are the Bab edh-Dhraʿ and Shiqmim projects, both late prehistoric sites. The Bab edh-Dhraʿ project, for example, examines, with a highly developed multidisciplinary emphasis, an Early Bronze Age site in Jordan, on the southeast plain of the Dead Sea. It includes a physical-anthropological component that has contributed greatly toward understanding the health, nutrition, and demography of the population buried in the site's extensive cemeteries (Ortner, 1979). The geological investigations have led to an understanding of the site and of environmental change, and the ceramic analyses have been strongly emphasized (Beynon et al., 1986; Schaub, 1987). A number of neighboring sites has also been examined, strengthening the project's regional orientation (Coogan, 1984). [*See* Bab edh-Dhraʿ.]

The Shiqmim project examines a Chalcolithic site in Israel's northern Negev desert. The site's actual excavation was preceded by an extensive regional archaeological survey that illuminated Shiqmim's importance and larger context. In the excavation of the site and its associated cemetery particular attention has been paid to questions of subsistence in a semiarid environment, craft production, especially of copper and chipped stone tools, and technological and spatial analyses of the ceramic assemblage. The result has been a number of summary and specialized reports that present and integrate the variety of data (Levy and Menahem, 1987; Levy and Shalev, 1989). While broadly conceived with ecological concerns, the Shiqmim project has concentrated on the practical matters of excavating, and analyzing and publishing data, rather than on self-conscious philosophical discussions. [*See* Shiqmim.]

The most successful example of a project addressing a multicomponent site and its surrounding regions with an explicit theoretical orientation is the Ḥesban project. While the original rationale was to investigate what was hoped would be a biblical site, research was structured around the food-systems concept developed by Øystein LaBianca that broadly addresses changing patterns of food production over time (LaBianca, 1986). This entailed a strong regional orientation, including archaeological and environmental surveys (LaBianca and Lacelle, 1986). The project was also concerned with modern evidence for subsistence and social organization and therefore conducted ethnoarchaeological investigations of surrounding villages and bedouin encampments (LaBianca, 1990). The Madaba Plains Project has continued to creatively combine a variety of approaches within the framework of the food-systems concept (Geraty et al., 1989). [*See* Ḥesban.]

While informed by advances in methodology, Syro-Palestinian archaeology remains firmly rooted in its cultural-historical approach. The discipline stands at a crossroads:

whether to return to a particularist and parochial orientation or to move into the archaeological mainstream, in terms of integrating and contributing to the development of method and theory. The experience of the New Archaeology points out both the advantages and pitfalls of the latter direction.

[*See also* Biblical Archaeology; Environmental Archaeology; Ideology and Archaeology; Settlement Patterns; *and* Statistical Applications. *In addition, many of the sites mentioned are the subject of independent entries.*]

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ALEXANDER H. JOFFE

NEW TESTAMENT. *See* Biblical Literature, *article on* New Testament.

NEWTON, CHARLES THOMAS (1816–1894), the most influential classical archaeologist in nineteenth-century England. Trained in classics at Oxford University, Newton described himself as a historian rather than an archaeologist. His scholarship was based in the tradition of Johann Joachim Winckelmann, on a thorough knowledge of Latin and Greek texts. The stress Newton placed on the identification of mythological subjects in Greek art prefigured the modern interest in iconography.

Newton entered the British Museum's Department of Antiquities in 1840 and left in 1852 for diplomatic service, mainly in the Aegean area. He was, however, able to devote time to excavations for the British Museum: his work at Kalymnos (1854–1855) produced a large corpus of inscriptions, but his main archaeological achievement was the 1856–1857 expedition to Halikarnassos, Knidos, and Branchidai (Miletus). Newton was supported by a naval vessel and a contingent of Royal Engineers, the latter commanded by Robert Murdoch Smith, who produced plans of the excavations and was the first to locate the actual site of the Mausoleum at Halikarnassos. Newton's excavation methods were primitive, and he did not maintain a daily list of finds, but he was almost the first excavator to employ a photographer.

Newton returned to the British Museum in 1861 as the first keeper of the new Department of Greek and Roman Antiquities. His tenure was marked by spectacular acquisitions, including several major collections and the fruits of excavations conducted by others (e.g., Alfred Biliotti on Rhodes; Robert Murdoch Smith and Edwin Augustus Porcher at Cyrene; Richard Popplewell Pullan at Priene; and John Turtle Wood at Ephesus). The museum's tradition of scholarship was much enhanced by his publications.

Newton also contributed to the advance of classical archaeology in England. He was the first Yates Professor of Art and Archaeology at University College London (1880–1888), and he was active in the founding of the Society for the Promotion of Hellenic Studies (1879), the Egypt Exploration Society (1882), and the British School at Athens (1885).

[*See also* Halikarnassos; Miletus.]

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B. F. COOK

NICOLAOU, KYRIAKOS (1918–1981), one of the foremost Cypriot archaeologists. Having earned his doctorate from the University of Göteborg (his dissertation was published in 1976), Nicolaou spent most of his working life in the Department of Antiquities of Cyprus. He was archaeological officer between 1957 and 1961, assistant curator of the Cyprus Museum between 1961 and 1964, and curator from 1964 until his retirement in 1978. As curator he was also responsible for the running of all state museums on the island. Nicolaou reorganized the stores and the displays of the Cyprus Museum in Nicosia, and he founded district museums in Famagusta, Larnaca, Limassol, and Paphos, as well as a number of local museums.

Nicolaou surveyed and excavated throughout the island. His main surveys covered a large part of the Kyrenia district and the Yialias River valley. Of his many excavations, the most important were those of the Hellenistic sanctuary of Aphrodite at Morphou, the Late Bronze Age necropoleis of Deneia, Angastina, and Kazaphani, as well as the Geometric-period necropoleis of Marion, which also includes clas-

sical sections, and Kythraia. It is, however, for his work in Nea-Paphos that he is most famous. There, apart from a number of important Hellenistic and Roman tombs, he excavated the Greco-Roman odeion and the house of Dionysos with its famous mosaic floors. He also started the excavation of the gymnasium and the Asklepieion, and in general brought Nea-Paphos, the Hellenistic and Roman capital of the island, to the foreground of archaeological research. He published many articles on his discoveries and on Cypriot archaeology in general; and he lectured widely in Europe and the United States. He was a member of many learned societies and was honored by several foreign organizations.

[*See also* Paphos.]

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DEMETRIOS MICHAELIDES

NILE. Because ancient Egypt rarely received rainfall, the size and the reliability of the Nile River's annual flooding was the basis for the Egyptians' stable agrarian economy. The inhabitants lived almost exclusively within the river valley and the Delta. They distinguished between these two regions and incorporated them into their world view; the valley was known as Upper Egypt and the Delta as Lower Egypt. The Nile Valley is bounded by the Eastern Desert and the Western or Libyan deserts. These remote regions were beyond the Nile's influence and therefore considered wild uncivilized areas.

Flowing northward from Central Africa's Lake Victoria (White Nile) and the Ethiopian plateau (Blue Nile and Atbara), the Nile entered Egypt at its southernmost point, Elephantine (modern Aswan) at the First Cataract. This 8.5-kilometer-long cataract—five others occur farther upriver in Nubia—consists of a narrowing in the valley made by the granite basement rock that has breached the ground surface. The First Cataract served as a natural barrier preventing unauthorized entrance into Egypt from the south. Farther downriver, the Nile cuts through sandstone until it reaches Gebel el-Silsila where the bedrock changes to softer limestone, allowing a wider floodplain.

The Nile Delta begins north of Memphis (near modern Cairo), formed in part from silt deposited as the river's speed decreases. In antiquity, several branches of the Nile dissected the Delta before emptying into the Mediterranean Sea; only the Rosetta and Damietta waterways survive.

The most important event in the Nile's regime was the annual inundation. Unfailingly each year in late June, the Nile began to rise as large volumes of water from heavy rains in East Africa drained into its system. The initial flood stage coincided with the heliacal rising of the star Sirius, whose reappearance in the sky marked the beginning of the new year. In a matter of weeks, the river overflowed its banks. The waters slowly spread across the floodplain, often to the edge of the low desert margins. The flood reached its apex after two months, although its duration and height varied depending on the site of the flood's measurement. This inundation soaked the soil, leaving behind a layer of rich silt while also replenishing the marshes in which the Egyptians fished and fowled. Gradually the river returned to its banks, and by late October crops could be planted in the sodden basin areas.

Variations in the amount of water entering Egypt determined the flood's height, and significant fluctuations seriously effected the economy. Lower water levels brought diminished crop yields, and an unusually high flood threatened villages, canals, animals, and fields. When the filling of the Aswan Dam began in 1964, this annual inundation ceased.

The river connected the inhabitants of ancient Egypt. They thought of north and south in relation to the river: to travel north (downstream) was written with a hieroglyph of a boat with a steering oar and folded sail, and traveling south (upstream) was identified as a boat in full sail. The valley's topography and the river's cycle impeded overland travel except for short distances, which were covered on paths following irrigation canals.

Given the river's significance to Egyptian life, it is not surprising that Nilotic imagery pervades the culture's mythology. The annual inundation, for example, was seen as a symbol for the creation of the universe. Several deities were associated with the Nile. Hapy symbolized its life-giving properties. The river was also under the protection of Khnum, lord of the First Cataract region, because the inundation was believed to spring from caverns located beneath Elephantine.

[*See also* Delta; Egypt.]

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DIANA CRAIG PATCH

NIMRIN, TELL (Tell esh-Shuna; Tell Shuna South), site located in the Jordan Valley, approximately 12 km (7 mi.) north of the Dead Sea and 16 km (10 mi.) east of Jericho (31°54′00″ N, 35°37′30″ E; map reference 2094 × 1451).

F. M. Abel, William Foxwell Albright, Claude R. Conder, Alexis Mallon, and Selah Merrill were among the nineteenth- and early twentieth-century explorers and archaeologists to visit and comment on the site. Nelson Glueck was the first to conduct a systematic archaeological survey there, early in 1943 (Glueck, 1943, pp. 7–26). He described Tell Nimrin as a "natural mound" and noted that he had collected "large numbers of Roman through mediaeval Arabic sherds," but found no evidence of pre-Roman ceramics (Glueck, 1951, pp. 367, 368).

Like other Western explorers before him, Glueck was especially interested in biblical associations. He suggested that the biblical "Waters of Nimrîn" (*Is.* 15:6; *Jer.* 48:34) might refer to the Wadi Nimrin, otherwise known as Wadi Sha'ib. He thought that Tell Nimrin itself undoubtedly, but mistakenly, preserved the ancient biblical name Beth-Nimrah found in *Numbers* 32:36 and *Joshua* 13:27 (Glueck, 1943, p. 11; 1951, pp. 367–368). Lacking evidence for Bronze and Iron Age occupation, Glueck followed Albright and Mallon in identifying nearby Tell Bleibil with biblical Beth-Nimrah, arguing that the name had likely migrated to Tell Nimrin during the Hellenistic period (Glueck, 1951, pp. 368, 371). Glueck was confident that Tell Nimrin was the site referred to as Bethnamaris by Eusebius and Jerome in the fourth century CE (Glueck, 1943, p. 11). The site is also mentioned in the Byzantine synagogue mosaic at Rehob in the Beth-Shean Valley (Naveh, 1978, p. 81, l. 16).

Glueck's conclusions were generally accepted as authoritative until the site was reexamined in 1976 in a surface survey that recovered pottery dating from the Early Bronze–Middle Bronze, Iron I, Iron II, Umayyad, 'Abbasid, Ayyubid/Mamluk, and Ottoman periods (Ibrahim et al., 1988, p. 192). In 1980, a sixth-century Byzantine church was excavated on the western slope of the mound by the Jordanian Department of Antiquities (Piccirillo, 1982).

The first full-scale excavation of Tell Nimrin was conducted by James W. Flanagan and David W. McCreery under the auspices of Case Western Reserve University during the summer of 1989. Khair N. Yassine joined the project as a codirector in 1990. The project's two seasons were organized as a salvage operations designed to clarify the occupational sequence and assess the importance of the site before modern development projects created further damage. An intensive surface survey of the mound was followed by the excavation of ten 5-meter squares. With the help of a road cut that exposed a section of the tell from top to base, the squares were strategically placed in order to test each level of the site. Approximately 12 m of stratigraphy, accumulated in a four-thousand-year occupational sequence, were documented.

The results of field readings of pottery from the surface survey and excavation, attested the site's occupational history. First settled near the end of EB IV (c. 2000 BCE), Nimrin was occupied throughout the MB period. Nearly 6 m of MB stratification are preserved, including monumental walls constructed in late MB II. During the Late Bronze and Early Iron I, the site was unoccupied (for approximately five hundred years, c. 1500–1000 BCE). Settlement resumed in Late Iron I/Early Iron II, when tenth-century structures were built immediately above the late MB II stratum. At least part of the site was destroyed by fire in the late tenth century BCE.

The Iron II occupational evidence is preserved in mudbrick walls, living surfaces, and almost 4 m of other stratified material. Late ninth-century and seventh-century destruction levels were encountered, but their extent was not determined in the first season of excavation. The site was continuously occupied from the Persian through the Mamluk periods. Most of the post-Hellenistic material has been bulldozed from the top of the tell, but classical through late Islamic strata are well preserved on the western slope.

Contrary to Glueck's conclusions, excavation has demonstrated that the site is a true tell, rather than a natural mound, and that occupation during the MB and Iron II periods was extensive. In light of this new evidence, there is no reason to prefer Tell Bleibil over Tell Nimrin as the site of biblical Beth-Nimrah. However, Tell Nimrin's long history of occupation and its rich deposits overshadow its relative insignificance as a biblical site. The site has yielded paleoagronomic remains rich enough to indicate that it and the region were fertile and productive zones in the MB period. Other material and textual artifacts suggest, as R. H. Dornemann (1983) hypothesized, that the Jordan Valley and Tell Nimrin enjoyed a simple but rich and independent life in the midst of surrounding centers of power.

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JAMES W. FLANAGAN and DAVID W. MCCREERY

NIMRUD, site located in northern Iraq, on the east bank of the Tigris River, southeast of Mosul (36°06′ N, 43°19′ E). The site covers an area of about 360 hectares (889 acres) and consists of a walled enclosure with a Citadel in the southwest corner, on which there were many public buildings, and an arsenal, known as Fort Shalmaneser, in its southeast corner. There has been little excavation in the outer town. In Assyrian texts the city is known as Kalḫu (the biblical equivalent is Calah), first attested in the thirteenth century BCE. The modern name of Nimrud derives from an association with Nimrod, "the mighty hunter," whose legend is described (rather differently) in both the Bible (*Gn.* 10:8–12) and the Qur'an (21:52–69). The site's first excavator, A. H. Layard, originally thought it was Nineveh. It was not until 1853 that H. C. Rawlinson demonstrated that it was in fact Kalḫu.

Although Nimrud is mainly known as a Neo-Assyrian capital, the site was occupied from prehistoric times, as attested by Ḥalaf- and Ubaid-period sherds found on the surface. Layard found pottery vessels of incised Ninevite V ware, and W. K. Loftus discovered a stone cist grave in the southeast part of the Citadel dating to the mid-second millennium BCE or slightly earlier. M. E. L. Mallowan found evidence of Middle Assyrian occupation in the so-called 1950 Building on the Citadel and in private houses built against the town wall on the east side of the Citadel (TW 53). It was this time that Shalmaneser I (1273–1244 BCE) did some building at Nimrud; however, it was not until the reign of Ashurnasirpal II (883–859 BCE) that it became a royal capital. This king initiated a major construction program continued by some of his successors, including Shalmaneser III (858–824 BCE), Adad-Nirari III (810–783 BCE), and Tiglath-Pileser III (744–727 BCE). During the reign of Sargon (721–705 BCE) the royal capital was moved to Khorsabad, but Kalḫu remained an important provincial capital. Esarhaddon (680–669 BCE) undertook some further building work here. In 614–612 BCE, Nimrud, together with other Assyrian centers, was destroyed by the Medes; extensive traces of this destruction were found in the excavations. There is evidence for limited occupation in the post-Assyrian period, albeit of an impoverished kind. There are also slight traces of habitation in the Achaemenid period, supported by the observations of Xenophon, who passed the site (which he called Larissa) in 401 BCE. Remains of the Hellenistic period are more substantial, particularly in the southeast part of the Citadel, where a succession of settlements was excavated dating from about 240 to 140 BCE. This occupation may have continued into Parthian and Sasanian times. Thereafter, Nimrud remained for all intents and purposes, unoccupied.

The first recorded excavations at Nimrud were undertaken by G. P. Badger in 1844, but it was Layard who realized the site's true potential and whose name is firmly linked with it. He worked there from 1845 to 1847 and 1849 to 1851, supported first by Sir Stratford Canning and then by the trustees of the British Museum. He was helped by a young Chaldean Christian from Mosul, Hormuzd Rassam. The results were spectacular. In the Northwest palace of Ashurnasirpal II he excavated mainly in the state apartments to the south of the main entrance. Lack of funds prevented him from completely excavating many of the rooms; he contented himself with trenching round the walls. Nevertheless, he uncovered many stone relief slabs and a number of colossal stone gateway figures, some of which are now in the British Museum. Elsewhere on the site, Layard excavated in the Ninurta and Ishtar Šarrat-niphi temples, and the Central, South-East and South-West palaces. In front of the so-called Central Building he found the black obelisk of Shalmaneser III that shows the biblical king Jehu submitting to the Assyrian king and tribute being brought from various parts of the Near East. He even worked briefly around the Ziggurat and Fort Shalmaneser. It is difficult to overestimate the enormity of Layard's contribution, not only to what is known about Nimrud, but to Mesopotamian archaeology in general.

A complete plan of the city, which is still useful today, was produced by Captain Felix Jones of the Indian Navy in 1852. In 1854–1855 W. K. Loftus, working on behalf of the Assyrian Excavation Fund, excavated mainly in the Central Palace area, the South-East and South-West palaces, and the Nabu Temple. His most interesting results, however, were obtained in the Burnt Palace, where he found an important collection of ivories. He also discovered a grave dating from the early–mid-second millennium BCE. For the next eighteen years no serious archaeological work was done at Nimrud, but two large collections of sculptures were removed during this time and sent to Zurich and Paris. In 1873

NIMRUD. *Relief from Nimrud depicting a battle scene.* Musée du Louvre, Paris. (Alinari/Art Resource, NY)

the cuneiform scholar George Smith of the British Museum worked briefly at Nimrud, investigating various buildings on the Acropolis, but without achieving any significant results. Then, from 1877 to 1879, Hormuzd Rassam returned to Nimrud, also sent by the trustees of the British Museum. In addition to working in the Nabu Temple and the South-East and Central Palace areas, he discovered the Kidmuri Temple northeast of the North-West Palace.

After Rassam's departure, there was a lull in archaeological work at Nimrud until 1949 when M. E. L. (Sir Max) Mallowan resumed work on behalf of the British School of Archaeology in Iraq. This expedition worked at Nimrud until 1963—after 1958 under the direction of David Oates and in 1963 of Jeffrey Orchard. In the North-West Palace, the British School team excavated the domestic quarters to the south of passage P and cleared part of the Administrative Wing (ZT) on the north side. They also cleared out the wells in rooms AB and NN. Elsewhere on the Acropolis the British School expedition worked mainly in the Ninurta Temple, the 1950 Building, the Governor's Palace, the Nabu Temple, the Burnt Palace, and the South-East Palace. They also investigated houses abutting the town wall (TW53) and cleared a stretch of stone wall on the west side of the Acropolis. From 1958 onward, the building in the southeast corner of the city (Fort Shalmaneser) was the main focus of attention. This vast building's ground plan was established, and many of its chambers were cleared, producing extensive and varied collections of carved ivories.

From 1974 to 1976, a Polish team led by Janusz Meuszyński worked in the central part of the Nimrud Acropolis on what he termed the Central Building, probably a temple built by Ashurnasirpal II, and on the Central Palace of Tiglath-Pileser III. The Poles were followed, from 1987 to 1989, by an Italian team from the Centro Scavi, Turin, led by Paolo Fiorina. They completed a contour plan of the entire city and undertook a surface-sherd survey. Otherwise, their attention was focused on Fort Shalmaneser. They investigated the wall separating the fort compound from the rest of the city and its junction with the main city wall; they also excavated or reexcavated a number of storerooms in the southwest sector, particularly SW36 and SW37. They recovered a number of ivories, but outstanding among the finds from this area was a bronze and iron model of a turreted fortress on wheels. In 1989, a British Museum team, directed by John Curtis and Dominique Collon, returned to Nimrud and also worked in Fort Shalmaneser. They partially excavated room T20, finding a bronze horse harness and glazed bricks of Shalmaneser III with Aramaic signs and pictographic symbols on their unglazed surfaces. They also

NIMRUD. *Assyrian relief from the palace of Ashurnasirpal II.* Detail from Ashurnasirpal's siege of a city showing King Ashurnasirpal in royal progress. Dated to the seventh century BCE. Musée du Louvre, Paris. (Foto Marburg/Art Resource, NY)

found clear evidence of rebuilding activities, probably in the reign of Esarhaddon.

Meanwhile, the Iraq Department of Antiquities had begun restoration work at Nimrud in 1956; they continued the project in 1959–1960. Since 1969 the work has been carried out annually. The emphasis is on reexcavation and restoration, principally in the North-West Palace and the Nabu Temple. In 1975, the clearance of the well in room AJ, directed by Muyasser Sa'id, produced another spectacular collection of ivories. Even more remarkable discoveries were made in a series of four tombs excavated between spring 1988 and November 1990 by Muzahim Mahmud in the southern part of the North-West Palace. These tombs contained vessels in precious metal and an astonishing array of gold jewelry; the tombs seem to have been the graves of the consorts of a number of Assyrian kings.

Nimrud's Citadel was surrounded by its own mud-brick wall, which, on the west side, overlooking the Tigris floodplain, was faced with stone blocks (sometimes called the quay wall). The largest and most important building on the Citadel in the North-West Palace, built by Ashurnasirpal II and partly restored by several later kings. It measures about 200 m north–south, although its southern limit has not been established. In the center were state apartments lavishly decorated with sculptured stone slabs as well as painted plaster and glazed bricks. In several of the more important gateways were colossal stone figures of human-headed lions or bulls. The northern wing of the palace (ZT) held offices and storerooms, while the southern wing held private apartments and what may have been the harem. The more important finds from the palace include the so-called banquet stela of Ashurnasirpal II describing his conquests and building works at Nimrud and ending with a description of the banquet to celebrate the building of the palace. This was found in a recess near gate E. The excavation of room AB recovered a large collection of bronzes, including furniture ornaments and bowls decorated in Syrian and Phoenician style, and several interesting glass vessels, including a vase inscribed with the name of Sargon. Important finds also came from a number of the wells. In the well in room NN a collection of ivories was discovered that includes the two well-known heads of women popularly known as the Mona Lisa and the Ugly Sister and two ivory plaques with traces of gold overlay, each showing a lioness mauling an African. In the well in room AB were ivory and wood writing boards with wax-coated surfaces. More ivories were recovered from the well in room AJ, including pyxides, bowls, small human heads, and carved tusks.

The palace's south wing is notable for the discovery there of a series of rich graves, all apparently of high-ranking women. Beneath the floor of room DD, Mallowan had found a terra-cotta coffin with a female skeleton and the so-called Nimrud jewel, but Mahmud's recent discoveries overshadow this grave. He found four subterranean cham-

NIMRUD. *Head of "Madonna" in ivory from Nimrud.* Dated to 720 BCE. Iraq Museum, Baghdad. (Scala/Art Resource, NY)

bers with barrel-vaulted roofs, three of which held astonishing collections of jewelry. The first tomb, in room MM, contained a pottery sarcophagus and jewelry that included a gold fibula and chain attached to a stamp seal in a gold mount. The second tomb, in room 49, had various inscriptions mentioning Yabâ, Banîti, and Atalia, "queens" or "palace women" of Tiglath-Pileser III, Shalmaneser V (726–722 BCE), and Sargon, respectively. A stone coffin held at least two bodies and a vast array of grave goods, including gold bowls, earrings, and necklaces. A Phoenician-style gold bowl has embossed decoration showing boats in a papyrus thicket. The third tomb, in room 57, was originally the grave of Mulissu-mukannišat-Ninua, a queen of Ashurnasirpal II, but it had been reused. The original stone sarcophagus was empty, but badly preserved bones and an stunning variety of grave goods were found in three bronze coffins in the antechamber. The large number of gold objects included an intricate crown or headdress. The fourth tomb contained large numbers of glazed pottery and alabaster vessels.

At the extreme northwest corner of the Citadel was the Ziggurat, and sandwiched between it and the North-West Palace was the Ninurta Temple, built by Ashurnasirpal II. At one entrance a pair of human-headed lions stood watch, while outside a second entrance a massive, round-topped stela of Ashurnasirpal II showed the king with symbols of the gods. Stone reliefs at these entrances show protective genies; one remarkable example shows a god battling with a monster that is a mixture of an eagle and a lion.

There were two other temples in this area, one dedicated to Ishtar Šarrat-niphi and the other to the Kidmurri. The former had colossal lions flanking the doorway; a magnifi-

cent limestone statue of Ashurnasirpal II standing on a red stone base was set up inside.

In the middle of the Citadel, among other important buildings, was the so-called Central Building and the Central Palace of Tiglath-Pileser III. Painted decoration and winged bulls were found here, as well as sculptured slabs, stacked and ready for reuse in the South-West Palace.

To the east of the Central Palace was the Governor's Palace, the residence of the governor of Kalḫu in the eighth century BCE. An important Archive of administrative tablets was found there. South of this building were the Burnt Palace and the Nabu Temple. The Burnt Palace was a ninth-century building that was subsequently rebuilt twice—the second time by Sargon, who may have used it as a royal residence. An important collection of ivories come from this palace (see above).

The Nabu Temple included shrines dedicated to Nabu and his consort Tashmetum and a reception suite. Ashurnasirpal claimed to have founded the building, but much of the construction work was done in the reign of Adad-Nirari III. A number of tablets were found here, including the "vassal treaties" of Esarhaddon. The temple held two pairs of statues of attendant gods, one colossal and one life-sized; inscriptions on the latter mention Adad-Nirari III. There was also a round-topped stela of Shamshi-Adad V (823–811 BCE), showing the king with symbols of gods. A number of incised ivory plaques in Assyrian style were found in this building.

The excavation of the two buildings at the extreme south end of the Citadel is incomplete. The South-West Palace was built by Esarhaddon and was decorated with reliefs of Ashurnasirpal II and Tiglath-Pileser III in secondary use. The so-called South-East Palace was apparently built by Shalmaneser III and later restored.

The building known as Fort Shalmaneser in the southeast corner of the city was a palace for reviewing troops *(ekal māšarti)* built by Shalmaneser III and restored by Esarhaddon. It is within a walled enclosure that covers about 30 hectares (74 acres). Later, stone walls with a postern gate in the south part were built by Esarhaddon. The building includes a block of state apartments (T) as well as storerooms and barracks grouped around courtyards. Outstanding finds include the throne-base of Shalmaneser III from throne room (T1). The sides are carved with scenes of tribute being brought to the king. A panel of painted and glazed bricks set above a doorway in courtyard T, which shows Shalmaneser III standing beneath a winged disk, within a framework of goats and floral motifs. In addition, important collections of smaller items have come from many of the rooms: ivories from rooms SW7, SW12, SW37, NW15, and NW21 and bronze furniture from room NE26. Tablets, including wine-ration lists, were found at various locations.

[*See also the biographies of Layard, Mallowan, and Rawlinson.*]

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JOHN CURTIS

NINA-SIRARA. *See* Girsu and Lagash.

NINEVEH,

ancient Ninua, one of the noted sites of antiquity, situated on the east bank of the Tigris River, close to the confluence of the Tigris and the Khosr Rivers (36°24′ N, 44°08′ E). Distinguished by the tall mounds of Kuyunjik and Nebi Yunus and the remains of a roughly rectangular perimeter wall that is about 2 km wide (1 mi.) and 5 km (3 mi.) long, the visible ruins of Nineveh are currently invested on all sides by recent additions to the city of Mosul, in modern Iraq. While the core mound, known today as Kuyunjik, may have been occupied almost continuously from the seventh millennium down to early Islamic times (when the focus of settlement moved to the site of medieval Mosul on the opposite bank of the Tigris), Nineveh's reputation principally rests on its role as the last great capital of the Assyrian Empire. In particular, Nineveh's destruction at the hands of the Medes and Babylonians in 612 BCE still stands as a vivid paradigm for a sudden fall from unrivaled wealth and dominion.

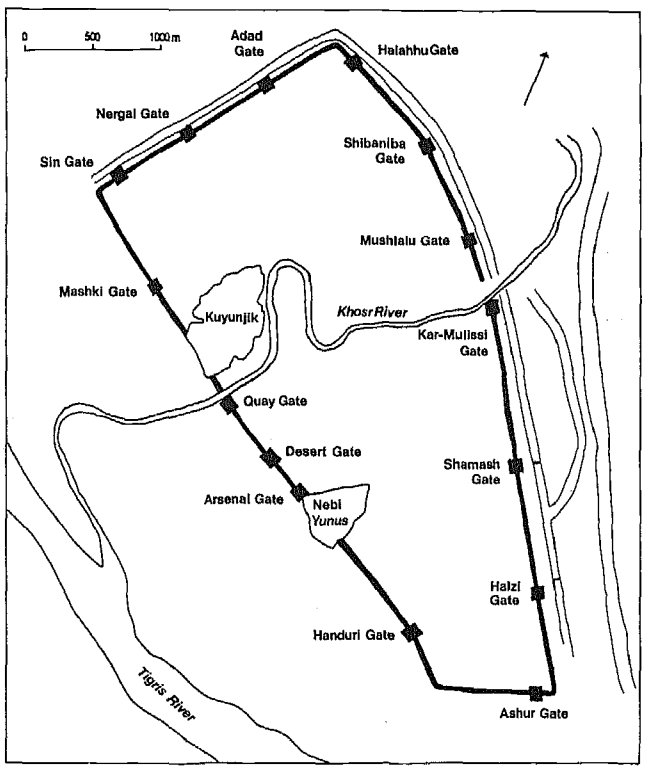
Exploration and Excavation. The first European traveler to take note of the location of ancient Nineveh was Benjamin of Tudela, the Spanish traveler and rabbi, in the twelfth century. Others who commented on the site in suc-

ceeding centuries included the Danish scholar Carsten Niebuhr, whose visit took place in 1766. The earliest detailed examination of Nineveh is owed to Claudius James Rich, whose admirable map of the site was completed in 1820. Twenty-two years later, Paul-Émile Botta, the consul of France at Mosul, opened the first trenches on Kuyunjik with little success. Then, following a prior period of concentration on the Assyrian remains at Nimrud, Austen Henry Layard began his own excavations at Nineveh in 1846. [*See* Nimrud.] Before he left Nineveh in 1851 to take up a career in politics, Layard had revealed a good part of the plan of the Southwest Palace, "the palace without a rival" (Luckenbill, 1924, p. 96) of the redoubtable Sennacherib (704–681 BCE). Within this structure he revealed close to 3 km (2 mi.) of carved stone reliefs, including those depicting Sennacherib's spectacular siege and capture of the Judean city of Lachish. [*See* Lachish; *and the biographies of Botta and Layard.*]

Layard's work on behalf of the British Museum was subsequently taken up by Hormuzd Rassam, his resourceful assistant, beginning in 1852. Rassam succeeded in discovering the North Palace of Ashurbanipal, where he not only excavated sculptured slabs depicting memorable lion-hunt sequences, but also a substantial portion of the twenty-four thousand cuneiform tablets that make up the so-called Library of Ashurbanipal (an invaluable resource on ancient Mesopotamia, variously composed of archival documents, manuals, and cultic literary works). [*See* Cuneiform; Tablet; Libraries and Archives.] The year 1852 also saw the completion of a further exemplary survey of Nineveh (by the trained cartographer Felix Jones). It was, in addition, the approximate moment when it first became possible to affirm the long-suspected identity of the site on the basis of excavated cuneiform records. Among other excavators who worked at Nineveh in the latter part of the nineteenth century, it is impossible to pass over the name of the gifted cuneiform scholar, George Smith. In 1872 Smith electrified Victorian England by discovering the greater part of the Babylonian account of the Flood among the tablets excavated by Layard and Rassam. [*See* Babylonians; *and the biography of Smith.*] Charged with the task of finding the missing portions of the story, he effectively achieved this aim within days of reaching Nineveh in the spring of 1873. Tragically, however, he was to die of dysentery soon after the end of his 1876 season. He was no more than thirty-six years old.

Subsequent British excavators include R. Campbell Thompson, who was at Nineveh in 1904–1905 and from 1927–1932. While Campbell Thompson did much to explore the poorly preserved remains of both the Nabu temple and the adjacent Temple of Ishtar (where he discovered the magnificent copper head that has been variously ascribed to either Sargon of Akkad or Naram-Sin), he also elected to introduce a sounding through the deep prehistoric strata of Kuyunjik in the course of his final season. This last, pioneer endeavor was supervised by his assistant, M. E. L. Mallowan, whose account (Mallowan, 1933) duly provided the first available overview of the early pottery sequence in northern Mesopotamia. [*See the biography of Mallowan.*]

Each of the more recent excavations at Nineveh—beginning with those of the Iraqi Department of Antiquities and Heritage from the second half of the 1960s onward and ending with those of the University of California at Berkeley between 1987 and 1990—have been shaped, at least in part, by the rapid post-1960 growth of the city of Mosul. Expressly, it was the pressure posed by a series of new building projects that persuaded Tariq Madhloom of the Department of Antiquities to devote a good part of his own efforts between 1965 and 1971 to the task of precisely locating, and then restoring, critical portions of the walls and gates of Nineveh's Neo-Assyrian defenses. In a direct complement to Madhloom's work, one of the main concerns of the Berkeley team, led by David Stronach, was to learn more about the nature of Nineveh's extensive lower town, especially within its still largely undisturbed northern sector.



NINEVEH. *Plan of certain main elements of the city in the seventh century BCE.* The terrain outside the city wall was marked by the presence of substantial moats and ditches, especially to the east. (Courtesy D. Stronach)

Early Nineveh. While little is yet known in any detail about Kuyunjik's very earliest phases of occupation, the site seems to have been closely related to innovative developments in southern Mesopotamia during the Uruk period (c.

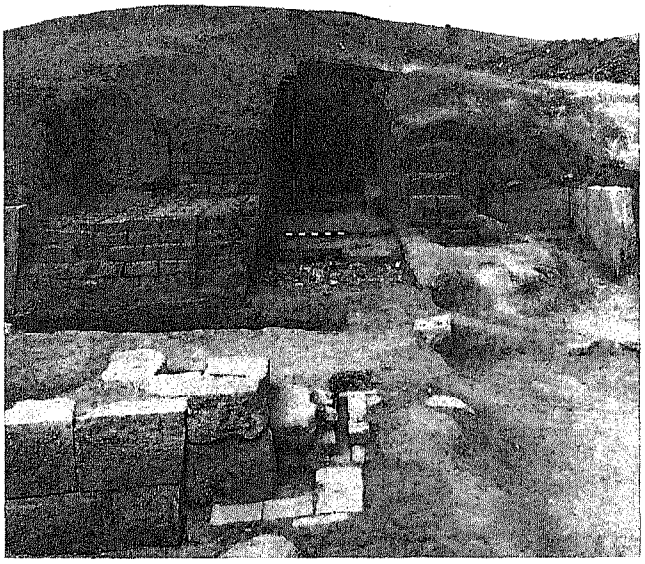
4000–3000 BCE). There are also indications that the subsequent Ninevite-5 settlement (c. 3000–2500 BCE) was at least as large as any that had preceded it. However, the original, enduring fame of Nineveh stemmed from the repute of the city's time-honored diety, Ishtar of Nineveh. In an allusion, for example, to an event that had taken place five hundred years before his own reign, Shamshi-Adad I of Assyria (c. 1813–1781 BCE) boasted in an inscription that he was the first monarch to renovate the Temple of Ishtar "since Manishtushu, son of Sargon, king of Akkad." [*See* Assyrians.]

Later Nineveh. Beginning in the reign of Shalmaneser I (1273–1244 BCE), a number of Middle Assyrian, and then Neo-Assyrian, rulers chose to erect a royal residence on the high summit of Kuyunjik. Elsewhere, the flat ground directly to its north appears to have become the hub of a sizable lower town from at least the beginning of the first millennium BCE. The principal expansion of Nineveh is directly related, however, to a somewhat later sequence of events: to the ignominious death in 705 BCE of the father of Sennacherib, Sargon II, and to Sennacherib's subsequent decision to move the capital from Dur Sharrukin (Khorsabad)—Sargon's newly created and patently inauspicious seat of government—to the long-hallowed "eternal foundation" of Nineveh (Luckenbill, 1924, p. 94). [*See* Khorsabad.]

As can be gauged from Sennacherib's successive building inscriptions, the main axis of his palace eventually came to measure a remarkable 500 m in length. Among this structure's many "objects of astonishment" (to use Sennacherib's own phrase; see Luckenbill, 1924, p. 97) certain of its tall columns were supported by resplendent bronze lions, each cast in a striding but at the same time weight-bearing pose. The city as a whole was expanded to include an area of 750 ha (1,852 acres) and its imposing double walls came to cover a distance of some 12 km (7 mi.). While the massive inner mud-brick wall is likely to have been at least 25 m high, the less lofty outer wall would have presented a gleaming facade of finely dressed limestone masonry, capped by continuous stone crenellations. No fewer than fifteen city gates pierced this circuit. Of these, the Nergal Gate in the north wall was the most sumptuously appointed. Guarded by giant winged colossi, it stood on the course of a paved royal road that led southward to the palace mound of Kuyunjik. [*See* Palace.] At the same time, the northwestern portion of the lower town appears to have included both a crowded industrial quarter not far from the Sin Gate and, just inside the Mashki Gate (at a point closer to Kuyunjik), a more affluent district distinguished by spacious courtyard houses.

With the death of Sennacherib, the pace of construction slowed considerably. Esarhaddon (680–669 BCE) and Ashurbanipal (668–627 BCE) both continued to build on Tell Nebi Yunus, the second mound of Nineveh, where Sennacherib had already founded an imperial arsenal. However, much of this later work was never finished and, when it came to the construction of Ashurbanipal's extensive North Palace, toward the north end of Kuyunjik, it is perhaps telling that no attempt was made to replicate the 40-ton monolithic winged bulls of his grandfather's time. Conversely, the quality of at least a part of Ashurbanipal's relief sculpture, and most especially that depicting the great lion hunt (see above), can be ranked as unsurpassed in the history of Mesopotamian art. An informative relief from about 645 BCE, which shows a royal park watered by a tall aqueduct, also provides one of several indications of the keen delight that Sennacherib and his successors took in providing Nineveh and its environs with parks, gardens, and even nature reserves. It demonstrates as well the singular feats of engineering, including dam and aqueduct construction, that made such choice amenities possible. [*See* Aqueducts; Gardens, *article on* Gardens in Preclassical Times.] As has been recently pointed out, in fact, the true locale of the famed Hanging Gardens may not have been Babylon but, given the nature of the extant evidence, Assyrian Nineveh (Dalley, 1994).

Biblical References. Many of the biblical references made to Nineveh can be seen to reflect either changing historical circumstances, competing religious messages, or descriptive matter that ranges from the legendary to the real. In *Genesis* 10:11–12, Nineveh is listed as one of the major cities of Mesopotamia that owed its foundation to Nimrod,



NINEVEH. *Entrance to the recently excavated Halzi Gate.* Located at the south end of Nineveh's long eastern wall, this gate was narrowed to a width of two meters in anticipation of the final Median and Babylonian assault. The gateway was nonetheless forced and the bed of the roadway (beneath the horizontal scale) was strewn with the heaped remains of those killed in that constricted space. (Courtesy D. Stronach)

the great grandson of Noah. The erstwhile glory of Nineveh is perhaps best reflected, however, in the *Book of Jonah* (where, as an object of god's grace, the city is said to have been spared, not overthrown). In a reference to the exceptional size of Nineveh, it is said to have taken "three days' journey" to cross it (*Jon.* 3:3). This is known to be hyperbole and, on the evidence of the three-day period Jonah is said to have spent in the belly of the great fish, a formulaic use of the number 3 can be assumed. On the other hand, the ingathering of people and livestock that would certainly have occurred at the time of the siege of Nineveh could perhaps have brought the city's suddenly swollen population to the figure of "six score thousand persons" (together with "much cattle") that is specified in *Jonah* 4:11. Apart from the fact that Muslim tradition places the tomb of Jonah on Tell Nebi Yunus ("the mound of the prophet Jonah"), Jonah's connection with Nineveh is also recalled in *Matthew* 12:41 and *Luke* 11:30, 32. These last passages assert that the inhabitants of Nineveh, the "men of Nineveh" to whom Jonah had preached, would arise at the Last Judgment to condemn the generation of Jesus.

Other biblical references to Nineveh are of a more historical nature. These include two that allude to Sennacherib residing at Nineveh (*2 Kgs.* 19:36; *Is.* 37:37) and another that records his assassination by his sons at the same location (*2 Kgs.* 19:37). Of most interest, however, is the "vision of Nahum" in which the overthrow of Nineveh (at the command of, in this case, a vengeful and wrathful god) is "foretold." Despite having been written well after the event, most probably in the Achaemenid period, the *Book of Nahum* carries the impact of an eyewitness account of the city's terrible fall. To begin with, the forceful image of the "myriads of slain" and the "heaps of corpses" that resulted from the sack of "the bloody city" (*Na.* 3:1–3) can be said to have found an all-too-realistic counterpart in the outstretched, tangled skeletons that came to light during the recent excavations at the Halzi Gate (Stronach, 1992). In additions, an insistence on the key role that water was made to play in the events that accompanied Nineveh's destruction (*Na.* 2:6) is not only echoed in other sources (see below), but would seem to stem from a detailed knowledge of the physical nature of the city's devastation.

Other Literary References. The Babylonian Chronicle indicates that Nineveh fell in the high summer of 612 BCE following a siege of three months. The same source also relates that Nabopolassar (625–605 BCE), the victorious king of Babylon, held court in the palace at Nineveh before returning to his homeland with ashes collected from the ruins of the Assyrian capital. [*See* Babylon.] Herodotus is less informative. He refers to the march on Nineveh of Cyaxares, the king of Media (1.104); promises to relate in full the details of the fall of Nineveh (1.106); and, in the end, neglects to do so. According to Diodorus Siculus, writing in the late first century CE, Nineveh fell in the third year of a prolonged siege, when the Euphrates River rose in flood and breached the wall of the city (Diodorus 1.27.1–2). [*See* Euphrates.] In reality, however, neither the Tigris nor the Euphrates (invoked in obvious error) would ever have been in flood at the height of summer. Indeed, in following the details of Nahum's account, which mentions the opening of "the gates of the rivers," the dissolving of "the palace" (an expression best taken to refer to rather less-vaunted structures at the level of the plain), and a degree of flooding that turned Nineveh into "a lake" (*Na.* 2:6, 8), it is preferable to suppose that the various sources for such an inundation consisted of the waters of the Khosr (which could have been effectively undammed upstream and redammed within the limits of the city) and the discharge of a number of Nineveh's still-operative canals. In sum, Nineveh was not only overthrown, it was also afflicted, after its fall, with many of the almost ritual terms of destruction (e.g., flooding and the removal of ashes) that Sennacherib had imposed on Babylon seventy-seven years earlier. Yet, the city of Nineveh did rise again (if never to its previously exalted status), especially during the last few centuries BCE and the first centuries CE, when it is known that a limited Hellenistic occupation was followed by an interval when both the Parthians and the Romans left a definite imprint on the site.

NINEVEH. *Detail of a number of tangled skeletons on the partly cobbled roadway of the Halzi Gate.* Those cut down at this spot recall Nahum's image of Nineveh's "myriads of slain" (*Na.* 3:1–3). (Courtesy D. Stronach)

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NIPPUR (modern Niffar or Nuffar), ancient Mesopotamian city and cult center located at the center of the southern Mesopotamian floodplain (32°10′ N, 45°11′ E), just north of Afak, about 180 km (112 mi.) southwest of Baghdad. Nippur stands nearly 20 m above the immediately surrounding plain and measures more than 1.5 km across, northeast–southwest. It is divided into an eastern and a western portion by the dried bed of a canal, the Shatt en-Nil. The southern tip of the eastern mound, known as Tablet Hill or the Scribal Quarter because of the large number of tablets found there, is separated from the northern part by a shallow gully. The northern part of the eastern mound is commonly termed the Religious Quarter because of the ziggurat complex located there. [*See* Ziggurat.] Austen Henry Layard reported that local Arabs referred to the ziggurat area as Bint il-Amir, "daughter of the emir," and had a tradition that a golden boat lay buried in the mound (*Discoveries in the Ruins of Nineveh and Babylon,* New York, 1985, p. 473). Chains of low mounds, the remains of the city's fortification wall, are visible on the far northeast and southwest. [*See the biography of Layard.*]

Hermann V. Hilprecht (*Die Ausgrabungen in Bel-Tempel zu Nippur,* Leipzig, 1903, p. 11) noted that Oppert first identified Nuffar as ancient Nippur. Henry C. Rawlinson had already linked Nuffar with ancient Nippur and biblical Calneh (*Gn.* 10:10) in 1861 (*Cuneiform Inscriptions of Western Asia,* vol. 1, London, 1861, pl. 1) and Hilprecht also noted the link (*Explorations in Bible Lands during the 19th Century,* Philadelphia, 1903, p. 294). The identification of Calneh with Nippur is based on a Talmudic tradition (Seder *Mo'ed* 3 *(Yoma'). Genesis* 10:10 reads "And his kingdom began at Babel and Erech and Accad and Calneh *(wkhalneh)* in the land of Shinar." In large part because there was no record of a southern Mesopotamian Calneh, William Foxwell Albright suggested that the Masoretic text was corrupt and should be emended to read *wkhullanah. Genesis* 10:10 would then read "And his kingdom began at Babel and Erech and Accad, and all of them were in the land of Shinar" (Albright, "The End of Calneh in Shinar," *Journal of Near Eastern Studies* 3 [1944]: 254–255). Albright's suggestion obviates any link between Nuffar/Nippur and a city mentioned in the Bible. [*See the biographies of Hilprecht, Rawlinson, and Albright.*]

Settlement History. Nippur was already occupied in the early sixth millennium. Sherds from the second (Hajji Muhammad) phase of the Ubaid period have been found on the surface of the mound and recovered from excavated contexts. The main mound continued to be occupied until 800 CE. Small mounds west of the site date to roughly 900–1200 BCE, however, and recent work has uncovered traces of an occupation dating to the fourteenth century BCE just northeast of the mound. McGuire Gibson has provided a concise summary of the history of settlement at Nippur (Gibson, 1992, pp. 33–54).

Throughout its early history, Nippur occupied a preeminent, if not unique, position among the cities of Mesopotamia. Not only was it equidistant between Sippar in the north and Ur in the south—in effect on the border between Sumer and Akkad—but Nippur was also the site of Ekur, the temple of Enlil, the paramount deity of the pantheon,

and the city served as the major religious center of Mesopotamia. [*See* Sippar; Ur; Sumerians; Akkade.] Probably because of its geographically strategic position and religious character, it was early on made a "neutral" city. There exists no trace in Mesopotamian historical tradition of any king or dynasty centered on Nippur holding political dominance, but nearly all of the kings of Sumer and Akkad sought legitimacy for their rule through recognition there. The city was large—by the end of the third millennium, 135–150 ha (334 acres) inside its walls—and prosperous, the object of continuous royal/state investments in the form of construction projects such as its fortification wall and temple buildings (and, concomitantly, pious donations to temples).

In the late eighteenth century BCE, however, Nippur's fortunes began to fluctuate. Perhaps because of a combination of politicoeconomic and environmental factors, including drought and the instability of the branch of the Euphrates River on which it was located, Nippur experienced periodic "abandonments" and, conversely, resurgences as a result of or accompanied by royal/state investments. The archaeological and written evidence suggests, for example, that the city was largely abandoned for three hundred years from the late eighteenth through the end of the fifteenth centuries BCE, but was revitalized under the Kassite kings in the fourteenth and thirteenth centuries. [*See* Kassites.] So, too, Nippur also appears to have been largely abandoned in the first century and a half of the Parthian era—the last 150 years BCE, but was reinvigorated by Vologases II as part of a deliberate strategy to control international trade by curbing the expansionist policies of Characene. [*See* Parthians.]

Excavations. Excavations have been carried out at Nippur since the beginning of archaeological work in Iraq, almost 140 years ago. Layard excavated for roughly two weeks in January and February 1851 and seems to have been disheartened by the results of his work, wondering whether extensive excavations would produce any important results (*Discoveries*, 1985, p. 477). An American expedition affiliated with the University of Pennsylvania carried out work at Nippur in the late nineteenth century. From 1888 to 1900 the expedition undertook four major campaigns at the site. Accounts of their work appeared in popular works by two of the excavators, John Punnett Peters and Hermann V. Hilprecht, but only one volume in the planned series of final reports was ever published.

In 1948 The University Museum of the University of Pennsylvania and the Oriental Institute of the University of Chicago reopened excavations at Nippur. This Joint Expedition, under the direction of Donald E. McCown, focused its work on the ziggurat complex, in particular on the so-called kitchen temple, and began two soundings (TA, TB) on Tablet Hill, to the southeast. The expedition continued to work in those areas in its second (1949–1950) and third (1951–1952) seasons. The results were published in *Nippur I* (McCown and Haines, 1967).

In the course of the third season, with work on the ziggurat complex and TA and TB nearing completion, the Joint Expedition undertook a number of soundings on the east mound designed to locate promising areas for future excavations. One of the soundings (E) was laid out about 325 m to the northwest of the ziggurat. The sequence of Early Dynastic and Akkadian temples—the so-called North Temple—encountered there became the primary focus of the fourth season's (1953–1954) work. The University Museum withdrew from the excavations at the end of the third season and the Baghdad School of the American Schools of Oriental Research joined the Oriental Institute in the fourth season in sponsoring the excavations. A final report was published in *Nippur II* (McCown et al., 1978).

A second of the third season's soundings (B) was on the northwest slope of a low rise just southwest of the ziggurat. There the excavators came down into the Temple of Inanna. Sounding B was expanded in the fourth season, and the Temple of Inanna was the major focus of work in the fifth–seventh seasons, although small-scale excavations were also carried out in the ziggurat complex in the fifth and sixth seasons. In the eighth season (1962–1963) the expedition continued work on the lower levels of the Inanna temple and undertook test soundings on the east mound. Richard C. Haines, who had earlier been the expedition's architect, acted as field director during the work on the temple. Only preliminary reports on the temple excavations have appeared to date.

After a break of two years and the near termination of the program of excavations begun in 1948, the Oriental Institute reopened the Nippur excavations in November 1964. In both the ninth and tenth seasons, the expedition, under James Knudstad's direction, turned its attention to delimiting the large Parthian fortress that overlay the ziggurat complex as a first step to excavating earlier levels of Ekur. However, it was not possible, largely for political reasons, and work at Nippur had to be halted after two seasons. The results of the excavations of the Parthian fortress have been published only in preliminary reports.

The Oriental Institute's expedition resumed work at Nippur in the early 1970s. In the eleventh (1972–1973) and twelfth (1973) seasons, the excavators, led by Gibson, worked in two areas on the west mound: area WA (and a sounding called WA 50c near the main opertion) and area WB. The excavators continued work in those areas in the thirteenth season (1975), but also began a program of excavations at the far southwestern end of the site (area WC). The stated purpose of the work in area WC was to uncover the remains of the city's wall, but a large Kassite building (area WC-1) and a series of private houses dating to the seventh century BCE (area WC-2) were also uncovered. The expedition continued work in area WC in the fourteenth (1976) and fifteenth seasons (1981–1982), undertaking extensive excavations of the city wall (WC-3), in addition to

work in WC-1 and WC-2. The final report on the excavations in area WC-1 was published in *Nippur III* (Zettler, 1993).

The sixteenth's season's work at Nippur (1985) was an outgrowth of excavations in area WC-2. The remains from the WC-2 houses were difficult to date, and so a sounding (area TC) was made at the southern end of area TA to provide a well-stratified sequence for the range of time in question and to provide a check on the published stratigraphy of area TA. In addition to work in area TC, two excavation areas (WD, WE) were established at the southern tip of the western mound as alternate excavation sites for those days when work in TC had to be halted because of sandstorms.

In recent years, the excavators undertook a series of operations in various areas, intended, in some cases, to check and expand on the results of earlier work and, in others, to provide a sequence through poorly known periods. In the seventeenth season (1987), for example, in addition to continuing work on the western city wall (area WC-3), the excavators focused their efforts on the eastern city wall (areas EA, EB, EC), previously excavated by the University of Pennsylvania, and on a low Islamic mound to the northeast of site (area M). In the eighteenth season (1989), the excavators located a 10-×-10-meter sounding (area WF) north of WA-50c. The sounding was undertaken there because excavations in area WA-50c in the early 1970s had shown readily accessible mid- to late third-millennium occupation levels. In addition, the excavators worked on the top of the west mound just west of area WA (area WG). Area WG was intended to check the transition from the pre-Islamic to the Islamic periods at the site. In the nineteenth season (1990), in addition to continuing work in Area WF, the excavators resumed work on the WA sequence of temples that had been the focus of excavations in the early 1970s. Successive campaigns of work that began with the eleventh season in 1972 have included environmental and landscape studies. (Brandt, 1990, pp. 67–73).

Excavation Results. The University of Pennsylvania's expeditions worked largely on the ziggurat complex and Tablet Hill, leaving only the far western end of the mound untouched. Aside from the ziggurat, perhaps the best-known architectural remains excavated by the expedition was the Court of Columns uncovered on the western mound in the vicinity of area WA. The Court of Columns features a megaron hall with *prodomos* opening off a columned court. The plan led the excavators to identify the building as a Mycenaean palace, but recent excavations have shown that it could not have been built before the end of the third century BCE (Gibson, 1978, p. 19).

In addition to architecture, the nineteenth-century Nippur expeditions recovered tens of thousands of tablets and fragments, which, along with economic documents, include lexical tablets and exemplars of almost all important Sumerian literary works, most of which probably came from private houses on Tablet Hill (for a bibliography of publications of Nippur tablets, see Bregstein and Schneider, 1992). On Tablet Hill, the area TA sounding (20 × 40 m) was located roughly in the center of the mound. Area TB was located approximately 30 m northeast of area TA at the bottom of a large cut made by the Pennsylvania expedition. The remains uncovered in areas TA and TB span a period of nearly two thousand years, from the time of the dynasty of Akkad through the Achaemenid era. Private houses were uncovered in both areas. The character of the excavated remains in area TB, however, changed over time. The buildings uncovered in the earliest, or lowest, levels (XIII–X) were probably private houses. They were replaced by a large "public" building that was rebuilt four times (levels IX–IV). That public building was, in turn, replaced in the latest area TB levels by private houses. The area TB public building was a private house and "office" of a high state official concerned with the administration of agricultural lands (Zettler, 1991, pp. 251–281).

The Inanna temple represents the longest continuous archaeological sequence available for Mesopotamia: twenty-two building levels spanning the Middle Uruk through Late

NIPPUR. *Bronze statue of King Ur-Nammu.* Dated to 2100 BCE. Iraq Museum, Baghdad. (Scala/Art Resource, NY)

Parthian periods. The Early Dynastic temples (levels IX–VII) have a unique building plan with two sanctuaries. The temples yielded important relief-carved plaques, sculpture in the round, and clay sealings (Hansen, 1963, pp. 145–166; 1971, pp. 47–54). The sequence of buildings and associated artifacts has provided the basis for Donald P. Hansen's redefinition of the phases of the Early Dynastic period. Where the Diyala sequence provided for a threefold division of the period (Early Dynastic I–III), the Inanna temple sequence suggested a twofold division (Hansen, 1965, pp. 201–213; Porada et al., 1992, pp. 103–113). The Parthian temples are particularly interesting in that they demonstrate the continuation of ancient Mesopotamian cults and traditional temple architecture into late periods (Keall, 1970).

While E. J. Keall discusses the Parthian Inanna temple, he focuses largely on the fortress built over the top of the ruined ziggurat. Excavations of the Parthian fortress showed that the fort went through three distinct phases of growth, and none of the plans was completed before being abandoned in favor of more ambitious constructions. In the latest phase (phase III), the north quadrant of the fort had a monumental complex that included a court with four iwans. The three phases of the fortress date to the first and second centuries BCE.

The excavations in area WA yielded a sequence of temples from the end of the Third Dynasty of Ur through the Achaemenid period. Based on inscriptions and figurines recovered from the excavations, Gibson has suggested that the WA temple was dedicated to Gula, a healing goddess and the wife of Ninurta. The WA excavations also provided additional evidence bearing on the so-called Mycenaean palace uncovered by the University of Pennsylvania.

In area WB, the lower levels contained private houses occupied for roughly fifty years from the end of the reign of Rim-Suen (1822–1763 BCE) to the time of Samsuiluna (1749–1712 BCE). A Kassite palace (level II) with a plan similar to the 'Aqar Quf (Dur Kurigalzu) palace was uncovered above the Old Babylonian houses. The palace, which dates to the thirteenth century BCE is probably the building from which the University of Pennsylvania recovered a large number of Kassite tablets and would appear to have been the governor's residence. The latest occupation phases (levels I, G–F) in area WB were poorly preserved. Level IB contained jar burials. One of the jars had a number of unbaked clay tablets packed into the cut into which it had been set. The tablets date to late eighth and early seventh centuries BCE and represent one of the few sources of information for that poorly documented period (Cole, 1990).

At the southwest end of the site, excavations in area WC-1 yielded remains of the city wall and a large Kassite house whose lower level (level III) had been rebuilt three times; the upper level (level II) provided evidence of two main construction phases. Both levels contained a formal court-

NIPPUR. *Statuette of a couple.* Iraq Museum, Baghdad. (Art Resource, NY)

yard and reception room, as well as a domestic suite of rooms. The upper level could be assigned to the thirteenth century BCE, based on a dated tablet. Surface remains in area WC-1 contained fragmentary floors and two chronologically discrete groups of burials. The earlier group of jar burials dated to the early first millennium BCE, while the later group of simple inhumations was probably late Parthian. In area WC-2 the excavations yielded two occupational phases of private houses that could be dated to the seventh century BCE. The earlier phase also contained a small chapel (Armstrong, 1989). Work in area WC-3 focused on disentangling the various phases of the western stretch of the city wall. Aside from the work in area WA, the most important recent excavations at the site have been in areas TC and WF. The sounding carried out in area TC provided incontestable evidence for the abandonment of the site between the Old Babylonian and Late Kassite periods (fourteenth and thirteenth centuries BCE) and made possible a reassessment of the stratigraphy of area TA (Armstrong, 1989). The sequence uncovered in area WF has been discussed in the context of the transition from the Early Dynastic to Akkadian periods at Nippur (McMahon, 1993).

[*See also* Mesopotamia, *article on* Ancient Mesopotamia; *and* Temples, *article on* Mesopotamian Temples.]

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NISHAPUR, site located in Khorasan province, northeastern Iran, about 65 km (40 mi.) west of Mashhad. Founded by Shapur II in the Sasanian period, Nishapur was one of the major cities of the region during the Middle Ages. However, during the Sasanian and Early Islamic periods, Nishapur had been a somewhat marginal town, even though one of the most important Sasanian fire temples was located in its vicinity. Nishapur gained prominence when the Tahirids proclaimed their dynasty to be semiautonomous and made the city their capital; the founder of this dynasty was 'Abd Allah ibn Tahir (AH 213–230/828–845 CE). Nishapur's importance was enhanced under the Samanids (tenth–eleventh centuries), when it began to decline; various factors contributed to this process, such as wars and earthquakes, culminating in its sacking by the Mongols in the thirteenth century. The city was never to regain its former prominence.

Under the Samanids, Nishapur competed with several other courts of semiautonomous princes, such as Merv, Rayy/Tehran and Bukhara, attaining a high level of cultural and intellectual activity. The city became a flourishing commercial center, producing luxury goods such as textiles and remarkable ceramics.

In the city a well-known mosque and the palace of the governor were adjacent to the citadel and another quarter. The city appears to have been planned on the classical pattern, with four gates that must have led to a *cardo* and a *decumanus* (most of the streets in the commercial district ran in parallel north–south and east–west directions, intersecting at right angles).

What is known of Nishapur is largely the result of excavations conducted by a team from the Metropolitan Museum of Art (New York City), primarily from 1935 to 1940, with a final season in 1947. The finds were distributed among several mounds (*tepes*), and were mostly attributed to the ninth–thirteenth centuries. The majority of the material consisted of pottery, both complete vessels and sherds, but kilns were also found, testifying to the local manufacture of these ceramics (Wilkinson, 1973). The ceramics are both

unglazed and glazed. The unglazed pieces are plain for the most part, though some are decorated by a variety of methods; molds were used, some of which were recovered and are particularly noteworthy. The various groups of glazed ceramics include a number of distinctive types: buff ware with an underglaze and painted decoration and black-on-white pottery with abundant epigraphic motifs. Glass, an extensive array of metalwork (Allan, 1982), coins, and fragments of frescoes were also among the finds.

[*See also* Ceramics, *article on* Ceramics in the Islamic Period; Metals, *article on* Artifacts of the Byzantine and Islamic Periods; *and* Persia, *article on* Persia in the Islamic Period.]

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MYRIAM ROSEN-AYALON

NITRIA, monastic settlements near Alexandria, visited in the fourth and fifth centuries CE by Greek and Latin writers who came to Egypt to see its holy men. The visitors called the settlements Nitria, or more properly, "the mount of Nitria" (Gk., *ho oros tēs Nitrias;* Lat., *mons Nitriae*). In the Latin text of the *Historia Monachorum in Aegypto,* attributed to Rufinus (c. 345–410 CE), who spent eight years in Egypt and was a leading figure in Palestinian monasticism, Nitria was about 65 km (40 mi.) from Alexandria and took its name from a nearby town, a center for the collection of salts *(nitratos).* Its precise location has not been identified; the description in the *Historia Monachorum,* as well as other references to Nitria by Palladius (c. 363–431), author of the *Lausiac History;* Cassian (c. 360–435); and other Christian writers, suggests that the region was settled near the modern village of El-Barnugi, about 14 km (9 mi.) southwest of Damanhur. In antiquity it lay on the edge of cultivation, in an area of marshy, marginal land.

Tradition ascribes the initial settlement to the ascetic Amoun (Ammon), a contemporary of Antony (c. 251–356), father of Egyptian monasticism. Unlike the coenobitic system introduced by Pachomius (c. 290–346) in Upper Egypt, in which formal, written rules regulated every detail of the monks' daily life, the system developed under the spiritual direction of Antony and Amoun allowed freer associations. The monks lived, according to Rufinus, in about fifty individual dwellings (lauras) set close together: in some, many monks lived together, in others only a few, and in still others, there were some true solitaries. The pattern of religious life allowed the monks to determine their own course to salvation, leading a life of prayer and penance in their cells. They met on Saturdays and Sundays for a common celebration of the Eucharist, the church being described by Palladius as being large but not magnificent. It was administered by priests who were subject to the authority of the bishop at Damanhur.

Monks supported themselves by tending small vegetable gardens and by selling mats and baskets plaited from halfa grass or palm fiber in the villages and in Alexandria. They hired themselves out as laborers at harvest time or wove flax. Their daily life, ascetic practices, conduct and behavior to one another, and relations with the secular world are exemplified in an anonymous compilation known as the *Sayings of the Fathers (Apophthegmata Patrum; Verba Seniorum),* dating from at least the middle of the fifth century, with translations into Coptic (the last stage of the native language of Egypt), Syriac, and Latin.

The proximity of Nitria to Alexandria attracted visitors in great numbers. There was a guest house and a bakery near the church. This influx of visitors and the growing number of disciples resulted in the withdrawal of individuals farther inland to an area that is referred to in the literary sources as Kellia ("cells"). The textual evidence for the site of Kellia confirms that it was in an area of some six hundred mounds of varying height, in the sandy country 16–17 km (11 mi.) southwest of El-Barnugi, remote from the settlements near Qusur el-'Ilzeila and Qusur al-Ruba'iyyat.

The area's archaeological significance was first noticed in 1925, but it was not until 1964 that it became the focus of a joint scientific mission carried out by Geneva University and the French Archaeological Institute of Cairo. After publishing a preliminary report on their findings, the missions proceeded separately with the work, which has not yet been completed. The report on the site's eroded brick buildings—of differing sizes, some with painted scenes—reflects a conglomerate of hermit dwellings, the larger more elaborate than might be supposed from the literary tradition. When the fieldwork is completed, the finds fully documented and published, and the site's chronological sequences defined, it should be possible to use the archaeological evidence to supplement the literary evidence for the monks' daily life, to clarify the relationship of Kellia with the less remote community of Nitria, and to trace the movement toward more closely knit monastic communities.

The literary evidence, supported by the study and analysis of pottery from Kellia, suggests that the settlements of Nitria and Kellia were in decline at the end of the fifth century and were abandoned in the ninth. In contrast, a third area, even more remote, called Scetis (Shiet) in the ancient texts, has had a continuous but checkered history of occupation. It lies within a depression below sea level, now known as Wadi 'n-Natrun, that takes its name from a chain of salt lakes fringed with reed beds. Its origins, in the fourth century, are traditionally associated with Macarius the Great (c. 330–390). There is little detailed information about how anchorite settlements developed into today's imposing monasteries, fortified with walls and keeps, with individual cells and com-

munal refectories, gardens, wells, oil and wine presses, bakeries, storerooms, and churches with wall paintings. Weakened by doctrinal disputes and subject to raids from Berber tribes to the west, the monks experienced periods of decline interspersed with periods of material prosperity. The history of construction at the different monasteries is complex: existing buildings, restored and enlarged, obscure more ancient construction that dates to the eighth century.

Four monasteries are still active, three of which date to the fourth century: Deir Abu-Maqar (Convent of St. Macarius), Deir Anba Bishoi (Convent of St. Pschoi), and Deir el-Baramous (Convent of the Romans—that is, of the two Roman saints Maximus and Domitius, said to be the sons of the emperor Valentinian, 364–375 CE). The fourth monastery is known as Deir as-Suryan (Convent of the Syrians). Originally founded in the sixth century, it was inhabited by Syrian monks from Mesopotamia in the ninth century. It was still active in the seventeenth century, when the great monasteries of Iraq, Syria, and eastern Turkey had already disappeared. Its library, whose fortunes can be traced back almost continuously to the ninth century, contained important Syriac manuscripts.

These communities are the center of Egyptian monasticism and have, since the seventh century, attracted European travelers in search of ancient manuscripts. Notable among travelers who left vivid accounts of their experiences was Robert Curzon. His *Visits to Monasteries in the Levant,* first published in 1849, is a minor classic.

[*See also* Monasteries.]

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NORTH AFRICA. Occuping the entire northwestern quarter of the African continent, North Africa, or the Maghreb, embraces modern Tunisia, Algeria, Morocco, and sometimes Libya. North Africa came in contact with the ancient Near East through the Phoenicians, who founded Carthage and other settlements across the region early in the first millennium BCE.

What the Phoenicians called this newly found land is uncertain because, in antiquity, North Africa had many names. To the Greeks it was Libya, by which they denoted everything from the Nile River westward to the Pillars of Hercules (Straits of Gibraltar). [*See* Libya.] The Romans called it Africa, subdividing the region according to political and economic organization or ethnic affiliation. Carthago in northern Tunisia was the city and territory of Phoenician Carthage. [*See* Carthage.] Emporia (Gk., "markets") denoted the eastern coast of central Tunisia. Tripolitania designated three Phoenician city-states along the coast in southeastern Tunisia and western Libya: Labdah (Leptis Magna), Trablus (Oea), and Sabratha. [*See* Leptis Magna.] Numidia in eastern Algeria was the territory of indigenous pastoralists, the Numidians (Gk., *nomades,* "nomads"), and Mauretania in western Algeria and northern Morocco, that of the native Maures. (Roman Mauretania should not be confused with the modern northwest African country of the same name but different location.) Medieval Arab geographers took the name *ifraqiya* ("Africa") from the Byzantines, but also coined their own, more descriptive phrase, *al-djezirat al-maghreb,* "the island of the west." Shortened to *al-maghreb,* "the west," this is today transliterated as Maghreb. No record survives of what the Phoenicians called their adoptive land in their own Semitic tongue; nor is there any trace of how it was named by its native peoples, the Numidians, Maures, Garamantes, and others—later known collectively as Berbers.

By whatever name the Phoenicians knew it, these newcomers to North Africa found a landscape there not unlike the one they had left behind in the east: a narrow coastal plain enclosed by echelons of low hills and high mountains,

beyond which stretched hot, dry desert. The terrain of North Africa, however, is far less compact than that of Lebanon or Syria, and, except in Tripolitania, the desert is far removed from the coast. East and south, the Sahara effectively isolates the Maghreb from the Nile Valley and from equatorial Africa. The waters of the Mediterranean Sea and South Atlantic Ocean border it on the north and west, respectively. Within these boundaries the Atlas Mountains, a chain of densely folded limestone ridges, form an interior massif extending 2,000 km (1,240 mi.) from the Atlantic coast of Morocco to the Straits of Sicily east of Carthage. Inland, the topography is sharply dissected by numerous short, seasonal wadis that drain the watersheds of the Atlas into the surrounding seas or into marshy, internal depressions. There are numerous rocky headlands and offshore islands along the lengthy North African coastline but few natural harbors, a circumstance that influenced where on the coast the seafaring Phoenicians made landfall during their journeys westward.

The North African climate is Mediterranean, with hot, dry summers and cool, wet winters. The upper elevations of the Atlas are colder and wetter, and the Saharan desert fringes, hotter and drier than the coastal zones. Since the Neolithic period, typical Mediterranean modes of subsistence have prevailed. Cereal agriculture and sheep/goat pastoralism are long-established livelihoods in North Africa. [*See* Cereals; Sheep and Goats.] Rainfall is usually adequate for dry cultivation and the annual renewal of pastures, but the amount of precipitation can vary considerably from year to year—with potentially disastrous consequences for both farmers and herders. The landscape once supported a natural-climax forest vegetation of cedar, pistachio, holm oak, and pine and the wild progenitors of domesticated olive and grape. It proved hospitable to the domesticated vines and olive trees introduced there by the Phoenicians. [*See* Viticulture; Olives.] Since the time of Phoenician contact, however, the human populations in North Africa have greatly altered its original environment. Millennia of exploitation by agriculturalists and pastoralists have resulted in familiar Mediterranean patterns of woodland destruction and ensuing soil erosion.

Phoenicians and Libyans comprised the two main groups of people inhabiting North Africa in antiquity. The Libyans were aborigines, descended probably from the region's original prehistoric inhabitants. The Phoenician newcomers arrived only in the early first millennium BCE. Classical authors also recognized a mixture of the two groups, so-called Libyphoenicians, that inevitably sprang up wherever the Phoenicians landed in North Africa (Livy, 20.22.3).

Phoenicians in North Africa are often referred to as Punic. This is an English transliteration of the Latin *poeni,* itself a Latin transliteration of the ancient Greek *phoinix,* a common noun for the color purple. In Greek it was also the gentilic name for Semitic speakers of the Syrian coast who specialized in the manufacture of purple dye. These were Canaanites, whose name may come from *kinaḫḫu,* a Semitic word for purple. [*See* Canaanites.]

The modern academic distinction between *Phoenician* and *Punic* is based on chronology, geography, and language. "Phoenician" history and archaeology are divided from "Punic" at about the beginning of the sixth century BCE, the time of the Neo-Babylonian siege and conquest of Tyre (586–573 BCE). [*See* Babylonians; Tyre.] Subsequently, Carthage emerged as the leading Phoenician city in the west. Geographically, the Mediterranean is separated into a Phoenician east and a Punic west. In language, older Phoenician grammatical forms, onomastica, and scripts are differentiated from linguistically and paleographically evolved Punic ones. [*See* Phoenician-Punic.] The distinction is not a rigid one, however, and artifacts, monuments, and settlements in North Africa are sometimes described somewhat ambiguously as Phoenician-Punic.

In this regard, St Augustine of Hippo (354–430 CE), a native North African, made a trenchant comment. Speaking of the indigenous inhabitants *(rustici)* of North Africa, he observed that they still (early fifth century CE) referred to themselves in their own (Punic) language as *Chananaei,* or "Canaanites" (*Letters* 209.2–3). This suggests that in North Africa the Phoenicians may never have ceased being Canaanites.

The Canaanites who "discovered" North Africa discovered that it was already occupied. The foundation legends of Carthage, transmitted through classical sources (cf. Justin 18.5 for the fullest account), mention native inhabitants who contested the newcomers' right to settle their land. Beyond the bare fact of their existence, however, little else is known. There is a dearth of direct archaeological data to support generalizations about the society and economy of the native populations of North Africa in the millennium leading up to their first contact with the Iron Age civilizations of the Near East. The best appraisal of the people encountered by the founders of Carthage is that they were probably ceramic Neolithic farmers and herders clustered in villages or camping in tents and possessing no knowledge of metal or of writing. The Stone Age prehistory of the Maghreb is well understood into the third millennium, but there is no evidence for a native "Bronze Age" in North Africa. The handful of indigenous inscriptions is chronologically very late. Even those that occur bilingually with Punic texts have never been satisfactorily deciphered.

What the natives called themselves in their own tongue is not known. Classical authors lumped them under one rubric, Libyans, though these same writers did record the names and the locations of traditional territories of some native tribes or tribal confederations. These include the Garamantes of the Sahara, the Massylies and Masaesylii of Numidia (central North Africa), and the Mauri of Mauretania (western North Africa). The ancient writers also distinguish

between native groups that farmed and those that herded. According to the written sources, agriculture was practiced in the Mediterranean zones of the northern and western Maghreb, while sheep/goat pastoralists ranged south and east along the Saharan fringe. (Camels and camel pastoralism were introduced into the region very late, probably in the Roman period.) [*See* Agriculture; Pastoral Nomadism; Camels.]

Today, native North Africans are collectively called Berbers, a transmutation of an ancient Greek epithet for non-Greek speakers, *barbaroi.* The modern Berber language is written in Arabic script and is laden with loanwords, but it remains identifiable with its remote linguistic ancestors, ancient Semitic and Egyptian.

Carthage. The best-known and most thoroughly explored of the ancient Near Eastern settlements in North Africa is Carthage. According to legend it was established by Phoenicians from Tyre and Cyprus in the late ninth century BCE. The early date, though not yet the specific origin, of Carthage is now supported by archaeological evidence. Utica, a neighboring site to the north, was (also according to legend) an earlier foundation (1101 BCE); archaeologically, however, the site does not date to before the eighth century BCE.

Carthage (Lat., Carthago) transliterates the Phoenician words *qart ḥadasht,* "new town," an approprite name for a colonial foundation. In the Persian and Hellenistic periods, Carthage emerged as a military and economic rival to Rome, ultimately contesting with that city, in a series of three so-called Punic Wars (in 264–241 BCE, 218–200 BCE, 149–146 BCE), for control of the entire western Mediterranean world. In the end, Phoenician Carthage lost that struggle. Afterward, the city reemerged as the capital of Roman Africa, ranking in size and importance with Alexandria in Egypt and Antioch in Syria. [*See* Alexandria; Antioch on Orontes.] After the Vandal interregnum (439–533 CE), Carthage remained under Byzantine rule until the Islamic conquest in 700.

The ruins of ancient Carthage—Phoenician, Roman, Vandal, and Byzantine—now lie in the coastal suburbs of modern Tunis, Tunisia. In antiquity the city spread over the southern tip of the Carthage peninsula, a low ridge of sandstone hills joined to the mainland by a broad, flat, sandy isthmus. The locale is often described as typically Phoenician: an offshore island or remote promontory providing safe haven from the sea and protective isolation from the mainland. Already partly enclosed by the Gulf of Tunis, the twin lagoons north and south of the peninsula offered ancient mariners a choice of sheltered anchorages, depending on the direction of the winds. As late as the Byzantine period (sixth–seventh centuries CE) these lagoons were still navigable, but continual siltation from adjacent rivers since the end of antiquity has almost cut them off from the sea.

Archaeological excavations, ongoing at Carthage since the nineteenth century, have revealed many, though not all, of the principal features of the Phoenician city: features excavated in whole or in part include the citadel (Byrsa), cemeteries of all periods, dwellings, fortifications, industrial installations of Old and New Carthage, the port, and the tophet, where the Carthaginians allegedly practiced (and archaeological evidence now suggests, actually did practice) child sacrifice. Much recent data have resulted from the International Campaign to Save Carthage carried out during the 1970s and 1980s by expeditions from a score of countries under the auspices of UNESCO.

Byrsa. The citadel of Carthage, the Byrsa was so called because its boundaries were legendarily delimited by the city founders with thongs of oxhide (Gk., *bursa*). The Byrsa rises 50 m (164 ft.) above the surrounding landscape and was always the focus of settlement in ancient Carthage. No trace of the earliest occupation survives on the summit, however, because Roman engineers truncated it in order to terrace the hilltop for their later monumental constructions. Flanking the crest of the hill and undisturbed by later occupation are seventh-century BCE extramural tombs built of monolithic sandstone blocks (see figure 1). Above the tombs are the well-preserved remains of the second-century BCE multistory townhouses of wealthy urbanites destroyed in the final Roman assault on the citadel in 146 BCE. These are the townhouses so vividly described by the Latin author Appian (*Libyca* 96), who also left an account of the Carthaginian ports. Ruins of these townhouses were later engulfed by debris pushed downslope from the summit during the massive Roman terrace building. Some of the townhouse walls are preserved to a height of more than 2 m.

Cemeteries. From the seventh century BCE onward, cemeteries spread north and east from the Byrsa in ever-widening, concentric semicircles. Their progressive enlargement and increasing distance from the Byrsa suggest that the town underwent a gradual expansion through the first three centuries of its existence, followed by an episode of rapid growth after 500 BCE. This growth corresponds with what can be gleaned from the meager written sources, which refer to an Old Carthage and a New Carthage—the latter possibly laid out on an orthogonal grid sometime in the fifth century BCE.

Old and New Carthage. Vestiges of both Old Carthage and New Carthage were revealed in German excavations in the 1970s and 1980s under the auspices of the German Archaeological Institute (Rome section), directed by Friedrich Rakob, and the University of Hamburg, directed by Hans-Georg Niemeyer, on the seafront east of the Byrsa and north of the port. Unearthed there were fifth-century BCE dwellings protected by a sandstone seawall that also functioned as part of the city's fortifications. These structures had been erected on backfill containing debris of seventh-century BCE buildings apparently razed to make way for them. In orientation, the new houses conformed to an orthogonal plan set at right angles to the coastline. In the third–second centuries BCE, larger, more sumptuous seaside villas succeeded

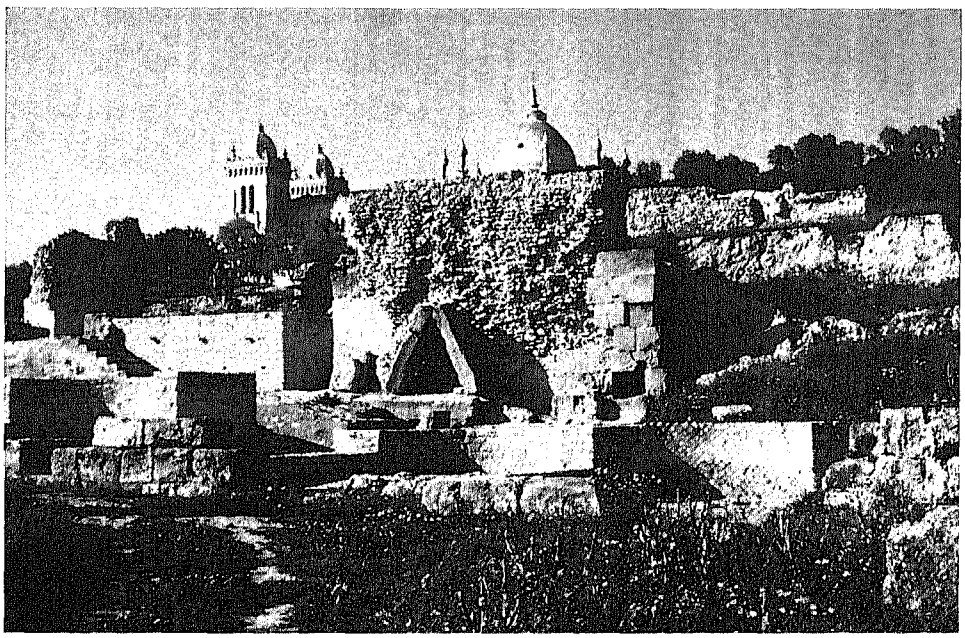
the fifth-century dwellings but maintained the same alignment. [*See* Villa.] The orientation of the city plan of Roman Carthage corresponds closely to this pre-Roman grid.

To the west, farther from the sea and closer to the foot of the Byrsa, in trenches that reached sterile soil, the German team found several meters of occupational debris laid down in eleven floor levels. The architecture consisted of mud-brick structures built on stone foundations with pillar-and-rubble walls. (Pillar-and-rubble wall construction, already in use at Megiddo in the tenth century BCE, was so widespread in North Africa the Romans dubbed it *opus Africanum*, "African work.") [*See* Megiddo.] Ceramics from these floor and fills, especially imported Greek wares, date this architecture indubitably to the eighth–sixth centuries BCE. Almost a third of the ceramics found in the basal deposits was not imported Phoenician or Greek, but indigenous handmade ware, a vestige of early contact between the incoming Phoenicians and indigenous Libyans. Also in this area were signs of industrial activity of the seventh–sixth centuries BCE: pottery kilns, metalworking installations, and purple-dye works. The picture emerging from these excavations is that of a seaside industrial area between the Byrsa and the tophet taken over for urban housing and public buildings as the Iron Age/Persian-period city developed into a Hellenistic metropolis. Late in this process, Carthage was provided with a new port befitting its status as a major Mediterranean trading city.

Port of Carthage. At the time of the final Punic War, the port of Carthage, according to Appian (*Libyca* 96), consisted of a rectangular harbor for merchantmen and an adjacent circular one for warships in the city's southeast quarter. American (ASOR Punic Project directed by Lawrence E. Stager, Oriental Institute, University of Chicago) and British (British Academy Excavations at Carthage directed by H. Hurst, Institute of Archaeology, Oxford University) excavations in the 1970s confirmed conclusively that the shallow lagoons southeast of the Byrsa (one rectangular, one circular) were indeed the remains of this port. Moreover, both were shown to be relatively late features of the city, built only after about 350 BCE. The location of the pre-Hellenistic harbor remains a mystery.

The commercial harbor was a rectangular artificial basin (Gk., *cothon*) surrounded by a quay wall built of monumental sandstone ashlars more than 2 m on a side and almost 1 m high. Near the quayside the American excavators discovered a large warehouse constructed in the typical Phoenician pillar-and-rubble technique (Stager, 1979). The harbor seems to have been only lightly damaged in the final Punic War, and the Romans soon put it back in service. The thickly plastered surface of the first-century CE Augustan quayside overlay a half meter of Punic destruction debris dumped as leveling fill by the Romans. The refurbished Punic port continued to serve the Roman city well into Late Antiquity.

The military harbor adjoined the commercial one. Investigations in the circular lagoon by British mission in the 1970s demonstrated that it too was part of the port described by Appian. This lagoon also was an artificial basin with an island created in the center. Based on the excavator's estimates, the military harbor (see figure 2) could accommodate 170 to 180 warships in timber-and-stone drydock ramps built on the central island and around the shore of the lagoon (Hurst and Stager, 1978). (Appian put its capacity at 220



NORTH AFRICA. Figure 1. *View of seventh-century* BCE *Punic tombs on the Byrsa hill, Carthage.* Looking northwest toward the summit. Note the triangular roofed tomb. (Photograph by J. A. Greene)

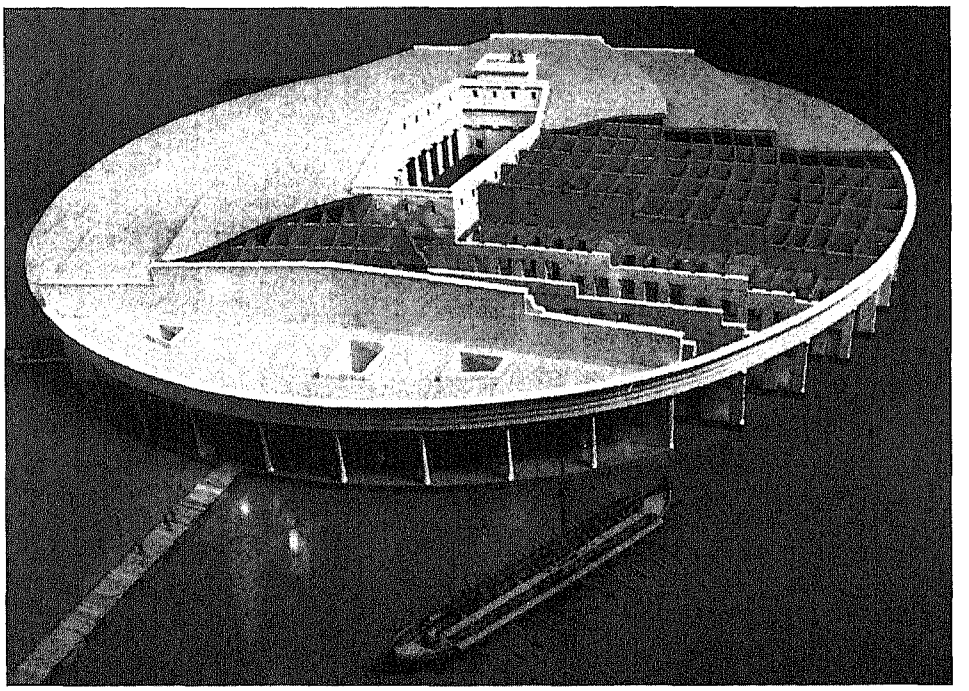
ships.) Such ramps had existed earlier in the eastern Mediterranean, as in the sixth-century BCE *cothon* at Phoenician Kition (Larnaca) on Cyprus. [*See* Kition.] The date of the military harbor is surprisingly late—no earlier than the second century BCE, when Carthage was on the brink of the last Punic War. Less surprisingly, the military harbor was heavily destroyed in the aftermath of that war but was later rebuilt along different lines by the Romans.

Tophet. The tophet, or Precinct of Tanit, was near the port but was founded much earlier. There, the Carthaginians practiced child sacrifice, or so charged Greek and Latin textual accounts. Owing to the fate of the city's library after 146 BCE (the Romans gave it to their Punic-speaking Numidian allies and it was subsequently lost), no Phoenician account of the city's history is preserved. Until archaeological evidence for a tophet at Carthage was discovered accidently in 1921, the classical sources might have been dismissed as mere adverse propaganda.

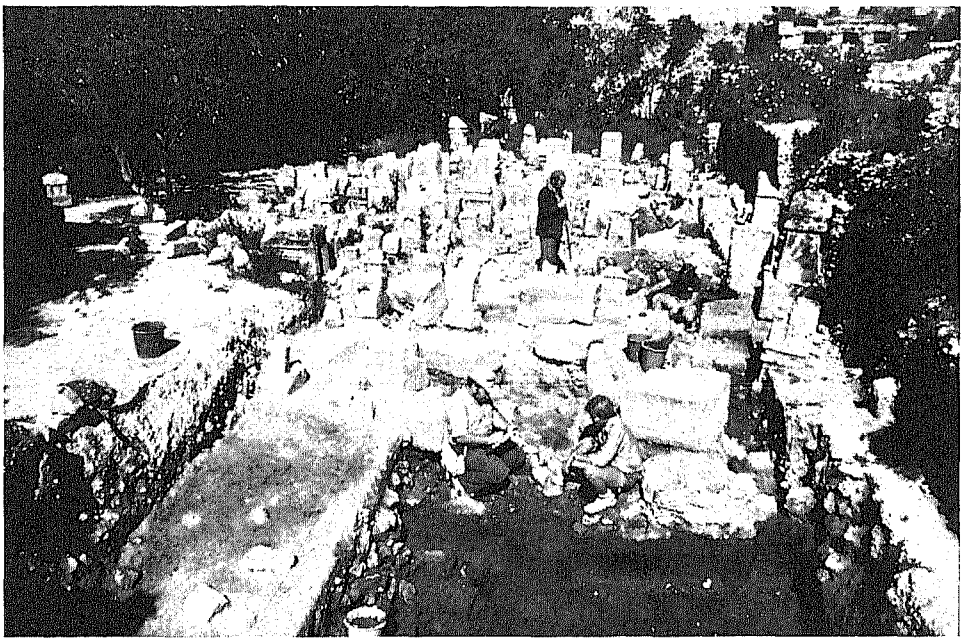
The tophet at Carthage was a typical open-air Phoenician sanctuary (see figure 3): an area delimited by a temenos wall and filled with urn burials containing cremated remains of humans or animals surmounted by stone markers, usually decorated or inscribed, or sometimes both. [*See* Burial Sites; Burial Techniques.] Other such sanctuaries were later discovered at Phoenician sites in North Africa and on Sicily and Sardinia. [*See* Sardinia.] They are now known at Amathus on Cyprus and in Tyre in Lebanon. [*See* Amathus; Tyre.] Tophets at other North African sites in the region of Byzacium to the south and along the Mediterranean coast of Algeria continued to be used into the Christian era, though by then animal substitution rather than actual human sacrifice was apparently the norm. The term *tophet* (meaning, perhaps, "roaster") is taken from *2 Kings* 23:10, which describes a tophet in the valley of Hinnom outside Jerusalem. The Jerusalem tophet was obliterated in the sixth century BCE, during Josiah's reforms "so that no one would make a son or daughter pass through the fire as a *mulk*-sacrifice" (NRSV, adapted). Excavations have shown that the tophet at Carthage was in continuous use from the founding of the city in about 800 BCE until its destruction by the Romans in 146 BCE.

Excavations at the Carthage tophet began immediately after its discovery, with campaigns of François Icard and Paul Gielly (Tunisian Department of Antiquities, 1922), Francis Kelsey (University of Michigan, 1925), G. G. Lapeyre (Tunisian Department of Antiquities, 1934–1936), and Pierre Cintas (Tunisian Department of Antiquities, 1944–1947). None was ever fully published, though Donald Harden, a junior member of Kelsey's expedition, synthesized the 1925 results in two brief articles that accurately fixed the relative sequence (Tanit I–III) and absolute chronology (eighth–second centuries BCE) of the tophet urn burials (summarized in Harden, 1980, pp. 82–90).

Excavations by the American Schools of Oriental Research Punic Project during the UNESCO Save Carthage Campaign in the 1970s verified the broad outlines as well as



NORTH AFRICA. Figure 2. *Model of the second-century* BCE *ship sheds at the circular harbor, Carthage.* (Courtesy British Academy Carthage Excavations)



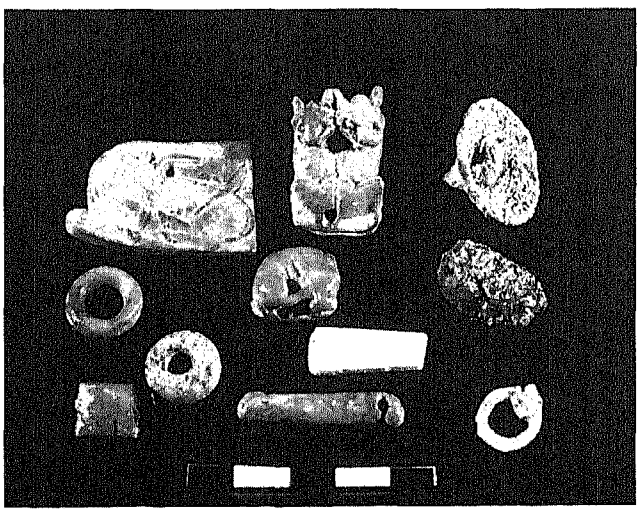
NORTH AFRICA. Figure 3. *General view of the Carthage Tophet excavations, looking west.* (Courtesy ASOR Punic Project)

many details of Harden's analysis. The Punic Project uncovered more than four hundred whole or fragmentary burial urns containing the cremated remains of children and young animals. Analysis of the contents and stratigraphic contexts of the urns, together with a reconsideration of the biblical and extrabiblical written sources, demonstrates beyond doubt that child sacrifice was practiced at Carthage.

In the area excavated at least nine phases of burials were dated, from about 750 to 146 BCE. The lowest levels, on bedrock, corresponded to the earliest period of the tophet, about 750–600 BCE (phases 1–4 = Harden's Tanit I). The intermediate levels spanned the fifth–fourth/third centuries BCE (phases 5–8 = Harden's Tanit II). The uppermost stratum, dating to the third–second centuries BCE (phases 9 = Harden's Tanit III), was mostly destroyed by the Romans, leaving little of the final level of the tophet in situ.

A typical burial consisted of an urn placed in a stoned-lined pit capped by a flat cobble. All of the urns contained the charred bones of sacrificial victims, either children (newborns or two–four-year-olds) or animals (lambs, kids, birds). Animal substitutes were interred with the same rites as human victims, including the provision of grave offerings (see figure 4 (glass beads, carved amulets and, more rarely, miniature pottery vessels) and sometimes a burial monument. [*See* Grave Goods.] The monuments, sandstone cippi or limestone stelae, were used frequently (though not invariably) to mark the burials. The earliest markers were undecorated, L-shaped sandstone cippi. By the fourth century BCE, the monuments were often embellished with the symbols of the deities Tanit and Baʿal Hammon; they were sometimes inscribed with the dedicant's name, profession, and genealogy.

Contrary to expectation, animal substitution did not gradually supplant human sacrifice. In the earliest phases (750–600 BCE), one urn in three contained the charred remains of lambs, kids, or birds. In later levels (phases 5–8) only one urn in ten contained the remains of an animal substitute. In all cases the integrity of individual skeletons in the urns in-



NORTH AFRICA. Figure 4. *Tanit I urn amulet group from the Tophet, Carthage.* (Courtesy ASOR Punic Project)

dicated that a deliberate effort had been made by those conducting the sacrifice to collect from the pyre the particular remains of each victim—human or animal—and place them in a separate urn.

The approximate age, but not the sex, of the human victims can be determined. Infant skeletons are composed of a high percentage of cartilage, all of which is destroyed by burning. Only the more completely ossified portions of the skeleton survive. Teeth are the most heat resistant, and the stage of dental development provides important clues for establishing the victim's age at death. While the sex of such young individuals cannot be determined from the skeletal evidence, the textual sources suggest that the rite was not limited to first-born males and that sons or daughters served equally as offerings to Tanit and Baʿal Hammon.

Child sacrifice at Carthage not only had religious dimensions, but also social and economic ones. Viewed in a comparative cultural perspective, ritual infanticide at Carthage may be seen to fulfil many of the same functions as more informal modes of infanticide—exposure, drowning, strangulation, poisoning—practiced in the contemporary Greek and Roman world. Thus, the practice served as a mechanism for regulating population growth. It was less hazardous to the health of the mother than abortion of an unborn fetus and allowed parents to select for the sex and birth order of children. Among the economic elite of Carthage, the religious institution of child sacrifice may have been used by wealthy families to consolidate and maintain their fortunes by allowing them to regulate the number of male heirs among whom inheritance would have to be shared and the number of females who would have to be dowered into marriage. Some scholars reject such a materialist analysis and contend that Phoenician tophets merely represent cemeteries of children who perished of natural causes and whose remains were accorded special treatment.

Cap Bon, Byzacium, and Tripolitania. Outside Carthage, to the south and west, lay other regions of North Africa: Cap Bon, Byzacium, Numidia, Mauretania, and the outer limits of the known world in antiquity beyond the Pillars of Hercules.

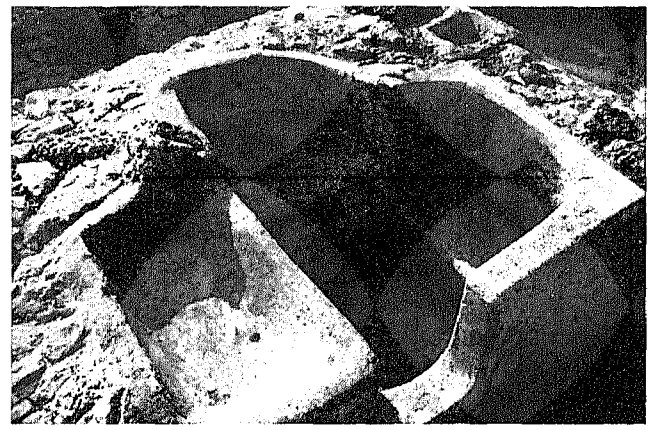
Cap Bon. A broad peninsula, Cap Bon's low mountains and hilly plains stretch north and east from Carthage. Its extreme eastern tip lies only 150 km (93 mi.) from Sicily, a propinquity that proved advantageous when the Phoenicians controlled Sicily and Sardinia; it was far less advantageous later, when, from the fifth century CE onward, Carthage faced military threats from Greek Sicily and from Rome. Easier to reach by sea than by land, Cap Bon formed a hinterland and resource base for the city. The sandstone so ubiquitous in public and private architecture of all periods at Carthage was quarried at El Houaria on Cap Bon's northwestern shore (see figure 5). By the late fourth century BCE, if not before, the peninsula was richly planted with olive groves, vineyards, and fruit orchards interspersed with pasture for sheep, cattle, and horses and dotted with luxurious country houses. [*See* Cattle and Oxen.] In 310 BCE the army

NORTH AFRICA. Figure 5. *Roman sandstone quarries at El Houaria, Cap Bon.* Note the quarried blocks of sandstone. These were taken both directly from the surrounding cliffs and from the extensive system of underground caves. (Photograph by J. A. Greene)

of Agathocles, the Syracusan tyrant, marched through this countryside to attack Megalopolis, a town of unknown location somewhere on Cap Bon (Diodorus Siculus 20.8.3–4). Historical sources record that three cities on Cap Bon—Nepheris, Aspis (modern Kelibia), and Neapolis (modern Nabeul)—remained loyal to Carthage until its ultimate defeat by Rome in 146 BCE. For that loyalty they paid with their own destruction (Strabo 17.3.16). The two sites whose locations are known have, however, yielded very little archaeological evidence of that destruction or of any pre-Roman occupation. Archaeological surveys by a joint Tunisian-Italian team at the northern end of Cap Bon have found surface traces of Phoenician occupation at smaller sites. Excavations by this same team at three sites (Djebel el-Fortras, Ras ed-Drek, Aspis/Kelibia) uncovered what have been interpreted as "forts" dating to the fifth century BCE. Also found at Ras ed-Drek was a temple, dated by its excavators to the third–second centuries BCE (Barreca and Fantar, 1983). The earliest and most substantial evidence for Phoenician settlement on the peninsula, however, is from Kerkouane, on the northeast coast of Cap Bon.

Kerkouane. Except for Carthage, Kerhouane is, to date, the best-preserved and most extensively excavated Phoenician town in North Africa. Its ancient name is lost; the surviving written sources mention only the larger Phoenician cities of Cap Bon. Archaeologically, however, ancient Kerkouane is quite well known. It was founded in the sixth century BCE and inhabited until the mid-third century BCE. There were two main periods of occupation, the first from its founding down to the late fourth century BCE, about the time of Agathocles' invasion from Sicily. Rebuilt, its second phase of occupation lasted fifty more years, until the town was abandoned permanently in the course of the First Punic War. Because there was no later occupation, the excavators of the Tunisian Institut National du Patrimonie, directed by M. Fantar, were able to recover substantially complete plans of structures wherever they dug.

A double fortification wall surrounded the town, enclosing an area of 7 or 8 ha (17 or 20 acres). Within the walls a well-planned system of wide streets intersected at regular angles, unpaved but provided with stone-lined drains. Courtyard houses opened onto the streets through narrow vestibules. Each house had a cistern sunk into the courtyard to provide water, as well as its own private bath (see figure 6). [*See* Cisterns; Baths.] Near the town center a large courtyard structure with pillars flanking its entrance and subsidiary rooms was surrounded by benches. Although very likely a temple, nothing found inside this structure offered a clue about the cult celebrated there. [*See* Cult.] At the edge of the town was an industrial zone of pottery and figurine workshops and kilns. Piles of broken Murex shells unearthed nearby suggest the presence a typical Phoenician enterprise, purple-dye works. Tombs dating from the sixth to the third centuries BCE lay, as expected, outside the town walls. Significantly, there is no natural harbor near the site. Kerkouane was an agricultural village, according well with Diodorus's depiction of Cap Bon as an agricultural hinterland.



NORTH AFRICA. Figure 6. *Bath in a fourth-century* BCE *private house, Kerkouane.* (Photograph by J. A. Greene)

Byzacium. South of Cap Bon lay Byzacium (the modern Tunisian Sahel), a flat, fertile, sandy plain known in Greek as Emporia. Along its littoral, from the base of Cap Bon to the border of Tripolitania, stretched a string of Phoenician towns: Hadrumetum (Sousse), Rusapina (Monastir), Lepti (Lemta), Thapsus (Ras Dimass), Mahdia (ancient name unknown), Sullecthum (Salakta), and Acholla (Ras Botria). These are known mainly from textual traditions. There are few ancient traces of Hadrumetum and Rusapina because they are buried beneath modern Sousse and Monastir. The accidental discovery and subsequent excavation at Hadrumetum of burial urns and carved stelae by Pierre Cintas revealed that a tophet was in use there from at least the seventh to the first centuries BCE (Lancel, 1995, pp. 291–292). Cemeteries dating to the fourth century BCE have also been found. By contrast, Rusapina, Thapsus, Mahdia, and Sullecthum are, before the Roman period, virtually blank archaeologically. Their locations on headlands or near offshore islets are, however, suggestive of Phoenician foundations, as are the presence at some of difficult-to-date harbor works, such as a *cothon* at Mahdia and a mole at Thapsus. Lepti, rechristened Leptis Minor by the Romans, to distinguish it from Leptis Magna, its greater neighbor in Tripolitania, similarly lacks any known Phoenician remains; however, the site and its region are now the object of renewed archaeological investigations by a joint Tunisian-American project that may file this lacuna. Pliny the Elder remarked on the cultural and ethnic particularity of Byzacium, identifying its inhabitants as Libyphoenicians (*Nat. Hist.* 5.24). This characterization is reflected archaeologically in cemeteries on the coast at Lepti and inland at Smirat that reveal indigenous (as distinct from Phoenician) funerary practices. Unlike Cap Bon, Byzacium sided with Rome in the final

Punic War and in return was spared destruction. Its reluctance to take a stake in Carthage's quarrel with Rome is perhaps explained by its mixed population, partly Canaanite, mostly Libyan.

Tripolitania. South of Byzacium lay Tripolitania ("three cities"), colonized by Phoenicians in the seventh century BCE. It took its name from its three principle cities: Labdah/Leptis Magna, Trablus/Oea, and Sabratha. Until 146 BCE, Tripolitania formed the eastern province of a western Phoenician realm dominated by Carthage. After Carthage's destruction, Rome ceded Tripolitania to its Numidian allies but later absorbed it as a Roman province.

Numidia, Mauretania, and Beyond the Pillars of Hercules. West of Carthage, the Mediterranean seaboard of North Africa is marked at roughly equal intervals by Phoenician coastal settlements, either known or conjectured, on or near prominent headlands or estuarine embayments. Some are no more than place names cited by ancient authors, with no firm connection to an identified archaeological site. Others are demonstrably ancient foundations firmly dated by excavated artifacts to as early as the sixth century BCE. Archaeologists have noted this uniform spacing—in time about one day's sail, in distance measured coastwise some 30–40 km (19–25 mi.)—and have connected it with the system of cabotage (short-distance coastal sailing and trading) described in documentary sources for the sixteenth-century Mediterranean. The Phoenicians were supposed to have practiced a first-millennium BCE version of cabotage as they expanded into the western Mediterranean. The data, though suggestive, are not in perfect accord with this reconstruction. The spacing of sites is not invariable, and archaeological evidence is often absent or chronologically too late. Some site identifications are based on nothing more than onomastic guesswork supported by the ambiguous testimony of the classical geographers.

At some coastal sites, extant remains are no earlier than the era of the Punic Wars (third–second centuries BCE). Hippo Regius (modern Anaba on the Tunisian-Algerian frontier) has yielded inscribed tophet stelae and evidence of a temple to African Saturn (i.e., Baʿal Hammon), all dated to the third–second centuries BCE. Beyond Hippo, from east to west along the Algerian coast, other late sites include Rusicada (modern Skikda), Chullu (Collo), Iqilgili (Gigel), Salda (Begaya), Iomnium (Tigzirt), Rusucurru (Dellys), and Rusguniae (Tametfoust). Rusazus, Rusippisir, and Cissi are known only by name and have yet to be located. At several of the excavated sites (Iomnium, Rusucurru, Rusguniae), the presence of inscribed tophet stelae dating to as late as the second century CE suggest the continuation of rites connected with child sacrifice (though perhaps not the actual practice itself) long after the Romans suppressed it at Carthage.

Near modern Algiers the data are better. While Icosium (Algiers) can be dated no earlier than the third–second centuries BCE, Tipasa (Zeralda), to the west, had a sizable occupation in the fifth and fourth centuries BCE, with strong Libyan funerary traditions and a tophet in use up to the first century CE. West of Tipasa, Iol (Roman Caesarea, modern Cherchel) was founded by the sixth or fifth century BCE. Literary traditions make it a Numidian royal city by the third century BCE. A second-century BCE Neo-Punic inscription found there mentions a temple dedicated to the Numidian king Micipsa, successor to Massinissa; two second–first-century BCE Neo-Punic texts attest a local cult of Saturn. West of Iol, Gunugu (Gouraya) has produced fifth-century BCE ceramics, Neo-Punic inscriptions, and Neo-Punic stelae from the second–third centuries CE mentioning Saturn.

Phoenician sites in the Gulf of Oran are separated by 160 km (99 mi.) from those near Algiers. The intervening stages are not yet located. The ancient name of Les Andalouses, a site 30 km (19 mi.) west of Oran, is uncertain. It has two cemeteries, a western one dating to the sixth century BCE and an eastern one dating to the late fourth–second centuries BCE. In between is a fourth–second-century BCE settlement of about 3 ha (7 acres). Both the settlement and the eastern cemetery show strong ceramic affinities with Phoenician Iberia. At Mersa Madakh (ancient name unknown) is a necropolis dating to about the sixth century BCE. [*See* Necropolis.] It too has ceramic connections with Phoenician Iberia and with Phoenician sites on the Atlantic coast of Morocco. Siga (Takembrit), founded in the fifth century BCE, became, in the third century BCE, a Numidian royal city occupied by Syphax, king of the Masaesyles. Neo-Punic inscribed stelae from the third–first centuries BCE attributed to Siga (and now in the Oran Museum) and second–third-century CE anepigraphic stelae excavated near Siga witness the continuity of the cult of Saturn at the site for at least five hundred years. Finally, there is Rachgoun, an island near shore on the Gulf of Oran, with a necropolis and dwellings dating to about 650–600 to 500 BCE. It is the earliest site thus far found on the Algerian coast; it too exhibits ceramic parallels with Phoenician Iberia, moreso than with Carthage.

To the west, of the known Phoenician settlements on the Moroccan Mediterranean coast, only Sidi Abdelsalem el Bahar shows any signs of occupation in the fifth century BCE. The others, Rusaddir (Mellila), Emsa, and Tamuda (Tetouan), range from the fourth to second centuries BCE.

There are strong literary traditions that the Phoenicians early (mi 1110 BCE) went beyond the Pillars of Hercules to found settlements at Gadir (Cadiz) on the southwest coast of Spain and, even before that, at Lixus (Larache) on the Atlantic coast of Morocco (Pliny, *Nat. Hist.* 19.63). There is at present, however, no archaeological support for such early foundations. At Tingis (Tangier) there is a necropolis from perhaps the seventh century BCE. The evidence for Phoenician occupation at Lixus is substantial, however: cemeteries and remains of habitations and a temple, but none date to before the seventh century BCE. Mogador, 700

km (434 mi.) south of Tingis, is in a typically Phoenician location, an offshore island close to a small river mouth. Excavations there in the 1950s by A. Jodin have found Attic and Ionian amphora and Phoenician red-slip pottery diagnostic of the seventh century BCE, but the overall nature of the occupation is unclear. In all cases, these sites show the same material cultural connections with Phoenician Iberia demonstrated by those on the western Algerian coast.

If evidence of settlement is lacking, the written sources do suggest extensive Phoenician contacts with the western coast of North Africa. Herodotus (4.196) recorded their custom of silent barter with Libyans on the coast beyond the Pillars, a wordless exchange of Phoenician trade goods for North African gold. The *Periplus of Hanno* (a set of sailing instructions) recounts the voyage of a Carthaginian, Hanno, and his fleet of sixty ships down the west coast of Africa in perhaps the late fifth century BCE "to found cities of Libyphoenicians." The expedition may have gone as far as modern Sierra Leone, or perhaps farther, to Cameroon or Gabon (the coastal features described are consistent for either location) before turning back, their supplies exhausted, without founding any new settlements. By its own account, the text of the *Periplus* was inscribed on a tablet displayed in the Temple of Kronos (Baʿal Hammon) in Carthage.

[*See* also American Institute for Maghreb Studies; *and* American Schools of Oriental Research.]

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North Africa is difficult to grasp bibliographically: books and articles concerned with its history and archaeology and its connections with the ancient eastern Mediterranean are numerous and published in many different languages. What follows serves to introduce essential bibliography by signaling classic works, sound interpretations of the existing evidence across a range of topics, and recent publications of important new data.

Because North African archaeology has long been a preserve of European scholars, mainly French and Italian, much past and present work appears in those languages. Fundamental early studies, all in French, are accessible only in major research libraries. Published proceedings of recent international conferences, despite their titles in French, Italian, and German, frequently contain important contributions in English. The major relevant museum collections are in North Africa and Europe; very few exhibits of this material travel to North America. As a result, exhibition catalogs are usually not in English. A notable exception is *Carthage: A Mosaic of Ancient Tunisia.* Despite this, much is accessible in English, either as original work or in translation.

Scholarly journals in English (e.g., the *Journal of Roman Archaeology, Libyan Studies*) often contain articles on North African archaeology. The French journal *Antiquités Africaines,* which focuses on ancient North Africa, sometimes includes lengthy English-language contributions. The *American Journal of Archaeology* from time to time publishes a "North Africa Newsletter" summarizing recent developments. One of these comprises a comprehensive bibliography for archaeology in Tunisia (exclusive of Carthage) from 1956 to 1980: Abdelmajid Ennabli, "North Africa Newsletter 3: Part 1. Tunisia, 1956–1980," *American Journal of Archaeology* 87 (1983): 197–206. For general bibliographies, see Richard I. Lawless, *Algeria* (Oxford, 1980), and Allan M. Findlay and Richard I. Lawless, *Tunisia* (Oxford, 1982) and *Morocco* (Oxford, 1984), in the World Bibliographical Series (vols. 19, 33, 47).

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JOSEPH A. GREENE

NORTHERN SAMARIA, SURVEY OF.

The area designated in the Bible and Bronze Age sources as Mt. Manasseh or Mt. Shechem is now known as the northern Samarian hills. This broad syncline, extending along a southwest–northeast axis, terminates to the west and north in the ʿAnabta and Umm el-Fahm anticlines and to the east in the Farʿah anticline. Rising out of the center of the region are mountain ranges that are higher than the surrounding anticlines. (The tallest of these, Mt. Ebal, is 940 m above sea level.) Of Eocene origin, the syncline is hatched in a southeast–northwest direction by a lattice of Neogene faults. Six interior valleys formed along these faults, as did Wadi Farʿah and Wadi el-Malih on the syncline's eastern side. Numerous springs can be found from north of Jenin to the foot of Mt. Gerizim in the south. Abundant water sources, as well as the region's arable soil and broad interior valleys, distinguish the northern Samarian hills from the more rugged hill country to the south, the Ephraim and Judean anticlines.

Archaeological investigation of northern Samaria has been ongoing since the early years of the twentieth century, primarily because of its biblical importance as the site of three Israelite capitals. Shechem, the earliest Israelite religious center, was excavated by Ernst Sellin in 1913–1914 and again in 1926–1927. Samaria (Sebaste), the religious and administrative capital of the northern kingdom for most of its independent history, was excavated in 1908–1910 by George A. Reisner and Clarence S. Fisher. The latter's work was continued between 1931 and 1935 by the Palestine Exploration Fund, and resumed by a Drew University–McCormick Theological Seminary expedition between 1956 and 1964. Tell el-Farʿah (North), identified as biblical Tirzah, the capital city of Jeroboam I, first king of the northern kingdom, was excavated by Roland de Vaux between 1946 and 1960. [*See the biographies of Sellin, Reisner, Fisher, and de Vaux.*]

A few sites on Mt. Manasseh were surveyed before the 1960s, but a systematic examination of the region was not undertaken until 1967–1968, when an emergency survey was conducted by Israeli archaeologists Zecharia Kallai, Ram Gophna, and Yosef Porath. Beginning in 1978, Adam Zertal led the first comprehensive survey of the region for Tel Aviv and Haifa Universities and for the Israel Exploration Society. By 1991 three-quarters of the northern Samarian hills, about 1,800 sq km (1,116 sq. mi.), had been surveyed and some 821 ancient sites classified—632 of them new discov-

eries—with every archaeological era from the Chalcolithic through the Ottoman periods represented. The survey also determined that, in terms of the region's settlement history and morphology, the division between north and south was not between Judea (Judah) and Samaria, as was formerly believed, but between the Ephraim and Judean anticlines and the Shechem syncline.

The history of northern Samaria can be characterized by dense settlements alternating in fairly quick succession with periods of rapid decline. Settlement was affected by political events as well as the region's diverse topography: internal valleys, particularly the Tubas (Thehez) and Zababdeh valleys in the east, the Mikhmetat valley in the south, and the er-Rameh and Dothan valleys in the west and north, where settlement was centered; hard limestone and dolomite hills to the west of these valleys, where forests of Palestinian terebinth and evergreen oak once stood (and where some specimens still stand); and a broad band of desert margin to the east, descending into the Jordan Valley.

Chalcolithic and Bronze Ages. An important survey finding was that most Early Bronze Age settlements were established in EB I (start of the third millennium BCE) rather than, as had been assumed, in EB II–III, when settlement actually declined. EB I settlements, like those of the Chalcolithic, were concentrated along Wadi Far'ah, Naḥal Shechem, and the western slope of the syncline, an area replete with water sources. Of the seventy-eight EB I sites, nineteen were fortified mounds, some indicative of large settlements. Six fortified enclosures, each positioned for defense, also were discovered. Not all of these enclosures housed settlements, but they probably served as a safe haven for the inhabitants of the nearby valleys. After two periods of decline, settlement activity increased significantly in EB IV, when fifty-five settlements were established, several of them likely serving a cultic function. Unlike the earlier EB sites, those from EB IV were situated along the desert margin and in the eastern valleys, where water was scarce and the soil poor. Large and clustered in groups, these settlements were characterized by a central fortified enclosure and an abundance of potsherds and architectural remains.

As well as can be determined from pottery dating to the Middle Bronze period (beginning of the second millennium BCE), settlement activity came to a virtual standstill in MB I but then exploded in MB II—to 161 sites, a number unequaled anywhere else in Palestine. Many new tells were founded at the region's largest sites (among them, Shechem, Tirzah, Dothan, and Jenin), each protected by exterior walls and earthen ramparts; smaller settlements, some with exterior protection, developed simultaneously on the edges of valleys. The contemporary Egyptian Execration texts refer to the region as Mt. Shechem, or the land of Shechem, but no evidence has been uncovered as to the area's political and ethnic makeup in this period.

Although settlement decreased in general during the Late Bronze Age (latter half of the second millennium BCE), extensive historical data from the period indicate that for a certain time the area extended into the Jezreel Valley and was ruled by the family of Lab'ayu of Shechem, the hill country's most powerful prince. The number of sites decreased substantially in LB I (to twenty-three), possibly as a result of a decline in rainfall and the desiccation of springs on the eastern edge of the syncline at the end of the sixteenth century BCE. These environmental changes were no doubt exacerbated by the widespread destruction wrought by the eighteenth-dynasty Egyptian pharaohs during their military incursions into Canaan.

Iron Age. Pottery remains from the thirteenth and twelfth centuries BCE indicate that seminomads did enter northern Samaria at the beginning of the Iron Age (c. 1200 BCE), the period of Israelite settlement. Moving through Naḥal Tirzah (Wadi Far'ah), the trade route that connected the northern Samarian hills with Transjordan, they settled initially in the Jordan Valley, along Wadi Far'ah and Wadi Malih, and in the eastern valleys of Mt. Manasseh, all areas of light Canaanite settlement. The first cultic center of the period probably was Shechem and possibly Mt. Ebal. Ceramic evidence, especially three types of cooking pots, indicates that these settlers moved gradually into the central and northern valleys and later, in search of arable land, into the forested areas and south toward Mt. Ephraim. This interpretation requires further study and is contested by some scholars (e.g., Dever, 1993), but it helps to explain some of the contradictory biblical references regarding the beginnings of Israelite settlement on Mt. Manasseh.

By Iron II northern Samaria was fully inhabited, the number of settlements reaching a high of 238. Israelite administration of the region is illuminated by the Samaria Ostraca, which date to this period. [*See* Samaria Ostraca.] Political upheavals caused by the Assyrian conquest of Samaria in 722 BCE resulted in a sharp decrease in settlements on Mt. Manasseh in Iron IIC (721–530 BCE), during which the fleeing inhabitants built fortified farms along the desert margin, from Wadi Far'ah to Wadi el-Malih. A new pottery group was introduced, probably by Cuthean settlers who were sent into the region from Mesopotamia in the eighth–seventh centuries BCE, when Samaria was a province of the Babylonian Empire.

Persian through Ottoman Periods. Political stability returned to Mt. Manasseh in the Persian period (sixth–fourth centuries BCE). As a result, settlement was heavy, particularly in the Dothan valley. These settlements, and other findings of the survey, support A. Grintz's assertion that Samaria as well as Judea (Judah) was resettled by those returning from captivity in Babylon after 538 BCE. Settlement was cut in half during the Hellenistic period, however, primarily in the wake of the Samaritan Revolt of 332 BCE, when the inhabitants of the region resisted the legions of Alexander the Great. [*See* Samaritans.] Stability returned during

the Early Roman period, when settlement surged and new sites were founded in the northwest, in the area linked to the small state of Narbata. Of all the historical periods, the greatest density of settlement on Mt. Manasseh occurred in the Byzantine period—358 sites—but that number was cut in half in both the Early Arab and the medieval periods (seventh–fourteenth centuries CE), again as a result of political upheavals. Evidence of renewed settlement, including fortified settlements, was found for the Mamluk period, but another significant decline—to less than a quarter of the number of Byzantine settlements—occurred in the Ottoman period.

[*See also* Dothan; Far'ah, Tell-el (North); Jordan Valley; Judah; Samaria; Shechem; *and* Southern Samaria, Survey of.]

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ADAM ZERTAL

NORTHWEST SEMITIC SEAL INSCRIPTIONS.

Reflecting a long tradition of seal inscriptions in Egypt and Mesopotamia, cylinder and stamp seals from Ugarit and other second-millennium BCE Syro-Palestinian sites are inscribed in Egyptian hieroglyphics, syllabic cuneiform, or bilingual Akkadian-Hittite. On one tablet, the dynastic cylinder ^{aban} *kunukku ša šarri* ("seal of the king") is placed next to a king's personal alphabetical stamp seal (MÍŠMN). In the first millennium BCE, the use of bullae to seal papyri became widespread. Hebrew used two Egyptian words for *seal, ḥôtām* and *ṭabba'at,* to refer to royal Egyptian (*Gn.* 41:22) and Persian (*Est.* 3:10; cf. Aram. *'izqah, Dn.* 6:18) stamp seals, respectively. The seals are most often made of hard, semiprecious stones such as carnelian.

Aramaic cylinder seals were in use from about 800 BCE until the end of the Achaemenid Empire (c. 330 BCE). Descended from Egyptian scarabs and used until about 100 BCE, scaraboid stamp seals were strung on cords or mounted on rings. A typical example might measure 20 × 15 × 8 mm, with a surface area of 3 sq cm. The characters are usually legible on the imprints. The decoration, often engraved first by a skilled craftsman, may relate to the inscription (Pierre Bordreuil, "Sceau en calcèdoine grise en forme de canard" BAALIM III, *Syria* 63 [1986], p. 429), or not (Galling, 1941, no. 97; Bordreuil, 1986, nos. 29, 139). More than 1,200 different seals are attested either by the seal itself or by an impression: 150 Phoenician, nearly 500 Hebrew, including 220 bullae from the end of the preexilic period, (about 2,000 "royal" stamp sealings on which the text is "LMLK + toponym" are not included), more than 350 Aramaic, about 100 Ammonite, about 40 Moabite, and about 10 Edomite.

Corpora. The study of Northwest Semitic seals was inaugurated by James Tassie and Rudolf E. Raspe (1791), Moritz A. Levy (1857), Henry C. Rawlinson (1864), Melchior de Vogüé (1868), and M. A. Levy (1869). In 1883 Charles Clermont-Ganneau listed thirty seals and in volume 2 of the *Corpus Inscriptorum Semiticarum* (*CIS;* Paris, 1889) forty-two seals from different collections were reedited. Hebrew inscriptions stamped on earthenware jars in Palestine were known to scholars by the end of the nineteenth century: the stamps were inscribed YH(W)D ("Judah") or LMLK ("belonging to the king"), followed by a place name and the depiction of a flying scarab. In 1934, David Diringer summarized the one hundred and four known inscribed Hebrew seals, and in 1941, Kurt Galling assembled a catalog of 183 illustrated inscribed seals (Galling, 1941). In 1946, Nahman Avigad began publishing a number of then newly discovered seals (selected bibliography, *Eretz Israel* 18 [1985], Nahman Avigad Volume). In 1951, Sabatino Moscati expanded Diringer's list. Beginning in 1969, Francesco Vattioni assembled lists of known inscribed seals: 452 in Hebrew (1971, 1978), 178 in Aramaic (1971), and 104 in Phoenician (1981). In 1976, Avigad published more than seventy new Aramaic bullae dating from 515 to 445 BCE and a catalog of the inscribed seals in collections in the museums of Israel (Hestrin and Dayagi-Mendels, 1979) gathered 136 documents. The importance of Transjordanian glyptic has in recent years been made apparent (more than 150 inscribed seals in Moabite, Ammonite, and Edomite; cf. Herr, 1978, pp. 55–78). In 1986 Avigad published 255 bullae of high officials dating to the end of the seventh century BCE (e.g., BRKYHW BN NRYHW HSPR, YRḤM'L BN HMLK; cf. *Jer.* 36:4, 26) and a catalog of 139 seals from various museums in Paris. The principle museum collections of inscribed seals are those in the Bibliotèque Nationale (106 examples), the Louvre (27), the Israel Museum (124), the British Museum (56), and the Vorderasiatisches Museum, Berlin (11).

Inscriptions. The first Phoenician seals date from the middle of the eighth century BCE. The lapidary script is illustrated by the scaraboid 'ŠTRT'Z (Bordreuil, 1986, no. 17). Systematic excavations have uncovered seals and seal

impressions at Khorsabad (*ibid.*, no. 8), ʿAtlit (Galling, 1941, no. 110a), Sarepta (Vattioni, 1981, no. 350), Byblos, Tell Anafa, Tell Kazel, Ras Ibn Hani, Cyprus, various sites in the western Mediterranean basin, and on Delos (a bulla dating to 128/27 BCE; Bordreuil, 1992, col. 143ff.).

Shortly after 800 BCE, the two Hebrew sigillary scripts, Israelite and Judean, diverged, only to be replaced by Aramaic script just before 500 BCE. The writing on the Judean intaglio L'BYW ʿBD ʿZYW (Bordreuil, 1986, no. 40: "minister of ʿUzziyahu" [781–740?]) is typical of the dominant cursive, whereas the writing on the contemporary seal LŠMʿ ʿBD YRBʿM from Megiddo (Galling, 1941, no. 17: "minister of Jeroboam [II]," 787–747?) is quite different. Other examples come from Samaria, Shechem, Jerusalem, Lachish, Arad, Gibeon, Ramat Raḥel, and Wadi ed-Daliyeh.

Because of the prolonged use and geographic extent of the Aramaic language and script on seals, many varieties of the script are attested. By iconographic criteria the cylinder seals can be dated to between about 800 BCE (Bordreuil, 1986, no. 85) and about 600 BCE (Galling, 1941, no. 148). The conoids date from 700 BCE (*ibid.*, no. 113) to 450 BCE (Bordreuil, 1986, no. 132). The writing on the stamp seal of Nurshi' ("servant of ʿAtarshumki"; *ibid.*, no. 86), and on that of Bar Rakib son of Panamou (Vattioni, 1971, no. 129), is still monumental in style; beginning in about 750 BCE, until the end of its use shortly before 300 BCE, Aramaic script (*ibid.*, nos. 63, 64) was influenced by cursive writing. Because Aramaic was an important chancery language in the Achaemenid period, many "Arameo-Persian" cylinder seals have been in use.

The first Transjordanian seals were not discovered in excavation until after 1945. The Ammonite sigillary script was first identified by Avigad on Vattioni's (1969, 1978), no. 98: L'DNPLṬ ʿBD ʿMNDB. The person in question had already been identified as an official of a king of ʿAmmon, just as in the case of L'DNNR ʿBD ʿMNDB (Vattioni, 1969, 1978, no. 164), whose seal was discovered in a tomb. The succession of kings and the evolution of the Ammonite sigillary script in the seventh century BCE were established when the personnages BYD'L ʿBD PD'L (Bordreuil, 1986, no. 69) and MLKM'WR ʿBD BʿLYŠʿ (Bordreuil, 1992, col. 154) were identified. This writing was replaced between 600 and 500 BCE first by Aramaic script and later by the Aramaic language. The iconography is typified by the use of animal figures.

Three Moabite seals have come from excavations: KMŠNTN from Ur, BʿLNTN from Tello, and PLṬY BN M'Š HMZKR from Amman. Qos, the principal diety of the Edomites, appears as the theophoric element in various names attested on Transjordan seals.

Personal Names and Titles. Proper names, official titles, and professional titles are, with a few rare place names, the principal information given by the inscribed glyptics. These are not negligible, for not only do they sometimes expand our knowledge of theophorous names (derived from the names of deities), but they also present, on occasion, new proper names.

Phoenician names. In the Phoenician language, personal names may be of one of five constructions: (1) in a verbal phrase: perfect predicate-subject, ŠT'L ("El has put"; Bordreuil, 1986, no. 20); subject-predicate, BʿLYTN ("Baal has given"; Vattioni, 1981, no. 25); imperfect predicate-subject, YḤZBʿL ("Baal will look"; *ibid.*, no. 87); subject-predicate, BʿLYSP ("Baal will add"; Vattioni, 1969, no. 219), abbreviated, YZBL ("he will exalt"; Vattioni, 1969, 1978, no. 215), or the interrogative, MKʾL ("who [is] like El?"; Vattioni, 1981, no. 84); (2) in a nonverbal phrase: nominal predicate-subject, NʿM'L ("El [is] agreeable"; Vattioni, 1969, no. 95); subject-predicate, ʿŠTRTʿZ ("Astart [is] strength"; Bordreuil, 1986, no. 17); or a construct state, GR'ŠMN ("host of Eshmun"; Vattioni, 1981, no. 93); (3) as a single noun, KPR ("lion"; Bordreuil, 1986, no. 24); (4) a hypocoristic verbal, ŠB' ("the divinity has returned"; Vattioni, 1981, no. 71); or (5) a divine name, a place name, such as ṢRPT (Sarepta), or an occupation, such as H'MN ("the artisan"; Vattioni, 1978, no. 256).

Hebrew names. Personal names in the Hebrew language may be of one of four constructions: (1) in a verbal phrase: perfect predicate-subject, 'MRYHW ("Y said"; Vattioni, 1978, no. 211); subject-predicate, 'LḤNN ("El favored"; Vattioni, 1969, no. 5); abbreviated 'ḤZ ("he took"; *ibid.*, no. 141); imperfect predicate-subject, Y'ZNYHW ("Y will hear"; Vattioni, 1969, 1978, no. 69); subject-predicate, YHWYḤY ("Y will make live"; Avigad, *Eretz Israel* 20 [1989], no. 3), abbreviated, Y'R ("he will make light"; Vattioni, 1969, no. 104); the imperative, DMLYHW ("live before Y"; *ibid.*, no. 19); the interrogative, M(Y)KYHW ("who is like Y?"; *ibid.*, no. 30); (2) a nonverbal phrase: nominal predicate-subject, 'BY(H)W ("Y [is] father"; Bordreuil, 1986, no. 40); subject-predicate, YW'B ("Y [is] father"; Vattioni, 1969, no. 9); prepositional, BDYHW ("in the hand of Y"; Vattioni, 1978, no. 393); (3) a construct state relation, 'Ḥ'B ("father's brother"; Vattioni, 1969, no. 57); an abstract noun, MTNYHW ("gift of Y"; Vattioni, 1978, no. 268); and (4) a single noun, 'PRḤ ("chick"; *ibid.*, no. 239); hypocoristic verbal, BRKY ("the divinity has blessed"; Vattioni, 1969, no. 193); nominal 'B' ("the divinity [is] father"; *ibid.*, no. 160); or a construct state: 'ŠN' ("gift [of god]"; *ibid.*, no. 141); place name, D'R (Vattioni, 1978, no. 323; or title of occupation, 'ŠR 'L HBYT ("majordomo"; *ibid.*, no. 149).

Aramaic names. In Aramaic, personal names may be one of six constructions: (1) in a verbal phrase: perfect predicate-subject, YPʿḤD ("Hadad made resplendent"; Vattioni, 1971, no. 72); subject-predicate, 'LYḤB ("El has provided"; *ibid.*, no. 70); abbreviated, NTN ("he has given"; *ibid.*, no. 85); imperfect predicate-subject, Y'DR'L ("El will aid"; *ibid.*, no. 19); abbreviated, YG'L ("he will buy back"; Vattioni, 1978, no. 309); verbal adjective, BLḤY ("Bel is living"; Vattioni, 1971, no. 116); (2) a nonverbal phrase:

nominal predicate-subject, GBR(H)D ("Hadad [is] powerful"; *ibid.*, no. 63); subject-predicate, 'BRM ("the father [is] elevated"; Vattioni, 1969, no. 66); prepositional, HDB'D ("Hadad [is] behind"; Vattioni, 1971, no. 55); (3) a construct state, NRŠ' ("light of sin"; Bordreuil, 1986, no. 86); (4) using nouns, S'LY (= Š'LY, "little fox"; Vattioni, 1971, no. 7), BRWK (Heb., "blessed"; Vattioni, 1978, no. 308); (5) using a transcription 'N'H'TN (Vattioni, 1971, no. 124) of the Akkadian *'Anu-aḫa-iddin(a)* ("Anu has given a brother"), of the Egyptian, ḤRḤRBY ("Horus of Kheb"; *ibid.*, no. 91), or of the Persian, 'RTDT/Artadata ("given by justice"; *ibid.*, no. 75); or (6) a hypocoristic verbal, BRKY ("the divinity has blessed"; Bordreuil, 1986, no. 95); an interrogative MYKH ("who [is] like the divinity?"; Vattioni, 1978, no. 313); the nominal 'DY ("the divinity [is] Adad"; Bordreuil, 1986, no. 127); or the title of an occupation PḤW' ("governor"; Vattioni, 1978, no. 306).

Ammonite names. In Ammonite, personal names may be one of five constructions: (1) a verbal phrase: perfect postpositive subject, 'MR'L ("El said"; Battioni, 1978, no. 259); prepositive subject, 'LZKR ("El remembered"; Bordreuil, 1986, no. 82); an abbreviated form, ŠM' ("he has heard"; Vattioni, 1978, no. 440); the imperfect postpositive subject YNḤM'L (unpublished; "El will console"); the abbreviated form, YNḤM ("he will console"; Vattioni, 1969, no. 103); and the interrogative, MKM'L ("who [is] like El?"; *ibid.*, no. 445); (2) in a nonverbal phrase: nominal predicate subject, N'M'M (Vattioni, 1969, no. 29, new reading: "the paternal uncle [is] agreeable"); subject-predicate, 'BGD ("the father [is] fortune"; *ibid.*, no. 234); prepositional, BDMLKM ("in the hand of Milkom"; Vattioni, 1971, no. 16); (3) in a construct state, MQNMLK ("possession of milk"; Bordreuil, 1986, no. 73); (4) in a noun, Š'L ("fox"; Vattioni, 1969, no. 41); (5) in a transcription of the Akkadian, MNG' NRT/Mannu-ki Ninurta ("who [is] like Ninurta?"; Vattioni, 1978, no. 225); in a hypocoristic verbal, TMK' ("the divinity has supported"; *ibid.*, no. 318); in an interrogative, 'Y' ("where [is] the divinity?"; Bordreuil, 1986, no. 72); in a nominal 'L' ("the divinity [is] El"; Vattioni, 1978, no. 262); and in a construct state, 'BD' ("servant of the divinity"; *ibid.*, no. 217) or an occupation, HNSS ("the standard bearer"; *ibid.*, no. 261).

Moabite names. In Moabite, personal names may be one of four constructions: (1) in a verbal phrase: perfect predicate-subject, 'D'L ("El testified"; Vattioni, 1969, no. 146); subject-predicate, KMŠNTN ("Kamosh has given"; *ibid.*, no. 265); imperfect subject-predicate, KMŠYḤY ("Kamosh will make live"); (2) in a nonverbal phrase: nominal predicate-subject, GDMLK ("milk [is] fortune"; *ibid.*, no. 64); subject-predicate, KMŠ'L ("Kamosh [is] god"; *ibid.*, no. 113); a construct state; 'BDYRḤ ("servant of Yarih"; Vattioni, 1971, no. 86); (3) in a noun, 'MṢ ("fort"; Vattioni, 1969, no. 74); or (4) in a hypocoristic, YŠ' ("the divinity has saved"; *ibid.*, no. 85), a gentilic, MṢRY ("Musrite"; Bordreuil, 1986, no. 65), or an occupation, HSPR ("the scribe"; Vattioni, 1969, no. 74).

Edomite names. In Edomite, personal names may be one of the following constructions: in a nominal phrase, subject-predicate, QWS G [BR] ("Qos [is] strong"; F. Israel, *Rivista Biblica Italiana* 27 [1979], no. 5, p. 172); a prepositional phrase, B'ZR'L ("with the aid of El"; Vattioni, 1969, no. 118); a hypocoristic phrase, QWS' ("Qos [is] god"; Israel, *Rivista Biblica Italiana* 27 [1979], no. 16, p. 176); or an occupation, 'BD HB'L ("servant of the master"; Bordreuil, 1992, col. 197).

Titles. Seals belonging to "servants" of kings, such as Shema' and Abyau (see above), of YHWZ⌜R⌝Ḥ . . . 'BD HZ⌜Q⌝YHW (Hestrin and Dayagi-Mendels, 1979, no. 4), of ŠBNYW 'BD 'ZYW (Bordreuil, 1986, no. 41), of 'ŠN' 'BD 'ḤZ (Galling, 1941, no. 1a; Hestrin and Dayagi-Mendels, 1979, no. 40), of 'BD'L . . . 'BD MTT . . . ("king of Ashkelon"; Vattioni, 1969, no. 73), of BYD'L, 'DNNR, and of MLKM'WR (see above) include an epigraphic and/or iconographic version of their title. The sovereign is occasionally designated anonymously: Y'ZNYHW 'BD HMLK (Vattioni, 1979, no. 69). A 'BD HML'K ("servant of the king") may have been in charge of palace provisions. Was the title YHW'ḤZ BN HMLK ("son of Josiah"? [*2 Kgs.* 23:30ff.]; *ibid.*, no. 252) common to the royal family? Did YRḤM'L BN HMLK (Avigad, 1986, no. 8) participate in the arrest of Jeremiah (*Jer.* 36:26)?

'MT ("female servant"; *ibid.*, no.157), as in ŠLMYT 'MT 'LNTN P⌜Ḥ⌝[W'], may have been a woman in charge of the provincial archives, subject to the provincial governor (Avigad, 1976, no. 14). 'ŠT ("wife"), as in 'ḤTMLK 'ŠT YŠ' (Vattioni, 1969, no. 63), may be ascribed an important status on the basis of the iconography of the seal. A PḤW' was a "governor" in the Achaemenid administration (cf. the bulla in Vattioni, 1978, no. 408 belonging to the PḤT of Samaria Sin-uballit [e.g., *Neh.* 2:10]). HMZKR ("the herald"; Bordreuil, 1992, col. 187) announces (ZKR) royal decisions. HSPR ("the scribe") could receive an order of the king (Vattioni, 1969, no. 41). BRKYHW BN NRYHW HSPR (Avigad, 1986, no. 9) was in all likelihood Jeremiah's secretary (*Jer.* 36:26). HNSS was "the standard bearer" (Vattioni, 1969, no. 261). GDLYHW 'ŠR 'L HBYT was a "major-domo" (Vattioni, 1978, no. 149), perhaps the governor of Judea (Judah) mentioned in *2 Kings* 25:22–25. 'ŠR 'L HMS (Bordreuil, 1992, col. 188ff.) was responsible for forced labor; Š'R HMSGR (*ibid.*, col. 189) was the "gatekeeper of the prison"); H'D (*ibid.*, col. 189) was the "the witness," a ministerial officer; and HRP' (*ibid.*, col. 189) was "the doctor."

Six sealings from seals belonging to L'LYQM N'R YWKN (N'R means "page"; Vattioni, 1969, 1978, no. 108) date to the end of the eighth century BCE, as do the LMLK sealings, which are unknown in other periods. Other occupations are PR' ("chief"; Vattioni, 1969, no. 126), TRTN

("commander in chief"; Bordreuil, 1992, col. 192), ŠR H'R ("governor of the city"; *ibid.*, col. 192), and PQD YH⌜D⌝ ("inspector of Ju⌜de⌝a"; *ibid.*, col. 192). The Phoenician fiscal seals of the fourth century BCE bear 'ŠR ("exaction of the tithe"), a place name (Sarepta, etc.), and a regnal year. Royal seals present an "iconographic" version in which a figure bearing an Egyptian crown and scepter with one hand raised: Musuri, king of Moab (MṢRY [?], in Vattioni, 1981, no. 19); Abibaal of Samsimuruna ('BYB'L [?], *ibid.*, no. 27); and Hanunu of Gaza (ḤNN [?]; Hestrin and Dayagi-Mendels, 1979, no. 123). A Phoenician stamp seal (550 BCE) reads LMLK ṢRPT ("belonging to the king of Sarepta"; Bordreuil, 1992, col. 194ff.). There are seals of priests: ZKRYW KHN D'R ("Zekaryau priest of Dor"; Vattioni, 1978, no. 323) and ḤNN B//N ḤLQYHW // HKHN ("Hanan son of Hilqiyahou the priest"; Bordreuil, 1992, col. 195ff.). On Aramaic seals figures greet a divine representation (Bordreuil, 1986, no. 117) or pray (*ibid.*, no. 123).

Phoenician tesserae (100 BCE) bear the inscriptions LMLQRT BṢR ("belonging to Milqart of Tyre"; Bordreuil, 1992, col. 199) and HYRW'SLS, the latter a transcription of the Greek words *hiera* and *asulos* ("sacred and inviolable"). Others evoked the favor of the goddess Tannit, ḤN(T) TMT. Seals (Vattioni, 1969, no. 31), sometimes made of blue material (lapis lazuli or chalcedony), are decorated with eyes (Bordreuil, 1986, no. 53) intended to ward off the evil eye. Seals with an inscription consisting of the first twelve letters of the alphabet has been explained as magical in nature (Bordreuil, 1992, col. 200). The only seal labeled with the name of Baal (Bordreuil, 1986, no. 37) may have been used to seal documents from a Phoenician sanctuary.

[*See also* Names and Naming; Seals; *and entries on specific languages.*]

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PIERRE BORDREUIL

Translated from French by Melissa Kaprelian

NOTH, MARTIN (1902–1968), historian and leading figure in the German school of biblical studies. Noth was born in Dresden, Germany, and studied at Erlangen, Rostock, and Leipzig. His central intellectual concern was the history of Israel in the biblical period. As a student of Rudolph Kittel and Albrecht Alt, his early work concentrated on the history of early Israelite religion through a study of personal names (1928). This was followed shortly by *Das System der zwölf Stämme Israels* (1930), a widely influential book proposing the existence of an Israelite twelve-tribe amphictyony in premonarchic Israel. These two works were augmented over the next four decades by studies of the literature of the Hebrew Bible (notably *Genesis–2 Kings, Chronicles, Ezra–Nehemiah*), which Noth believed were the most likely sources of historical information concerning Israel. In his work, archaeology was seen as necessary for understanding the wider context of the written material but limited in the type of information it could provide. Noth's evaluation of the role of archaeology within biblical studies contrasted sharply with that of American scholars of the same period, most notably William Foxwell Albright and G. Ernest Wright. Although he was not directly involved in major excavations, the issues Noth raised in his synthesis in the *History of Israel* (1960), and in the studies that led to the volume, have set the questions for much of the archaeological work since his time.

A major component of Noth's contribution to the field of archaeology is to be found in his numerous studies of topography and written materials (e.g., from Mari, Egypt, and Ugarit). Many of these studies appeared in the journal *Zeitschrift des Deutschen Palästina-Vereins,* which he edited from 1929 to 1964. His approach to archaeological information is illustrated in his 1964 survey of the setting of the biblical material. While acknowledging the independence of archaeology as a discipline, he recognized the difficulty in connecting archaeological material with written evidence (*Die Welt des Alten Testaments,* Berlin 1964). The depth of his involvement with archaeological data is indicated by his participation in *Seminars* at the Deutsches Evangelisches Institute für Altertumswissenschaft des Heiligen Landes in Jerusalem and his directorship of that institution from 1964 until the time of his death. Prior to this he had been professor at the Universities of Königsberg (1930–1944) and Bonn (1945–1967).

Noth's significant contributions within biblical studies include work in the areas of form, redaction, and tradition

criticism. Particularly important were his proposals of a Deuteronomistic history stretching from *Deuteronomy* through *2 Kings;* his studies on the development of the Pentateuchal traditions, proposing a common source *(Grundlage)* for the Yahwistic and Elohistic sources; and his work on the Chronicler's history. His wide-ranging interests are exemplified by his editorship of several journals, including *Vetus Testamentum* (1951–1959), *Zeitschrift für Theologie und Kirche* (1950–1962), and *Welt des Orients* (1947–1964).

[*See also the biographies of Albright, Alt, and Wright.*]

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ROBERT D. HAAK

NUBIA, ancient land that extended from Aswan in the north to the region below Khartoum, the capital of the modern Republic of the Sudan. Like Egypt, Nubia was divided into northern and southern regions. The northern part (Lower Nubia), bordered on southern Egypt and the southern part (Upper Nubia) stretched from the Third to the Sixth Cataract of the Nile. Also like Egypt, Nubia was divided by the Nile; however, the river in Nubia was bounded by a very narrow strip of arable land. The Nile remained an important route of transportation between settlements, serving as a conduit to the rest of Africa and enabling the trading of ivory, ebony, gold, and animal skins. Fishing and hunting game in the marshes beside the Nile was an important part of the Nubian diet.

Settlement in Nubia goes back into the Paleolithic period (before c. 25,000 BCE). Evidence of this occupation consists of scatters of stone tools found on the desert margins of the Nile. Later inhabitants left rock drawings and other remains of one of the world's earliest settlements. Traces of this settled Mesolithic culture were found in the area of modern day Khartoum and date to around 6000.

The Lower Nubian Neolithic cultures are closely linked to the Upper Egyptian Predynastic sequence (c. 5000–3100). The first truly distinctive Nubian civilization to be identified by archaeologists is known as the A-Group. It appeared in the area of Lower Nubia in the period immediately preceding the unification of Egypt around 3100. It lasted through the first and second dynasties in Egypt (c. 2985). The A-Group produced very fine ceramics, which were painted to resemble baskets. Along with locally produced wares imported pottery and stone vessels from Egypt are found in A-Group contexts.

Excavations at Qustul by the University of Chicago revealed large, rich graves of local kings (Emery, 1965, Williams, 1986). These tombs date to the period just before the unification of Egypt and represent one of the early states found along the Nile at the end of the Neolithic. The A-Group disappeared suddenly before the end of the Egyptian second dynasty (c. 2650). Neither the written nor the archaeological record provides a satisfactory explanation for the end of the A-Group civilization. Texts indicate that raids were made into Nubia from Egypt by the pharaohs of the Early Dynastic Period and the Old Kingdom.

Egyptian inscriptions dating to the Old Kingdom have been found in the diorite quarries in Lower Nubia and an Old Kingdom town was excavated at Buhen by Walter Emery. Snefru, founder of the fourth dynasty (c. 2575–2465) recorded that he brought from Nubia seven thousand prisoners and two hundred thousand head of cattle. The loss of such an important economic product as that many cattle may account for the "impoverishment" seen in the archaeological record. The prisoners may well belong to the so-called B-Group, the poor successors to the A-Group kingdom.

By the end of the Old Kingdom (late sixth dynasty, c. 2150), the Egyptian record shows peaceful trade relations between Egypt and Nubia, as is recorded in the tomb of Wenis at Saqqara and the tombs of the governors of Aswan, Harkhuf, and Pepinakht. Egypt's power over Nubia decreased during the First Intermediate Period. By the late First Intermediate Period, a new culture known as the C-Group began to appear in Lower Nubia. A reunited Egypt again exerted control over Nubia in the Middle Kingdom. Fortresses were built at Kuban, Aniba, Serra East, Buhen, Kor, Dabenarti, Mirgissa, Askut, Uronarti, Kumma, Semna, and Semna South. These forts were constructed to protect Egypt from the growing power of the first kingdom of Kush. The kingdom was centered in the third cataract area at the site of Kerma, excavated by George A. Reisner for Harvard University and the Museum of Fine Arts, Boston, from 1913 through 1916. [*See the biography of Reisner.*] There were three distinct cultural groups active in Lower Nubia during this time: the Kerma culture; the C-Group peoples, who were nomadic cattle herders; and the Pan-Grave people, desert nomads who served as mercenary soldiers for the Egyptians. The Kerma culture eventually allied itself with the Hyksos (Asiatic) overlords of Egypt in the Second Intermediate Period.

The Kerma kingdom and the Hyksos were eventually de-

stroyed by the Theban pharaohs of the early eighteenth dynasty (c. 1550–1505). The C-Group remained under Egyptian control as evidenced by a fortified settlement of C-Group peoples and Egyptians excavated by the University of Pennsylvania at Areika (Randall-MacIver and Woolley, 1909).

The New Kingdom (eighteenth–twentieth dynasties, c. 1550–1070) marks an important change in the relations between Egypt and Nubia. At the outset of the Egyptian reoccupation the Middle Kingdom fortresses were reoccupied and the temples within them rebuilt. The Egyptians instituted a gradual process of egyptianization. Nubian princes visited the Egyptian court as depicted in the tomb of the governor of Nubia under Tutankhamun, Huy (Davies, 1926).

The temples, rather than the forts served as the main administrative centers by the mid- and later New Kingdom. Rameses II (c. 1290–1224) of the nineteenth dynasty built a great number of temples. One of the more impressive structures was the great temple at Abu Simbel. [*See* Abu Simbel.] However, the most important Egyptian temple complex was that dedicated to Amun at Gebel Barkal; it was established by Thutmosis III (c. 1479–1425) was expanded by nearly every pharaoh of the eighteenth and nineteenth dynasties through Rameses II. It continued to function long after Nubia had again slipped from Egyptian control at the end of the New Kingdom (Davies, 1991; Kemp, 1989; O'Connor, 1983).

Around 800 a local Nubian dynasty began to rise to power in the area of the fourth cataract at Napata. By about 750 it extended its control over all of Nubia, and within another generation it had assumed control of Egypt. The Assyrians invaded Egypt in 663 and the Nubian rule over Egypt came to an end.

The Nubian rulers of the second kingdom of Kush continued to rule for another thousand years. Because Napata remained both the chief cult center of the kingdom and the burial place of its kings, the first half of the second kingdom of Kush is known as the Napatan period. After the third century, the center of political and religious power in the kingdom of Kush shifted south to the city of Meroë. Culturally and politically the ensuing Meroitic period was also very different from the preceding Napatan period. Although the Nubians continued to respect Egyptian traditions, they were also influenced both by Ptolemaic, Roman, and central African ideals. Many of the gods they worshiped were unique; their art and architecture were highly original; and they began to express their own language in an alphabetic script. [*See* Meroë.]

Eventually it appears as though Meroë itself was invaded and destroyed by the armies from Axum in Ethiopia. Nubia was divided into three kingdoms in the Christian period—Nabata in the north, Makouria between the Third and Fourth Cataract, and Alwa at the junction of the Blue and White branches of the Nile. About 350 CE Makouria and Nabata became one kingdom under a single ruler with its capital at Old Dongola.

Nubia became Islamic territory with the treaty of Baqt (640 CE). In that period, Nubia showed a revival in art, literature and architecture, evidencing both Coptic and Byzantine influence. In the sixth century CE missionaries from Egypt and Byzantium converted the various Nubian peoples to Christianity, and two rival Christian kingdoms emerged in the north and south. These survived until the fourteenth century, when they were finally overwhelmed by Arab peoples and superseded by Islamic states.

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NUZI (genitive of Nuzu, modern Yorgan Tepe), site located in northeastern Iraq, 13 km (8 mi.) southwest of Kirkuk (35°21′47″ N, 44°15′30″ E). Kirkuk (ancient Arraphа - *āl-ilāni*) was the source of tablets that had been sold on the antiquities market. Nothing was known about the origin or historical context of these tablets, which were marked by a peculiar dialect of Akkadian and contained Hurrian onomastica that had previously been encountered in letters of

the Amarna archive in Egypt and in Kassite-period texts from Nippur. The search for an uninhabited site more suited for excavation led to Nuzi, where a cache of similar tablets had been discovered near the main mound.

Nuzi comprises a main mound and several smaller tells. Oriented northwest–southeast, the mound measures about 200 × 200 m, with an average height of 5 m above the surrounding plain. Only three of the smaller tells were investigated: one prehistoric site (Qudish Ṣaghīr), about 5 km (3 mi.) to the south, and two small mid-second millennium BCE sites, about 300 m to the north. Occupation of the main mound extended from the prehistoric to the Mitannian/Middle Assyrian period, followed by meager remnants of habitation in the Neo-Assyrian, Parthian, and early Sasanian periods (the "late period"). Identified as Gasur by recurrent late third-millennium BCE textual references and as Nuzu/Nuzi in the mid-second millennium BCE, the site is known primarily for the latter occupation. Its stratified Mitannian/Middle Assyrian period archives of more than five thousand sealed tablets span five or six generations of a mainly Hurrian population in the kingdom of Arrapḫa, the easternmost province of Mitanni. Published extensively over the years, the archives sparked intense study of the social, economic, religious, and legal institutions of the Nuzians/Hurrians, whose presumed identity with the biblical Horites *(ḫōrī[m])* prompted several comparisons with the patriarchal customs of the Hebrew Bible. Nuzi replaced Kirkuk as the generic term for analogous tablets and seal impressions from neighboring mounds, including Kirkuk/Arrapḫa and Tell al-Faḫḫar/Kurruḫanni. The associated material culture, notably painted ceramics, glazed wares, and glass and faience objects became diagnostic of the so-called Nuzi period.

Excavations and Division of Finds. At the request of Gertrude Bell, director of antiquities in Iraq, Edward Chiera led the first campaign to Nuzi in 1925–1926, under the joint auspices of the Iraq Museum and the American Schools of Oriental Research. Work began on the small northwestern tell, in the house of Šurki-tilla (two buildings) and the house of Teḫip-tilla. The excavated material was divided between the two supporting institutions.

The subsequent four campaigns, sponsored jointly by the Fogg Art Museum and the Harvard Semitic Museum in Boston and the American Schools of Oriental Research, were directed by Chiera (1927–1928), Robert H. Pfeiffer (1928–1929), and Richard F. S. Starr (1929–1930, 1930–1931). The finds were divided between the Iraq Museum and Harvard University. From the northwestern tell, Chiera moved to the northeastern tell, where he excavated the house of Zike and the house of Šilwa-teššup before turning to the main mound. Pfeiffer introduced a grid system. In addition to completing Chiera's excavation of the palace and adjacent domestic structures to the southwest and northeast, Pfeiffer initiated two test pits in rooms N120 and L4 to establish the sequence of occupation. Starr concentrated on the northwestern ridge and the temple complex. Once the upper levels associated with the widespread Nuzi tablets had been cleared, work focused on an investigation of the lower strata in the temple area (temples A–G), along the northwestern ridge (strata I–IV), and on the southeastern edge in the region of the city wall (strata V–VIII). Pit L4 was extended down to virgin soil, providing a continuous sequence of fifteen occupation levels (pavements I–XII).

Stratigraphy and Chronology. Three stratigraphic schemes were used simultaneously and only tentatively integrated into a single system. Their only contact is during the final Nuzi period between pavement I, stratum II, and temple A, which were also linked by a complicated drainage system and the Nuzi tablets. The date of the tablets hinged until recently on a letter bearing the seal impression of Sauštatar, son of Parsatatar, king of Mitanni, whose reign fluctuates within the fifteenth century BCE. It now appears that the seal was probably an heirloom and that a later date for stratum II conforms with the evidence from other sites where Nuzi-related material is dated by associated texts to the mid-fourteenth and thirteenth centuries BCE. The range of the Nuzi archives is currently posited between 1445/1425 and 1350/1330 BCE, following the low chronology. The variant dating of the latest Nuzi texts and the destruction of the site depends, then, on the Aššur-mutakkil synchronism in the first or second generation at Nuzi and on historical-political factors that best match the socioeconomic turmoil reflected in the latest Nuzi records.

Too little remains of the uppermost stratum I material to extend the duration of the Nuzi period much beyond the stratum II destruction date. The origin of this period is less certain. Although architectural and material remains of the Nuzi period are represented in the lower pavement II, strata III–IV, and temples B–E, Starr's correlation between stratum IV and temple E is contested by Ruth Opificius, who relates stratum IV to temple F, which she considers Old Babylonian by its pottery and figurines (*Das altbabylonische Terrakottarelief,* Untersuchungen zur Assyriologie und vorderasiatischen Archäologie, 2, Berlin, 1961, pp. 18–19). The latter would be compatible with Starr's own comparison between the pottery of strata IV and VII.

Most scholars agree on the synchronism between pavements IIA and IIB, strata V–VII, and temple F. One Old Babylonian tablet and five early Old Assyrian tablets from pavement IIA and one Ur III tablet found in or above pavement IIB–III (a rubbish deposit) provide a tentative chronological range (c. 2100–1650 BCE) for pavements IIA, IIB, and IIB–III, whose contents are considered transitional between those of the upper Nuzi pavements and the lower Gasur pavements. Opinions diverge over the association of the Gasur pavement III, dated by tablets to the Old Akkadian period, with temple G and stratum VIII by virtue of their relative position directly below the transitional phase. Structural as well as ceramic links between temples F and

G and between strata VII and VIII support a later Ur III/Isin-Larsa date instead.

Pavements III to VIII were disturbed by numerous graves, so that any demarcation of the Old Akkadian occupation, linked variously with pavements III–V and III–IX, remains inconclusive. Henry W. Eliot (in Starr, 1939) has tentatively identified pavement VI as Early Dynastic, VII as Late Uruk, and VIII–IX as Uruk. The earliest deposits, pavements XA–XII, belong to the Ubaid period.

Prehistoric period. Represented in pits L4 and G50 and on Qudish Ṣaghir, the lowest levels for the prehistoric period are characterized by packed clay (pisé) walls and incised, knobbed, and painted wares. The painted wares are superseded by unpainted wares in pavement X, which sees the introduction of mud-brick construction and infant burials. A cache of marble stamp seals from G50 is attributed to this period on typological grounds.

Gasur and transitional periods. The Gasur occupation is encountered in pits L4 and G50 and, according to Starr, in the City Wall (stratum VIII) and temples G and F. It is identified and dated by 222 tablets attributed to the early Old Akkadian period on linguistic, orthographic, and paleographic grounds. Most notable among the mainly business documents, in which Semitic names predominate, is an inscribed clay "map" that accompanies a record of land and appears to locate an estate within the district of Gasur. The small finds include a terra-cotta mold for casting animal-shaped amulets and a copper statuette from temple G. The cultural pottery is typified by incised gray-ware vases, zoomorphic vessels, house-shaped stands, and relief decoration in the form of applied snakes, scorpions, and quadrupeds. The glyptic evidence comprises impressions of one cylinder seal and two stamp seals and five cylinder seals (including a shell seal mounted on a copper pin that accompanied a burial).

Nuzi period. The Nuzi period was fully excavated over the entire mound and on both northern tells. The evidence of architecture, texts, glyptic, and luxury products provides the most complete picture of a provincial town on the eastern edge of the Mitannian kingdom toward the end of its hegemony. As such, the Nuzi material complements the evidence from Alalakh levels V and IV, which represents a provincial town on the western edge of the Mitannian kingdom during its formative and mature phase.

Architecture and architectural decoration. Stratum II structures on the main mound include a palace and temple complex surrounded by well-constructed municipal buildings along the northwestern ridge and denser residential sectors on the southeast, southwest, and northeast. Five contemporary buildings, associated by their archives with wealthy landowners and high-ranking officials, were excavated outside the citadel walls on the northern tells.

The tripartite palace plan, incorporating old and new elements, is divided into a formal area consisting of rooms grouped conventionally around courtyards; an agglutinate administrative section south of the outer courtyard; and residential quarters beyond the throne room to the southwest. The main entrance, though not preserved, would have led into the outer courtyard (M94), which was bordered by benches. A connecting room with a hearth (M89) gave indirect access to the inner courtyard (M100), which was flanked by reception rooms and apartments. This separation of the public from the official domain, while reminiscent of the palace plans at Mari and Tell Asmar, becomes a characteristic of Neo-Assyrian palaces. The entrance to the unusually juxtaposed anteroom (L20) and audience hall (L4/11) is marked by two freestanding brick pillars that may have supported a portico or canopy. The supposed chapel directly north of the audience hall was devoid of cult fittings, and Starr's identification of a kitchen in the administrative sector has also been queried on practical grounds. Luxuriously furnished with a sophisticated drainage system, marble paving, and silver-coated copper door studs, the palace is best known for its well-preserved frescoes, also found outside the citadel in the house of Prince Šilwa-teššup, which resembles the palace on a smaller scale. The more elaborate examples show figured designs in panels of solid red and gray framed by geometric patterns arranged in an architectural scheme of bands and metopes. The Hathor head, bucranion, and palmette tree are recurrent motifs that also appear on ceramics, cylinder seals, and plaques. The designs reflect the current taste for foreign, in this case Egyptian and Aegean, imagery.

During the Isin-Larsa/Old Babylonian Period (temple F), the sanctuary was transformed from a single temple (G29) into a double temple (G29, G53) complex with forecourts with subsidiary rooms. Where originally G29 was based on a double-flanked main room (temple G), both temples are Herdhaus types—arranged on the standard Mesopotamian bent-axis scheme, with the hearth or altar and cult podium at the short, southeastern end of a rectangular room that was entered from its northern corner. Apart from structural revetments, neither temple was altered significantly before its destruction in the mid-fourteenth century BCE. The contrasting furnishings of the two cella suggested different patron deities. Temple G29, with its wall decoration of glazed terra-cotta nails, a sheep's head, a boar's head, zoomorphic jars, and glazed terra-cotta lions, was attributed to Ishtar, the Babylonian goddess of love and war, whose association with lions extends back to the Akkadian period. This cella also contained nude female figurines, female amulets, and a unique ivory statuette of a seminude female in Hittite attire, who may represent Ishtar's Hurrian counterpart, Šawuška. Temple G53, marked by its conspicious lack of contents, was attributed to the Hurrian storm god, Teššup, one of Ishtar-Šawuška's numerous partners, who headed the Mitannian pantheon and whose name is a common onomastic element at Nuzi. Evidence for the cult of Teššup first ap-

pears in the early second millennium BCE and supports the later dating of temple F to the Isin-Larsa or early Old Babylonian period.

Tablets and seal impressions. The excavated tablets from Nuzi were stored as public and private archives on the main mound and on both northern tells. Although associated with the upper strata (I–IV), the vast majority come from stratum II. A relative chronological framework is derived from the five-generation scribal family of Apil-sîn and that of the real-estate magnate and crown official Teḫip-tilla. Through ration and personnel lists, contracts, legal records, and letters, the texts, written in a Middle Babylonian dialect of Akkadian mixed with Hurrian idiosyncracies, reflect rapidly declining socioeconomic conditions in the province of Arrapḫa: the grain surplus was decreasing and both debts and litigation were increasing, forcing the majority to cede their property rights to the privileged few. The last years are marked by intensive military activity on both the northern and southern frontiers, but Nuzi's destruction is generally attributed to the Assyrians.

The tablets bore the seals of people from all walks of life in Nuzi and in the surrounding towns. They thus provide a unique source of information on sealing practices and on the relationship between seal design, text type, user, rank, period, and origin. The style is characterized by the extensive, often unmasked use of point and tubular drills; the seals' material is sintered quartz (frit). The iconography is heterogeneous, drawing on a long tradition of assimilation and adaptation. Superimposed on native designs devoted to hunting and animal rituals centered on a tree, are court fashions that shift with the political tide. During the first generations, which coincided with the Mitannian confederacy, contact with the west brought Egyptian and Aegean iconography, such as the Hathor mask, the ankh sign, the sphinx, the griffin, and the winged disk. In time, the tree was replaced by the winged disk and confrontation scenes between human and divine figures, influenced by provincial Kassite-Babylonian traditions from Elam and the Hamrin, gave way to a revival of ancient Mesopotamian contest scenes between mythical beasts—which presumably had survived on the eastern periphery of the region. Among the Akkadian revivals are the storm god on his lion-dragon mount and mythological representations, including scenes from the myth of a Ḫedammu-type dragon and, possibly, the death of Huwawa from the Epic of Gilgamesh. Although associated with the Hurrians in later literary traditions, the origin of these myths is unknown.

Small finds. The material culture associated with the stratum II tablets became diagnostic of the Nuzi period and, by extention, of the Hurrians, who migrated across the Fertile Crescent from the east. Apart from the difficulties of relating any category of archaeological material to an ethnic sector of a composite population, the redating of stratum II to the mid-fourteenth century BCE places the origin of much of the characteristic Nuzi material in the west.

Nuzi ware (formerly called Hurrian ware and Subartu ware) combines elements from a number of earlier ceramic traditions in Mesopotamia with foreign elements of design. Distinguished by a white pattern painted on a dark (red-brown to black) background, this ware is distributed from the Zab valley east of the Tigris River to the ʿAmuq plain and Orontes valley in the west and as far south as Babylonia. At Nuzi, geometric motifs predominate over natural ones. The characteristic shapes include the slender goblet (high cup) with a small foot or button base, and the shoulder cup. Both are thin, fine-grained drinking cups derived from Babylonian prototypes of the Isin-Larsa period. Found predominantly in palaces, temples, and "manor houses," Nuzi ware is considered a luxury product, along with the great quantities of faience, multicolored glass, and glazed wares that are widely distributed during the Mitannian period. At Nuzi, these products include zoomorphic amulets, figurines, beads, vessels, cylinder seals, and plaques. The most common glazed objects are terra-cotta wall nails. They appear to be connected with the cult and may have been dedicated by individuals to decorate the walls following an ancient tradition reaching back to prehistoric times at Qudish Ṣaghīr and to Mesopotamia in general. Cultic paraphernalia cast in copper or bronze include small statuettes and a cylindrical pot stand with excised sides and couchant lions on the upper edge. In a military context, bronze scales were used for the armor of men and horses. Most unusual is a bronze dagger, its hilt decorated with inlaid iron plaques secured by iron rivets. Terrestrial and meteoritic iron was a rare and valued metal used primarily for ornamentation until the late period.

Late period. Structural remains of the late period were concentrated on the northwestern ridge and many low adjacent mounds. Three silver coins of the Parthian king Vologases III and a silver coin of the Sasanian king Shapur I provide a chronological range from the late second to the late third century CE for the settlement and cemetery.

[*See also* Hurrians; Mitanni.]

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DIANA L. STEIN

O

OBODA. *See* Avdat.

ODEUM (Gk., *odeion;* Lat., *odeum*), a small roofed theater, used for musical performances (Gk., *ōdai*), recitations, and lectures. The first monument of this kind was built by Pericles near the theater of Dionysus in Athens and was reconstructed in 52 BCE by two Roman architects. It is recorded only later (Vitruvius, 5.9.1; Plutarch, *Pericles* 13.9) as an odeum. The term is often incorrectly applied to any small theater (especially in cities that have more than one scenical building), to distinguish it from a city's sometimes more ancient (Greek) theater. For all of Greece, however, in the second century CE, Pausanias knew only four odea: those of Agrippa (1.8.6 and 1.14.1) and of Herodes Atticus (7.20.6) in Athens, and those built or rebuilt at Corinth (2.3.6) and Patras (7.20.6) by the same rich rhetor and benefactor; however, Pausanias, in the *Periegeta* was also aware of one at Smyrna (9.35.6). At Caesarea Maritima, in ancient Palestine, Vespasian built an odeum on the site of a destroyed synagogue (Malalas, 10.338, p. 261.13). In Rome, the word is used for, but limited to, the Domitianic construction in the Campus Martius (Suetonius, *Domitianus* 5). This kind of monument therefore seems to be much rarer than might be expected. Epigraphic evidence in the western as well as in the eastern provinces, has, however, added other examples (Carthage in North Africa; Gortyna on Crete; Patara; Qanawat; Thessalonike in Greece; and Vienna), which suggests that the problem of unidentified buildings of this or related types all over the empire needs to be reconsidered.

It was once argued that an odeum was characterized by the absence of *versurae* and of parodoi ("side entrances") leading to the orchestra. However, the identification of the monument in Corinth, which is secured both by a literary source and by an inscription, also has *versurae* and parodoi. It is first of all essential to put aside an important group of monuments that are linked to an agora; they are probable bouleuteria, rather than real odea. Most have but a few, or reduced, scenical installations, others only a podium behind the facade. In some cases, too (e.g., at Gerasa/Jerash, in modern Jordan), the seats are inscribed with the names of the tribes into which the assembly of the people was divided; these point to a completely different use for the monument. Some of these constructions (Alabanda; Anemurium; Arykanda; the island of Cos; Iasos; Pinara; Selinos in Cilicia) have a rectangular plan that facilitated the use of a roof but limited the width of the cavea, or spectators' section; they are relatively small, the largest rivaling the boundary measures adopted, for technical reasons, by the Hellenistic bouleuterion at Miletus (34.84 × 24.28 m). The abandonment of this model in the second century CE, a time of splendor in urban life and architectural renewal in the provinces of the Roman Empire, allowed the development of a plan that is still nearer to—and very often quite the same as—that of the theaters, but roofed. The best examples of this type are at Aphrodisias, Aspendos, Cibyra, Ephesus, Magnesia ad Maeandrum, Sagalassos, and Sillyon in Asia Minor, at Nea-Paphos on Cyprus, and at Amman, Gadara, Gerasa (the North Theater), and Pella in the Near East. The cavea was then wider, with diameters ranging between 30 and 54 m. The building was still placed close to the city's agora or was directly connected to its porticoes. Whether these constructions were used both as bouleuteria and odea has been discussed: Reudiger Meinel (1979) speaks of a mixed type (Ger., *mischtypus,* or *mischgebäude*), on account of the development and magnificence of the rear wall of some of the facades. However, those walls were purely decorative and cannot be considered real *scaenae frontes*—limited as they were to displaying sculptured groups of the house of Augustus and of the municipal elites who took political advantage of acting as benefactors and propagators of the imperial ideology in their own cities. Despite a real influence by the plan of one and the decoration of the other, there are significant distinctions between the two kinds of buildings.

A second group that needs to be excluded is the small *auditoria* (of less than a half-circle) that are usually part of a gymnasium and correspond to what seems to have been called *acroatēria* (Apollonia of Illyria; Arykanda [no. IX on plans of the city]; Cnidus [the so-called bouleuterion], Epidaurus, Syracuse, and perhaps Ariassos and Termessos). Built as they are within the architectural structure of a monument devoted to education, they were clearly intended for

lecturing and have no scenical purposes. The so-called odeum of Agrippa in the Athenian agora, dedicated in about 15 BCE, was itself established not far from the gymnasium of Ptolemy—and was probably connected with it.

Cultic assembly halls, either semicircular (as on Delos) or inscribed (as at Dura-Europos in Syria), have also been called odea. Indeed, at Delos, religious processions or epiphanies of the goddess's statue did certainly take place, but the monument has no *scaena* and was evidently not used for real sacred dramas, as has sometimes been thought. On the contrary, the auditorium at Dura, suggested by an imperial dedication and a graffito on one of the seats, was certainly the colony's bouleuterion in the third century CE and has nothing in common with the nearby hall of the Artemis Nanaia temple. Monuments at Gerasa (the festival theater at the Birketein), Sahr, and El-Hammeh (?) seem to have been dependencies of their respective sanctuaries but do not share architectural characteristics with well-identified odea. They represent a third group of buildings whose purposes and functions were distinct from the odea's.

Real odea are certainly larger than a city's *boulē,* a gymnasium, or auditoria for religious spectacles, as they were intended for larger assemblies. The capacities of the buildings at Corinth, Lyon, and Vienna are calculated to have held some three thousand spectators and that of Herodes Atticus to have approached five thousand. There is, therefore, no comparison with simple *auditoria* and cultal theaters (such as on Delos), which seat only hundreds, and still less with the largest bouleuteria (Aphrodisias, Ephesus), which may have seated fourteen hundred.

With an exterior diameter of about 63–76 m, the odea at Athens, Corinth, Lyon, and Vienna are clearly situated between the largest bouleuteria and medium-sized theaters; the monument at Carthage, with its 95-meter diameter, was still wider, and nearer to real theaters. The smallest (Catania, Nicopolis, Patras) have the same diameter (about 43–48 m) as the largest uninscribed bouleuteria. In plan, many of the real odea "were simply theaters in miniature," as John B. Ward-Perkins put it, which is the sense of the inscription of the *theatroeidēs ōdeion* at Qanawat (W. H. Waddington and P. LeBas, *Voyage archéologiques en Grèce et Asie Mineure: Inscriptions et Applications,* 3 vols., Paris, 1870, 2341) and the expression of the architectural evolution from inscribed rectangular buildings to wider semicircular constructions that clearly resemble theaters. The only significant distinctions seem to have been that odea were covered, in order to facilitate a better acoustic environment for concerts and lectures; their stage was of a simple and more severe design.

Except in the great cities of the empire (Athens, Carthage, Corinth, Lyon, Rome, Smyrna), which were often visited by famous rhetors and in which the spectacles were more diversified than in small cities, odea existed where there were special festivals and games: at Argos, the monument's orchestra is paved with a mosaic that bears an undisputable allusion to the Nemean games; at Nicopolis, it may well be related to the celebration of the *Actiaca;* at Carthage (built in 207 CE) it may be related to the Pythian games; and in Rome itself, the odeum of Domitian was probably intended, just as its stadium was, for the *Certamen Capitolinum,* instituted in 86 CE.

Odea are often directly connected with theaters (Athens, Corinth, Catania, Lyon, and Vienna); both constructions use the same lie of the ground, with its pending particularly adapted for the setting of a cavea. However, at Akrai, Soluntum, and Amman, the bouleuterion also takes the same topographic advantages of this proximity to become, as Statius said for Naples (*Silv.* 3.5.91), this *geminam molem nudi tectique theatri,* an important element in the city's landscape. The joining of the two monuments, interesting as it is for ancient town planning, is thus no absolute criterion by itself for identifying the smaller one as an odeum.

[*See also* Public Buildings; Theaters.]

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JEAN CH. BALTY

OHNEFALSCH-RICHTER, MAX (1850–1917), German excavator, antique dealer, writer, and one of the pioneers of Cypriot archaeology. After gradation from Halle University, where he studied agriculture, political economy,

and natural sciences, Ohnefalsch-Richter traveled extensively in central and southern Europe before going to Cyprus in 1878 to work as a newspaper reporter. He was soon attracted to the archaeology of the island and began a series of excavations, and except for one trip to Germany, stayed there until 1890. Ohnefalsch-Richter returned to his country and wrote his doctoral dissertation on the cult places of Cyprus at Leipzig University. He went back to Cyprus for further research in 1894–1895 and 1910.

Ohnefalsch-Richter excavated throughout the island either for himself or on contract at Athienou, Idalion, Kition, Paphos, Salamis, Tamassos, and at other sites. He located and excavated a large number of very important sites and recovered an enormous quantity of objects. His interests, however, were not always scientific because he also was a dealer in these antiquities. Although he took issue with Luigi Palma di Cesnola and his methods, his own techniques were sometimes considered controversial. Ohnefalsch-Richter did pioneering work, however, and published widely. Being a good draftsman and an accomplished photographer, he left valuable records of his discoveries and of nineteenth-century Cyprus in general. Early in his career he wrote some interesting nonarchaeological articles on Cyprus and later helped his wife, Magda, in photographing objects and people and collecting information pertaining to the folk tradition of the island (Magda Ohnefalsch-Richter, *Griechische Sitten und Gebräuche auf Cypern,* Berlin, 1913). He lectured extensively, illustrating his talks with drawings, watercolors, and photographs, as well as ancient objects from his excavations.

[*See also* Idalion; Kition; Paphos; Salamis; *and the biography of di Cesnola.*]

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DEMETRIOS MICHAELIDES

OLIVES. The wild olive *(Olea Europaea Var. Oleaster)* is indigenous to the natural forests of the Mediterranean region, whose wet, cool winters and hot, dry summers are ideal for olive cultivation. A mature tree can withstand temperatures as low as −110°C, whereas a young sapling may not survive temperatures below −7°C. On the other hand, to produce maximum fruit yields, the temperature must be below 7°C for a certain number of hours each year.

The wild olive is interfertile with the cultivated varieties, and it is still usual to use wild-olive saplings as root stock: scions are grafted that are taken from the finest tree in the village. Many of the wild trees today are undoubtedly escapees from cultivation.

Origin and Domestication. Olive stones have been found in Natufian and Pre-Pottery Neolithic B (PPNB) contexts and from many Chalcolithic sites in Israel and from Neolithic Ib and II contexts on Cyprus. It was once thought that the stones of wild and cultivated olives could be distinguished. The transitional forms identified between wild and cultivated types on Crete were regarded as evidence for the olive having been domesticated there independently, but today many scholars believe that the wood, stones, and pollen of the wild olive cannot be distinguished from those of cultivated varieties. Proof for the beginning of cultivation is therefore being sought in quantative data and in the archaeological evidence for olive-processing installations. The large number of olive stones found at the Chalcolithic site of Teleilat el-Ghassul was considered proof of cultivation. More recent evidence of large quantities of olive wood and stones at Chalcolithic sites in Jordan and in the Golan region in Israel, and the presence of crushing basins and ceramic oil separators at sites in the Golan, shows clearly that the olive was cultivated in them.

At most sites in Israel, however, olive wood is not found in large quantities until the Early Bronze Age. The evidence suggests that large-scale cultivation coincided with the increase in the size and number of sites now recorded for the period and confirmed by pollen analysis. Colin Renfrew suggested that in the Aegean there was also a connection between the urban revolution of the Early Bronze Age and the beginning of large-scale olive and vine cultivation. This theory has recently been questioned and awaits similar quantitative confirmation.

As the possibility of distinguishing between the stones of the wild and cultivated olive is today considered questionable, the paleobotanical argument for independent domestication of the olive in the Aegean is no longer tenable. It is

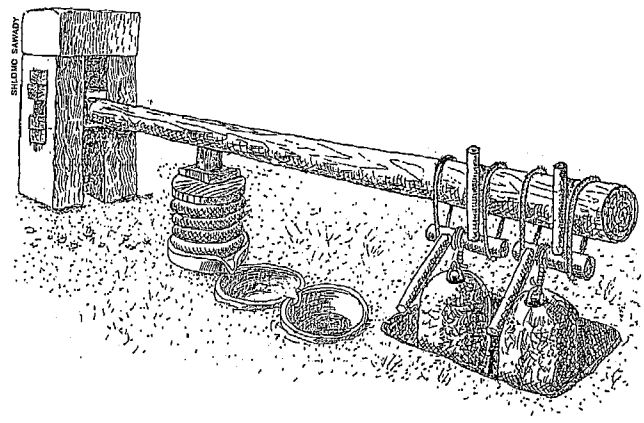
perhaps relevant, however, that although the vine is not indigenous to the Levant—and was almost certainly introduced from Anatolia—the terms used in Semitic and Indo-European languages for *vine* and *wine* derive from a common source. This is not true for the olive, however. The Greek and Latin terms for the olive and for its oil have no connection to the Semitic roots. This suggests independent domestication in the different regions.

Technology of Olive Oil Production. The quality of olive oil depends on the ripeness and quality of the olive and on the extraction process. Oil made from unripe olives, virgin oil, is more bitter and greener in color than other oil. The first oil to come from a batch of olives is the finest, the quality declining in consecutive pressings.

There are three stages in the production of olive oil: crushing the olives to a pulp, pressing the pulp to express the liquid, and separating the oil (20–30 percent of the liquid expressed) from the resulting black, watery lee, or sediment. The simplest method was to crush the olives with a stone roller. The resultant olive pulp was then put in sacks, or frails (baskets). The oil was then extracted by the weight of stones that were placed on a board on the frails. The oil was allowed to separate, and, when it floated on the lee, was skimmed. An Early Bronze Age oil press from Ugarit in Syria consisted of stone slabs (on which the olives were crushed and pressed) and, at a lower level, a collecting vat (into which the liquid flowed and in which the oil was separated). The installation resembles the wineries/wine presses that are found in the thousands throughout the Levant. In later periods, specific devices evolved for each of the three stages, oil presses and wineries differentiated, and various types of installation developed in different regions.

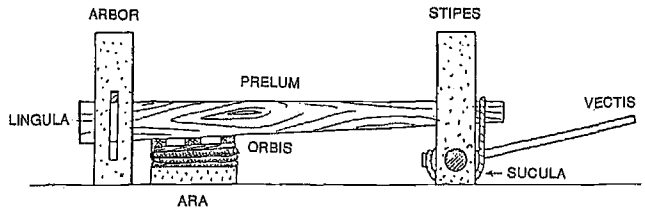
The first technical change took place in the Late Bronze Age with the introduction of the lever-and-weights press (beam-and-weights press) found on Crete and Cyprus, and in Ugarit. In Israel the earliest examples are from the Iron Age—two distinct types being discernible by Iron II. In the northern part of the country the olives were crushed in round mortars and then pressed on round press beds as found, for example, at Rosh Zayit from which the liquid flowed to lateral collecting vats. The weights were unworked perforated fieldstones. In the south, in Judah, olives were usually crushed with rollers in rectangular crushing basins. The weights were fashioned either with a horizontal bore at the top or with a vertical bore—the doughnut-shaped weight. The characteristic element was the Beth-Mirsham (Beit Mirsim) central vat in which the collecting vat was cut in the center of the press bed and the frails of crushed olive pulp were placed above it (on slats placed criss-cross, to allow the oil to flow down directly into the central vat). William Foxwell Albright mistakenly called the freestanding version of this device a dyeing vat. Similar rock-cut installations are found at sites in the hill country.

The next important technological change was the round

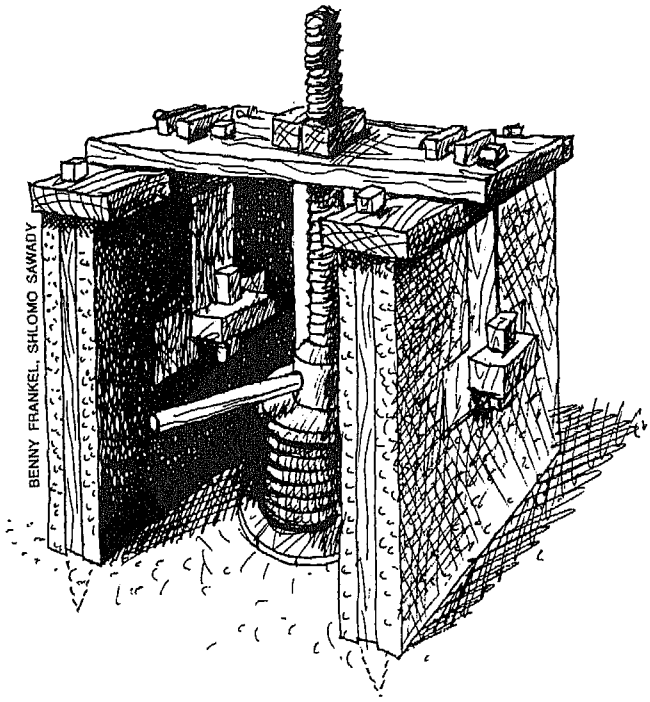


OLIVES. Figure 1. *Phoenician Zabadi weight press.* (Courtesy R. Frankel)

rotary olive crusher. It reached Palestine in the Hellenistic period, but its date and place of origin remain undetermined. The method, however, was used throughout the Mediterranean world until recently. The two main types of presses developed at the same time. At Mareshah/Marisa in the south, a press on either side of the central vat appeared with two plain piers that supported the pile of frails. The weight was also a new type: the bore was in the form of a reversed T; it also is found on Cyprus and in Lebanon. In a press found in the north, in western Galilee at Zabadi (see figure 1), the collection is lateral, and the characteristic element is a monumental slotted pier in which the beam was anchored. The weights in both types of press were raised by a drum attached to the beam. Other types of lever presses developed in other parts of the world. In the Aegean, the Crimea, North Africa, Spain, and southern France the Semana beam weight, which is rectangular and has external dovetailed mortices, is found. In the Semana weight the drum is attached to the weight and not to the beam. It apparently originated in the Aegean or in Anatolia. Both the reversed-T weight and the Semana weight are found on Cyprus, while in North Syria weights were found incorporating the characteristics of both. In Roman Italy, lever and drum presses without weights were used (the drum was attached to the ground). In the second century CE, Cato the Elder described a lever-and-drum press (*De Agricultura* 18; see



OLIVES. Figure 2. *Cato's lever-and-drum press.* (Courtesy R. Frankel)



OLIVES. Figure 3. *The Judean grooved pier screw press.* (Courtesy R. Frankel)

figure 2) as did Pliny the Elder in the first century (*Historia Naturalis* 18.74.317). Hero of Alexandria (*Mechanica* 3.13–14) described a lever-drum-and-weights press that clearly incorporated the drum of the Roman press and the weight of the Levantine press. There were also regional differences in the manner in which the beam was anchored: large free-standing stone niches were utilized in North Syria, slotted monoliths on Cyprus, and other techniques in the western Mediterranean.

The next technical development was the screw. In Judah, a direct-pressure screw press developed with central collection. A grooved piers press (see figure 3) clearly developed from the plain piers of the press found at Mareshah. In western Galilee, the screw press was a lever-and-screw press—a direct development from the Zabadi Press (see figure 4). Three different types of screw weights developed in the region, the Mi'ilya, Beth ha-'Emeq, and Din'ila weights. The Din'ila weight was the one described by Hero of Alexandria (*Mechanica* 3.15). In Samaria the main press was also a lever-and-screw press, but it used the Samaria screw weight, a type common throughout the Mediterranean; in Lower Galilee and the Golan, direct screw presses were used, but of types different from that in Judah. In North Syria yet another screw weight (the Kafsa weight) was used, a few examples of which have been found in the Jerusalem area. Thus, distinct technical cultures can be discerned that evince strong regional diversity and continuity (figure 5).

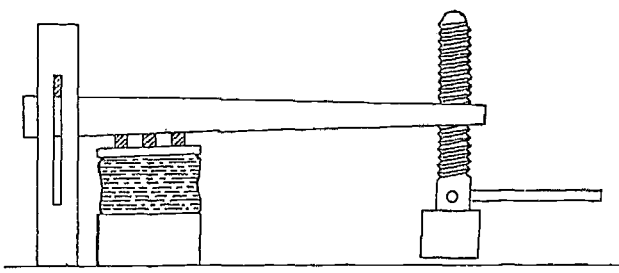
The Olive in Written Sources. The Hebrew word for olive is *zyt* (Ugar., *zt*) and for oil, *šmn* (Ugar./Akk., *šamnu*). The Sumerogram (*I*[*A*]) denoting oil and olive oil is *I.GIŠ* (lit., "tree oil," to be read *šamnu*). The olive tree was *[GIŠ] se/irdu*, which, in the peripheral eastern regions, was written *ze/irtu* (Hur., *zirte*), suggesting a connection to the West Semitic *zyt–zt*. In Egyptian, olive oil was *b3Ḳ*, while the olive tree was *dt*, a term introduced only at the time of the New Kingdom, again deriving from *zyt–zt*.

There are many Late Bronze Age administrative tablets from Ugarit that mention the purchase of olive groves and list quantities of oil paid in taxation by individuals (one to four jars) and by whole villages (up to five hundred jars) and allocations of oil from the royal stores to officials, soldiers, and craftsmen, for example (one to ten jars). An estimate of Ugarit's total oil production is 25 tons per village (two hundred villages thus produced 5,000 tons).

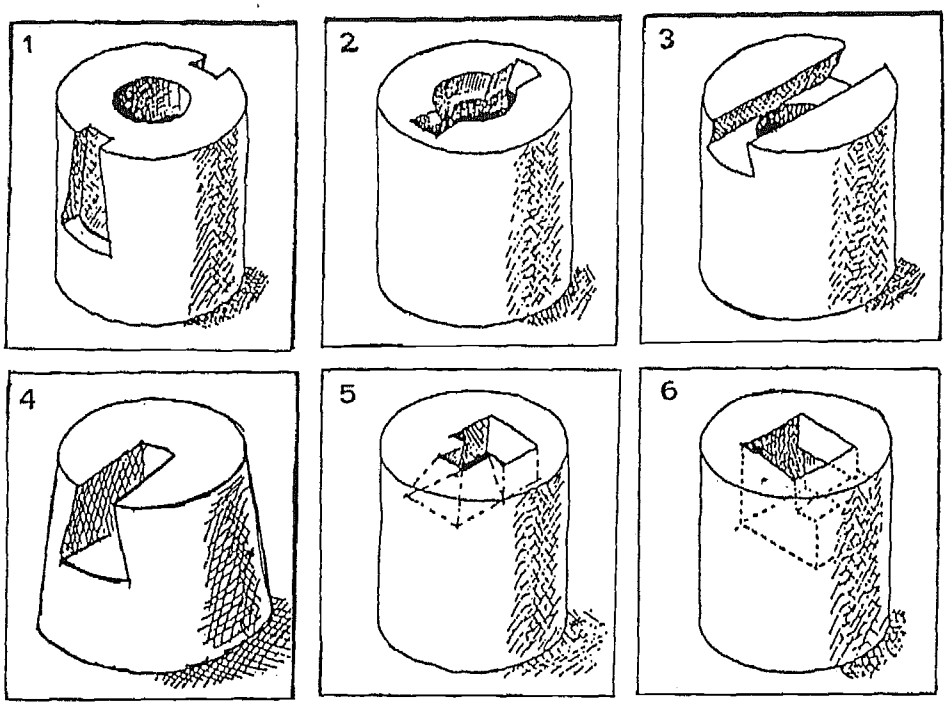
Similar documents have been found at Alalakh in Syria and in Hittite archives, both countries where the olive was grown. Hittite texts also describe methods of preparing various foods and perfumed oil, some of the latter used in rituals.

Because oil was either not produced or was produced in negligible quantities in Mesopotamia proper and in Egypt, documents often mention it as an exotic luxury. At Mari, imported oil from Aleppo and the provision of oil for the palace are mentioned but no olive groves. In later Assyrian documents, Assurnasirpal and Sennacherib describe gardens and wildlife reserves they set up based on plants and animals brought from distant regions of their empire that included the olive. Both kings describe sumptuous banquets attended by notables from afar at which olives and olive oil were served. Sennacherib describes how he drenched the heads of his guests with oil mixed with spices.

The Tale of Sinuhe (one of the earliest documents mentioning the land of Israel), from Egypt's Middle Kingdom, describes the land of Yaa (probably in the Galilee or in Syria): "It had more wine than water, abundant was its honey, plentiful its oil." In other documents importing oil from Retenu, Dhaji, and Naharina is referred to. The soldiers of Thutmosis III when in Dhaji "were drunk and annointed with oil as if at feasts in Egypt," and in his lists of



OLIVES. Figure 4. *The lever-and-screw press.* (Courtesy R. Frankel)



OLIVES. Figure 5. *Six main types of screw weight found in Israel.* (Courtesy R. Frankel)

booty two kinds of oil appear *ndm* ("sweet") and *w3d* ("fresh/green," probably virgin oil). (See *ANET,* p. 239.)

Hebrew Bible and Hebrew epigraphy. The olive is one of the triad *dgn, tyrwš, yṣhr* ("corn, wine, oil") that appears eighteen times in the Hebrew Bible and is one of the Seven Kinds (*Dt.* 8:8). The two lists have come to symbolize the staple products of Mediterranean dry farming. The olive tree was the first to be asked to be king over the trees in Abimelech's parable (*Jgs.* 9:8–9); similarly, Columella, the Roman agronomist, called the olive "queen of all trees" (*De Re Rustica* 5.8.1).

The names of the officials of King David who were responsible for the olive groves in the Shephelah and for the royal oil stores are specified in *1 Chronicles* (27:28), as are the quantities of oil King Solomon sent to Hiram of Tyre (*1 Kgs.* 5:25; *2 Chr.* 2:29). The export of oil to Egypt is referred to by Hosea (12:2).

No specific term appears in the Bible for an oil press, but, like wine, oil flows into a *yqb* (*Jl.* 4:13; *gt* and *pwrh* usually are translated as "wine press"), a simple treading installation usually cut into rock. Oil production is actually referred to only once (*Mi.* 6:15), and there the oil is expressed by treading.

Four types of spiced oil appear: *šmn rwqḥ* (*Eccl.* 10:1); *šmn hmr,* "myrrh oil" (*Est.* 2:12); *šmn ḥtwb* (*2Kgs.* 20:13; *Ps.* 133:2), to be translated "spiced oil," not "good oil"; *šmn twrq* (*Sg.* 1:3), usually translated "poured oil," but should, perhaps, be corrected to *tmrwq,* "cosmetic oil." Of the three other types that appear, *šmn rʿnn,* "fresh oil" (*Ps.* 92:11), may be a technical term for virgin oil; and *šmn ktyt,* literally, "pounded in a mortar" (*Ex.* 27:20, 29:40; *Lv.* 24:2; *Nm.* 28:5; *1 Kgs.* 5:25) and *šmn rḥṣ,* literally, "washed" (Samaria ostraca) designate production techniques—in the first, oil is extracted without pressure after pounding, and in the second, it was extracted with the aid of hot water. [*See* Samaria Ostraca.]

Oil, then, appears in the Samaria ostraca, which are bills of lading found in the palace of the kings of Israel, apparently of taxes assigned to royal officials. Of those ostraca in which the products are known, sixteen mention wine only, eight mention only oil, and two name both products. The Arad inscriptions are on ostraca from the archives of a Judean border fortress. They include fifteen consignment orders to supply soldiers with provisions: wine, oil, and flour—dough or bread, depending on the length of their duty. Oil is mentioned on eight of the fifteen ostraca. It is specifically stated that the oil jar is to be sealed. These documents show that oil was in general use but more scarce and valuable than wine or corn. [*See* Arad Inscriptions.]

Talmudic literature. In Mishnaic Hebrew, unlike biblical Hebrew, there is a clear distinction between a winery, *gt,* and an oil press, *byt bd* (lit., "house of the beam"). The most detailed reference to a press is to a lever-and-weights press (*B.B.* 4:5) that mentions six parts: *btwlwt,* "slotted piers," for anchoring the beam; *mml,* "press bed"; *ym,* "collection vat"; *qwrh,* "beam"; *ʿkyrym/ʿkydym,* "press weights"; and *glgl,* "drum." The term *lwlbyn* for a screw appears in the Tosefta and Talmuds.

An important text is that concerned with the oil to be used in the Temple (*Men.* 8 and related sections in the Talmuds and Tosefta). Lists of types of oil that were forbidden are enumerated, as are the places from which the finest oil came and the factors that affected oil quality. Three grades of olives and of oil are described. Rabbi Yehudah was of the opinion that the oil for the Temple (*šmn ktyt,* "pure oil" or "pounded oil") should be prepared the way it had been for the First Temple: by pounding the olives in mortars and extracting the oil without a beam, using only the weight of stones. Other sages favored more modern methods. The ordinance in the Mishna accepts Rabbi Yehudah's views about the first grade oil but that of the other sages about the second and third.

Uses of Olive Oil. In addition to its use as food and in a ritual context, olive oil was used in cosmetics and perfume and to provide light. These uses are verified in written sources.

1. *Cosmetics.* There is evidence for the use of oil as an unguent or as a base for perfumes in Mesopotamian, Egyptian, and Hittite sources. The Hebrew Bible mentions many perfumed oils: men annoint their beards and hair with oil (*Ps.* 133:2, 141:5; *Eccl.* 9:8), and maidens receive beauty treatments with myrrh oil (*Est.* 2:12). The obvious use for oil was cosmetic (*Mi.* 6:15). In the Greek world, athletes rubbed oil on their body following strenuous activity, and then removed it, the dust, and their sweat with a sicklelike *strigil.* Pliny affirmed that "There are two liquids that are agreeable to the human body, wine inside and oil outside" (*Hist. Nat.* 14.29.150).

2. *Food.* The annual consumption of oil "per capita per annum" in village communities in Greece and Israel in recent times is 17–20 kg (50–55 g per day). It has been suggested that in the Aegean the main use for oil was cosmetic and that its main source, until the end of the Late Bronze Age and beyond, was the wild olive. The written sources from Ugarit in the Late Bronze Age and from Samaria and Arad in the Iron Age show that in the Levant oil was an important element in the diet in these periods, as the biblical triad *dgn, tyrwš, yṣhr* implies.

3. *Light.* Ceramic lamps from the Early Bronze Age used olive oil as their main fuel.

4. *Ritual.* The annointing of kings with olive oil is attested in the Hebrew Bible (*1 Sm.* 16:1–13; *2 Kgs.* 9:1–3) and in Hittite sources. Priests were annointed (*Ex.* 29:7), and the word *messiah* derives from *mšyḥ* (Heb., "annointed"). Stelae were sanctified by annointing them with oil (*Gn.* 28:18, 35:14), as was the tabernacle and all its contents (*Ex.* 30:23–29, 40:9). Oil was used in purification ceremonies (*Lv.* 12–32 and in Hittite sources); was part of meal offerings in the Temple, alone (*Lv.* 2) or with animal sacrifices (*Nm.* 15:1–16); and was used to light the Temple candelabrum (*Ex.* 25:6, 35:15; *Lv.* 24:2; *Men.* 8). Hittite sources refer to annointing the bones of the deceased after cremation.

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RAFAEL FRANKEL

OMAN. Currently a geopolitical term defining the modern country of the Sultanate of Oman, located on the southeastern portion of the Arabian Peninsula, Oman covers an area of about 192,000 sq km, or 120,000 sq. mi. It is bordered on the north by the United Arab Emirates (UAE) and the Saudi Arabian Rub al-Khali and on the west by Yemen. Its coastline exceeds 1,600 km (1,000 mi.), from the Musandam peninsula to Yemen (Clements, 1980, p. 5). Although a number of geographic subprovinces, or ecological regions, can be observed (Musandam peninsula, Hajar Mountains, Batinah coast, the Nejd, Rub al-Khali, and Dhofar), archaeologically and historically, two basic regions are of paramount importance: the north (the Oman peninsula, broadly) and the south (Dhofar). The summer monsoon that affects the south may be the most important feature in contrasting the two regions. By far the largest amount of archaeological work has taken place in the north. Work in the south by the Transarabian Expedition led by Juris Zarins concluded a four-year field schedule (1992–1995) whose results add to the earlier work of Frank P. Albright (1982), Paolo M. Costa (1979), and Judith Pullar (1974, 1975).

Paleolithic Period. No Paleolithic industries are known in the north, a phenomenon true not only of Oman, but also the UAE, Qatar, Bahrain, and eastern Saudi Arabia (Zarins et al., 1982, pp. 28–29). The dividing line for the Paleolithic appears to run through the Dhofar region. Sites are numerous to the west in Yemen, rare in Dhofar, and nonexistent to the northeast of Dauqa. The largest and earliest Lower Paleolithic site was found in the middle of Wadi Ghadun, on its highest, western terrace. Farther south, along its tributaries, a few scattered artifacts were recovered at Hanun and elsewhere (Biagi, 1994b, p. 84). Oldowan material to the northwest and west, contrasting to the later Early Acheulean handaxe material, suggests a time horizon of about one million years BP for the Wadi Ghadun site and similar sites in western Saudi Arabia and Yemen (Zarins et al., 1981, pp. 13–16; Amirkhanov, 1991, pp. 10–204; 1994, pp. 218–219). Along the southern coast, Paolo Biagi (1994b) suggests that a Late Acheulean industry is to be found at Saiwan. No Middle Paleolithic sites are yet known, but Upper Paleolithic blade industries have been found in the Shisur region of Wadi Ghadun and parallel finds have been found farther west in the Hadhraumaut region (Amirkhanov, 1991, pp. 266–312; 1994, p. 220). In light of new evidence concerning Upper Paleolithic industries and the spread of modern hominids, dates may range as far back as 150,000 BP for these sites. [*See* Hadhraumaut.]

Holocene "Neolithic" Industries (6000–3400 BCE). Beginning in the early Holocene period (c. 8000 BCE), the Arabian Peninsula (as well as most of North Africa) was affected by a significant increase in precipitation and moisture retention. This is reflected in the quite sudden appearance of blade and bifacial industries found in the north, but more extensively in the south (phase I). The largest percentage of sites are dominated by the blade industry, which produced Pre-Pottery Neolithic (PPN)-type points suggestive of ties with the Levant (Potts, 1993, pp. 170–173). In the north, distinctive coastal adaptations diverge from this pattern (Uerpmann, 1989); however, in the south, numerous sites are known from the Nejd on interior drainages and lakes with Fasad-type (blade) points (Edens, 1988a, p. 115). Sites are either lithic scatters, middens, or contain structures. Known principally from Dhofar, such a culture extended into the Hadhramaut province in Yemen and as far north as Jebel Tuwayq in southern Saudi Arabia (cf. McClure, 1994).

Subsequent bifacial projectile-point traditions (phase II) are even more widespread on the peninsula; numerous sites have been found in the south, as well as in adjoining areas of Yemen and in the Saudi Arabian Rub al-Khali (Edens, 1982; 1988b). To the north, such sites are known from eastern Saudi Arabia to the UAE (Potts, 1993, fig. 4). Shell middens in the north continue to follow a divergent stone-tool technology (Biagi, 1994a), that has a common tradition with sites found on the Yemen and Red Sea coastlines. Of particular interest are the Ras al-Hamra sites found near Muscat (Biagi et al., 1984; 1989). While Ubaid period ceramics are now known from the western Oman peninsula inside the Arab-Persian Gulf in the UAE (Haerinck, 1991; Frifelt, 1989), none have been found in the Arabian Sea along the Batinah coast. This suggests that Ubaid seafarers did not leave the Arab-Persian Gulf. [*See* Ubaid; Seafaring.] Other

long-distance contacts are known, however, connecting much of the peninsula. Obsidian beads in a Qatari tomb originated in Yemen or southern Saudi Arabia (Zarins, 1990, p. 531); more recently, obsidian from Matafah in Wadi Ghadun was connected to the Dhamar-Reda field in Yemen or to an Eritrean source (Vincenzo Francaviglia, personal communication; Zarins, 1995).

Subsistence activities from the phase I and II groups are most likely attributable to pastoral nomadism and herding. [*See* Pastoral Nomadism.] Rock art in central and southwest Arabia (Anati, 1968; Zarins, 1982) principally depicts cattle and ovicaprids being herded. This evidence is supported by faunal studies (Uerpmann and Uerpmann cited in Potts, 1993, p. 177). Hunting, fishing, and shellfish gathering are also attested. [*See* Hunting; Fishing; Paleozoology.] A unique site in the south (Uruq Ibn Hamuda) produced numerous pestles, mortars, and pounders, confirming that, at most sites, hand-stone grinders were used to process plant remains.

In the south, phase III defines the last stage of the bifacial stone-tool tradition stretching from 3400 to 2500 BCE. There the hallmark is the trihedral rod; peculiar to the south, it is commonly found associated with numerous lithic scatter and structural sites (Ayun, Hailat Araka) and similar sites are reported from the Ḥadhramaut region in Yemen (Amirkhanov, 1994, p. 226, fig. 10). Few examples are known from the Rub al-Khali to the north. The trihedral rods may well be imitations of bronze points that were unavailable locally. In the north, the key stratigraphic site of Hili 8 (3000–1900 BCE) suggests the beginning of complex oasis life involving domesticated animals—sheep, goats, cattle, donkey, dog—and plants—wheat, barley, melons, dates (Cleuziou, 1982; 1989). [*See* Sheep and Goats; Cattle and Oxen; Dogs; Cereals.] Domestic sorghum from Hili 8, dated to the third millennium (Cleuziou and Costantini, 1980), is now superceded by samples from Ras al-Hamra 5 from the late fifth millennium (Nisbet, 1985). The Hamra 5 samples are the earliest known not only from Arabia, but also Sahel Africa and western India. Graves from the north (Hafit type) are single-chambered and double-ring walled. [*See* Burial Techniques.] Pottery types include imported Mesopotamian Jemdet Nasr/Early Dynastic I types. Copper resources are inferred to have been exploited for the first time (Potts, 1993, pp. 178–180). Written evidence from Mesopotamia and Susiana begins in about 3400 BCE, and eastern Arabia is identified as Dilmun. [*See* Dilmun.] Products coming from Dilmun, such as copper and stone, may have originated on the Oman peninsula. Aromatics from Dhofar may have already been imported into Mesopotamia as well (Zarins, 1995).

Protohistoric Cultures (2500–1300 BCE). In phase A (2500–2000 BCE) in the north, Hili 8 (and now Hili 1) define the archaeological sequence for the region. Sites such as Amlah, Bat, Wadi Bahla, Maysar, and the Ras al-Junayz series add to the picture. The tombs and settlement at Umm an-Nar excavated in the 1960s by the Danish archaeological expedition to the Persian Gulf initially defined this mid-third-millennium horizon (Frifelt, 1991; 1995). Now the circular communal tombs are known from Ra's al-Hadd to Khasab. [*See* Ra's al-Hadd.] Subsistence activities at Umm an-Nar pinpointed for the first time the possible domestication of the camel (Hoch, 1979; 1995, pp. 250–252). [*See* Camels.] Both ceramic materials and soft-stone vessels, which first appear in complex, carved designs (*série ancienne,* to use the terminology of Miroschedji, 1973) tie Iran, the Indus Valley, and Mesopotamia to the Arab-Persian Gulf. By 2200 BCE, the soft-stone vessels evolved into a simpler design using dots and circles *(série récente).* Copper sources in Wadi Jizzi and the Maysar complex are known to have been exploited (Weisgerber, 1980; 1981). Historically, the Oman peninsula is mentioned for the first time in the Old Akkadian period as Magan. In the South, Bronze Age sites are defined by megalithic house types, a remnant lithic industry, and the introduction of copper/bronze (Taqa 60, Hagif 241, Khor Rori). Previous Neolithic populations retreated to the fringes of the Dhofar hills.

In phase B (2000–1700 BCE), the north is defined by the Wadi Suq horizon. This subperiod is contemporary to the Isin-Larsa and Old Babylonian periods in Mesopotamia and has ties to the Dilmun culture of eastern Saudi Arabia, Bahrain, and Failaka. [*See* Isin; Larsa; Bahrain; Failaka.] Cist graves contain the distinctive painted Wadi Suq ceramics and the *série tardive* soft-stone vessels. Copper mining continued to play a major role in the region's economy (cf. Oppenheim, 1954), with evidence not only from the Oman peninsula (Wadi Jizzi, Wadi Samad) but from Masirah Island as well. Sites on the Ra's al-Junayz coastline continued to provide evidence of a maritime economy (e.g., RJ1). In the south, Carbon-14 dates from encampments on now fossil lagoons on the Salalah plain define the ongoing Bronze Age tradition. Both shell and copper fishhooks have been recovered, as well as marine and land fauna.

In phase C (1700–1300 BCE), Tell Abraq, Rumeilah, and Hili 2 on the Oman peninsula define the latest phase of the Wadi Suq complex. Ceramic ties connect Elam and Kassite Mesopotamia. Bronze weapons from Nizwa also point to an Iranian connection. In the south, the Bronze Age probably ends by 1300/1100 BCE (Taqa 60, Hagif 241).

Iron Age (1300–300 BCE). In the north, the period between 1300 and 300 BCE is known as Iron A–B, or Lizq. A series of sites is found either as coastal middens (Shimal), agricultural towns (Dibba), piedmont villages at the mouths of wadis (Ghalilah), oases (Rumeilah, Hili 2) or fortifications (Hili 14, Lizq). Graveyards are also known (Qarn Bint Saud, Maysar, Shimal). The largest and most important sites for the period are Rumeilah and Hili 2. Maysar 8 and 42 and Samad 10, among other sites in the area, suggest that the *falaj/qanat* ("channel") system characteristic of irrigation practices in the north probably originated in Iron Age Iran. [*See* Irrigation.] Typical Iron A assemblages include

incense burners, Kaftiari ceramic types from Iran, soft-stone vessels, and copper/bronze tools and jewelry (Potts, 1990, p. 376, figs. 41–43). In historical terms, Neo-Assyrian references (640 BCE) to the land of Kade and the city of Iske may refer to modern Izki. The name *Kade* continued to be used into the classical period by Pliny, and Daniel T. Potts has argued that Kade was the Akkadian equivalent of the Persian Maka/Makkaš and its later variants Mykoi/Machiya. Achaemenid control and/or influence over the Oman peninsula was most likely exerted from a coastal center such as Sohar. [*See* Sohar.] In addition, the Azd Omani migrations into Oman may have begun during the Achaemenid period.

In the south, Iron Age sites (1300–300 BCE) have been found principally on high coastal terraces. Some of the structures are superimposed on Bronze Age sites (Taqa, Khor Rori, Hagif), but others represent large Iron Age period homesteads (Wadi Adonhib, Raysut headland). The archaeological assemblages are characterized by red wares and a microlithic flint technique, both having ties to Yemen. The early phases of the formal buildings at Shisur may parallel the Iron Age buildings at Hili 14, the Bahrain fort, or Jumeirah (Potts, 1990, p. 112, figs. 6, 24).

Classical Period (300 BCE–650 CE). Following Hellenistic expansion into the Gulf and across trade routes into central-southern Arabia, Seleucid-period sites on the Omani peninsula such as Mleiha (Potts, 1990, vol. 2, p. 272) parallel northeastern Arabian sites such as Thaj. [*See* Thaj.] From the succeeding Parthian period, more sites, such as ed-Dur, Sohar, and Samad (Maysar 43, Samad ash Shan 1) are known. The majority of these sites continued to be occupied in the following Sasanian period.

First-century historical sources (Pliny, Ptolemy, and the *Periplus of the Erythraean Sea*) refer for the first time to Omana, which is likely Sohar, or perhaps ed-Dur (Groom, 1994). These contemporary sources and later Islamic traditions refer to the Azd Omani as bedouin from the Tanukh confederation (classical Thanuitai). They came from southwest Arabia, perhaps as early as the first century CE, across the south to the north, reaching Basra by 600. The Sasanian name for the Omani was *Mazun,* from the Parthian *mzw(n)* (Potts, 1990, vol. 2, p. 329, n. 309; for the Islamic conversion, see Potts, 1990, pp. 340–348).

In the south, classical sites such as the Shisur fort (probably Marimatha in the territory of the Iobaritae) are datable in part to the Seleucid era, based on the recovery of red appliqué and black-burnished wares. Parthian red wares are paralleled at Sohar (Kervran and Hiebert, 1991). At ʿAin Humran the predominant remains date to the Parthian period, but the baked bricks may be Achaemenid. Other sites along the Salalah plain, such as Taqa and al-Balid have Seleucid- to Parthian-period occupation. The excavations at Khor Rori in the 1950s proved that the site is to be identified as SMHRM and belongs to the first century CE as a Hadhramaut outpost (Albright, 1982). Survey sites discovered in 1992–1995 on the Salalah plain can be matched with the references in Pliny, the *Periplus,* and Ptolemy.

Islamic Period (650–1500 CE). Until 1150 political control of the north alternated between the local Imamate (Ibadi) and caliphate authorities (Umayyad, ʿAbbasid, and Seljuk). [*See* Umayyad Caliphate; ʿAbbasid Caliphate.] The expansion of Omani influence into India, China, and East Africa took place in the Early Islamic period. Sohar, as the key maritime trade center, peaked in the ninth–tenth centuries and was destroyed by 1225 (Grohmann, 1934; Williamson, 1973; Wilkinson, 1979). By medieval times, the importance of Muscat and Qalhat had grown as a result of increased trade and control through the straits of Hormuz. With the arrival of the Portugese (1507–1625) and their struggles with the Ottomans and Omani in the interior, fortress technology reached new dimensions (Nizwa, Jilani). In the south, Islamic expansion can be documented by ʿAbbasid expansion. Sites such as Jebel Qinqari and Raysut demonstrate the control of harbors and the Indian Ocean coastline. Al-Balid (medieval Mansura), controlled by the Rasulids from Yemen, dominated the Salalah plain (Costa, 1979), and smaller sites such as Taqa were occupied as well.

[*See also* Arabian Peninsula; Qatar; United Arab Emirates; *and* Yemen.]

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ONOMASTICS. *See* Names and Naming.

OSSUARY.

A small chest or box, usually made of stone but occasionally of clay or wood, used for reburying human bones after the flesh has decayed, is known as an ossuary. It was used with some frequency in the Early Roman period in Jewish tombs in the vicinity of Jerusalem.

A typical ossuary from that period is hollowed from a single block of limestone and measured about 60 × 35 × 30 cm; there were smaller ossuaries for children. It had a removable lid that might be flat, rounded, or gabled. Most ossuaries were plain, but many were decorated with motifs typical of Jewish art of the period: geometric designs (e.g., the six-petaled rosette) or representations of Jewish architectural and religious themes (e.g., tomb monuments or palm branches). (See figure 1.) Often only one long side of the ossuary was decorated and professionally incised by chip carving. Inscriptions, by contrast, were not professionally done but were scrawled with charcoal or scratched with a sharp object almost anywhere on the ossuary—on its sides, ends, lid, or even along a top edge. Written in Greek, Ara-

OSSUARY. Figure 1. *Stone ossuary.* From Mt. Scopus, first century BCE. (Courtesy ASOR Archives)

maic, or Hebrew, ossuary inscriptions identify the deceased by name, only occasionally adding details about family relations, place of origin, age, or status.

The deceased was initially laid in a niche or on a shelf to decompose in a family burial cave. When decomposition was complete, the bones were gathered in ossuaries for secondary burial and placed in a niche, on a shelf, or in a separate chamber (e.g., in the family tomb located on Rehov Ruppin in Jerusalem, in the "Goliath" tomb in Jericho, and at Dominus Flevit, a first-century cemetery on the Mount of Olives). The bones of more than one individual could by custom be placed in the same ossuary: according to the third-century rabbinic document *Semaḥot* 13.8, persons who shared a bed in life could share an ossuary in death. Even the "Caiaphas" ossuary contained the bones of more than one person. The Caiaphas ossuary is a large (74 × 29 × 38 cm) richly ornamental ossuary with a vaulted lid inscribed on the side and back with the name "Caiaphas." This name also belonged to the High Priest during the days of Jesus (*Mt.* 26:57). The ossuary was found in 1990 in a tomb located in North Talpiyot, a southern suburb of Jerusalem.

The historical development of Jewish ossuaries is still debated. Eric Meyers sees them as an adaptation of the long-standing ancient Near Eastern custom of secondary burial, with parallels in Chalcolithic bone containers, Cretan larnakes, and Persian astodans. L. Y. Rahmani argues, however, that Jewish secondary burial in ossuaries was unique to Jerusalem in the Early Roman period. Rachel Hachlili and Amos Kloner have in turn questioned Rahmani's view. They note several finds of Jewish ossuaries at locations quite distant from Jerusalem as late as the fourth century CE. Kloner cites the finds at Ḥorvat Tilla, in the southern Shephelah, in particular. Although there presently is no scholarly consensus, ossuaries can reasonably be regarded as the form of secondary burial that was most popular among Jews living near Jerusalem in the Early Roman period.

It is widely agreed (based on literary evidence from the Mishnah and the two Talmuds) that Jewish secondary burial in ossuaries was driven by two theological beliefs: resurrection of the body, and expiation of sin via the decomposition of human flesh. The former motivated the use of an individual burial container and the latter the practice of secondary burial. For Palestinian Jews in the Roman period, bones that had been placed in an ossuary were purified from sin and ready for the resurrection.

[*See also* Burial Techniques; Jerusalem; Sarcophagus.]

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OSTEN, HANS HENNING ERIMAR VON DER (1899–1960), German archaeologist and Orientalist. In 1923 von der Osten was forced by post-World War I politics to leave his archaeological studies in Berlin. He emigrated to the United States where, from 1924 to 1925, he was an assistant curator at the Metropolitan Museum of Art in New York City. In 1926–1927, he was director of the Hittite Survey for the Oriental Institute of Chicago and from 1927 to 1934 director of its Anatolian Expedition to Alişar Höyük and Kerkenesdağ (1928), Gavurkale (1930), and Terzili Hamam (1932). While chairman of the archaeology department at Ankara University (1936–1939), he worked at Ahlatlıbel (1937), Van (1938), and the Roman baths in Ankara (1938–1939). Imprisoned in 1940 as a result of unsubstantiated accusations of spying, he spent ten years in a Turkish prison. He was rehabilitated in 1950. From 1951 to

1960 he worked at Uppsala University in Sweden, during which time he excavated Tell es-Salihiyeh, Syria (1953); directed the German-Swedish excavation at Takht-i-Suleiman, Iran (1959); and was director of the German Archaeological Institute in Tehran (1960).

Von der Osten's scholarly contribution, some sixty publications and manuscripts, is dominated by his fieldwork, by Anatolian archaeology and historical topography, and ancient Near Eastern glyptics. The main objective of his extensive topographical explorations and surveys in central Anatolia (putting some three hundred sites on the archaeological map) was to find remains of the then newly discovered Hittites. This led to his pioneering, carefully dug, and meticulously published excavation at Alişar Höyük (1927–1932), in collaboration with Erich F. Schmidt (Chicago, 1930–1937). The work produced the first important, albeit controversial, stratigraphy of the Anatolian plateau, with evidence of almost every period except the Hittite. Unfortunately, von der Osten's numerous articles on Anatolian archaeology never culminated in the completion of his long-term study of the historical geography of Anatolia, the unfinished manuscript "Siedlungsgeschichte Kleinasiens."

Osten produced learned volumes on the seal collections of Edward T. Newell (Chicago, 1934), A. Baldwin Brett (Chicago, 1936), and especially Hans S. von Aulock (Uppsala, 1957). A late interest in the archaeology of Iran resulted in the elegant synthesis *Die Welt der Perser* (Stuttgart, 1956) and in his participation on the excavation at the Sasanian site Takht-i Suleiman in Azerbaijan, in 1959.

A forceful, farsighted master of landscape, on an excavation or in a graduate seminar, H. H. von der Osten was caught in the forces of world politics and robbed of his most creative years. Yet, much of his work endures.

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CARL NYLANDER

OSTRACON. A loanword from Greek, in which it means "shell" or "sherd," *ostracon* is used in epigraphy to describe generally small inscriptions on shells, irregular pieces of stone, and, most frequently, sherds. Inscriptions were mostly written with ink on these hard materials, although there are a few incised ostraca. In principle, there is a distinction between an ostracon and an inscription on a vessel. In the latter case, there is generally a connection between the inscription and the vessel or its content, such as, perhaps, the name of its owner, its content, place, and date of production. In Egypt and in Palestine occasionally complete jars seem also to have been used for writing exercises. [*See* Kuntillet ʿAjrud.]

The main reason for using sherds was that they were plentiful and cost nothing. However, using such objects presented difficulties: they were relatively heavy and they were difficult to store because they are irregular in shape. In fact, they were mainly used to write provisional notes, administrative lists, short messages, or drafts that could later be copied or registered on leather or papyrus scrolls—though they could be used for official messages when papyrus was unavailable. [*See* Papyrus; Parchment; Writing Materials.] They were also used for school exercises, and, in Egypt at least, for drafts of drawings and sculptures (e.g., at Khirbet el-Medineh).

Because most ostraca were inscribed in ink, they were generally connected with the use of a calamus (rush or reed) to write a linear script. They were therefore unusual and found late in Mesopotamia and Anatolia where cuneiform writing dominated but found frequently in Egypt and in the Levant, especially after the development of alphabetic writing (Canaanite, Hebrew, Phoenician, Aramaic, and, later, Greek and Arabic).

Egypt can be considered the homeland of ostraca, with thousands of Hieratic, Demotic, Greek, and Coptic ostraca, not to mention hundreds of Phoenician and Aramaic ostraca found mainly at Saqqara and Elephantine and dating mostly from the Persian period. [*See* Saqqara; Elephantine.] Those ostraca throw a vivid light on everyday life, with its economical and daily problems. They also contain numerous schoolboys' exercises, including excerpts of literary texts.

In the Levant, scribes chose sherds that were as flat as possible—mainly body sherds from large jars. They sometimes cut or broke them to get a rectangular shape that is easy to hold in the left hand (e.g., in the Elyashib archives at Arad, ostraca are about 5–8 × 7–12 cm). [*See* Arad Inscriptions.] However, there are also very small ostraca of a few centimeters—labels of sorts—and others as large as a modern sheet of paper (e.g., about 21.5 × 28 cm; see Lemaire and Vernus, 1983), or even larger (42 × 60 cm for the Aššur ostracon; see below). [*See* Aššur.] They could be inscribed on both sides, the convex side generally written on first. [*See* Scribes and Scribal Techniques; Writing and Writing Systems.]

Excavations in Israel have produced various kinds or groups of ostraca in addition to a few in Greek and Arabic:

1. *Hieratic.* A few hieratic ostraca have been found in Late Bronze Age strata, mainly at Tell ed-Duweir/Lachish and Tell esh-Shari'a (cf. Goldwasser, 1991). [*See* Lachish.]

2. *"Canaanite" or "Proto-Hebrew."* Ostraca from the Iron Age I, an abecedary and a list of names in Canaanite or Proto-Hebrew, have been found at ʿIzbet Ṣarṭah (Kochavi, 1977) and Beth-Shemesh. [*See* ʿIzbet Ṣarṭah; Beth-Shemesh.]

3. *Philistine.* Several ostraca of Philistine origin have been found at Tell Jemmeh. They contain lists of names and date to the seventh century BCE (cf. Naveh, 1985). [*See* Jemmeh, Tell.]

4. *Paleo-Hebrew.* Many Iron Age II Paleo-Hebrew ostraca, mainly from Samaria, Jerusalem, Lachish, Meṣad Ḥashavyahu, Arad, and Khirbet Ghazza/Ḥorvat ʿUza, are connected with the royal administration of the kingdoms of Israel (for the Samaria ostraca) and Judah (for the others). The latter, dating mainly to about 600 BCE, illuminate the administrative and military organization, as well as the people's state of mind, on the eve of the fall of Judah. [*See* Samaria; Jerusalem; Meṣad Ḥashavyahu.]

5. *Ammonite.* Various ostraca inscribed in Ammonite, generally from the seventh–sixth centuries BCE, have been found in central Transjordan, at Ḥesban/Heshbon, Tell el-Mazar, and Tell el-ʿUmeiri. They are either lists of names or are practically illegible. However, ostracon 3 from Tell el-Mazar is a letter of Palt to his brother. [*See* Ḥesban; Mazar, Tell el-; ʿUmeiri, Tell el-.]

6. *Edomite.* A few small ostraca written in Edomite in about 600 BCE have been found at Umm el-Biyara, Buṣeirah, Tell el-Kheleifeh, and in the Negev; the most interesting is a letter found at Khirbet Ghazza/Ḥorvat ʿUza with a greeting formula mentioning the god Qos. [*See* Umm el-Biyara; Buṣeirah; Kheleifeh, Tell el-; Negev.]

7. *Aramaic.* During the Persian period, Aramaic became the administrative language of Palestine. Aramaic ostraca have been found in Cisjordan and Transjordan, the two main collections being from Arad and Beersheba. Several hundred new Aramaic ostraca have recently appeared on the market. [*See* Aramaic Language and Literature; Beersheba; Idumeans.]

8. *Aramaic and Greek.* A Hellenistic bilingual ostracon, in Aramaic and Greek, was discovered at Khirbet el-Qom (cf. Geraty, 1975, 1981). A dated marriage contract, probably an exercise, was found recently at Mareshah (Kloner and Eshel, 1994). [*See* Qom, Khirbet el-; Mareshah.]

9. *Square Hebrew and Aramaic.* Early Roman ostraca written in Hebrew and Aramaic in a square script have been found at a number of sites: Qumran, Masada, Murabbaʿat, and Herodium. Some were writing exercises—abecedaries or lists of names—while others were simply tags with letter(s) or name(s). [*See* Qumran; Masada; Murabbaʿat; Herodium.]

So far, only a few ostraca have been found in Phoenicia: a small collection of seven ostraca was found in the Temple of Eshmun in Sidon (cf. Vanel, 1967, 1969; Betlyon, 1973) and a single ostracon was found at Tell el-Fukhar/Akko (Dothan, 1985), dating to the Persian period. [*See* Sidon; Akko.]

In Mesopotamia, ostraca are generally rare, late, and connected with the use of Aramaic (cf. Röllig, 1990) and eventually of Greek. However, the large Aššur ostracon (Donner and Röllig 1966–1969, no. 233; Gibson, 1975, no. 20, pp. 98–110) was written by an Assyrian official at the time of the revolt of Shamash-shum-ukin (c. 650 BCE); it shows that Aramaic was already being used between Assyrian officials. In fact, another ostracon, found at Nimrud and containing a list of probably Ammonite names, may be even earlier; it is dated on paleographic grounds to the end of the eighth century BCE. [*See* Nimrud; Ammonite Inscriptions.] The number of these ostraca pales against the some three thousand Parthian ostraca found at Nisa, not far from Ashkhabad (Turkmenistan) and dating to the first century BCE.

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ANDRÉ LEMAIRE

'OUEILI, TELL EL-, prehistoric site located on the surface of an alluvial plain not far from the present-day Euphrates River, near the ruins of Larsa, a major city and one of the historic capitals of ancient Mesopotamia (31°14′ N, 45°53′ E). The site of Tell el-'Oueili dominates the surrounding plain from a height of about 4 m, with its visible part covering about 4 ha (9 acres, or 200 m in diameter). However, when the modern water table was reached, close to 4.5 m below the level of the plain (following two major soundings), the inhabited layers continued even beyond that level and virgin soil was still not visible. Clearly, the site encompasses much more territory than the area suggested by the visible remains. However, the earliest occupation layers are now under water.

Although the ruins of Larsa were discovered in 1854 and periodically excavated by a French team (led by André Parrot, Musée du Louvre) beginning in 1933, it was not until 1967 that the same team located a small, low tell 3 km (2 mi.) southeast of the historic ruins. That tell, 'Oueili, appeared to consist entirely of prehistoric remains, rendering the site of particular interest, as the prehistoric levels of southern Mesopotamia are generally covered by massive later historical ruins. Prehistoric levels can only be excavated once the area has been carefully investigated, however, as was the case at Ur, Uruk, and Larsa, among other sites. It had long been known that a prehistoric age existed in lower Mesopotamia, but when the sites were not covered over by subsequent cultural layers, they were buried beneath thick layers of alluvial sediment from the Tigris or Euphrates Rivers. The sherds discovered on the surface of 'Oueili pointed to layers dating from Uruk and, in particular, the Ubaid 3 and 4 eras. This presented a unique opportunity to explore 'Oueili's prehistoric levels, in contrast to Larsa where, though present, they remained inaccessible because they were buried underneath more recent deposits 10–15 m deep. The Ubaid period in Lower Mesopotamia was particularly critical because it immediately preceded urbanization. Prior to the discovery of 'Oueili this period was known only from the excavations at Eridu carried out in 1946–1948.

The excavation of 'Oueili was carried out by Jean-Louis Huot and Jean-Daniel Forest (of the Université de Paris I, Panthéon-Sorbonne) beginning in 1976; the work gained momentum between 1981 and 1989. Periods previously believed to exist were uncovered and explored (Ubaid 3–4 and Uruk), as well as earlier, completely unknown phases that had not been detected in the first surface exploration (Ubaid 0–2).

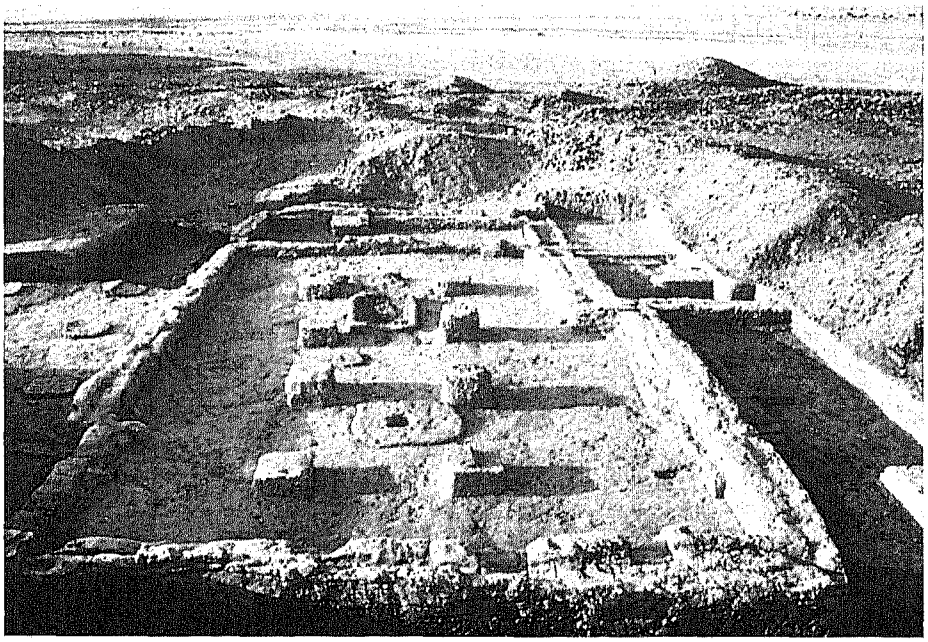
Six periods were identified. They were distinguished from one another by phases of abandonment that were only beginning to become apparent when the excavation was interrupted by the international crisis in the Persian Gulf in 1990. The origins of 'Oueili are unknown. Similarly, the date the village was established is not known. The most ancient levels excavated—albeit not the earliest—were dubbed Ubaid 0 or the 'Oueili phase. They preceded and heralded the Ubaid 1–4 sequence so named in 1960 (on the basis of evidence from Eridu) and still in use, although the phases remain very general. The culture to which Ubaid 0 is linked is unknown

(it may be the Pre-Pottery Neolithic B tradition in Syria). Certain architectural similarities suggest a connection between Ubaid 0 and the Hassuna culture of Samarra. [*See* Hassuna.] The two are either contemporaneous or Ubaid 0 is slightly earlier, at least in its final phase. For the time being, Ubaid 0 can only been seen at 'Oueili where its final phase can be dated, on the evidence of two radiocarbon dates (7430 ± 150 and 7320 ± 140 BP), to 5480 and 5370 BCE (uncorrected dates) or 6516–6018 and 6414–5955 BCE (corrected dates).

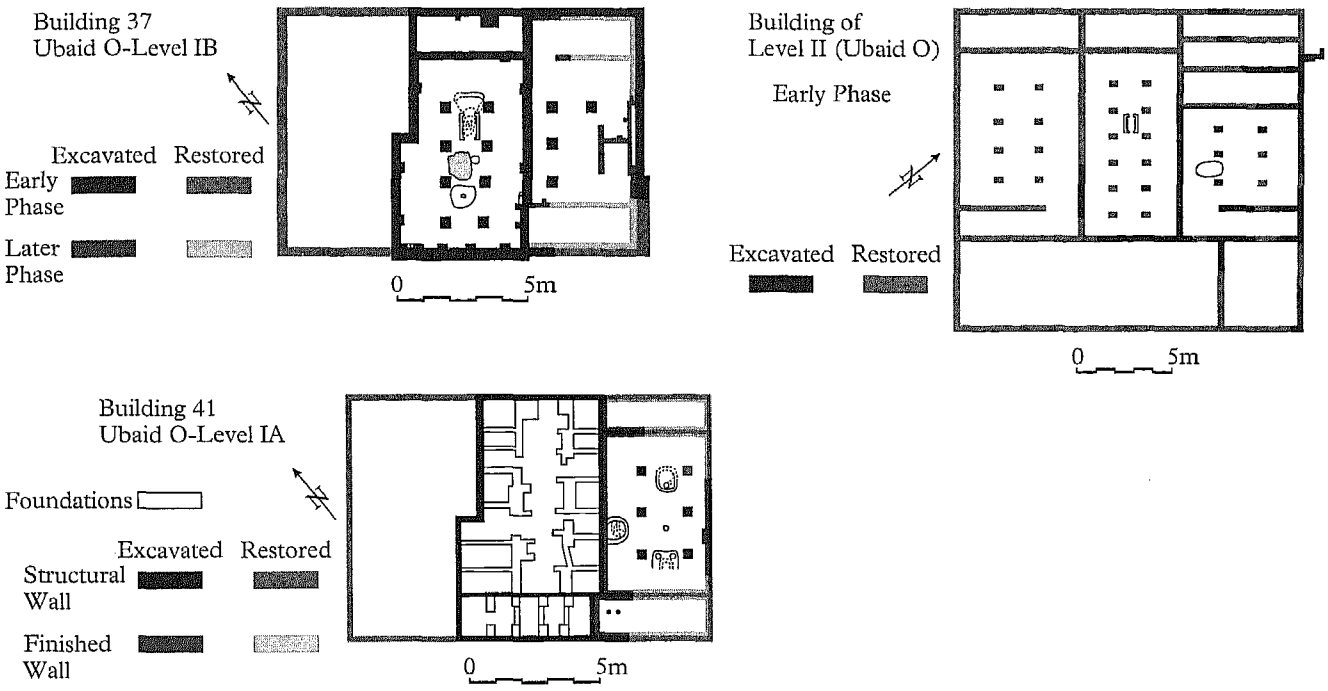
Three phases can be discerned in Ubaid 0 thanks to mud-brick architectural remains, some bearing finger marks. Small parallel or intersecting walls thought to have functioned as granaries, and three dwellings, each on a tripartite plan, with roofs held up by rows of wooden posts with brick bases were recovered. [*See* Granaries and Silos.] The regular use of posts to support a terracelike roof enabled the rooms, or the surface of the dwelling, to be enlarged and also anchored the building firmly. Two of the houses at 'Oueili measured approximately 140 sq m, while the third one—the oldest—probably measured 240 sq m. Floor-level ovens, a water jar, and other materials found leave no doubt that the buildings were used for housing. Such a discovery considerably alters existing notions with regard to early architecture in Lower Mesopotamia in about the middle of the sixth millennium. With the exception of some burnished sherds (perhaps of Hassuna date) containing vegetal temper, the pottery from this phase is decorated with simple geometric patterns painted dark brown or a very pale pinkish-gray. Among the types found were large bowls, stemmed goblets, large convex-concave earthenware jars (possibly a Hassunian survival or a new technique). The small objects found—lip ornaments of fine clay and dried or baked objects made of bitumen—reveal little variety. A small, painted head of a figurine, probably intact, with oval "coffee-bean" eyes, bears some resemblance to the Samarran figurines at Chogha Mami. Beginning in Ubaid 0, wheat (*Triticum* mono/dicoccum) and especially six-rowed hulled barley were grown, and common domestic animals were bred—goats, sheep, and, in particular, oxen and pigs. [*See* Cereals; Sheep and Goats; Cattle and Oxen; Pigs.]

From the earliest discernible phases, it is obvious that a small, sedentary community cultivated and irrigated cereal crops (the only possible method given the latitude and climate) and bred cattle and pigs as well as sheep and goats in smaller numbers. Fishing and shellfish harvesting were also practiced. Rather remarkable architecture is also visible, though the group appeared to live practically in isolation. Very small amounts of bitumen and some flint were the only raw materials imported. The population was limited in size and was probably highly egalitarian. Unfortunately, the absence of tombs makes it difficult to interpret possible social ranking.

During Ubaid 1 (the available carbon-14 dates are 6710 ± 160, 6680 ± 110, 6460 ± 140 BP—or 4760, 4730, 4550 BCE, uncorrected dates; 5976–5369, 5723–5420, 5608–5236 BCE, corrected dates), the most noticeable development was in the pottery: it is much more elaborately decorated and painted, though still geometric. It closely resembles Eridu ceramics. Architecturally, posts continued to be used, as well



'OUEILI, TELL EL-. *Building 37, Ubaid 0, general view.* (Courtesy J.-L. Huot)



'OUEILI, TELL EL-. *Layout of three three-section buildings, Ubaid 0.* (Courtesy J.-L. Huot)

as mud bricks with markings. Housing is not as easily described as for the preceding period. Two structures consisting of three adjacent rooms were uncovered, undoubtedly sections of houses along the lines of those from Ubaid 0 (despite a period of abandonment between the two phases). Particularly noteworthy are granary infrastructures similar to those from Ubaid 0—that is, a pisé platform with woven reeds supported by small parallel or intersecting walls. In one case, the platform is supported by a tight network of low clay pillars. There is a noticeable difference, however, between the two periods: Ubaid 0 granaries occupied a considerable surface area (approximately 80 sq m), whereas those from Ubaid 1 were much smaller (around 30 sq m). The large collective compounds evident in Ubaid 0 may thus have given way to small, independent family units during Ubaid 1.

The Ubaid 2 phase, clearly evident at Eridu and Hajji Mohammed, is less well-known, albeit present, at 'Oueili. At Ubaid 3, the excavated (but limited) site consists of a vast terrace 40 m long preserved to a height, in some spots, of more than 1.5 m. Unfortunately, neither the extent, the exact layout, nor for that matter the building's function are known. Like all the other construction at 'Oueili, it was made of mud brick. That it resembled the better-known construction at Susa from a later period can only be surmised. [*See* Susa.] The mere existence of such an impressive structure at 'Oueili nonetheless provides some evidence for the settlement's growth and social evolution. Little more can be said, however. Some type of local authority is implied, and, by extension, an increasingly complex society. The pottery from Ubaid 3 resembles that found at all the other sites of the same period in Mesopotamia: fewer painted and decorated examples; standardized motifs on goblets, bowls, and basins; marli dishes; and earthenware jars similar to those discovered at Eridu, Ras al-Amiya, and Tell Abada. From a technical viewpoint, this ceramic pottery heralds the appearance of paint made of "black sand" (containing chromite and iron-titanium minerals) typical of Ubaid 3 and 4 and discovered at Telloh, Ubaid, and Ur as well. This paint was more durable than earlier kinds and gradually replaced them, thus indicating increasingly standardized ceramic techniques.

The Ubaid 4 phase is represented by a tripartite structure that was later reused as a granary, as revealed by the extremely dense network of small intersecting walls. Available carbon-14 dates for Ubaid are 6190 ± 90, 6170 ± 90, 5980 ± 100, 5800 ± 100, 5650 ± 90 BP—or 4240, 4220, 4030, 3850, 3700, BCE, uncorrected dates; 5304–4940, 5293–4926, 5187–4719, 4893–4486, 4725–4357 BCE, corrected dates), a structure divided into three sections was discovered that later functioned as a granary—revealed by the extremely dense network of small, intersecting walls. Ceramics from this period resemble vases from the same period at the large southern sites and on the west coast of the Gulf; at 'Oueili, however, this pottery is less decorated and appears to have been used less frequently. Plain, undecorated vases are far

more numerous. Terra-cotta sickles, which began to appear in Ubaid 3, were by this time commonly used, as were small clay knobs (curved nails); clay lip ornaments (practically unchanged since Ubaid 0); animal figures, or ophidians (human figurines with a snake head) polished obsidian "nails"; a few stamp seals (but no seal impressions); and ornaments. [*See* Seals.] Paleobotanical remains attest to the existence of tamarisk, reeds, and the date palm (one of the earliest known examples), as well as wheat (*Triticum* mono/dicoccum) and six-rowed hulled barley, cultivated using stone hoes. Animal breeding continued to revolve around cattle and pigs. Only 5.2 percent of the bones identified belonged to goats and sheep. This rather unusual livestock probably reflects the very marshy terrain during the final Ubaid phase. Fish were numerous and undoubtedly provided most of the protein consumed. Unfortunately, no tombs or prestigious buildings were found. It is known from Eridu's contemporary levels, however, that Ubaid 4 had begun to develop a ranked social order. Furthermore, the large "temples" (according to early interpretations) of Eridu VIII–VI attest to the important position occupied by heads of families or clans within these agricultural settlements because only they could have ordered such construction.

A small worksite at 'Oueili has yielded evidence of a final Ubaid phase (Ubaid 5) characterized by painted pottery found in an area where ceramics were drawn from the kiln, along with obvious wasters. This can be correlated to the discovery of a two-storied pottery kiln, with a preparation area and firing chamber, discovered during the first season of excavation. Pottery remains are the only evidence of this phase. A few Late Uruk remains (bevelled-rim bowls, jugs with a curved spout, incised latticework decoration) represent the final period during which 'Oueili is known to have been inhabited. The site apparently ceased to exist thereafter—abandoned, probably, in favor of Larsa. Following a long period of economic and social growth, society was at the threshold of urbanization.

The excavation at 'Oueili was originally undertaken to pinpoint the transition toward urbanization. The goal was not achieved. On the other hand, discovery of the site led to the identification of the longest sequence known to date in Lower Mesopotamia; despite a few gaps, it encompasses most of the Ubaid phase, from the most ancient levels (previously unidentified) to the late prehistoric era. As a result, what is now known of this transitional phase, which had previously rested entirely on the discovery of Eridu, has been corrected and expanded.

[*See also* Eridu; Larsa; Mesopotamia, *article on* Prehistoric Mesopotamia; Ubaid; Ur; *and* Uruk-Warka.]

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OXEN. *See* Cattle and Oxen.

OXYRHYNCHUS (Ar., Al-Bahnasa), principal town in the nome (province) Oxyrhynchites in Lower Egypt, located approximately 75 km (47 mi.) southwest of modern Bani Suef and 16 km (10 mi.) west of Bani Mazar (28°30′ N, 30°40′ E). Oxyrhynchus flourished chiefly during the Roman era, although it has remains from both the earlier Ptolemaic and later Byzantine and Arab periods. The toponym for both the town and the province derive from the Greek name for a fish of the sturgeon class in whose honor a temple was built at Oxyrhynchus.

Excavations of the ancient rubbish dumps at the site were carried out initially by Bernard P. Grenfell and Arthur S. Hunt, two young papyrologists, in six campaigns from 1897 to 1898 and 1903 to 1907. They were followed by excavators from Italy, led first by Ermenogildo Pistelli and Giulio Farina (1910, 1912, 1913), and later by Evaristo Breccia (1927–1928, 1932, 1934) for the Società per la Ricerca dei Papiri. The principal object of all of these excavators was the acquisition of papyrus texts. The result was the discovery of a stunning number of documents. The number of published volumes in the series The Oxyrhynchus Papyri, for instance, has reached fifty-seven (1990), the edited texts consisting of not only Greek and Latin literary works but chiefly documentary writings, in Greek and Latin as well as other languages. Other Oxyrhynchus texts have been published elsewhere, primarily in the series *Papiri greci e latini* (Pubblicazioni della Società Italiana).

As Grenfell and Hunt described it, the site of the ancient town itself stretched about 2 km (1 mi.) from north to south and .8 km (.5 mi.) from east to west. The rubbish mounds

were scattered to the west. From the distribution of papyri in the mounds, Grenfell and Hunt determined that the city had expanded during the Roman period and had then contracted during the Byzantine and Arab periods. The rubbish heaps that lay farthest to the west, running a substantial distance into the uncultivated land, contained a majority of documents from the Roman period, with some Ptolemaic texts, whereas those that lay closer to the modern town preserved a large number of texts from later eras.

According to their initial report, Grenfell and Hunt began excavating in the cemetery but quickly turned to the rubbish mounds lying to the west of the town where the harvest of torn, discarded texts was plentiful. They soon determined that the manuscripts were much better preserved in the portions of the mounds that were above the "damp" line created by underlying groundwater. Their technique was to cut an initial trench directly into a mound until the local laborers, digging chiefly with their hands in order to feel the papyrus fragments, reached the midpoint of the mound. At times, the trenches reached a depth of 7 m (23 ft.) below the upper surfaces of the mounds.

Of the ancient city, almost nothing remained when Grenfell and Hunt arrived. Long before, the stones of the foundations of buildings had been robbed and reused in other structures. Only stone chips and windblown sand could be seen where walls had stood. Now the area is crisscrossed by the trenches of peasants who have dug for fertile soil for their own agricultural purposes. Following the work of Grenfell and Hunt, peasants uncovered the partial remains of two colonnades and a theater that was examined by Flinders Petrie in 1922. Despite the existence of Grenfell's site plan—his work on it was cut short by illness—later scholars have not published it because Grenfell had not completed it.

Although Grenfell and Hunt have been criticized for not employing excavating techniques that would have yielded more archaeological data, it is important to realize that in their day the methods associated with modern archaeology were in their infancy. Furthermore, their efforts, largely carried out with limited funding, led to the discovery of an astonishing number of discarded texts from late antiquity.

[*See also* Oxyrhynchus Papyri.]

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OXYRHYNCHUS PAPYRI. British and Italian excavations at Oxyrhynchus in Egypt unearthed several thousand papyri (and parchments), mostly inscribed in Greek, but also including texts in Latin, Coptic, Demotic, and Arabic. The Oxyrhynchus papyri range in date from the Ptolemaic through Early Islamic periods, but the majority come from the Roman period. They are an unusually complete record of the town's culture, society, and economy and form one of the largest and most important groups of texts from Roman Egypt.

The excavation of papyri at Oxyrhynchus began in 1897, under the direction of Bernard P. Grenfell and Arthur S. Hunt for the Egypt Exploration Fund. The great success of this first season, in which thousands of papyri were found, led Grenfell and Hunt to continue digging from 1903 through 1907. Oxyrhynchus was excavated by Italian archaeologists for the Società per la Ricerca dei Papiri intermittently between 1910 and 1934, which resulted in additional papyrus finds. Most of the papyri from the British excavations were found in ancient rubbish dumps and latrines, whereas the papyri from the Italian excavations came from the town itself. The archaeological contexts of the Oxyrhynchus papyri remain largely unpublished, but the papyri themselves have been the object of extensive publication efforts: Greek and Latin texts from the British excavations have regularly appeared in the series *The Oxyrhynchus Papyri* (1898–the present, or sixty-one volumes). Papyri from the Italian excavations were published as *Papiri greci e latini* (1910–1979). In addition, individual Oxyrhynchus papyri have been published in monographs and journal articles.

The contents of the Oxyrhynchus papyri span an enormous range of literary and nonliterary production. The initial goal of the excavation of Oxyrhynchus concentrated on the discovery of Greek literary papyri. In addition to known Greek literature, the Oxyrhynchus papyri have yielded hundreds of fragments of "new" texts by known authors: Sappho, Euripides, Sophocles (including his satyr play *The Trackers*), Menander, Lysias, Hyperides, Callimachus, and Chariton (to name a few), along with anonymous poems, plays, orations, grammars, and scholia. The Oxyrhynchus papyri include fragments of numerous philosophical, rhe-

torical, and historical works, including the so-called *Hellenica Oxyrhynchia,* published separately (McKechnie and Kern, 1988), which chronicles the events of 396–395 BCE. Scientific, astronomical, astrological, mathematical, medical, and magical works are also represented. In addition to this great assemblage of literary material, the Oxyrhynchus papyri include an extraordinary wealth of documentary, nonliterary papyri: official documents, legal contracts, wills, accounts, lists, private letters—the majority of Roman date and in Greek, with a smaller (but significant) number in Latin. Papyri from the Roman period document the importance of Egyptian cults at Oxyrhynchus and also attest to a significant Jewish presence there. [*See* Cult.] Many important Early Christian texts come from Oxyrhynchus, including fragments of biblical manuscripts and documentary evidence. An important group of Byzantine Greek papyri comes from Oxyrhynchus: the papers of the Apion family, who owned the best attested of the large Byzantine estates in Egypt. Coptic and Arabic papyri from Oxyrhynchus, almost entirely unpublished, include documentary, literary, and magical texts.

[*See also* Arabic; Coptic; Greek; Latin; Oxyrhynchus; Papyrus; *and* Parchment.]

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P

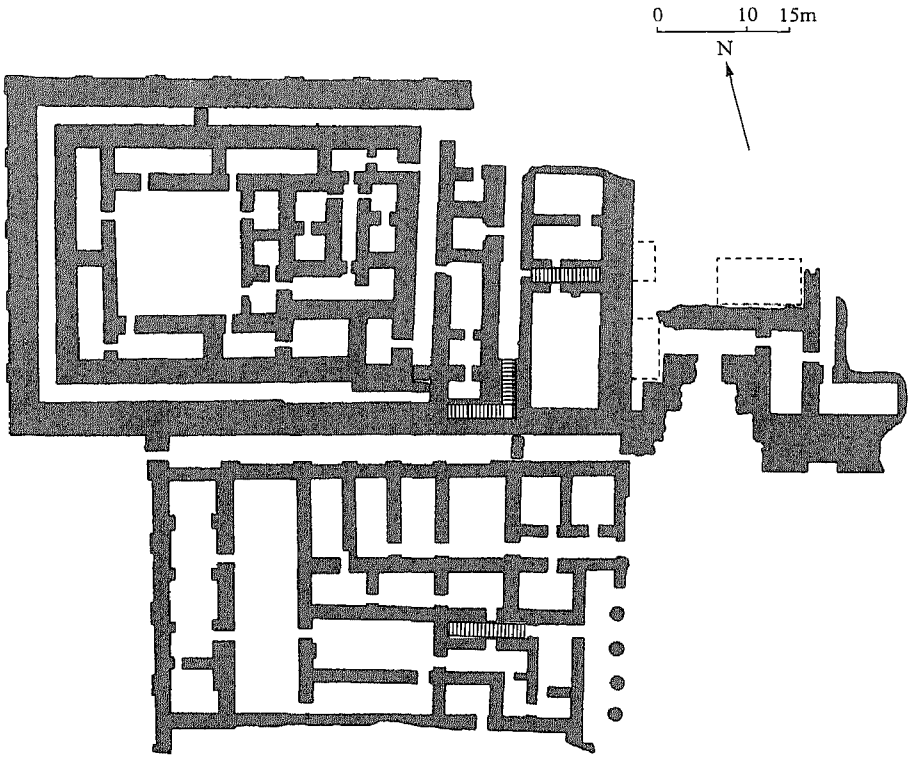
PALACE. As the house of the king, his customary residence, the palace contains everything that concerns the activities of daily life in any house, although possibly elaborated in accordance with the wealth of the individual and his family. Because the king exercised a specific function and possessed a unique nature, his house could include specific fixtures (such as a throne room) that would facilitate the exercise of power and of manifesting it materially.

A true palace can exist only in the context of a monarchy, and certainty on this point is possible only when there are texts. Historians date the birth of the first royal dynasties in Mesopotamia, as well as the appearance of the first palaces, to the beginning of the third millennium. The actual situation is, however, less clear. The royal institution was no more born in a day than the palace emerged one fine morning from the head of a genial architect. Throughout the Neolithic period in the Near East, the growing complexity of relationships among agricultural production, the need for exotic raw materials in the river basins, and social organization, all led to the development of a power that often manifested its existence in the creation of specific architecture. By the end of the fifth and in the early fourth millennium, with the first steps toward urbanization, social hierarchy was already marked by clear architectural differentiation. Tepe Gawra, in northern Mesopotamia, demonstrates this situation as early as level XI; the Round House (level XI–A) expresses the real hierarchical social structure because it is the house of the holder of power, sited there, at the summit of the mound. [*See* Tepe Gawra.] In the Uruk period, the great architectural complexes that have been recognized at Uruk itself, such as the E-anna, or at the sites of the Uruk expansion, such as Tell Kannas, also appear as centers of power (without presuming either a theocratic or secular nature). Thus, it is necessary to consider these structures if not palaces in the strict sense, at least as the architectural expression of the exercise of power in a hierarchical society. [*See* Uruk-Warka.]

Early Bronze Age. Mesopotamia has yielded a number of buildings of the Early Dynastic period considered to be palaces, most often because of their scale rather than for precise morphological reasons. It seems, however, that the identification as palaces of the buildings uncovered at Kish (Palace A and the Plano-Convex Building), at Eridu, and at Tell Asmar/Eshnunna (the northern palaces) can be retained (see figure 1). [*See* Kish; Eridu; Eshnunna.] In these cases the palace appears as a complex comprising several autonomous buildings that are connected by long, peripheral corridors that circulated people as well as air and light. Because the palaces expanded to two levels, the definition of functions is a difficult and uncertain exercise. It seems likely, however, that the upper level was devoted to habitation and reception. Perhaps even the throne room, if in fact one existed then, was also located there; the ground floor served mainly for storage (the Akkadian palace at Tell Brak in Khabur) and secondarily as a workplace. The palaces of third-millennium Mari, in the process of excavation since 1964, display the unusual characteristic of being closely associated with a cult place, the Sacred Precinct, but with only this single example, it is difficult to define the existence of any fundamental relationship between palace and temple.

Outside of the Mesopotamian basin, there is still little evidence, for there are hardly any palaces. The discovery of Palace G at Ebla in Syria, and now the large building at Tel Yarmut in Israel, shows, however, that the institution was not confined to Mesopotamia. [*See* Ebla; Yarmut, Tel.] Nevertheless, in these two cases the buildings discovered do not permit a definition of their architectural traits as closely related to those of the region of the Tigris and Euphrates Rivers.

Middle Bronze Age. With the third dynasty of Ur, Mesopotamia saw the birth of a new formula that dominated the river basin completely. Varied solutions were adopted simultaneously in the western (Syria-Palestine) and northern (upper course of the Euphrates) regions. It is at Ur, with the palace of Ur-Nammu and Shulgi, that the formula appears for the first time; it appears again in the palace at Eshnunna/Tell Asmar. Throughout a very long history, the palace formula was transformed many times; however, there is also continuity in the organization of the most significant sectors, such as the complex of official rooms at Mari (the Great Royal Palace and, doubtless, the earlier palaces of the Shakkanakku); at Larsa (the Palace of Nur-Adad, which appears as a veritable architectural drawing); at Aššur (the



PALACE. Figure 1. *Plan of palace A, Kish.* (Courtesy J.-C. Margueron)

Old Palace); Tell er-Rimah; and, finally, at Uruk (the Palace of Sinkashid). [*See* Mari; Larsa; Aššur; Rimah, Tell er-.]

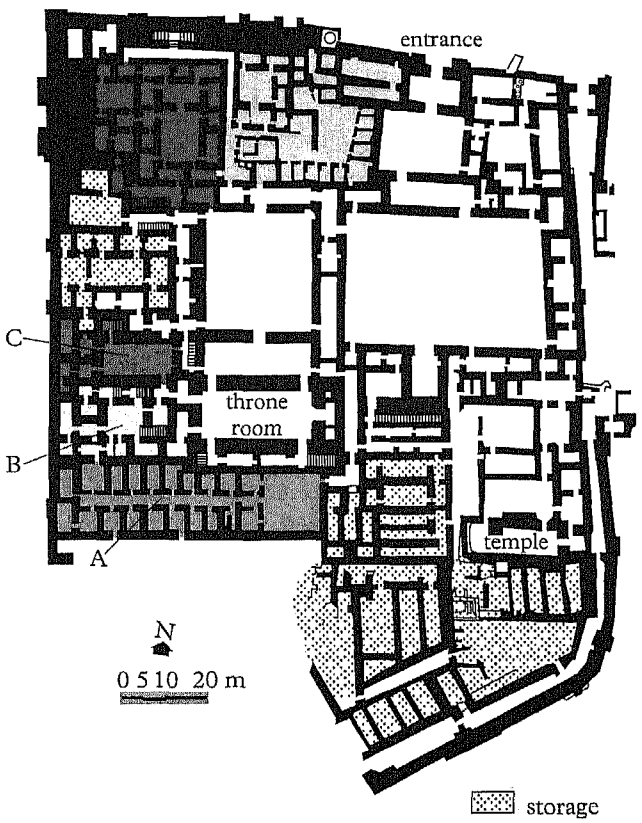
If Tuttul on the Balikh River has provided an example of a palace close to those at Mari, which belong to the Mesopotamian tradition, Syria and Palestine used formulae whose inspiration was clearly Mediterranean. Occupying a more restricted surface area, these structures developed vertically, occasionally reaching three stories, as was certainly the case in the palace of Yarimlim at Alalakh (eighteenth century BCE), or in the cities of the Upper Euphrates (e.g., Karahöyük). [*See* Alalakh.] There were numerous palaces at Ebla, but they do not seem to represent the morphological traits associated with royal functions that the palaces in Mesopotamia do; they may not be true palaces—places in which the king exercised his authority. The frequent use of the pillar in the columned porch, as well as the court that served as a light well, tended to systematize itself and became a distinctive mark of western architecture.

Late Bronze Age. Mesopotamia does not occupy the foreground in the Late Bronze Age. A single palace, difficult to interpret because it differs totally from the others, and is only partially excavated, is that of ʿAqar Quf (Dur Kurigalzu). The Mitannian period is well represented, however, in the provincial palaces at Nuzi and Tell Brak. [*See* ʿAqar Quf; Mitanni; Nuzi; Brak, Tell.] In Syria-Palestine, the palace is in general small, as in the preceding period; the exception is Ugarit, where a true palatial complex evolved, closer to those of the great capitals of the empire than the Levantine cities. [*See* Ugarit.] Ḫattuša (Boğazköy), capital of the Hittite Empire, is a good example of the complex formed by the association of separate buildings to form a true fortress on an imperial scale. This formula seems to belong to Anatolia. [*See* Boğazköy.]

Iron Age. The evolution toward the formation of the great empires of the Iron Age partly modified the system because if a city possessed a palace, most often a royal governor resided in it. The king inhabited or constructed a palace in the capital city that had to appear in its splendor, dimensions, and wealth like those in other world centers. The Assyrians were particularly prodigious in palatial constructions at Nineveh, Nimrud, and Khorsabad (Dur Sharrukin); however, the approximately ten palaces recovered wholly or in part present great morphological similarities and correspond to a concept well defined by royal function. [*See* Nineveh; Nimrud; Khorsabad.] The Neo-Babylonian kings yielded to the Assyrians in this regard only because of the brief duration of their rule. In this context it is not always easy to know whether, in the Levantine cities, for example, the great residences should be considered royal palaces (which is, however, probable at Megiddo, Ramat Raḥel, and Lachish), or the seats of local governors. [*See* Megiddo; Ramat Raḥel; Lachish.] In the specific form of the *ḫilani*, whose origin goes back to the Late Bronze Age at Emar, the capitals

of the small Aramean city-states had a royal building that became very popular, even with the Assyrian kings. [*See* Emar.] The *ḫilani* appears in a very compact form: a columned porch preceded a great elongated room surrounded by smaller rooms, with one or two stories constructed above the whole complex.

Expression of a Civilization. In the course of three millennia in the ancient Near East, the palace has taken diverse forms. Fundamentally, however, the same functions recur, and the final result is always the fruit of a compromise between contradictory demands. Thus, the need to open the building to the city and the realm of which it is the supreme expression, in which the people must see itself, counterbalances the necessity to construct a protected place to assure the security of the king and his belongings and to guard the wealth accumulated there. The palace at Mari from the beginning of the second millennium BCE—because of its exceptional state of preservation and the wealth of the furnishings and archives recovered there, and in spite of its idiosyncrasies—has greatly advanced what is known of what a palace is and how it functioned (see figure 2). Thus, contrary to what is often stated, a Near Eastern palace is neither a city within a city, nor a miniature city. It is an organism that must satisfy specific requirements and whose content varies little.



PALACE. Figure 2. *Plan of the second-millennium palace, Mari.* In the northwest corner are the women's quarters. Area C is the administrative center. Area B is the kitchen. In area A are the slaves quarters. (Courtesy J.-C. Margueron)

Royal living quarters. As the quarters of the king and his family, or at least a part of it, the first functions of a palace were consistently to provide comfort, whose nature might vary with the climate, and security. At Mari, the house of the king and the house of the women (the location of the queen, all the wives of the lower ranks, concubines, singers, and dancers) were clearly independent. Each was provided with living quarters for the personnel committed to the service of the king and his queens; this dichotomy is not always so clear at other palaces. The level of comfort was addressed generally by the quality of construction, the size of the rooms, and the character of the sanitary installations. The wealth of decoration that contributed to the splendor of the royal house was not only an aesthetic concern: paintings and reliefs served also to manifest royal power in its basic activities. The themes of the king as hunter, builder, conqueror, protector, and intermediary between the realms of gods and men were repeated endlessly in both the king's apartments and the official quarters.

Official quarters. The palace's official area was often closely connected to the living quarters of the king, who had direct access to it. The situation is not clear in the third millennium, but it becomes more apparent in the Amorite period. The official module at that time was a complex organized around a richly decorated great court, intended to enhance the religious aspect of the royal function (e.g., the Court of the Palm at Mari). This court gave access, by way of an intermediary room marked by a certain cultic character (at Mari the statue of a goddess with a flowing vase [now in the Aleppo Museum] stood there), to the throne room (25 m long × 12 m wide), where the king, seated at one end, held audience. Various ceremonies took place there, certainly including banquets, as the proximity of the kitchens found in room 31 in the palace of Mari suggests. In the Assyrian period, the room that formed an intermediate stage in the progression between the court and the throne room disappeared, but the principle remained the same.

Administrative offices. A meticulous administration characterized the house of the king, but also that of the women. The administrative offices were located in the upper story, connected to the great room where the king presided over administrative operations. Administration was not limited, however, to the service of the king. It also concerned itself with the affairs of the realm, and the principal servants of the king, the viziers and stewards, were responsible for it. The king administered his country from the palace and maintained relations with provincial chieftains and foreign courts; a secretariat functioned to discharge these tasks. The palace steward played an essential role: placed at the doorway of the palace, he controlled entrance and egress and managed some part of the economic activity. In addition,

the king was a great employer; he had to compensate his personnel, and for that purpose the palace storerooms contained provisions that were distributed as payment, including cereals, oils, and cloth. These provisions were compensation rather than reserves hoarded to meet future needs. The palace was not a workplace, however, except occasionally for a luxury craftsman. The agricultural estates depended on the palace, and workshops could be located either in the agricultural areas or in the city.

While specific aspects of the palace might vary in importance from one period to another, the arrangement of its various components change, and circumstances lead to the expansion of one characteristic at the expense of others, as a rule, the same functions appear behind the variety of forms. Throughout the history of the ancient Near East, the palace conveyed the very essence of Oriental civilization.

[*See also* Building Materials and Techniques.]

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JEAN-CLAUDE MARGUERON

Translated from French by Nancy W. Leinwand

PALEOBOTANY. To study the interrelationship between humans and plants through time, paleobotany (or paleoethnobotany), recovers and analyzes both macroscopic and microscopic botanical remains. In the Near East, macroscopic plant remains are preserved primarily through carbonization, or charring. Seeds, wood, or other plant parts that have been exposed to heat of sufficient intensity will turn to carbon while essentially retaining their original shape and size. These remains are often found during excavation in ceramic vessels, storage facilities, and hearths or scattered as debris on floor surfaces. Where remains are not dense and have not been collected by hand during excavation, a flotation, or water-sieving, device is used. In flotation, excavated soil is placed in a large container of water and carefully agitated. The carbonized material floats to the surface and can be scooped off, poured off, or directed through an overflow spout into a sieve or other container. When dry, the remains are sorted and identifiable plant remains are removed.

Microscopic plant remains include pollen or phytoliths, which are also important in understanding ancient environments and plant use. Wind disperses pollen from plants over wide areas. Some is deposited in lake beds, bogs, and other permanently wet, still waters, where it sinks to the bottom and is rapidly covered with sediment. There it becomes sealed in an anoxic (oxygen-free) environment, where it can be preserved for thousands of years. Cores of lake-bed sediments (i.e., sample columns of sediment extracted by forcing a tube vertically into the sediment) can yield a record of the pollen deposited, thereby allowing a reconstruction of the vegetation in the region and the changes in this vegetation through time. These changes can be linked to climatic fluctuations or such human action as deforestation, depending on the nature of the change and the types of plants involved. Phytoliths are microscopic silica bodies in plants that take on the shape of certain plant cells when the plant dies. Phytoliths of the particular plant stored or processed are often recovered in storage areas and on stone tools that had been used for plant processing.

The earliest macroscopic remains identified so far from an archaeological site include species of wild plum and hackberry found in the Douara cave in the Palmyra basin in Syria; they date to approximately 100,000 years ago. Palynological data (i.e., data for pollen and spores) from western Syria indicate that these species would not have been growing very near the cave but may have been collected at a

higher altitude in the nearby hills. Hunter-gatherer populations throughout the Near East collected a variety of plant food resources, including the wild cereals and legumes that eventually were domesticated. The evidence is that agriculture was developed about ten thousand years ago: palynological studies suggest increased aridity then in parts of the Near East; there was a relatively large, settled population in some areas; and new technology in the form of stone sickles made new harvesting techniques possible for wild cereals, which may have, in part, resulted in the selection of domesticated types. Arboriculture, especially of olives, and viticulture were begun in the Levant at least by 3200 BCE or somewhat earlier. There is written evidence that viticulture was exported to Egypt by 3000 BCE, most likely from the Levant.

Paleobotany is used in conjunction with other biological studies, such as zooarchaeology and paleoanthropology, to address questions of ancient subsistence practices, paleonutrition, and paleodiet. Together with geology and geomorphology paleobotany can provide clues to ancient land use, agricultural practices, and the causes of erosion that may have led to the eventual abandonment of an area. For example, a recent study of the wood-charcoal remains from 'Ain Ghazal in Jordan estimates that deforestation resulted in massive erosion of the arable slopes around the site, thus substantially depleting the potential for agricultural subsistence in the area. The site was abandoned by about 5700 BCE.

[*See also* Agriculture; 'Ain Ghazal; Cereals; Douara; Ethnobotany; Paleoenvironmental Reconstruction; *and* Paleozoology.]

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JULIE HANSEN

PALEOENVIRONMENTAL RECONSTRUCTION.

The foundation for paleoenvironmental studies in archaeology was laid in the early nineteenth century by European geologists such as James Hutton, Ignaz Venetz, A. Bernhardi, Jean de Charpentier, and Louis Agassiz, who convinced the Western world of the evidence for massive glacial movement brought on by striking climatic changes in the past. By the 1860s the concept of a Pleistocene Ice Age was generally accepted, and other types of environmental evidence began to fall into place. Enigmatic fossil remains of cold-loving animals found in temperate climates were suddenly explainable by this new idea. Pollen analysis, first used to identify pollen grains, which could be used as temporal stratigraphic indicators, later became a powerful tool for reconstructing vegetational history in the light of climatic fluctuations, as well as for delineating the climatic changes themselves.

In 1863 T. F. Jamieson, also a geologist, suggested that even semiarid regions had experienced Pleistocene climatic change, and that those areas had once enjoyed climates that were markedly cooler and wetter than existing ones. Paleolimnologists working in the Near East and North Africa began to identify evidence for now extinct pluvial lakes in regions that are today desertic or semiarid. At this time a French archaeologist, Louis Lartet, recognized that the Lisan sediments surrounding the Dead Sea were in fact the remnants of a very much enlarged Pleistocene lake.

The archaeological community of the time soon acquired an awareness of the importance of environmental contexts. Pioneering researchers such as the Danish archaeologist J. J. A. Worsaae maintained in 1840 that environmental information was essential for understanding archaeological finds. In the 1920s and 1930s, these ideas were brought to Near Eastern archaeology and implemented in studies such as those conducted by Dorothy A. E. Garrod and Dorothea M. A. Bate for understanding the prehistory and animal exploitation at the Carmel cave sites in western Palestine, and Gertrude Caton-Thomson and E. Gardiner in studies of the prehistory and environment of the Egyptian Faiyum.

Concepts and Goals. A major goal of paleoenvironmental reconstruction is to understand the social, economic, and spatial relationships between past human groups and the environment. This includes such lines of research as spatial patterns of settlement over a given landscape; ancient subsistence practices; human impact on the landscape; and the influence of climatic change on cultural systems. To achieve this end, techniques have been borrowed from the biological

and earth sciences and adapted to address these and other archaeological questions.

In his book *Archaeology as Human Ecology* (1982), Karl W. Butzer outlined five important concepts and methods for approaching paleoenvironmental studies: space, scale, complexity, interaction, and state of equilibrium. The concern with space and spatial distribution applies to landforms and biological communities, as well as to human settlements. The spatial patterning of these three groups is often interrelated and provides insight into the interaction among them.

Paleoenvironmental studies in archaeology are carried out in the framework of three scales of research: macroscale, mesoscale, and microscale. These refer to the physical size of the land area being investigated, the extent of a given biotic zone, the size of a human community, and the magnitude of temporal units. In physical terms, the macroscale refers to major regions with distinctive life zones, or biomes, such as the eastern Mediterranean area or North Africa. Temporally, it can range from about 10,000 to 100,000 years.

The mesoscale is a much smaller unit of space, usually within the vicinity, or catchment, of an archaeological site. It may encompass a variety of different landforms—hills, valleys, dunes, lakes, and streams—each with distinctive groups of biota. Temporal changes at this scale could take place at a magnitude of about 100–10,000 years.

The microscale of investigation includes the site itself, the patterning of residences, and the location of activity areas. Temporally, it is concerned with periods of fewer than one hundred years. Although the three scales of investigation are interrelated, they all impart different information about environmental variability and the interaction between environments and past sociocultural and economic systems. Human perceptions of their natural surroundings also vary with respect to scale, and these perceptions govern the interaction between human groups and their natural milieu.

The concept of interaction refers to the interactive relationships of human communities with each other and their natural environment at varying scales and rates. The relationship between people and their environment is not a deterministic one—with climate, landscape, and biotic communities shaping human responses—or the opposite—with human groups completely manipulating their surroundings. Environmental changes can be viewed as positive or negative stimuli to a human system. The response to this stimuli will differ according to internal factors such as technological level, social organization, and cultural perception of the change.

The complexity factor maintains that environments and human communities are heterogeneous, and that researchers should therefore structure their investigations to account for spatial and temporal variability at different scales of analysis. Finally, the equilibrium state refers to the stability of a given system, either cultural, or environmental, and its vulnerability to changes of differing magnitudes created by stress from outside factors.

Methods of Reconstruction. In reconstructing ancient landscapes and environments, methods have been borrowed from the earth sciences, botany, and zoology. Although the methods resemble those used in the natural sciences, objectives and research questions differ because they are related to archaeological goals and concerns. This has given rise to three basic environmentally oriented subdisciplines in archaeology: geoarchaeology, paleoethnobotany, and archaeozoology. Often, the goals and techniques of these three areas of research overlap.

Geoarchaeology. Some of the major goals of geoarchaeology include reconstructing past climates and interpreting their role in a region's archaeological developments; reconstructing ancient landforms in the vicinity of a site (marshes, springs, floodplains, and streams), including their availability as resources or liabilities and their use in aiding site surveys; assisting in site surveys using methods of geophysical prospecting; identifying the sources of a site's mineral resources; determining the factors that formed an archaeological site; and analyzing areas of diverse activities within a site by chemical tests and microartifact analyses.

One of the cornerstones of paleoenvironmental reconstruction in geoarchaeology is the concept that weathering, transportation, and sediment deposition are controlled by environmental conditions. This life history of sediments is revealed by some of the characteristics of the deposit. Therefore, in describing the color, composition, grain-size distribution, shape, angularity, bedding form, and postdepositional changes of deposits, the geoarchaeologist can find substantial clues for reconstructing ancient land forms and the nature of past environments.

Identifying ancient landforms (abandoned stream or beach terraces, playa lakes, and ancient marshy areas) can aid in locating sites in a site survey, as well as in assessing an area's past agricultural, mineral, and water resource potential. Geophysical prospecting for archaeological sites is conducted by magnetometry, electrical resistivity, and ground-penetrating radar. The appropriate geophysical technique depends on the type of site being investigated, the kind of finds expected (e.g., brick walls, stone walls, or pits), and the nature of the sediment matrix.

Mineral resources at a site include building stone, clay used in ceramic manufacture, metal ores, obsidian and flint for tool production, metals, and precious or semiprecious stones for jewelry and utensils. Locating the sources of this material involves identifying distinctive minerals through heavy mineral, petrographic, and neutron activation analyses and having knowledge of the character of local and regional sources.

On the archaeological site the geoarchaeologist helps to identify the processes of stratigraphic development, factors

of site disturbance, and the interface between natural and cultural sediments at the boundary of the archaeological deposits. He or she is concerned with reconstructing the site's formation history and the amount of postdepositional disturbance to artifacts.

The geoarchaeologist may also participate in delineating activity areas. Two procedures used are microartifact and chemical analyses. In microartifact studies, the researcher examines the artifacts, which range in size from about 3 cm down to 0.250 mm. These remains on and in a living surface, too small to be removed or swept away, would have been trampled into the floor or occupation surface. Microartifacts such as sherds, flint chips, charcoal, bone, eggshell, and beads provide a record of activities throughout the life of the living surface. This is one of the only archaeological techniques that allows direct comparisons of percentages of different artifact types.

Chemical analyses of living surfaces include determining pH and phosphate content of the sediments, with a low pH (indicating acid sediment) and high phosphate value indicative of high concentrations of decaying organic matter. These analyses can aid in identifying animal pens and stables. Along the same line of research is soil micromorphology, in which a small unit of sediment from an archaeological site is solidified and thin sections are taken for microscopic examination. This allows the researcher to examine the relationships between site formation and natural soil processes at a microscopic scale.

Paleoethnobotany. The techniques of paleoethnobotany vary with the kinds of research objectives. Some of the aims of paleoethnobotany are paleoenvironmental reconstruction, both at the macroscale of regional vegetation and at the mesoscale of local site environs; investigating ancient plant use for subsistence, fuel, building materials, medicines, and ritual practices; analyzing farming practices; determining the seasonality of site occupation; and understanding the interaction between ancient peoples and their environment. Two techniques commonly applied to the problem of paleoenvironmental reconstruction at the macro- and mesoscales of investigation are palynology and phytolith analysis.

Palynology is the study of pollen grains originating in flowering plants and dispersed primarily through the air. The microscopic (silt sized) pollen is identified according to the size, shape, and surface features of individual grains—which are distinctive to family, often to genus, and sometimes to plant species. At the macroscale of research, pollen samples are usually extracted from water-logged sediments in bog and lake cores and are used to reconstruct regional vegetation and general environmental conditions. This is accomplished by comparing suites of species from the past with modern ones and by identifying "indicator species" that point to a specific ecological situation.

One of the problems facing palynological studies of this kind includes the differential output of pollen by different types of vegetation. This precludes a simple comparison of pollen frequencies without taking into account the amount of pollen produced by each type of plant. Pollen sequences are dated by radiocarbon dates taken from pollen cores. This dating is sometimes problematic because the dated units are often meters apart and changing sedimentation rates can hinder the extrapolation of dates throughout the core. Although a large number of trees and shrubs are identifiable by pollen type, the pollen of grasses is usually indistinguishable.

Identifying grass families and other types of monocotyledons (rushes, sedges, and palms) can be accomplished by another microbotanical technique: phytolith analysis. Phytoliths are microscopic mineralized bodies, usually composed of amorphous silica (opal), that form within the epidermal tissue of living plants. They generally take on the shape of the plant epidermal cells and are seen as microfossils of individual cells or sections of epidermal tissue encompassing from two to hundreds of joined cells. Phytoliths are commonly identifiable to plant family and often to plant genus. Occasional identifications can be made at the species level. As basic research in this field progresses, the range of identifiable plants is rapidly increasing. Phytoliths are initially deposited in the location at which the host plant disintegrated and are generally not dispersed through the air, as is pollen. They are washed into lake sediments by streams in the vicinity.

The combination of pollen and phytolith analyses affords a more exacting method for reconstructing regional vegetation patterns at the macroscale, as well as local plant communities at the mesoscale. The analysis of charred woods from an archaeological site can also offer information about local plant communities, but caution is needed in interpreting this information because humans can transport woods from other ecological zones.

At the microscale of analysis, or site level, the most traditional paleobotanical technique is analyzing macrobotanical remains, usually charred seeds, wood, and sometimes fruit and nuts. The most useful method of retrieving this material is by a system of flotation whereby sediment is mixed with water or a chemical solution. The charred material floats to the top and is removed using a fine-mesh sieve. Macrobotanical remains give information about the types of plants used for subsistence, fuel, building materials, medicines, and ritual pursuits. They are also informative about farming practices, cropping strategies, and the seasonality of site occupation. On a more detailed level of significance, they contribute to what is known about the timing and location of the first cereal domestication.

Phytolith analysis is also an advantageous technique at this level of investigation. Phytoliths are resistant to decay and are commonly preserved where macrobotanical remains are not. Phytoliths have distinctive shapes in different parts of a given plant, which allows differentiation between its stem

and its flower. They can therefore aid in identifying activity areas by distinguishing, for example, the remnants of straw, or reed mats, from the remains of cereal glumes. One drawback to this technique is the as yet relatively small corpus of plants with known identifiable forms; however, the list of plant types identifiable by their phytoliths is growing. To date, there are cereals (including maize, wheat, and barley), weed grasses, reeds, sedges, and palms that can be identified at the family and genus level with this technique. Phytoliths are usually extracted from sediment taken from the archaeological site and processed by a researcher specializing in this technique.

Zooarchaeology. Some of the concerns of zooarchaeology, faunal studies of bones from archaeological deposits, include paleoenvironments at the macroscale, as well as the mesoscale, in the vicinity of a site; the season of site occupation; nutritional studies of protein intake from meat; hunting strategies, such as the types and sizes of animals hunted, and the energy expended in the hunt; animal domestication; pastoral strategies of animal species mixtures and patterns of transhumance; the use of secondary products such as milk, wool, and draft power; and how animals were raised for domestic use or market sale.

The most reliable method of bone collection at archaeological sites is the systematic sieving of most archaeological excavation units. This provides the faunal analyst with a large and mostly unbiased sample usable for statistical analyses. Because bones and botanical remains are not independently assignable to a specific period or archaeological level, much care must be taken to record proveniences and note the temporal homogeneity of the archaeological unit. If there are intrusive artifacts, there can also be intrusive bones and botanical remains.

With these considerations in mind, faunal analysts can reconstruct environments in a site's vicinity by the types of wild species present—and sometimes by the size of the species. Seasonality of site occupation is determined by fauna that is only present in the region during specific months in the year (e.g., migratory birds) or by the characteristics of the fauna that change with the seasons (antler growth or juvenile tooth development). Faunal analysts can also approximate the amount of meat consumed by weighing bones because there is a correlation between bone weight and meat. They can also identify butchery practices by the patterns of cut marks on the bones.

Animal husbandry and domestication are recognized by such features as a decrease in species size, signs of draft labor, wear marks from bits, and cultural factors (e.g., the deliberate burial of whole animals and calcium depletion in the bones from milking). The use of secondary products such as milk and wool and the raising of animals for domestic use or market sale are determined by the age profiles of a population of animals at the time of slaughter.

Integration. In reconstructing climates and paleoenvironments at the macroscale of research, each of the three approaches discussed above investigates different and independent data sets that are all environmental responses to climatic factors. In any reconstruction of climatic conditions, it is necessary to compare scenarios from several varied forms of information. Often, these data sets appear to have contradictory facts that, in essence, can be related to inconsistencies in dating the environmental indices. This can sometimes be reconciled by comparing patterns of trends indicating vacillations to wet or dry and cool or warm conditions that are similar to the trends specified by different methodologies.

In applying information about environmental and climatic change to explanations of human responses, it is essential to account for cultural, technological, economic, and settlement variability. All of these factors control the reaction of human groups to their environment, whether stable or changing. This is also true of the impact of the human group on its surroundings. Broadly speaking, hunter-gatherers, pastoralists, subsistence farmers, and cash-crop farmers will respond in different ways to an environmental stimulus such as drought. They will also impact their environments in different manners.

On the meso- and microscale of research, results from landscape reconstructions, combined with analyses of biological and mineral remains from an archaeological site, can assist in delineating site catchment areas or spheres of resource exploitation in the site vicinity. These types of studies are most successful when combined with other factors that influence settlement in a given region: political connections, cultic considerations, and access to resources through long-distance trade. The combination of paleoenvironmental reconstruction with settlement-pattern and catchment analyses provide a powerful body of information that can significantly contribute to our understanding of many aspects of political, social, and economic organizations.

[*See also* Analytical Techniques; Climatology; Environmental Archaeology; Ethnobotany; Ethnozoology; Geology; Paleobotany; *and* Paleozoology.]

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PALEOPATHOLOGY. The scientific study of ancient disease, which has historical and medical implications for human, animal, and plant evolution, began in the late nineteenth century. The discipline, known as paleopathology, is today closely allied with archaeology and physical anthropology. Together, those two disciplines provide paleopathologists with the material for their research. Paleopathology's interdisciplinary nature and broad scope place most modern research in universities and medical schools.

According to Calvin Wells, a leader of the field in Europe, one of the main principles of paleopathology is the premise that humans and animals do not exist in isolation from their surroundings: the pattern of disease or injury that affects them is an integral part of that environment. Disease is the manifestation of the stress and strain to which they are exposed. Disease is reflected in their genetic inheritance, the climate in which they lived, the soil that gave them sustenance, and the other animals and plants with which they shared their world. It is influenced by their daily occupations, dietary habits, choice of dwellings, social structure, and even their folklore and mythology (Zias, 1989).

In the Near East, from the mid-nineteenth century until the 1930s, descriptive studies of Egyptian mummies were the prime concern of paleopathologists. Although much of the research appearing in journals is still descriptive, several scholarly attempts (e.g., Cockburn, 1963; Manchester, 1983) to provide a well-formulated theoretical/historical background for the discipline are providing direction for future research. Research today is rapidly moving in the direction of biomolecular studies of ancient disease including the extraction of DNA and polymerase chain reaction (PCR).

The well-established literary tradition in the Near East provides a wealth of information on disease and medical practices spanning five thousand years. While early Assyrian and Egyptian texts deal specifically with the problem of disease and medical practices, perhaps the greatest body of knowledge comes from the Hebrew scriptural writings. Although not intended as medical texts, they are a source of medical practices and folk beliefs.

The scientific value of paleopathology lies in its diachronic approach to illness, which enables researchers to perceive chronic diseases, such as leprosy and tuberculosis, over a long period of time. The paleopathologist can thus determine whether a disease has evolved or changed its pattern. Certain diseases, such as arteriosclerosis, once regarded as the result of diet and modern living conditions, have been found in autopsies performed on Egyptian mummies (Sandison, 1980) calling into question many modern concepts about the etiology of heart disease.

The skeletal remains of all people in all periods are a very valuable scientific-medical resource for tracing the biological history of the human race. This material needs to be studied to understand better our ancestors, our health, and our world.

[*See also* Paleobotany; Paleoenvironmental Reconstruction; Paleozoology; *and* Skeletal Analysis.]

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JOSEPH ZIAS

PALEOZOOLOGY. The study of animal remains from archaeological sites is known as zooarchaeology, archaeozoology, and faunal analysis as well as paleozoology. As a field it has developed an intellectual territory between and overlapping with several sets of older disciplines. In one dimension it occupies the temporal gap between paleontology, a subject concerned primarily with pre-Holocene phenomena, and neontology, which deals with modern living populations. In another, it overlaps zoology's primary concern with wild animals and veterinary/animal science's preoccupation with domestic species. In a third, archaeological, arena, it has arisen to deal with the collection, identification, and interpretation of the ubiquitous fragments of bone and shell that occur at most sites. Over the century of its existence, paleozoology has developed two overlapping emphases, one primarily concerned with animals and the impact human activity has had on them, the other primarily concerned with human cultures and the way animals affected and were exploited by them.

The zoological side of the discipline emphasizes the development of techniques for identifying remains and describing changes in animal morphology over time. As examples of identification, fragmentary sheep bones are hard to tell from those of goats, and equid remains are notoriously difficult to refer to the various species that inhabited the greater Near East: horses, donkeys, onagers, and their various crosses. However, extensive osteometric analyses in recent years have produced criteria for making some of the separations. Estimating the age at death from teeth and bones has been another achievement. Various methods, including the examination of dental wear and cross-sections of teeth and the study of the schedule of bone maturation, have been developed to assess mortality patterns in many of the more commonly recovered Near Eastern fauna. In the case of domestication, the process of taming and husbanding produces physical changes in animals, some of which are reflected in the skeleton. The horns of goats change from a wild morphology characterized by a quadrilateral cross-section to a domestic morphology of tear-drop shape. Pig and dog skulls are foreshortened and teeth reduced in length by the same process. Many animals also undergo an overall reduction in size and develop greater variability in appearance. An important component of the husbandry of several species is castration. Osteometric analysis of large samples has the potential to demonstrate the use of the technique. Paleozoologists additionally record incidences of disease and pathology. The use of cattle for plowing produces distinctive bony growths on the feet, a feature that appears as early as the Bronze Age in the Near East.

Paleozoology is also charged with contributing to the reconstruction of past environments and the estimation of the seasonality of human occupation. Some species of bird, rodent, and mollusc are diagnostic of past conditions. In the case of snails, the chemical makeup of the shell is also an indicator. In other archaeological problems, it is the relative abundance of different taxa that is the clue.

The development of quantitative measures has been a preoccupation of the field. A number of statistics have been developed (minimum number of individuals, relative frequency, total number of fragments, bone weight), but because each method has significant biases, none has proved a panacea in estimating abundance. Concern with quantification has stimulated concern with taphonomy, the study of processes that affect remains between deposition and recovery. As organic material, bone fragments are subject to attritional processes that tend not to affect lithics and ceramics. Because of these taphonomic biases, the number of bones fragments found and referred to a species is not equivalent to the abundance of that species in the past. Furthermore, because bones in and of themselves are rarely datable directly either by species or morphology (the use of radiocarbon and other physiochemical techniques is prohibitively expensive and is thus restricted to special finds), they must be dated by association with other artifacts, usually pottery. Paleozoologists have found it necessary to distinguish sharply between the stratigraphic date of an archaeological deposit and the date based on its content. Quantitative descriptions of paleozoological data are therefore presented as relative trends through time and space rather than absolute quantities for a given period.

The cultural side of paleozoology targets the reconstruction of past socioeconomic systems. Information about the spatial patterning of bone remains, the relative abundance of different species, and the age of a species at death is evaluated with ethnographic and ethnohistorical data. These models have been applied at regional, site, and household

levels. Study of modern pastoralists has shown that their management decisions are shaped by the degree of interaction they have with markets. Application of these principles to archaeological settings reveals how a community's interaction with its network of surrounding communities was constructed. For instance, at Iron Age Tel Dan in the Galilee in Israel, as the village grew to a city, predictable shifts occurred in the abundance of sheep and goats relative to cattle and in the manner of processing carcasses. At Early Iron Age Ai/Raddanah, in the central hill country of Cisjordan, the relative proportions and age at the slaughter of sheep and goats points to a much greater degree of market involvement than has been posited for a small village from this period. Larger forces are also visible. The paleozoological record at Tell Jemmeh in Israel's northern Negev desert and at Tel Miqne (Ekron in ancient Philistia) shows how Assyrian imperial demands for tribute and military provisions severely dislocated local pastoral production systems in the Late Iron Age.

Intrasite spatial variability of animal remains is also informative. Access to different resources is predicated on socioeconomic status and organization of the redistributive system. With respect to animals, this often means that different species and even different parts of the same carcass are distributed to households and sectors of the community based on wealth, prestige, ritual status, or the degree of involvement in pastoral production. Evidence from Tell el-Amarna in Egypt shows that pork was the mainstay of the diet of laborers during the New Kingdom period, while other elements of the society ate cattle, sheep, and a few goats. Faunal remains from Elephantine in the Nile valley, Tell el-Ḥayyat in the Jordan Valley, and al-Hiba in southern Mesopotamia show that although pigs were eaten, remains of the animal are not found in temple complexes at those sites, whereas bones of other domesticates are.

Spatial variability is visible within the household as well. The process of converting animal products to meals is called cuisine. Different stages in food preparation generate distinctive carcass debris. Ethnographically based models of the culinary process have, for example, been used to explain the variability in bone remains found in the various rooms of Byzantine houses at Qaṣrin in the Golan Heights.

[*See also* Animal Husbandry; Camels; Cattle and Oxen; Equids; Ethnoarchaeology; Ethnobotany; Paleobotany; Pigs; *and* Sheep and Goats. *In addition, with the exception of al-Hiba, all of the sites mentioned are the subject of independent entries.*]

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PALESTINE. [*This entry provides a broad survey of the history of Palestine as known primarily from archaeological discoveries. It is chronologically divided into six articles:*

Prehistoric Palestine
Palestine in the Bronze Age
Palestine in the Iron Age
Palestine in the Persian through Roman Periods
Palestine in the Byzantine Period
Palestine in the Islamic Period

In addition to the related articles on specific subregions and sites referred to in this entry, see also History of the Field, *article on* Archaeology in Israel.]

Prehistoric Palestine

The earliest occurrences of human artifacts, generally classified as Lower Paleolithic, were found at ʿUbeidiya in the central Jordan Valley. As the archaeological horizons were embedded within a sequence of lacustrine and fluvial deposits, most of the bone and lithic assemblages were recovered from lake shores. The artifacts are characterized by high frequencies of core choppers, from which flakes were removed and used. Polyhedrons, spheroids, and a few handaxes form the rest of the assemblages. Most core choppers and polyhedrons were made of flint pebbles, spheroids were shaped from limestone, and handaxes were predominantly made of basalt but also from flint and limestone. The entire lithic sequence is attributed to the Early Acheulean and is considered to mark the move of *Homo erectus* out of Africa about 1.4–1.0 million years ago. [*See* ʿUbeidiya; Jordan Valley.]

Early hominids at ʿUbeidiya were probably both scavengers and hunters. Their main sources of meat were hippo,

horse, and deer. The natural accumulation of more than one hundred different species of fish, reptiles, birds, and mammals indicates that the climate of the Jordan Valley was similar to that of Israel's coastal plain today.

Other Lower Paleolithic sites, all of which are classified as Middle or Upper Acheulean, are found in the Jordan Valley and on the coastal plain. Among these is 'Evron Quarry, a small site that contained some animal bones and an assemblage of a few large flint bifaces and small flakes, indicating that part of the assemblage was transported there. Gesher Benot Ya'aqob, on the banks of the Jordan River is known for its assemblages of lava-flake cleavers made in the African technique. Also found were the remains of large mammals, best correlated with Middle Pleistocene fauna that include elephant, rhinoceros, hippopotamus, wild boar, and deer and two fragments of a human femora. The site overlies a lava flow dated by potassium/argon to 0.68 million years ago and is estimated to be around 0.6–0.5 million years old.

Upper Acheulean occurrences, mostly collected from surface scatters, were located throughout the region and at such cave sites as Tabun (Mt. Carmel) and Umm Qaṭafa (Wadi Khareitoun, Judean Desert). [*See* Tabun.] The incorporated animal bones are often those of large-to-medium mammals, probably indicating the scavenging activities of humans.

At several cave sites in the Levant the Upper Acheulean is overlain by the lithic industry known as the Mugharan or Acheulo-Yabrudian tradition. One facies of this entity contains thick scrapers of various shapes, including canted and transverse forms (known as Yabrudian); the second, together with the scrapers, has varying frequencies of often small, oval, or pointed bifaces (called Acheulean); and the third is dominated by blades with a few bifaces and burins (named Amudian). The first two are the most common. The Acheulo-Yabrudian is found in the northern and central Levant. Dating techniques based on the relative amount of uranium in artifacts and teeth known as TL and ESR suggest that this entity lasted from about 500,000/400,000 to 270,000/250,000 years ago. The fragmentary skull recovered in Zuttiyeh cave and a broken femur in Tabun cave are the only human remains. The Zuttiyeh skull is attributed to archaic *Homo sapiens*. The Acheulo-Yabrudian is overlaid by the Mousterian complex. The long sequence of the Tabun cave enabled the general description of three types of lithic industries, mostly made through the use of various core-reduction techniques. Often, other Mousterian assemblages are compared to those of the Tabun sequence:

Tabun D type (earliest Mousterian): contains numerous elongated points and blades not always produced by the Levallois technique. The industry is more common in the Negev desert, southern Jordan, and the Syrian desert.

Tabun C type: often dominated by radial and bidirectional core reduction, this assemblage resulted in large, oval flakes. Convergent flaking to produce Levallois points is quite rare. Similar assemblages are known mainly from the coastal Levant.

Tabun B type: characterized by blanks removed from unidirectional and convergent Levallois cores, this assemblage's short and broad points are common, as are side scrapers. The industry occurs in southern Jordan.

Several human remains were recovered from burials at the Tabun, Skhul, Kebara, Qafzeh, and 'Amud caves. These fossils were considered to be West Asian Neanderthals (Tabun, Kebara, 'Amud) and archaic *Homo sapiens* (Qafzeh, Skhul). One school views the entire collection as representing the same population, while others see the Mediterranean Neanderthals as either emerging from local ancestors or as Southeast Europeans who migrated into the Levant with the onset of glacial conditions (115,000 or 75,000 years ago). [*See* Carmel Caves.]

Mousterian people gathered plant foods and hunted gazelles, fallow deer, and other animals. They opportunistically scavenged large animals such as wild oxen, rhinoceros, and hippo. Their tools reflect hide scraping, woodworking, and butchery. Levallois points bear the impact fractures of having been hafted as spear points. The use of red ocher and the collection of marine shells occur rarely. Hearths were rounded or oval; amorphous ashy deposits are common in well-preserved caves (e.g., Kebara).

The transition from the Middle Paleolithic to the Upper Paleolithic is reflected in the lithic industries uncovered at Boqer Taḥtit in the Negev and Ksar 'Akil in Lebanon. [*See* Ksar 'Akil.] The changes demonstrate a transition in the core-reduction methods. Levallois points were removed with blades from bidirectional Upper Paleolithic, mostly prismatic cores. Later, unidirectional cores became the source for blades. The retouched pieces of the transitional industry (also named Emiran) are mainly Upper Paleolithic. Tool types include end scrapers—sometimes made on Levallois blanks—blades, and flakes with a few Emireh points.

The Ahmarian tradition in the lithic industry follows (38,000–20,000/18,000 BP). It is best documented in the Negev, Sinai, and southern Jordan, as well as in a few layers in caves (e.g., Kebara), and is predominantly a blade industry. The Ahmarian sites are interpreted as the residuum of mobile hunter-gatherers who hunted gazelle, fallow deer, roe deer, and ibex in semiarid areas. Several grinding tools indicate a slow change in vegetal food processing to include ground substances in addition to ocher. Bone tools are quite rare, and the use of marine shells began in about 20,000 BP.

The Levantine Aurignacian is only known from the northern and central Levant. It is considered to be the archaeological expression of a social unit foreign to the Near East that arrived in the region and remained for some time between 32,000 and 27,000 BP. The Levantine Aurignacian A and B assemblages include carinated and nosed scrapers. Phase A is rich in blades, and phase B is dominated by flake

production. Both contain el-Wad points and are often rich in a bone and antler industry. Two incised slabs from Hayonim cave may represent artistic expressions. The following period (27,000–18,000 BP) incorporates a series of assemblages that are not well dated. Several (previously named Levantine Aurignacian C) are rich in scrapers and burins. In one of the sites, Naḥal 'Ein-Gev I, the flexed burial of a 30–35-year-old woman was uncovered. [*See also* 'Ein-Gev.] Other assemblages, called Late Ahmarian, are dominated by the production of blades and bladelets. Ohalo II, a waterlogged site radiocarbon dated to 19,000 BP, was discovered in Lake Kinneret (Sea of Galilee). Excavations of this site exposed a series of hut bases with numerous lithics, a rich fauna assemblage including fish bones, and a wealth of plant remains.

The Late Ahmarian heralds the onset of what is called the Kebaran cultural complex (c. 19,000/18,000–14,000 BP), in which the main changes in the lithic industries is in the form of the microliths. Nongeometrics such as the obliquely truncated bladelets (Kebara points) give way to the elongated trapeze rectangles that characterize the ensuing cultural complex, the Geometric Kebaran (c. 14,000–13,000/12,800 BP). Kebaran sites are generally small. A shallow base of a brush hut dug into sandy deposits some 5–7 m in diameter was found at 'Ein-Gev I. Repeated occupations resulted in the accumulation of flints and animal bones, including fallow deer and gazelle. A semiflexed burial of a thirty–thirty-five-year-old woman was found under one of the levels in the hut. Mortar and several pestles were used in plant processing. The only art object from this period was found at Urkan er-Rubb II in the lower Jordan Valley: a flat pebble with several incised series of a "ladder" pattern.

The cold and dry climate during the Kebaran, known also as the Late Glacial Maximum, limited occupations to the woodland belt and margins of the steppic belt. Subsequent amelioration brought increased temperatures and precipitation. This enabled the Geometric Kebaran groups to inhabit many of the formerly arid areas and tempted groups from neighboring regions, such as the Mushabian, to penetrate from northeast Africa. During this time period, most people lived in small groups of hunter-gatherers, and the larger sites are considered palimpsests of reoccupations. The consumption of seeds, grain, acorns, and nuts is best recorded in the use of pounding and grinding tools—mortars, pestles, and mullers. Marine shells were brought mainly from the Mediterranean and occasionally from the Red Sea. Two burials with fragmentary skeletons were uncovered at Neveh David (Mt. Carmel), and others are known from the site of Kharraneh, near Azraq (Jordan).

An abrupt climatic shift in about 13,000/12,800 BP, followed by a rapid increase in annual precipitation, has been interpreted as either a "push" or "pull" motivator in the disruption of the previous socioeconomic scenario. Several groups, known as the Natufian culture, resolved the seasonal shortages by becoming sedentary. Large Natufian sites are about 2,000–5,000 sq m in area and contain rounded and oval houses, ('Ain Mallaha; Hayonim cave, Israel; the Terrace at Wadi Ḥammeh 27), burials, and rich lithic and bone industries. [*See* Hayonim.] The houses are often dug into the ground and have walls of undressed stone slanting toward the interior, although in one large house at 'Ain Mallaha a series of postholes was uncovered. Most superstructures seem to have been made of organic materials.

Natufian burials display various styles. Collective burials are more common in the Early Natufian, when positions are supine, semiflexed, and flexed, and skull removal is rare. The Late Natufian sites contain more single burials in flexed position. Grave goods indicate some possible intergroup social differentiation. Body decorations were made of bone and stone pendants, shell beads, commonly of *Dentalium.* Shell decorations appear on headgear, garments, and belts and were used in necklaces and bracelets. Human burials accompanied by dogs (as at 'Ain Mallaha) indicate canine domestication, as well as a change in religious beliefs. The skeletal remains indicate that the Natufians were generally healthy, with a life expectancy of thirty-two–thirty-five.

Natufian stone tools include geometric microliths, such as lunates shaped by either Helwan or abrupt retouch. Also present are sickle blades, burins, perforators, and some elongated picks. The production of small flakes and short bladelets as blanks for tools distinguishes the Natufian lithic industry from the former cultural complexes. The use of the microburin technique, with which oblique snaps are achieved, may reflect local traditions. Natufian artistic representations include ungulate heads carved on sickle hafts; schematic limestone figurines that represent humans and animals; and zigzag and meander decorations incised or carved on domestic objects. Natufian sites also differ in their use of ornaments, such as bone beads, which are distinctive enough to indicate group identification. The Natufian economy was based on the intensive collection of cereals, which leads some scholars to suggest that the Natufians were the earliest farmers. [*See* Cereals.] However, plant remains are scarce as a result of poor site preservation. Mortars and pestles were used extensively, and the range of hunted game, collected reptiles, and trapped water fowl is wider than for any previous Epipaleolithic entity. Natufian subsistence strategy responded to the increase of basic group size and sedentism.

The Harifian culture (c. 10,700–10,1000 BP) in the Negev and Sinai is interpreted as a cultural adaptation of Late Natufian to the dry and cold conditions of the Younger Dryas. (This brief cold and dry period is now recognized globally and considered the last cold spell of the last glacial cycle.) Their small winter sites were dispersed in the lowlands while the larger summer–fall sites were in the highlands. The latter

contain semisubterranean dwellings, mortars, pestles, grinding stones, and slabs with numerous cup holes either inside the huts or around them. No plant remains were recovered. The lithic industry is dominated by lunates and the projectile the Harif point, among other numerous microliths. Gazelle, ibex, and hare were the main game.

The Early Neolithic period (10,300/10,000–8000/7800 BP) saw the emergence of small villages of farmers-hunters and later farmers-herders in a narrow Levantine corridor stretching from the Damascus basin through the Jordan Valley to southern Transjordan. While agriculture as a subsistence strategy expanded, the Lebanese mountains and the arid region remained the territories of hunter-gatherers who continued to interact with farming communities. [*See* Agriculture.]

The few known Pre-Pottery Neolithic A (PPNA; 10,300–9,300/9,200 BP) sites are found in the Jordan Valley. The early levels contain Khiamian assemblages, which include some microliths, perforators, burins, sickle blades, and arrowheads, mostly of the el-Khiam type. The ensuing Sultanian industry includes axes/adzes and polished celts. Cultural change is expressed in the range of site size from 2.5 ha (6 acres) to 100 sq m. Demographic estimates suggest a population of about 450 people for the PPNA site of Jericho. [*See* Demography; Jericho.] In front of Jericho's so-called town wall lies a 3.5-meter-wide shallow ditch dug into the chalky bedrock. Behind the wall, inside the settlement, is the well-known rounded tower (8.5 m high) with a small door and interior staircase. A few large and deep rounded structures built of mud bricks were exposed on the northern side of the tower (Kenyon, 1957). Many have interpreted the wall and tower as a defense system. An alternative is that the wall was built in response to the wetter conditions that prevailed during the PPNA (as compared to the preceding millennium), in order to protect the village from flooding. The tower is seen as having accommodated a mud-brick shrine on top (Bar-Yosef, 1986). The houses were oval, their foundations were dug into the ground, they were lined with stones, and their walls were built of plano-convex mud bricks. The roof was probably flat with wooden beams and woven-reed mats covered with mud. The mud floors also were covered with mats and the hearths were shallow, paved basins.

Burials were found in various places, including open spaces that were later built up. The burials were generally single, with the crania of adults removed. No grave goods were encountered at any of the sites.

The PPNA lithic industry differs from the Natufian by having much lower frequencies of microliths. Among the retouched pieces are small projectiles such as the el-Khiam point and others with small tangs. Perforators and burins are common; sickle blades are often plain and rarely have bifacial retouch. The group of axes/adzes with transverse removal shaping the working edge includes chisels and picks. Polished celts made of basalt and limestone occur, while sickle blades and bifacial tools are missing from the desert sites. The art objects are rare and include small figurines made of limestone or clay that depict seated females, a female with a string skirt, or kneeling females.

The economy of the Sultanian villages was a mixture of cultivation of emmer wheat (on the Damascus plain), barley, and legumes. Fruits and wild seeds were collected, including figs, nuts, and acorns. Gazelle and foxes were the main game sources; fallow deer, bovids, and hare were exploited to a lesser extent; and trapping waterfowl was a seasonal activity. Little is known about the health of the people although their skeletal remains resemble those of the Natufians. In some cases (Jericho) skull deformation was practiced in vivo.

In the following period, the Pre-Pottery Neolithic B (PPNB; 9300/9200–7800/7500 BP) climatic conditions continued to be favorable for farming communities in the Levant, at least until 8000 BP. While most villages remained small, the maximum site size increased to 12 ha or 30 acres ('Ain Ghazal, Basta), reflecting a population increase evident in both the more lush areas of Palestine and in the desertic regions. [*See* 'Ain Ghazal; Basta.] The excavations at Beidha demonstrate that the building of rectangular houses is a local shift in the villages from round or polygonal buildings, where the roof was supported by wooden posts. [*See* Beidha.] The use of lime plaster on floors, as well as in storage facilities, is recorded from various sites. At 'Ain Ghazal preserved postholes demonstrate the use of timber; in the later phases of the site's history, the diminution of this resource is reflected in smaller enclosed spaces and fewer posts.

PPNB burials are found under floors and in open spaces. Skulls of adults were removed and in a few sites nests of skulls were uncovered. Plastered skulls have been discovered at Jericho, Tel Ramad, 'Ain Ghazal, Beisamoun, and Kefar Hahoresh. At Naḥal Ḥemar skulls modeled in asphalt were found. There is a general consensus that the special treatment of the skulls provides evidence of an ancestor cult. Additional insights into domestic and cultic activities are gained from the numerous clay figurines representing pregnant females, males, and animals. A cache of human figurines, stone masks, modeled skulls, and numerous domestic objects at Naḥal Ḥemar indicates that ritual activities also encompassed special sites, perhaps marking territorial ownership.

The PPNB lithic industry is characterized by blade removal from bipolar cores that, in their more elaborate, elongated form, are known as naviform cores. The punched blades were shaped into arrowheads, perforators, burins, or sickle blades or were used in their original shape. The earliest types of arrowheads are Helwan point (with bilateral

notches and a tang) and the Jericho point (with wings or clear-cut shoulders and a tang); later types are the Byblos point (leaf shaped with a tang) and ʿAmuq point (leaf shaped). Sickle blades are either plain blades (which bear the luster resulting from the harvesting of cereals) or elongated, tanged blades, often finely serrated; burins are common at many, but not all, sites.

The group of bifacial tools including axe/adzes and celts also saw some changes through time. While at most early and middle PPNB sites the Tahunian (tranchet) types dominate, there is a shift in the later PPNB to objects with a rounded retouched or polished working edge. These types seem to have been used to cut and work wood and sometimes as hoes. Imported raw materials such as obsidian, which first appeared in the Late Natufian, are more frequent at some PPNB sites—although not necessarily at the large ones. Exotic raw materials include greenstone (serpentine, malachite, rosasite), from which beads and pendants were made. Marine shells were collected on the shores of the Mediterranean and the Red Sea and distributed through the Levant. Cowries (*Cyprea* sp.) and *Glycimerys* sp. were among the most common species.

PPNB village economy was based on the cultivation of domesticated species of cereals and legumes and the continuous collection of wild fruits and seeds. Hunting gazelles, roe deer, fallow deer, wild boar, and hare was supplemented in agricultural villages by the raising of goats and sheep. [*See* Sheep and Goats.] In the late stages of the PPNB new objects for domestic use were introduced. These products, known as white ware, were made of a mixture of ashes and plaster. The forms include bowls, open jars, and bowls on pedestals; most are known from northern Syria and rarely occur in Palestinian contexts.

The collapse of the PPNB in the southern Levant manifested either as a major break or an abrupt change in settlement pattern. At the site of ʿAin Ghazal, where this phase is called PPNC, the lithic industry and mortuary practices changed. The main core-reduction strategy was based on the production of flakes and to a lesser extent of blades. The dominant tool types were the burin, with low frequencies of other formal tool types, including arrowheads. Finally, burials were less organized and lack evidence for skull removal. Speculations on the reasons behind the population shift include group aggression, salinization of fields, mortal epidemic, and the temptation to move to a positive environment.

The Pottery Neolithic (PN) period is poorly known, mainly because of a major change in settlement patterns. This change is archaeologically attested in two ways: at stratified sites, PN remains are found in numerous pits of various sizes that often penetrated and disturbed a wealth of PPNB rectangular buildings (Jericho, Munḥata, Beisamoun); and many new settlements were established either in the Jordan Valley (Shaʿar ha-Golan) or along the coastal plain. [*See* Munḥata; Shaʿar ha-Golan.] The invention of pottery and its introduction for domestic use took place first in the northern Levant and later in Palestine. In Palestine, clay pots outnumber white-ware products; the common forms are simple: jars, cooking pots, and bowls decorated first with chevron patterns and red paint and later with paint alone. The economy of this period was based on the cultivation of cereals and legumes, goat and sheep herding, and raising pigs in the more humid parts of the country and some cattle. [*See* Pigs; Cattle and Oxen.] The activities of pastoral nomads, who partially subsisted on herding goats, are reflected at numerous desertic sites. These groups continued to hunt and may have exchanged meat and other animal products for carbohydrates from the farming communities. [*See* Pastoral Nomadism.]

Evidence of burials is rare but indicates a shift from the earlier pattern. One burial under a small cairn was exposed at Shaʿar ha-Golan, and single flexed and semiflexed burials were found at other sites. Further indications concerning belief systems are reflected in clay and stone figurines. The Yarmukian culture is renown for its seated female clay figurines with tall headgear, masks, and exposed breasts. Temples or shrines are as yet unknown from the more sedentary sites, occurring mainly at such desertic sites as at Biqʿat ʿUvda.

The distribution of the PN sites in Palestine documents a settlement pattern that was based on cultivation and herding with seasonal mobility. The investment in the more permanent sites seems to have been less than in the PPNB period and probably points to a less regular pattern of mobility. This might reflect the unstable climatic conditions that, by the mid-Holocene, were changing from a stable pattern of precipitation to one resembling the modern, less predictable pattern.

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OFER BAR-YOSEF

Palestine in the Bronze Age

The period between about 3500 and 1200 BCE in the southern Levant is termed the Bronze Age and is divided into Early, Middle, and Late periods. These in turn are further divided into numbered and lettered subphases. The division of the Bronze Age into three parts was intended to reflect larger contours of sociopolitical, political, and historical development, although transitions continue to be regarded differently. The scholarly literature is replete with periodizations and dating schemes that supplement, contradict, and supersede one another, creating a confusing picture. They are, however, important because they manifest the changing perceptions of internal development during the Bronze Age and the synchronization of the relative chronology of the southern Levant with the more securely fixed chronologies of Egypt and Mesopotamia.

Early Bronze Age. With the end of the Chalcolithic period, in about 3500 BCE, the Early Bronze Age began. The former was a village, agropastoral society with strongly developed craft specialization in copper, ivory, and ceramics and elaborate religious iconography. The reasons for its collapse remain unclear, although climate change may have been involved.

The EB I contains two phases and dates from about 3500 to 3100 BCE. Its early phase is characterized by small settlements with curvilinear architecture, as at Yiftaḥel, ʿEin-Shadud, and Tel Teo. Some sites, such as Tell esh-Shuna in the central Jordan Valley, were occupied in both the Chalcolithic and EB I periods, although it is unclear whether occupation was continuous. Jawa, in Jordan's Black Desert, also straddles the boundary between the Chalcolithic and EB I. The earliest EB I phase is poorly represented in the south, with remains such as pit dwellings at Tell el-Ḥesi and cave dwellings on the Ḥalif terrace. Wadi Gaza site H is an important site, with imported Egyptian ceramics and artifacts. Its copper artifacts originated at the Feinan mines in southern Transjordan. Egyptian material reflects an interest in the resources of the southern coastal plain and the northern Negev desert. The early EB I witnessed settlement in the southern Levant, suggesting individual domestic units with little integration or cooperation, such as village planning or social storage.

Large villages developed late in EB I in both the north and south. Some sites, such as Beth-Yeraḥ, Tell esh-Shuna (North), Tel ʿErani, and Beth-Shean, reached 20 or 25 ha (49 or 62 acres) although their internal layout remains unclear. The overall number of sites increased, especially in the Galilee, Jordan Valley, and Transjordanian highlands. The first unequivocal temples appeared at Megiddo, Jericho, Ai, and Ḥartuv—the last incorporating a previously freestanding row of standing stones into the wall of a structure. In the Negev and Sinai there was an increasing tendency toward sedentarization that peaked in EB II. Egyptian material culture is accompanied by Egyptian architecture, such as the "residency" at the site of ʿEin-Besor and a large building at Tel ʿErani. The Egyptian presence is organized as an official mission, demonstrated by the seal impressions bearing the names of dynasty-"zero" and first-dynasty kings found at ʿEin-Besor. A network of sites provisioned the administrative center at ʿEin-Besor and associated outposts, such as Tel Malḥata and the Ḥalif terrace. Tel ʿErani and Beth-Shemesh are important examples of large sites where Egyptians lived alongside the local population.

Rectilinear architecture predominates at late EB I sites. The new architectural units accommodated larger numbers of residents and were formed into larger blocks, indicating higher levels of cooperation and leadership. Beyond temples, little social architecture is known, save for a few sites like Tell Shalem that may have had fortification walls. There is little evidence of social or political institutions outside extended kinship ties. Temples and fortifications indicate higher levels of organization, however.

The EB II (c. 3100–2700 BCE) was the first "urban" period in the southern Levant. Urban structures—public architecture such as fortifications, gates, and water systems—and urban institutions—"temples" and political institutions—emerge for the first time. A dichotomy between urban and rural segments of society develops, with urban sites controlling the growing international trade. The process of "urbanization" is unclear, given the limited internal chronological resolution available. The transition to urbanism was made on a site or regional basis. Some planned sites, such as Arad, were constructed above small, preexisting EB I communities; others, such as Tel Yarmut, became fortified later in EB II or in EB III.

The EB II settlement landscape shows a decrease in the number of sites and the emergence of size classes, as urban centers dominated rural hinterlands. The increased settlement in the Negev and Sinai is associated by some scholars with the copper trade from southern Sinai controlled by Arad. More likely this was in response to the general social and economic conditions created by urbanism in the Mediterranean core civilizations. Egyptian settlements on the southern coastal plain disappeared at the end of EB I. A trade relationship with Egypt developed instead, the primary evidence being southern Levantine jars and jugs in Egyptian contexts, so-called Abydos wares. The goods involved in this trade remain obscure, but Mediterranean olive crops and grape products in particular may be suspected. Production of Mediterranean crops and containers may have been the basis for elite socioeconomic power during EB II.

Fortifications are the best-known aspect of EB II architecture and were comprised of wall, gate, and tower systems. More than three-dozen fortified sites developed during the course of the period, including Ai, Arad, Tell el-Farʿah (North), Beth-Yeraḥ, and Aphek. Other social architecture includes administrative buildings whose functions are unclear. "Palaces" have been claimed at Arad and Megiddo but lack unequivocal evidence of being elite residences. Religious architecture is better known, with temples found at Ai, Beth-Yeraḥ, Megiddo, and Arad. EB II domestic architecture is based around the broadroom module, the "Arad house," and its variants. Modules are linked with subsidiary structures into compounds, suggesting extended household groups, and also into urban blocks separated by streets. The architectural evidence suggests only weakly developed political institutions during EB II. Economically powerful kin or domestic groups may have been the source of EB II urban planning and civic authority.

The transition from EB II to III is unclear. Ceramic criteria marking this transition were regional, notably the appearance of Khirbet Kerak or Red-Black Burnished Wares in the north and the disappearance of the EB II assemblage known at Arad in the south. The EB III was a period of hypercentralization in the southern Levant. Surveys suggest that the rural component of society was absorbed into urban sites at the beginning of EB III. Many important EB II urban sites did not continue into EB III, including Tell el-Farʿah

(North), Aphek, and Arad. New fortified sites were also founded in Judah and the Shephelah and on the coastal plain, such as Tell Beit Mirsim, Tell Poran, and Tell Nagila. The settlement landscape of the arid zones also changed significantly, with a sharp decline in the number of sites.

Remaining sites become physically larger and were enhanced with fortification systems, with the best examples being Tel Yarmut and Ai. These defenses suggest that society had become more competitive and more violent after about 2700 BCE, and that the ability of urban institutions to mobilize labor was greater than before. Another feature of the urban landscape was the appearance of new urban institutions, notably temples and possibly "palaces." The similarities of temples at Megiddo and Khirbet Zeraqun, comprised of circular altars surrounded by rectangular buildings, suggest a common model. Tel Yarmut provides the best example of a complex or an insula. It is enclosed by a temenos wall and contains large structures and production facilities, interpreted by the excavators as the remains of a palace. The Building with Circles at Beth-Yerah, probably a public granary, also indicates administered redistribution or social storage. During EB III social, political, economic, and religious power were highly centralized at increasingly large urban sites, and rural social institutions and settlements declined correspondingly.

Traditionally ascribed to invading "Amorites," and more recently to climatic fluctuations, the end of EB III has been reinterpreted, particularly as details of the EB IV period become better known. [*See* Amorites.] Some evidence suggests a long-term trend toward desiccation; the EB II and III reliance of urban sites on specialized agricultural production of Mediterranean crops would have made sites vulnerable to climatic change. The abandonment of EB III urban sites is not precisely dated but took place over a long period. Supporting this is the continuation during EB IV of a remnant form of urbanism at lightly fortified sites located on the eastern side of the Dead Sea, such as Khirbet Iskander, Tell Iktanu, and Ader. With village-level occupations in the Mediterranean core, including at formerly urban sites, this may be evidence of less catastrophic collapse than once postulated.

The EB IV period began in about 2300 BCE. Once a "dark age" in the settlement history of the southern Levant—attributed to an influx of Semitic speakers from the north—collapse processes now appear to have been largely internal. The EB IV is also described as a pastoral-nomadic interlude, with cities abandoned and settlement shifting back into arid zones. [*See* Pastoral Nomadism.] There was a tremendous increase in settlement in arid regions, but the village component of society was also becoming better known. Most urban tell sites were abandoned, but at many of them (e.g., Megiddo, Hazor, Beth-Shean, Jericho) damaged remains of EB IV village occupations have been found. The discovery of villages such as Naḥal Rephaim outside of Jerusalem, Naḥal Alexander on the coastal plain, and Shaʿar ha-Golan in the Jordan Valley indicate that sedentary agricultural settlement and production were reconstituted in EB IV. Sites in the arid zones (Be'er Resisim, ʿEin-Ziq) reflect a mobile component of society emphasizing pastoral production—possibly making rounds between the central hill country and perhaps even occupying larger sites in the Negev highlands year-round.

Among the best-known features of the EB IV are the massive cemeteries, often consisting of hundreds or thousands of shaft tombs dug into bedrock, such as Jebel Qaʿaqir near Hebron and ʿAin es-Samiyeh in Samaria. [*See* Tombs.] These cemeteries were used for disarticulated, secondary burials and were reopened when necessary by kin or extended family groups on their seasonal return to the central hills and by agriculturalists residing in nearby villages. Site plans suggest that at arid-zone sites kinship organization was reasserted as the primary form of production and authority, with headmen leading extended domestic groups.

In the Early Bronze Age, the southern Levant was generally a social and cultural backwater. The EB IV period is the height of literate, urban society in Syria, however, with sites like Ebla exerting sociopolitical and economic hegemony over large areas. Akkadian and Ur III interest in Syria had no impact on the southern Levant. Relations with inland Syria and the northern Levant are only attested by the appearance of true tin-bronze and by caliciform ceramic wares, typical at inland Syrian sites such as Hama and Ebla.

Middle Bronze Age. The urban climax of the Bronze Age in the southern Levant took place in the Middle Bronze Age. Renewed urbanism, based on a Syrian model—emulating its material culture, architecture, and perhaps social organization and literacy—is an example of secondary state reformation of sufficient strength and integration to have controlled Lower Egypt for more than a century during the "Hyksos" period. For the first time, sites in the southern Levant were attested in Syrian and Mesopotamian documents, and Egyptian evidence indicates a higher level of development and interaction than the fragmentary and cryptic references from the third millennium. The Middle Bronze Age remains paradoxical because it is difficult to explain the wholesale adoption of Syrian and northern Levantine cultural patterns in the south. Scholars have suggested the influx of one or more waves of migrating or conquering Amorites, but this no longer appears to be an adequate explanation. A series of factors that led to reurbanization on a Syrian model can be enumerated: the migration of both fellow Semitic-speaking and Hurrian groups from north to south, local elites anxious to emulate foreign practices, and generally higher levels of economic interaction with Syria and with a newly reorganized Egypt.

The MB I began after 2000 BCE, and major shifts are evident in the settlement landscape. Village sites occupied during EB IV disappeared on the coastal plain and in the Jordan

Valley and the central hills country. The remnant urbanism on the eastern side of the Dead Sea also disappeared. Finally, settlement disappeared from the arid zones, and there is no evidence of MB occupation or utilization of the Negev and Sinai. A number of urban tell sites on the coastal plain and inland valleys were occupied in MB I (Tell Poleg, Tel Aphek, Tell Burga) and were fortified with characteristic wall and glacis or rampart systems early in the period. Farther inland, however, sites such as Shechem and Tel Dan were not fortified until later. While reurbanization spread quickly, those sites located on trade routes leading from Syria to Egypt were the first to fortify and assume fully urban status. Surveys also indicate many small villages and campsites, especially on the coastal plain.

MB pottery was largely derived from contemporary Syria. Only a few forms may have evolved from EB IV prototypes, such as platter bowls and small burnished juglets. Pottery was made on a fast wheel, with centrifugal force allowing the production of thinner and finer vessels than had been possible with the slow wheel or tournette during the third millennium. Bronze was used exclusively for tools and weapons, and texts indicate the shipment of tin from Mari to Hazor and Dan. Art objects include carved bone and ivory, ceramic and metal figurines, and cylinder seals, all similar to Syrian types. [*See* Seals.] Akkadian cuneiform writing is also found for the first time, indicating that ruling elites were literate, in communication with, and part of the cultural sphere of Syria and Mesopotamia. [*See* Literacy.] Contemporary Egyptian documents, in particular the story of Sinuhe and the Execration texts, reflect the development of sociopolitical organization. Sinuhe was an Egyptian official who fled to the southern Levant shortly after 2000 BCE and who describes a mobile lifestyle. The earlier set of Execration texts lists the names of several leaders in association with each site, indicating that political authority was not centered around individual rulers. Later Execration texts list only one person's name in association with individual sites.

The MB II and III periods represent the peak of urban development in the second millennium BCE. There was widespread settlement in the central hill country during MB II, as third-millennium tells were reoccupied and new locations settled. This settlement wave produced many fortified sites, some of which were cities and others fortresses or redoubts. Settlement geography suggests an increasingly competitive political landscape, perhaps as lowland elites fissioned and established their own sites. Like those of the EB III, fortification systems of the MB II and III were progressively enlarged by the addition of walls and ramparts. This style of fortification is characteristic of contemporary Syrian sites (Qatna, Ebla). Fortifications became so large they created the characteristic bowl shape of many large tells.

The most important MB II and III urban centers include Hazor, Shechem, and Megiddo. During this period Hazor reached its maximum extent of more than 80 ha (198 acres), and is the only site whose size rivals those in Syria. Complex internal organization also appears during this period, suggesting a variety of social institutions. At MB III Megiddo and Shechem there were large, fortified *migdal* temple structures—long rooms with an altar at one end and surrounded by thick walls. Smaller temples are known from such MB rural sites as Tell el-Ḥayyat, Tel Kitan, Nahariya, and Giv'at-Sharett. Curiously, MB II sites such as Megiddo and Shechem do not appear to have temples, suggesting that religious institutions waned temporarily; individualizing forms of worship, especially the veneration of ancestors buried below house floors, took precedence. The palaces at Tel Aphek, Megiddo, and Tel Sera' often adjoined temples and were complexes of rooms arrayed around large central courtyards. The examples from Tel Kabri are especially elaborate, with decorated plaster floors and Aegean-style wall paintings. [*See* Wall Paintings.] Urban planning is present during the Middle Bronze Age, as seen by the erection of fortification and gate systems and adjacent plazas and streets. MB domestic architecture at both rural and urban sites consisted of rectilinear courtyard houses, indicating agricultural and pastoral production by domestic units. Larger structures included more elaborate courtyard houses, suggesting class or wealth distinctions, and palaces. The architectural evidence reflects significant stratification and political authority not easily discerned in third-millennium evidence.

During MB II and III, sites with southern Levantine material culture, including Tell ed-Dab'a, the Hyksos capital of Avaris, Tell el-Yahudiyeh, and Tell el-Maskhuta, flourished in the Nile Delta. *Hyksos*, an Egyptian term meaning "foreign rulers," were southern Levantine elites who had been in Egypt since the end of the third millennium, having come to power during a period of Egyptian weakness. Hyksos sites are known for their rampart fortifications and, at Tell ed-Dab'a, temples and equid burials, suggesting a military elite. Egyptian sources indicate that the Hyksos fifteenth dynasty ruled Egypt for more than a century and were eventually expelled in about 1540–1525 BCE by Ahmose I of the eighteenth dynasty. The Egyptians destroyed the Hyksos Delta sites and those on the southern coastal plain, in particular Tell el-'Ajjul (probably the Hyksos capital, Sharuhen) and then exacted revenge on sites farther north. The complex series of destructions makes it difficult to understand the interval between the expulsion of the Hyksos and a renewed series of campaigns by Thutmosis III that marked the beginning of Egyptian imperial domination. [*See* Hyksos.]

Late Bronze Age. Though the height of internationalism, the Late Bronze Age was much diminished by Egyptian vengeance and then domination. The period represents an extreme concentration of wealth and power in the urban elites, at the expense of all other segments of society. It is difficult to determine archaeologically when the Late Bronze

Age began. The final destruction of the Hyksos in about 1525 BCE by Ahmose is a historical turning point. The campaigns of kings of the eighteenth dynasty, beginning with Thutmosis III (c. 1457 BCE), mark the beginning of aggressive efforts to dominate western Asia. The period from about 1450 to 1300 BCE, corresponding in part to the "Amarna age," saw Egyptians periodically moving north through the southern Levant on campaigns into Syria. The Amarna archive reflects conflict and intrigue among petty city-states of the southern Levant and their Egyptian overlords. [*See* Amarna Tablets.] After 1300 BCE, rulers of the nineteenth dynasty moved to control the southern Levant directly, engaging in conflict with the Hittites over boundaries between their respective empires. By 1225 BCE, the Hittites were no longer a threat. The kings of the twentieth dynasty were then forced to engage the "Sea Peoples" in battle, perhaps even in the Nile Delta itself. Egyptian control over the southern Levant declined swiftly after 1225 BCE and ended soon after, bringing the Late Bronze Age to a close.

A few sites escaped the initial Egyptian destructions at the end of MB III, and many others exhibit a gap in occupation until about 1450 BCE. Other decisive changes suggest that LB society never fully recovered. Few, if any, LB sites are fortified, and virtually the entire rural component of society disappeared. The disposition of the rural component is a major outstanding question for scholars. One suggestion is that they became mobile pastoralists who have thus far been invisible to archaeologists. Some recovery of urban society occurred after 1400 BCE, with much-reduced settlements lodged within the areas configured by MB fortifications. MB material culture continued, albeit increasingly impoverished in style and execution. LB pottery styles were derived directly from MB types; only minor decorations and Egyptian-influenced shapes were new. Imported pottery from Cyprus and the Aegean constituted the fine ware of the period. Bronze metallurgy continued, with copper imported from Cyprus and tin probably from southern Anatolia.

Many MB institutional features continued into the Late Bronze Age. Temples are well attested, with multiple examples found at Hazor, Megiddo, Beth-Shean, and Lachish. Some include Egyptian elements, reflecting the deep Egyptian cultural influence, but more generally they reflect Syrian design and practice. Temples were elaborate, often tripartite in design, and decorated with carved orthostats and statues of deities. Palaces were separated from temples (such as the long series at Megiddo) and consisted of rooms around a central courtyard. Numerous imports and luxury goods, such as carved ivories, indicate the wealth of the ruling elites. Cuneiform literacy is attested by the Amarna archives and by a few tablet finds. A number of other elite residential complexes are known (e.g., at Ashdod, Tell el-ʿAjjul, Tell Beit Mirsim), consisting of multiple rooms around courtyards. A final type of elite structure was the square brick Egyptian "governor's residence," found after 1300 BCE at Tell Jemmeh, Tel Seraʿ, Beth-Shean, and possibly Tell es-Saʿidiyeh. The variety of elite structures indicates the growth of institutional power during the Late Bronze Age. Domestic architecture is more poorly known and again consisted of courtyard houses. At urban sites, domestic architecture and planning were placed between palace and temple precincts.

While culturally much diminished from the Middle Bronze Age, the Late Bronze Age did see a number of innovations that set the stage for important later developments. Akkadian cuneiform remained the primary writing form, but the alphabet was also being pioneered. The Proto-Sinaitic or Proto-Canaanite script, parent to the Hebrew and Phoenician alphabets, is found on a small number of inscriptions, mostly votives, and varied in the number of letters and direction. [*See* Proto-Canaanite.] A small number of inscriptions in the simplified cuneiform alphabet used at Ugarit are also found. The plastic arts, such as ivory and seal carving, were influenced by both Egyptian and Syrian styles, reflecting an international exchange of ideas and artisans. International trade reached its zenith, with a range of goods (metals, foodstuffs, wines, oils, art objects) and artisans moving across western Asia and the eastern Mediterranean. The ability of the southern Levant to participate in this trade, despite its diminished state, reflects the concentration of wealth and power.

The breakdown of LB society came swiftly. Tied to both the Egyptian Empire and the international economy, the southern Levant was pulled down along with the rest of western Asia after 1200 BCE. With the collapse of the Egyptian and Hittite Empires for internal reasons and the appearance of the Sea Peoples as a threat to parts of the eastern Mediterranean, including the coast of the southern Levant, the city-state structure of the southern Levant also collapsed. Some sites, such as Megiddo, persisted as independent city-states after 1200 BCE, while others were destroyed in internecine warfare. The subsequent Iron Age, while continuing certain aspects of Bronze Age material culture, such as its ceramic styles, was marked by new technologies and an entirely new sociopolitical and ethnic configuration, notably the rise of national states.

[*See also* Fortifications, *article on* Fortifications of the Bronze and Iron Ages; Palace; *and* Temples, *article on* Syro-Palestinian Temples. *In addition, most of the sites mentioned are the subject of independent entries.*]

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ALEXANDER H. JOFFE

Palestine in the Iron Age

The archaeology of Iron Age Palestine covers most of the period of the Hebrew Bible, from the Israelite settlement until the Babylonian conquest of Jerusalem. To a large extent, the term *biblical archaeology* relates to this period, a field that has inspired extensive research that has, in turn, produced rich and varied data. The mutual relationship between the archaeological data and the biblical texts is one of the crucial methodological problems faced by archaeologists and historians of the period. [*See* Biblical Literature, *article on* Hebrew Scriptures.]

Chronological Framework and Terminology. The Iron Age in Palestine is defined archaeologically as the period that follows the Late Bronze Age (c. 1200 BCE) and terminates with the Babylonian conquests of Philistia and Judah (the latter in 586 BCE). There are, however, alternative proposals concerning the beginning, end, and inner division of this chronological framework, samples of which are provided in figure 1. Some Israeli scholars employ the term *Israelite period* instead of Iron Age. In the following discussion the terminology used is Iron Age I for the twelfth–elev-

PALESTINE: Iron Age. Figure 1. *Comparison of Iron Age Chronologies*

William Foxwell Albright (*The Archaeology of Palestine,* 1949, Harmondsworth, Middlesex, rev. 1960)

Iron Age I	Twelfth–tenth century BCE
Iron Age II	Ninth–beginning of the sixth century BCE
Iron Age III	550-333 BCE

Yohanan Aharoni and Ruth Amiran ("A New Scheme for the Subdivision of the Iron Age in Palestine," *IEJ* 8 [1958]: 016015-016015)

Iron Age I	1200-1000 BCE
Iron Age II	1000-840
Iron Age III	840-586

Philip J. King (*American Archaeology in the Mideast,* Philadelphia, 1983)

Iron Age I	1200-930 BCE
Iron Age IIA	930-721
Iron Age IIB	721-605
Iron Age IIC	605-539

The Encyclopedia of Archaeological Excavations in the Holy Land (edited by Michael Avi-Yonah and Ephraim Stern, Jerusalem, 1976)

Iron Age IA	1200-1150 BCE
Iron Age IB	1150-1000
Iron Age IIA	1000-900
Iron Age IIB	900-800
Iron Age IIC	800-586

The New Encyclopedia of Archaeological Excavations in the Holy Land (edited by Ephraim Stern, Jerusalem and New York, 1993)

Retains the divisions of the earlier encyclopedia, except that the date 800 BCE for the end of Iron IIB was lowered to 700 BCE

Amihai Mazar (*Archaeology of the Land of the Bible,* New York, 1990)

Iron IA	1200-1150 BCE
Iron IB	1150-1000
Iron IIA	1000-925
Iron IIB	925-720
Iron IIC	720-586

Gabriel Barkai (*The Archaeology of Ancient Israel,* edited by Amnon Ben-Tor, New Haven, 1992)

Iron Age IIa	Tenth and ninth centuries BCE
Iron Age IIb	Eighth century
Iron Age IIIa	Seventh century until 586.
Iron Age IIIb	586 until the late sixth century

enth centuries and Iron Age II for the tenth–sixth centuries, disregarding further subdivisions.

Iron Age I (1200–1000 BCE). The first two centuries of the Iron Age are characterized by the disintegration of the Late Bronze Age socioeconomic and political structure and its gradual replacement by a new social organization. The latter was related to the appearance of new ethnic groups bearing individual national and religious identities: the Israelites, the "Sea Peoples" (among them the Philistines), the nations of Transjordan (Ammonites, Moabites, Edomites), the Arameans, and the descendents of the Canaanites, called Phoenicians by both the Greeks and modern scholars. [*See* Philistines; Transjordan, *article on* Transjordan in the Bronze and Iron Ages; Ammon; Moab; Edom; Arameans; *and* Phoenicians.] These ethnic entities did not appear simultaneously, and their impact on the cultural development in Palestine during this period was diverse. Several major trends characterize this era: the decline of international trade; the appearance of new modes in pottery manufacture, architecture, and other aspects of material culture; the emergence of new technologies (particularly the use of iron); and distinct regionalism in the material culture.

Demise of Egyptian hegemony. During the first part of its twentieth dynasty, Egypt retained control over the province of Canaan. Egyptian monuments, inscriptions, pottery, and burials in anthropomorphic coffins are evidence of the continuation of this domination at least until the reign of Rameses VI. Beth-Shean continued to serve as an Egyptian administrative center, as demonstrated by a group of monuments and inscriptions dating to the time of Rameses III, including a full-sized statue of this pharaoh. [*See* Beth-Shean.] Finds at other sites, such as Akko, Megiddo, Lachish, Gezer, Tel Sera', Tell el-Far'ah (South) and the copper mines at Timna', demonstrate the continuity of an Egyptian presence on the coastal and inner plains of the country during the first part of the twelfth century BCE. [*See* Akko; Megiddo; Lachish; Gezer; Sera', Tel; Far'ah, Tell el- (South), Timna' (Negev).] The demise of Egyptian occupation most likely occurred during the reign of Rameses VI, or slightly afterward, when the Egyptian town at Beth-Shean was violently destroyed by fire.

Continuity of Canaanite culture. Although Hazor, the largest Canaanite city, was destroyed in the thirteenth century BCE, other Canaanite cities, such as Lachish (stratum VI) and Megiddo (stratum VIIA), survived well into the twelfth century BCE. [*See* Hazor.] Destructions in the mid-twelfth century BCE, perhaps related to the decline of Egyptian control and the appearance of new ethnic groups (Sea Peoples and Israelites), devastated those cities. While some (e.g., Hazor, Lachish) did not recover for some time, the finds excavated at others reflect a thriving Canaanite culture. The best example is Megiddo (stratum VI) where Canaanite urban life flourished until the late eleventh century BCE. Similarly, a viable Canaanite culture continued on the Plain of

Akko (Akko, Tell Keisan), gradually developing into what can be defined as the Phoenician culture. Canaanites probably persisted as a significant component of the population throughout the country, although their previous mode of urban life was disrupted, and many probably integrated gradually into the new ethnic elements. [*See* Canaanites; Keisan, Tell.]

Sea Peoples. The invasion and settlement of the Sea Peoples is documented by Egyptian and biblical sources, as well as by archaeological evidence. The battles of the Sea Peoples against Rameses III in his eighth regnal year did not appear to have much impact on Palestine, as they probably took place in Lebanon and Egypt. However, the settlement of Sea Peoples, and particularly of the Philistines, is well documented in the archaeological record. The development of the Philistine material culture has been investigated at the principal Philistine cities (Ashdod, Ashkelon, Ekron/Tel Miqne), as well as at peripheral sites (Tell Qasile, Gezer, Timnah/Tel Batash, Tel Sera', Tell el-Far'ah [South]). The Philistines maintained a vital urban culture that combined elements brought from their Aegean homeland with local Canaanite and Egyptian components. Philistia was one of the few regions in the entire Levant where an urban system, including fortifications, temples, and public buildings, thrived in the twelfth–eleventh centuries BCE; cities like Miqne/Ekron reached an area of 20 ha (50 acres). The earliest phase of Philistine pottery was a local variation of the Mycenaean IIIC:1b style. Subsequently, this ware absorbed Canaanite, Egyptian, and Cypriot motifs and forms, developing into an eclectic style (the Philistine Bichrome ware). Philistine clay figurines retained Aegean traditions, and some of the seals are inscribed with a unique, still undeciphered linear script. [*See* Philistines; Ashdod; Ashkelon; Miqne, Tel; Qasile, Tell; Batash, Tel; *and* Ceramics, *article on* Syro-Palestinian Ceramics of the Neolithic, Bronze, and Iron Ages.]

Israelites. The Israelite settlement in the hill country of central Palestine and in the Galilee is archaeologically well attested. Intensive surface surveys have revealed hundreds of small sites founded during Iron I in these regions. A limited number of excavations (at Dan, Hazor, Sasa, Ḥorvat Ḥarashim, the Bull Site, Mt. Ebal, Shiloh, Ai, Khirbet Raddanah, and Giloh) provide data about the nature of the material culture at these sites. The central hill country was the heartland of the settlement process, in territories allocated to the Israelite tribes of Manasseh, Ephraim, and Benjamin. In many cases, the settlements were established on harsh terrain, far from water sources and often in the heart of the hilly woodland. This was a "frontier zone," practically unsettled by the Canaanites of the Late Bronze Age. The new pattern of settlement in these regions reflects the social, economic, environmental, and perhaps ideological factors that distinguished the emerging Israelite society. It appears that this was a sedentary, rural, self-sufficient society that placed an emphasis on familial and tribal relationships. The settlements are usually small and unfortified and display an unsophisticated material culture, although based largely on Canaanite traditions. Somewhat different settlement patterns have been found in the northern Negev desert (Tel Masos) and foothills ('Izbet Ṣarṭah), however. [*See* Dan; Bull Site; Ebal, Mount; Shiloh; Ai; Raddanah; Giloh; Masos, Tel; *and* 'Izbet Ṣarṭah.]

The origin of the settlers in the hill country has been interpreted in various ways. One school of thought pictures this population as local, indigenous peoples, either pastoralists who changed their way of life or farmers who fled to the mountains from the lowlands of Canaan. Another approach claims that the settlers were seminomadic pastoralists who penetrated the country's borders. Still others postulate a complex process in which population groups of the above-suggested origins, as well as immigrants infiltrating from regions north of Palestine, merged to create the new "Israelite" entity. In any event, the archaeological data are source materials for studying the origins of Israel presented in the biblical texts and in the single mention of "Israel" in Merneptah's victory stela (c. 1207 BCE).

Iron Age II (1000–586 BCE). Two key factors determined the material culture of the Iron II period in Palestine: the country's geopolitical history, and the influence of artistic and architectural trends common to the entire Levant. These two opposing trends are discernible in the period's archaeological record.

Israelite kingdoms. Intensive archaeological research has been carried out in the territories of the United Monarchy of David and Solomon, as well as in the realm of the divided monarchies of Judah and Israel. Excavations have been conducted at numerous and diverse sites: the main urban centers (Jerusalem, Samaria, Dan, Hazor, Megiddo, Jezreel, Dor, Gezer, Lachish); smaller towns and villages (Tel Kinnerot, 'Ein-Gev, Yoqne'am, Tel Qiri, Tirzah, Tell en-Naṣbeh, Timnah/Tel Batash, Beth-Shemesh, Tell Beit Mirsim, Tel Ḥalif, 'Ein-Gedi, Tel Sheva/Beersheba, Tel 'Ira, 'Aro'er); royal citadels (Arad, Ḥorvat 'Uza, Qadesh-Barnea); countryside palaces (Ramat Raḥel); desert shrines or cultic centers of worship (Kuntillet 'Ajrud, Qitmit); isolated fortresses and observation towers (Khirbet Abu Tuwein, French Hill [Jerusalem], Giloh); small farmsteads and caravanserais (Vered Jericho, Ḥorvat Shilhah, and various sites in the Judean desert and along the shores of the Dead Sea); and unique phenomena such as the short-lived wave of settlement (probably dating to the tenth century BCE) in the Negev highlands, which includes some fifty main structures ("citadels"), along with hundreds of houses and installations scattered over an extensive area. Surface surveys in many parts of the country round out the excavations by providing data on patterns of settlement in the Israelite territories. [*See* Jerusalem; Samaria; Jezreel; Dor; Lachish; 'Ein-Gev; Yoqne'am; Qiri, Tel; Naṣbeh, Tell en-; Beth Shemesh;

Beit Mirsim, Tell; 'Ein-Gedi; Beersheba; 'Ira, Tel; 'Aro'er; Arad; Qadesh-Barnea; Ramat Raḥel; Kuntillet 'Ajrud; Qitmit, Ḥorvat; *and* Giloh.]

This extensive research has facilitated detailed studies of many aspects of the material culture, such as settlement patterns, comparative stratigraphy, town planning, architecture, pottery typology, technology, agriculture, industries, trade, religious practices, art, iconography, burial customs, metallurgy, metrology, and paleography. Attempts to reconstruct various aspects of Israelite society, such as demography and family structure, have been made utilizing this vast body of data. Relating these archaeological finds to the political, social, and cultural history of the period, based on the biblical texts as well as on extrabiblical written sources, poses a special challenge, however, often raising serious methodological problems.

Several historically attested military events during this period resulting in severe destructions serve as "datum points" for establishing absolute chronology, the most outstanding of which are David's conquests sometime after 1000 BCE (destruction of Megiddo VIA, Tell Qasile X, Dor); Shishak's conquests during his raid in Israel and the Negev five years after the death of Solomon, in 925 BCE (destruction of Beth-Shean, Tell 'Amal, Megiddo IVB-VA, Gezer VIII, Tel Qasile VIII, Negev sites); the Assyrian conquest of the northern kingdom of Israel in 735 and 722 BCE (destructions at Dan, Hazor V, Megiddo IVA, Yoqne'am, Samaria, and other sites); Sennacherib's invasion of Judah in 701 BCE (destruction of Lachish III, Tel Batash III, Tell Beit Mirsim A, Tel Sheva/Beersheba II, Arad VIII, and related sites); and the Babylonian conquest of Judah in 586 BCE (destruction of Jerusalem, 'Ein-Gedi, Ramat Raḥel, Lachish, 'Aro'er, Arad VI, and other sites).

Material Culture. Only a few selected features of Israelite material culture can be highlighted here, among them the monumental, public architecture of royal Israelite cities. These cities are distinguished by large-scale, meticulous planning, such as evidenced at the royal enclosures at Samaria, Jezreel, Ramat Raḥel, and Lachish, as well as at the sanctuary at Dan. Architectural decoration included the use of ashlar masonry, proto-Aeolic, or "palmette," capitals, and carved windows. These features have been considered typically "Israelite" by some scholars, yet they were probably shared by Israel's neighbors and even invented by Phoenician artists (although this cannot be unequivocably proven). The use of squared-off monolithic pillars became a very common feature in both public structures (storehouses and stables) and private dwellings.

Urban fortifications included both casemate (or double) and solid walls, as well as city gates with two to six chambers, sometimes with an outer gate. These architectural features appear from the reign of Solomon until the end of the monarchy. Although it has been proposed that an inner development and typology exists for these characteristics, there is no consensus on the point. Water-supply projects constitute one of the most enterprising and impressive remains of the period, including shafts and tunnels leading to springs outside the cities or to the underground water table. Aqueducts are rare, the best known being Hezekiah's tunnel in Jerusalem, a unique engineering venture that demonstrates sophisticated hydrological ingenuity. [*See* Water Tunnels.]

Settlement patterns. An important factor in understanding this period is the settlements' spatial distribution and hierarchy. In this respect, the growth of Jerusalem during the eighth–seventh centuries BCE in relation to the rest of Judah is significant; the size of Jerusalem in the eighth–seventh centuries is estimated at 60 ha (150 acres), while most other towns in Judah did not exceed 2–3 ha (5–8 acres). [*See* Judah; Demography.] Thus, the capital became a megalopolis, with a complex, centralized economic, political, and religious system. Jerusalem's agricultural hinterland consisted of many small villages and farmsteads, which enlarged the area of arable land by constructing cultivation terraces on the hillsides.

Religion and cult. What is known of Israelite religious practices comes from two excavated shrines (Arad and Dan), several inscriptions, and numerous clay figurines and other art forms. The central Israelite Temple in Jerusalem is known, only from its description in the Bible (*1 Kgs.* 6–7), which is sufficient to show that its plan was largely akin to earlier and later tripartite temples throughout the Levant. [*See* Temples, *article on* Syro-Palestinian Temples.]

Epigraphy. Epigraphic finds (e.g., ostraca, seals, seal impressions) add important information concerning private names, administrative practices, economic activities, iconography, and even some specific historical events. [*See* Ostracon; Seals.] Some discoveries (such as the Khirbet el-Qom, Kuntillet 'Ajrud, and Ketef Hinnom inscriptions) are of great importance for reconstructing the development of ancient Israelite religion, as well as the history of the transmission of the biblical text. [*See* Qom, Khirbet el-; Ketef Hinnom.]

Other ethnic entities. Archaeological research into the Iron Age elucidates the culture of neighboring regions and other ethnic entities, such as the city-states of Philistia, the nations of Transjordan, and the Phoenicians.

In Philistia, excavations at Ashdod, Ashkelon, and Ekron/Tel Miqne have shed light on the flourishing urban material culture of these city-states in Iron II. They reveal massive fortifications, public buildings, and industries. Their pottery indicates local traditions, which means that a regional material culture was created with its own ethnic and geopolitical affinities (now being called Neo-Philistine). These city-states developed at different rates. Thus, the spurt of growth experienced by Ashdod in the tenth century BCE appears to have allowed it to overtake the role played by the dwindling town of Ekron. The latter, however, expanded to the size of almost 30 ha (75 acres) in the seventh century BCE, when it became a center of olive oil production. Trade relations with Egypt, Greece, Transjordan, and Phoenicia are reflected in

the archaeological record, such as the finds from Meṣad Ḥashavyahu on the coast, due west of Tel Miqne/Ekron. [*See* Meṣad Ḥashavyahu.] Severe destructions uncovered at Ekron, Timnah, and Ashkelon mark the Babylonian conquest of Philistia between 605–600 BCE.

The Plain of Akko is by and large the southern extremity of the Phoenician entity, which stretches northward along the Mediterranean coast. At sites such as Achziv, Tel Kabri, Tell Keisan, Tell Abu Hawam, and Dor, the distinctive Phoenician material culture is well represented. [*See* Achziv; Kabri, Tel; Abu Hawam, Tell.] It is particularly well known from the rich cemeteries at Achziv, where different burial customs (rock-cut and ashlar-built chamber tombs and cremations) reflect varying cultural influences. [*See* Burial Techniques.] Phoenician pottery traditions and art are known both from Phoenicia itself and from the objects it exported to Israel, such as the Phoenician ivories found at Samaria, which are a superb example of costly Phoenician art objects. Phoenician influence is also represented in the iconography of many Israelite seals.

The culture of the Moabites, Ammonites, and Edomites in Transjordan is much less known from that of the Israelites, although in recent years important advances have been made in this field. Ammonite tomb groups, watchtowers, seals, and inscriptions, dating mainly to the eight–seventh centuries BCE, have been discovered. The land of Moab has been explored by intensive surface surveys, as well as in excavations at such key sites as Ḥesban (Heshbon) and Dibon; the Moabite stone remains the most important discovery from this region. [*See* Ḥesban; Dibon; Moabite Stone.] Surveys and excavations at several sites in Edom (Buṣeirah, Tawilan, Umm el-Biyara, Tell el-Kheleifeh, and others) provide data concerning settlement history as well as local pottery styles. [*See* Buṣeirah; Tawilan; Umm el-Biyara; Kheleifeh, Tell el-.] However, the majority of these discoveries date to the eight–seventh centuries BCE, so that the earlier part of the Iron Age remains enigmatic. Edomite activity in the ʿArabah and Negev is also known from excavations at Hatzevah and Ḥorvat Qitmit, where an Edomite shrine was uncovered.

Assyrian Domination. Evidence for Assyrian conquests in Palestine after 732 BCE and for Assyrian domination of large parts of the country until about 630 BCE, has been found at various sites. The conquest of Lachish by Sennacherib is illustrated by a unique combination of biblical and Assyrian texts, monumental Assyrian reliefs, and archaeological discoveries at the site, including the only excavated Assyrian siege ramp. Assyrian governmental buildings found at Megiddo (stratum III) and other places, as well as Assyrian objects found at various sites such as Gezer, constitute evidence of local Assyrian administrative centers. A series of sites in the northern Negev (Tell Jemmeh, Tel Seraʿ, Tel Haror, Ruqeish) has produced Assyrian architectural complexes and a variety of objects, indicating a particularly intense Assyrian presence in this region, close to the southern border of Palestine, possibly related to the Assyrian conquest of Egypt. [*See* Jemmeh, Tell; Haror, Tel.]

Conclusion. The archaeology of Iron Age Palestine (including Transjordan) has yielded a vast body of rich and varied information on many aspects of life in the country's various geopolitical zones. The integration of the archaeological data with the biblical and extrabiblical written sources provides a sound basis for reconstructing the material culture, social structure, economy, and technology of the Israelites and their neighbors during most of the period recorded in the Hebrew Bible.

[*See also* Israelites.]

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AMIHAI MAZAR

Palestine in the Persian through Roman Periods

After the exile of the Judeans, Palestine fell into obscurity until the return of the exiles under Cyrus the Great in 539 BCE. For the more than a thousand years that followed, the area was administered by imperial powers: the Achaemenid Persian Empire, the Hellenistic Ptolemaic Egyptian and Seleucid Syrian dynasts of Macedonia who succeeded Alexander the Great, and the Roman Empire from Pompey (63 BCE) until the Islamic conquests of the seventh century CE. Until recently, archaeological knowledge of the Persian and Hellenistic periods was veiled in darkness, but exciting discoveries of papyri, coins, seals, and a few inscriptions have begun to provide new insights into the period, which is still basically known best from literary and documentary sources. The century of Jewish independence under the Hasmonean monarchs (167–63 BCE) has also yielded little information from archaeological exploration. In contrast, the archaeological sources for the Roman era are quite substantial and more than amply add to the extensive written sources for the period.

Persian period (539–332 BCE). After the catastrophic conquests by the Mesopotamian empires, Palestine went through a revival under Persian rule. With Cyrus's conquest of Babylon in 539 BCE, the adjacent territories were seized and the Judean exiles permitted to return to Jerusalem and rebuild their temple. [*See* Jerusalem.] The subsequent Egyptian campaign by Cambyses (525 BCE) suggests that political motives and propaganda were involved in the decision. After the uprisings and rebellion in the aftermath of the monarch's death, the rise of Darius to the throne may have instilled hopes in some segments of the population of a Davidic monarch governing the returning exiles in Judah. [*See* Judah.] Under the "governor" Zerubbabel, the grandson of King Jehoiachin, and a scion of the Davidic house, the rebuilding of the temple was completed, with the events recorded by Haggai and Zechariah (516–515 BCE). The next seventy-five years represent somewhat of a literary gap in the Hebrew Bible, casting darkness over the subsequent developments in the region, although the later biblical prophets do offer some vital details. The death of Darius in 486 BCE prompted revolts in Babylon and Egypt, and Judah may not have been unaffected by those events. [*See* Babylon.] A second wave of Judean exiles in the mid-fifth century BCE, under Ezra and Nehemiah, provide the next documented period, and the changes are notable. The previous messianic hopes were gone and the Judeans apparently were settled into life under Persian rule with native hierocratic viceroys supervising their activities. The earlier governors, between Zerubbabel and Nehemiah, remain a matter of speculation (cf. *Neh.* 5:15), as do most of those who subsequently served in this capacity. The recent recovery of a hoard of bullae from Jerusalem makes a partial reconstruction of the governing gap possible today, however (Avigad, 1976; Meyers, 1985).

Because Xerxes' campaign against Greece in 480/79 BCE ended in disaster, it is sometimes assumed that it initiated a period of decline in Persia. However, Persian sources for the period are dismal, forcing the historian to turn to Greek writers for any detailed information about the realm. Nonetheless, little credibility should be ascribed to the picture of a weak and tottering Persian regime contained in Xenophon and the Greek orators. Historical reason, not Greek rhetoric, should be the guide for the events of the fourth century. In spite of periodic revolts, Persian rule was maintained throughout most areas of its extensive domain, including Palestine, for another century and a half, until the Macedonian king Alexander the Great's conquest in 330 BCE. For Palestine, the Hebrew Bible provides a more positive perspective of Persia and the events of the period. These include the prophets Haggai, Zechariah, and Malachi, the Books of *Chronicles, Ezra,* and *Nehemiah,* and the more problematic *Book of Esther.*

It appears that the Persians basically maintained the administrative divisions of Palestine inherited from Neo-Assyrian imperialistic administration, even if subsequent events forced a number of changes in the organization of the region. [*See* Assyrians.] Palestine originally comprised only one part of the substantial territory of the "fifth satrapy," administered by the satrap, or governor *(pḥh),* of the province better known as "Babylon and Beyond the [Euphrates] River" *(Babili u Ebir Nari).* This title is last attested in 486 BCE, sometime after which the territory was divided into two provinces, Babylon and Beyond the River. The latter contained Palestine and the regions of Syria, Phoenicia, and Transjordan. Within Palestine itself, a number of subdistricts existed: Megiddo (or Galilee), Dor (the Carmel coast), and Samaria in the north and Judah, Ashdod (Philistia), and Idumea (Negev) in the south. [*See* Megiddo; Dor; Samaria; Ashdod; Negev.] Only Judah and Samaria are explicitly attested; the other divisions are presumed on the basis of the Neo-Assyrian organization of the region or later

evidence. Each of these subdivisions of the satrapy was designated a province (Heb., *medinah*) under the rule of an official called a governor *(pḥh)*. If Judah is typical, there were also internal districts (Heb., *pelek*) within each of the provinces. Some remains of the administrative centers are known, such as a Persian throne from Samaria and the possible palace of the capital at Beth-Zur. [*See* Beth-Zur.]

Other regions may have been organized differently. Some scholars assume that the coast was comprised of a network of autonomous cities under the political jurisdiction of the Phoenician kings of Tyre and Sidon (excluding Akko and Gaza), but they initially may only have exercised certain economic rights and tax concessions in the area, without any political authority. [*See* Phoenicians; Tyre; Sidon.] By the fourth century BCE, however, there appear to be some changes in the system. The Shamunʿazar sarcophagus from Sidon indicates that the Phoenician king received Dor and Jaffa from the Persian king. [*See* Sarcophagus; Jaffa.] According to Pseudo-Scylax, Ashkelon the former capital of Ashdod, became a Tyrian colony with a royal palace. [*See* Ashkelon.] It is also difficult to ascertain how Samaria was internally organized. Between the time of Nehemiah and Alexander the Great, it was governed by the local native dynasty of Sanballat, but it is not clear how it was administered earlier. The population was of varied ethnic backgrounds as a result of an influx of Babylonians, Iranians, Elamites, and Arabs who settled in the region earlier. [*See* Babylonians; Elamites.] All are represented in the region's onomasticon. Recent excavations on M. Gerazim also reveal that the material culture was influenced by both Persia and Phoenicia, in spite of a strong local component. These early migrants appear to have extensively developed the countryside and established many new sites, including fortified towns, villages, and farms. In addition, the more sparely populated Negev of Palestine and southern Transjordan was under the control of the Qedarite Arab tribal confederation in the fifth century BCE, subsidized by Persia to maintain order in the region. Although centered in northern Arabia at Jauf, these Aramaic-speaking Arabs seem to have controlled the vast territory from Tell el-Maskhuta in the eastern Delta of Egypt across the Negev of Palestine to Transjordan, including the vital trade route between Gaza and ʿAqaba on the Red Sea. [*See* Maskhuta, Tell el-; Delta; ʿAqaba.] By the fourth century BCE, the situation had changed, with the Qedarite Arabs replaced by the Nabateans and a new province named Idumea attested for the Negev (Diodorus Siculus 19.94.7). [*See* Nabateans; Idumeans.] In sum, Judah was surrounded by different ethnic groups: Samaritans to the north, Ammonites to the east, Arabs to the south, and Sidonian and Tyrian merchants to the northwest.

Such ethnic and cultural diversity may help to explain the conservative reforms and transformation of the Jewish community under Ezra and Nehemiah. The latter's struggles with Geshem the Arab, Sanballat of Samaria, and Tyrian merchants resident in the city (*Neh.* 2:19, 6:1–6, 13:16) attest the internal divisions and ethnic tensions within Palestine. Some scholars even assume that Nehemiah freed Judah from prior dependency on Samaria, transforming it into a separate province. Emphasis on purity of language (*Neh.* 13:24), prohibitions against mixed marriages (*Ez.* 10; *Neh.* 10:31, 13:23–28), and the development of strict religious and cultural traditions may have been stimulated by this xenophobia. This ethnic diversity within Palestine is supported by the epigraphic finds in the region. Aramaic, the lingua franca of the Persian realm, was dominant throughout Palestine. [*See* Aramaic Language and Literature.] It is represented by scattered finds of ostraca at Akko, Yoqneʿam in the Galilee, Samaria, throughout Judah, and in the Negev. [*See* Ostracon; Akko; Yoqneʿam.] Phoenician inscriptions appear mainly along the coast, with only random finds inland. [*See* Phoenician-Punic.] From Dor, pottery incised with Greek and Phoenician was recently discovered. Finds of Edomite texts also continue to accumulate in the eastern Negev. In contrast, epigraphic texts in Hebrew are rare for the period.

Judah, however, is rich in other kinds of documentation. Coins of the Philisto-Arabian Attic type and standard were minted in Palestine during the Persian era, but Gaza no longer appears to be the center for the issues. The discovery, since the 1960s, of hundreds of new coins from Judea and Samaria have substantially expanded the existing numismatic corpus of the Persian period. One coin even mentions Yehezqiyah, a governor *(pḥh)* of Judea and a Yohanan the priest *(hkwhn)* of Judah. The legends are mainly in Paleo-Hebrew script and mention the name *yhd* or, less frequently, *yhwd*. Unfortunately, the bulk of the coins lack a precise provenance and none are from a clear, unstratified context. Nevertheless, the reports assign almost all of them to the confines of Judah (Jerusalem, Ramat Raḥel, Beth-Zur, Jericho, and Bethlehem—with a few stray finds outside Judah at Tell Jemmeh near Gaza and also near Jericho). [*See* Ramat Raḥel; Jericho; Bethlehem.] Finds of stamped seal impressions within Judah are even more confined; finds are limited to the 25–40 km (16–25 mi.) around Jerusalem, extending from Bethel/Ai in the north to Hebron and Lachish in the south. [*See* Seals; Ai; Hebron; Lachish.] They bear the imprint of the governor of Judah *(pḥwh yhd)* and leave the impression that the territory of Judah is far more restricted and compact than what may be assumed from the list of the villages of Judah in the Hebrew Bible (*Neh.* 3:1–32). Stylistic changes in the seals and the possible existence of other governors of Judah have yet to be molded into any chronological scheme.

These finds are rivaled by the discoveries from a cave in Wadi ed-Daliyeh near Jericho that make it clear that the Sanballat dynasty continued to rule over Samaria until Alexander's conquest. [*See* Daliyeh, Wadi ed-.] Coins of the Philisto-Arabian type from the cave were issued by the Sa-

maritan state, matching those known from Judah and Gaza. They date from 375 to 335 BCE. One contains the name of the Samaritan capital (*šmryn,* "Shomron") and another the name of what was probably one of its governors (*yrbʿm,* "Jeroboam"). According to Josephus (*Antiq.* 11.301–309), the last Persian king, Darius III, granted approval for the construction of a temple on Mt. Gerazim, similar to the one in Jerusalem. It was even staffed by some priests from Jerusalem, who were given land and subsidized by Sanballat. The events apparently took place shortly before the conquest of the region by Alexander the Great.

No such contemporary nonbiblical documents survive from Judah, leaving many matters of its history subject to speculation. It is evident that the returning exiles in the 460s stimulated a slow revival in the region for the remainder of the fifth century BCE that reached its zenith in the fourth. There are, however, indications that the native population was restless and that there were periodic revolts. According to Ephraim Stern (1990) some cities in Samaria and Benjamin in the center of Palestine suffered destruction in the 480s, and those of the Shephelah and Negev in the 380s. [*See* Cities, *article on* Cities of the Persian Period.] Revolts in Babylon and Egypt for independence, between 404 and 343 BCE, may account for the latter, producing invasions and counterattacks by Persia that affected southern Palestine. A prior revolt by Egypt in the 450s may have resulted in a chain of fortresses being constructed in Judea, either delineating and protecting its borders or controlling the region's vital roads and trade routes. The second wave of exiles under Ezra and Nehemiah may have served to create a buffer zone against Egypt in Persian interests. A network of forts and royal granaries was constructed along the entire Palestinian coast to control the Mediterannean ports and the rest of the region. [*See* Granaries and Silos.] Akko was an especially important military base for the campaigns against Egypt in 374/73 CE (Diodorus 16.41.3; cf. Strabo 16.2.25 [758]).

A network of roads was also organized as a communication system for the various garrisons of Persian troops or mercenaries in the region. Some of these must have been located at the provincial centers (Samaria, Jerusalem, Dor, Ashkelon, Lachish). Tombs at Gezer and Shechem have been identified with Persian garrisons residing in the area. [*See* Tombs; Gezer; Shechem.] Another string of garrisons appeared in the Negev between Gaza and the Dead Sea. Hebrew ostraca from Arad, Beersheba, Tel ʿIra, Yatta, and Tell Jemmeh and Tell el- Farʿah (south) near Gaza perhaps emanate from these military posts. [*See* Arad; Beersheba; Jemmeh, Tell; Farʿah, Tell el- (South).] The texts from Arad and Beersheba are the most numerous and are basically concerned with the delivery of cereal to various men and animals. There are references to the province *(mdynh),* military units *(degel),* a "treasurer" *(gnzbr),* and perhaps "tax bearers" ([*bnb*]*ry*ʿ), but it is not clear if these are rations for local garrisons of soldiers, horsemen, and donkey drivers or tax receipts from the local population or both. There are no architectural remains of a garrison; only store pits from the Persian period attest to an occupation at the sites. Persian occupation of the Negev, farther south, was even more limited; it is represented by only a few ostraca at Horvat Ritma, Qadesh-Barnea, and Tell el-Kheleifeh, near ʿAqaba. [*See* Qadesh-Barnea; Kheleifeh, Tell el-.]

The material culture of the Persian period has been summarized by Stern (1982). Palestine appears to have been culturally divided into two distinct regions. The culture of Judah and Samaria was still influenced by the traditions of Mesopotamia and Egypt. In contrast, the culture of the coastland and Galilee was heavily influenced by foreigners. Throughout Palestine, pottery from Attica, Cyprus, Phoenicia, and of the East Greeks appears at numerous sites. Some of the Greek pottery dates to before 475 BCE, but afterward abundant Attic black-glazed wares signal vigorous trade in the region, following a hiatus of more than a century for any notable evidence of Greek imports. The finds may mainly be a product of Phoenician and Greek mercenaries and traders active in the area, but ceramic imitations of other eastern prototypes are also common. Persian influence itself was minimal; their presence was reflected only in scattered finds of Iranian-type weapons, riding accessories, bronze and silver Persian-type bowls, and Achaemenid-type jewelry. [*See* Weapons; Jewelry.]

Hellenistic Period (332–63 BCE). After the death of Alexander the Great, his Macedonian successors *(Diodochoi)* divided up the conquered territory, with Palestine and Phoenicia becoming the possession of the Ptolemaic dynasty centered in Egypt by 301 BCE. These extraterritorial possession of the Ptolemies were governed by a local provincial official called a strategos, who was empowered with military and civil jurisdiction of the region. [*See* Ptolemies.] For administrative purposes, Syria and Palestine were organized into divisions known as hyparchies or toparchies; minimal literary and archaeological evidence for the period leaves other details unknown. It is known that Ptolemy Philadelphus II (285–246 BCE) created a number of military colonies in the region, including Ptolemais (Akko), Philoteria on Lake Galilee, and perhaps Scythopolis/Beth-Shean in the Jordan Valley. [*See* Beth-Shean.] The major source for the mid-third century in Palestine is the Zenon papyri from the Faiyum in Egypt. [*See* Faiyum.] Zenon was the private agent of Apollonios, the financial minister for Ptolemy II, between 260 and 258 BCE Zenon conducted visits to Gaza, the Idumean cities of Adora and Marisa/Mareshah, and other areas in Palestine, including the cities of Ashkelon, Straton's Tower (Casarea Maritima), Jaffa, Akko/Ptolemais, the royal estates at nearby Beth-ʿAnat and Kedasa, and Jerusalem. [*See* Caesarea.] The focus is obviously the coastal cities and the inland administrative centers. Beginning with Ptolemy II, coins were minted at seven coastal cities (Berytus/Beirut,

Tyre, Sidon, Ptolemais/Akko, Jaffa, Ashkelon, Gaza), but not at any inland city. [*See* Beirut.]

The Macedonian Seleucid dynast Antiochus III defeated Ptolemy V at Panion/Banias in 200 BCE, after which Palestine came under the rule of the Syrian monarchs. [*See* Seleucids; Banias.] At first, the hereditary Zadokite high priests served as the viceroys of Palestine for the Seleucid king. In a similar fashion, Samaria (inclusive perhaps of Galilee) and Idumea were probably also separate spheres governed by native rulers. Macedonian garrisons were located at strategic locations to maintain security in the region, but the focus was still primarily the coastline and Transjordan. Seleucid regional policy is reflected in two recently discovered inscriptions. The Hefzibah inscription found in 1960 near Beth-Shean/Scythopolis provides the correspondence between Antiochus III and the strategos for Syria and Phoenicia in 200–198 BCE regarding the latter's village property in the area and the conduct of his garrison force among the native population. A more recently discovered inscription from the hellenized Sidonian community at Jamnia on the Sea (Yavneh-Yam) indicates that Antiochus V Eupator granted them special status in 163 BCE because of their loyalty to the throne (like the privileges extended by Antiochus IV to the Sidonian community at Shechem in Samaria; (*Antiq.* 12.5.5 [258]). [*See* Yavneh-Yam.] The cities founded by the Macedonian kings were essentially military colonies, not Greek cities with democratic civic organizations disseminating Greek culture to the native population. The language of Jesus and Josephus in the Roman era was still Aramaic, not Greek. The hellenization process was a limited affair sponsored by native monarchs and supported by an urban elite, in contrast to the rural countryside where traditional culture prevailed.

Events in Judea illustrate the phenomenon. The Seleucid appointment of non-Zadokites to the priesthood in Jerusalem and the attempt by a local collaborating elite to transform the city into a hellenized Antiochene community provoked the Maccabean revolt in 167 BCE and eventually led, in 142 BCE, to an independent Jewish state (a native Hasmonean dynasty) under Simon Maccabee. [*See* Hasmoneans.] The real transition to independence was marked later by the hiring of mercenaries by John Hyrcanus I (134–104 BCE) and the territorial expansion of Alexander Jannaeus (104–76 BCE) that resulted in the conquest of the hellenized coastal cities and parts of Transjordan. These efforts produced clashes with the neighboring Nabatean monarchs of Petra over the possession of Gaza and the Golan. [*See* Petra; Golan.] Consolidation of the new territories led to the conversion of the Idumeans by Hyrcanus and of the Itureans of Syria, who had infiltrated Galilee, by Aristobulus. Archaeological evidence for the period is still dominated by the sensational discoveries of the Dead Sea Scrolls from the Qumran Essene community, which remain a center of controversy even after a half century of research. [*See* Dead Sea Scrolls; Qumran.] Their main contribution remains twofold: they provide insights into the transmission of the text of the Hebrew Bible and into the complex and varied Jewish sectarian community they present for the Late Hellenistic and Roman periods, illuminating even further what is known from the Apocrypha and Pseudipigrapha. The scant traces of Hellenistic sites elsewhere remain enigmatic, perhaps concealed by subsequent Roman construction, as indicated by the excavations at Beth-Shean/Scythopolis or still awaiting discovery—such as the Hellenistic tombs recently found at the Maccabee family village of Modi'in. In spite of this lack of evidence within Judah, a Hellenistic military and commercial presence in the region is evident in peripheral areas: excavations at Tel Anafa in Upper Galilee revealed a prospering Greek community in the second century BCE located on the major trade route between Damascus and Tyre; the Hellenistic necropolis at the Idumean capital of Marisa/Beth-Guvrin reveals Greek and Sidonian influences; and the reconstruction of the Tobiad palace at 'Iraq el-Amir near Amman in Transjordan provides important insights into the art and architecture of the period. [*See* Anafa, Tel; 'Iraq el-Amir.]

Roman Period (63 BCE–324 CE). The Roman commander Pompey's settlement of the East and creation of a province in Syria resulted in the scrambling efforts of neighboring petty kings and tyrants to preserve their rule, including the Hasmonean and Nabatean kings, who were at the mercy of the Roman army. By 63 BCE, Jerusalem was taken by Pompey, the Greek cities of the coast and Transjordan were liberated from Hasmonean rule, and Judea was divided into five administrative districts. The Roman governor of Syria henceforth became the director of affairs in the region, with the Hasmonean Hyrcanus II surviving as a puppet ruler of the Jews supported by his ally Antipater of Idumea. Their later assistance to Caesar in Alexandria won for the former the position of ethnarch of the Jews and for the latter an appointment as procurator of Judea. Antipater's sons, Phasael and Herod, were then given administrative posts in Judea and Galilee, respectively. After Caesar's death, Antony reaffirmed the arrangement and eventually had the Idumean-Nabatean scion Herod declared the "king of the Jews" by the Senate in Rome. Later, Octavian confirmed his rule as a client king of Rome. From 37 to 4 BCE, Herod reigned over Palestine.

At this time, the urbanization of Palestine began in earnest with Herod's massive building program. At the inception of his rule, Palestine was still a world of small villages, but by the time of his death it had been transformed into a network of cities with all of the Greco-Roman features—temples, gymnasia, theaters, amphitheaters, stadia, and hippodromes. [*See* Theaters.] A palace was constructed in Jerusalem, protected by the adjacent Antonia Fortress, and a theater and anphitheater reputedly were constructed in the city. [*See* Palace.] His other foundations include Caesarea

Maritima, with its impressive harbor; Samaria, rebuilt as Sebaste as a tribute to the emperor Augustus; his own tripalatial winter palace at Jericho; and a magnificent marble temple at Panion/Banias in honor of Augustus. In addition, fortress-palaces were constructed at Herodium, Hyrcania, Cypros, Alexandrium, Masada, and Machaerus. [*See* Herodium; Masada; Machaerus.] He also subsidized building projects at major cities outside his realm, including the Lebanese ports of Berytus/Beirut, Tyre, and Sidon; Antioch and Damascus in Syria; and Rhodes, Chios, and Nicopolis in the Greek Aegean. His successors also made their contributions: in Galilee, Sepphoris was rebuilt, Tiberias was founded in 20 CE by Herod Antipas, and Caesarea Philippi (Panion/Banias) was founded by Philip the Tetrarch. [*See* Sepphoris; Tiberias.] To protect his realm, a native garrison force of one cavalry unit and five cohorts of infantry was established; military colonies were created in Batanea of Idumeans and Babylonian Jews; and veterans from his army were settled near Mt. Carmel and in the Golan and in Esbonitis (Hesban) in Transjordan. [*See* Hesban.] Vestiges of the Herodian cities and fortresses are still visible, unlike the magnificent temple building project that enlarged the sacred Temple Mount in Jerusalem, the elaborate central shrine of Judaism, where only the temenos walls lie exposed.

With Herod's death, the kingdom was assigned by Augustus to Herod's sons. Archelaus received Judea and Samaria, Antipas Galilee and Perea (east of the Dead Sea in Transjordan), and Philip the Tetrarch the territories of the Golan and parts of the Hauran (Iturea and Trachonitis in southern Syria). Archelaus's mismanagement of Judea led to its transformation into a Roman province governed by prefects of equestrian rank appointed and supervised by the governor of Syria. Caesarea Maritima became the seat of the officials who administered Judea from 6 to 41 CE, until the old kingdom of Herod the Great was briefly reinstituted under his grandson Agrippa I (41–44 CE), the friend of the emperor Claudian. With Agrippa's death, Roman procurators were appointed to rule over Judea (44–66 CE), again as a Roman province. His son Agrippa II became ruler of the kingdom of Chalcis in Syria and of Philip's territory while exercising some moral authority in Judea. Nevertheless, Agrippa II could not prevent the Roman procurators' harsh and corrupt policies from precipitating the outbreak of the First Jewish Revolt (66–70 CE). [*See* First Jewish Revolt.] The crushing of the rebellion led to Judea being administered by legates of senatorial rank with legionary troops at their command and directly responsible to the emperor. The effects of a Jewish revolt that broke out in Cyrene and Egypt, before spreading to Cyprus and Mesopotamia in 115 CE, seems to have had repercussions in Judea. [*See* Cyrene; Cyprus.] It is, however, the Bar Kokhba Revolt of 132–135 CE that is better known. This is so partially because of the documentation provided from letters written on papyrus by the rebel leader himself and by the Babatha archive found in caves near the Dead Sea, but mainly because of the disastrous impact it subsequently had on Palestine. [*See* Bar Kokhba Revolt; Judean Desert Caves.]

Prior to the revolt in 66 CE, the Roman army in Judea was composed of the one cavalry unit and five infantry regiments of the former Herodian garrison transformed into regular auxiliary troops serving at Caesarea and in Jerusalem. With the outbreak of the rebellion, the Syrian governor, C. Cestius Gasslus, marched into Palestine with the Twelfth Legion (Fulminata), which suffered a serious defeat by the Jews in an ambush. Consequently, Vespasian sent Titus to Alexandria to withdraw the Fifteenth Legion (Apollinarus), while he brought the Fifth (Macedonia) and Tenth (Fretensis) legions from Syria, accompanied by twenty auxiliary units. Between 68 and 70 the camp of the Fifth Legion was at Emmaus near Jerusalem (*War* 4.8.1 [445]; 5.1.6 [42]). [*See* Emmaus.] After the revolt, the Tenth legion remained in Jerusalem as the permanent Roman garrison in Palestine (*War* 7.1.3 [17]). By 120 it was joined by the Sixth Legion (Ferrata), which was stationed at Caparcotna (Legio) in the Jezreel Valley. This addition signals the transformation of Judea from a single-legion province governed by a legatus of ex-praetor status to a double-legion province under an ex-consul. After the Bar Kokhba Revolt and for the rest of the century (according to military diplomas of 139 and 186), three *alae* (cavalry) and twelve *cohortes* (infantry) units were stationed in Palestine. The ethnic name *Judea* was replaced by *Syria-Palaestinia* for the province, and Jerusalem was transformed into the *colonia* of Aelia Capitolina. By the end of the fourth century, the Tenth Legion was moved to ʿAqaba; a single cavalry unit (Equites Mauri Illyricani) replaced it in Jerusalem.

The development of the Roman road system in Judea is closely associated with Roman military activity in the region. [*See* Roads.] Between 51 and 54, veterans of four Syrian legions were settled in a colony at Ptolemais/Akko that was immediately connected by a coastal road to the Syrian capital at Antioch; it later served as the base of operations against Lower Galilee for Vespasian during the first Jewish Revolt. [*See* Antioch.] During the conflict, a road also was constructed between Caesarea and Scythopolis/Beth-Shean, obviously facilitating the movement of troops for the conflict. A lengthy hiatus followed before there were any signs of such activity again. No milestones of Flavian or Trajanic date are attested in Judea, but under Hadrian a dozen roads were constructed between 120 and 130, just prior to the Bar Kokhba Revolt. The establishment of the Roman colony of Aelia Capitolina (Jerusalem) and the addition of a new legion in Judea seem to have been the motivation, but Hadrian's visit to the region in 129/30 was a spur to construction projects elsewhere and probably in Palestine as well. At Tell Shalem, in the Jordan Valley, a statue of Hadrian was found with a dedication to the emperor by a vexillation of the Sixth Legion, which was probably stationed in the area.

The next documented periods of roadwork are connected with the movement of troops for the Parthian campaigns of the Antonine and Severan dynasties. The final known construction is the Diocletianic road between Aila (ʿAqaba) and Jotapata/Ghadyan, 40 km (25 mi.) north in Wadi ʿArabah. [*See* Jotapata.] Some isolated texts dated to Constantine and other fourth-century emperors are known from the Jordan Valley and Jerusalem. These latest additions to the system probably are to be associated with the administrative and military reorganization of the region.

Jews were excluded from the territory of Jerusalem with its foundation as a Roman *colonia* following the Bar Kokhba Revolt. Even in the rest of Palestine, they were faced with a changed situation as the land underwent an even greater urbanization program under Roman auspices. The Decapolis city of Scythopolis/Beth-Shean was designated one of Coele Syria's Greek cities in the Antonine era and was developed accordingly, as excavations reveal; Sepphoris in Galilee was renamed Diocaesarea under Antoninus Pius; during the Severan dynasty, Lydda/Lod became Diospolis, Beth-Guvrin was renamed Eletheropolis, and Emmaus was called Nicopolis. [*See* Decapolis; Cities, *article on* Cities of the Hellenistic and Roman Periods.] Palestine became a world of Greco-Roman cities in which the Jews were a minority. The center of Judaism consequently shifted to Galilee and the Golan, where the rabbis emerged as the dominant force in villages that were still predominantly Jewish. Throughout the post-135 period, prominent Jews locally and from the Diaspora sought burial in the necropolis of Beth-Sheʿarim on the edge of the Galilee. [*See* Beth-Sheʿarim; Necropolis.] The changed world of Palestine was reflected at Beth-Sheʿarim in the predominance of Greek over Aramaic and Hebrew in funerary inscriptions and in the pagan motifs decorating the tombs. [*See* Greek; Hebrew Language and Literature.] The same emphasis appears in the Graco-Roman mythological and astrological scenes in the synagogue mosaics of the Lower Galilee region. [*See* Synagogues; Mosaics.]

Galilee was apparently extensively developed in the Roman era, with hundreds of towns divided among two distinct regions. Lower Galilee, dominated by the cities of Sepphoris and Tiberias, lay astride the major trade route to the Greek cities of the Palestinian coast and was the center for the majority of the local population in the pre-70 era. Excavations at Yodefat/Jotapata and Gamla provide some insight into the centers of rebellion during the First Revolt. [*See* Gamla.] Upper Galilee appears to have flourished only later, in the second and third centuries, when there may have been a substantial influx of new Jewish migrants. Even there the technical world of Hellenism was absorbed by the population, otherwise known for its religious conservatism. North of the Tiberias-Ptolemais road, there are no Roman roads and there is minimal evidence for any Roman garrisons. The Roman road between Panion/Caesarea Phillipi and Tyre suggests that the contact in Upper Galilee was with the hellenized Phoenician coast, as is reflected in the material culture and coinage of the region produced by excavations of the synagogues at Khirbet Shemaʿ, Meiron, and Gush Ḥalav. [*See* Shemaʿ, Khirbet; Meiron; Gush Ḥalav.] The nature of the population and its relationship to the prerevolt population remains a matter of sharp debate, in spite of the abundant rabbinic literature for the period.

Roman occupation of the rest of Palestine must have been extensive. The royal lands of the Herodian monarchs and much of Judea were confiscated and transformed into imperial property, beginning with the collapse of Archelaus's rule (Josephus, *Antiq.* 17.13.1–2 [340–344]; cf. 18.2.1 [26]), again after the First Revolt (*War* 7.6.6 [216]), and finally in the aftermath of the Bar Kokhba Revolt (Eusebius *H.E.* 4.6.1). Even if much of it was later liquidated, the overwhelming impression is that large tracts of land continued to exist as Roman villae and imperial property. References to Saltus Geraiticus and Saltus Constantinianus, protected by imperial troops to the southeast of Gaza, indicate that vestiges of these imperial lands survived into the Byzantine era. By this time, the tetrarchic reforms had rearranged the provincial borders by adding parts of the province of Arabia (the Negev, Sinai, and southern Transjordan between the southern end of the Dead Sea and ʿAqaba) to Syria-Palestine. [*See* Sinai.] The assumption that the Diocletianic military reforms created a fortified frontier commonly known as the limes Palestinae and limes Arabicus is now a matter of considerable controversy. [*See* Limes Arabicus.] The effects of Diocletian's economic reforms on the region must have been felt by the native population in personal and land taxes, but the extant evidence is limited to parts of Galilee and the Golan. The persecution of the church between 303 and 313 ended with a Christian emperor, Constantine, and a christianized empire that marked the dawn of a new era of prosperity for Palestine.

[*See also* Galilee, *article on* Galilee in the Hellenistic through Byzantine Periods.]

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DAVID F. GRAF

Palestine in the Byzantine Period

The Byzantine period represents one of the most populous, prosperous, and archaeologically rich periods in the entire history of Israel (ancient Palestine). The beginning of the era is usually identified by the date, 324 CE, when the Christian emperor Constantine took control of the East; the end of the period is marked by the Islamic conquest in 640. In archaeological terms, a growing body of stratigraphic evidence from all regions of the country argues against investing too much credibility in these dates. Suffice it to say that the period begins sometime in the fourth century, depending on which site or region of the country is being considered, and continues in some places (like the Galilee and Golan) into the seventh century.

From a political standpoint, the most dramatic change in the country was its enshrinement in the empire as a Holy Land for Christians, as well as Jews, as has been recently documented from literary sources by Robert L. Wilken (1992). Nothing shows this more dramatically than the building programs carried out in Jerusalem by Christian emperors from Constantine onward. The height of this movement to make Palestine a Christian Holy Land is best illustrated by the emperor Justinian's (527–565) building program in Jerusalem, when the *cardo* (the major north–south street) was extended to the south to create a Christian section of the city. A huge basilical church called the Nea was installed near the site of the Church of the Holy Sepulcher in the modern city's Jewish Quarter. [*See* Jerusalem.] Depicted on the sixth century Madaba mosaic map, the *cardo* and a part of the church have now been securely located and excavated by Nahman Avigad (1993, pp. 128–135). [*See* Madaba.]

From an archaeological standpoint, the most dramatic feature of the Byzantine period is the density of site settlement. Byzantine occupation has been found on nearly every known ancient site in what was Palestine. In addition, recent research has focused on the settlement of the area's fragile deserts—in Judaea (Judah) and the Negev and Sinai. After the empire became officially Christian in the late fourth century, the rise of Christian pilgrimage resulted in the settlement of the Judean Desert by Christian monks. They created a new architectural settlement form, the monastery, some fifty-five of which have been studied and systematized into distinct types (Hirschfeld, 1992). [*See* Monasteries.] The presence of the monasteries brought numerous pilgrims and travelers to and through the country's deserts, in addition to the some three thousand permanent inhabitants at the height of the monastic movement. In the northern Ne-

gev, superb Byzantine hydrology created a system of runoff agriculture (rainwater diverted to field use by sophisticated dams, terraces, and channels) that was able to sustain the greatest flowering of city culture in the Negev's long history. [*See* Irrigation.] Viticulture was introduced to the Negev, though wine production appears (at least from the Nessana papyri) not to have been carried on. Along with the revitalized city settlements, a flowering of pastoral nomadism occurred. The camping remains of nomads have been mapped (and some excavated) by Steven A. Rosen and Gideon Avni (1993), pp. 189–199). In fact, the very boarders of civilized cultivation were pushed several miles south of Nessana's city territory for the first time, as the boundaries of the "inner desert" receded in the face of the Byzantine presence (Mayerson, 1963, pp. 160–172). Mid-sixth-century Palestine had become an "international" province, with trade links to the wider Mediterranean world, as demonstrated by the Palestinian amphorae found as far west and north as Britain and by the steady flow of imported fine tableware from Asia Minor, Egypt, and North Africa into all regions of the country. Already at the very beginnings of the period in the mid-fourth century, an observant Jewish family in the rural village world of mountainous Upper Galilee had, among its collection of fine-ware bowls, a particularly lovely (and somewhat scarce) red-ware bowl with a flaring rim and a curved body manufactured in far-away Carthage (Groh, 1981, pp. 129–138, pls. 8.29–31). [*See* Galilee, *article on* Galilee in the Hellenistic through Byzantine Periods.]

Yet, curiously, for all the new international flavor of this period, regionalism is most deeply ensconced into both the history and material culture of ancient Palestine precisely in these centuries. Politically, the country was first divided into two halves (north and south) in the late 350s and then, in about 400, into three separate provinces: Palaestina Prima (the northern coastal plain plus Judaea, Idumea, Samaria, Peraea) with its capital at Caesarea Maritima; Palaestina Secunda (Galilee, the Palestinian Decapolis, the Golan region) with its capital at Scythopolis (Beth-Shean); and Palaestina Tertia (formerly Palaestina Salutaris), whose capital has not yet been exactly determined (Gutwein, 1981, p. 8). [*See* Caesarea; Decapolis; Golan; Beth-Shean.] Because almost no Jews lived in the region south of Beersheba (which functioned as the principal city for the region), the development of a virtual southern Christian Holy Land was made possible, organized around the principal northern Negev cities, the bishop's seat for this area being located at Ḥaluṣa. [*See* Ḥaluṣa.]

However, the threefold political division does not do full justice to the vast differences that appear in the material culture of the country's various regions and subregions. It is the recognition of regionalism that best characterizes the professional activity being carried out in surveys, excavations, and the interpretation of material culture from ancient Palestine. Little synthetic work has been done on the country as a whole, however.

Byzantine Aesthetics. The careful attention to architectural balance and proportion, so characteristic of the earlier Roman-period buildings, gave way in the late third century to a heavy reuse of earlier building materials (columns, facings, capitals, inscriptions) employed in ways quite different from their earlier architectonic functions (Groh, 1988, pp. 91–92). For example, in the construction of synagogues and churches in the period, columns with different diameters and bases were used in the same colonnade. [*See* Synagogues; Churches.] Despite attempts to find a rational Byzantine proportionality in planning buildings (see Chen, 1981, 1985), archaeology has recovered buildings that offered overall mass and overall effect (in adaptation to local tastes and topography and availability of materials) as its basic aesthetic. Also, the interiors of public buildings such as synagogues and churches, with their interior forest of basilical columns and their second-story galleries or chapels, were formed by the heightened Byzantine aesthetic commitment to the mysterious interior play of light and shadow on the worshiping faithful. Hanging lamps of metal and glass, found throughout the country in excavations of Jewish or Christian basilical buildings, heightened this play. The glass factories of Asia Minor and Palestine, one of which was found at Jebel Jalme in the Galilee, seem to have been able to keep up with the increased demand (Weinberg, 1988). The tighter and deeper ribbing on the exteriors of fifth–seventh-century crude-ware pottery (especially amphorae) shares in this same aesthetic concern to break up surface appearance into sculptured depth (hence shadow) and light. Most excavators, however, simply consider Byzantine pottery crude and ugly, compared to the more graceful forms and less-severely and more broadly ribbed exterior surfaces of Roman-period pottery. Colored mosaic floors and interior painted plaster walls in both private and public rooms further added to the new aesthetic. [*See* Mosaics; Wall Paintings.]

Common Byzantine Characteristics. Standard Byzantine weights and measures met a shopper in whatever region, and the city dweller walked on a Byzantine street roughly 4.5 m wide. Houses were constructed of stone. The walls were constructed first (floors were added later) and were sometimes mortared, often chinked with rocks and offcuttings. The roofs were made of wood timbers and tile or constructed in the stone-roof slab-and-arch technique of the "Hauranic" style employed in the Golan and the northern Negev. While modern architects point out the utter unsuitability of courtyard houses to a country with (alternately) too much rain and too much sun, residents of Byzantine Palestine were addicted to houses with central courtyards (Shereshevski, 1986)—even apartment-building residences (insulae) had them. Most private housing so far excavated from the period are one or two stories high, with exterior

stairways from the courtyard to the upper story or roof. The Galilean split-level house, called the patrician house, excavated at Meiron, the Dionysiac house excavated at Sepphoris, and the numerous houses preserved to the first and second stories in the Golan and Negev, provide excellent examples. [*See* Meiron; Sepphoris.] While private housing can be quite spacious, the huge sprawling urban villas of the rich, so characteristic of these centuries in most other provinces of the empire, are almost completely absent in the three Palestines. The continuous reuse of materials on a site and the wide, contemporaneous variety of plans adapted to local topography, tastes, and pocketbooks, make any attempt to salvage an architectural chronology of synagogue-, housing-, and church-plan types (that is, without careful stratigraphic excavation) relatively hopeless, despite the rigor of its defenders. [*See* Building Materials and Techniques, *article on* Materials and Techniques of the Byzantine and Islamic Periods.]

Regionalism. Eric M. Meyers (1976, 1975) pioneered in identifying an analogous material culture that separated the Galilee from other regions of the country (best represented by the ubiquitous Galilean bowl, seldom found outside the Galilee and Golan) and in separating the Upper Galilee and Upper Golan (following Josephus) into a subregion with its own peculiarities in architectural style, decoration (aniconic and restrained carving), and language preference (primarily Aramaic inscriptions). The material culture of Upper Galilee differed markedly from the Lower Galilee of the Kinneret region (with its highly hellenized artistic tastes and preponderance of the Greek language testified to by the inscriptional evidence). The Jews of the Lower Galilee who lived at sites like Sepphoris or (farther south) Scythopolis/Beth-Shean were wealthy, artistically and linguistically sophisticated people, as their synagogues, inscriptions, and homes attest. Dan Urman (1985) has given even more precision to the Golan and its subregions, suggesting that ethnic preference in settlement took regional archaeology a giant step forward. Identifying the subregions of the northern Negev has furthered helped to see the importance of the way peopled built, lived, adapted, and shopped locally (Gutwein, 1981).

The various regions of the country bought most of their common pottery locally. Although kilns for most regions have not been found, recent discoveries permit the conclusion that certain storage-jar forms and cookers found throughout the Galilee and Golan were manufactured at Kefar Hananyah and Shikhin in Lower Galilee, at least until the Late Roman period (Strange, 1994). It is possible to hypothesize that the characteristically brittle Golan-ware forms were made in that region but did not gain currency in other areas. Judea must have had its own Byzantine pottery factory, located in the Jerusalem area, that produced local fine-ware forms (termed Judean sigillata), as well as other vessels that appear at excavated sites in Jerusalem and its environs. The kilns that produced the Gaza jar, which appears all over the south, have now been found at Ashkelon by the Harvard University Expedition. [*See* Ashkelon.] The distinctive wheel-made southern lamp, which rarely occurs in the north, must be manufactured somewhere in the Negev region, as must the late amphorae so characteristic of the region. The dark-black metallic amphorae, often decorated with paint dribbled down them, must be products of the northern coastal plain because they are found frequently in the north but are rarely seen in the southern regions. [*See* Ceramics, *article on* Ceramics of the Byzantine Period.]

Archaeological Periodization. The vast regional differences in ancient Palestine make a chronological division into subperiods for the Byzantine era impossible at this stage of research. No overall events, either natural or political, cut across all regions of the country to mark a clear and sharp break between one subperiod and another. For example, some recent research and excavations have shown that the so-called Persian destruction layers from the 614 Persian invasion do not appear at carefully excavated sites such as Caesarea Maritima, Capernaum, and Naburiya (Groh, 1989, pp. 62–71). [*See* Capernaum.] Destruction materials that turn up at sites near the Sea of Galilee and in Jerusalem may now be attributable to postinvasion disturbances caused by the populace itself. Similarly, no single event inaugurates the Byzantine period. In Galilee, the revolt of a few of the Jewish cities against Gallus Caesar in 352, which resulted in the military destruction of sites like Sepphoris and Beth-She'arim in the Galilee and Juhada in the Golan Heights, vies with the earthquake of 363, which damaged some sites in Upper Galilee (like Khirbet Shema'), for central importance in precision dating (Nathanson, 1986, pp. 29–36). For all that has been written about the supposed dating and sequencing of synagogues, the precise dating of only a few is known, where there was clean excavating, recording, use of balk sections in conjunction with precise ceramic controls, and clear publication of all finds (see Groh, 1995, pp. 51–69). A similar problem exists in determining church-plan development (Tsafrir, 1993, p. 13).

Appeals to imperial legislation to explain life in Palestine are not helpful either. It is now known that "power decays with distance" (Gill Stein, Northwestern University), and Constantinople was a world away from Palestine. It will fall to the next generation of scholars to trace the exact contours of the subperiodization of material life in Byzantine Palestine.

More Pious Populace. The ethnic/religious groups that inhabited the land (Jews, Christians, Arab tribes, Hellenes, Samaritans, descendents of the Nabateans, and resident foreigners—most of them from Egypt, Asia Minor, Greece, and Syria) are known, but very little is known about their physical appearance, marital patterns, or diets because there

has been only limited study of their skeletal remains (Hershkovitz et al., 1988, pp. 193–194). Male skeletons tend to predominate in the evidence, so even less is known about women (even discussions about such basic questions as "gender space" are only at their very inception among archaeologists and historians of this period). The tiny sample suggests that such groups tended to marry within their own intimate ethnic or religious group. The literary evidence for the contact between the two numerically largest groups—Jews and Christians—indicates the same carefully cultivated remoteness. People wanted to keep their distance from outsiders.

This makes the contemporary presence of the beautiful Byzantine synagogue at Capernaum, only a few meters from the Church of the House of St. Peter, all the more intriguing: it signals the ground-level insistence of Jews upon maintaining their own religious and ethnic identity in the face of the encroachment of Christians in the very Jewish heartland, a struggle enacted across the country in previously Jewish areas. Jews in the Holy Land were crowded by the influx of gentiles into their areas; but they were neither repressed nor in internal disarray, as witnessed by the dozens of Byzantine synagogues created all over the country in the fifth–sixth centuries and by the crowning achievement of Talmudic scholarship, the codification of the Palestinian (or Jerusalem) Talmud (c. 400). The patriarchate was eliminated (c. 425), but the communities and their scholars continued in vibrancy.

However, the Jews of the period differed from earlier Jews in one important way: they were more focused in their synagogue life on personal piety and on the study and veneration of Scripture. The synagogue building as a "house of assembly" required a separate *beit midrash* ("house of study") only in this later period. Thus, the great synagogue at Meroth was equipped with both a hall for assembly and a separate hall for study. The growing number of synagogues in the Byzantine era in which rebuildings of the interior bema were carried out to increase its height and majesty underscore this point, as does the new emphasis on prayer in the synagogue (Urman, 1995, pp. 232–255). The veneration of holy sites and burials by the Christians of the era who were residents of the land, and not simply foreign pilgrims, also shows this new dedication to personal piety in their communities. The overwhelming number of synagogue and church donors, as reflected by their dedicatory inscriptions, were neither governmental officials nor official leaders of the communities, but private individuals. In 638, the southern and eastern deserts brought forth a great influx of equally pious people, the faithful of Islam. In their first hundred years of rule, they gradually turned the economy, political links, and orientation of the rulers and peoples of ancient Palestine away from the West and Jerusalem and toward Damascus and Mecca.

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DENNIS E. GROH

Palestine in the Islamic Period

Just as the Islamic period is the most recent stratum on every archaeological site (if it has an Islamic stratum), so is the study of Islamic archaeology the most recent of archaeological disciplines. In fact, this state of affairs is not confined to ancient Palestine but is shared by many of Israel's neighboring countries. The belated interest in Islamic archaeology has resulted in relatively limited attention to the later levels of excavations, of which the overwhelming majority have concentrated on ancient periods. Few excavations have aimed from the outset at uncovering and studying Islamic remains, which have only recently received the acknowledgement they deserve.

The Islamic history of Palestine (beginning of the seventh century–end of the fifteenth century) can be divided roughly into three main eras—early, middle, and late—each of which is further subdivided. These divisions correspond to the periodization dictated by historical events and, to a considerable extent, reflect the archaeological evidence of their respective material culture. [*See* Periodization.] The weight of the three main periods is far from evenly distributed. Another important factor is that, during the period under discussion, the area of "Palestine" was not a political entity but, from an administrative point of view, comprised two major units: the first, comprising the coastal area, the northern Jordan Valley, and the east bank of the Jordan River was the Jund al-Urdan (the equivalent of the Byzantine Palaestina Secunda); the second included the southern part of the Jordan Valley and Transjordan (echoing Palaestina Prima) and was known as the Jund Filastin. However, historically and politically they shared the same fate and depended, according to shifts in the balance of power, on either Syria or Egypt.

Two factors preceding the advent of Islam had an impact on the character of the country, and both are attested in the archaeological record: a series of infiltrations of nomads, mainly from Arabia via the Red Sea, into the southern part of Palestine; and the Sasanian occupation from 614–628 CE, which was accompanied by the destruction of a large number of churches. [*See* Churches.] Thus, prior to the Islamic occupation there was a phase that did not experience widespread destruction but influenced many of the existing cultural conditions. Evidence for this phase (c. 600–636) is best known from the survey made of the Negev desert, particularly in the area of Sede Boqer. [*See* Negev.] A few pottery sherds that appear to be an extension of Byzantine typologies and an enormous number of rock graffiti in Arabic are finds that should probably be viewed as belonging to an "Arab" stratum (reflecting some degree of Arab infiltration in the pre-Islamic period). However, in the same area there is evidence for the existence of several open-air mosques and several hundreds of rock inscriptions in Arabic dating from the period after 636. [*See* Mosque.] These inscriptions, incidentally, continued into the ninth century, but by then they are Islamic rather than Arabic.

Early Islamic Period. The major turning point in areas of social, political, and cultural developments took place under the Umayyads (661–749). [*See* Umayyad Caliphate.] As early as the reign of ʿAbd al-Malik, Jerusalem benefited from an extraordinary renaissance. The Dome of the Rock was built in AH 72/691–692 CE, a magnificent artistic landmark that expressed the principles of the Islamic art to come—one of them being the use of the Arabic script for decorative purposes. The focal point created by the Dome of the Rock was augmented by a number of buildings, such as the al-Aqṣa mosque and in particular the series of secular buildings discovered during the excavations of Benjamin Mazar to the south and southwest of the Temple Mount. [*See the biography of Mazar.*] These buildings created a new Islamic compound on the Temple Mount, henceforth known as the Ḥaram esh-Sharif. It contributed to transforming Jerusalem into a major administrative center.

In about 712–715, the new city of Ramla was founded by Sulayman, who, as governor of Jund Filastin, chose to establish his capital at this major crossroad. [*See* Ramla.] Excavations at Ramla have permitted the reconstruction of the layout of the city in this early period. The earliest finds were indeed on virgin soil (the *raml* of Ramla). The mosque, a series of mosaic pavements, and particularly a large amount of pottery finds, with some evidence for the existence of a potter's workshop, all combine to offer a new picture of the material culture of Palestine in the eighth century. The phenomenon of the "Umayyad chateau" is exemplified by Khirbat al-Minyeh, on the shore of the Sea of Galilee (beginning of the eighth century) and Khirbat al-Mafjar in the Jericho area (mid-eighth century). [*See* Mafjar, Khirbat al-.] These mansions, linked to agricultural production in the surrounding areas, display a surprising degree of luxury and rich artistic decoration. The excavations of both palaces yielded a varied harvest of sculpture, floor mosaics, carved stone, and carved stucco, each in a most distinctive style. (Only the mosaics resemble their Byzantine counterparts.) During this period the country apparently underwent a considerable reorganization: the roads must have been repaired, for there are several milestones from the reign of ʿAbd al-Malik as testimony. Another significant innovation introduced by ʿAbd al-Malik was in the field of numismatics. The Byzantine coinage, which continued in circulation, eventually received Arabic countermarks. Somewhat later, completely new coins were struck in various centers of the country. A major reform was carried out by ʿAbd al-Malik in which the typical Islamic coin displayed Arabic script on both sides, including a proclamation of the Muslim faith (Ar., *shahādah*), a formula that persisted for centuries.

Islamic pottery deserves particular attention because it changed significantly from that of the preceding Byzantine

period. Most of the pottery manufactured during the Early Islamic period was unglazed. However, it was of high artistic quality and great care is exhibited in its manufacture and finish. The shapes, of both vessels and lamps, are indicative of a new era. There was a sophisticated use of molds, enabling a wide variety of decoration—particularly evident in finds at Ramla and in some of the pottery from Khirbat al-Mafjar. The clay is almost always buff, fine, and well levigated. Gradually, glazes made their appearance, and from the ninth century onward, pottery in Palestine was part of the large and varied family of Islamic glazed polychrome ware. [*See also* Ceramics, *article on* Ceramics of the Islamic Period.]

Middle Islamic Period. Under the ʿAbbasids there is little evidence of involvement on the part of the authorities in making improvements in the cities. A rare find is a cistern in Ramla with a dated inscription corresponding to the year 789, during the reign of Harun al-Rashid. [*See* ʿAbbasid Caliphate.] At Abu Ghosh, excavations uncovered the earliest known public hostel (Ar., *khan*), with a rich assemblage of pottery, both unglazed and glazed, dated roughly to the tenth century. The outstanding remains of the Fatimid period that followed are two contemporaneous monumental inscriptions, one in the Dome of the Rock and the other in the al-Aqṣa mosque. Also belonging to the Fatimid period are two spectacular hoards of jewelry, found in the excavations at Caesarea and Ashkelon. [*See* Fatimid Dynasty; Jewelry; Caesarea; Ashkelon.]

Late Medieval Period. The Ayyubid period primarily marks the gradual return to Islamic rule after the interlude of Crusader control. This period, though again a relatively short one (1187–1250), is one of the most fascinating chapters in Islamic history and archaeology in Palestine. The new theological institution of the *madrasa,* or school, became widespread; the new cursive script (Naskhi) was preferred in calligraphy over that of Kufic writing; and the confrontation with the Crusaders led to a most unexpected culmination: the destruction of the coastal cities of the country as far south as Jerusalem. Excavations have produced dramatic evidence of this policy, which was to continue under the Mamluks. Magen Broshi's excavations along the southern wall of Jerusalem revealed a broken inscription commemorating the building of a gate in the wall by the Ayyubid sultan al-Malik al-Muʿazzam ʿIsa. It was known from the written sources that this wall had been destroyed by the same ruler shortly afterward. [*See* Ayyubid-Mamluk Dynasties; Crusader Period.]

The Mamluk period (1250–1517) is represented by monuments all over the country, from Safed in the north to Gaza in the south. It is best exemplified by the concentration of distinctive Mamluk monuments—*madrasas,* markets, and baths–in the Old City of Jerusalem. [*See* Jerusalem.] The modern city's urban plan *inter muros* reflects the Mamluk period to a great extent. Sites excavated in different areas of the country (e.g., Abu Ghosh, Yoqneʿam, Jerusalem) have yielded rather homogeneous pottery, but no local centers of production have yet been located. [See Yoqneʿam.] In the late medieval period, both glazed and unglazed ceramics continued to be manufactured, but they differed in quality, techniques, style, and motifs from their Umayyad and ʿAbbasid predecessors. In the Ayyubid and Mamluk periods, the clay of unglazed pottery is somewhat more green and the shapes are different. A very distinctive family of unglazed pottery made its appearance, consisting of handmade vessels with geometric patterns painted in a dark reddish brown over a pinkish slip. The glazed pottery is characterized by a combination of molded and incised (sgraffito) decoration. Excavations in Jerusalem have uncovered some examples of locally made marvered glass. In the Islamic period, the archaeology of Palestine shares many characteristics of material culture with both Syria and Egypt.

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MYRIAM ROSEN-AYALON

PALESTINE EXPLORATION FUND. Founded on 12 May 1865, at a meeting held in the Jerusalem Chamber of Westminster Abbey, the Palestine Exploration Fund was the brainchild of George Grove, then manager of the Crystal Palace. Grove's interest in the fund was sparked by the work he had done on biblical place names for George Adam Smith's *Dictionary of the Bible.* It and the *Ordnance Survey of Jerusalem* appeared in 1864, raising public interest in the subject sufficiently for a society dedicated to studying the land of the Bible to succeed. This interest was heightened by Charles Darwin's *Origin of Species,* published in

1859, and by the text-critical work of the German school of biblical scholars led by Julius Wellhausen in Tübingen: it was felt necessary to buttress the historicity of the Hebrew Bible.

The fund's initial effort was to provide a proper survey and an accurate map of Palestine, as a basis for studying its archaeology (in the broadest sense). In 1865 Charles Wilson of the Royal Engineers carried out a preliminary survey for the fund. The substantial cost and difficulties involved in a full-scale survey were daunting. The fund decided instead to continue the work of exploring Jerusalem, concentrating on the problem of the location of Herod's Temple—a project chosen to raise the profile of the fund and attract the monies necessary for the larger project. Accordingly, from 1867 to 1871 Charles Warren explored "underground Jerusalem" by means of a series of tunnels around the Temple Mount (Ḥaram esh-Sharif). [*See* Jerusalem.] His work revealed for the first time the massive scale of the construction undertaken by Herod and greatly advanced what was known of the location of the Temple. By 1869 the quantity of material resulting from the fund's projects required the regular publication of a journal, the *Palestine Exploration Fund Quarterly Statement (PEFQ),* the first journal specifically devoted to the study of the region.

By late 1871, the fund had enough money to engage a team of Royal Engineers to survey and map Palestine. The team's initial leader, R. W. Stewart, was sent home within a month of his arrival, a victim of "fever," probably malaria, which was to take the lives of several members of the survey party. He was replaced by Claude R. Conder, who arrived in July 1872 and led the survey until July 1875, when he was injured in an attack at Safed. He had been joined in 1874 by Herbert Horatio Kitchener, who was also injured in the attack. The survey was suspended until 1877, when it was resumed under Kitchener's command. It was completed in September of that year; the map was published in 1880 and the text volumes in 1881–1884. In 1881–1882 the American Palestine Exploration Society attempted to do a similar survey east of the Jordan River, but with the society's demise the work was left incomplete. The fund's attempt was cut short, after more than 800 sq km (500 sq. mi.) of central Jordan had been surveyed, as a result of the opposition of the Ottoman governor of es-Salt. Between 1885 and 1889, Gottlieb Schumacher surveyed the area of Transjordan between Amman and the Syrian border for the fund, while surveying the line of the Hejaz Railway for the Ottoman government. In 1883–1884, an expedition led by Edward Hull, assisted by Kitchener, carried out a geological survey of Wadi ʿArabah. This expedition concluded the first phase of the fund's activities—the mapping and survey of the land.

The next phase began with the first excavation carried out in Palestine by a professional archaeologist, W. M. F. Petrie, who chose Tell el-Ḥesi, believed then to be ancient Lachish. [*See* Ḥesi, Tell el-; Lachish.] Petrie spent six weeks on the site, during which time he laid the foundations for a stratigraphic excavation and established the outlines of the site's ceramic sequence as the basic means of dating the archaeological remains. Although Heinrich Schliemann's work at Troy had already shown that the tells that dotted the Near East were formed by continuous human settlement, this was the first time it was being demonstrated in the Levant. Petrie's use of pottery for dating purposes was at first opposed, notably by Conder, but soon became widely accepted. When Petrie expressed a desire to return to his beloved Egypt, the fund found a replacement in a young American, Frederick Jones Bliss, son of Daniel Bliss, who had founded what was to become the American University of Beirut. Bliss excavated at Ḥesi until the end of 1893.

The fund's international character was reinforced in this period by employing Charles Clermont-Ganneau, a French diplomat and antiquarian who had studied the antiquities of the country in connection with the 1873–1874 survey, and Conrad Schick, a German architect who had originally gone to Jerusalem as a missionary in 1846. Schick maintained a close connection with the fund from its inception until his death in 1901, during which time he carried out extensive research in Jerusalem. From 1894 to 1897, the fund again turned its attention to Jerusalem, and excavations were carried out in a number of areas by Bliss, assisted by the architect A. C. Dickie. Between 1898 and 1900, excavations directed by Bliss, assisted by R. A. S. Macalister, were carried out at four sites in the Shephelah: Tell Zakariya (ʿAzekah), Tell eṣ-Ṣafi (Gath?), Tell el-Judeideh (Moreshet-Gath), and Tell eṣ-Ṣandaḥanna/Mareshah (Marisa). [*See* ʿAzekah; Judeideh, Tell el-; Mareshah.] From 1902 to 1905 and 1907 to 1909, the fund carried out its largest excavation, at Tell el-Jezer (Gezer), under Macalister's direction. [*See* Gezer.] The large-scale and prompt publication of these excavations should have made them the cornerstone of future work in the area; however, Macalister's decision to publish the material by stratum/period, without any indication of findspot, and his crude stratigraphy made his report difficult to use. The fund's final excavation prior to World War I, which brought a halt to archaeology in the field, was in 1911–1912 at ʿAin Shems (Beth-Shemesh), directed by Duncan Mackenzie, assisted by F. G. Newton, an architect. [*See* Beth-Shemesh.] The fund then began to publish a series of annuals, of which only six volumes appeared. In spring 1914, with war looming, Kitchener asked the fund to survey the Negev desert, the last unmapped area in western Palestine. [*See* Negev.] A team of Royal Engineers commanded by S. F. Newcombe, carried out the mapping. The fund had chosen the distinguished Egyptologist T. E. Peet to carry out the archaeological survey, but Peet had a prior commitment. The fund turned to the director of the British Museum, Frederick Kenyon, who, in turn, obtained the services of two young archaeologists then excavating at Carchemish for the museum, C. Leonard Woolley and T. E.

Lawrence. The resulting map was completed in the first year of the war and released for publication in 1921; the archaeological survey results were published in 1915.

The establishment of the British Mandate in Palestine created a new situation. A Mandatory Department of Antiquities was created and in 1918 the British School of Archaeology in Jerusalem was established. A number of other organizations also operating in the field included the American Schools of Oriental Research, the École Biblique et Archéologique Française, and the Jewish Palestine Exploration Society. The fund renewed its own excavations in Jerusalem from 1923 to 1925, directed by Macalister, assisted by J. Garrow Duncan, and from 1925 to 1927, directed by Crowfoot, assisted by G. M. Fitzgerald. In 1934 Alan Rowe carried out a brief excavation at Gezer for the fund, intended to clarify the site's stratigraphy. Unfortunately, the stratigraphy in the area chosen for excavation was so shallow the promised final report never appeared. The fund's last major excavation, at Samaria/Sebaste (1931–1935), was a joint project with Harvard University, the British Academy, the British School of Archaeology in Jerusalem, and the Hebrew University of Jerusalem. [*See* Samaria.] The excavations revealed remains from the tenth century BCE, prior to the foundation of the royal citadel, and from the occupation following the move to the site by Omri in about 880 BCE. An important area of the Hellenistic and Roman city was excavated and the stratified sequence of *terra sigillata* ware became important for the study of the archaeology of the Roman Empire in regions as far away as Scotland.

The period following World War II was a difficult one for the fund. The last of the generation of the founders and their immediate successors was gone, and public interest in biblical matters—and the funds available for them—had greatly diminished. The fund did, however, continue to publish its journal, now known as the *Palestine Exploration Quarterly (PEQ)*, hold lectures, and give some limited financial support to promote research. In 1989 the fund resumed the publication of monographs.

[*See also* American Palestine Exploration Society; British School of Archaeology in Jerusalem; École Biblique et Archéologique Française; Israel Exploration Society; Nationalism and Archaeology; *and the biographies of Bliss, Conder, Clermont-Ganneau, Crowfoot, Kitchener, Lawrence, Macalister, Petrie, Rowe, Schumacher, Schick, Smith, Warren, Wilson, and Woolley.*]

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RUPERT CHAPMAN

PALESTINE ORIENTAL SOCIETY. While in Jerusalem as the first Annual Professor of the American Schools of Oriental Research (ASOR), Albert T. Clay, a professor of Assyriology at Yale University, perceived a need for greater communication and cooperation (from cultural and ecumenical perspectives) among scholars conducting research in Palestine. To that end, on 9 January 1920, he organized a meeting attended by twenty-nine scholars. The society held its first official meeting on 20 March of that year, at which time Père Marie-Joseph Lagrange of the École Biblique et Archéologique Française was elected its first president. Thereafter, the Palestine Oriental Society met quarterly, usually at the ASOR facilities. Other prominent charter members of the society were William F. Albright, Eliezer Ben Yehudah, Herbert Danby, Père Édouard Dhorme, and Père Louis Vincent. The society's last president, serving from 1941 to 1948, was J. H. Iliffe.

The society's stated purposes were to provide scholars from different backgrounds and nationalities with a forum in which to share their findings in all aspects of archaeological and oriental studies; to facilitate greater cooperation and coordination of efforts; to sharpen the focus of research through mutual criticism; to promote publication of findings; and to take advantage of the new openness toward archaeological excavations that characterized British rule in Palestine.

One of the society's major contributions was its publication, the *Journal of the Palestine Oriental Society.* Twenty volumes of the journal were issued from 1920 through 1941; an index was published in 1948, at the end of the British Mandate in Palestine, as its twenty-first and final edition. Virtually every aspect of Near Eastern archaeology is represented in the numerous articles the journal published, including Bible, botany, climatology, folklore, geology, history, inscriptions, epigraphy, linguistics, literature, mosaics, numismatics, pottery, prehistory, religion, and synagogues.

[*See also* American Schools of Oriental Research; École Biblique et Archéologique Française; *and the biographies of Albright, Lagrange, and Vincent.*]

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CHARLES E. CARTER

PALESTINIAN ARAMAIC. The language of the corpus of written material from Palestine from roughly 200 BCE to 200 CE are written in Palestinian Aramaic. The corpus principally comprises literary and ephemeral texts from Qumran, Murabbaʿat, and Naḥal Ḥever, but include inscriptions on ossuaries, tombstones, and coins; Aramaic words found in Josephus and the New Testament; and certain very early rabbinic texts, such as *Megillat Taʿanit*. Palestinian Aramaic belongs to the phase of the language that Joseph Fitzmyer (1979) has called Middle Aramaic, distinguishing it from the earlier Official or Imperial Aramaic, on the one hand, and the dialects of Late Aramaic on the other. Contemporary with Palestinian Aramaic are the Aramaic dialects of Nabatea, Edessa, Palmyra, and Hatra.

Morphologically, Palestinian Aramaic differs little from Official Aramaic. The principal differences are the use of third-person plural feminine forms of the pronoun, suffix, and verb; the use of *dn* rather than *dnh* for the demonstrative; and the occasional use of *d* for the earlier relative particle *dy*. Syntactically, Palestinian Aramaic displays a preference for historic Semitic word order (verb-subject-object), whereas Official Aramaic tends to free word order. In comparison with contemporary Aramaic dialects, Palestinian Aramaic tends to make more conservative use of Official Aramaic dialect traits than most. For example, unlike its contemporaries, Palestinian Aramaic retains the use of the jussive.

A major question in research on this dialect is the degree to which it represents the spoken Aramaic of Palestine—that is, how different were the spoken and written forms of the language? In all languages there are some differences, so the question is one of degree. Was there a "Standard Literary Aramaic," as many scholars contend, that was used to write most types of literary text? The existence of such a standard would imply a diglossia, in which different forms of a language serve different functions in complementary distribution. It would also imply, therefore, that various spoken Aramaic dialects existed in Palestine in this period—dialects whose distinctive forms would never appear in written texts except inadvertently. One of the larger issues involved is what sort of Aramaic texts scholars might rightly use in attempting to reconstruct hypothetical Aramaic originals of the sayings of Jesus.

Aramaic texts from Qumran number approximately one hundred, one-sixth of the nonbiblical scrolls; virtually all are literary as opposed to documentary. Broadly speaking, these are theological writings. Their dates correspond to the dates of the Dead Sea Scrolls generally (c. 150 BCE–70 CE). Attempts to date individual texts more precisely have not taken into account the possibility of significantly variant scripts among scribes working in a given period and are therefore unreliable. These Aramaic texts are for the most part written in the Jewish square script that developed from the Aramaic script used in the Persian period. Some are written in cursive or semicursive forms, but those scripts more commonly characterize contracts and other ephemeral writings such as are frequent among the Bar Kokhba materials. Among the best-preserved Aramaic scrolls from the Qumran caves are the *Genesis Apocryphon*, *11QTargum Job*, the Enochic literature, and several copies of the *Book of Tobit*. A group of works that are more or less closely related to the biblical *Book of Daniel* are, like several chapters of that book itself, written in Aramaic. These writings include the *Prayer of Nabonidus* (4Q242), the "Son of God" text (4Q246), and the pseudo-*Daniel* apocalypse (4Q243–245).

Numerous Palestinian Aramaic texts from Murabbaʿat and Naḥal Ḥever are associated with the Bar Kokhba-led Second Jewish Revolt (132–135 CE). These texts include marriage contracts and writs of divorce, IOUs, deeds of sale, and subscriptions to contracts. Perhaps most significant is the correspondence from Bar Kokhba to his lieutenants, and from his lieutenants to others. A substantial proportion of the Bar Kokhba letters are in Aramaic, but others are in Hebrew or Greek. Alongside the Aramaic contracts are Nabatean analogs. Thus, these materials illustrate the linguistic complexity that characterized Palestine in this period. How Aramaic functioned socially vis-à-vis the other languages in use in this complex is still uncertain.

Aramaic ossuary and tomb inscriptions come principally from the region of Jerusalem and number nearly one hundred. New ones continue to be discovered almost every year. Excavations at Masada discovered many Aramaic-inscribed ostraca—letters and *tituli picti*, or "labels."

A potentially confusing imprecision in the literature is sometimes encountered in which Palestinian Aramaic is used loosely to connote very different corpora from the one described here. It is important to distinguish the term as defined above from the Aramaic of Palestine: the earliest Aramaic materials found in Palestine date to the ninth century BCE, long before the period under discussion here. The terms Jewish Palestinian Aramaic, denoting materials from the Byzantine period, and Christian Palestinian Aramaic, for materials from the same general period, are also used.

[*See also* Aramaic Language and Literature; Dead Sea Scrolls; Murabbaʿat; *and* Qumran.]

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MICHAEL O. WISE

PALMER, EDWARD HENRY (1840–1882), British Orientalist. Born in Cambridge, Palmer was a small, slender man with a low and remarkably receding forehead and an inherited tendency to asthma and bronchial disease. Orphaned when he was young, he was raised by an aunt and educated at Perse Grammar School in Oxford, where he studied Latin and Greek. As a boy he spent his pocket money on lessons in Romany from Gypsies passing through the area. He did not excell at school and, instead of going on to the university, went to work as a clerk in a firm of brokers in the City of London. During his time there he learned Italian and French in the same way he had learned Romany. He left the City following a serious attack of bronchial disease, from which he nearly died. He had already begun studying Oriental languages and in 1863 entered St. John's College, Cambridge, from which he received his B.A. degree in 1866; he was elected a fellow of St. John's in 1867.

In 1869 Palmer took part in the Ordnance Survey of Sinai, in which his duties were to collect the traditions, names, and legends of the local people, to copy and decipher any inscriptions encountered, and to observe any dialectical differences that appeared. Following the success of the Sinai expedition, Palmer was engaged by the Palestine Exploration Fund to explore the North Sinai and Negev deserts (December 1869–May 1870). The ten years that followed were taken up with the publication of reports on his explorations and books on the history of the region.

In 1871 Palmer was appointed to fill the vacant post of professor of Arabic at Cambridge, a preferment of a kind then most unusual there because it allowed the holder to keep his position if he married. Palmer married and began a period of intense and productive work. In 1881 the Egyptian army rebelled against the Anglo-French domination of its country, and London feared for the safety of the Suez Canal, the strategic link to India. Britain's military occupation of Egypt made it necessary to secure the loyalty of the bedouin tribes in Sinai, and Palmer was asked to undertake the mission with government backing and a few men. He left Gaza on 15 July 1881 and traveled through the desert, visiting the leaders of the tribes. He reached Suez on 1 August. On 6 August, Palmer and his party again set off into Sinai, but this time one of their guides betrayed them and they were ambushed and murdered in Wadi Sudr.

[*See also* Nationalism and Archaeology; Negev; Palestine Exploration Fund; *and* Sinai.]

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RUPERT CHAPMAN

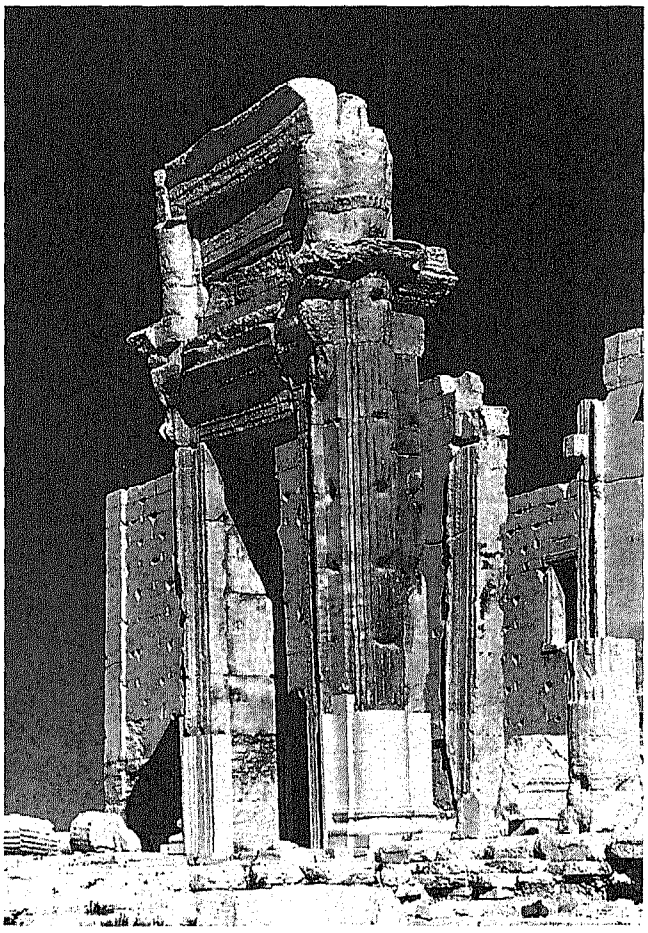
PALMYRA (Tadmor), oasis 245 km (152 mi.) east of the Mediterranean Sea and 210 km (30 mi.) west of the Euphrates River, in the center of the Syrian steppe, which is generally known as the Syrian desert (Badiat ash-Sham). Palmyra lies at the northeastern slope of Jebel al-Muntar of the Palmyrene mountain chain at an altitude of about 600 m. Palmyra is 235 km (146 mi.) from Damascus, 155 km (96 mi.) from Homs, and 210 km (130 mi.) from Deiz ez-Zor. It was always a rest stop, and for at least four thousand years a caravan station between Syria and Mesopotamia. The etymology of its ancient, and also actual, name in all Semitic languages, *Tadmor,* is unexplained in all known di-

alects. It may be derived from the West Semitic *dh-m-r,* which means "protect." It is called Palmyra in Greco-Latin sources, probably because of the extensive palm groves there.

The field of ruins of Palmyra and a part of the oasis are encircled by a rampart of about 6 km (4 mi.) long. A larger enclosure, known as the custom's rampart, rises up toward the mountain; its traces are still visible south of the Afqa Spring.

The city's "Grand Colonnade," a main street more than one km long, has been the city's axis since about the end of the second century CE. (Another axis belonged to the Late Hellenistic city; it was related to the Temple of Bel. The temple was later connected to the new axis through a triangular monumental arch misnamed the Arch of Triumph.)

The Temple of Bel, called the Temple of the Sun in ancient texts, is the largest and the most imposing building at Palmyra: it consists of a large, square courtyard more than 200 × 200 m in area, surrounded by four porticoes, a huge central sanctuary, a propylon, and vestiges of a large banquet hall, a basin, and an altar. The columns of the left portico and four tall columns of a nymphaeum led from the temple to a monumental arch decorated in the Severan-period style (beginning of the third century). Across from the arch, on the left portico, stand the ruins of the Temple of Nabu, which was refounded, with a beautiful propylon, in about the fourth quarter of the first century CE and completed in the second. Its monumental altar was constructed in the third century. On the right portico stands the monumental entrance added to the baths during the reign of Diocletian, at about the end of the third century. Also on the left is an arched path leading to the semicircular colonnaded square around the theater. To the right, near the tetrapylon, is another nymphaeum and two stepped column bases that point the way to a narrow road leading to the Temple of Ba'al Shamin, which was rebuilt in 131. Another street to the left is flanked by a banquet hall and a caesareum. This street leads to the theater, senate, and agora with its annex. Beyond the tetrapylon an Umayyad market was built inside the main street. To the left there is an exedra. At the end of the street, on the hill inside the enclosure of Diocletian's camp, is the Temple of Allat. From it there is a panoramic view of the ruins, the necropolis surrounding the city, and particularly the Valley of the Tombs. The valley was the site of the tower tombs belonging to the city's richest families in the first century CE, with some dating to the first century BCE.

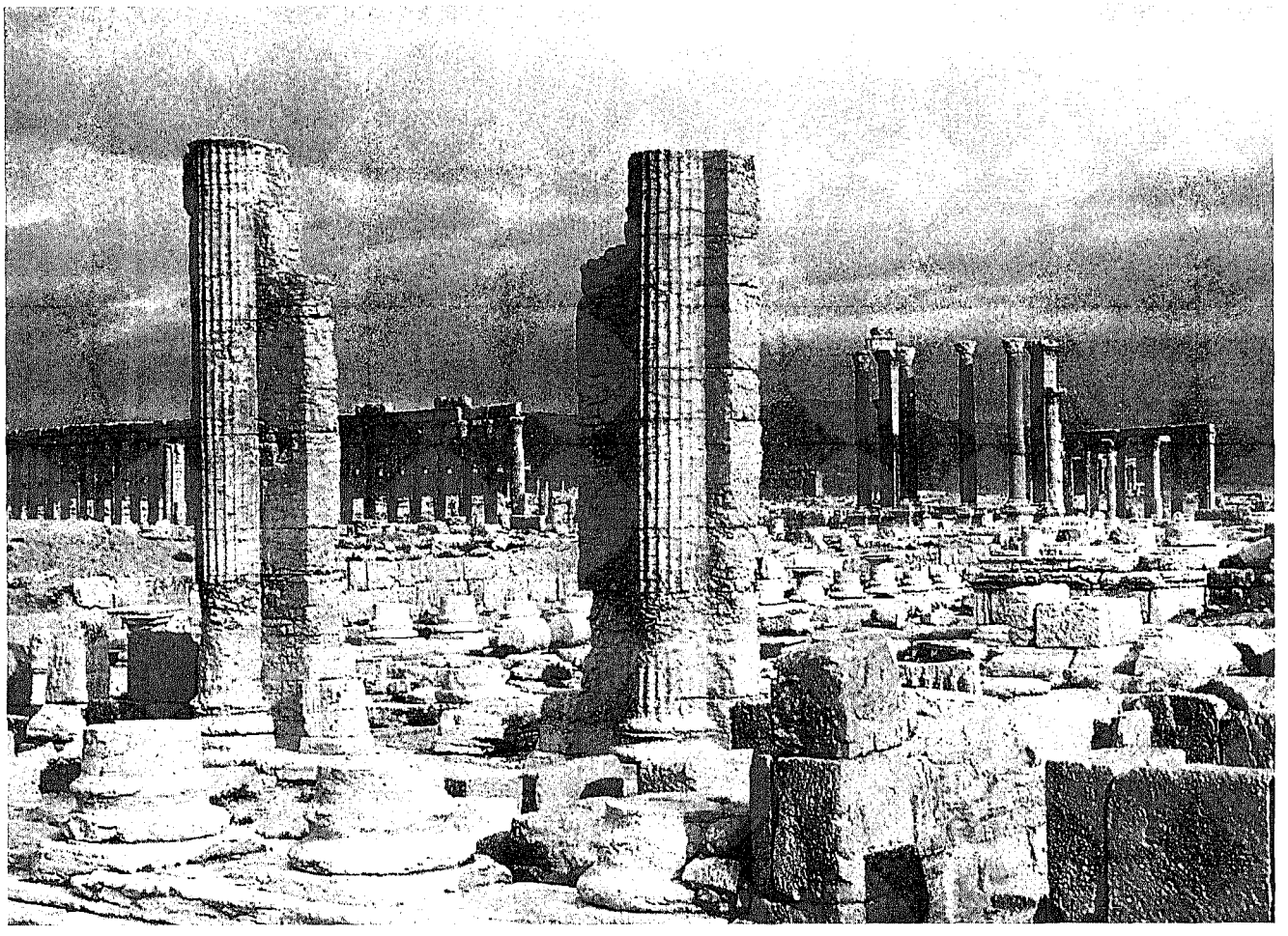


PALMYRA. *The gate of the central building in the Temple of Bel.* (Courtesy Department of Antiquities and Museums, Syria)

Prehistory. In the Upper Paleolithic, the area to the southeast of the site was filled with a large lake whose remains are the present salt flats. It was an excellent place for hunting, which explains the existence of the Levalloiso-Mousterian flint industry from about 75,000 BP in the caves and shelters in the surrounding mountains (Jarf al-'Ajla, thaniyat al-Baidah, Ad-Dawarah). Neolithic materials are encountered at different mounds in the vicinity of the oasis. Traces of scattered seventh-millennium settlements probably belong to the first sedentarization there, principally encouraged by the abundant sulfuric spring that gave birth to the oasis and subsequently to the city. Recent discoveries at el-Kowm, in the Palmyrene oasis region, confirm that the Uruk culture (end of the fourth millennium) extended to this region.

Bronze and Iron Ages. Excavation on the mound, underneath the courtyard of the Temple of Bel, uncovered primarily Early Bronze Age pottery (c. 2200–2100 BCE) especially that in the calciform Syrian tradition.

The oldest written texts known relating to Palmyra (Tadmor) and the Palmyrenes (Tadmorim) were found at the Assyrian colony of Kaneš (Kültepe) in Cappadocia and date to the nineteenth century BCE. The texts from Mari (Tell Hariri) also mention Palmyra and the Palmyrenes. At Emar (Meskene), texts dealing with Palmyrene citizens have been found. The eleventh-century BCE annals of Tiglath-Pileser refer to Tadmor as being in the country of Amurru. [*See*



PALMYRA. *The main gate of the Temple of Nabu.* (Photograph by Adnan Bounni)

Kültepe Texts; Cappadocia; Mari Texts; Emar Texts; Amorites.]

Seleucid and Roman Periods. Like Emesa/Homs, Petra, and Iturea at that time, Palmyra was independent, keeping its status as an Arab principality. It is known from Polybius (5.79) that at the battle of Raphia (217 BCE), between the Lagid Ptolemy IV and the Seleucid Antiochus III, a certain Zabdibel with ten thousand Arabs supported the Seleucids. These were certainly Palmyrenes because the name of their chieftain is known only in Palmyrene onomastica and means "the gift of (the god) Bel."

While Syria became a Roman province in 63–64 BCE, Palmyra maintained its independence and enjoyed—according to Pliny the Elder (*Nat. Hist.* 5.88)—a privileged position between Rome and Parthia. Both, it seems, were interested in Palmyra. In 41 BCE, Marcus Antonius undertook a futile push toward the city. The Palmyrenes had, as Appian reports (5.9), gained a key trade and political position. They procured exotic goods from India, Arabia, and Persia and then traded them to the Romans. When, precisely, Palmyra was incorporated into the Roman state is a contested issue, but it may have occurred under Tiberius (14–37 CE).

In the second half of the first century CE, Palmyra was occupied by a Roman garrison. Beginning in the reign of Trajan (98–117 CE) the city's own archers, cavalry, and cameleers participated in the defense of the empire's borders on the Danube River, in England, and in Africa. In 106, following the fall of Petra, Palmyra became the most important trading center in the East. Its great prosperity was expressed in the restoration of old monumental buildings and the reconstruction of temples. [*See* Petra.]

Under Hadrian (117–138) Palmyra achieved the status of a free city, as Hadriana Palmyra and, in the name of its senate and people's council, defined its own taxes and proclaimed its own decisions. Under Septimius Severus and the Syrian dynasty (first half of the third century), Palmyra was at its largest (12 km, or 7 mi., in diameter). Emperor Caracalla raised the city to the rank of a Roman colony in 212.

The foundation of the Sasanian Empire in 228 resulted in the loss of Palmyra's control over trade routes. The Pal-

myrenes then sought new economic opportunities under the leadership of a well-known Arabian family headed by Odainat, who held the title of governor of the Syrian province. In 262 and 267 he led two campaigns against the Sasanian capital. Odainat became dux romanorum, "chief general," of the armies of the East, corrector of the Orient, and king of the kings and imperator. The hope simultaneously of Palmyra and Rome was murdered along with his older son under mysterious circumstances. [*See* Sasanians.]

Because his second son was too young to succeed him, his wife Zenobia took the post of regent. Highly intelligent, knowledgable, and ambitious, Zenobia knew the political situation of the Orient and the weakness of Rome. She did not hesitate to proclaim her independence and took with her son the title of the Augusti. She soon conquered all of Syria, and her armies also occupied Egypt and Anatolia. The emperor Aurelian, forced to react quickly, defeated the Palmyrene army at Antioch and Emesa/Homs. Zenobia retreated to Palmyra, where Aurelian laid siege to her heavy defenses. Zenobia attempted to flee to the Sasanians but was caught and imprisoned in 272. In this critical situation the Palmyrenes rose up and massacred the occupying Roman garrison. Aurelian's retaliation was devastating. The ancient authors offer different versions of Zenobia's end.

In 297, the emperor Diocletian made peace with the Persians in the treaty of Nisibis, which moved the Syrian border to the Khabur River. Palmyra became a center of a network of roads where the principal road was the Strata Diocletiana linking Damascus to the Euphrates River. Inside the city a Roman camp was established and the ramparts were modified to protect the camp.

Byzantine and Islamic Periods. Christianity was well established in Palmyra in the fourth century. During the Byzantine period, the cellas of the temples of Bel and Ba'al Shamin and some other buildings were transformed into churches. At the end of the fifth century and at the beginning of the sixth, Palmyra was one of the residences of the Ghassanid ally of the Byzantines. According to Procopius (*De aedificiis* 2.11), Justinian (527–565) fortified Palmyra's rampart and reestablished its irrigation system.

In 634 Khaled ibn al-Walid, the general of the Muslim armies, occupied Palmyra peacefully. During the Umayyad period Palmyra regained some of its importance but during the 'Abbasid period was neglected by the caliphs of Baghdad. It became important under the Burids of Damascus (twelfth century), the Ayyubids (twelfth–thirteenth centuries), and the Mamluks (thirteenth–fifteenth centuries). The Temple of Bel was transformed into a fortress, the cella becoming a mosque. The castle overlooking the city is attributed to the emir Ibn Ma'an Fakhr al-Din (1595–1634). The historian and high functionary Ibn Fadl Allah (1301–1349) refers to the splendid homes and gardens of Palmyra and to its prosperous commerce. In 1401 Timur (Tamerlane) sent a detachment against Palmyra that pillaged it. The city's decline accelerated during the Ottoman period (1516–1919). It was soon reduced to a village, at the mercy of nomadic tribes. In the last half of the twentieth century it experienced a renaissance.

Exploration. The story of Palmyra and Zenobia, its beautiful and noble queen, have fascinated the Western world since the Renaissance. They have inspired literary masterpieces by D'Aubignac, Labruyère, and Molière and paintings and tapestries. Many travelers were drawn to Palmyra: the Neapolitan Pietra della Valle (1616–1625); the Frenchman Jean-Baptiste Tavernier (1638); English merchants from Aleppo (1678, 1691), the Frenchmen Girod and Sautet (1705); and the Swede Cornelius Loos (1710). They returned to Europe with copies of inscriptions, drawings of ruins, and sometimes incredible travel stories. The visit of two Englishmen, Robert Wood and H. Dawkins in 1751 had far-reaching effects. Their work, *The Ruins of Palmyra,* which appeared in English and French in 1753, signaled the beginning of systematic exploration at Palmyra. A year later, the Frenchman Jean Jacques Barthelemy and the Englishman John Swinton deciphered the Palmyrene alphabet. An ever-larger number of travelers and researchers then followed: Louis François Cassas (1785), C. F. Volney (c. 1785), Melchior de Vogüé (1853), and J. L. Porter (1851). In 1861 William Henry Waddington copied a number of inscriptions. In 1870 the German A. D. Mordtmann edited several new texts and E. Sachau, who visited the city in 1879, devoted many articles to it.

In 1881 a Russian, S. A. Lazarew, discovered a text of the city's fiscal law, the longest economic text from the ancient world. This important document is now in the Hermitage museum. In 1889 D. Simonsen published the Palmyrene sculptures and texts of the Glyptotheque Ny Carlsberg. The collection is the result principally of the activity of M. J. Loytved, the Danish consul in Beirut.

In 1899 M. Sobernhein discovered a house tomb in the Valley of the Tombs and took the first photographs of Palmyra. Research on the entire city began in 1902 and continued in 1917 under the direction of Theodor Wiegand (1932). In 1908, 1912, and 1915 Alois Musil undertook explorations of the more distant reaches of the city.

In 1914 the French Académie des Inscriptions et Belles-Lettres initiated a project under the direction of Antonin Jaussen and Raphael Savignac to copy all hitherto known texts, which were subsequently published by Jean-Baptiste Chabot (1922).

In 1924 and 1928 Harald Ingolt opened an excavation on Palmyra's western necropolis area, on behalf of the French Académie des Inscriptions et Belles-Lettres and the University of Copenhagen. Again in 1928, with the architect Charles Christensen, he excavated many hypogea in the same area on behalf of the Rask Orsted Foundation. Once again he dug a new hypogeum in 1937 whose excavation was completed by Obeid Taha.

In 1929 A. Gabriel achieved the first precise topographic plan of the city. New epigraphic research was undertaken by Jean Cantineau (1930–1936) that was continued by Jean Starcky in 1949, Javier Teixidor in 1965, and Adnan Bounni and Teixidor in 1975. The large Temple of Bel was cleared in 1929–1930 by Henri Seyrig, who was then director of the Antiquities Service of Syria and Lebanon, with Ja'far al-Hasani, director of the National Museum in Damascus (Seyrig, Amy, and Will, 1968–1975). Between 1934 and 1940 Seyrig and al-Hasani were the strongest proponents of carrying out archaeological research at Palmyra. [*See the biographies of Starcky and Seyrig.*]

Robert Amy, Ernest Will, Michel Ecochard, Raymond Duru, and others participated in the excavations or the study of the Temple of Bel, the tomb of Yarhai (now exhibited in the National Museum of Damascus), the agora, the Villa Cassiopeia, and the Valley of the Tombs. Daniel Schlumberger (1951) investigated the environs of Palmyra and Starcky published the first comprehensive summary of Palmyrene research results. [*See the biography of Schlumberger.*]

With independence in 1946, national research at Palmyra expanded considerably. In 1952 Selim Abdul-Hak excavated the Hypogeum of Ta'i in the southeast necropolis. Beginning in 1957 Bounni initiated what is now some twenty years of research at Palmyra. Nassib Saliby, Taha, and Khaled As'ad have been his principal collaborators. This research has focused on three hypogea in the Valley of the Tombs, the main street, the Temple of Nabu, the annex of the agora, nymphea A and B, and the street of Ba'al Shamin. As'ad excavated the ramparts, the Temple of Arsu, and the Hypogeum of Amarisha, continued the excavation of the main street, and restored many buildings in collaboration with Ali Taha and Saleh Taha.

Foreign missions have been authorized by the Syrian authorities to participate in the excavations of several monuments: Paul Collart and his Swiss team worked on the temple of Ba'al Shamin in 1954–1956; since 1959 Polish excavations in the area of Diocletian's camp have been led by Kazmierz Michalowski, Anna Sadurska, and Michal Gawlikowski. In 1966–1967 Robert Du Mesnil du Buisson led excavations in the courtyard of the Bel Temple and also excavated the Temple of Belhamon, while Manot worked on the peak of Jebel al Muntar. Joint expeditions—Japanese, Swiss, and Polish—are also working with Syrian teams at Palmyra.

Language and Writing. Palmyrene onomastica, cults, rituals, and several deities represent definitive evidence of the Arab origin of the majority of the inhabitants of the city and its principality. They kept their tribal social organization and were attributed to four main tribes. Palmyrene texts are written mostly in Aramaic, which was the lingua franca in western Asia from the Achaemenid period onward. The Aramaic of Palmyra reflects western and eastern characteristics and has some Arabic expressions.

An essential source on Palmyra is certainly the Palmyrene texts found in different countries, from the Euphrates to northern England. In Palmyra itself about three thousands texts have been recovered. Hundreds of these inscriptions are bilingual (Palmyrene and Greek). Latin texts are very few. The oldest known Palmyrene text is dated to 44 BCE and the latest to 272 CE. In 1754 the Frenchman Barthelemy and the Englishman Swinton deciphered some Palmyrene texts independently. Palmyrenes used the Seleucid era (which began in October 312 BCE) for candendrical dates.

Economy. Palmyra's prosperity made it an important metropolis in the ancient world. An oligarchic class of merchants and caravaneers amassed considerable fortunes from the caravan trade. The luxurious life-style of the Palmyrene aristocracy was displayed in its fondness for temples, colonnaded streets, and monumental tombs. Entertainment was provided by theater, thermal baths, and banquets. Michael Rostovtzeff has correctly identified Palmyra as "the caravan city." The caravans were the hub of Palmyra's economic life. Indeed, Palmyra's social order, religious beliefs,

PALMYRA. *A relief depicting the great Palmyrene goddess and Tyche.* (Courtesy Department of Antiquities and Museums, Syria)

and architecture were all products of its caravan economy. The Palmyrene fiscal law found in 1881 (see above) reflects this clearly and gives an accurate image of daily life.

Religion. Palmyrene cults were characterized by eclecticism and syncretism. The city's pantheon constituted more than sixty deities headed by the Babylonian god Bel/Zeus, often represented with Yarhibol (sun) and ʿAglibol (moon). Nabu/Apollo, son of Bel, also had great popularity in the city, as in the rest of the region. The Canaanite Baʿal Shamin was the chief of another triad. Allat/Athena, the Arab goddess, and Arsu (the Arab Radu) had also their temples in the city. Many Gods were dressed in military costumes and some rode horses and camels.

The main practice in Palmyrene religion was the ritual of procession around the main temple, following the Arab tradition. Attendance at ritual banquets *(thiases)* was widespread. The priesthood was well organized; its highest authority was the symposiarch of the Temple of Bel.

Art and Architecture. All through the three centuries of its history (first–third centuries), Palmyrene art followed the Oriental and Greco-Oriental traditions of Syria and Mesopotamia, with a strong Central Asian influence—particularly Indian and Persian. The Greco-Roman impact on its aesthetics was very strong beginning in the second century.

Palmyrene arts produced mostly sculpture, particularly for religious and funerary purposes. Bas-reliefs predominated, while statuary was rare. In general, Palmyrene art is static, idealized, and stylized, giving little care to dramatic representation and portraiture. Special care was given to details of dress and jewelry, which on many stelae were colored.

Frescoes have been discovered in Palmyrene underground tombs. [*See* Wall Paintings.] They follow the traditional Oriental use of linear technique, frontality, and detailed accessories. In the mosaic pavements, themes are usually related to Greco-Roman mythology. [*See* Mosaics.]

According to Harald Ingholt there were three phases of Palmyrene art, following an Archaic period, from about the first century BCE to the first century CE, that produced more original and naturalistic work whose originality is unanimously recognized (Ingholt, 1928; Ingholt et al., 1955). The Palmyrenes excelled in many aspects of architecture, but their unique achievement was the tomb—and especially tower tomb, such as the Elabel tower tomb built in 103. In the field of religious architecture they built or refounded many temples. From 32 CE through the following two centuries they completed the monumental Temple of Bel, one of the most collossal and beautiful temples in the Orient. The rich decoration on Palmyrene religious architecture developed at about the end of the first century CE from Oriental and Greco-Oriental traditions, while maintaining Syrian traditions, such as vast courtyards adytons, monumental altars, windows in the cella, and merlons. Local limestone was used in the construction of public buildings and streets, but private houses were only partly constructed in stone.

PALMYRA. *Limestone portrait on a funerary monument.* Dated first-second century CE. (Courtesy ASOR Archives)

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ADNAN BOUNNI

PALMYRENE INSCRIPTIONS. The Semitic language spoken in the oasis of Palmyra in Syria developed from a dialect of the official ("Imperial") Aramaic used in the Achaemenid Empire. After the settlement of Amorites and Arameans in the oasis, the arrival of the Arabs in the area by the middle of the first millennium BCE made Palmyra the center of major Semitic groups for whom Aramaic, by then an international language, must have served as a common link. Spoken and written all over Western Asia, Aramaic outlasted the end of the empire; distinct dialects appeared once the politically and religiously fragmented region restabilized under the Macedonians and the Romans. It seems, however, that when used by people whose native language was not Aramaic the language developed divergences in syntax and vocabulary that were more conspicuous than in the language of native speakers. This would explain the idiosyncrasies of Palmyrene related in some points to Eastern Aramaic—the plural in *aleph,* the adverbial ending *-âîth,* and the infinitive ending *-û*—but with some features closer to Western Aramaic—the plural in *-yod aleph,* the imperfect with the prefix *y-* instead of *n-* or *l-*, and the relative *dy.* Other noteworthy features are the diacritic point often used, as in Syriac, to distinguish *d* from *r,* ligatures binding some letters to the letter that precedes or follows, and the final form of *n.* Palmyrene is known through some twelve hundred honorary, official, votive, and sepulcral inscriptions dating from the first century BCE to the fourth century CE. No literary text or document on leather has yet been discovered. Palmyrene was the first of the Semitic inscriptional languages to be deciphered (see Daniels, 1988) and new inscriptions appear regularly, both in official excavations and on the antiquities market.

The epigraphic material from Palmyra constitutes a remarkable legacy of an exuberant assemblage of traditions. The substratum of the Aramean tribes who populated the area of Palmyra in the second millennium BCE is perceivable in the names borne by gods and individuals alike. The Babylonian pantheon is present in some liturgical inscriptions discovered in the Temple of Bel. The pervasiveness of Phoenician influence is a less well-known phenomenon, but it cannot be depreciated. The rituals reflect the presence of both Syro-Palestinian traditions and Arabian cults. A statistical survey of the personal names appearing in the inscriptions has revealed that the bulk of the population was of Arab origin—and therefore more than half of the names can be best explained through Arabic; several Arabic words occur, too, in the vocabulary. On the other hand, the technical terms of municipal and administrative life are mostly Greek, and under the Romans the use of Latin words was frequent.

The inscriptions are occasionally given in a Greek version after the Palmyrene. This is particularly the case in the honorary inscriptions written on Corinthian columns that were ranged along the principal streets, or stood in the porticos of the temples and of the agora. On the column there is a bracket for the statue to which the text refers. Two examples of this kind of inscription are "The council and people have made these two statues of Bariki son of Amrisa son of Yarhibola, and of Moqimu his son, lovers of the city and fearers of the gods: to their honor. In the month Nisan, the year 450" (139 CE), and "This statue is that of Taimarṣu son of Taima son of Moqimu Garba, chief of the caravan, which has been made for him by the members of the caravan who came up with him from Charax, because he saved them (their) expenses, three hundred denarii of gold, ancient currency, and was well pleasing to them: to his honor, and to the honor of Yaddai and Abdibol his sons. In the month Nisan, the year 504" (193 CE).

Tombs at Palmyra showed formal variation according to period and resources. The inscriptions outside the hypogea and in the tower tombs are often bilingual, whereas within they are only in Palmyrene. Votive inscriptions are rarely bilingual. The following text is an example of a Palmyrene

votive text, commemorating the gift of a column to a deity: "In the month Tebet, the year 363, Amtallat daughter of Bara a son of Attenatan, from the tribe of the Bene Mitha, wife of Taima son of Belhazai son of Zabdibel, from the tribe of the Bene Maazin, dedicated this column to Baal Shamen, the good and bountiful god, for her and the lives of her sons and brothers" (52 CE).

The Palmyrene script is a modified form of the elegant cursive used in the Persian chancelleries, and in many respects it approximates Hebrew square characters. The scribes carved their texts on the local limestone, using either the lapidary or the cursive technique, the former being close to the model of Greek epigraphic letters. No major changes are noticeable in either of the script types during the four centuries they were in use.

[*See also* Palmyra.]

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PAPHOS, ancient city on the southwest coast of Cyprus (34°42′ N, 32°35′ E), situated on a low hill above the coastal plain, fewer than 2 km (about 1 mi.) from the shore. The original settlement was also called Paphos, but since the end of the fourth century BCE has been called Old Paphos (Gk., Palaipaphos; Lat., Palaepaphus), to avoid confusion with the recently founded harbor town of New Paphos (Nea Paphos), some 19 km (12 mi.) along the coast to the northwest.

The ancient name of the city was lost during the Middle Ages. In the sixteenth century, the Swiss traveler Ludwig Tschudi (1519) and the Venetian official Francesco Attar (1540) discovered that the ruins outside the village of Kouklia marked the site of the renowned Sanctuary of the Paphian Aphrodite. The first excavations at Palaipaphos-Kouklia were carried out in 1888 by an expedition from the Cyprus Exploration Fund. After an interval of more than seventy years, the British Kouklia Expedition (1950–1955) initiated a systematic archaeological investigation of the city and the sanctuary. Since 1966, regular excavations have been conducted under the auspices of the German Archaeological Institute and the University of Zurich.

Paphos represents the only capital of the ancient kingdoms of Cyprus whose history dates to the early third millennium BCE. The site was inhabited in the Chalcolithic period (c. 2800 BCE). Greek immigrants began to appear in the extensive Late Bronze Age settlement at Paphos (late twelfth or early eleventh century BCE). The city remained the capital of the Kingdom of Paphos from the Iron Age until the conquest of Cyprus by the Ptolemies, in 294 BCE, who abolished the island's local monarchies. The city of Palaipaphos, however, continued to function as a noted place of worship throughout antiquity.

A local fertility cult is attested at Paphos as early as the third millennium. It seems that the Greek immigrants transformed it into the worship of the Paphian Aphrodite, whose cult later also adapted elements of the Syrian Astarte. The shrine at Paphos, situated close to the spot on the coast where the "foam-born" goddess was believed to have risen from the sea, gradually became one of the most famous sanctuaries of Aphrodite in the Greek and Roman world. The sanctuary therefore formed the chief architectural feature of Paphos. The first monumental sanctuary buildings date to about 1200 BCE. Basically, they represent a type of Near Eastern court sanctuary, combining a small, covered hall with a large, open temenos (a sacred precinct), originally filled with altars and votive gifts. The hall probably housed the idol of the goddess in the shape of a conical stone, a symbol of fertility. The aniconic worship of Aphrodite at Paphos throughout the sanctuary's history was a legacy of the original autochthonous cult.

In the large Late Bronze Age city of Paphos, workshops produced refined pottery, jewelery, and ivory objects that exhibit a characteristic fusion of Cypriot, Aegean, and Levantine traditions. Yet, probably the most flourishing phases in the history of the city were the Archaic and Classical periods, as shown by the large number of tombs of the wealthy and by an architectural heritage. In the sanctuary itself, a thorough Roman remodeling destroyed the LB buildings, but the cult's continuity is amply attested by more than four thousand fragments of Geometric, Archaic, and Classical terra-cotta votives. An imposing Late Archaic or Early Classical ashlar building most likely served as a royal residence. It is modeled on Achaemenid prototypes and exhibits a certain monumental elegance. A large Late Classical peristyle mansion, discovered a few years ago, may have served a similar purpose in the fourth century BCE. Another important feature of the Classical period is the vast chamber tomb *Spilaion tis Regainas,* the burial place of two fourth-century kings of Paphos.

The city of Paphos was defended by a circuit of walls built in the Early Archaic period and maintained until about 300 BCE. The northeast gate, which forms a sector of these fortifications, represents an important and, in some respects, unique monument of military architecture. Elaborate siege and countersiege works excavated on the site allow a detailed reconstruction of the siege of Paphos by a Persian army during the Ionian Revolt in 498 BCE. In order to amass the materials to construct a vast siege ramp, the attackers destroyed a sanctuary outside the walls. This debris contained several hundred fragments of sculptures and votive monuments that include some of the finest Archaic Cypriot statues known. These finds testify to a considerable local school of sculptors whose work combines Egyptian trends with Greek and Phoenician influences; they also provide a key date for the art history of ancient Cyprus. The potter's craft also lived on in the Iron Age, as shown by a large number of remarkable vessels decorated in the rather severe Paphian style that relies mainly on austere geometric patterns.

At the beginning of the third century BCE, when a considerable part of the population was transferred to the harbor city of Nea Paphos, the importance of the old city of Paphos declined, but it did retain its fame as an important religious center in the Hellenistic and later the Roman world. The sanctuary was rebuilt in about 100 CE, possibly after a destruction caused by the earthquake of 76/77 CE. This Roman sanctuary, which incorporated part of the LB buildings, was not in the classical Greco-Roman design. The building retained the basic Oriental character of an open-court sanctuary, reminiscent of the cult's Near Eastern antecedents.

The shrine with the longest cult tradition on Cyprus did not survive the final outlawing of all pagan religions by Emperor Theodosius I (391). Yet, several centuries later, at the beginning of the twelfth century, Palaipaphos (then named Couvoucle) regained some of its former importance. The royal manor house was erected adjacent to the sanctuary site, incorporating a thirteenth-century hall that is one of the finest surviving monuments of Gothic secular architecture on Cyprus. The manor served as a center of cane sugar production. On the coastal plain below it, a large and fairly well-preserved cane-sugar refinery was discovered and excavated. Erected in the late thirteenth century, it represents a so-far unique example of a medieval industrial plant; it remained in use until the end of the sixteenth century.

[*See also* Cyprus.]

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PAPYRUS. The writing material named after the plant from which it is made, papyrus, was manufactured as early as the first Egyptian dynasty (c. 3100 BCE). The emergence of writing and the concomitant use of papyrus seem to be outcomes of the imperial bureaucracy. The Egyptians used papyrus until the ninth–eleventh centuries CE—some four thousand years.

Papyrus was first exported to Syria no later than the twentieth century BCE. It found its way to other societies that had developed writing, such as the Greeks. The majority of extant papyri have been discovered in Egypt, where they survived because of the dry climate, but they have also been found in Asia and Europe. While only a few fragments dating from the Classical period have been found in Greece, dozens of depictions of rolls and papyri appear on vases of the same period. These vase paintings supplement the textual sources with many details of Classical and Hellenistic Greek book culture.

That biblical literature was originally written on papyrus (rather than on parchment) is evident from archaeological finds and textual analysis: a seventh-century BCE papyrus was found in Wadi Murabbaʿat near the Dead Sea and one from the fourth century BCE was found near Jericho. [*See* Murabbaʿat; Jericho.] Imprints of papyrus fibers have been found on the underside of bullae used to seal papyri. These findings support scholarly claims that the "books" mentioned in the Bible (*Jer.* 36:15–16; *Ez.* 2:8, 3:1–3) were actually written on papyrus. Probably only under Hellenistic influence were biblical writings committed to parchment. Jewish sages disqualified biblical scrolls written on papyri for ritual purposes (see Mishnah, *Meg.* 2:2), probably because papyri were considered to be less valuable and less reliable than parchment. This habit of disqualifying papyri is seen also at Qumran: more than eight hundred scrolls have been found there and only some sixty of them (8 percent) are papyrus scrolls. Egyptian Jews, however, continued to use papyrus as was regular in Egypt.

Papyrus was manufactured in Palestine in the Byzantine period (fourth–seventh centuries). According to the Jewish mystical literature of the time, as well as the Testament of Abraham (probably composed in Egypt), in heavenly administration human deeds are written on *pinax* (Gk., wooden tablets with wax) and on papyrus, from which the same practice can be inferred for earthly administration.

Technology. The papyrus-manufacturing process described by Pliny (*Nat. Hist.* 13.74 ff.) did not change over its thousands of years of use. The product was made by tearing off the "skin" of the papyrus reed. The strips thus

formed were laid in lengthwise and crosswise layers to achieve strength (sometimes a bit of vegetal glue was added), and the layers were pressed and beaten to meld them. The papyrus was then stretched and smoothed to make it fit for use. To create a roll, the sheets thus produced were glued together with the horizontal fibers on the inside, perpendicular to the join. A text on a scroll was normally arranged in columns, so that the writing followed the horizontal lines of the fibers. Normally, writing was done on only one side of the papyrus, although exceptions are known.

For practical purposes, the papyrus was limited to a standard size: 47 cm long at the most (29–33 cm on the average) and 22 cm wide. The total length of a typical papyrus scroll, consisting of some twenty "pages," was about 4.5 m—although much longer examples are known.

The dependence on a single raw material, a plant that grew mainly in Egypt, determined where papyrus was manufactured and had a significant effect on its cost when it was exported. The Egyptian embargo on exporting papyrus at the end of the seventh century CE opened the way for the use of parchment, and later of paper, its successors. "Ground" paper (the predecessor of modern paper) was invented in China in the second century CE, but reached western Asia only after the Muslim conquest of Turkestan in 751. After the secrets of manufacturing ground paper (from a selection of plants) were disclosed, paper gradually replaced papyrus for economic reasons. In Egypt, the large-scale manufacture of papyrus continued until the end of the eleventh century. It is manufactured today on a small scale, for the tourism industry.

Scribal Technique. The scribe's primary instrument was the pen (Gk., *kalamos*), a reed that was cut to some 15 cm and whose end was chewed to form a brushlike edge. The desired width of the script and the color of the ink determined which of several pens would be used. The ancient Egyptian scribe initially used several colors (with organic and mineral bases) because writing hieroglyphs was so much like drawing. In the course of time, the number of colors was reduced to two: black and red. The scribe's kit included an inkwell, a few pens, two dry inks, and a small container of water to prepare the ink for use. (see, e.g., Pierre Montet, *Everyday Life in Egypt in the Days of Ramesses the Great*, London, 1958, p. 255).

The ancient scribe usually wrote while standing or kneeling, without the aid of a table (as does his modern Yemenite Jewish counterpart). In the second millennium BCE, some Egyptian scribes began to use desks. In Western culture, the desk became an essential accessory only at the beginning of the Middle Ages (or perhaps earlier at Qumran; see Clark, 1963).

A scribe usually worked with other scribes, who were either his equal (official scribes like himself) or of different ranks and subordinate to the chief scribe. Using groups of scribes facilitated writing in more than one language and writing from dictation. Whole families (or a guild) of scribes created an apprenticeship system.

[*See also* Parchment; Scribes and Scribal Techniques; Seals; *and* Writing Materials.]

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PARCHMENT. Animal skins have been treated for human use since Paleolithic times, but processing skins for writing (parchment) is a relatively late development, postdating the invention of papyrus. Early evidence for writing on skins comes from the Egyptian fourth dynasty, before 2750 BCE. The practice was limited to religious and other special writings (such as the Book of the Dead). Although the Assyrians and the Babylonians wrote on clay tablets, there is evidence that they also wrote on parchment, at least from the sixth century BCE onward.

The parchment scroll was unknown in the Hellenistic and Roman world. In the first century CE, Pliny (*Nat. Hist.* 13.70) the statement of Varro (a Roman scholar and politician, 116–27? BCE) that the preparation of skins for writing was invented in Pergamon in Asia Minor at the beginning of the second century BCE (see below). In the Hellenistic world at least, the transition from papyrus to parchment may have been the result of the Egyptian embargo on exporting papyrus. The transition to parchment took place in Palestine as well, and the Jewish sages of the Roman period were of the opinion that any mention of a "book" in the Bible referred to a parchment scroll. It is possible that the use of parchment in Judaism became dominant under the influence of Hellenistic scribal culture: it is attested that the Hebrew and Aramaic languages borrowed more than twenty technical Greek terms pertaining to the manufacture

of parchment during that period, among them *diphtera* (Gk., untanned hide for writing), *duchsustos* (the inferior of parchment), *tomos* (scroll), and *tophos* (formula, form).

Unlike papyrus, a strictly Egyptian product, parchment could be produced anywhere and was considerably more durable. In Egypt, low humidity and the ready availability of the papyrus plant kept papyrus the material of choice.

Technology. While the production of papyrus remained virtually unchanged for thousands of years, methods of skin preparation evolved over time. The skin was taken from comestible animals such as sheep, goats, or cows; the hair and fat were removed; and the skin was made smooth.

The traditional method of preparing a hide was to soak it in water, to which calcium ($Ca(OH)_2$) or flour (to cause fermentation) and salt had been added. Subsequently, tannin, made of oak gall, was added, which produced an irreversible chemical reaction that strengthened the product. To remove hair or to improve the product some tanners used dates in the process (or dog dung—although not all the Jewish sages favored it). Different treatment processes applied to the raw skins led to a variety of final products, each with a different name, such as *diphtera* or *gewil* (Gk., the whole, unplaned hide).

A material called *pergamena,* first mentioned in 301 CE, is assumed to have been prepared by the people of Pergamon. The process did not include tanning, so that the skin dried while it was being stretched. The final product was thin and very delicate.

The ancient preparation techniques were passed on into the Middle Ages but were abandoned when the technology for producing paper became available in Europe—in Spain, in the twelfth century. The use of paper increased after the development of printing in the sixteenth-seventeenth centuries. The use of parchment became purely ceremonial or ritualistic; it is, for example, the material of the modern Jewish Torah scroll.

Scribal Technique. Scribes used two types of pens for writing on parchment. One, made of iron or wood, was stiff; the other, the *kalamos* (Gk., "pen"), of reed, was much softer and was used as a brush. The ink used was usually made out of lampblack mixed with the sap of plants. Scribes soon discovered, however, that by adding various minerals to the mixture they could strengthen the dye, making the ink more difficult to erase. Different types of inkwells, from the pharaonic period to the Roman-Byzantine periods, have been found in Egypt, Israel, Jordan, and elsewhere in the Near East (Khairy, 1980).

Scribes writing in Aramaic wrote in ink on clay tablets, using only black ink. Jewish scribes in the Roman period sometimes used ink in other colors, but religious tradition limited writing on the Torah scroll to black only (out of a few examples from Qumran).

[*See also* Leather; Papyrus; Scribes and Scribal Techniques; Tablet; *and* Writing Materials.]

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PARROT, ANDRÉ (1901–1980), French archaeologist noted for his exploration of the site of Mari in Syria. The son of a minister, Parrot studied theology, during which time he first became interested in the ancient Near East when he took some art history courses at the École du Louvre. The year he spent at the École Biblique et Archéologique Française in Jerusalem determined his vocation. He did his first archaeological work in 1926 at Nerab in North Syria and a year later at Baalbek in Lebanon. He participated in the excavation of Sumerian Telloh (1930) and ultimately became director of that project (1931–1933). Parrot also explored at Tell Senkere (ancient Larsa) in 1933, until difficulties with the Iraqi authorities ended his excavation. Although he returned to Larsa for two campaigns in 1967, he concentrated his field research at Mari, where he conducted twenty-one campaigns before 1974.

Throughout his career, Parrot worked at the Louvre museum, first as conservator, then as chief conservator of the Department of Near Eastern Antiquities. He became director of the museum in 1965. After World War II he reorganized the museum's Near Eastern galleries, which remained unchanged until 1992. Especially concerned with the history of art in its traditional form (cf. Parrot, *Sumer* [1960] and *Assur* [1961]), Parrot drew from the exceptionally rich discoveries at Mari, realizing that they would be of interest not only to specialists, but to a broad public. In his studies of the Flood, the Tower of Babel, and the Patriarchs, Parrot sought to show connections between the biblical world and that of other Near Eastern civilizations.

[*See also* Baalbek; Larsa; *and* Mari.]

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Translated from French by Nancy W. Leinwand

PARTHIANS. Parthava, which lies southeast of the Caspian Sea, was part of the Achaemenid Empire. It is recorded in royal inscriptions, including Darius's report of a revolt in 521 BCE. Yet, there is no record of the Parthians in the Hebrew Bible or in Assyrian annals. Those who ruled Parthava in the third century BCE, as Parni, were outsiders related to the Saka (Scythians). They adopted the local Iranian dialect and culture of the Parthian residents, calling themselves Arsacid, after the founder of the dynasty, Arsaces (c. 247 BCE).

In about 171 BCE, Mithridates I expanded the Parthian realm dramatically, at the expense of the Seleucids. By 141 BCE, Babylonia had become the center of the new Parthia. Continuing expansion toward Asia Minor brought the Parthians into conflict with the Romans, who felt their eastern interests threatened. The best-known confrontation, because of the loss of legionary standards, was the Roman proconsul Crassus's defeat at Carrhae, in northern Syria, in 53 BCE. Subsequent rivalries within Parthia weakened the state and eventually allowed the emperor Augustus to engineer the return of the standards, a peace celebrated in his Odes (no. 15) by the poet Horace.

Knowledge of the Parthians comes mostly from these western sources. Parthian sources tend to be rare. Their own successors downplayed Parthian history and deliberately suppressed the Parthian version of Zoroastrianism, so that few texts were consciously preserved. Coins, with individual bust portraits, furnish the outlines of the chronology (247 BCE–226 CE). Commercial documents were often written in ink, as ostraca, or on parchment. As a variant of Aramaic, the script is imprecise, and the heavy use of ideograms makes it difficult to decipher. Used by their successors at first, the Parthian language was abandoned in official inscriptions after seventy-five years of Sasanian rule.

Commentators tend to represent the Parthians as unsophisticated because of their origins as horse-riding tribesmen from the steppes of Central Asia. Fratricide over who should inherit the throne did eradicate most advantages gained through territorial conquest; and the use of Crassus's head as a gruesome stage prop in a performance of the Bacchae is a reasonable example of "eastern barbarity." However, the fact that, as Plutarch tells us *(Life of Crassus)*, this Greek play was being watched by the Parthian King Orodes II and Artavazd of Armenia, while drawing up a military alliance through marriage of a son and daughter to counter a Roman invasion, tells a lot about the culture and diplomacy of the first-century BCE Parthians. Greek was one of the formal languages used in Parthian administration. Although the use of the language has been given as an example of Parthian political weakness, it should rather be seen as an astute acknowledgment of the distinct heritage of Parthia's Macedonian settlers and a readiness to use the technical and administrative skills of an immigrant population.

Through his self-claimed title "king of kings," as expressed on all royal coins, the Parthian monarch was a supreme ruler. But there was a variety of governments in the provinces and principalities; some areas occasionally acquired degrees of independence that lasted for a short time, including the right to strike coins, which makes it difficult to define the political boundaries. If describing only those cities ruled directly from the capital, Parthia would appear to have been on the wane as soon as its greatest limit was fixed, in the expansionist years of the second century BCE. A definition by culture allows a broader scope, but it is difficult to know where to stop. Palmyra (Syria) and Taxila (Pakistan) have strong Parthian elements but cannot be claimed to be Parthian, any more than Hatra (Iraq)—because Hatra was the seat of a completely independent Arab principality. Yet, the latter's artwork is always called Parthian. Other excavated sites, such as Nisa (Turkmenistan), Kuh-i-Khwaja (Seistan), and Shahr-i Qumis (Gurgan) were far from the royal capital and eventually lay outside of Parthia proper. Even Qal'eh-i Yazdigird (Media), which lay within easy reach of the capital, was a rebel fortress.

Parthian art is as difficult to define as Parthian government. Rather than be judged as a culture in which Greek standards became debased, Parthian art should be seen as part of an evolution of the distinctive "eastern" modes that became fundamental in later Iranian and Islamic art. In architecture, the vaulted *eyvan/iwan*, or hall, opening onto a courtyard, replaced the older columned style, becoming an Iranian norm. Overall wall coverings of geometric ornament in plaster, based on textile designs, became another distinctive development in Parthian art. In pottery production, the glazed traditions of ancient Assyria were continued, and it is said that the Parthians applied the principle of the battery in the electroplating of metal. The almost five hundred years of Parthian culture formed an important link between the ancient world and the world of Islam.

[*See also* Persia, *article on* Persia from Alexander to the Rise of Islam.]

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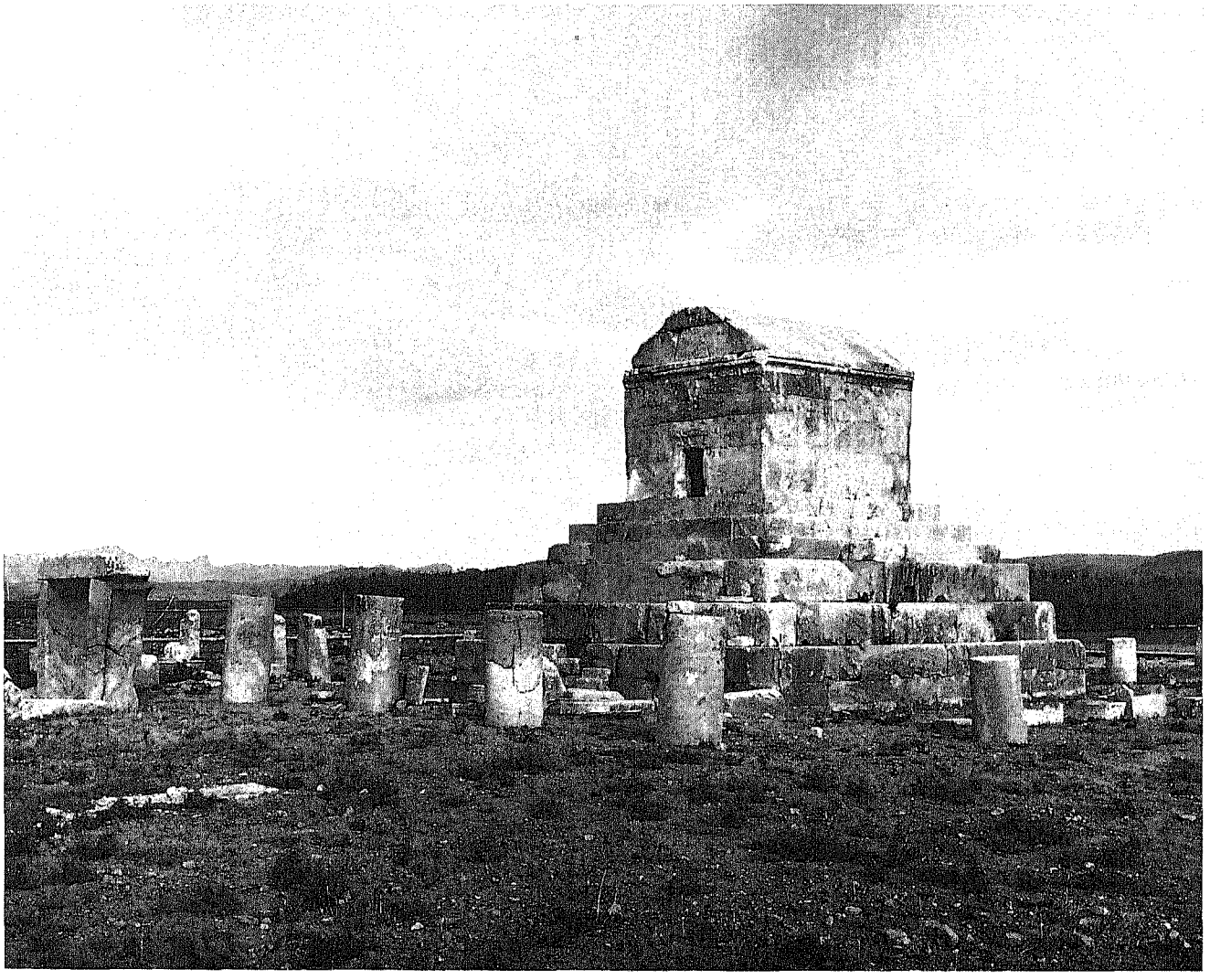
PASARGADAE, site located in the mountain-ringed Morghab Plain of southwestern Iran at an elevation of 1,900 m above sea level (30°15′ N, 53°14′ E). Pasargadae was founded by Cyrus the Great (559–530 BCE) soon after his conquest of Lydia (c. 547 BCE). According to Strabo (*Geog.* 15.3.8), the site marked the scene of Cyrus's prior victory (c. 550 BCE) over his erstwhile suzerain Astyages of Media. Early Achaemenid art and architecture took shape at Pasargadae and Cyrus, founder of the Persian Empire, was buried



PASARGADAE. Figure 1. *The tomb of Cyrus seen from the west.* The stone elements in the foreground were installed in the thirteenth century CE when the tomb served as the central part of a medieval mosque. (Photograph by O. Kitson, 1961)

there. While the name of the site is rendered as Batrakataš in the Elanite cuneiform of the Persepolis fortification tablets, the name in current usage derives from a Greek transliteration of an Old Persion toponym of still-uncertain meaning.

From the fifteenth century onward, the distinctive, well-preserved Tomb of the Mother of Solomon (the name then ascribed to Cyrus's long-forgotten resting place) was noted by European travelers traversing the main caravan route between Isfahan and Shiraz. Beginning in 1812, a number of such observers raised the possibility that the Morghab monuments might indeed constitute the lost remains of Cyrus's capital, but it took the detailed arguments first of George N. Curzon (1892) and then of Ernst Herzfeld (1908) to affirm the correlation. Herzfeld conducted the first excavations at Pasargadae in 1928. Six years later Aurel Stein examined several of the prehistoric mounds standing on the fringes of the Morghab Plain, and in 1935 E. F. Schmidt took the first aerial photographs of the site. Subsequent excavations were carried out by Ali Sami from 1949 to 1955 under the auspices of the Iranian Antiquities Service and by David Stronach from 1961 to 1963 on behalf of the British Institute of Persian Studies.

The principle remains of Achaemenid Pasargadae are distributed over an area some 3 km (2 mi.) long and 2 km (1 mi.) wide. Individual monuments within this parklike stretch of ground adjacent to the Pulvar River include the tomb of Cyrus, a monumental gatehouse (R), two palaces, a royal garden, an enigmatic stone tower (the Zendan-i Suleiman), two hollow limestone plinths, and an impressive stone platform jutting from the western side of a low hill now known as the Tall-i Takht, or "throne hill."

Tomb of Cyrus. Arguably an intentional synthesis of many separate Near Eastern architectural elements, the tomb of Cyrus stands at the southern limit of the site, approximately one kilometer south of the palace area (see figure 1). With its massive ashlar masonry and plain surfaces balanced by only a minimal number of decorative moldings, the structure creates an indelible impression of dignity, simplicity, and strength. With an estimated original height of 11.10 m, the tomb consists of two parts: a high plinth with six receding tiers and a rectangular cella with a steep-pitched, gabled roof. The stepped plinth measures 13.35 × 12.30 m at the base, and the compact tomb chamber, reached through a low doorway, is 3.17 m long, 2.11 m wide, and 2.11 m high. Until just after the fall of the Achaemenid Empire in 330 BCE, the body of Cyrus is said to have lain here in a golden coffin, on a golden couch beside a table (*Geog.* 15.3.7). Much later, in the thirteenth century CE, a shallow *miḥrab,* or prayer niche, was cut into the southwest wall of the tomb chamber. For an unknown period of time, the tomb served as the focal point of a medieval mosque.

Gate R. Placed on the eastern approach to the palace area, Gate R (also known as the Palace with the Relief) appears to have provided the chief ceremonial means of entrance to the site as a whole. Now greatly denuded, this free-standing rectangular structure originally housed a markedly tall, stone-floored hypostyle hall with two rows of four stone columns and four axial doorways. While the broad, main doorways on the opposed short walls were at one time flanked by paired colossi of Assyrian inspiration, the worn relief of a four-winged apotropaic genius still stands guard over the northeastern side door (see figure 2). Based on yet another kind of Assyrian protective image, the latter figure is distinguished by a short-bearded face with a distinctly Persian physiognomy, a traditional Elamite robe, and an Egyptian *hmhm* crown (an impressive headdress that rested on the long twisted horns of the Abyssinian ram). This last attribute, which was at home in the egyptianizing art of Syria and Phoenicia, may only have been introduced in order to underscore the submission of the eastern Mediterranean seaboard in 539 BCE; equally, however, it may have been intended to advertise what was (at the time) a still-unfulfilled Achaemenid claim to Egypt.

PASARGADAE. Figure 2. *Apotropaic four-winged figure.* The figure is carved in low relief on the one well-preserved door jamb of Gate R. Before the topmost portion of the imposing *hmhm* crown was broken off some 130 years ago, the intact figure measured about 2.85 m in height. (Photograph by O. Kitson, 1961)

Palace S. In reference to this structure's one surviving

13-meter-high stone column, Herzfeld (1908) opted for the label palace S, an abbreviation from *der palast mit der saule* ("the palace with the column"). The architects of palace S succeeded in combining, in one harmonious design, certain longstanding Iranian traditions (e.g., a lofty audience hall with two rows of four columns) with particular imported Ionian concepts (such as, most notably, that of placing an open and inviting columned portico on each side of a free-standing building). In terms of innovation, palace S also documents the first known use of one of the more distinctive (and indigenous) emblems of Achaemenid architecture: a stone capital in the form of a double animal protome. At the same time, however, certain of the now severely truncated doorway reliefs of palace S (including one in which the relief shows the legs of a bull man and those of a fish-cloaked genius) show a clear debt to the rich, exotic imagery of Assyria. Seventy years after the fall of Nineveh, Cyrus appears to have realized, in short, that various of the more distinctive elements in the art of Assyria could be borrowed with advantage to proclaim the return of a degree of dominion not seen since the days of Ashurbanipal. [*See* Assyria; Nineveh.]

Palace P. Herzfeld (1908) named palace P (*palast mit der pfleiler,* or "palace with the anta") for its once single visible feature: a protruding stone anta. In contrast to Cyrus's other palatial constructions, this innermost palace appears to have been intended to supply a relatively private, if still representational, setting for royal audiences. This circumstance probably accounts, for example, for the small scale of the thirty columns that once graced the central hall; for the narrow width of even the two main doorways that led into the hall; and for the importance given to the exceptionally long, well-appointed "garden portico" on the southeast side of the building. In many ways, in fact, palace P stands out not so much as a formal palace as a garden pavilion of exceptional size and status. More that this, the building was far from complete when Cyrus died in battle; and, as the latest patterns of research now indicate, neither palace P's Persepolitan-style doorway sculptures (each of which once included a figure of Cyrus followed by an attendant) nor any of the building's three separate inscriptions (including a single example of the standard trilingual building inscription that can be understood to have carried the meaning "I, Cyrus, the king, the Achaemenid [built this]") are to be attributed to Cyrus. Instead, each of these features has to be attributed to Darius: a monarch who apparently found it advisable—not least at the emotive site of Pasargadae—to project his own carefully nuanced image of the memorable ruler whose line he had supplanted.

Palace Garden. Although Cyrus did not live long enough to enjoy the prospect, it is clear that he had an external throne seat placed at the midpoint of the southwest portico of palace P in order to contemplate a well-ordered, luxuriant inner garden. Long, white limestone water channels, studded at intervals by square basins, still define the rectilinear lines of this early Achaemenid garden. It appears to have been divided into four quadrants—a division that may, at the time, have been understood to symbolize the "four quarters" of universal rule. [*See* Gardens, *article on* Gardens in Preclassical Times.]

The possibility that the palace garden was scrupulously maintained for two hundred years (perhaps as one expression of the homage that continued to be paid to Cyrus in his capital and burial place), is not at all improbable. Such a claim not only derives credibility from the long-term, clearly detectable impact of Cyrus's fourfold garden plan (Stronach, 1994, but could also be said to be substantiated by the discovery, within the confines of the garden, of the elegant Pasargadae treasure, a rich hoard of Achaemenid gold and silver objects that, based on the objects themselves, is not likely to have been hidden before 350 BCE.

Zendan-i Suleiman. One of Cyrus's most carefully constructed and enigmatic stone monuments, the Zendan-i Suleiman ("prison of Solomon") originally consisted of an almost square, 14-meter-high tower in which a solitary, raised room was approached by a projecting monumental stone staircase. Copied by Darius at Naqsh-i Rustam, and variously regarded as either a tomb, a fire temple, or a depository, this now-fragmentary construction continues to defy secure interpretation. [*See* Naqsh-i Rustam.]

Stone Plinths. The extreme northern limit of Pasargadae is marked by two isolated limestone plinths, each of which is square in plan and more than 2 m high, and each of which can be ascribed to the reign of Cyrus on the basis of datable stone working techniques. While numerous interpretations of the function of these features have been put forward, it is most likely (on the basis of comparable evidence contained in the funerary relief of Darius) that Cyrus ascended the step-topped southern plinth (by means on an eight-stepped staircase block) in order to worship opposite an elevated altar that stood on the adjacent, northern plinth.

Tall-i Takht. The towering stone platform that protrudes from the west side of this hump-backed hill offers one further proof of the scale and quality of Cyrus's building activities. Left unfinished upon Cyrus's death in 530 BCE, this rigorously constructed palace platform provides a manifest link between the earlier ashlar terraces at Lydian Sardis and the huge, later terrace Darius chose to erect at Persepolis. [*See* Sardis; Persepolis.] In the case of the Tall-i Takht, however, Cyrus's suddenly obsolete platform/terrace came to be incorporated—most probably during Darius's reign—in a sprawling citadel with substantial mud-brick defenses. This fortified complex may in fact represent a notable storehouse, mentioned by Arrian, said to have been surrendered intact to Alexander the Great (*Anabasis* 3.18.10). With reference to the Tall-i Takht's later history, the excavations of the early 1960s served to document a burning of part of the citadel in or near 300 BCE (an event likely to have marked the end of direct Seleucid control in Fars); the subsequent

introduction of a more independent local occupation that may have extended down to 180 BCE; and the establishment of a short-lived fortified settlement tentatively dated to the beginning of the Islamic era (seventh and eighth centuries CE).

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PASTORAL NOMADISM. A strategy for producing food that emphasizes breeding—the care and use of herd animals, in particular, in the Near East, of camels, cattle, sheep, and goats—is known as pastoral nomadism. Recent research into the history of pastoral nomadism in the Near East has benefited from three independent yet interrelated lines of scholarship. The first is the accumulation of a wealth of ethnographic information on pastoral nomadism in the nineteenth and early part of the twentieth centuries gathered by explorers, missionaries, and colonial administrators. The second is the more recent infusion of ideas and approaches from anthropology into the research agendas of historians and, especially, archaeologists (the so-called New Archaeology revolution). [*See* New Archaeology.] This led not only to renewed interest in ethnography by archaeologists (ethnoarchaeology), but to a virtual explosion of reexaminations by researchers of the documents (reports, artistic renderings, early photographs) of nineteenth-century explorers and missionaries—which has had an impact on biblical scholarship as well (see, e.g., Finkelstein and Na'aman, 1994). The third is the growth of regional archaeological surveys throughout the Near East mandated both by the New Archaeology and by the threat to antiquities sites by the rapid expansion of modern roads, farming, and settlements. Not surprisingly, a very significant proportion of the sites surveyed have produced information relevant to reconstructing the nature and contribution of pastoral nomadism over millennia.

An outcome of this recent escalation of research is an emerging consensus that the lives of nomadic pastoralists in the Near East have always been enmeshed with those of village-based farmers. Thus, the tendency of early scholars to emphasize differences and hostilities between farmers and herders has given way to perspectives emphasizing the varied ways in which raising crops and raising animals presented strategic food-production alternatives. Rural households and whole communities had to chose among them in order to adapt to shifting environmental, economic, and political conditions.

Three factors are especially important for understanding the migratory aspect of food production in the Near East. The first is the availability of water. In much of the region there are two seasons: the rainy season, which usually begins in November and ends in March or April, and summer, when there is little or no rain, only dew. In virtually rainless places, such as Egypt and Iraq (ancient Mesopotamia), the rainy season is nevertheless evident by the annual flooding of the Nile River and the Tigris and Euphrates Rivers, respectively.

Rainwater and floodwater have been counted on not only to irrigate fields, but also to replenish hewn cisterns and reservoirs, as well as natural reservoirs and underground aquifers. In many cases the latter provide fresh water to springs and streams year-round. An important advantage of pastoral nomadism in this regard is that—unlike sedentary agriculture—it is not dependent to the same extent on human labor to maintain irrigation canals, terraced hillsides, cisterns, and reservoirs to provide water for their crops, animals, and households during the dry season. On the contrary, pastoralists rely to a greater degree on their mobility and knowledge of natural pastures and watering places for year-round access to water.

A second factor is the presence of the three great deserts in the region: the Sahara and Sinai in North Africa and the Arabian desert along the frontier of the Fertile Crescent. During the rainy season, these vast deserts produce pastures of sufficient quantity and quality to feed hundreds of thousands of herd animals. By visiting these deserts, herders take advantage of the ability of ruminants to convert cellulose, which humans cannot digest directly, into animal pro-

tein, which humans can digest. During the dry season, when the desert becomes too inhospitable for people and animals, most herders bring their herds back to graze them on the stubble that remains following the grain harvest in the well-watered areas surrounding villages and towns.

A third factor affecting an understanding of nomadic pastoralism in the ancient Near East is the shifting of political and economic realities, which at times made sedentary agriculture very risky. This was especially true along the desert frontiers, where settlers sometimes abandoned their villages and farms and moved to safer areas or adopted subsistence pastoralism to provide for their food and security needs. When conditions became more favorable again, they or their descendents often resettled their former homelands.

Such sedentarization and nomadization has been documented by geographers, historians, and archaeologists for the countries along the North African coast, the Levant, and ancient Mesopotamia. Where these processes have been studied intensively—such as in Cyrenaica on the Libyan coast (Johnson, 1973), in the Madaba region of Jordan (LaBianca, 1988), and on the Mesopotamian floodplain (Adams, 1981)—sedentarization has typically been linked with the buildup of permanent settlements such as farmsteads, villages, and towns; with gradual increases in craft specialization; with the production of field crops and tree crops; with the centralization of power and bureaucratization of production; with the stratification of society; and with the delocalization of the food supply. Nomadization, on the other hand, has been linked with the partial or complete abandonment of settled areas; with increased reliance on animals; with dwelling in tents, caves, and abandoned buildings; and with increased reliance on tribal affiliation for access to lands and protection against hostile tribes and states. [*See* Tents.]

There is little scholarly dispute that subsistence pastoralism is a very ancient phenomenon in the Old World. The prevailing view is that nomadic pastoralism emerged as a consequence of the expansion of crop cultivation (Bar-Yosef and Khazarov, 1992). This likely first occurred sometime during Pre-Pottery Neolithic period (c. 6000–5500 BCE), when the first experiments with the migratory herding of animals away from arable areas were made. This early pastoralism likely began with herds of goats, which are a greater hazard to cultivated fields than are sheep. [*See* Sheep and Goats.]

The extent to which pastoralism developed during Pottery Neolithic times (c. 5500–4500 BCE) is uncertain, although it is likely that it was during this period that sheep were added to mobile herding operations. There is some evidence that these animals were raised primarily for their meat until the Chalcolithic period (c. 4500–3500 BCE), when they began to be kept for their milk and wool as well.

The emergence of the first cities during the Early Bronze Age (c. 3500–2300 BCE) provided additional impetus to the specialized production of sheep and goats: expanding urban populations needed to be supplied with meat, milk, fiber, skins, and wool. [*See* Textiles, *article on* Textiles of the Neolithic through Iron Ages.] This "secondary products revolution" coincided with the ass coming into full use as a means of transport, thus facilitating the hauling of the animal products produced in distant pastures to urban centers. [*See* Transportation.]

By the end of the Early Bronze Age, people's experience with the specialized production of animals had developed to the point where pastoral nomadism was fully established as a viable alternative to sedentary agriculture. Throughout most of the Old World, this mobile production of animals typically involved some sort of transhumance, whereby shepherds migrated with their flocks between summer and winter pastures. This ascendancy of nomadic lifestyles—especially toward the end of the Early Bronze Age—signaled the beginning of the cycles of sedentarization and nomadization that thereafter left their marks on the cultural landscape of the ancient Near East.

The secondary products revolution appears to have played a pivotal role in leading to the ascendancy of subsistence pastoralism as an alternative to village agriculture. Three subsequent events had a profound effect on this development in the Near East: the introduction of the camel, the invention of the North Arabian saddle, and the recent introduction of the pickup truck. [*See* Camels.]

Experts seem to agree that the one-humped camel, or dromedary, was domesticated (possibly in Somalia) sometime during the third millennium. Prior to its domestication, herders relied primarily on domestic sheep, goats, cows, and donkeys for their livelihoods. [*See* Cattle and Oxen.] The introduction of the camel allowed them to penetrate deeper into the desert in search of pastures. This increased capacity for mobility in previously uninhabitable desert regions, in turn, led to new opportunities for camel-breeding nomads when it came to long-distance trade.

It is a curious fact that, especially in the Levant, the camel does not appear to have played a very significant role either as a herding animal or as a transport animal until after about 1400 BCE. After that time, however, its importance gradually increased, apparently because of its usefulness to the burgeoning overland trade in incense. The trade was at first controlled by settled merchants; after the invention of the North Arabian saddle in about 500 BCE, however, the usefulness of the dromedary in transport increased so significantly it put the camel-breeding nomads in control. The rise of such desert commercial centers as Petra and Palmyra followed. [*See* Petra; Palmyra.]

The military and economic advantages provided by the camel, the North Arabian saddle, and subsequent technological advances related to riding and raiding by nomads on camel, led to the beginning of what is often referred to as bedouin society (cf. Bulliet, 1975). The auspicious ascent of

bedouins as the undisputed masters of the overland trade routes crisscrossing the Arabian desert only lasted a few centuries. Ironically, as Richard W. Bulliet has noted, the very "technological changes that originally made it possible for desert tribes bordering settled empires to gain control of the trade passing through their lands eventually raised the military capacity of all the Arab tribes to such a level that anarchy replaced the control exercised by the first trading states" (1990, p. 104).

No doubt other factors contributed to the waning role of the bedouin when it came to controlling overland trade routes—not the least of which were the deliberate and eventually successful attempts by the Roman overlords of ancient Palestine to take over this control. In the nearly two millennia since then, the fortunes of the bedouin with respect to control of the desert trade routes of Arabia have waxed and waned. Pivotal to the persistence of their way of life in the face of constantly shifting political fortunes has been their skill as breeders of camels, horses, sheep, and goats; their intimate knowledge of the desert; and their resilient tribal organization, which invariably includes complex partnerships not only among their own groups, but also with the villagers and townspeople bordering their desert territories.

The twentieth century brought enormous challenges and changes to the bedouin way of life. In modern Egypt, Israel, Jordan, and Syria their numbers have dwindled as their traditional dry-season pastures in the settled areas have been converted to the intensive cultivation of legumes, vegetables, and fruit trees and their traditional reliance on raiding and collecting protection taxes from villagers and townspeople has been ended by local governments. Furthermore, the introduction of well-guarded national borders has impeded their traditional long-distance migrations.

Despite these changes, bedouin continue to survive. Because of their expertise at utilizing some of the most marginal lands in the world, they have an important contribution to make to the economies of their host countries; their strategies for doing so are likely to change, however, not the least because of modern technology. Thus, the camel as a means of desert transport is rapidly being replaced by trucks, especially small pickup trucks. As new technologies continue to be introduced, the question remains as to whether the bedouin way of life will persist as a type of subsistence pastoralism or, as some predict, it will become a Near Eastern version of commercial ranching.

The infusion of anthropological understanding of pastoral nomadism since the 1960s into historical and archaeological research on the ancient Near East has led to many new insights with broad ramifications for our understanding of the prehistory and history of the Holy Land. For instance, recent scholarship concerned with the cyclic appearance and disappearance of settled villages and towns in ancient Palestine throughout the Chalcolithic, Bronze, and Iron ages has come to rely explicitly on the anthropological concepts of sedentarization and nomadization to understand this phenomenon (cf. Finkelstein and Na'aman, 1994; Levy, 1995). As Israel Finkelstein has argued, the settlement of the Israelites in the highlands of Canaan toward the end of the second millennium BCE was thus not a singular event of some kind, but rather "a phase in the cyclic history of Canaan" (Finkelstein, 1994).

The fluidity that has characterized the social landscape of the Near East over the millennia has in a large measure been possible because of the persistence at the local level of various forms of tribalism. Since prehistoric times, tribal ideology has served as the enabling mechanism whereby small groups of kin have been able shift back and forth between nomadic and sedentary ways in order to adapt to changes in their natural and social environment. Thus, when it comes to understanding the origins, rise, and collapse of such local kingdoms as Israel, Judah, Ammon, Moab, and Edom toward the end of the second and throughout most of the first millennia BCE, insights gained from anthropological research on tribalism—as manifest both among sedentary and nomadic groups—will be crucial to future attempts to understand the nature of the polities of these early kingdoms (cf. LaBianca and Younker, 1995).

[*See also* Agriculture; Egypt, *article on* Prehistoric Egypt; Mesopotamia, *article on* Prehistoric Mesopotamia; North Africa; Palestine, *article on* Prehistoric Palestine; Syria, *article on* Prehistoric Syria; *and* Transjordan, *article on* Prehistoric Transjordan.]

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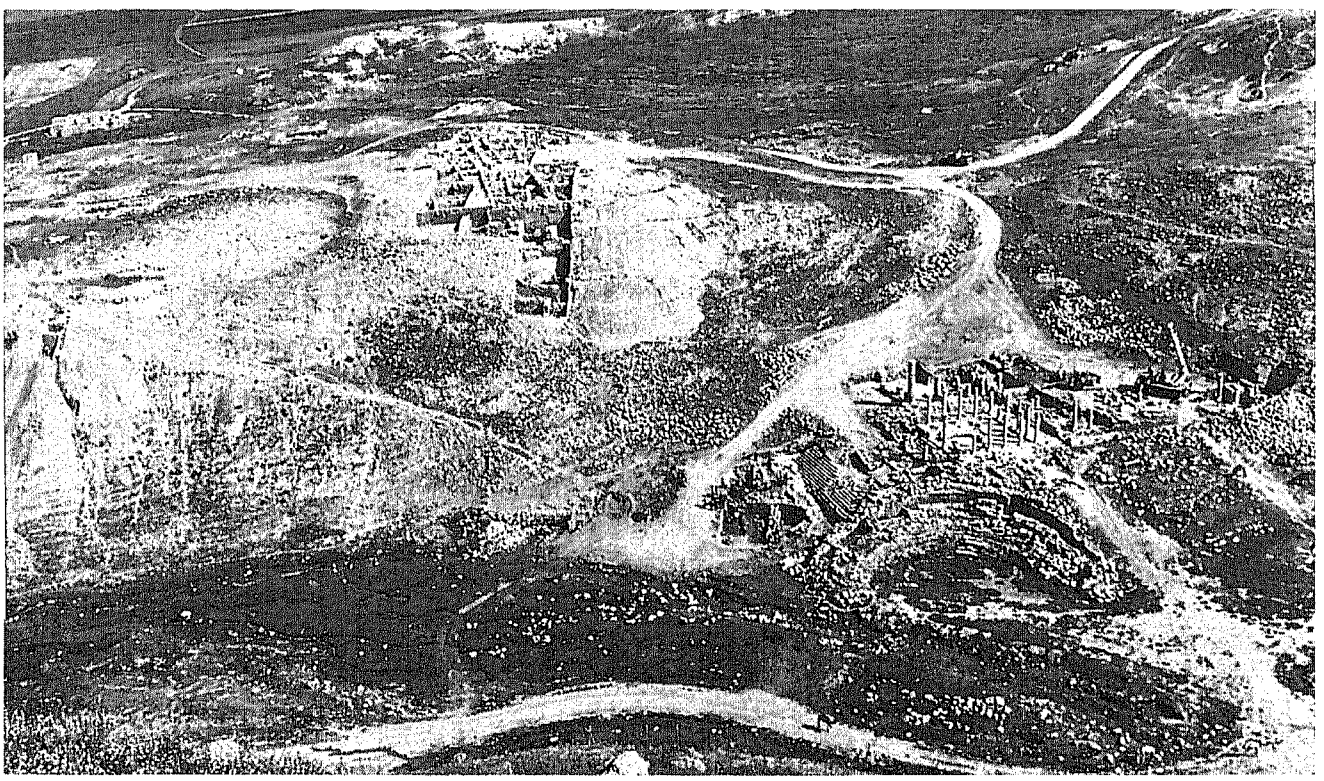
PELLA (modern Ṭabaqaṭ Faḥl, Early Islamic Fiḥl), site located in the lower foothills of the eastern Jordan Valley, 28 km (17 mi.) south of the Sea of Galilee and 4 km (2.5 mi.) east of the Jordan River (32°27′ N, 35°37′ E). The site, nestled among rugged hills and deep valleys, overlooks the north Jordan Valley and the plain of Esdraelon. Pella's principal archaeological feature is an oval mound on the north side of Wadi Jirm el-Moz, a small valley that descends from the highlands that lie to the east. On its steep, eroded southern slope the mound rises 30 m (100 ft.) above the valley floor. Beneath its deep occupational remains is a natural hillock, at whose foot a powerful spring has flowed into the valley for thousands of years. On the south side of Wadi Jirm rises a large, dome-shaped natural hill known as Tell el-Ḥusn, which was used both for interment and for occupation at various times in the past. The surrounding region reveals abundant evidence of ancient utilization.



PELLA. *View of excavations from the south.* A portion of the main mound is visible on the left. At center right is the Civic Complex of the Roman-Byzantine period. The Roman odeon (small theater) is visible, as well as the Civic Complex Church, which may have been the city's cathedral. (Photograph courtesy College of Wooster)

Pella was highly desirable as a place of habitation because it commanded the resources of three ecosystems: its own and those in the ascending hills to the east and the Jordan Valley on the west. Although hot in the summer, it had, as it still does, one of the best climates in the region. Even today, after centuries of environmental degradation, it has rich soils and sufficient rainfall to make the vicinity excellent for agriculture. In ancient times it also lay near the junction of two of the major trade and military routes of the ancient Levant, one running along the eastern side of the Jordan Valley and the other descending northwest from the Central Transjordanian highlands, crossing the Jordan River near Beth-Shean and continuing through the Plain of Esdraelon to the coast.

The site has been known to Western travelers and explorers since it was visited, but not identified, by Charles Irby and James Mangles in 1818. It appeared as "Pella" on Heinrich Kiepert's 1842 map, an identification confirmed, on the basis of both research and visitation, by Edward Robinson in his *Later Biblical Researches in Palestine and the Adjacent Regions* (London, 1856). It was recognized by William Foxwell Albright in 1926 as the Pihil, or Pihir, in several Egyptian texts, a correlation that opened up a textually documented history going as far back as the Egyptian Middle Kingdom. Several dozen Greek, Latin, and Arabic texts allude briefly to Pella, as does a Talmudic passage (Smith, 1973, pp. 23–82).

Archaeological exploration of the site began with soundings made in 1958 by Robert Funk and Neil Richardson of the American Schools of Oriental Research. The first full-scale excavations were begun in 1967 by the College of Wooster, under the direction of Robert H. Smith, but were curtailed by the June war of that year. Smith returned in 1979 with J. Basil Hennessy and Anthony W. McNicoll as directors of a joint University of Sydney–College of Wooster expedition. The Wooster team had its last season in 1985; Sydney's excavations continued into the 1990s. It is only with this most recent research that the long and rich history of the area has been illuminated.

Surface surveys and excavation have demonstrated occupation in the region of Pella from the Lower Paleolithic (perhaps as many as a million years ago) to the present day. Important Early and Middle Paleolithic sequences predate the formation of the Lisan lake that dominated the region's geography and economy between 100,000 and 14,000 years ago, after which the lake began to retreat and, in its retreat, to create the deep ravines that are so prominent a feature of the existing landscape.

Six sites from the Upper Paleolithic, Kebaran, and Natufian periods have been excavated by the joint expedition; they provide a detailed picture of the environment and human activity in the vicinity of Pella between 30,000 and 12,000 years ago. Excavation of the Early Natufian settlement exposed two large, circular buildings containing deposits of thousands of domestic and agricultural stone tools, as well as carefully worked basalt bowls, pedestal mortars and pestles, small animal sculptures in both basalt and limestone, and large limestone stelae decorated with deeply carved concentric rectangles. Dietary staples included wild barley, lentils, and peas. Human burials and offerings were found beneath some of the domestic structures.

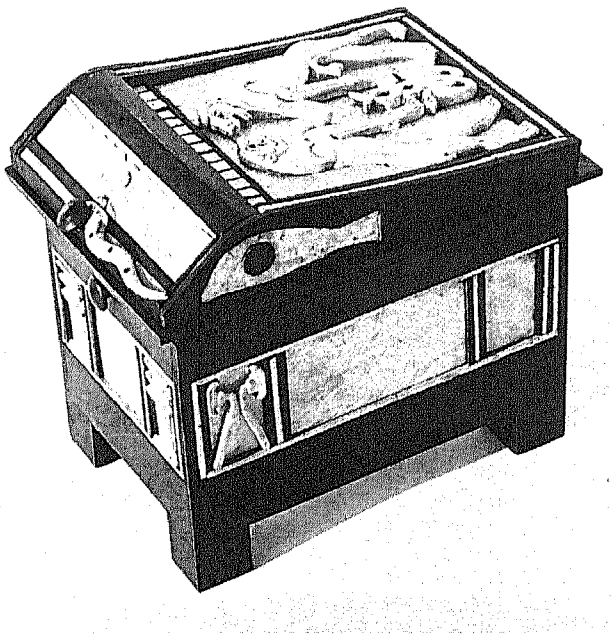
Prepottery Neolithic remains are evidenced so far only in unstratified contexts, but excavation and surface survey indicate a widespread Pottery Neolithic settlement of the Yarmukian horizon in the sixth and fifth millennia, both on the main mound and along the banks of Wadi Jirm el-Moz.

Numerous Chalcolithic settlements are attested throughout the vicinity of Pella. One of these, a large village situated southeast of the central mound on the slope of a large hill known as Jebel Ṣarṭaba, has been excavated. The plan appears to consist of broad courtyard areas between clusters of roughly rectangular stone and mud-brick houses partly cut into the hill's soft bedrock. The ceramic and lithic industries are closely related to those of the upper levels at Teleilat el-Ghassul, the basic levels of the Beersheba Chalcolithic, and some settlements in the Golan in Israel. The village had an agricultural economy based on barley, emmer wheat, lentils, chickpeas, and peas. A radiocarbon sample dates the short-lived settlement to 3480 ± 60 BCE.

Early Bronze Age remains have been found on both the mound and at Tell el-Ḥusn; where many of the areas of deep excavation have reached EB levels. A substantial EB I building has been found on the mound. It is probable that a massive defensive wall exposed in the deep excavations carried out on the southeastern part of the mound had its origin in the Early Bronze Age. An EB IIA large stone platform was discovered at Tell el-Ḥusn. There are few remains of the EB III period. An EB IV cemetery was partly excavated in Wadi Ḥammeh, near the Natufian settlement mentioned above, and there is evidence of a small settlement from the same period in that vicinity.

Pihil was a city of some significance throughout the Middle and Late Bronze Ages, as might be expected from the Egyptian references. It was defended by a substantial mud-brick wall that continued in use, with occasional patching, into the Iron Age. Rich settlement and tomb remains attest to a continuous and widespread occupation throughout the second millennium BCE, perhaps extending beyond the city wall. Unlike the situation in much of Palestine and Transjordan, there does not appear to have been a reduction in the city's size or any evidence of destruction until the end of LB II, and many MB II buildings continued in use into the Late Bronze Age.

Contact with Egypt is archaeologically attested as early as the MB IIb period by the presence of alabaster and faience vessels, scarabs, and other trade items, and with Cyprus and the Aegean during the Late Bronze Age, when ceramic vessels were imported in some quantity. Fragments of cunei-



PELLA. *Egyptian style box.* Restored ebony box with ivory inlays. Late Bronze Age, fifteenth century BCE. (Photograph courtesy University of Sydney)

form tablets of LB I date suggest a literate society, as do the previously known Amarna letters from Mut-bal'lu of Pella to pharaoh Akhenaten. One substantial building may prove to be the equivalent of the now well-attested governors' residences in contemporary Palestinian cities. There was no marked change in prosperity during LB II, although the town's area may have been more restricted in the thirteenth century BCE. There are very rich burials of LB I and II.

The beginning of the Iron Age saw rebuilding and continuity of local ceramic and other material cultural elements, but the large, MB–LB prosperous city gave way to a somewhat smaller and poorer town. Pella receives no mention in the Hebrew Bible, unless it appears there under some other name. It is possible that during the later biblical period the city was virtually unoccupied, as there is little at the site that is datable to the period from the late seventh through the fourth centuries BCE.

Following the conquests of Alexander the Great in Syria and Palestine in 332–331 BCE and the ensuing reconfigurations in government, economy, and culture, Pella began to revive. Although the late tradition of Stephanos Byzantios (*Ethnica,* pp. 103–104) that the city was refounded by Alexander is probably fictional, it began to rebuild its population and participate in Hellenistic commerce under Ptolemaic suzerainty.

Following the Seleucid conquest of the southern Levant in 200 BCE, Pella experienced a century of expansion and prosperity. New residences and public or military structures were built. Greek became the language of culture and commerce, although the indigenous language of the city was never completely abandoned. The ancient Semitic name of the city was hellenized to *Pella,* calling to mind the city of Alexander's birth. Late Hellenistic artifacts, found in abundance, include not only fine artifacts imported from Syria and elsewhere in the eastern Mediterranean region, but also a new repertoire of local ceramic vessels.

Contemporary with Pella's Late Hellenistic development was the rise of the Maccabean kingdom west of the Jordan River. Having traditionally stood outside the Hebrew cultural sphere, Pella maintained an uneasy relationship with the Jewish state; nevertheless, by keeping a low profile and probably serving as a useful conduit for Seleucid commerce, the city managed to remain relatively free from Hasmonean domination for almost a century. In 83/82 BCE, however, the Hasmonean ruler Alexander Jannaeus, displeased, according to Josephus, that a city so near its border would not accede to Jewish practices, overran and destroyed the city (Josephus, *Antiq.* 13.392–397; *War* 1.103–105). Evidence of extensive burning is present in the Late Hellenistic stratum on the mound.

The advance of the Roman general Pompey through Syria in 63 BCE brought an end to Seleucid and Hasmonean domination alike. Pella was one of ten hellenized cities in southern Syria and northern Transjordan that from this time on were known collectively as the Decapolis—if, indeed, that term had not already come into existence in Late Hellenistic times. Although the cities were placed within the newly created province of Syria, Pompey in fact returned to them much of the independence they had enjoyed under the Seleucid Empire. Archaeological evidence shows that while commerce was important, Pella was no more involved in international trade than many other cities outside that league.

Stratified archaeological deposition from the first three centuries CE has not been found on the mound to the extent that might be expected; nevertheless, it is clear that Pella underwent considerable development during the Roman period. In 82/83 CE the city issued its first modest bronze coinage. Excavations in the Civic Complex near the spring have exposed the remnants of public baths and a small theater constructed about this time, and a forum probably was built in Wadi Jirm. Several of the city's early third-century coins show the facade of a nymphaeum, which was undoubtedly located in the Civic Complex. There was a popular spa at Pella, probably the warm mineral spring that still flows in Wadi Ḥammeh, 3 km (2 mi.) north of the city. The road between Pella and the Decapolis city of Gerasa/Jerash was improved in 160/61 CE, as inscribed milestones found along its route indicate.

Throughout this period the city continued to have its cultural roots in an intermingling of its ancient Syro-Palestinian heritage with Hellenism. The Greco-Roman deities that ap-

pear on the coins the city issued between 177 and 222 CE include Athena, an unidentified male deity, and perhaps Heracles, while another coin depicts a large hexastyle temple. Inscriptions found during excavation mention "the elders of Zeus-Ares" and "the Arabian God." Excavations have brought to light scattered evidence of the everyday religious practices of the city's inhabitants, such as the wearing of amulets and the inclusion of hens' eggs in the burial of a newborn child.

Although Pella is not mentioned in the New Testament, the interaction of Judaism and Christianity in the city during this period is of particular interest. Josephus states that Pella was among a number of hellenized cities and villages in Transjordan and Syria that were pillaged by Jews in 66 CE (*War* 2.457–465). Evidently the damage to the city was limited, for some two years later, as Roman troops were on the verge of attacking Jerusalem during the First Jewish Revolt, the Christians who lived in Jerusalem are said to have fled for safety across the Jordan River to the region of Peraea, especially to Pella (Eusebius, *Historia Ecclesiastica* 3.5.3–4; Epiphanius, *Adversus Haereses* 30.2.7–8). The choice of Pella as a city of refuge is further said to have been divinely revealed to a prophet in the Jerusalem church, but it can also be viewed on the pragmatic ground that Pella was the most easily reached of the hellenized cities of Transjordan and would have had no involvement in the insurrection against Rome. In view of the aforesaid distaste that the citizens of Hellenistic Pella had for Jewish customs and nationalism, it is likely that the majority of the Christians who took refuge in Pella came from a hellenized Jewish background. A sarcophagus excavated beneath the floor of the West Church at Pella may originally have contained the remains of a leader of that group who died during the sojourn.

Although these Christians are reported later to have returned to Jerusalem, the fact that the mid-second-century apologist Aristo came from Pella suggests that Christianity continued to exist in the city from that time onward. By the end of the fourth century CE, Pella had become a bishopric and Christianity had displaced most or all of the city's former religions. Three large churches were constructed during the Byzantine period, one of which—probably the city's cathedral—was located in the Civic Complex, another on the west side of the city, and the third on a high slope east of the city. The names of several bishops of the fifth and sixth centuries are known as participants in the church's ecumenical councils.

Pella probably reached its greatest size in the sixth century, when its international trade was extensive and its citizens were enjoying considerable prosperity. The city fell to its Islamic conquerors in 635 CE, after a major battle between the Byzantine and Islamic armies on the nearby plain of Fihl. Excavations have demonstrated that the city was taken peacefully into the Early Umayyad Empire, with a gradual transition from its former Byzantine culture and economy.

The city was destroyed in a violent earthquake in 746/47 CE but was not entirely deserted. Excavations to the northeast of the mound have uncovered substantial buildings from the 'Abbasid period in the ninth and tenth centuries CE. These remains, along with those of the earlier Umayyad occupation, make Pella a type-site for the early Islamic settlement of Jordan. There was some occupation of the site during Mamluk and Early Ottoman times, supported by sugar production. During the Mamluk period a mosque was constructed on top of the mound, but the city itself was never rebuilt.

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J. BASIL HENNESSY and ROBERT HOUSTON SMITH

PERGAMON, ancient city situated in the region of Mysia in northwestern Asia Minor. The city occupies the summit and south slope of a dramatic hill that towers over the fertile valley of the Caicus River, about 25 km (15.5 mi.) east of the Aegean coast, opposite the Greek island of Lesbos. The location of Pergamon was never forgotten, and the name survives in that of the modern Turkish town of Bergama. Pergamon was visited and described by numerous early European travelers, starting with Cyriacus of Ancona

in the mid-fifteenth century. German excavations sponsored by the Berlin Museum and later by the German Archaeological Institute began in 1878 and have continued intermittently ever since.

In Greek myth, Pergamon was founded by Telephos, the son of Herakles; although prehistoric pottery has been found in places on the Caicus plain, the earliest archaeological evidence for settlement on the hill of Pergamon are scattered Greek Geometric sherds of the seventh century BCE. Until the end of the fourth century BCE, Pergamon was a small fortress settlement, inhabited by a mixed population of Greeks and indigenous peoples. The decisive turning point in the history of the city came in 301 BCE, when the Hellenistic warlord Lysimachos of Thrace secured his war chest in its fortress, entrusting it to a lieutenant named Philetaerus. In 282 BCE, Philetaerus revolted from Lysimachos and founded the so-called Attalid dynasty, which ruled Pergamon for the next century and a half. The Attalids made the city an architectural showpiece and the capital of an increasingly powerful kingdom. This most distinctive epoch in Pergamene history came to an end in 133 BCE, when the last of the Attalid rulers, Attalus III, took the remarkable diplomatic step of leaving his kingdom on his death to the People of Rome. Pergamon continued to grow and prosper under Roman rule, ranking as one of the two or three leading cities in the province of Asia. It became the home, eventually, of one of the seven churches of that province addressed in the *Book of Revelation* (2:12–17). The strategic value of its fortress ensured Pergamon's continued importance in the Byzantine period. Early in the fourteenth century, the city was taken by the Turks and incorporated into the newly founded Ottoman kingdom.

The site of Pergamon falls into three major areas: the fortified hill to which the Hellenistic city was confined; the relatively level area south of the hill, built up in Roman times and now occupied by Bergama; and an extramural sanctuary of Asclepius, southwest of Roman Pergamon. The hill of Pergamon can be divided into two parts: the hilltop, or acropolis, which housed the original fortress; and the south slope, which contained the residential part of town and was entirely enclosed by fortifications in the second century BCE (the total area of Hellenistic city was about 90 ha, or 222 acres).

Although the hilltop was settled as early as the seventh century BCE, the earliest substantial architectural remains belong to the Hellenistic period. The north and east sides—the highest parts—are occupied by the fortress proper: the palaces of the kings (relatively modest peristyle structures) and various military installations. To the west lie the theater, built into the slope of the hill, and a series of grand terraces that run radially around the outside of the theater, stepping down from north to south. The earliest of the building complexes supported by these terraces is the sanctuary of Athena, directly east of the theater. It consists of a Doric temple of the late fourth or third century BCE, which was later enclosed on its north, east, and south sides by stoas and other structures, including a library. An elaborate propylon dates to the reign of Eumenes II (197–159 BCE). South of and below the sanctuary of Athena lies Pergamon's most famous monument, the altar of Zeus, also begun, if not perhaps entirely finished, during the reign of Eumenes (see figure 1). The sculptured frieze that decorated its podium represents the battle between the gods and the giants. It is now the centerpiece of the Pergamon Museum in Berlin. South of the altar lies a monumental marketplace, or agora. By the end of the Hellenistic period, the architectural elaboration of the acropolis of Pergamon was essentially complete. The only major new building from the Roman era is the Trajaneum, a temple on a monumental terrace northeast of the theater, in which colossal statues of both Trajan (98–117 CE) and his successor, Hadrian (117–138 CE), were found. The partial restoration of the Trajaneum was begun in the 1970s and is still underway.

New fortifications which enclosed the whole south slope of the hill of Pergamon were built, like much of the acropolis, during the reigns of Eumenes II (197–159 BCE) and his successor, Attalus II (159–138 BCE). Excavation has concentrated on four areas: the so-called *stadtgrabung,* or "city excavations," a residential area which was a major focus of work from the 1970s into the 1990s; the sanctuary of Demeter, a small Ionic temple enclosed by stoas on a monumental terrace, which was built largely in the third and early second centuries BCE; the gymnasium, a grand complex occupying a series of three terraces, which includes stoas, meeting rooms, public baths, and several small sanctuaries, in addition to a large palaestra, or exercise ground, built in the second century BCE and substantially renovated in the Roman period; and the lower agora, together with a nearby group of houses. The lower agora lies just inside the "Eumenes gate," at the southern edge of the Hellenistic city.

The Roman development of the area south of the hill of Pergamon is largely hidden by Bergama. Monumental buildings include a theater, a stadium, and an amphitheater, as well as the so-called Red Hall, a huge and unusual temple complex from the second century CE which was dedicated to a trio of Egyptian gods. The sanctuary of Asclepius, southwest of the Roman city, was said to have been founded in the fourth century BCE, but the surviving complex belongs largely to the Roman period, especially the second century CE (see figure 2). It consists of a large courtyard flanked by stoas on its north, west, and south sides (with a theater behind the north stoa) and a row of monumental buildings on the east. The most remarkable of those buildings is the Temple of Zeus-Asclepius, a small replica of the Pantheon in Rome.

With the advent of Christianity, many of Pergamon's pagan sanctuaries were converted into churches, including the Asclepium and the Red Hall in the lower city. In Late Antiquity, however, the lower city was abandoned, as the populace retreated to the fortified slopes of the Hellenistic town.

PERGAMON. Figure 1. *Altar of Zeus.* Pergamon Museum, Berlin. (Foto Marburg/Art Resource, NY)

PERGAMON. Figure 2. *General view of the Asklepieion.* (Foto Marburg/Art Resource, NY)

The area between the gymnasium and the acropolis was enclosed by new fortifications (built partly on top of earlier walls). The city enjoyed relative prosperity until as late as the thirteenth century. It fell to the Turks in the early fourteenth century.

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CHRISTOPHER RATTÉ

PERIODICAL LITERATURE. The range of current periodical literature dealing with the archaeology of the ancient Near East and the Mediterranean basin runs the gamut from popular newsletters and magazines to extremely technical, scientific journals. Much of this literature is produced by the major institutes and schools of archaeological research in the United States and Europe; some is regionally specific, while other journals deal with issues that transcend regional boundaries. A growing number of technical journals deal with the scientific aspects of archaeology and related disciplines, including geology, zoology, microbiology, and ethnoarchaeology.

Archaeological and related studies are also found in journals devoted primarily to biblical research, such as the *Journal of Biblical Literature,* the *Catholic Biblical Quarterly, Vetus Testamentum,* and *Zeitschrift für die alttestamentliche Wissenschaft,* which will not be considered here. What follows is an annotated description of the most useful and best-known periodicals dealing with archaeological research and methods, excavation reports, and the artifactual remains (either physical or literary). For a comprehensive list of what is currently available, see the annual *Archäologische Bibliographie* (Deutsches Archäologisches Institut, Werner Hermann and Richard Neudecker et al., eds., Berlin), an index of articles, subjects, and authors on the archaeology of the ancient Near East and the Mediterranean world.

The periodical literature can be organized into two major categories: popular sources and technical sources. Within each category are subcategories of publications. Popular sources include newsletters, abstracts, and popular journals and magazines. Technical sources are comprised of journals of Near Eastern archaeology; Near Eastern history, languages, and culture; classical or Mediterranean archaeology; classical history, languages, and culture; related areas and nonregional archaeological studies; scientific methods that relate to archaeology; and anthropological studies. Within each category and subcategory, the most useful and accessible of these publications are listed here first, in alphabetical order; those that are not as accessible to the general community are listed separately, also in alphabetical order.

Popular Sources

Newsletters. For the general reader or the scholar who wishes to be informed about fellowships, conferences, and preliminary site reports, the newsletter is a helpful publication.

ASOR Newsletters. Quarterly report of news from the archaeological institutes of the American Schools of Oriental Research—the W. F. Albright Institute of Archaeological Research (AIAR), Jerusalem; the American Center of Oriental Research (ACOR), Amman; and the Cyprus American Archaeological Research Institute (CAARI), Nicosia (see below). The newsletter also includes announcements, fellowship opportunities, and general information on ASOR-sponsored activities; illustrated.

Mar Šipri. Biannual newsletter of the Committee on Mesopotamian Civilization; contains short articles, news items, and communications pertaining to research and archaeology in Syria and Iraq; illustrated.

ACOR Newsletter. Biannual published by the American Center of Oriental Research in Amman (see above); contains preliminary excavation reports, news, fellowship information; illustrated.

Art and Archaeology Newsletter. Quarterly in English; occasionally articles contain texts in ancient Egyptian, Greek, and Latin; book reviews; illustrated.

CAARI News. Biannual published by the Cyprus American Archaeological Research Institute in Nicosia; contains research reports, news, fellowship opportunities, and conference information; illustrated.

Diggings. Monthly published in Australia; contains archaeological news on the latest discoveries in the lands of the Bible.

La Tinaja. Quarterly newsletter of archaeological ceramics; contains short reports and announcements.

Newsletter of the American Research Center in Egypt. Quarterly; contains short articles, reports from the field, and announcements; illustrated.

Abstracts. Abstracts provide individuals with the opportunity to review a larger body of information than would otherwise be possible. These short summaries of articles give an overview of current research.

Old Testament Abstracts. Three issues per year; contains sections on "The Ancient Near East: History, Texts, etc." and "Archaeology, Epigraphy, Philology."

Mundus. Quarterly review of German research contributions on Asia, Africa, and Latin America; book notes and abstracts in English.

New Testament Abstracts. Three issues per year; contains a section on the "New Testament World."

Religious and Theological Abstracts. Biannual; contains short abstracts in English, with sections under "Old Testament" on "History and Literature of the Ancient Near East" and on "Archaeology."

Religious Studies Review. Quarterly review of books, including a section on the "Ancient Near East."

Journals and magazines. For the general reader, perhaps the best way to keep up with developments in archaeology is through popular journals and magazines. The following illustrated publications provide semischolarly and popular articles that inform without overwhelming.

Archaeology. Bimonthly publication of the Archaeological Institute of America; contains refereed, lavishly illustrated articles on archaeological excavations throughout the world as well as interpretative research reports, news briefs, and book notes.

Biblical Archaeologist: Perspectives on the Ancient World from Mesopotamia to the Mediterranean. Quarterly ASOR publication; contains refereed, semischolarly, and occasionally thematic issues on current archaeological discoveries in the Near East and Mediterranean area; includes interpretative and historical articles, short book reviews, and news from the field; illustrated.

Biblical Archaeology Review. Six issues per year; contains popular articles, news, short book reviews, and letters from readers. Articles highlight recent excavations, interpretative research, and current developments in the publication and presentation of archaeological information; color illustrations.

Ancient History: Resources for Teachers. Three issues per year, published by the Macquarie Ancient History Association, North Ryder, New South Wales, Australia, for secondary school teachers; contains new developments in ancient history and archaeology.

Antiquaries Journal. Annual publication of the Society of Antiquaries of London; international journal of record within archaeology, reporting the work of specialists to a general readership as well as specific issues of concern for every archaeologist.

Archaeology and Biblical Research. Quarterly (formerly *Bible and Spade*); contains book and film reviews, popular articles on recent discoveries.

Archaeology in the Biblical World. Bimonthly publication of the Near East Archaeological Society, Shafter, California; contains popular articles from a conservative viewpoint, news, letters, and reviews; illustrated.

Biblical Illustrator. Quarterly publication of the Southern Baptist Sunday School Board, devoted to articles to aid teachers and ministers; color illustrations.

Bulletin of the Anglo-Israel Archaeological Society. Annual or biennial dedicated to the subjects of ancient Israel and Jerusalem; contains short articles and book reviews; illustrated.

Buried History. Quarterly journal of the Australian Institute of Archaeology; contains brief articles on aspects of archaeology and social history in the ancient Near East; illustrated.

Expedition. Three issues per year; refereed journal from the University of Pennsylvania; contains short articles on current research in archaeology and anthropology.

Ḥadashot Arkheologiyot. (Hebrew version; English version title is *Excavations and Surveys in Israel*). Published by the Israel Antiquities Authority; contains preliminary excavation reports of sites in Israel; illustrated with color plates and black and white photos.

JACT Review. Biannual publication of the Joint Association of Classical Teachers; contains short articles and book reviews covering all aspects of the classical world.

Technical Journals. Technical journals (all refereed) have a variety of agendas. Some are designed to provide preliminary excavation reports, while others produce final reports or analytical studies of artifactual remains. Still others are concerned with scientific methods or anthropological studies. In every case, however, these publications are written for specialists. The assumption is made that those using them will understand the technical language the authors employ.

Near Eastern archaeology

Bulletin of the American Schools of Oriental Research (BASOR). Quarterly; contains reports from ASOR-sponsored excavations, interpretative research on archaeological data, and a thorough examination of artifactual and philological remains from the ancient Near East; illustrated.

Israel Exploration Journal (IEJ). Quarterly published by the Israel Exploration Society; contains preliminary excavation reports, analysis of newly discovered artifacts, publication of inscriptional materials; illustrated.

Journal of the American Research Center in Egypt. Annual; contains excavation reports as well as philological and historical studies on all periods in Egyptian history.

Levant. Annual jointly published by the British School of Archaeology in Jerusalem and the British Institute at Amman for Archaeology and History; contains studies on the history and archaeology of Near East and eastern Mediterranean world.

Palestine Exploration Quarterly (PEQ). Semiannual published by the Palestine Exploration Fund, London; contains preliminary excavation reports, artifactual analysis, illustrated.

Tel Aviv. Semiannual journal published by Tel Aviv Uni-

versity; contains site reports and interpretative articles on aspects of history and archaeological discoveries in Israel and on the West Bank of the Jordan River; illustrated.

Zeitschrift des Deutschen Palästina-Vereins (ZDPV). Biannual journal; contains articles in English, French, and German on the history, culture, and archaeology of the ancient Near East.

Acta Archaeologica. Quarterly publication, in English, German, French, and Russian, of the Academiae Scientiarum Hungaricae, contains articles on Hittite, Mediterranean, and eastern European archaeology.

Acta Sumerologica. Annual or biennial in English, German, and French published by the Middle Eastern Culture Center in Japan; contains articles about artifacts and inscriptions in Japanese collections.

Anatolica. Annual publication of the Netherlands Historical Archaeological Institute in Istanbul, Turkey; contains historical studies, excavation reports, and archaeological analysis of sites in Turkey—from the prehistoric to the Hittite to the medieval period.

Annual of the Department of Antiquities of Jordan. Annual; contains excavation reports and illustrated articles analyzing newly discovered artifactual and inscriptional materials from sites in Jordan.

'Atiqot. Published irregularly, in a Hebrew and an English version, by the Israel Antiquities Authority; contains excavation reports from sites in Israel.

Baghdader Mitteilungen. Annual publication in German of the Deutsches Archäologische Institut; contains analytical articles and excavation reports.

Berytus: Archaeological Studies. Annual of the Faculty of Arts and Sciences of the American University of Beirut; contains historical, philological, and archaeological studies of Syria and Lebanon from prehistoric to Islamic times.

Bulletin of the Society for Near Eastern Studies in Japan. Biannual in Japanese; contains articles discussing the history of the ancient Near East and excavation and survey reports from sites in Syria, Iran, Egypt.

Eretz Israel. Annual published by the Israel Exploration Society, Jerusalem, in English and Hebrew (with English summaries); contains articles on Israeli archaeology, ancient history, and geography.

Journal of Egyptian Archaeology. Annual; contains philological and historical articles dealing with all periods of Egyptian civilization.

Journal of the Israel Prehistoric Society. Annual in English; contains illustrated articles on prehistoric archaeology and methodology.

Judean Desert Studies. Published irregularly in English by the Israel Exploration Society; contains monographs on archaeological discoveries in Israel.

Qadmoniot. Quarterly published in Hebrew by the Israel Exploration Society; contains articles on biblical archaeology, ancient history, the history and archaeology of later periods, and preliminary excavation reports.

Michmanim. Annual publication in Hebrew and English of the University of Haifa; contains articles on archaeological and historical analysis.

Mitteilungen der Deutschen Orient-Gesellschaft zu Berlin. Annual; contains preliminary reports on excavations in the Near East, with an emphasis on philology and archaeology.

Phoenix. Three issues per year in Dutch; contains articles on recent discoveries in the ancient Near East and Egypt.

Qedem. Published irregularly in English by the Institute of Archaeology at the Hebrew University of Jerusalem; contains monographs on current research and excavation reports.

Report of the Department of Antiquities, Cyprus. Annual in English and French; contains preliminary excavation reports for the previous year on Cyprus; illustrated.

Near Eastern history, languages, and culture

Journal of Near Eastern Studies. Quarterly; contains a broad scope of examinations into the ancient and medieval civilizations of the area; the latest theories and research are presented.

Journal of the American Oriental Society. Quarterly; contains articles dealing with the history, culture, and philology of the ancient Near East, Islam in all periods, Asian and African studies, and an extensive book review section and lengthy reviews.

Orientalia. Quarterly in English, French, and German; contains philological and historical studies of ancient Near Eastern civilizations and an extensive book review section.

Revue d'assyriologie et d'archéologie orientale. Biannual in French, German, and English; contains philological and historical examination of the literate cultures of ancient Mesopotamia.

Zeitschrift für Assyriologie und vorderasiatische Archäologie. Biannual in German, French, and English; contains historical, philological, and archaeological studies of the major cultures of ancient Mesopotamia and Anatolia.

Abr-Nahrain. Annual in English, French, and German published by the University of Melbourne; contains studies dealing with the history, languages, and culture of the ancient Near East.

Acta Orientalia. Three issues per year published in English, German, French, and Russian by the Academiae Scientiarum Hungaricae; contains articles on Oriental philology.

Aegyptus: Rivista italiana di egittologia e di papirologia. Semiannual published in English, French, and German; contains scientific articles on the study of ancient Egypt, its culture, people, history, and other related areas.

Akkadica. Five issues per year published in French, English, and German by the Foundation Assyriologique Georges Dossin; contains articles on the history and philology of the ancient Near East, as well as excavation reports; includes the list of papers from the Rencontre Assyriologique Internationale.

Anatolian Studies. Annual journal of the British Institute of Archaeology at Ankara; contains articles on the history, philology, and archaeology of the civilizations of ancient Anatolia.

Annual Review of the Royal Inscriptions of Mesopotamia Project. Annual publication of the RIM Project; contains compilations of cuneiform collections in standard Assyriological format; includes photos.

Archiv für Orientforschung. Annual in German, French, and English; contains articles on the philology and history of the ancient Near East, with an extensive book review section.

Archiv orientální. Quarterly publication in English, French, German, and Russian of the Czech Academy of Sciences, Oriental Institute; contains articles on the history, economy, culture, and society of the ancient Near East, Judaica, Asian studies, African studies, and archaeological analysis.

Bibliotheca orientalis. Bimonthly publication in German, French, and English of the Nederlands Instituut voor Het Nabije Oosten; contains lengthy articles and an extensive book review section dealing with the history and philology of the Near East from ancient through Islamic times.

Bulletin for Biblical Research. Annual journal of the Institute for Biblical Research; contains articles primarily on biblical theology and exegesis from a conservative perspective. Some articles deal with issues touching on archaeological research.

Bulletin of the American Society of Papyrologists. Irregularly published journal of philological studies of papyri documents.

Bulletin of the School of Oriental and African Studies (University of London). Three issues per year; contains articles and reviews on ancient Near Eastern history and culture, Islamic studies, Asian and African studies, and anthropology.

Computer Aided Research in Near Eastern Studies. Published irregularly as part of the Cybernetica Mesopotamia series.

Data Sets: Cuneiform Texts. Published irregularly; electronic data processing of Mesopotamian materials, philological and artifactual.

Dilmun. Biannual published in Arabic and English by the Bahrain Historical and Archaeological Society; contains excavation reports and articles on sites on the Arabian Peninsula and in the Persian Gulf area.

Iraq. Annual; articles on the history, archaeology, philology, and culture of ancient Mesopotamian civilizations.

Istanbuler Mitteilungen. Annual; explores the prehistory, archaeology, history and art history of Asia Minor up until the Ottoman period.

Journal of Coptic Studies. Annual; contains articles on all aspects of premodern Coptic society, including its literature, history, archaeology, art, religion, linguistics, and related studies.

Journal of Cuneiform Studies. Semiannual ASOR publication; contains technical articles on the history and languages of ancient Mesopotamian and Anatolian literate cultures.

Journal of Semitic Studies. Biannual; contains articles dealing primarily with the philology of the ancient Near East.

Journal of the Ancient Near Eastern Society of Columbia University. Annual; contains articles on all aspects of the history and culture of the ancient Near East; illustrated.

Journal of the Economic and Social History of the Orient. Quarterly in English, French, and German; contains specialized studies furthering knowledge of the economic and social history of Asia and Africa from the earliest times to the beginning of the nineteenth century.

Oriens antiquus. Quarterly in English, French, and German; contains articles on the history, philology, and archaeology of the ancient Near East.

Orientalia Lovaniensia Periodica. Annual publication of the Catholic University of Leuven; contains studies on the history, languages, and culture of the ancient Near East and Asia.

Orientalia Suecana. Annual published in Sweden; contains philologic studies of Near Eastern languages from Canaanite to Arabic.

Revista degli studi orientali. Quarterly in English, French, German, Italian, and Spanish; covers all fields of Oriental studies from the ancient Near East to modern Japan.

Revue de Qumran. Semiannual published in English, French, German, Italian, Latin, and Spanish; contains studies in linguistics and culture pertaining to the Dead Sea Scrolls.

Sefarad. Quarterly; studies the text of the Hebrew Bible and its ancient versions and cultures, as well as the history and culture of Jews in Spain and the Hebrew and Aramaic languages.

Semitica. Annual; contains articles in French on the history and philology of the classical world and Ugaritic and Islamic studies.

Studi epigrafici e linguistici sul Vicino Oriente antico. Annual

in Italian, French, and English; contains articles on philology and ancient Near Eastern studies.

Sumer. Annual in Arabic and English; contains preliminary excavation reports from sites in Iraq and artifactual analysis from all periods.

Syria: Revue d'art oriental et d'archéologie. Quarterly in French and English; a review of art history, philology, and archaeology, primarily from sites in Syria and Iraq.

Ugarit-Forschungen. Annual in English, French, and German; provides linguistic, historical, and cultural studies, with an emphasis on Ugarit and Mesopotamian civilizations.

Wiener Zeitschrift für die Kunde des Morgenlandes. Annual; studies in philology, including Egyptian and Coptic texts, Islamic studies, and an extensive book review section.

Zeitschrift der Deutschen Morgenländischen Gesellschaft. Semiannual in German; studies in the philology of the ancient Near East, Islamic periods, and Asia.

Classical and Mediterranean archaeology

American Journal of Archaeology. Quarterly publication of the American Institute of Archaeology; contains scholarly essays and book reviews on Old World archaeology from prehistoric times to the Middle Ages; illustrated.

Archaeological Reports. Annual publication of the Society for the Promotion of Hellenic Studies and the British School at Athens; contains accounts of recent archaeological work in Greece, with supplementary reports from other parts of the ancient Greek and Byzantine world.

Greece and Rome. Semiannual; contains literary evaluations of the major Greek and Roman authors and articles on ancient history, art, archaeology, the classical tradition, and teaching classics at the tertiary level.

Journal of Mediterranean Archaeology. Biannual; contains articles on local and regional production, development, interaction, and change in the Mediterranean, including Anatolia, with the theoretical implications or methodological assumptions extrapolated from archaeological data.

Journal of Roman Archaeology (JRA). Annual; contains coverage of all aspects of archaeology in every part of the Roman world, from 700 BCE to about 700 CE.

Nestor. Nine issues per year in English, containing original languages; contains bibliographies of material relevant to prehistoric archaeology, Homeric studies, Indo-European linguistics, and related fields in the eastern Mediterranean area and southeast Europe.

Annali dell'Istituto universitario orientale di Napoli. Three issues per year; contains philological and archaeological studies on the ancient Near East, Africa, and Mediterranean cultures.

Mitteilungen des Deutschen Archäologischen Instituts Römische Abteilung. Annual; contains articles, primarily in German, on classical studies and archaeology.

Opuscula atheniensia. Annual published in Stockholm; contains articles on classical archaeology.

Revue archéologique. Semiannual in French; contains recent studies on the Greco-Roman period, Bronze Age, and the start of the Middle Ages.

Classical history, languages, and culture

Classical Antiquity. Biannual; contains interdisciplinary research and discussions of major issues from the entire spectrum of ancient Greek and Roman civilization.

The Classical Journal. Bimonthly; contains philological research and language studies in modern literature and book reviews.

Classical Philology. Quarterly; devoted to research in the language, literature, history, and life of classical antiquity.

The Classical Review. Biannual; contains critical reviews of books dealing with all aspects of classical language, literature, and history from all countries.

Classical World. Bimonthly; contains broad-ranging articles on classical languages and literature and pedagogic aids; includes lists of meeting programs.

Hesperia. Quarterly in English of the American School of Classical Studies in Athens; some articles contain ancient Greek; presents the scholarly research of members and alumni of ASCSA on historical, archaeological, and epigraphic topics on ancient Greece.

Journal of Hellenic Studies. Annual; contains articles covering the Greek language, literature, history, and art in the ancient and Byzantine periods.

Journal of Roman Studies. Annual; contains articles dealing with all aspects of Roman history and culture and linguistics.

Ancient Society. Annual in Dutch, English, French, German, and Italian; articles deal with the cultural history of the Greek, Hellenistic, and Roman world.

Classica et Mediaevalia: Revue danoise de philologie et d'histoire. Annual in English, French, and German; contains studies in classical philology and history through the medieval period.

Das Altertum. Quarterly in German; contains classical studies, including linguistics, history, and culture.

East and West. Annual; includes studies in the language, culture, and philosophy of the classical and eastern Mediterranean world.

Genava. Annual publication of the Musée d'art et d'histoire Genève; contains articles dealing primarily with

archaeological remains in Europe; does include studies on ancient Near Eastern archaeology based on items in their museum.

Greek, Roman, and Byzantine Studies. Quarterly; contains research articles on all aspects of the Greek world, from the prehistoric through the Hellenic, Hellenistic, Roman, and Byzantine periods.

Mediterranean Historical Review. Biannual; provides an international forum for a discussion of topics on the ancient, medieval, and modern history of the Mediterranean basin.

Pallas: revue d'études antiques. Annual; contains articles on the literature, linguistics, history, and archaeology of the Greek and Roman periods.

Related areas and nonregional archaeological journals

Antiquity. Quarterly; a periodical review of archaeology with reports on the work of specialists and archaeology and a book review section.

World Archaeology. Three issues per year; presents thematic issues, including interpretative examinations of cultural development, illustrated.

African Archaeological Review. Annual; studies all aspects of the archaeology of Africa and neighboring islands, with an emphasis on new data from the field as well as areas of wider than regional significance.

Journal of the Royal Asiatic Society of Great Britain and Ireland. Three issues per year; contains articles dealing with archaeology, art, anthropology, and the history of Asia, North Africa, and Ethiopia.

Raydan. Published irregularly in Belgium; contains studies dealing with ancient Yemeni antiquities and epigraphy.

Scientific methodology

Journal of Archaeological Science. Six issues per year; articles directed to archaeologists and scientists who have a particular interest in advances in applying scientific techniques and methodologies to all areas of archaeology.

Journal of Field Archaeology. Quarterly publication of Boston University; reports on field excavations and surveys the world over, methodological and technical matters, scientific advances in archaeology, and larger interpretative studies.

Archaeomaterials. Semiannual publication of the University of Pennsylvania Museum; contains articles on the pre- and nonindustrial manipulation of materials, using scientific methods for humanistic ends.

Archaeozoologia. Biannual; devoted to publishing papers presented at the International Congress of Archaeozoology.

Geoarchaeology. Bimonthly; contains original reports on the environmental settings of archaeological sites, materials analysis of artifacts, and process papers describing new techniques and equipment.

International Journal of Nautical Archaeology. Quarterly publication of the Nautical Archaeology Society; contains nonregional studies of marine archaeology.

Radiocarbon. Annual; publishes the radiocarbon dating of archaeological, geological, and other samples and articles on conventional and new techniques and related subjects.

Readings in Glass History. Published irregularly, contains monographs on topics in the history of glass vessels and beads and the glass industry, with a focus on the ancient, medieval, and premodern Near East up to the rise of the Venetian glass industries.

SAS Bulletin. Quarterly published by the Society for Archaeological Sciences; contains articles on cooperative and interdisciplinary research between archaeology and the natural and physical sciences.

Anthropological studies

American Anthropologist. Quarterly; covers cultural, physical, linguistic, and applied anthropology; includes information on archaeology.

Journal of Anthropological Archaeology. Quarterly; nonregional; primarily contains studies in ethnoarchaeological methods and fieldwork.

Man. Quarterly published by the Royal Anthropological Institute of Great Britain and Ireland; covers all areas of anthropology—physical, social, and cultural; includes information on archaeology and linguistics.

Nomadic Peoples. Biannual publication of the Scandinavian Institute of African Studies, ethnographic articles on the peoples of Asia, Africa, and the Middle East.

Tempus. Published irregularly by the University of Queensland; provides a forum for communicating anthropologically oriented studies in archaeology and material culture.

[*See also* Reference Works. *In addition, many of the organizations and institutions mentioned are the subject of independent entries.*]

VICTOR H. MATTHEWS and JAMES C. MOYER

PERIODIZATION. The division of past time into sequential segments based on technological, politico-historical, or religio-ethnic factors is known as periodization. The following discussion is of periodization in ancient Palestine and its application to other parts of the Near East.

Limitations and History. Most periodization charts find their roots in the 1836 publication of Christian Thomsen,

who first designated worldwide ancient eras with technological terms (Stone, Bronze, Iron). Although used widely in Europe in the nineteenth century, this "three-age" system was not influential in the Near East until much later. Researchers within some regions of the Near East, especially those with copious written texts, adopted politico-historical terms handed down by ancient authors (e.g., in Egypt, kingdom and dynasty, based on Manetho). In Syria-Palestine in the late nineteenth and early twentieth centuries, most excavators used terms of their own devising. The resulting confusion compelled the British mandatory government of Palestine in 1922 to bring together representatives from the chief foreign schools in Jerusalem to hammer out a common set of terms. The group, which included John Garstang, Louis-Hugues Vincent, and William Foxwell Albright, adopted Thomsen's nomenclature, with subdivisions adapted to Palestine but related to Aegean periodization (Gitin, 1985, p. 101). Primarily because of Albright's forceful scholarship and his prompt publication of the Tell Beit Mirsim excavation in the 1930s, these terms as interpreted by him were accepted as the framework for Syro-Palestinian archaeology. For periods after the Iron Age, the names of various historical empires controlling the area were adopted from classical and medieval authors. [*See* Beit Mirsim, Tell; *and the biographies of Albright, Garstang, and Vincent.*]

Terminology. The term *age* is used for a broad time period, usually for the three technological ages, but could also be used for other macroperiods, such as Classical Age, or Islamic Age. The term *era* is used similarly, but in a less formal sense, especially for post-Iron Age designations (the classical era). *Period* normally refers to a subdivision of an age, such as Late Bronze II period or Roman period, whereas *stage* or *phase* can refer informally to subdivisions of periods. These terms are not used consistently or uniformly.

The different types of names for periodization in Syria-Palestine include technological ones, like those Thomsen introduced; dynastic names for political periods (Persian or Umayyad); religious or ethnic terms for periods in which a dominant group is evident (Islamic, or Arab); and chronological parameters for broad designations (millennium) or specific designations (century).

Technological terms reflect the tools in use during certain periods but, except for the Stone Age, do not necessarily reflect the predominant technologies. While they do accurately present the growth of civilization and can be correlated with broad societal, historical, and technological changes, they span the antiquity of the Near East only until the sixth century BCE, giving the impression that later periods are of less interest.

Dynastic names have the advantage of connecting the archaeological finds with particular political and social events known from written records. Because archaeological change does not necessarily move in concert with or as rapidly as political change, the temptation to ascribe a dynasty's precise range of dates to the archaeological remains can distort the finds, however. For instance, because the Umayyad dynasty ruled from about 640 to 750 CE does not mean that the Umayyad period produced an isolatable archaeological assemblage limited to those precise years. Moreover, although a dynastic term may be appropriate for one period of time in one place, a new dynasty may move in while the original dynasty still holds power elsewhere. For example, the Fatimid period refers to the time when the Fatimid Egyptian dynasty wrested Palestine from the ʿAbbasids of Baghdad; however, farther north and east, where the Fatimids were not in control, it was still the ʿAbbasid period.

Although religious or ethnic terms make sense when they reflect a region's significantly dominant makeup, their deemphasis of minorities can lead to a distorted historical picture: for example, it was once erroneously believed that the arrival of the Islamic or Arab period erased Christianity. Chronological designations are useful approximations, but they do not characterize a period in any way.

No terminology is entirely appropriate or entirely faulty. Moreover, periodization is a dynamic process; it slowly changes its designations as a greater accumulation of data forces a new consensus.

Chronology. None of the above systems relate archaeological assemblages to chronological time with precision. Periodization is relative, emphasizing more the approximate fix of an assemblage in time than precise chronological limits. However, as more data are unearthed, archaeologists tend to become more confident in closer dating schemes.

Using principles he had already outlined in Egypt, William Flinders Petrie was the first to realize that pottery could be a key to date archaeological deposits when he dug Tell el-Ḥesi in 1890. He established a sequential system whereby certain ceramic forms could be ascribed to specific strata. From there, it was an easy step to the principle of comparative stratigraphy, in which deposits from a stratum at one site can be equated with those from another, based on identical or similar finds. The system enabled a comparison of the pottery of Palestine with that of other regions whose chronologies, like Egypt's, were tighter, based on their relationship to written texts. Palestinian pottery found in Egypt (or Egyptian pottery found in Palestine) and Egyptian inscriptions in Palestine thus became the foundation for the absolute dates associated with the periodization of Palestine. [*See* Ḥesi, Tell el-; *and the biography of Petrie.*] Ancient Egyptians sometimes dated their writings by astronomical observations, which modern astronomers can reconstruct. The Sothic cycle is the most significant of these (Rast, 1992, p. 42). For the Iron Age, the Neo-Assyrian eponym lists from Mesopotamia perform a similar function and allow the tie-in of some biblical events (Thiele, 1951, pp. 42–54). For

periods before the onset of writing, carbon-14 dates are relied on, corrected by dendroarchaeological computations (tree-ring dating). For Paleolithic dates, other geological time clocks provide only very approximate dates. The following discussion is a summary of periodization for Palestine.

Stone Age. The origins of human material culture until the arrival of bronze is known as the Stone Age.

Lower Paleolithic. The most common artifact of Paleolithic, or Achulean, culture (c. 1,000,000–120,000 BP) is the stone handaxe used by hominids (prehumans); deposits are found in caves or on old lake shores where hunters skinned game. The most important site in Palestine is an old lake bed, now tipped almost vertically by tectonic action, at 'Ubeidiya, south of the Sea of Galilee.

Middle Paleolithic. Found stratigraphically above the Lower Paleolithic at Kebara and other sites, the Middle Paleolithic, or Mousterian, culture (c. 120,000–45,000 BP) is characterized by mostly triangular medium-sized flint tools. Settlements occur in many different ecosystems at sites such as the Mt. Carmel caves, Wadi Zerqa, and the Azraq oasis.

Upper Paleolithic. Mostly contemporary with the Aurignacian culture in Europe, the stone tools typical of Upper Paleolithic (c. 45,000–20,000 BP) include long blades and burins. Sites with these remains are not numerous, but they include Naḥal 'Ein-Gev on the eastern shore of the Sea of Galilee and the Qafzeh cave in Lower Galilee.

Epipaleolithic. Formerly called the Mesolithic period, the Epipaleolithic (c. 18,000–8500 BCE) is equated with the Natufian and Kebaran cultures. Its present name characterizes it accurately as the end of the Paleolithic period. Extremely small flint tools called microliths are ubiquitous at sites like Eynan in the Hulah Valley and the Kebara cave on Mt. Carmel.

Pre-Pottery Neolithic. During the first part of the Pre-Pottery Neolithic (PPNA; c. 8500–7200 BCE), a gradual change in subsistence took place in agricultural communities, with circular huts for dwellings (Jericho was the largest). In its second stage, the PPNB (c. 7200–6000 BCE), the "Neolithic revolution" completed the shift to full-fledged cereal farming and sheep/goat herding. Houses were rectangular in plan and often had thick plaster floors containing finds related to textile production. Mortuary rituals used plastered skulls (portraits?), while at 'Ain Ghazal, the largest settlement of the period, other ceremonial activities are represented by anthropomorphic statues about 90 cm tall. Other important sites were Munḥata, Jericho, and Beidha.

Pottery Neolithic. The earliest of the Pottery Neolithic stages (c. 6000–4500 BCE), called Yarmukian after the location of its discovery (Sha'ar ha-Golan, near the Yarmuk River), includes the first evidence of pottery, similar to that of the Hassuna culture in Mesopotamia. The second stage, called Munḥata after a key site in the Jordan Valley, saw the introduction of dark-faced burnished ware, a ceramic style connecting Palestine, Syria, and Anatolia. The third stage, named after the Wadi Rabbah near the Yarkon River, saw the introduction of weapons of war beyond flint points: slingstones and mace-heads. These weapons also occurred at Halafian sites in Mesopotamia.

Chalcolithic. A diversity of subcultures characterize the Chalcolithic period (c. 4500–3300 BCE). The Ghassulian culture, named after the site in the southern Jordan Valley (Tel-eilat el-Ghassul), is characterized by colorful paintings on plastered walls, ivory objects, terra-cotta figurines, and basalt bowls. The temple complex at 'Ein-Gedi, and the nearby cache of ceremonial copper objects from a cave in Naḥal Mishmar, may be Ghassulian. The Beersheba culture, comprising fifty-seven sites in the region of the northern Negev desert (Shiqmim is of special importance), displays subterranean dwellings and storerooms and a unique pottery vessel called a churn. In the Golan, villagers built their houses in rows of adjacent broadrooms, in which stylized busts of human heads called pillar figures are found frequently.

Bronze Age. The various phases in the period that marks the beginning of the urbanization process in Palestine, the Bronze Age, are designated Canaanite by some Israeli archaeologists. The practice is now diminishing and a more uniform nomenclature is appearing in the literature.

Early Bronze I. There are four distinct ceramic assemblages related to regions in the Early Bronze I period (c. 3300–3000 BCE): gray-burnished ware in the north; red-burnished ware in the north and south; line-group painted ware (groups of parallel lines) in the central hills and the south; and impressed-slashed ware (relief decoration with pie-crust finger indentations) in the central hills and the south. Until recently, several scholars identified these ware groups as Chalcolithic. Settlements seem to have grown from the valleys and coastal plain into the hills. Connections can be established with Gerzean Egypt and the Proto-Literate period in Mesopotamia via Jawa in the eastern desert. Important sites include Bab edh-Dhra', Arad, Jericho, and Beth-Shean.

Early Bronze II–III. The Early Bronze II–III periods (c. 3000–2250 BCE) represent a unified flow of cultural development. They are a time of reduced regionalism and international trade in which donkey caravans carry wine and oil from Palestine to Egypt (Stager 1992). This provides good synchronisms with Egypt, where nearly two-hundred Palestinian pots have been found in tombs. In Egypt the period includes the Old Kingdom: the first dynasty marks the beginning of EB II, whereas the latest connections in EB III are with Pepi II of the sixth dynasty. In Mesopotamia, it is the Early Dynastic period. The highly burnished EB III pottery known as Khirbet Kerak ware also provides links to Syria and Anatolia. During this long period the largest for-

tified cities prior to Roman times were built, including Tel Yarmut, Ai, Arad, Tell el-Ḥesi, and Tell el-Farʿah (North). City walls were enormous, sometimes reaching 10 m in width. Houses often were of the broadroom type, as were palaces and temples.

Early Bronze IV. Although not all scholars use the term *Early Bronze IV* (c. 2250–2000 BCE), a rapidly growing consensus favors it. Originally called Middle Bronze I by Albright, others (especially archaeologist William G. Dever; see, e.g., his "The Early Bronze IV Period in Transjordan and Southern Palestine," *BASOR* 210 [1973]: 37–62) noted its closer connections to EB culture and called it Intermediate EB–MB, Intermediate Bronze, or EB IV. The period witnessed a massive change in life-style: gone were the large fortified EB II–III sites (except for moderately sized Khirbet Iskander in Transjordan). Instead, the period is characterized by pastoralists who buried their dead in large cemeteries with shaft tombs, such as at ʿAin es-Samiyeh and Bab edh-Dhraʿ. Sites with small, circular structures (dwellings?) are found in the Negev highlands (Be'er Resisim), and an unfortified hillside village has recently been discovered in the Rephaim Valley near Jerusalem.

Middle Bronze IIA. The renaming of MB I as EB IV created a gap in the nomenclature. Some scholars, therefore, renamed the three phases of MB II: MB IIA became MB I; MB IIB became MB II; and MB IIC became MB III. But this nomenclature has not found consistent support, and most scholars retain the original terms and tolerate the lack of an MB I. MB IIA (c. 2000–1800 BCE) begins the second period of urbanization with settlements refortifying old EB II–III sites or constructing new ones, but in both cases using huge sloping ramparts (glacis) as part of their fortification system. EB pottery had been mostly handmade, but in MBIIA a slow tournette produced some of the most delicate pottery made in Palestine, especially forms with carination (an elegant, sharp bend in the body). The most important site of the period is Aphek, but Tell el-Ḥayyat in the Jordan Valley provides the best continuity from EB IV to MB IIA. This was the Middle Kingdom in Egypt and the Old Assyrian kingdom in Mesopotamia and western Anatolia.

Middle Bronze IIB–C. The cultural direction of MB IIA continued smoothly through MB IIB–C (c. 1800–1550 BCE), and many more sites were fortified with ramparts: Shechem, Gezer, and Hazor (the latter the largest site of any period in Palestine). Pottery forms became more varied, but still maintained the earlier commitment to fine, elegant wares. Burials were often in jars beneath the floors of houses. At this time the Canaanites invented the alphabet, probably in the north. The Old Babylonian kingdom and Mari shared power in Mesopotamia, while the foreign Hyksos ruled Egypt. Indeed, the period comes to an end when the indigenous Egyptians of the seventeenth dynasty chased out the Hyksos and destroyed a number of Palestinian sites in the process. A recent debate about the chronology of this event, spearheaded by the Egyptologist Manfred Bietak, has made some scholars question the date of the end of MB IIB–C.

Late Bronze. At several Palestinian sites there is strong evidence for a three-fold separation of the Late Bronze period into LB I (c. 1550–1400), LB IIA (c. 1400–1300), and LB IIB (c. 1300–1200). Because the culture is a continuous and gradual breakdown of that inherited from the Middle Bronze Age, they will be considered together here. The Late Bronze was an international age, when the Egyptian Empire reached its apogee in Asia (the Amarna period is LB IIA). Large amounts of imported pottery and other objects occur at Palestinian sites, especially Mycenaean pottery from the Aegean and base-ring and white-slipped wares from Cyprus. The most important sites include Megiddo, Hazor, Aphek, Lachish, and Beth-Shean. At the latter, several Egyptian inscriptions connect Palestinian stratigraphy with various New Kingdom pharaohs, while many inscriptions in Egypt speak of pharaonic military campaigns into Palestine. At Aphek a large building may have been an Egyptian governor's residence. In Mesopotamia the Hurrian Empire of Mitanni was influential, while farther west the Hittites were at the height of their power. The period came to an end as part of the larger disruptions in the eastern Mediterranean, most often associated with the Sea Peoples.

Iron Age. Many archaeologists date Iron Age materials by century rather than by period terminology. Among Israeli archaeologists, a few refer to it as the Israelite period.

Iron I. Most Israeli archaeologists date the end of Iron I (c. 1200–925 BCE) to the rise of the United Monarchy in ancient Israel (c. 1000 BCE); other scholars favor the more traditional view that it ended with the invasion of Pharaoh Sheshong (Shishak, dated to about 925 BCE by the Bible and Egyptian texts), which left clear destruction layers at many sites. On the northern coastal plain and in the broad valley regions, the LB Canaanite culture continued (Megiddo) into Early Iron I, while, on the southern coastal plain, a distinctive material culture related to the Aegean and southern Asia Minor undoubtedly represents that of the Philistines (and other Sea Peoples). Sites in the central hills and Transjordan probably represent the coalescence of tribal and some local urban elements toward the national groups known from the Hebrew Bible: Israelites, Ammonites, Moabites, Edomites, and others. The small settlements in the hilly regions, probably of extended families, were farming villages with a limited repertoire of artifacts (Raddanah, Giloh, Shiloh, ʿUmeiri [ʿUmayri]); during the period, however, larger towns and cities gradually developed until, during Israel's United Monarchy, large, fortified cities were built (Jerusalem, Gezer, Megiddo, Hazor). The Iron I period is often subdivided into Iron IA (c. 1200–1125), Iron IB (c. 1125–1000), and Iron IC (c. 1000–925). In Mesopotamia, Assyria was strong only for brief periods and, after the strong leadership of Rameses III at the beginning of the twentieth dynasty, Egyptian influence in Asia was largely absent through

the twenty-first dynasty until Sheshonq (twenty-second dynasty).

Iron II. Schemes to subdivide the Iron II period (c. 925–586 BCE) attach a variety of dates to periods labeled Iron IIA, B, C, and sometimes D. It is easiest to subdivide the period into two: Iron IIA from Sheshonq's destruction to the Assyrian invasions at the end of the eighth century BCE, and Iron IIB from those destructions to the Babylonian invasions in the early sixth century BCE. This period witnessed the high points of the region's various national groups (small kingdoms or chiefdoms) and, toward the end of the period, the composition of much of the Hebrew Bible. The various royal courts bred regionalism and an elite social class, both of which are reflected in the archaeological remains. Assemblages of pottery and writing styles are characteristic of definable regions, and finds are richer at royal cities, such as Samaria, Megiddo, Hazor, Jerusalem, Lachish, and Amman than at more provincial sites. In Mesopotamia the dominant power was Assyria, which, in the seventh century BCE, conquered Egypt briefly. The Egyptian twenty-second–twenty-sixth dynasties remained relatively weak until the late seventh century BCE when Neco II (twenty-sixth dynasty) briefly controlled Palestine. In Syria various city-states, such as Damascus and Aleppo, managed to carve out significant kingdoms.

Neo-Babylonian period. Because the culture is still fundamentally Iron II, many attach the Neo-Babylonian period (c. 586–539 BCE) to it as Iron III. However, most begin to use terms that reflect the large empires at this time. Until recently, very few sites were ascribed to these years. There is a new awareness, however, that a significant number of sites existed, especially in Transjordan ('Umeiri), in the region north of Jerusalem, and in Phoenician areas along the coast (Dor).

Persian period. The Persian period (539–332 BCE) was also international in scope, with imports into the Levant from Attic Greece reflecting the maritime trade of the Phoenicians and their colonies in the western Mediterranean as well as the presence of Greek travelers and mercenaries. The Persians built small administrative centers and a vast road system to connect them. Important sites in Palestine were Megiddo, Ashdod, Ashkelon, Akko, Dor, Samaria, and Amman. The imperial bureaucratic system, and the common language of Aramaic it used, broke down barriers and allowed the long-range exchange of ideas and material culture. Coins began to be used with frequency.

Classical Age. The term *Classical Age* is not frequent, but it may be used to provide continuity with the preceding "Ages." It includes the Hellenistic, Roman, and Byzantine periods.

Hellenistic period (332–63 BCE). With Alexander the Great's conquest of the Near East in the late fourth century BCE, Greek influence sustained a movement toward Western ideals that lasted into the Islamic Age. The two Greek kingdoms that controlled Palestine, the Ptolemies in Egypt and the Seleucids in Syria, established and supported certain key sites, to which they imported Hellenism: Samaria, Anafa, Jerusalem, and Dor. Indigenously supported settlements tended to be smaller and poorer. Hundreds of amphoras (probably containing wine) were sent from the Aegean to the Levant, many bearing historically important stamped inscriptions in Greek on their handles. The Jewish revolt in the mid-second century BCE against Seleucid inroads of Hellenism into Judaism founded the Hasmonean (Maccabean) dynasty.

Early Roman period (63 BCE –135 CE). Pompey's arrival in Palestine signaled a new era, but the greatest developments took place under the rule of Herod the Great and his followers. Indeed, archaeologists also use *Herodian* to characterize the period until 70 CE. At no time in the past did so much building activity take place in such a short time as under Herod. He built large, opulent Roman-style palaces at Jerusalem, Jericho, Masada, Herodium, and Machaerus. The largest temple complex and harbor in the Roman Empire at the time were at Jerusalem and Caesarea, respectively, with a Roman-style city at the latter site. Other Roman cities, such as the ten cities of the Decapolis (all but one of them in Transjordan), Samaria, and Banias (Caesarea Philippi) were built with huge inflows of capital. Again, indigenous groups lived in more modest surroundings. This was the age of Cleopatra, Julius Caesar, Augustus, the Dead Sea Scrolls, and Jewish sectarianism, out of which rabbinic Judaism and the Talmud, as well as Jesus and the New Testament, grew. Overland trade flourished in the hands of the Nabateans from their capital at Petra and other cities in the Negev. The period came to an end in 135 CE, with the defeat of the Second Jewish Revolt against Rome under Bar Kokhba, although some scholars place it earlier, with the end of the First Revolt, in 70 CE.

Late Roman period (135–c. 325 CE). The Late Roman period is sometimes subdivided into Middle Roman (135–c. 250) and Late Roman (c. 250–325). Emperor Hadrian's restructuring of Palestine gave it Roman temples, palaces, and villas at many sites, including Jerusalem. The Romans took over the Nabatean trade routes and, toward the end of the period, built a line of fortress settlements, known as the limes, fronting the eastern desert. Also toward the end of the period, synagogues and churches began to multiply. Constantine's moving of his capital from Rome to Byzantium, marks the historical end of the period, although some scholars place it at the time of the great earthquake of 363.

Byzantine period (c. 325–640 CE). The period during which churches proliferated in Palestine at almost every non-Jewish settlement larger than a village is known as the Byzantine, or Christian, period. Especially impressive are the roughly fifteen churches in Madaba (a moderately sized town) and another twelve or so churches on Mt. Nebo (a pilgrimage center) in Transjordan. Jewish towns contained

synagogues, and both churches and synagogues were built on the basilica plan and paved with beautifully designed mosaic floors, many with historically important Greek and Hebrew inscriptions. [*See also* Churches; Synagogues; Mosaics.] Not until the modern period did the number of settlements and the size of the population of Palestine approach that of the Byzantine period. Many of the Roman cities grew large (Kurnub, Umm el-Jimal, Jerash), and money flowed into the region from pilgrims, who traveled everywhere in the Holy Land. Whereas in the Roman period there had tended to be a wide disparity between the very wealthy and the poor, the booming Byzantine economy allowed a more egalitarian spread of wealth, so that many houses were well built. [*See* Byzantine Empire.]

Islamic Age. With the Islamic conquest of the Near East in the mid-seventh century, a new idealism began to alter the features of the region. A rising consensus among Islamic archaeologists is to abandon the old dynastic names for periodization and instead group them into broad categories. Such categories will facilitate tying Islamic ceramics to chronology. The present divisions belong to this writer.

Early Islamic period (c. 640–1100 CE). The Early Islamic period comprises three foreign dynasties who ruled Palestine: the Umayyads from Damascus (Early Islamic I, c. 640–750 CE); the ʿAbbasids from Baghdad (Early Islamic II, c. 750–969 CE); and the Fatimids from Egypt (Early Islamic III, 969–c.1100). Recent research emphasizes how difficult it is to locate breaks in the stratigraphic record to correspond with these historical and dynastic periods. For instance, much of what used to be limited to Umayyad times is now seen to extend well into the ʿAbbasid period. Thus, Khirbat al-Mafjar in the Jordan Valley, the best known of the Early Islamic palaces, is now known as ʿAbbasid as well as Umayyad.

The coming of Islam did not mean the rejection of Christianity. Many churches continued to function unabated into Umayyad times, and some were even built then, lasting into the ʿAbbasid period. (The mosaic in St. Stephen's Church at Umm er-Rasas, southeast of Madaba, is dated by an inscription to early ʿAbbasid times.) Palestine prospered while the caliphs were in Damascus. They established a provincial capital at Ramla, west of Jerusalem, whose Early Islamic ruins are still preserved. Jerusalem, as a holy city, also saw grandiose building activity, such as the Dome of the Rock, the al-ʿAqṣa mosque, and a major palace. Some of the most pristine structures are the desert castles in the eastern desert. When the caliphate moved to Baghdad, the intensity of settlement abated in Palestine, though cities like ʿAqaba (where a vessel imported from China was found) show that it continued to be productive. [*See* Umayyad Caliphate; ʿAbbasid Caliphate; Fatimid Dynasty.]

Middle Islamic (c. 1100–1516 CE). Comprising foreign rule by the Crusaders (Middle Islamic I, c. 1100–1291 CE), who took over while the ʿAbbasids still ruled in Baghdad; the Ayyubids (1174–1263); and the Mamluks (Middle Islamic II, 1250–1516), the Middle Islamic period illustrates the problem of overlapping dynastic periods. The Crusaders brought European architecture in the form of castles (Nimrud, Kerak, Shobak, Belvoir, ʿAtlit), churches (the Holy Sepulcher and St. Anne's in Jerusalem, the church at Yoqneʿam); institutional structures (monasteries, hospices); and cities/forts (Caesarea, Akko). They also inspired Muslims to follow suit: ʿAjlun Castle was built by the Ayyubid Salah ad-Din. A renaissance of settlements during the Mamluk dynasty made the population the highest in the region since Byzantine times. Many villages and towns dotted the countryside (Heshbon, ʿAqaba, Pella) to complement the major cities (Jerusalem, with its suqs, and Ramla, with the White Mosque). Heightened water control permitted the introduction of sugarcane and its processing sites in the Jordan Valley. Although the period's pottery is mostly handmade, glazed wares were introduced from Egypt, which in turn had been inspired by Chinese ceramics. [*See* Crusader Period; Ayyubid-Mamluk Dynasties.]

Late Islamic period (1516–1918 CE). With the arrival of the Ottoman Turks (after whom the period is also called), consistent administrative neglect gradually produced a chaotic cycle of rebellions by local strongmen (pashas) and crackdowns by Turkish troops. As a result, settlements diminished until Akko, Jaffa, and Jerusalem were virtually all that was left. A concomitant rise in nomadic pastoral lifestyles saw people tenting during the summer and living in caves during the winter. Süleman the Magnificent reconstructed the walls around Jerusalem in the sixteenth century, and much of the Old City of Akko, famous for Napoleon's siege, dates to this period. The most important artifact associated with the period is the clay pipe, which swept the Mediterranean after tobacco was brought from the New World. Toward the end of the period, in the nineteenth century, the European powers became interested in the region and established religious missions and encouraged trade, archaeology, and pilgrimage, bringing an upswing in wealth and settlement.

Modern Period (Since 1918). The period since World War I has been witness to the most rapid rise in settlement intensity in the region's history. Modern construction with bulldozers has destroyed architectural remains from preceding periods, and governments have encouraged sedentarization, so that pastoral and nomadic life-styles have diminished. Rapid technological change has also made traditional artifact types obsolete: the use of pottery is virtually nil, replaced with plastic, glass, and metal, probably the datable artifacts of future excavations, and in a period of international trade objects from all over the world are entering the archaeological record. Copious written records make archaeology more of a historical science than previously. Although it is too early to subdivide the modern period, it may be that, for Palestine, a new subperiod should begin with

1967 when the six-day war caused a massive explosion in the population and settlement of Transjordan and began a process of new settlement in the hill country of Cis-Jordan.

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LARRY G. HERR

PERISTYLE HOUSE. The term *peristyle,* from the Greek words *peri* and *stylos,* refers to the arrangement of columns encircling an architectural feature. In a peristyle temple, for example, the columns surround the outside of the building; in a peristyle house, the columns encircle a central court. The columns in a peristyle house support a roofed porch around the center of the court, which is open to the sky. The rooms of the house surround the four sides of the central court and open onto the porch.

Early examples of peristyle houses dating to the second century BCE are found on the island of Delos. The outside walls of the Delian houses are irregular in shape (i.e., not square or rectangular in layout), but the large central courtyard usually has a perfectly square peristyle. The area within the columns is a sunken impluvium (a shallow depression or sunken area, provided to receive rainwater from the roof), often with a mosaic pavement covering a water cistern. In a variant of the peristyle house known as the Rhodian type, the columns on the south side of the court are taller than the others, enabling the porch to catch the sunlight from that direction.

Peristyle houses enjoyed great popularity throughout the Hellenistic world and beyond. A Hellenistic example from northern Palestine is located at Tel Anafa. [*See* Anafa, Tel.] The northern half of the mound at the site is dominated by a large stucco building that had rooms on four sides of a peristyle courtyard, including a bath complex on the east. Evidence for the adoption of this type by Palestine's Jewish population comes from the Jewish Quarter in Jerusalem, where fragmentary remains of a peristyle house dating to the first century CE were uncovered in Nahman Avigad's excavations. Two of the rooms opening off the peristyle court were paved with opus sectile (colored stone tiles). Peristyle houses found elsewhere in the Near East display adaptations of the type to local building materials and conditions. At Dura-Europos and Nippur, for example, the walls of the houses and sometimes even the columns were constructed of mud brick instead of stone. [*See* Dura-Europos; Nippur.]

A large peristyle building was discovered in the excavations at Ramat Raḥel outside Jerusalem. It appears to have been constructed during the third century CE, when the Tenth Roman Legion occupied the site. During the last phase of the building's use, the floors were deepened, benches were added along some of the walls, and a thin wall was erected in the center of the western colonnade, to the south of which a kitchen was installed. Such subdivisions of peristyle buildings were common throughout the Roman Empire, from the fifth to seventh century CE. While the construction of new peristyle houses declined dramatically then, the few that were constructed were larger than ever. Simon P. Ellis suggests that these developments reflect the increased concentration of wealth in the Late Roman Empire and a more autocratic form of patronage. The construction of peristyle houses appears to have come to an end by the middle of the sixth century CE.

[*See also* Building Materials and Techniques, *article on* Materials and Techniques of the Persian through Roman Periods.]

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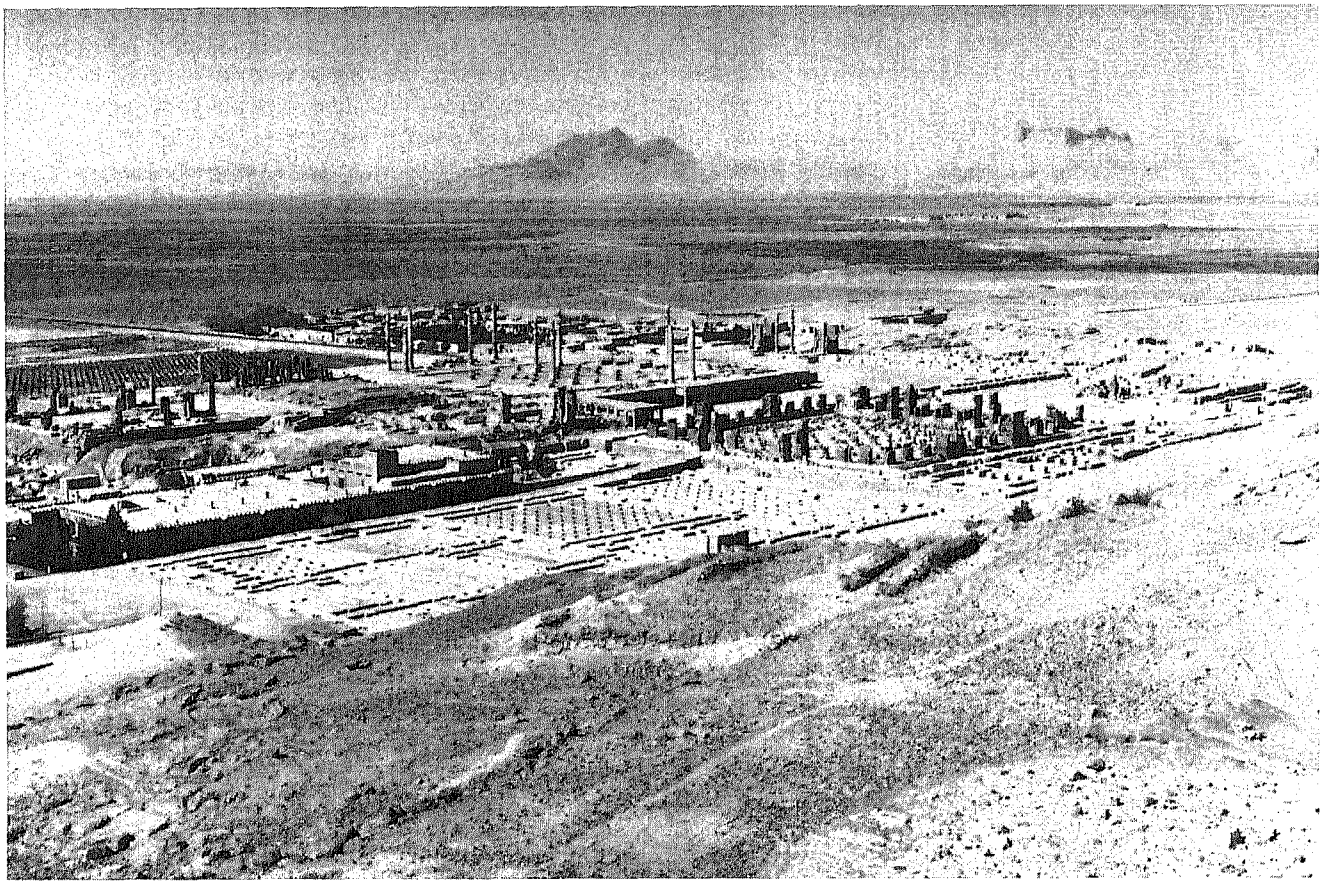
JODI MAGNESS

PERSEPOLIS, site located in the southwest Iranian province of Fars, on the eastern edge of the broad plain called Marv Dasht (29°57′ N, 52°59′ E). The Achaemenid Persian ruler Darius I (522–486 BCE) elected to build a new dynastic seat here to replace the prior capital, Pasargadae, some 40 km (25 mi.) to the north. The site includes a lofty stone terrace close to 450 m long and 300 m wide (see figure 1); the substantial remains of a series of relief-decorated pa-



PERSEPOLIS. Figure 1. *The terrace viewed from the southeast.* Starting clockwise, from the left, this view includes the Palace of Xerxes, the relatively compact Palace of Darius, the apadana (with the building's relief decorated eastern facade hidden beheath a temporary protective covering), the Gate of All Lands, the Hall of One Hundred Columns, and the now severely denuded fabric of the multiroomed Treasury. (Courtesy D. Stronach)

latial buildings; a fortified hill directly to the east; and a series of lesser representational buildings on the adjacent plain. The settlement in which the common people lived has not been identified. The sheer cliff face at Naqsh-i Rustam, 6 km (3.5 mi.) to the north, is the dramatic setting for the rock-cut tombs of Darius and three others of his line. [*See* Pasargadae; Naqsh-i Rustam.]

Four trilingual cuneiform inscriptions (in Old Persian, Elamite, and Babylonian) on the gate of Persepolis combine with other textual evidence (Hallock, 1969) to affirm that Darius's extensive palace fortress was given the same name, *Parsa,* as the surrounding homeland of the Persians. [*See* Cuneiform; Persians.] Centuries later, when the original name and associations of the terrace had long been forgotten, certain of the carved figures in the doorway reliefs of Darius's palace were taken to represent the mythical Jamshid, the great hunter and paramount ruler of Iran's heroic tradition. Thus, while Biruni, an eleventh-century scientist and geographer at the court of the Ghaznavids, was not without some knowledge of Alexander the Great's fateful actions at the site (see below), most medieval and later Persian visitors appear to have known the terrace and its associated remains as Takht-i Jamshid, or the "throne of Jamshid." At the same time, the site's currently preferred designation, Persepolis, is directly drawn from the name by which it was known to the ancient Greeks (an apparent contraction of Persai polis or "the city in Persis").

The first mention of the ruins appears in the journal of Odoric of Porderone, who passed through Fars in 1318. He refers to the site as Comerun, a corruption of a second popular designation: *chehel sotun* or "forty columns," a term signifying "many columns." In the course of the seventeenth century, however, interest intensified: the first detailed drawings of the well-preserved site and its sculptures began to be published in Europe. Some visitors, such as Don Garcia de Silva y Figueroa, proclaimed their conviction that the ruins had to be those of Persepolis. There matters rested until the early nineteenth century, when G. F. Grotefend

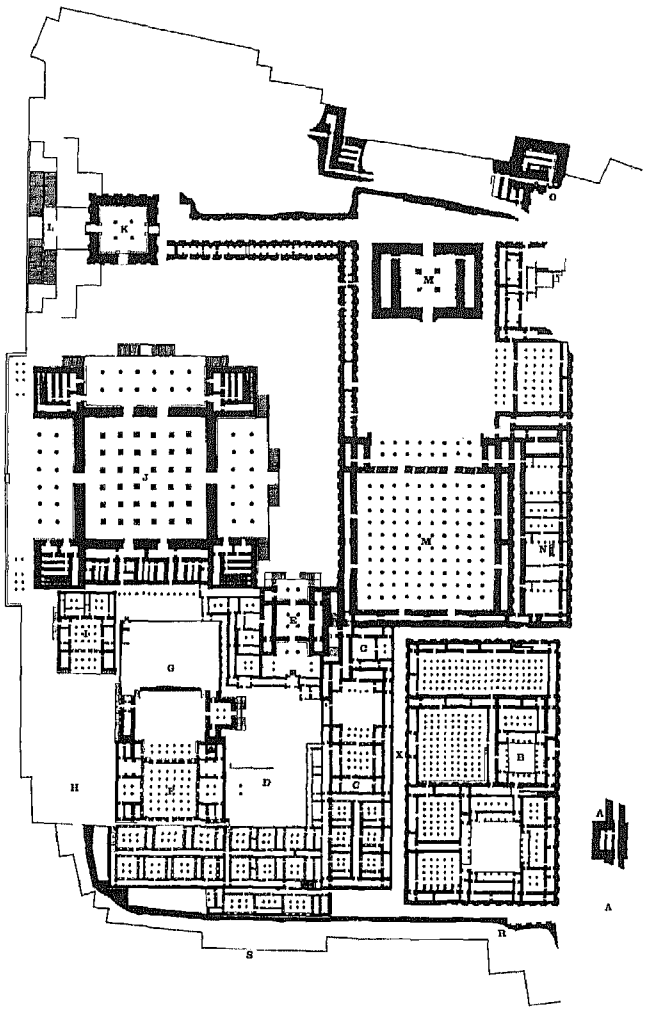
of Heidelberg University, working from copies of Old Persian cuneiform texts made earlier at the site, was able to distinguish the names of Darius and several of his successors. This triumph of decipherment cut through all previous speculation and pointed to the undeniable rediscovery of the Persian capital, the Persepolis of classical accounts, that Alexander had sacked and burned in 330 BCE.

Formal excavations were slow to begin. It was only in 1924 that the Iranian government invited Ernst Herzfeld, the foremost Iranologist of the day, to prepare a detailed plan of Persepolis, together with an estimate of what it would cost to clear the site. Then, in the new circumstances that attended the abrogation (c. 1930) of France's hitherto exclusive concession to excavate in Iran, the Oriental Institute of the University of Chicago was invited to sponsor the work and Herzfeld was chosen to head the expedition. Following four campaigns, from 1931 to 1934 (during which the famed reliefs on the east side of the apadana were uncovered), the direction of the work passed to Erich F. Schmidt, who continued to excavate from 1935 to 1939. It was Schmidt, moreover, who published the results of the Oriental Institute's all-important excavations in a comprehensive three-volume final report.

Subsequent excavations, initially conducted by André Godard, M. T. Mostafavi, and Ali Sami on behalf of the Iranian Archaeological Service, did much to reveal the plan of the few remaining unexamined areas of the site. The most productive advances in the last few decades may be said to have come, however, from other directions: in a new interest in the organization and chronology of the work at Persepolis (where the contributions of Carl Nylander, Michael Roaf, Margaret Root, and Ann-Britt Tilia each call for special note) and in a new level of concern for the conservation and restoration of the monuments. [*See* Conservation Archaeology; Restoration and Conservation.]

While work on the massive retaining wall of the partly rubble-filled terrace and on the magnificent stairway in the northwest corner of the site is likely to have begun at least as early as 515 BCE, a string of building inscriptions of Darius himself, his son Xerxes (486–465 BCE), and his grandson Artaxerxes (465–425 BCE) helps to document a subsequent, prolonged sequence of construction on the surface of the terrace from about 500 BCE down to about 440 BCE. Such inscriptions not only reflect the measured pace that was demanded by the uncompromising standards of Achaemenid construction, but they also do much to illustrate the sense of dynastic continuity that apparently inspired the completion of much of an original masterplan. It is also striking that, while there are necessarily many contrasts between the spacious plan of Pasargadae and the more condensed plan of Persepolis, both sites adhere to a distinctive Iranian preference for multiple freestanding units, rather than to the characteristic palace plan of Mesopotamia, which tended to incorporate many disparate elements under one roof (see figure 2). [*See* Palace.]

In a process that was presumably intended to underscore the exalted rank of the Persian king, all visitors to Achaemenid Persepolis were obliged to ascend the 14-meter-high double-return stairway that led to the single formal entrance to the terrace: the freestanding Gate of All Lands. This formidable square structure was marked by a single soaring hall



PERSEPOLIS. Figure 2. *Plan of the terrace.* A = Eastern Fortification, garrison; B = Treasury; C/North = Service Quarters of Harem; C/South = Main Wing of Harem; D = Palace D; E = Council Hall; F = Xerxes Palace; G = Palace G; H = Palace H; I = Palace of Darius I; J = Apadana; K = Gate of Xerxes; L = Terrace Stairway; M/North = Unfinished Gate; M/South = Hall of One Hundred Columns; N = Stairway to Drainage Tunnel; O = Northern Fortification; R = Southern Fortification; S = Foundation Inscription of Darius I. The double-return stairway at the northwest corner of the platform provided the only formal access to both the adjacent, supremely spacious public buildings and the more private structures located within the southern half of the terrace. (After Schmidt, 1953)

with four stone columns and three doorways. In keeping with the Assyrian-inspired colossi that once formed part of the fabric of gate R at Pasargadae, two massive stone bulls guarded the outer doorway and two winged human-headed bulls guarded the opposite, inner doorway. Trilingual inscriptions indicate that Xerxes erected, or at least completed, this aptly named structure.

The hub of all else on the terrace was the imposing audience hall, or apadana, a building that was founded by Darius and completed by Xerxes and which stood on a separate podium 2.60 m high. With a plan that can be seen to have followed that of the slightly earlier apadana of Darius at Susa, each side of this square edifice was 110 m long. [*See* Susa.] Six rows of six columns (each with a square base, a fluted shaft, and a composite capital that was crowned by addorsed bull protomes) supported the cedar beams of the main hall, a vast room that stood more than 19 m high and measured 60.50 m on each side. The hall's 5-meter-thick mud-brick walls were flanked by four corner towers and by deep recesses between the towers. To the north, east, and west these recesses took the form of tall porticoes, each marked by two rows of six stone columns set on circular, bell-shaped bases.

While the west portico provided a focal point from which the monarch could review parades on the plain below, the remaining two porticoes were each approached by monumental stairways composed of four symmetrically arranged flights of steps. Effectively carved at eye level, where all who sought an audience could not fail to observe them, the facades of these matching stairways still boast a series of reliefs that rightly remain among the most celebrated expressions of Achaemenid art (see figure 3).

When first conceived, each mirror image relief showed a procession of twenty-three tribute-bearing delegations of the empire; a central panel in which the king and the crown prince are giving audience to an official; and a third, complementary tableau that depicts (behind the royal figures) the massed files of royal guards, followed by members of the court entourage. In addition, the left and right edges of the central panel and the extreme limits of the overall composition are each flanked by the sole motif that carried any direct reference to active force: namely, the often-repeated scene of a bull being attacked by a lion (in what appears to be a representation of great power being overcome by yet greater power). Debate will of course persist, but while these and other reliefs from Persepolis were once thought to document the details of an annual new year's festival, it now seems more probable that the above-mentioned scenes were expressly designed to illustrate Darius's personal vision of empire: one of far-reaching, harmonious government at once secure in terms of the power and authority of the monarch and the assured condition of the royal succession.

Like the apadana, Darius's palace stood on its own separate podium near the western edge of the terrace. An archetype for later royal residences, the building was distinguished by a single entrance portico flanked by guardrooms, a hypostyle central hall, and a series of symmetrically planned, adjoining suites. The extant stone elements of this compact structure include highly polished door, window, and niche frames (each capped by fluted, egyptianized cornices), low wall socles, and a series of elegant doorway reliefs. The latter are especially remarkable for those examples in which Darius chose to introduce a novel type of apotropaic relief: the Persian "royal hero" shown in the act of vanquishing one or another real or fabulous beast in defense (in all likelihood) of not only the actual residence of the ruler, but also the realm as a whole.

PERSEPOLIS. Figure 3. *Detail from the east facade of the apadana.* Two members of the Cappadocian delegation display gifts of Median-style clothing as they move towards the royal dias. The cape of each figure is fastened by an arched and ribbed fibula. (Courtesy D. Stronach)

Darius also founded, but did not himself complete, a three-doored tripylon. This monumental, enigmatic structure appears to have served as the main link between the open courts and public buildings in the northern portion of the site and the more southerly areas of the terrace that largely came to be given over to the private palaces of Darius's successors. He also laid out the first stage of the treasury, an eventually much altered and expanded structure that served as one of the Achaemenid Empire's richest storehouses (as well as one of the more prolific sources of metal objects, administrative tablets, seal impressions, and other notable finds recovered during Schmidt's excavations). After 486 BCE, this latter structure came to be flanked on the west by the so-called Harem of Xerxes and, closer to the southwest corner of the terrace, by Xerxes' palace. In ar-

chitectural terms, however, the most impressive of all the later buildings at Persepolis consists of the so-called throne hall (or Hall of One Hundred Columns), which was most probably begun by Xerxes and completed by Artaxerxes. Although the square hall of this structure was not given the towering height of the main hall of the apadana, its ground area was substantially larger, with each side measuring 68.50 m.

Subsequent construction at Persepolis was mainly confined to the southeast corner of the terrace and to the creation of a series of private palaces of lesser note. A well-documented exception concerns the addition of a double staircase on the south side of Darius's palace. There an Old Persian inscription proclaims the authorship of Artaxerxes III (359–338 BCE) and an analysis of the associated reliefs shows them to be of the same late date (Roaf, 1983). Elsewhere, both Artaxerxes II (404–359 BCE) and Artaxerxes III chose to locate their sizable rock-cut tombs on the western slope of the fortified hill that overlooks the terrace. With the completion of these last two major monuments, however, a singular record of sustained architectural and artistic accomplishment came to an effective close only a handful of years before the fateful destruction of the site.

[*See also* Persia, *article on* Ancient Persia.]

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PERSIA. [*This entry provides a broad survey of the history of Persia as known primarily from archaeological discoveries. It is chronologically divided into four articles:*

Prehistoric Persia
Ancient Persia
Persia from Alexander to the Rise of Islam
Persia in the Islamic Period

In addition to the related articles on specific subregions and sites referred to in this entry, see also History of the Field, *article on* Archaeology in Persia.]

Prehistoric Persia

Persia is mostly a high, desertic plateau surrounded by forested mountains. As a result of its rugged topography and severe seasonal climates, permanent settlements were always localized around oases or riverine water sources and near the 5–10 percent of the land surface that is arable. About half of the arable land must be farmed with the aid of irrigation.

Persia's prehistory is understood as a result of numerous expeditions to discover sites and then through selective excavations. In the late nineteenth century, French archaeologists pioneered research in Persia, primarily in the central Zagros Mountains and Khuzistan. Following World War II, and until all foreign research ceased with the Iranian Revolution of 1979, archaeologists from the United States, Britain, Canada, and most western European countries, as well as Japan, also carried out projects there. Rather than excavate single sites, many archaeologists during the postwar era explored whole regions. During two decades of intensive research, they surveyed most of western Iran, providing a wealth of information on changes in population from period to period and differences among regions. [*See* Demography.] Nevertheless, this information represents only a preliminary stage in archaeological understanding, for excavations of some critical sites that would provide a solid basis for interpreting the survey results could not be carried out or completed.

Initial Village Period. The first period of human settlement in Persia, following a long and poorly known Paleolithic era, is the Neolithic. Agriculture and the domestication of goats and sheep—a process that may have taken place in the mountains of Persia—were introduced. [*See* Agriculture; Sheep and Goats.] Agriculture appeared in Persia in about 7000 BCE, one thousand years after it began in the southern Levant and probably spread by diffusion from that source. By this time Anatolian obsidian was reaching sites in both the Levant and the Zagros, an indication of very widespread contacts among these early peoples. Beginning with the Neolithic, there was increasing sedentism across Southwest Asia, as farmers began to settle near arable land and build houses out of mud.

A small number of excavated sites, sometimes widely scattered geographically, define the successive archaeological periods. The Aceramic Neolithic, the period when the first permanent agricultural settlements were established, is known from excavations at Ganj Dareh and Tepe Guran; in the mountain plains of Kurdistan; and at Ali Kosh in the lowland Deh Luran plain. [*See* Ali Kosh; Deh Luran.] The inhabitants of each site consumed wild foods, supplemented by cultivated cereals and domestic goats. [*See* Cereals.] Shortly before 6000 BCE, pottery came into common use, and the number of villages began to increase—a trend that was to continue for nearly two thousand years.

Late Village Period. From 5500 to 3800 BCE, cultures arose in Persia that paralleled the Ubaid in Mesopotamia but displayed many regional variants reflecting local, somewhat isolated adaptations to scattered resources. On some of the most favorable agricultural plains, a few sites became much larger than others, but hundreds of villages held fewer than one hundred inhabitants. In addition, a few excavated campsites and cemeteries show that migratory herders, in numbers that are impossible to estimate, utilized the vast stretches of mountain pastures. Patterns of transhumance, similar to those in recent periods, were well established by the mid-fifth millennium. [*See* Pastoral Nomadism.]

After two thousand years of increase, evidence indicates that from 4500 to 4000 BCE there was a general decline in the number of villages and even the abandonment of some regions. The situation may have been related to climatic changes, as well as to regional political and economic ones.

Some of the prominent Late Village period excavated sites are Dalma Tepe, Pisdeli, and Gabrestan in the northern Zagros; Sialk, on the plateau; Giyan, Siabid, and Seh Gabi in the central Zagros; Bakun and Tepe Yahya in the southern Zagros; and Tepe Sabz, Farukhabad, Jaffarabad, Chogha Mish, and Susa in lowland Khuzistan. [*See* Tepe Yahya; Tepe Farukhabad; Susa.]

Susa, on the western edge of the lowland Khuzistan plain, has provided the most information of all these sites. Well known for its historical periods, Susa was founded shortly before 4000 BCE, when the local population had fallen to near its lowest point in two millennia. At Susa, the inhabitants erected a stepped platform of mud bricks on which they placed a number of large buildings, but the ruins give few clues to the buildings' original functions. Nevertheless, by analogy with Eridu and other early temples in Mesopotamia, it is likely that Susa's platform was also the base of at least one religious edifice. [*See* Eridu.] The buildings were destroyed, probably twice, partially by fire, in violent events in about 3800 BCE.

At the base of the platform, the burial remains of a thousand or more individuals, accompanied by elaborately painted ceramics, were crammed into a small cemetery. The conditions that led to this mass interment, often of bones that had been moved from another location, remain a mystery. [*See* Burial Techniques; Grave Goods.]

Known as the Susa I period, this is the final phase of painted pottery in the Ubaid tradition that had begun two thousand years earlier (its demise is later in Persia than in Mesopotamia). The reasons for the disappearance of painted ceramics throughout Southwest Asia at this time are obscure; the type was replaced by undecorated, mass-produced, often wheelmade pots in the Uruk style.

Uruk Period. Without further excavation, it is not possible to resolve debates concerning the nature of the change between Susa I and Uruk in Persia. Some hold that it was a gradual, indigenous transition; others that it signifies an invasion by people from southern Mesopotamia, the region of Warka (Uruk). [*See* Uruk-Warka.] Whatever the case, the pattern of settlement changed. A hierarchy of sites developed, with large ones surrounded by small satellites, implying that some sites may have served regional administrative and economic functions. On the surrounding plain, there was a threefold increase in population. At Susa, a narrow excavation trench has revealed a succession of devices that were precursors of writing: seals, tokens, and bullae (clay envelopes that held tokens and preserved a record of commodity exchange).

At Godin Tepe in the central Zagros, a Late Uruk building is situated in the midst of a local settlement; it may have been an entrepôt, where trade between the lowlands and highlands was effected. [*See* Godin Tepe.] Around Tepe Malyan, on the Marv Dasht plain near Shiraz, there was a severe decline in settlement, and at Tepe Yahya, after a prolonged disruption of settlement in the late fourth millennium, a Proto-Elamite colony was installed. [*See* Malyan.] Both the disruptions of settlement and the incursion of the Proto-Elamites may be related to the emergence of cities in Khuzistan and southern Mesopotamia. By this time, sites in northern Persia were following a trajectory more related to that of Anatolia, the Caucasus, and central Asia than to Mesopotamia. Unfortunately, there have been few excavations of sites pertinent to this dynamic period of social change in

Persia. It resulted, in the third millennium, in an Elamite course of development quite separate from the Sumerian in Mesopotamia.

[*See also* Elamites; Persians; *and* Mesopotamia, *article on* Prehistoric Mesopotamia.]

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FRANK HOLE

Ancient Persia

Persia is an ecological and cultural mosaic characterized by variation rather then uniformity. Variation dominates the geographic and cultural landscape from the Neolithic period (7000 BCE) to the end of the Bronze Age (1200 BCE). Distinctive "culture areas" were characterized by shifting boundaries whose core regions, nevertheless, can be identified. The following list of core areas is in descending order of the extent to which they are known archaeologically: (1) south and southwest Iran—the modern province of Khuzistan; (2) central southern Iran, comprising modern Fars and Luristan; (3) northwest Iran—the provinces of Azerbaijan, Kurdistan, and Kermanshah; (4) southeastern Iran—the provinces of Kerman and Seistan, extending into Baluchistan; and (5) northeastern Iran, comprising the regions southeast of the Caspian Sea and Khorasan, extending to the foothills of the Kopet Dagh Mountains in Turkmenistan.

Neolithic Communities. The earliest Neolithic communities on the Iranian plateau appear in the Zagros Mountains and date to the second half of the eighth millennium (Young et al., 1983). At this time such sites as Ganj Dareh appear, a site approximately one hectare in size (Smith, 1975). It is unlikely that the community represented more than a small number of individual households. The upper levels of this site contain the remains of an early village constructed of mud-brick architecture. Structures took the form of rectilinear two-story structures—the first floor for storage and/or animal pens and the upper story for living accommodations. Ganj Dareh offers the earliest known pottery in the Near East. It is a lightly fired, chaff-tempered coarse ware that takes the form of small pots and large storage vessels. Other clay artifacts included human and animal figurines, as well as small geometric tokens. The stone industry at Ganj Dareh is characterized by numerous blade types, some containing sickle sheen, used to harvest grain. Mortars and pestles for processing cereals occured in abundance. The subsistence economy at Ganj Dareh is incompletely understood, but sheep and goats were certainly domesticated, as was barley. [*See* Sheep and Goats; Cereals.] In one of the rooms, two skulls of wild sheep were discovered embedded in the wall and plastered over with clay. Throughout the Neolithic, either entire structures or parts of buildings were increasingly turned over to ritual functions.

Perhaps the most complete Neolithic sequence in Iran is known from the region of Deh Luran in Khuzistan (Hole et al., 1969). The excavations at Ali Kosh uncovered a Neolithic sequence that ranges from about 7500 to 5500 BCE. Ali Kosh is a roughly circular settlement (135 m in diameter) with an accumulated depth of 7 m of deposit. In the earliest settlement, referred to as the Bus Mordeh phase, the inhabitants relied on a combination of wild and domestic resources. A majority of the seeds recovered were wild annual legumes and grasses native to the environment. The recovery of a limited number of cultivated barley and wheat seeds, of the type not native to the local environment, indicate that the inhabitants were also farming. During this early phase there is also evidence for the primary herding of goats, but less for sheep. It has been suggested that this phase may represent a seasonal settlement—a winter-spring station for the community that moved to higher pastures in the summer months. The Ali Kosh phase (6750–6000 BCE) represents a fully developed Neolithic community. The architecture consisted of large, well-constructed dwellings with a considerably developed material culture. Containers included stone vessels, baskets, and, toward the very end of the phase, pottery. At this time the inhabitants of Ali Kosh participated in far-reaching trade that brought them obsidian from the highland mountains of eastern Anatolia, shells from the Per-

sian Gulf, copper from central Iran, and turquoise from northeastern Iran. Some of the earliest burials on the Iranian plateau belong to the Ali Kosh phase. The dead were buried in a shallow pit beneath the floors of the houses. Frequently, the body was covered with ocher, tightly flexed, wrapped within a reed mat, and buried with items of personal adornment. [*See* Ali Kosh; Tombs; Burial Practices; Grave Goods.]

During the last period of occupation, in about 6000–5600 BCE, (the Muhammad Jaffar phase), the effectiveness of domesticated resources, building techniques, and agricultural tools all continued to increase and pottery is found throughout the Iranian plateau. This earliest pottery is referred to as the Soft Ware horizon, for wherever it is found it is invariably a coarse, low-fired, chaff-tempered ceramic with minimal design motifs. Laboratory studies of this type of pottery from a number of different sites on the Iranian plateau and beyond has shown an identical production technique (Vandiver, 1986). The technique, referred to as consecutive slab construction, endured for more than a millennium, thus typifying the conservative tradition of technological innovation. However, its wide distribution indicates that, by the middle of the sixth millennium, there was considerable diffusion and sharing of technological skills.

Prehistory at Susa and Susiana. Archaeologically, the region of southwestern Iran, Khuzistan, is the best known and most documented in all of Persia. The province of Khuzistan is an extension of the Mesopotamian plain. The lower plains of Khuzistan lie between the Persian Gulf and include the Tigris River marshes. To the west of the Karkheh River, the northern reaches of Khuzistan touch the Zagros Mountains and extend to the eastern edge of the Ram Hormuz plain. In the valleys of Khuzistan, as well as in the lowlands, the yearly rainfall ranges from 250 to 400 mm. This allows for dry farming, which, nevertheless, would be greatly enhanced by irrigation in regions of marginal precipatation.

The archaeology of Khuzistan is responsible for revealing the history and the archaeology of Persia's oldest kingdom, Elam. The most important city within this kingdom was Susa; a site that has been excavated for nearly a century. Beginning in the late nineteenth century, excavations at Susa were directed by a number of French archaeologists: Marcel Dieulafoy, Jacques de Morgan, Roland de Mecquenem, and Roman Ghirshman. The results of these excavations have been published in scores of monographs in *Mémoires de la Délégation en Perse* (Paris). In 1968 Jean Perrot took over the French Archaeological Mission at Susa and provided the first systematic stratigraphic excavation and comprehensive picture of the prehistory of Susa (Perrot, 1976). In addition to the recent excavations at Susa, Geneviève Dollfus (1978), on behalf of the French Mission, excavated several prehistoric settlements in Khuzistan that predate the earliest settlement at Susa and provide an understanding of the region from 6000 to 4000 BCE, when Susa emerged as a regional center. Major excavations at Choga Mish (Kantor, 1976) and Haft Tepe (Negahban, 1991) have also added to what is understood of Elam in the third and second millennia BCE. Archaeological surveys undertaken in Khuzistan by Robert Adams (1962) and Henry Wright and Gregory Johnson (1975) have led to an unparalleled understanding of the local sequences and settlement regimes in this part of Persia. [*See* Susa; Haft Tepe.]

For the Kur River basin of Fars, John R. Alden (1982) and William M. Sumner (1972) have offered an archaeological sequence from both settlement survey and excavation. Research at the site of Malyan in Fars, identified as the Elamite city of Anshan, adds an important understanding of a highland Elamite capital. [*See* Malyan.] In northwestern Iran, survey and excavations in the vicinity of Hasanlu (Dyson, 1965) and Godin Tepe (Young and Levine, 1974) offer a comprehensive picture of settlement and social organization from the Late Neolithic site of Hajji Firuz (Voigt, 1983) to the Median citadel uncovered at Godin Tepe. [*See* Hasanlu; Godin Tepe; Hajji Firuz.] Sites in the Zagros range occasionally exhibit cultural ties to the settlements of Khuzistan. Materials recovered from the excavations at Tepe Sialk (Ghirshman, 1938), Tall-i Iblis (Caldwell, 1967), Tepe Yahya (Lamberg-Karlovsky and Beale, 1986), and Shahdad (Hakemi 1972), at the western edge of the Dasht-i Lut, indicate far-reaching contacts with sites to the west. [*See* Tepe Yahya.] Excavations at Tepe Hissar (Schmidt, 1937; Dyson, 1989) in the Damghan region indicate cultural ties to sites in central Asia as well as with distant Khuzistan. The work of the Italian Mission at Shahr-i Sokhta, in Sistan, has extended what is known of the urban process in this region, as well as this site's role in the production and trade of lapis lazuli (Tosi and Piperno, 1973). Beatrice de Cardi's (1970) excavations in Iranian Baluchistan indicate its cultural relationships with archaeological sites excavated in the Persian Gulf and in the United Arab Emirates. [*See* United Arab Emirates.]

Given what presently is known, there can be little doubt that the emergence of a centralized state is first documented in the region of Khuzistan. The fact that this region was an extension of the Mesopotamian plain readily explains why the prehistoric sequence in Khuzistan is closely related to Mesopotamia's. Throughout the fifth and fourth millennia, Khuzistan was the most densely settled region in Persia. The period in Khuzistan referred to as Susa I, or Susa A, was roughly contemporary with the Ubaid 3–4 culture in southern Mesopotamia (Porada et al., 1992). [*See* Ubaid.] Although there is no doubt that the peoples of Khuzistan were in direct contact with southern Mesopotamia, the developments in the two regions were distinctly different. This may be the result in part to the peoples of southern Mesopotamia being ethnically Sumerian, while those of Khuzistan were Elamite—representatives of entirely distinctive language

families. During Susa A, the site of Susa reached 25–30 ha (62–74 acres) in size, and numerous intermediate-sized communities of 10 ha (25 acres) dotted the Khuzistan countryside. These towns, in turn, were surrounded by numerous smaller villages of 2–3 ha (5–7 acres). During this period at Susa, a large terrace or platform (80 × 80 × 10 m) was constructed that is associated with an enigmatic structure called the *massif funéraire* by its excavator, Jacque de Morgan. The structure contained more than two thousand burials and a considerable wealth of grave goods (Hole, 1987). By 4000 BCE, Susa had established itself as the preeminent community in Elam, a position it was to maintain throughout most of the following three thousand years of Elamite history.

Susa I (A) is followed by Susa II. The nature of the transition remains unclear, but there are several phases of abandonment, destruction, and rebuilding of the terrace at the end of Susa I. The nature of the Susa II assemblage is best documented in the recent excavations of Acropole (acropolis) I (levels 22–17) and Acropole II (levels 6–1) (LeBrun, 1978). The material culture of Susa II is of outstanding significance: in private houses pottery, inscribed tablets, sealings, and stone objects were uncovered. The ceramics, tablets, and sealings are identical to those of the Late Uruk period (c. 3400–3200 BCE) in southern Mesopotamia. A comparable assemblage has also been recovered from Godin Tepe (Weiss and Young, 1975). In both instances it appears that the sites were impacted by the "Uruk expansion." [*See* Seals; Uruk-Warka.]

The Uruk expansion represents a massive emigration from southern Mesopotamia to regions as distant as central Anatolia. The reason(s) for the massive exodus remains elusive and is much discussed (Algaze, 1993). There is a predisposition to view the expansion and its colonization of foreign regions as motivated by the desire to control trade routes and exploit resources for shipment to southern Mesopotamia. The southern Mesopotamian artifacts recovered from Susa II represent an inventory of administrative devices dedicated to a technology of social control. The inscribed tablets and bullae (hollow, unbaked clay balls containing geometric tokens believed to represent specific numbers) were devices for monitoring economic production and consumption; the seals and sealings were used to monitor security and access by sealing doors, vessels, and reed bundles. It has been suggested that the beveled-rim bowls were standard units for measuring the rations given in return for labor (Nissen, 1988).

It has been argued that the bullae stratigraphically precede the inscribed numerical tablets, which in turn precede the inscribed tablets containing numbers and text (Schmandt-Bessarat, 1992). Should this be further documented it would represent a stratigraphic unfolding from numeracy to literacy, from symbol to writing. The common use of administrative artifacts at Susa, Chogha Mish, and smaller sites in Khuzistan thus suggests an extensive colonization of Khuzistan by the Late Uruk peoples of southern Mesopotamia. The presence of a three-level settlement hierarchy indicates the specialization of settlement function and the emergence of a social organization and political structure dependent upon state-level bureaucracies.

Proto-Elamite Period. Dated to 3400–3200/2600 BCE, the term *Proto-Elamite* refers both to a specific language and to an archaeological assemblage. The beginning of this period, as determined by the excavations at Susa, are in level 16 at the acropolis I and define the nature of Susa III: Proto-Elamite culture (LeBrun and Vallat, 1978). The origins of Proto-Elamite culture are to be sought in Khuzistan following the Late Uruk colonization. Shared features of the Proto-Elamite culture include administrative texts (Damerow and Englund, 1989), heavily influenced by the earlier Uruk IV texts of southern Mesopotamia written in an undeciphered Proto-Elamite script; a distinctive style of cylinder seal known from numerous seals and sealings on tablets; ceramics, particularly the ubiquitous beveled-rim bowl; and miniature zoomorphic stone objects and vessels manufactured from raw resources procured from distant regions on the Iranian plateau.

At the time in which Proto-Elamite culture was emerging in Khuzistan, there was a major decline in population. Gregory Johnson (1973) estimates that by the end of the Late Uruk period there was a 41 percent decline in the occupied area of Khuzistan. Populations were almost entirely concentrated in the urban centers—Susa and Chogha Mish—leaving the village settlements of the hinterland abandoned. Throughout the Proto-Elamite period, the settlement size of Susa ranged between 10 and 20 ha (25 and 50 acres). The appearance of scenes of warfare depicted on cylinder seals suggest that these dramatic shifts in population and settlement occurred within a context of conflict believed to be responsible for the breakdown of the local exchange systems.

In about 3000 BCE, Susiana became independent of the Mesopotamian sphere of influence. The loss of population in Susiana may be related to the unprecedented urban growth that took place in contemporary southern Mesopotamia and the rise of a strong Proto-Elamite state centered around Malyan in Fars. Although Malyan may have been the center of a strong regional polity, it is clear from the archaeological record that a Proto-Elamite influence was felt in virtually every corner of the Iranian plateau. Following the collapse of the Uruk expansion in Khuzistan, the Proto-Elamites replicated the expansionist process and colonized distant sites. Excavated Iranian sites sharing the characteristic Proto-Elamite assemblage include Susa, Chogha Mish, Tall-i Ghazir, Tepe Sialk, Tall-i Malyan, Tall-i Iblis, Tepe Yahya, and Godin Tepe (Lamberg-Karlovsky, 1978). Materials recovered from the surface of Shahdad, a single Proto-Elamite tablet and sealings from Shahr-i Sokhta, and

a single tablet from Hissar suggest that these sites and regions were also influenced by the Proto-Elamite expansion. Russian archaeologists, excavating at Altyn Depe (Altin Tepe) in Turkmenistan, have argued that distant reverberations of a Proto-Elamite influence can be detected there in the presence of Proto-Elamite signs on ceramics and figurines (Masson and Sarianidi, 1972).

The sparse settlement in Susiana throughout the Susa III period contrasts with the relatively high populations in western and eastern Khuzistan. In the Deh Luran plain, 60 km (37 mi.) northwest of Susiana, early third-millennium settlement reached a peak unsurpassed until the Achaemenid period. Excavated sites include Tepe Mussian (which may have exceeded contemporary Susa in size), Tepe Farukhabad, Tepe Khazineh, and Tepe Aliabad. [*See* Deh Luran; Tepe Mussian; Tepe Farukhabad.] Many of these sites contained ceramics that can be easily paralleled in the Diyala region of Mesopotamia during the Jemdet Nasr and Early Dynastic I periods. [*See* Diyala; Jemdet Nasr.] At Fars, excavations and extensive surveys in the vicinity of Malyan offer a relatively comprehensive picture of Proto-Elamite culture, referred to as the Banesh phase (c. 3400–2600 BCE, and at Malyan excavators identified five ceramic phases (4500–3400 BCE) preceding it. In the early third millennium, Malyan reached 50 ha (124 acres), almost four times the size of Susa. In the Banesh phase at Malyan three major phases of superimposed architecture were revealed, including public buildings containing extensive wall paintings. From the rooms of private houses, excavators recovered characteristic Proto-Elamite tablets, seals, and sealings. In various areas of excavation, craft production included the working of mother-of-pearl, *Dentalium* shells, bead production, and installations for producing metals and ceramics (Nicholas, 1990).

The results of the settlement surveys undertaken in the vicinity of Malyan (Summer, 1972) are comparable in importance to those in Khuzistan and around Tepe Yahya in Kerman province (Prickett, 1986). The growth of the Banesh phase at Malyan is believed to be the result of the absorption of numerous small surrounding settlements dated to the Susa I and II periods. In about 3000 BCE, Malyan attained the status of an urban center by absorbing the surrounding village populations and by immigration from the lowlands. At this time, toward the end of the Middle Banesh phase, Malyan experienced explosive growth, from 10 to 50 ha (25 to 124 acres) within a couple of centuries, concentrating a regional administration within its authority. The evidence for an immigration to Malyan from Susiana is supported by the increasing similarities between their material culture; the distribution of Proto-Elamite sites east and west of Malyan that link the natural routes connecting the resource-rich areas of the Iranian plateau with resource-poor Mesopotamia; and the marked decline in the population of Susiana, which coincides with the increase at Malyan (Alden, 1982). Other Proto-Elamite communities, represented by such sites as Tepe Yahya, Sialk, and Godin, suggest the presence of a Proto-Elamite colony established within a distinctive local culture. Excavations at each of these distant settlements indicates a local culture that preceded, by at least a millennium, the establishment of the Proto-Elamite colony. The excavators of these sites have independently suggested that the exploitation of local resources and/or commerce was the motivating factor for the establishment of the Proto-Elamite colony.

In the second half of the fourth millennium, a number of widely scattered sites in Khuzistan, Kurdistan, Fars, Kerman, Sistan, and Khorasan participated in a Proto-Elamite ecumene whose primary motivation was economic. It was recognized that differential access to natural resources required economic interdependence between the highlands of the Iranian plateau and the lowlands of Khuzistan and Mesopotamia. It is believed that eventually economic interdependence led to the incorporation of military, political, and even religious alliances. Increased conflict and warfare resulted: late third- and second-millennia BCE texts indicate a nearly constant state of bellicosity between southern Mesopotamia and Elam (Hinz, 1964, 1971). The origins of Proto-Elamite culture in Khuzistan and its dissemination across the Iranian plateau were contemporary with the growing internationalism that characterized the early urban environments in Mesopotamia, the Levant, and Egypt in the Late Uruk period. The foundations for the interaction that united the resource-rich highlands with the resource-poor lowlands, so characteristic of later historical periods, were initially framed within the context of the Uruk and Proto-Elamite expansions.

Third Millennium. Proto-Elamite administrative texts, associated glyptic, and diagnostic ceramics all but disappeared by 2800 BCE. Sites such as Malyan and Yahya were abandoned and only resettled in the last centuries of the third millennium. The precise cause for this decline and abandonment remains elusive. The reabsorption of Susa into the Mesopotamian political community, accomplished by the conquest of Susa by the city-state of Lagash (c. 2450 BCE) and later by the Akkadian and Ur III Empires in the last half of the third millennium, may have been important factors. [*See* Girsu and Lagash; Akkadians; Ur.] Equally significant for the collapse of a centralized Elamite power over the periphery was the rise of powerful independent polities, such as the kingdom of Marhaši, mentioned in numerous Mesopotamian texts of the late third millennium. Marhaši is believed to be centered in eastern Iran in the region that includes Shahdad and Tepe Yahya (Steinkeller, 1982). In the last half of the third millennium, southern Mesopotamian maritime commerce extended to the settlements in the Persian Gulf and reached the Indus Valley (Edens, 1993).

The marked increase in maritime trade appears to have bypassed, if not intentionally replaced, the overland routes that crossed the Iranian plateau. The effort to isolate the plateau may have been the byproduct of the increasing enmity between southern Mesopotamia and Elam.

By the middle of the third millennium, the archaeological picture is embellished by the written texts. The Sumerian king list claims that, as early as 2600 BCE, King En-Mebaragesi of Kish "carried away as spoil the weapons of the land of Elam" (Jacobsen, 1939). The Sumerian king list also attributes 356 years of sovereignty to a "dynasty" of Awan that ruled in about 2500 BCE. Although the existence of these rulers is confirmed in other texts, the kingdom's precise location remains unknown. Early Dynastic inscriptions from the Mesopotamian city-state of Lagash indicate that the king, Eanatum, claimed victory over Elam (c. 2450 BCE) after he conquered Susa. Less then a century later, Enetarzi claims to have defeated a band of Elamites and recovered goods pillaged from Lagash in earlier raiding. Complementing the texts that address the constant conflicts that characterized Elam and the Mesopotamian city-states are tablets that record commercial contacts and literary texts.

One of these literary texts, "Enmerkar and the Lord of Aratta," enjoyed a long popularity in Mesopotamia and involves the relationships of a number of semidivine figures (including Enmerkar, Dumuzi, and Gilgamesh) with the lord of Aratta, who presided over an undiscovered kingdom thought to be on the Iranian plateau (Cohen, 1973). In this epic the Sumerian hero, Enmerkar, sends repeated demands to the ruler of Aratta for craftsmen, metals, and lapis lazuli. En route to the kingdom of Aratta, the messenger passes through Susa and Anshan (Malyan). In failing to obtain the desired materials, another epic relates a siege of Aratta. Yet another fragmentary literary text alludes to an Elamite invasion of Sumer in the time of Dumuzi. Literary traditions also invoke the martial exploits of the great Sumerian hero Gilgamesh in Khuzistan and the mountains beyond. Although these heroic tales are not historical treatises, they can be taken as metaphors of genuine reminiscences that allude to the incessant warfare and administered commerce that characterized southern Mesopotamia and Elamite relations. With the consolidation of the Akkadian Empire by Sargon of Agade (2334–2279 BCE), Mesopotamian texts begin to provide a relatively continuous archive of warfare and commerce with Elam. Mesopotamian boasts of victory can be checked against the contemporary texts of Susa. Sargon's victory over the Elamites is reliably recorded in later Old Babylonian texts. Sargon's successor, Rimush, repeated the war on Elam and Marhaši and is credited with dismantling the fortifications of the Elamite cities. His brother, Manishtushu, succeeded him and in his campaigns against the Elamites is credited with the capture of a king of Anshan. Naram-Sin, one of the greatest of Akkadian conquerors and the first to proclaim himself a divinity, boasts of having attained control "of all Elam, as far as Marhaši and the land of the Subartu" (northern Mesopotamia).

Akkadian influence was well entrenched at Susa throughout the second half of the third millennium. The texts from Susa indicate that the Akkadian language, administrative techniques, and even pedagogical methods were employed in that Elamite city. The texts from both Mesopotamia and Susa indicate that commerce (trading) and warfare (raiding) typified the relations of both the Akkadian and subsequent Ur III empires with Elam. The city of Umma in Mesopotamia appears to have acted as an entrepôt of trade with Khuzistan, while Susa, and its surrounding territory, was integrated into the Akkadian conquest state. Local Elamite rulers continued to hold office, but only as "governors of Susa" under Akkadian patronage.

Although the Akkadians waged war against Anshan, they were less successful in its complete subordination. Beyond Anshan and Elam remained the persistently hostile kingdom of Marhaši. The Akkadian and subsequent Ur III empires managed their relations with these autonomous polities by occasional warfare and diplomatic alliances—one of the daughters of Shulgi (2094–2047 BCE), the greatest of the Ur III kings, married the king of Marhaši, while another married the king of Anshan. Throughout the Ur III period, Mesopotamian relations with Elam were both intensive and extensive. Mesopotamian administrative texts refer to couriers traveling between Susa, Marhaši, Sabum, Adamdun, Huhnuri, the Su-lands, Anshan, Shimashki, and other regions (Carter and Stolper, 1984). The location of most of these regions is elusive, as is the degree of their political subordination to the Ur III Empire. Tantalizing references allude to a "dynasty" of twelve kings that ruled over the "lands of Shimashki" and an equal number of kings that presided over the kingdom of Awan. Such evidence suggests the existence of indigenous political traditions beyond the immediate control of Mesopotamian empires. The locations of Awan and Shimashki are unknown, but the context of these toponyms indicates that the place names refer to regions rather than to specific sites.

Second Millennium (Sukkalmah period, 1900–1500 BCE). Dynastic alliances and diplomatic relations increasingly became the hallmark of Elamite and Mesopotamian political relations. This period was characterized by the rule of the Elamite *sukkalmah,* "grand regent" (see below), whose emergence was contemporary with significant changes in the political life of Mesopotamia. (With the collapse of the Ur III Empire, Mesopotamia reverted to the rule of independent city-states in alliance with powerful leaders of tribal federations.) Excavations at Susa, Chogha Mish, Sharafabad, Chogha Zanbil, and Haft Tepe offer substantial archaeological remains of this period. [*See* Chogha Zanbil.] The site of Malyan, on the other hand, appears to have lost

much of its significance after 2000 BCE. Sites on the eastern Iranian plateau—Shahr-i Sokhta, Tepe Yahya, Shahdad, Hissar, and Bampur—all appear to have been abandoned by 1800 BCE. The reason(s) for the large-scale abandonment of these sites remains elusive (Dyson, 1973).

There is evidence at some of the sites (Shahdad, Yahya, Hissar) of a material culture readily paralleled in central Asia in the Murghab and Bactrian oases (Hiebert and Lamberg-Karlovsky, 1992). The discovery of burials in eastern Iran at Shahdad, Khinaman, and Khurab and in Pakistan at Sibri containing artifacts of this central Asian culture suggests a movement of populations. There is an irresistible temptation to associate this migration with the movement of Indo-Iranians onto the Iranian plateau (Parpola, 1988). The role, if any, played by this emigration of central Asian peoples into eastern Iran and the coterminous abandonment of settlements remains an intriguing correlation, but not one necessarily causally related. Thus, on the eastern and central Iranian plateau, the second millennium BCE represents a gap that extends from about 1700 to 1200 BCE (the latter date being when settlements were reestablished).

Archaeological sites in northern and northwestern Iran, largely unrelated to the Elamite polities, appear to sustain their settlement regimes. Excavations at Tureng Tepe (Deshayes, 1975) on the Gurgan plain and at Godin Tepe offer a relatively comprehensive picture of the second millennium BCE in these regions of Iran. The long-term abandonment of numerous sites in the first half of the second millennium; an absence of settlement-pattern studies; and the relatively small number of excavations detailing the period offer only the most limited understanding of the political, economic, and social conditions that characterized the Iranian plateau then. The exceptions are the settlement studies and excavations in Khuzistan and Fars and the excavations at Susa, Haft Tepe, and Chogha Zanbil.

The excavation of and texts from Susa indicate that following the demise of the Ur III dynasty Susiana became independent from Mesopotamia and was ruled by a dynasty of Shimaskian kings. After a few centuries, this dynasty was replaced by the Sukkalmah, a dynasty that may have emanated from Fars and that maintained important diplomatic relations with the Babylonian state of Hammurabi. In Fars, Malyan regained its position as a regional center during the Kaftari phase (2200–1700 BCE) and may have been the point of origin of the Sukkalmah dynasty; later, Malyan, referred to in the Elamite texts as Anshan, was, together with Susa, the cocapital of the Elamite kingdom. Two Elamite rock carvings are believed to be dated to the Late Kaftari phase. One of them, 200 m above the Fahlian plain, depicts a divine couple seated between worshippers. A second relief, at Naqsh-i Rustam, illustrates a number of worshipers and a divine couple seated on a serpent throne. [*See* Naqsh-i Rustam.] The location of these shrines suggests that the Elamites positioned their divinities to indicate symbolically the incorporation of specific territories and to protect the main lines of communication between Susiana and Malyan.

Throughout the first half of the second millennium BCE, the regions surrounding Susa and Malyan experienced an unprecedented prosperity. The extensive use of irrigation near Malyan was not to be replicated until the time of the Achaemenids. Few settlements existed in the valleys and plains separating the two sites, but those known from Luristan (Tepe Guran) suggest that they were culturally distinct from and politically unaligned with the Elamite state. Throughout the first half of the period, the rapid population growth in Khuzistan and Fars was enabled by an increase in agricultural production. It was made possible, at least in part, by the adoption of a Mesopotamian administrative bureaucracy that emphasized agricultural production; alliances with tribal federations and distant autonomous polities; a professional military organization; and a civil bureaucracy dependent upon a tax base for its support.

The textual and archaeological record from the end of the Sukkalmah period (c. 1600 BCE) to the rise of the Middle Elamite kings in the thirteenth century BCE—i.e., Tepti-ahar, 1375 BCE) is poorly known. This gap roughly coincides with the time in which the aforementioned sites on the Iranian plateau were abandoned. In Khuzistan and Fars there is no evidence of continuity from the early (Sukkalmah) to the late (Middle Elamite) second millennium BCE. Nevertheless, archaeological remains from the second half of the period have been recovered from the Ville Royal at Susa, Tepe Sharafabad, and Haft Tepe, 15 km (9 mi.) southeast of Susa, where monumental temple architecture dates to the time of King Tepti-ahar. The royal city of Al Untash-Napirisha (modern Chogha Zanbil), 30 km (19 mi.) southeast of Susa, is the most prominent archaeological monument of the Middle Elamite period (Ghirshman, 1966–1968). The major excavated complex at Chogha Zanbil is a ziggurat surrounded by a double wall. [*See* Ziggurat.] The area enclosed within the city walls is in excess of 100 ha (247 acres). The ziggurat incorporates several different building phases, of which the last resulted in a five-story stepped pyramid crowned by a temple dedicated to the Elamite divine couple Inshushinak and Napirisha. At the foot of the ziggurat archaeologists exposed a number of lesser temples and shrines; several were lavishly decorated with glazed tiles, wooden doors embedded with glass beads, and winged griffins and bulls of glazed frit placed over vaulted stairwells leading to the summit. Large, vaulted structures of baked brick were uncovered at Chogha Zanbil, Haft Tepe, and Susa that served as family tombs. Similarities in the complexity of burial pattern at Haft Tepe and Chogha Zanbil suggest that they were centers of a burial cult.

The last half of the second millennium BCE experienced an "elamization" in southwestern Iran, particularly in Khuzistan and Fars and perhaps in Luristan. The Middle Elamite period was not without its continuing hostility with Mes-

opotamia: an Elamite stela records the capture of seven hundred towns including Sippar, Opis, Dur Kurigalzu, Eshnunna, and perhaps even Akkad. [*See* Sippar; Eshnunna; Akkade.] War booty was carried off to Susa—the law code of Hammurabi and the victory stela of Naram-Sin—and displayed in the Temple of Inshushinak, tangible evidence that the spoils of war contributed to the wealth of the Middle Elamite kings. Texts recording military campaigns, building projects, and religious commemorations have been recovered from Susa, Haft Tepe, Chogha Zanbil, and Malyan. Archaeological remains recovered from the first three indicate the high level achieved in the production of crafts, especially metalworking.

Many Middle Elamite settlements in Khuzistan were abandoned in about 1000 BCE. The slow decline in the settlements and populations of Susiana indicate that more was involved in the decline of the Middle Elamite period than the defeat of the Elamite king Huteludush-Inshushinak by the Assyrian king Nebuchadrezzar I in 1110 BCE. Once again, it is quite likely that the fortunes of the Elamites were ironically tied to those of their traditional enemy, Mesopotamia. At the turn of the millennium, in Babylonia and Assyria, written texts speak of severe food shortages precipitated by the raiding of nomadic peoples. Susiana may have experienced comparable raids, for one of the tribes responsible, the Arameans, are known to have settled in Khuzistan from the Karkheh River to the Gulf. [*See* Arameans.] In the first half of the first millennium BCE, the general decline in Susiana was complemented by an overall prosperity in Luristan and Kurdistan. In the northeast, the Medes established varying control over independent kingdoms, while the Assyrians exercised dominance over the Mesopotamian borderlands. [*See* Medes.] By 1000 BCE, numerous independent kingdoms are attested in the texts and documented in the archaeological record: Hasanlu, in the northeast, attempted to maintain its independence in the face of a rising ascendancy of Assyrian, Median, and Urartean power.

In 646 BCE, Ashurbanipal plundered Susa with a ferocity unparalleled in the Assyrian annals. The texts detail the razing of all the temples, the destruction of the sacred groves, the desecration of Elamite gods and royal tombs, the deportation of the population and their livestock, and the sowing of salt on the devastated land. Ashurbanipal's lengthy description of the pillaging of Susa was intended to stun the world and deliver the message of Elam's political and cultural eradication. The devastated Elamites were further pressured by the Babylonians to the west, the Medes to the northeast, and the Persians to the southeast. By the mid-sixth century BCE, much of the former Elamite territory was under Achaemenid rule. Inscriptions of Cyrus the Great (559–530 BCE) indicate that his great grandfather, Teispes, claimed to be "king of Anshan." Although it is not documented, it is more than likely that Cyrus took possession of Susa and Khuzistan before he conquered Babylon. The documentation of the decline, fall, and eventual assimilation of Elamite territories by the Achaemenid Empire remains one of the major research questions pertaining to the second half of the first millennium BCE.

[*See also* Elamites; *and* Mesopotamia, *article on* Ancient Mesopotamia.]

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C. C. LAMBERG-KARLOVSKY

Persia from Alexander to the Rise of Islam

With the defeat of the last Achaemenid king, Darius III (336–331 BCE), and the final victory of Alexander the Great at Gaugamela in 331, the vast empire of the Achaemenids came under Hellenistic rule for the next two hundred years. After Alexander's premature death in 323, his empire became the center of a political struggle between his Macedonian generals as well as witnessing opposition by local dynasts. Although the Achaemenid system of satrapies (provinces) was basically maintained under Alexander, it seems that even before his death Macedonian satraps (provincial governors) had replaced the Iranians and that the so-called policy of integration between Greeks and Iranians had been abandoned. Despite the lack of sources reporting on the feelings of the local population, there are some Akkadian texts that indicate hostility toward Alexander and the years of his rule are described as bad (Grayson, 1975, pp. 30–36; Oelsner, 1986, p. 52). At the same time we have an indication of position through Greek rebellions in Bactria where the local population joined the Greeks in a bid for independence.

Seleucus became satrap of Babylonia in 319, and during the years after Alexander's death and the struggle for power, he enjoyed the support of the population of Babylonia, as recorded in the Chronicle of the Diadochoi. After beating off a challenge from Antigonus that had resulted in a period of war ending in 308, Seleucus became sole ruler of Babylonia. He soon turned his attention to Iranian satrapies, such as Media and Susiana, which he successfully incorporated into his kingdom. By 302 his realm included the inner satrapies, that is, Media, Persis, and Susiana as well as outer satrapies—the area of eastern Iran and further east. The em-

pire of Seleucus stretched from Mesopotamia in the west to Central Asia in the east.

With the expansion of the Hellenistic Empire, colonization followed and, particularly during the reign of Seleucus and his son, Antiochus, a number of Greek colonies were established throughout the Seleucid Empire. In Iran these include Seleucia Eulaeus at Susa and Seleucia Hedyphon elsewhere in the southwest, Rhagae (modern Ray) near Tehran and Hecatompylos, probably the site of Shahr-i Qumis near Damghan in northeastern Iran. In the eastern satapies the most famous of the colonies is Antioch-Margiana, Gjar Kala near modern Merv in Turkmenistan, and at Ai Khanum in northern Afghanistan, the first occupation level dates to the early Seleucid period. In the Persian Gulf, the island of Failaka was also occupied during this time. [*See* Failaka.]

Antiochus, who was already acting as joint ruler at the time of his father's murder, came to the throne without any apparent opposition, but there is some suggestion of a local Iranian revolt against Seleucid rule at this time. This is evidenced by the destruction level of the citadel at Pasargadae in southwestern Iran, which on the basis of numismatic evidence dates to the end of Seleucus's reign. [*See* Pasargadae.] In addition, Persian troops in Persis started a mutiny, which resulted in their massacre by Greek infantry and cavalry, and we also hear of a massacre of three thousand Macedonian settlers by local troops in Persis. By the time of his death in 261, Antiochus had consolidated the empire of his father. Both Seleucus and Antiochus attempted to foster an image of tolerance and caring for local beliefs and traditions, but at the same time they were keen to stress their dynastic mythological link with the Greek god Apollo.

The policy of new foundations and refoundations continued under Antiochus and his successors. These included *poleis* or cities as well as military occupations or *strathmoi*. Nihavand-Laodicea, near Hamadan, was an important Greek city, which was placed strategically on the main route from Media to Babylonia. At nearby Kangavar, the monumental architecture and the pottery indicate some Greek Hellenistic influence. Susa in the southwest became a Greek city with Greek law. The various architectural remains such as a gymnasium and a theater with inscriptions in Greek testify to its stature as a city.

During the corulership of Seleucus and Antiochus, the latter had received the eastern part of the empire with its center in Babylonia, and Seleucus had moved his capital from Seleucia on the Tigris to Antiochea on the Orontes in Syria. The reason behind this shift was the ongoing struggle for power in the west between the Ptolemies and the Seleucids, which resulted in the Syrian Wars of 274–271, 260–253, and 246–225. [*See* Seleucia on the Tigris; Antioch on Orontes; Ptolemies; Seleucids; *and* Alexandrian Empire.]

Parthian Period. Danger in the east from the Parthians did not emerge until the middle of the third century during the reign of Seleucus II. The Third Syrian War diverted attention once again to the west and this may have given Andragoras, the Greek satrap of Parthia, the opportunity to declare independence in 245. Already by this time the Parni, a nomadic group of Iranian-speaking tribes, who, according to ancient sources such as Justin and Strabo, were related to the Scythians, had left their homeland in the Atrek Valley (Strabo 11.9.1; Justin 41.4.5–41.5.6). The Parni pose two questions that so far have no answers. Did they conquer the province of Astauene around the middle of the third century? Was their center of power at modern Turkmenistan, that is, the area to the northeast of the Elburz and Kopet Dagh mountains? Archaeological evidence for the early Parthian Period in northeastern Iran is meager because archaeological sites are largely unknown. Further excavation of possible Parthian sites in Iran could radically change the usual reconstruction of early Parthian history.

After the revolt in Bactria under its satrap Diodotos, Arsaces, the eponymous founder of the Parthian Arsacid dynasty, may have conquered Parthia around 238 and shortly afterwards Hyrcania. This triumph of the Parthians over former Seleucid territories resulted in the campaign of Seleucus II against Arsaces sometime between 231 and 227. The result was a victory for Arsaces partly because of Seleucus's enforced retreat to Asia Minor, where revolts had started. Antiochus III (223–187) successfully supressed revolts in Media and Persia in 220 and began a campaign to the east in 209. Peace was eventually made between the Seleucids and the Parthians, however, and the Parthians probably remained vassals of the Seleucids with a certain degree of political freedom. Antiochus returned from his eastern campaign via Arachosia, Drangiana, and Kermania and marched through Persis into Susiana and Seleucia in 205. It was after this campaign that he adopted the title of great king, but he was soon to become the victim of another growing force. In 190 the Seleucid Empire fell to the Romans, and Antiochus himself was brutally murdered while plundering a temple in Elymais.

Thereafter the rise and expansion of the Parthian empire began. Phraates I (c. 176–171) successfully moved the boundaries to the south of the Elburz Mountains and the southern shores of the Caspian Sea, but a significant breakthrough came only with the accession of his brother, Mithridates I, to the throne in 171. Then a new period began in the history of the Arsacid Parthians. After recapturing areas in the east, Mithridates turned his attention to the west where his most important task was to conquer Media for access to Mesopotamia. This process probably took several years, and a Greek inscription on the Herakles relief from Bisitun in western Iran (see Vanden Berghe, 1984, pl. 10) shows that parts of Media were still under Seleucid control between 149 and 148, thus dating the actual transfer of power after 148. [*See* Bisitun.] The conquest of Mesopotamia was likewise not a swift and straightforward matter, as indicated by contemporary cuneiform tablets (Debevoise, 1969, p. 22, n. 99). After a long struggle against the Seleucid

king Demetrius II, the Parthians finally gained the upper hand. Mithridates was probably crowned in Seleucia on the Tigris in 141, and in the same year his rule was acknowledged as far south as Uruk in southern Mesopotamia.

After these successes the king soon had to turn his attention to the eastern provinces where he successfully dealt with an invasion by the Saka nomads. While Mithridates I was fighting in the east, part of his army left behind in Mesopotamia entered Elymais and captured Susa, which had become independent under the local Elymaian ruler Kamnaskires I. By the time of his death in 138 or 137 Mithridates' empire had reached its maximum extent; he had transformed the insecure Parthian kingdom into an empire that stretched from eastern Bactria to Mesopotamia. However, his successors were faced with invasions on both eastern and western frontiers, and it was only the accession of a second able ruler, Mithridates II (c. 124–87), that saved the empire.

The new ruler first turned his attention to Babylonia, where an Arab called Hyspaosines had formed the state of Characene at the head of the Persian Gulf. After his victory in southern Mesopotamia, he turned his attention to the north where large areas were annexed in 113. At this time we hear of direct interference of the Parthians in the affairs of Armenia and contact and conflict with Rome (Strabo 11.14.15).

Mithridates II restored the empire of the Arsacids to its maximum extent, and his close control over the empire as well as the overland trade routes gave a great boost to trading activities. Parthia by now seems to have been in control of the so-called Silk Road, which passed through its territories, connecting Rome with China. The Parthians were probably beginning to profit from their position as middlemen in this overland trade and the growing demand of Rome for luxury goods from the East.

Mithridates' increase in power is reflected in his changing title on his coins. As a young king wearing a diadem, he called himself "the great king Arsaces, (god) manifest." As an aged king he wore a tall bejeweled tiara and diadem, and the accompanying legend reads "the great king of kings, Arsaces. . . ." According to cuneiform tablets from Babylonia the new title "king of kings" was introduced around 109.

By the end of his reign, however, there were internal problems, which were to become a recurrent feature in Parthian history. Babylonian tablets of 91 BCE mention a rival king, Gotarzes, who had control over Babylonia, and Mithridates' power probably extended over Iran and northern Mesopotamia. Gotarzes may be the same figure who appears on the so-called Mithridates relief at Bisitun as satrap of satraps. After Mithridates' death in 87, a new ruler, Orodes II, succeeded to the throne. During his reign Roman forces under Crassus came face-to-face with the Parthian army in 53, under Surena at Carrhae in Syria. The result was devastating for the Roman army, which was helpless against the Parthian cavalry and its hail of arrows. By now the Euphrates was definitely recognized as the frontier between the two superpowers. After Mark Antony's unsuccessful march into Media in 36, a period of peace set in between Parthia and Rome. This new peaceful relationship must have provided a boost to the trade of luxury goods across the Euphrates from the east to the west.

Internally Parthian history was overshadowed by rivalry, the emergence of contenders to the throne, and the murder of most of the rulers by their sons or wives. Under Artabanus the superpowers again came into conflict over Armenia, and when the Parthian nobility became discontent with the growing power of Artabanus, they turned to Rome for help. After Tiridates, a grandson of Phraates IV was sent by the Romans to Parthia in 35 CE. Artabanus fled to Hyrcania where he gathered forces. He returned to Mesopotamia, expelled Tiridates, and became sole ruler in 36.

Artabanus's son and successor, Vardanes II, was soon opposed by a certain Gotarzes II, who may have been a brother of the former Gotarzes, but their relationship is unclear. The town of Seleucia began a revolt and forced the two contenders to the throne to come to a temporary agreement in 45. Vardanes was murdered in 47 during a hunting expedition. It was probably at about this time that Elymais in southwestern Iran rebelled against Parthian supremacy and the Elymaians began to issue their own coins by 75. Their control over Susa is evidenced by the find of Elymaian coins at the city. After the death of Vardanes, Gotarzes became the sole ruler but was soon opposed by some of the Parthian nobility, who again turned to Rome for help. Gotarzes captured and killed the Roman puppet king Meherdates. The jousting relief at Bisitun near Kermanshah seems to commemorate his victory (Herrmann, 1977, p. 53). Gotarzes himself died in 51.

Vonones, apparently king of Media, now came to the throne but was soon succeeded by his son Vologases I (c. 51–78). Once again there was conflict with Rome over Armenia but in 63 CE peace was made. [*See* Armenia.] In addition, Vologases was soon faced with a revolt by one of his own sons, Vardanes III but soon reestablished power and gained control over the country. The last years of Vologases' reign were troubled by the advance of the nomadic tribe of the Alani from the Black Sea area. Despite internal and external problems Vologases' rule succeeded in securing Parthia's position and consolidating its share of the growing trade between the west and the Persian Gulf. During Vologases' long reign a few contenders to the throne, namely Pacorus and Osroes, issued coins. Osroes may have been in control over Babylonia and Elymais while Vologases was the "king of kings." Such a division of power was to become a characteristic feature of Parthian politics, indicating the weakness of central authority. In 114 Trajan invaded Armenia, northern Mesopotamia, and also further south but his successor Hadrian made peace with Parthia.

During the long reign of Vologases IV (148–191) relations

with Rome were calm only until the death of Antoninus Pius in 161. For some unknown reason, probably because of economic problems, Vologases declared war on Rome after the accession of Marcus Aurelius. By now trade routes were under the control of Palmyrene merchants who were also keeping them under their protection. Thus, Parthia was no longer in charge of the east–west traffic of luxury goods. Having advanced into Parthian territory in Mesopotamia, the Roman army was forced to retreat in 166 only because of an epidemic of smallpox.

The end of the Parthian era is marked by Roman advances into northern and also southern Mesopotamia under Septimius Severus (193–211). Soon after Vologases came to the Parthian throne, he was challenged by his brother Artabanus IV, who was in control of Media and Susa by 216 CE. The so-called Artabanus relief from Susa dated to 215 shows the enthroned Artabanus handing over the ring of power to the satrap of Susa (Colledge, 1967, pl. 29). Elymais at this time was ruled by its local kings. Rock reliefs from sites such as Tang-i Sarvak, Shimbar, and Hung-i Nauruzi, together with the reliefs and sculpture from Masjid-i Suleiman and Bard-i Nishandeh document a certain degree of independence (Colledge, 1967, pls. 17–20; Vanden Berghe and Schippmann, 1985). [*See* Susa.]

When the request of the Roman emperor Caracalla to marry a daughter of Artabanus was rejected, he went to war against the Parthians in 216, and his forces attacked Media. Artabanus fled to the east but returned when Macrinus, the new Roman emperor, offered him peace. A treaty was finally signed in 218. [*See* Parthians; Roman Empire.]

Sasanian Period. Artabanus had successfully withstood the Roman advance but was soon to become the victim of an internal usurper, who finally put an end to Parthian rule. In 224 Artabanus was killed at Hormizdgan by the forces of Ardashir, the son of Papak, the local ruler of Istakhr in Pars and of the house of the legendary Sasan. This victory of the Sasanians was commemorated on the rock relief of Tang-i Ab at Firuzabad in Fars. Ardashir went on to capture Ctesiphon, in 226. Before 230 he had consolidated his position as the new king of kings of a dynasty that was eager to stress its lineage from the Achaemenids kings. Zoroastrianism became the state religion, and coins of Ardashir show a combination of the fire altar and the royal throne that emphasize the unity of the religion and the state.

In the following years Ardashir concentrated on his western enemy, Rome, and the annexation of territories in northern Mesopotamia, in particular Hatra, which had fallen into Roman hands in the late Parthian period. The advance of the Sasanians into Roman occupied territories resulted in a series of clashes, first in 242 with the emperor Gordian III, with Phillip the Arab who made peace in 244, and finally with Valerian. These historic events and campaigns are documented in the inscriptions and reliefs at Kaaba Zardusht, Naqsh-i Rustam, Bishapur, and Darab. After 239 Ardashir appointed his son Shapur as coregent, and he became sole ruler after the death of his father in 241. Other military and political victories of this time include the conquest of Armenia in the northwest and a final defeat of the Kushan Empire in the east.

New Sasanian cities were built. They include Ardashir Khurrah (Gur Ardashir, Firuzabad), Jundeshapur, and Bishapur, all three situated in the region of Fars, the homeland of the Sasanians. In religious matters Shapur showed a certain degree of tolerance, which is best evidenced in his relationship with Mani, the prophet of the Manichaeans, who spent some years at the royal court and enjoyed religious freedom. After the death of Shapur between 270 and 273 and during the reign of Hormizd I and Bahram I, the policy of tolerance was to change as the power of the Zoroastrian priesthood grew, and finally under Kardir, the high priest of Istakhr, Mani was executed in 276. During the reign of Bahram many Manichaeans, Christians, Jews, and Buddhists were killed. Only after the accession of Bahram III in 293 did tolerance toward minority groups became evident again.

Politically the old conflict with Rome continued, especially over Armenia, which was lost to the Romans during the reign of Narseh (293–302), a son of Shapur I, in 297. By now the Tigris had become the official border between the Roman and Sasanian empires. Not until the reign of Shapur II (c. 309–379), a grandson of Shapur I, did the Sasanian empire once again reach its maximum extent. Shapur's main adversary in the early years of his reign was the emperor Constantine, who had converted to Christianity in 312 and later transferred his capital to Byzantium, later called Constantinople. [*See* Byzantine Empire; Constantinople.] The recognition of Christianity as the official religion of Rome resulted in the persecution of Christians. The latter part of Shapur's long reign of seventy years was overshadowed by continuous clashes with Rome under the emperors Constantine II and Julian and war over Armenia, which finally resulted in an official division of Armenia in 377. The Sasanians now had a new enemy in the East, the Hephthalites, whose first attack on Sasanian territory dates to 427 during the reign of Yazdigird I (c. 399–421), known by Islamic historians as "the Sinner" because of his initially tolerant views toward Christians. This situation was to change at the end of his rule when Christians set fire to a Zoroastrian fire temple in Fars, and mass executions of the Christians followed throughout the empire. After his death, Bahram, one of his three sons who had grown up at the court of the king of Hira, succeeded in gaining support from the nobility and was crowned as Bahram V in 421. He was hailed in Persian literature and art as Bahram Gur ("ass"), the skillful hunter. His successor, Yazdigird II (439–457), continued the persecution of Christians in Armenia that had begun earlier. His vizier, Mihr Narseh, tried to impose Zoroastrianism as the state religion.

After Yazdigird's death in 457 there was a lengthy struggle

between different contenders to the throne, which finally ended in Peroz's victory in 459 with the help of the Hephthalites. When a period of drought paralyzed the country a few years later, however, Peroz turned against his Hephthalite allies in 465. He and his son were imprisoned, and only after a heavy payment to the Hephthalites was he released. Once again Peroz went into battle against the eastern enemy, but the campaign proved abortive, and in 484 Peroz lost his life. The Hephthalites advanced into eastern Iran and forced the Sasanian state to pay an annual tax.

An important event during Peroz' reign was the formation of the Nestorian church named after Nestorius, patriarch of Constantinople. In 484 a meeting of Iranian Christians in Jundeshapur marked the official beginning of this denomination. Throughout their long history, the Nestorians were involved in many struggles with other Christians.

Peace with the Hephthalites was made under Valkash (484–488) but internal struggles overshadowed the reign of this king. Finally, in 488, Kavad, a son of Peroz came to the throne. The most significant feature of his reign was the rise of Mazdakite movement under its leaders, Mazdak and a certain Zardusht. It was initially of a religious nature but then developed into a social uprising, attacking the power of the nobility. This revolutionary movement, which enjoyed Kavad's support at first, was temporarily halted in 496 when the nobility and the Zoroastrian clergy joined forces against the king and imprisoned him in Khuzistan. Kavad managed to escape and sought refuge with the Hephthalites. A few years later he returned with a Hephthalite army and removed his brother Zamasp from the throne. During the latter part of his reign, Kavad ended his support for the Mazdakites, and Mazdak was executed around 528. By this time Kavad had appointed his son Khusrau I Anushirvan "of the immortal soul" (r. 531–579) as his successor. Khusrau introduced a series of reforms, particularly in connection with the army, the nobility, and taxation, which were probably inspired by the Mazdakite movement. A new social level was created, the class of the *dihqan* or land-owning nobility which stood up against the powerful feudal lords or vassals.

In 532 Khusrau made "eternal" peace with Byzantium, but it lasted only for a short while, and war broke out once again. A so-called fifty-year peace began in 556, enabling Khusrau to turn his attention to the Hephthalites in the east. He now had the support of powerful allies, the Turks, and together they defeated the Hephthalites. The result was that the Turks became the eastern neighbors of the Sasanian Empire. Soon a coalition of Byzantium and Turks excluded the Sasanians from the trade of silk, however, and this move led to yet another confrontation between Iran and Byzantium in 572. Before peace could be declared Khusrau died in 579. The Byzantine Empire now proved crucial in the succession to the throne. When Bahram Chubin, a Parthian general of the house of Mihran, who had successfully pushed back an advance of the Turks under Khusrau's father, Hormizd IV (579–590) crowned himself as Bahram VI at Ctesiphon, Khusrau fled to Byzantium where he was given support. With a large Byzantine army Khusrau started his campaign against Bahram Chubin in 591, who fled to the east where he was murdered. During the second part of Khusrau's reign many of the old nobility and generals who had sided with Bahram were removed. His support for the Christian church is shown by his marriage to Mariam, a Byzantine princess, and his legendary love for Shirin, an Armenian princess. This situation created enemies amongst the Zoroastrian clergy. In addition, mistakes in Khusrau's foreign policy and particularly his wars with the Lachmid kingdom and the execution of their king, Numan, proved to be costly in the long run. Also, Khusrau turned against Byzantium in 603 after the murder of his ally, the pro-Sasanian emperor Mauritius. Initially the Sasanians enjoyed victories and recovered important cities in Syria and Mesopotamia. Another part of the Sasanian army reconquered Armenia. The new Byzantine emperor was no longer able to withstand the advance of the Sasanian army, which reached Jerusalem in 614, supposedly taking the Holy Cross with them to Ctesiphon. In 615 the Persian army reached the Bosporus, opposite Constantinople, and in 619 they conquered Egypt, where they went up the Nile to Nubia. The Sasanian empire had reached its maximum extent, only to fall to the forces of Heraclius in 627; in 628 the Byzantine army entered Ctesiphon, the capital of the Sasanian empire. But the final blow came from an Arab army under the banner of Islam in 637 at Qadisiya near Ctesiphon. A further defeat followed at Nihavand in 642 and Yazdigird III (632–651), the last Sasanian king, was forced to flee to Merv, where he was murdered. [*See* Ctesiphon; Sasanians.]

The splendor of the art of the late Sasanian period is best seen in the rock reliefs of Khusrau II at Taq-i Bustan near Kermanshah. Here, the king appears in an investiture scene flanked by Anahita and Ahura Mazda, and another relief shows him as a knight in armor riding a horse. The reliefs on the sides of the iwan depict scenes of the royal hunt with the king standing in a boat and surrounded by boars and elephants (Herrmann, 1977, pp. 132–135; Vanden Berghe, 1984, pls. 37–39).

Among the sites of the late Sasanian period, Takht-i Suleiman in Iranian Azerbaijan, is especially important. Built around a lake, the site was one of the most important religious centers of the time. It is assumed that the Gushnasp fire, the fire of the warriors, burned eternally.

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Persia in the Islamic Period

The Islamic period in Persia (Iran) was inaugurated politically and historically by the crucial defeat of the Sasanian dynasty in the battle of Nehavend in 642 CE. The transitional period, in which it is difficult to distinguish between the pre-Islamic and Islamic periods, lasted for some time and is unevenly discernible in different parts of Iran, as well as in the various spheres of cultural and artistic activity. Throughout the Middle Ages and even beyond, the Persian-Iranian world comprised vast territories outside the frontiers of modern Iran, such as Afghanistan in the east and Bukhara and Samarkand in the northeast. The heterogeneous nature of the population, then, with its tribal affiliations and local political developments, contributed to the creation of a number of centers of cultural importance. The centers essentially revolved around princely courts that were more or less autonomous and often in competition with one another. This was the case for major capitals—Merv, Bukhara, Nishapur, Rayy/Tehran and Samarkand—each of which became the focus of important intellectual developments while retaining distinct artistic characteristics in pottery, architecture, and literature. [*See* Nishapur.]

In the Late Middle Ages, other centers—Herat, Tabriz (painting), Kashan (ceramics), Kazvin, and Shiraz—rose to fame, culminating, in the seventeenth century, in the extraordinary role played by Isfahan as the cradle and capital of the Safavid dynasty, with its remarkable urbanization project that included a distinctive system of irrigation based on connected underground channels, or *qanats* (Goblot, 1979). [*See* Irrigation; Isfahan.] Throughout this period Iran, despite its adoption of Islam and the Arabic script, retained the Persian language. [*See* Persian.] The country maintained a distinct identity from the Muslim world while remaining part of it.

One of the oldest mosques in Iran has been excavated by Roman Ghirshman (1948, pp. 77–79) at Susa. [*See* Susa.] Its plan appears to reflect the impact of the Mesopotamian mosque type, which can be traced to the Early ʿAbbasid mosque in Isfahan (Galdieri, 1984). The first mosque with a pointed arch occurs, apparently, at Damghan in about 760. By the twelfth century, the plan most typical of Iranian mosques, that of the four iwans, is found at Isfahan. [*See* Mosque.]

Iran's architecture is essentially in brick. Its use entailed a number of distinctive techniques that became integral features of Iranian architecture, particularly in the Islamic period. One of these techniques was the use of stucco decoration. At an early stage, stucco decoration appears in various parts of the Nayin mosque; this form of embellishment continued in use throughout the Middle Ages, as can be seen in the classic example of Gunbad-i Alavian near Hamadan/Ecbatana. [*See* Ecbatana.] Moreover, the medium of brick stimulated the imagination of artists and craftsmen, who created, with much virtuosity, the most extraordinary works of art, such as the incomparable tomb of Ismaʿil the Samanid in Bukhara (c. 907). More than a dozen patterns were created in the tomb's unadorned brick. The tower-tomb at Gunbad-i Qabus in the Gurgan area (c. 1006) displays the opposite concept: apart from a few cartouches with inscriptions, the monument is devoid of decoration. It relies for its effect on its very striking plan and the perfect execution of its severe brickwork. The next step was the integration of glazed tiles into brick structures; eventually, in the Safavid period, the color scheme of the tiles came to dominate the architecture. [*See* Tile.]

Iran has undergone excavations that concentrated primarily on the glory of ancient Iran: at Susa, for example, initiated by the French as early as the nineteenth century, along with those at Persepolis and, more recently, Pasargadae, an exception was the Metropolitan Museum of Art's excavations at Nishapur. It was only after the World War II that Iran's Islamic period began to attract interest. [*See* Persepolis; Pasargadae.] Meanwhile, many clandestine digs have been carried out (e.g., at Gurgan and Rayy, to mention only the most flagrant instances), destroying archaeological contexts and dispersing items on the international antiquities market. [*See* Ethics and Archaeology.] Pottery, metalwork, textiles, and jewelry have found their way into collections, though they lack adequate data as to their provenance.

Islamic archaeology in Iran has concentrated on a relatively limited number of sites. In the northeast, the above-mentioned excavations of Nishapur took place as early as the 1930s. Istakhr, in the center of the country, has yielded important finds of coins, pottery, and other artifacts that are being studied by the Oriental Institute of the University of Chicago. In the south, the port of Siraf was excavated for a number of seasons beginning in 1966 (Whitehouse, 1968, pp. 1–22, and subsequent reports), contributing much to what is understood about the continuity of Sasanian traditions into Islamic Iran and their ultimate integration.

Finally, Susa in the southwest, one of the richest sites in ancient Iran, also yielded a considerable amount of important information for the Islamic period (Boucharlat and Labrousse, 1979, pp. 155–237; Rosen-Ayalon, 1974).

One salient feature clearly emerges: an imaginary diagonal line can be drawn between the very different cultural spheres of the northeast and the southwest. For the ceramics found at Susa, the cultural affiliations are with the area to its west, Mesopotamia, with close connections to Samarra in Iraq; the pottery of Nishapur, however, lacks some of the typical blue-and-white and lusterwares and displays a range of rather different types, such as brown and black-on-white wares. [*See* Samarra, *article on* Islamic Period.]

Unlike the pottery, the spectacular metalwork for which Iran is known has, as yet, no archaeological documentation. Most of the metal artifacts found at Nishapur are rather modest, so that analysis of the stratigraphic contexts of pieces found in the excavations cannot provide answers to the many unsolved questions surrounding metalware.

Some of the most original products of Islamic pottery were devised and manufactured in Iran. The Minai family of ceramics, with its polychrome overglaze painting (thirteenth–fourteenth centuries), is probably the most famous, while the lusterwares in the distinct styles of Rayy and Kashan comprise another category. Iranian potters attempted to compete with Chinese porcelain ware; frit wares were invented under the Seljuks (twelfth–thirteenth centuries), and Chinese wares were imitated under the Safavids (seventeenth century).

[*See also* Ceramics, *article on* Ceramics of the Islamic Period; *and* Sasanians.]

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PERSIAN. The dominant Iranian language, Persian in its oldest documented form was the language of the Achaemenids (559–330 BCE). In its middle form, Persian was the official language of the Sasanian empire (227–651 CE). It emerged in its new form after islamization in the middle of the seventh century CE. The Medes, who preceded the Achaemenids, spoke a language closely related to Old Persian. The Parthians (247 BCE–227 CE), who reasserted Iranian rule after the interregnum of Alexander and the Seleucids, spoke a language closely related to Middle Persian.

These Iranian-speaking empires, centered in Iran, at one time or another extended over two vast areas: (1) much of the Near East and (2) southern Eurasia and the northern Indian subcontinent. As such, they played a major role in the political, cultural, and religious history of two major regions of the world.

Geographically, Parsa and the western Iranian plateau as the bridgehead of the ancient Iranian empires represent the area of the southernmost extension of Iranian speakers, whose historical areas were the vast expanses of southern Eurasia from the western shores of the Black Sea to China.

The English term *Persian* derives from the Greek *Persis* and Old Persian *Parsa,* and originally referred to the southwest region of the Iranian plateau, where the Achaemenids first established their empire. They referred to themselves as "Parsa" or as rulers "in Parsa." The arabicized form of the term is *Fars,* from which derives the Arabo-Persian designation *Farsi* for the language. Although the term *Persian* in its origin referred to a specific region and its local dialect, the term *Iranian* refers to the totality of the members of the large family of related languages called *Iranian.*

The Iranian tongues are a branch of the Indo-Iranian or Aryan family of Indo-European languages together with the Indo-Aryan and Nuristani languages. The latter are found in minute remnants in the mountainous Pakistan-Afghanistan border areas, and recognized as distinct only in this century (Morgenstierne, 1973).

The term *arya,* whose suggested meanings includes "noble," was a self-designation in the Old Persian inscriptions, in the Avesta and Zoroastrian books, as well as in the Old Indic *Vedas* (Schmitt, 1986; 1989, pp. 1–3). It came to refer specifically to the western Aryans, that is, the "Iranians."

Persia and Iran. The name of the country Iran derives from Old Iranian *aryanam khshathram* "realm of the Aryas" (Schmitt, 1989, pp. 1–3), later *eran shahr,* Modern Persian *Iranshahr,* ultimately reduced to *Iran.* The confusion between the terms *Persia* and *Iran* stems from the political decision of the founder of the Pahlavi dynasty early in the twentieth century to identify his country ethnically and all inclusively as Aryan.

It appears that the areas where Indo-Iranian originally began to develop were the middle Volga River and Kazakhstan. From there the ancestors of the later Indo-Aryan branch first moved south into Central Asia, and further south into eastern Iran, Afghanistan, and northwest India in the early second millennium BCE. These were followed by moves of the ancestors of the later Iranian speakers across southern Eurasia to the west, east, and south, probably beginning around the middle of the second millennium. In the eastern regions, there appears to have occurred a long process of symbiosis and interchange with Indo-Aryan, by

which the latter became increasingly absorbed and ultimately confined to the southeastern areas of this expanse and the northwestern areas of the Indian subcontinent. In the western regions, between the Caspian and the western shores of the Black Sea, there appear to have occurred similar processes with other Indo-European branches.

This tentative reconstruction is essentially based on the later linguistic evidence. The correlation of linguistic and ethnic dynamics and archaeological evidence is complex by necessity. The most prominent Indo-Iranian archaeological cultures during the second millennium are Andronovo, Namazga, and Tazabagyab in the delta of the Amu Darya River on the southeastern Aral Sea.

Forays to the south as well appear to have happened frequently but without lasting results. Best known are the linguistic Indo-Aryan-type traces in texts of the Mitanni period of the fifteenth century. Similarly, there may have been Indo-European or pre-Indo-Iranian influences on the Kassites in the central Zagros in western Iran. [*See* Kassites.]

The Iranians in Eurasia included such better-known peoples as the Scythians, known in the classical periods as the most numerous barbarians beside the Celts. The Scythians' forays found them in Poland and Siberia; their cousins, the Saka, reigned in eastern Eurasia, Afghanistan, and northern India. Other prominent Eurasian Iranians were the Sarmatians and Alans (from *arya-) in the areas between the Black and Caspian Seas, who at one time entered the Hungarian plains; and the widely urbanized Sogdians who resided between the Aral Sea and Chinese Turkistan, a vital link in east-west commerce. It is possible that the Cimmerians, who were driven by the Scythians from the eastern Pontic areas across the Caucasus in the eighth century BCE had a strong Iranian component.

As to the plateau of Iran proper, the Medes, probably from across the Caucasus were the first Iranians to extend their rule in northwestern Iran. Simultaneously, groups of Persians appear to have made forays from the northeast of the plateau and moved further to the west and finally south. Both were first mentioned as Mada and Parsua in inscriptions of Salmaneser III (858–854). [*See* Medes.]

Overall, it appears that the East, including Sistan, Central Asia, and Afghanistan, remained a major linguistic and cultural Iranian center during the first millennium. In fact, it retained its status throughout the first millennium CE and beyond, until its devastation by the Mongols during the first half of the thirteenth century (Geiger and Kuhn, 1895–1904, vol. 2; Grantovskij, 1970; Burrow, 1973; Ghirshman, 1977; Parpola, 1988; Renfrew, 1987, pp. 178–210; Mallory, 1989, pp. 227–31; Anthony, 1991; Boyce, 1992, with implications for Zoroastrianism).

Dialectology and Periodization. The documented Iranian languages are divided into three diachronic (chronological) stages—Old Iranian, Middle Iranian, and Modern Iranian—roughly following major political changes. The Iranian languages are divided into two major dialects: (1) South Iranian, which comprises the languages of the Iranian plateau and (2) North Iranian, which covers the remainder of the Iranian languages. (The traditional terminological distinction, still often followed, is West vs. East Iranian.) In turn, South Iranian is divided into two subdialects: (1) Southwest Iranian, which comprises Persian and related dialects, and (2) Northwest Iranian, sometimes called *Median*, which includes the remainder of South Iranian. (For general overviews, see Geiger and Kuhn, 1895–1904; Schmitt, 1989, pp. 1–3; and for early history, see Mayrhofer, 1989; Schmitt, 1989, pp. 25–31; Schmitt, 1994).

Old Iranian languages. Only two languages, Old Persian and Avestan, are well documented. Old Persian was the court language of the Achaemenids. It is attested by a rather limited corpus of inscriptions and is probably based on the local dialect of the province Parsa (Kent, 1953; Brandenstein and Mayrhofer, 1964; Schmitt 1989, pp. 56–85).

Avestan (probably a calque on Greek *episteme* "received knowledge"), the sacred language of the Zoroastrian texts, was originally spoken in northeastern Iran and Central Asia. It is documented by a much more extensive corpus, ranging from the Gathas of Zarathushtra (possibly dating from before 1000 BCE) to the so-called Younger Avestan texts, some of which in origin may have predated Zarathushtra, and later compositions. The oldest preserved manuscripts date from the thirteenth century BCE (Jackson, 1892; Reichelt, 1909; Beekes, 1988; Kellens, 1989).

These two languages are also known from references in other languages (Hinz, 1975; Schmitt, 1989, pp. 86–94). A number of other Old Iranian languages are attested only by a small number of words, names, and phrases scattered throughout the writings of additional languages such as Old Scythian in southern Russia, Old Parthian in eastern Iran, and Old Sogdian in Central Asia.

Old Persian and Avestan are southwestern and northern dialects respectively. Within Avestan both diachronic and dialectical differences are apparent. Old Persian has several dialectical features, including "Medisms" and incipient Middle Persian features in later inscriptions.

Middle Iranian languages. The beginning of the Middle Iranian stage can be dated to the third century BCE, based on the evidence found in later Achaemenid inscriptions (Schmitt, 1989, pp. 95–105; Sundermann, 1989, pp. 106–113). Although Middle Persian was replaced by New Persian beginning about the seventh century CE, some other Middle Iranian languages are documented in the thirteenth century. The Middle Iranian languages described in the following paragraphs are documented by texts.

Middle Persian was the official language of the Sasanians. It is best attested in the writings of their state religion, Zoroastrianism, most of which date from the ninth century CE but represent an earlier stage of the language. Middle Persian was also used by Christians, and it was one of the

church languages of the Manichaeans in eastern Iran and Central Asia. Mani (d. 277) himself, though an Aramaic speaker, composed a book in Middle Persian for Shapur I. It was used until the eleventh century, as evidenced, e.g., by the signature of witnesses on a copper-plate grant to a Syrian Church in southern India (probably ninth century) and by coins and inscriptions of several local Iranian dynasties (Nyberg, 1964; 1974; Heston, 1976; Brunner, 1977; MacKenzie 1971; Sundermann, 1989, pp. 138–164).

A dialect of the Northwestern subgroup, Parthian was the official language of the Parthians or Arsacids and was spoken in northeastern and partially also northwestern Iran. There are also extensive Manichaean texts in Parthian, which provide evidence for the continuation of this language in Central Asia until the tenth century (Ghilain, 1939; Heston, 1976; Brunner, 1977; Sundermann, 1989, pp. 114–137).

Several languages comprise the northern dialects (Sims-Williams, 1989, pp. 165–172). Sogdian, spoken from Central Asia to the borders of China, is likewise found in many Manichaean texts (Gershevitch, 1954; Sims-Williams, 1989, pp. 173–192). Khwarezmian was spoken in the area south of the Aral Sea and is attested mainly by glosses to Arabic texts (Humbach, 1989). Saka appears in many Buddhist texts found in Chinese Turkestan (Emmerick, 1968, 1989). Bactrian in northern Afghanistan is evidenced by several inscriptions and texts mainly from the first to the third century CE (Humbach and Grahmann, 1966; Humbach, 1989). Scytho-Sarmatian and Alanian were used in the northern Pontic (Bielmeier, 1989; Sims-Williams, 1989, pp. 230–235).

Middle Persian is a successor, albeit with more typical "southwestern" features, of Old Persian. Parthian does not have a known direct ancestor but shows certain northern features attributable to the origin of the dynasty from among the Parni between the Caspian and Aral Seas. No direct successor of Avestan is attested. (On the multiethnic and linguistic variety of Middle Persian with a focus on the Achaemenid Empire, see Rossi, 1981; Delauney, 1985; Schmitt, 1978, 1989, pp. 56–85.)

Modern Iranian languages. Modern Iranian emerged during the eighth century CE. First attested is Modern Persian (three Judeo-Persian inscriptions in Hebraic script, dated 752/3, found in central Afghanistan; and a letter fragment found near Khotan in Xinjiang, China, also dating to the eighth century).

The modern Iranian dialects are spoken in an area that roughly reflects the extent of earlier Iranian rule, stretching from Central Asia and Pakistan through Afghanistan and Iran to Iraq and Turkey, and into the Caucasus. The modern southern Iranian languages include southwestern Persian (in Iran, Afghanistan, and Tajikistan); northwestern Baluchi (in eastern Iran, western Afghanistan, and southwestern Pakistan) and Kurdish (in northwestern Iran, northern Iraq, and eastern Turkey); and numerous remnants of Median and Parthian dialects in central and northwestern Iran, and also in northern Iraq, and eastern Turkey.

The modern northeastern languages include Pashto, which is widely spoken in Afghanistan and Pakistan; Yaghnobi in southern Tajikistan, which is the sole remnant of Sogdian; and a great variety of dialects in northeastern and central Afghanistan and Pakistan. Finally, Ossetic is isolated in the central Caucasus, and the last remnant of the Scytho-Sarmatian dialects that in antiquity were spoken over vast areas of South Russia (see respective chapters in Schmitt, 1989).

Writing Systems. Most Iranian scripts are varieties of and developments from Aramaic, which was the administrative language of the Achaemenid Empire. Subsequently Iranian languages—first Parthian, then Middle Persian—were written in variants of Aramaic. Middle Persian is most familiar from the Zoroastrian books in the script Book-Pahlavi in which the original twenty-two letters had coalesced to some fourteen distinct shapes in cursive and partially connected ligatures. The Avestan script, which was highly differentiated to allow the smallest record of the standard pronunciation of the sacred texts, was developed out of Book-Pahlavi (Morgenstierne, 1942; Windfuhr, 1972).

Scripts not derived from Aramaic are the thirty-six signs of Old Persian cuneiform, which were invented for the inscriptions of Darius I (Diakonoff, 1979; Windfuhr, 1970; LeCoq, 1974); the Greek alphabet of Bactrian; and the central Asian Brahmi variant used for the Saka documents.

[*See also* Parthians; Persia; Persians; *and* Sasanians.]

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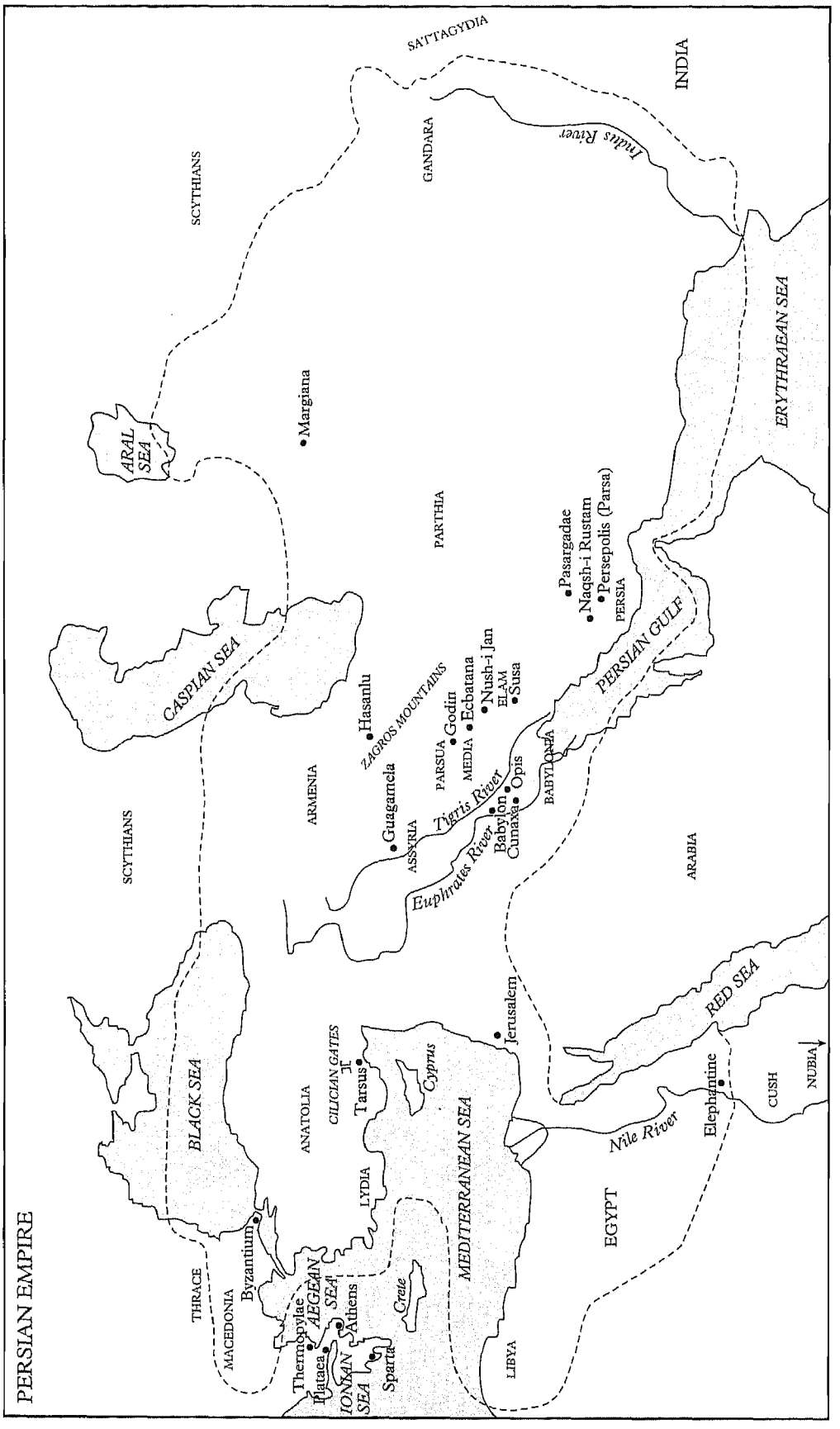
PERSIANS. The Persians were one of several Iranian-language groups who migrated onto the Iranian plateau from lands east of the Caspian Sea, perhaps as early as the mid-second millennium BCE. These Old Iranians are divided into three sublanguage groups: Old Northeast Iranian (known from Gathic Avestan); Old Northwest Iranian, or Median (known from Persian personal names and loanwords); and Old Southwest Iranian (known from Old Persian cuneiform inscriptions, the ancestor of modern Persian). [*See* Persian.]

By the mid-ninth century BCE, Mesopotamian records attest the presence of both the Medes and the Persians in the central western Zagros Mountain region. After these sources fall silent (c. 640 BCE), the Persians appear in the southwestern Zagros, in the land of Parsa, modern Fars. The possible relationship between ninth-century BCE Parsua/Parsumash and sixth-century BCE Parsa is a matter of debate. There is no consensus on whether the Persians migrated from north to south; whether two Persias existed at the same time; or which Persia Herodotus described as a Median vassal (1.102). [*See* Medes.] The best explanation may be that there were indeed two groups of Persians, one in the central-western and one in the southwestern Zagros. The former may have been tributary to, and eventually absorbed by, the Medes. The latter, under Cyrus II, may have either rebelled against the Medes, or may, as an independent Iranian group, have attacked them.

Efforts to trace these migrations in the archaeological record have met with little success. One hypothesis, that the radical shift from painted to plain gray-black and buff ceramics at the end of the Bronze Age in central and northwestern Iran represents the arrival of Iranians in about 1450 BCE, is not widely accepted (Young, 1967). Others have suggested that the appearance of the distinctive plain buff pottery of the Iron Age III period in central-western Iran in the ninth century BCE marks the appearance of Iranians in the Zagros. This hypothesis has also gained little support. More widely accepted is the proposition that the rapid spread of Iron III pottery throughout the Zagros in the seventh century BCE may be archaeological evidence of the rise of the unified and powerful Median kingdom that is documented textually (Young, 1988).

In Parsa, the Achaemenid Persian homeland, there is almost no archaeological evidence for the centuries immediately preceding the rise of the Persians to imperial power. This may indicate that these early Persian tribes were tent-dwelling pastoralists.


PERSIAN EMPIRE
SATTAGYDIA
INDIA
SCYTHIANS
GANDARA
Indus River
ARAL SEA
Margiana
ERYTHRAEAN SEA
CASPIAN SEA
PARTHIA
Pasargadae
Naqsh-i Rustam
Persepolis (Parsa)
PERSIA
PERSIAN GULF
Hasanlu
ZAGROS MOUNTAINS
Godin
Ecbatana
Nush-i Jan
ELAM
Susa
PARSUA
MEDIA
ARMENIA
Guagamela
ASSYRIA
Tigris River
Opis
Babylon
Cunaxa
BABYLONIA
Euphrates River
ARABIA
SCYTHIANS
Jerusalem
RED SEA
BLACK SEA
CILICIAN GATES
Tarsus
Cyprus
ANATOLIA
Nile River
Elephantine
CUSH
NUBIA
LYDIA
MEDITERRANEAN SEA
EGYPT
THRACE
MACEDONIA
Byzantium
Thermopylae
Plataea
AEGEAN SEA
Athens
IONIAN SEA
Sparta
Crete
LIBYA

Rise to Imperial Power. Cyrus II (559–530 BCE) was the first great king of the Persian royal house, the Achaemenids. His initial task was to unite the Persian tribes. He then successfully attacked the Median king Astyages (550 BCE). Among Iranians this event may have been seen as nothing more than an internal dynastic power struggle, for the Medes became so closely allied with the Persians that the Greeks often had difficulty distinguishing between them.

In 547 BCE Cyrus defended himself against Lydian attack, and after an inconclusive battle, successfully besieged the Lydian capital, Sardis. [*See* Sardis.] Shortly thereafter, all of Asia Minor came under Persian rule (Herodotus, 1.74–84). In October 539 BCE, Cyrus invaded Babylonia, where he fought only one battle, at Opis; the Persians then marched unopposed into Babylon. Cyrus performed the religious rituals required of a Babylonian king and returned confiscated deities to their native Mesopotamian cities. That same year, his decree (*Ez.* 1–4) permitting the Jews to rebuild the Temple in Jerusalem established the Persian custom of ruling with religious and cultural tolerance.

Cyrus died in 530 BCE, fighting the Scythian Massagetae on the northeastern frontier of the empire. His conquests included all of eastern Iran, Afghanistan, much of central Asia, Anatolia, and all of the Babylonian Empire. Of the four kingdoms that held the balance of power in the Near East at the time of Cyrus's succession, only Egypt remained independent.

Cambyses II (530–522 BCE), Cyrus's son, conquered Egypt in 525 BCE in a well-planned campaign. He remained there for three years, extending Persian conquest south into Nubia and west into North Africa. He ruled in Egypt as a legitimate pharaoh, but, probably because of a reorganization of the Egyptian religious establishment, gained a poor historical reputation. While he was in Egypt, rebellion broke out in Persia. He turned homeward in 522 BCE but died en route. It fell to Darius I to suppress the rebellion and to restore the Achaemenid family to power.

Darius I (521–486 BCE) dealt first with the rebellion of Gaumata (Bardiya/Smerdis). The story of the rebellion in Herodotus (3.67–88) and in Darius's Bisitun inscription is that Cambyses killed his brother Bardiya before leaving for Egypt. [*See* Bisitun.] Then Gaumata (Greek Smerdis), a Magian (Median) priest, claiming he was Bardiya, rebelled. Darius and six other nobles were the only Persians willing to challenge the false Bardiya. They killed him and the kingship was given to Darius. He then restored the sanctuaries Gaumata had destroyed, returned confiscated private property, and "reestablished the people on its foundation, both Persia, Media, and the other provinces" (Bisitun inscription, I. 71–72). Clearly, this was more than a palace coup. The empire had been shaken to its foundations by issues involving Mede versus Persian, "haves" versus "have nots," upper versus lower social orders, and different religions.

These confusions provided the climate for widespread rebellion in the first year of Darius's kingship. Elam and Babylon rebelled first but were quickly retaken. In the meantime, Armenia, Persia, Media, Assyria, Parthia, Margiana, Sattagydia, and Scythia rebelled. Subordinate generals were sent to deal with distant trouble spots; the king himself concentrated on the most dangerous core rebellion, in Media and neighboring regions. Once those provinces were under control, troops were available to crush rebellion elsewhere. Darius won because he retained control of the professional army, used his central position to prevent rebel coordination, and was a first-class general.

After an administrative reorganization of the empire, Darius turned to further expansion. Sometime between 520 and 513 BCE, India (the Punjab) was conquered. By 517 BCE Persia controlled the Ionian islands, and in 513 BCE Darius campaigned, with some success, against the Black Sea Scythians and conquered European Thrace and most of the northern Aegean. [*See* Scythians.]

In 499 BCE peace in the west was disturbed by the Ionian Revolt. Fierce fighting restored the power of Persia throughout western Asia Minor and northern Greece by 494 BCE. In response to Athenian support for the Ionians, Darius decided to invade mainland Greece, which the Persians did in 490 BCE, only to lose the battle at Marathon. The Persians retired to Asia. Darius was determined to return, but he died before he could do so, in 486 BCE.

Xerxes (486–465 BCE), Darius's son, assumed the task of conquering Greece. First, however, he had to put down rebellions in both Babylon and Egypt. The invasion of Greece began in 480 BCE, with initial success for the Persians: they outmaneuvered the Spartans at Thermopilae, conquered Attica, and burned the Acropolis in Athens. Their navy, however, was defeated in the confined waters of the Bay of Salamis. Xerxes returned to Persia, leaving general Mardonius in command. In spring 479 BCE, Persians and Greeks fought a close battle at Plataea. Only when Mardonius himself was killed did the Persians collapse and flee both the field and Greece. In the decade that followed, Persian power in western Asia Minor and the Aegean was at its nadir. Xerxes was effectively not heard of again until he was assassinated in 465 BCE.

Late Empire. The Persian Empire survived for 134 years after the death of Xerxes, but its days of expansion were over. Persia continually intervened, to her advantage, with diplomacy and bribery in the internecine wars in Greece. The Peace of Callis was signed with Athens in 448 BCE by Artaxerxes I (464–425 BCE), which left Asia Minor to Persia and the Aegean to the Greeks. The agreement broke down, however, and in 400 BCE Persia and Sparta were at war. Persia supported Sparta's enemies with gold, and eventually Artaxerxes II (405–359 BCE) was invited by the Greeks to mediate their disputes. The result was the so-called King's Peace of 387–386 BCE, with which the Persian Empire firmly reestablished its hold on Asia Minor.

Artaxerxes II had to deal with two major challenges from within. His brother, Cyrus the Younger, rebelled but was defeated at the battle of Cunaxa in 401 BCE. Then, in 373 BCE, the Revolt of the Satraps ("protectors of the Kingdom/Kingship") began. Several satraps, mainly from Asia Minor, combined in rebellion. The rebels, however, fell out among themselves and Artaxerxes triumphed.

Egypt had successfully rebelled in 405 BCE and was not brought back into the empire until 343 BCE under Artaxerxes III (359–338 BCE). The real threat to the Persian Empire by this time, however, was not from rebellion but from the growing power of Macedonia. By the time Darius III (336–331 BCE) was on the throne, Alexander the Great was ready to invade Asia. Alexander won his first battle at the Granicus River in 334 BCE. Victory also went to the invaders at a second battle shortly thereafter, near the Cilician Gates. Alexander spent the next two years consolidating his hold on the Levant and Egypt. The final Persian defeat took place on 1 October 331 BCE, at Gaugamela, near modern Erbil. Alexander captured Persepolis in April 330 BCE, and the fleeing Darius was murdered that summer. [*See* Alexandrian Empire.]

Government and Society. The royal court was the center of imperial government. At its center was the king, so that the capital was wherever the king was. Fixed capitals were Susa, Persepolis, Ecbatana/Hamadan, and sometimes Babylon. [*See* Susa; Persepolis; Ecbatana; Babylon.] King, court, and government were supported by a large scribal bureaucracy concentrated in the treasuries of the empire, for which the best evidence comes from Persepolis. The treasuries were repositories from which stores of imperial wealth in kind were administered. The Persepolis texts tell of provisions issued to work parties, craftsmen, travelers, treasury officials, priests, members of the royal household, and the king himself. These texts make clear that the central government was highly organized and accountable to a hierarchy of officialdom, ending with the king.

Into the reign of Xerxes, the language of the treasury at Persepolis was Elamite. The end of the Elamite record suggests that the language of the treasury became Aramaic, the lingua franca of the empire, which was written not on clay tablets but on perishable materials. [*See* Aramaic.] The language of the royal inscriptions was alphabetic Old Persian, probably invented under Darius I in order to write the Bisitun inscription (see above).

Provincial organization. The empire was organized into provinces (satrapies), each ruled by a satrap. This system existed under Cyrus II but was restructured by Darius I. Satraps were appointed by the king, often from among his relatives. Except for certain royal fortresses, the satrap was both the military and civil commander of his province. Representatives of the king, however—the "king's eyes" or "king's ears"—traveled in the provinces and reported directly to him. Control of the empire was also facilitated by an extensive system of "royal roads," the most famous of which ran from Susa to Sardis.

Military forces. The military was divided into the army and navy. At the core of the standing army were the ten thousand Immortals, a thousand of whom formed the king's elite bodyguard. There were also ten thousand cavalry in the standing army. Troops of the standing army—exclusively Persians, Medes, Elamites, and perhaps Scythians—were often permanently stationed in the satrapies. Provincial forces were supported by native troops and long-term mercenaries, such as the Jewish soldiers stationed at Elephantine on the southern Egyptian frontier. In time of full-scale war, the army was augmented by a levy called up from almost all of the empire's subject peoples. The standing forces in the navy were supplied by Phoenicians, Egyptians, and perhaps Cypriots. Ionian Greeks often participated. All marines were Persians, Medes, or Scythians.

Law and the economy. Little is known of ancient Persian law. Following the model set by Cyrus II, the Achaemenids generally governed with tolerance of, and respect for, the customs, traditions, and laws of its conquered peoples. The best evidence comes from Babylonia, where, in the main, legal affairs were conducted according to long-standing Babylonian law and custom. There is, however, evidence of what might be a "king's" law administered in a "king's" court, though the available texts suggest that even there the Persians were introducing new economic and administrative arrangements rather than rewriting law.

The wealth of the empire was founded on agriculture, but manufacturing and commerce played important roles in the economy. The government taxed with vigor. State and royal properties were rented, funds were collected in lieu of obligations, tribute was paid by peoples outside the provincial structure, customs charges were collected, and selected sales taxes were levied. Most taxes were paid in kind. Some of this wealth, however, went back into the economy. Seed grain and seedlings (probably fruit trees) were issued to private estates by the treasuries. Archaeological evidence demonstrates that state investment in irrigation systems greatly increased productivity in Mesopotamia. [*See* Irrigation.] Manufacturing, at least in cottage industries, was encouraged by payments from the treasuries, and exploratory sea voyages were undertaken at government expense to discover trade routes. Darius dug a canal from the Nile River to the Red Sea, and on land the state-supported road network allowed the peoples of the empire to benefit from what was, for ancient times, a very large common market. [*See* Roads; Transportation.]

Social organization. Persia's tolerance of the customs of her subjects precludes speaking of an imperial social organization. There were two reasons for that tolerance: it was a realistic policy, given the empire's size and cultural diver-

sity; and such a policy fit the Persians' own sense of social structure. Their vertical view of society began at the base, with the family, and progressed upward through the levels of clan, tribe, and country, to culminate in a people or nation. Viewed horizontally, Persian society had four classes: priests, warriors, scribes, and artisans/peasants. At the summit of society was the king, surrounded by the concept *khvarna,* or "kingly glory," that attached itself both to the man and the office. Thus, the king functioned only at the highest level: he was king of countries, peoples, and nations; it was therefore logical that imperial policy not interfere with the affairs of tribes, clans, and families. If the peoples of the empire remained loyal and functioned well, how they did so was not the business of the central government. Tolerance was built into the Persian concept of how the world was organized.

Religion. As wide a variety of religions were practiced in the empire as there were subject peoples. From the Persepolis texts we know that a number of different beliefs and practices were found even in Persia. The critical question, however, remains whether the Achaemenid kings were Zoroastrians, in terms of what Zoroastrianism may have been like in the sixth–fourth centuries BCE. Zoroaster was a great ethical prophet who preached in northeast Iran sometime prior to the rise of the Achaemenids. In due time his message triumphed over the polytheism of the Iranian world, and Zoroastrianism eventually became the state religion of Iran in Sasanian times. [*See* Sasanians.]

There are no data on the religion of Cyrus. Darius I, in several of his inscriptions, uses wording compatible with Zoroaster's teaching, however: truth *(arta)* is in conflict with the lie *(druj).* Ahuramazda is the supreme and only god mentioned. Darius may have been a Zoroastrian. Xerxes elevated Arta to the role of a deity and seemed particularly concerned about devil worship, as Zoroaster was. The relapse into polytheism must have continued under Artaxerxes I, as the goddess Anahita and the god Mithra appear in royal inscriptions. Yet, with the imperial adoption of the Zoroastrian religious calendar, a clear commitment to Zoroastrianism is made under this king. Thus, beginning with Darius I, the Persian kings seem to move steadily toward a Zoroastrian theology.

Evidence of ritual practice from Persepolis confirms this drift. That fire, whose purity and importance Zoroaster emphasized, was central to Persian royal religious ritual can be seen in the royal tomb reliefs and the great fire altar at Pasargadae. [*See* Pasargadae.] There also appears to have been no animal sacrifice at court—a practice Zoroaster had condemned. The Persepolis texts yield evidence of offerings only of wine, beer, wheat, and flour. Zoroaster had preached against the Haoma cult, a drunken pagan ritual; however, textual and archaeological evidence from Persepolis indicates that the cult was practiced. Nevertheless, on balance, Persian royal religious ritual seems to have come close to Zoroastrian practice at the time.

Art and Architecture. Achaemenid Persian art is a blend of two elements: the experiences Persians had with material culture on the Iranian plateau during the centuries prior to the rise of Cyrus II, and the material culture of the empire's conquered peoples. These elements are most evident in architecture. The artists who decorated the great imperial capitals of Pasargadae, Susa, and Persepolis came from every corner of the empire. Their influence on individual elements is so great as to lead some scholars to argue that Achaemenid art and architecture are only eclectic. A closer look at Pasargadae and Persepolis shows that this is not true.

At Pasargadae, founded by Cyrus II, a clear Egyptian and Mesopotamian influence is evident and a considerable amount of decorative detail; Greek influence is also patent. The layout of the site and the conception of the "whole" is entirely Persian, however. The Pulvar River, which runs through the site, is the key to understanding the plan of the "city": the tomb of Cyrus, the main gate, two major palaces, two pavilions, a bridge, the so-called Zendan, the sacred precinct, and the hilltop fortress, the Tall-i Takht. Most of these structures were oriented to life in the open air. The various water channels feeding off the river and running among the buildings make it clear that the site was in fact a great park, not a city: a physical manifestation of a Persian paradise.

The concept and the details—of the columned halls and pavilions—are fundamentally Persian. Although the columned hall was foreign to the ancient Near East outside of Egypt, it was an architectural tradition that can be traced back in western Iran to Median times at such sites as Tepe Nush-i Jan and Godin II and from there back to the Early Iron Age at Hasanlu V (1450–1150 BCE). It was an architectural concept the Persians brought with them to Parsa. Pasargadae remains a superb expression in stone, wood, and brick of what the city of the king of a new empire (only recently the ruler of tent-dwelling pastoralists) might look like.

That imperial authority was yet more forcefully expressed at Persepolis and Susa—the former grander and better preserved. At Persepolis Darius built a great stone platform jutting westward from the base of the Kuh-i Rahmat ("mountain of mercy"). Xerxes expanded the platform and completed buildings his father had begun and added others. Construction continued under Artaxerxes, and, in a more desultory way, under even later kings. Two large columned audience halls (the Apadana and the Hall of a Hundred Columns), a columned gateway (Gate of All Nations), private columned residence palaces, a treasury, and a harem were the main structures on the platform.

Some of the most remarkable reliefs ever carved in the ancient Near East adorn the walls of these structures. Again,

foreign influence is clear, but the basic Persian conception of the totality is equally clear. The carving was done by a team of artisans: a master craftsman working with others, each assigned special elements of each figure. In short, the reliefs were created in an assembly line—the master artist(s) was not the carver of the reliefs (where foreign influences show). Rather, the master was he who conceived, designed, and decided on the final layout of the reliefs. He was a Persian, for the story he told, and the way he told it, was an original contribution of the Achaemenid Persians to the art of the ancient world.

The reliefs are unhistorical. Unlike those of Egypt and Assyria, they tell no story. Instead they are a static picture of accomplishments—they are not scenes of warfare, of the king's conquests, or of enemies defeated, but of contented subject peoples paying homage to their ruler. The king is the central focus, but he is not an individual: he is not Darius or Xerxes or Artaxerxes, but the image of *khvarna,* of the glory of kingship in the abstract. The reliefs are a sculptured statement of the philosophy behind the tolerance of Persian imperial rule, the perfect *pax persica.*

Achaemenid sites have produced few small objects from foreign countries, for the Persians preferred their own products. Relatively plain stone and pottery vessels, with an emphasis on crisp shapes derived from metal prototypes, are common. Bird and animal heads are used as decoration, often on handles—a tradition going back to Median times. Stone-seal cutting was a consummate art, as were metalwork and jewelry. Metal vessels were practical, even when ornate, with an emphasis on intricate, repetitive, and highly geometric decorative elements; animal motifs, long a tradition on the plateau, also were common. Achaemenid jewelry and tableware represent some of the most delicate achievements in ancient metalwork.

Almost nothing is known outside of ceramics of the material culture of the common people for excavation has concentrated on royal sites. At Persepolis the platform was only the acropolis of a large city which may have spread north and west as far as the royal rock-cut tombs at Naqsh-i Rustam. Excavations off the terrace revealed some palaces of the nobility, but no peasant or artisan compound.

The Achaemenids combined the art of others before them with traditions of their own. In doing so they produced an art which, like their empire, marked the end of the ancient world and the beginning of something new.

[*See also* Persia.]

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T. CUYLER YOUNG, JR.

PERSONAL HYGIENE. In the hot, dry climate of the Near East, washing the body and anointing it with oil were hygienic necessities of the first order. The frequency of bathing was influenced not only by the availability of water, but also by social status: wealthy individuals could pay

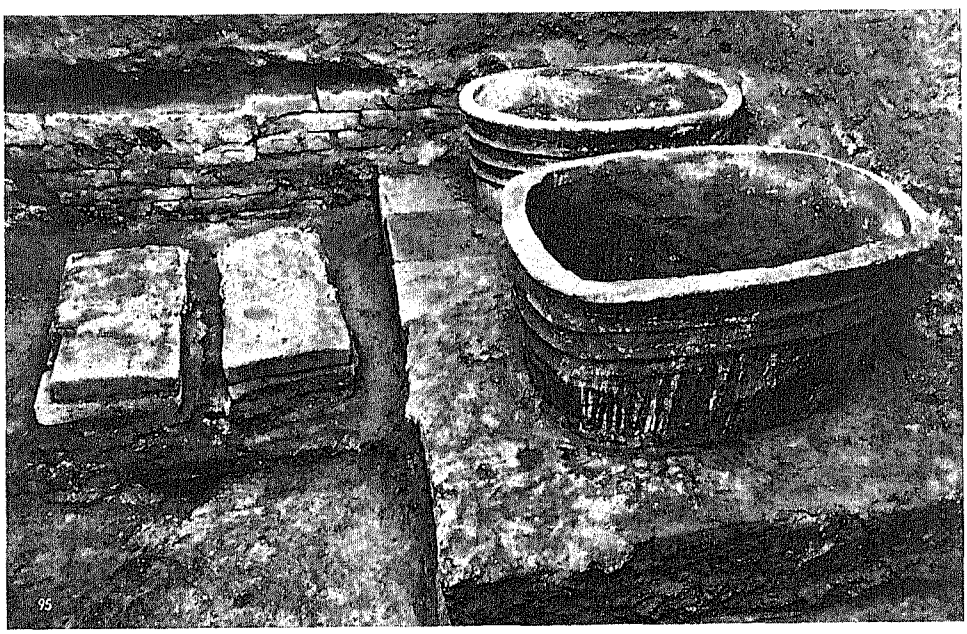
stricter attention to personal hygiene than poor people. Generally, in the ancient Near East people contented themselves with washing only their face, hands, and feet, although the Egyptians appear to have bathed daily and the Babylonians washed their entire body mainly in preparing for religious festivals (Dayagi-Mendels, 1989, pp. 13–34). In the Bible, too, bathing is mentioned most often in connection with ritual purity (*Lv.* 16:24). It was also the rule among the Hebrews to bathe after an illness or a battle, and women were instructed to purify themselves through immersion in the miqveh, or "ritual bath" from their menstrual uncleanness.

Washing the hands was a practice common to all people in the ancient Near East. It was customary to wash the hands upon rising in the morning and before meals (*Mk.* 7:3), and usually after meals, as well. In the Talmud it is said that one must wash one's hands every morning and evening and before prayer (B.T., *Shab.* 109a).

In ancient Greece, banquet guests washed their hands in warm, perfumed water and wiped them on a common towel (Dayagi-Mendels, 1989, p. 14). In the Near East, no special vessels for rinsing the hands are known, with the exception of Egypt, where spouted vessels have been found next to basins. These vessels are frequently depicted on reliefs and in paintings, where they are seen under a table. They are known from the third and second millennia BCE, made mostly of bronze but sometimes of alabaster or pottery.

The custom of washing the feet is mentioned in the Bible as central to the conventions of hospitality (*Gn.* 18:4; 19:2; *2 Sm.* 11:8). It is probably in the context of this custom that the footbaths known from Palestine in the Iron Age should be interpreted. In the bathrooms of first-century CE houses in the Upper City of Jerusalem, stone installations have been found (Nahman Avigad, *Discovering Jerusalem*, Nashville, 1983, pp. 84–86) that probably served as footbaths of the kind mentioned in the Mishnah (*Yad.* 4:1). According to Jewish literary sources it was one of the wife's duties to wash the feet, hands, and face of her husband, even if there were servants in the house (B.T. *Ket.* 61a). This washing was intended to be enjoyable and was done with hot water, in contrast to the hasty washing in the mornings, for which cold water was used.

The tomb of Ruaben, an official of the Egyptian second dynasty, a house containing a bathroom is planned; as in houses of the twelfth dynasty excavated at Kahun, bathrooms were uncovered next to bedrooms; and in houses of the eighteenth dynasty at Tell el-Amarna, the bathrooms were located at the rear. The bathing was actually more like a shower: the bathroom contained a large stone slab raised slightly above the floor, with a drain next to it. The bather stood on the stone while his servant poured water over him through a sieve. Clearly such bathrooms only existed in palaces and in the homes of the wealthy; people of lesser means must have washed in a basin or bathed in the river. The people of Mesopotamia washed their entire body only on festive occasions (see above). The common people bathed in the rivers or in reservoirs in courtyards, while notables and wealthy citizens had special bathing installations in their palaces and mansions. Bathtubs existed also at Mari (see figure 1), where two basins set on a raised platform were uncovered in one of the rooms of the palace (G. E. Men-



PERSONAL HYGIENE. Figure 1. *Bathroom from the palace at Mari.* Two terra-cotta tubs and a toilet area are shown (Courtesy ASOR Archives)

denhall, in *Biblical Archaeologist* 11 [1948]: 8–10). Paved bathrooms equipped with drains and the remains of a bronze bathtub were unearthed at Zincirli in northern Syria. Many bathrooms containing bathtubs have also been found in palaces on Crete and Mycenae from the second millennium BCE (Arthur Evans, *The Palace of Minos,* vol. 3, London, 1930, pp. 384–385). In the Neo-Babylonian period, bathrooms in private houses became commonplace.

Although bathrooms were a rarity in ancient Palestine until the Hellenistic period, several early examples have been discovered (e.g., at Tell el-ʿAjjul, Tell Jemmeh, and Megiddo). Some people also washed in basins or tubs, as demonstrated by the seventh-century BCE figurine of a woman washing herself found in a Phoenician tomb at Achziv. Biblical stories imply that it was also customary to wash in enclosed courtyards (*2 Sm.* 11:2). Presumably, many people also bathed in streams and springs.

Various vegetal or mineral substances were added to the bathwater in antiquity (*Jer.* 2:22), and Pliny says it was the Gauls who invented soap (*Nat. Hist.* 28.191). To prevent the skin from drying and cracking after using harsh minerals, and to protect it in a hot, dry climate, it was customary to anoint the body with oil after bathing (*Ru.* 3:3). Oiling the body was not considered a luxury and in most countries in the ancient Near East, body oils were regarded as an everyday commodity that was in fact used by the majority of the population. It was therefore a sign of mourning to refrain from anointing oneself (*2 Sm.* 14:2). The Egyptians knew more than thirty different oils and ointments for anointing the skin, and in Persia, too, various oils and cosmetics were well differentiated, as is learned in the story of *Esther* (2:12).

In the Greek world, the attitude toward body hygiene was very different, essentially because there the need to take care of the body was connected with sports. As early as the fourth century BCE, the palaestrae and gymnasia in which athletes exercised were equipped with bathing facilities that were continually improved over the centuries. Relatively few remains of bathtubs have been found in private houses in the Greek world. Most of what is known comes from literary sources (e.g., *Odyssey* 4.49–53) and from depictions on vase paintings. The paintings show bathers in a fountain or women washing themselves from a basin. Footbaths were also used, and in banqueting scenes they are depicted underneath the couches. In Greece anointing the body with oil was also part of the daily routine, often even replacing washing or bathing.

In the Hellenistic world, the bathroom became a regular fixture in the homes of the middle class, as seen at Olynthos. At the same time, public baths were established, serving especially those exercizing in the palaestrae and gymnasia, as at Olympia. The Romans took over the concept and construction of bathing installations from the Greeks and perfected them. Under the influence of Hellenistic culture, baths also began to appear in Palestine—and not only in the houses of the nobility (Dayagi-Mendels, 1989, p. 25). The Romans regarded bathing not only as a hygienic necessity, but also as a form of entertainment that went on for many hours. The many public baths they founded were open to all. The patron, after bathing, was massaged with ointments, either by his personal servant or by an individual employed for this task by the baths.

The pampered Roman lady entrusted herself, immediately after her bath, to the hands of her personal staff of maids who massaged her, rubbed her skin with unguents, cared for her hands and feet, and plucked out unwanted hairs. When the lady set out for the baths, she took her creams and unguents with her (Dayagi-Mendels, 1989, p. 25). The unguents used for anointing the skin after bathing were composed of a base of vegetable oils—olive oil, almond oil, or sesame oil—or were made from animal fat taken from geese, sheep, goats, or cattle. To these, various fixatives were added, including milk, honey, and different salts. While the wealthy treated their skin with precious and perfumed unguents, those with lesser means used oils of inferior quality, such as castor oil. The ointment and oil industry led to the development of an entire field devoted to the manufacture of beautiful containers. Stone vessels, especially those made of alabaster, were popular in Egypt, and beautifully painted pottery vessels are known from the classical world.

[*See also* Baths; Cosmetics; Medicine; *and* Ritual Baths. *In addition, many of the sites mentioned are the subject of independent entries.*]

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MICHAL DAYAGI-MENDELS

PETERS, JOHN PUNNETT (1852–1921), professor of Old Testament language and literature at the Episcopal Divinity School, Philadelphia (1884–1891), and professor of Hebrew at the University of Pennsylvania (1886–1893), best known for organizing the first American archaeological excavations in Mesopotamia, at Nippur (1888–1900). Peters was involved in arousing interest in archaeological work in Mesopotamia as early as 1883, soliciting funds from Catherine Lorillard Wolfe, a wealthy New Yorker, to send an exploratory expedition to southern Mesopotamia (1884–1885). Peters then tried to elicit interest in a second expedition to carry out excavations. Nothing came of his efforts until 1887, when he met Edward White Clark, a Philadelphia financier, who, as a young man, had traveled to the Near East and was an avid reader of Austen Henry

Layard's accounts of his travels and excavations. Clark raised the funds for an expedition affiliated with the University of Pennsylvania. In 1888, with pledges of funding in hand, the Babylonian Exploration Fund (with William Pepper, provost of the university, as president) came into existence.

Peters served as director of the first and second excavation campaigns at Nippur (1888–1889, 1889–1900). Despite rivalries and quibbling among the expeditions' crews and limited digging techniques, the first two seasons' excavations were thoroughly recorded and were adequate, held to the standards of the time. Peters' detailed journal, notes, measurements and sketches of walls and buildings, and his catalog of objects from the second campaign, which are in the University Museum's archives at the University of Pennsylvania, constitute a usable source of information on the excavations.

Peters became assistant rector of St. Michael's Church in New York City in 1891 and resigned his position at the Episcopal Divinity School. He became rector when his father died in 1893, at which time he left his position at the University of Pennsylvania.

Although no longer director in the field, Peters nevertheless served as scientific director of the third campaign (1893–1896) to Nippur and maintained an active interest in the excavations throughout his life. From 1905 to 1908 he was embroiled in a bitter dispute with Herman V. Hilprecht, professor of Assyriology at the University of Pennsylvania. The dispute involved not only everyone connected with the Nippur excavations, but also a good number of scholars in the discipline. Peters sparked the so-called Peters-Hilprecht controversy when he alleged that Hilprecht had exaggerated his claims to having found a temple library during the fourth campaign of excavations in 1900, had misrepresented purchased tablets as excavated artifacts, and had falsified the findspots of other excavated artifacts. The trustees of the university appointed a committee to act as a court of inquiry and, in its report dated 26 June 1905, found the charges untrue; its report did not end the controversy, however.

[*See also* Nippur; *and the biography of Hilprecht.*]

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RICHARD L. ZETTLER

PETRA. [*In order to treat the separate phases of excavations at this site, this entry comprises two articles, the first on the history of excavation and the second on more recent finds.*]

History of Excavation

Petra is an ancient city in modern Jordan situated in a broad north-south basin bordered on the east and west by mountain ridges (30°19′ N, 35°26′ E). The traditional entrance to the city is through a cleft in the eastern ridge, El-Kubtha, called the Siq, although access from both the north and the south is possible and was defended by walls during the Nabatean period (from the fourth century onward). The basin is watered by two perennial springs, with a natural water channel running east–west within the city area called Wadi Musa ("valley of Moses"). The Nabateans augmented the water supply with an intricate systems of runnels, cisterns, catchments, and a gravity-fed pipeline extending from another natural spring, 'Ain Musa ("spring of Moses"), about 3 km (2 mi.) from the basin proper.

Occupation of the basin area is documented archaeologically from at least the Neolithic period (6800) and sporadically thereafter, in the biblical Edomite, Hellenistic, Nabatean (to 363 CE), Byzantine, and Crusader periods. With the Islamic conquest in the seventh century CE, the area lost both its place along the major commercial routes and its strategic value. Although known to geographers of the Islamic period, the site became more and more obscure and was not recognized again until its "discovery" by the Swiss explorer Johann Ludwig Burckhardt in 1812. Since that time, most of the "learned travelers" of the late nineteenth and early twentieth centuries have visited the site and left their accounts. They were followed, in 1929 by the first excavations, undertaken by George and Agnes Horsfield working under the Department of Antiquities of Palestine during the mandate period (Horsfield, 1938; 1941). [*See* Nabateans; *and the biography of Horsfield.*]

The major period of modern scientific excavation actually began in the 1950s, with the work of Diana Kirkbride and Peter J. Parr of the British School of Archaeology in Jerusalem (BSAJ), Philip C. Hammond, director of the American Expedition to Petra, Fawzi Zayadine of the Department of Antiquities of Jordan, Manfred Lindner of the Nuremberg Natural History organization, Nabil Khairy of the Jor-

dan University, and Rolf Stucky of the Archaeological Seminar of the University of Basel. Hammond and Parr excavated a Nabatean domestic structure in the city dump area of El-Katute in 1959, the first excavation of built structures on the site. Since that time considerable reconstruction, exploration, and excavations have been conducted, primarily through the activities of the Department of Antiquities of Jordan.

Kirkbride cleared the Paved Street sector of the City Center. Hammond excavated the first major monument on the site at the Main Theater, in cooperation with the Department of Antiquities; and Parr constructed revetment walls along the banks of Wadi Musa and conducted excavations in the temenos area of the temple (Qaṣr Bint Faroun) dedicated to Dhushares, the chief male deity of the Nabateans. The Department of Antiquities excavated a bath complex near the Monumental Gate and partially reconstructed it, rebuilt the frontal area of the Urn Tomb, and carried out other similar projects in the northern suburb of the city at El-Barid.

Parr and G. R. H. Wright investigated the architectural details of the Qaṣr and Zayadine began a durative study of its decorative motifs, as well as more extensive research on Nabatean architecture. Khairy excavated the first "villa" on the southern slope of the City Center. Lindner began extensive surveys of local graves, roads, flora, and geology and investigated the suburb of Sabra, to the south. His investigations also revealed data relating to Nabatean copper mining and discovered a small temple in the southern part of the basin. Stucky began a series of excavations of other residential structures in the Zanṭur sector, paying special attention to the ceramic materials.

Hammond undertook the most extensive work at the site in 1973, beginning with an electronic survey. The long-term excavation of a residential site and a public installation on the north slope of the City Center followed. It uncovered a temple dedicated to Allat, the chief female deity of the Nabateans, with a complex of outbuildings, both residential and industrial. Because of feline-decorated capitals around the altar platform of the building, it acquired the popular name of the Temple of the Winged Lions. The American Center of Oriental Research (ACOR), in Amman, undertook excavations at the site of a suspected Byzantine church to the east of the Temple of the Winged Lions, beginning in 1992.

In addition to the strictly Nabatean interest of the site, other periods were investigated. Crystal-M. Bennett undertook a short excavation project on top of the mountain called Umm el-Biyara, exposing Edomite ruins and recovering considerable materials from that period. Her excavations also called into question the identification of that mountain with biblical Sela, the acropolis of the Edomites during the Iron Age. [*See* Umm el-Biyara; *and the biography of Bennett.*] Hammond and James Jeffers surveyed the small Crusader fort on top of the mountain called El-Habis, during the joint excavation project with the BSAJ in 1959. Kirkbride devoted her attention to materials from earlier periods of occupation in the basin, having discovered and excavated an Early Neolithic settlement at el-Beidha, to the north. [*See* Beidha.]

Because of the relative paucity of Nabatean epigraphic materials from Petra proper, studies on the Nabatean language have concentrated on the hundreds of minor inscriptions in the Sinai and Negev deserts and at Meda'in Saleh in modern Saudi Arabia. [*See* Meda'in Saleh.] Beginning with the work of J. Cantineau in 1930, the basic vocabulary of the Nabateans has been assembled and the language can be read with little difficulty. Excavations on the Paved Street produced a quantity of ostraca, all of which were subsequently lost. Excavations at the Temple of the Winged Lions produced both ostraca and lapidary inscriptions. The former, because of close dating, are of importance for the transition between Nabatean and Arabic script, in keeping with the documentary evidence of a Nabatean teacher of writing during the Early Islamic period, after the destruction of Petra. [*See* Nabatean Inscriptions.]

Horsfield began the study of Nabatean ceramics in 1929 by recognizing fine, thin, red-painted pottery as Nabatean. Since then, a number of studies have been done, including Hammond's on the fine wares, Khairy's on fine and common wares, David Johnson's on unguentaria, and Karl Schmidt-Korte's on decorative patterns and modern replication studies.

Since Burckhardt's rediscovery of the site, a number of maps of the basin have been produced that have benefited from aerial, photogrammetric, plane, and subsurface electronic surveys. However, absolute identification has only been possible by excavation because of the tremendous rock falls that resulted from the earthquakes of 363 and 551 CE in particular. However, the work of Rudolf Ernst Brünnow and Alfred von Domaszewski (1904) at the end of the eighteenth century thoroughly documented the site's more than eight hundred rock-cut monuments and added the modern names of mountains, wadis, and other topographic features. Presently, however, only the Main Theater, the Paved Street, and its related temenos area, the Qaṣr Bint Faroun, the Bath Complex, the excavated residential sites, and the Temple of the Winged Lions represent proper identifications of once-subsurface structures. Judith McKenzie (1990) examined the major architectural structures and has produced a chronology based on typology.

Diodorus of Sicily is the earliest recorder of Nabatean settlement, and he cites an author some three hundred years earlier (*History* 19.94–100). Recent studies have sought to place the original homeland of the Nabateans in what has become modern Saudi Arabia, with the dating of the arrival of the people placed considerably prior to the 312 BCE date

of Diodorus's report of Nabatean relations with the Seleucid Greeks. Strabo used an informant in his report of the urbanized city of Petra in the first century CE (*Geog.* 16.4.8; 21). Unfortunately, the informant was blind, and so not all of Strabo's analysis of the culture of the people at that point in history can be trusted as accurate. Nor is the picture of the manner in which the Nabateans urbanized Petra completely understood, in spite of various attempts to analyze the data. It does appear, however, from the archaeological record of building activities, that the main thrust toward urbanization took place under the most energetic of Petra's kings, Aretas IV (9 BCE–40 CE). Although king lists have been reconstructed, the early history of the people remains unclear, and data concerning such societal factors as ranking, actual political organization at lower levels, slavery, and control of sites outside the capital remain to be gathered.

What is known of religious life at Petra is based on its stone-cut monuments and the mention of deities encountered in inscriptional materials within and outside the city (see above). Further information has been made available by the excavations at the Temple of the Winged Lions, including probable cultic practices, the cultic model, and a number of cultic objects recovered, but the story of the cult at Petra, despite lists of deities, two temples known at the site, and many figurines recovered that are presumed to be cultic, is still incomplete.

Recent interest in Nabatean technology, at Petra and elsewhere, has provided a more informed idea of the craftsmanship, products, and even the names of artisan "families" connected with the site and its many tributary areas. Of greatest interest is the profound eclecticism shown by the people in their adoption, adaptation, and innovation of technologies. Thus far, the main areas studied have involved architecture (Parr, Wright, Hammond, Zayadine, Stucky, and Others), metallurgy (Lindner), ceramic production (Hammond, Parr, Khairy, Schmidt-Korte), marble sources (Slaughter), and art.

The Nabatean people have emerged as perhaps the most prominent commercial groups operating in the Near East from the Augustan Age through the Early Byzantine period (first–fourth centuries CE). Their variety of products, reaction to the varying tastes of the western market, and sheer business energy qualify their preeminence in the commercial life of the West. Their assumed earlier seminomadic wandering in the Arabian Peninsula apparently brought knowledge of the trade routes and their skillful choice of products brought profits—especially from oils and balms. The products appear to have been processed from raw materials secured in the area and packaged for sale, with Petra functioning as the main redistribution center. Later sources cite medicinal products from Petra as of the highest quality; along with frankincense, myrrh, bitumen, silk, gems, and spices, they may have been among the luxury items traded to the Western world. Even the Roman occupation of the site (106 CE) does not seem to have reduced the level of the Nabateans' economic activities, as recovered remains from after that date indicate.

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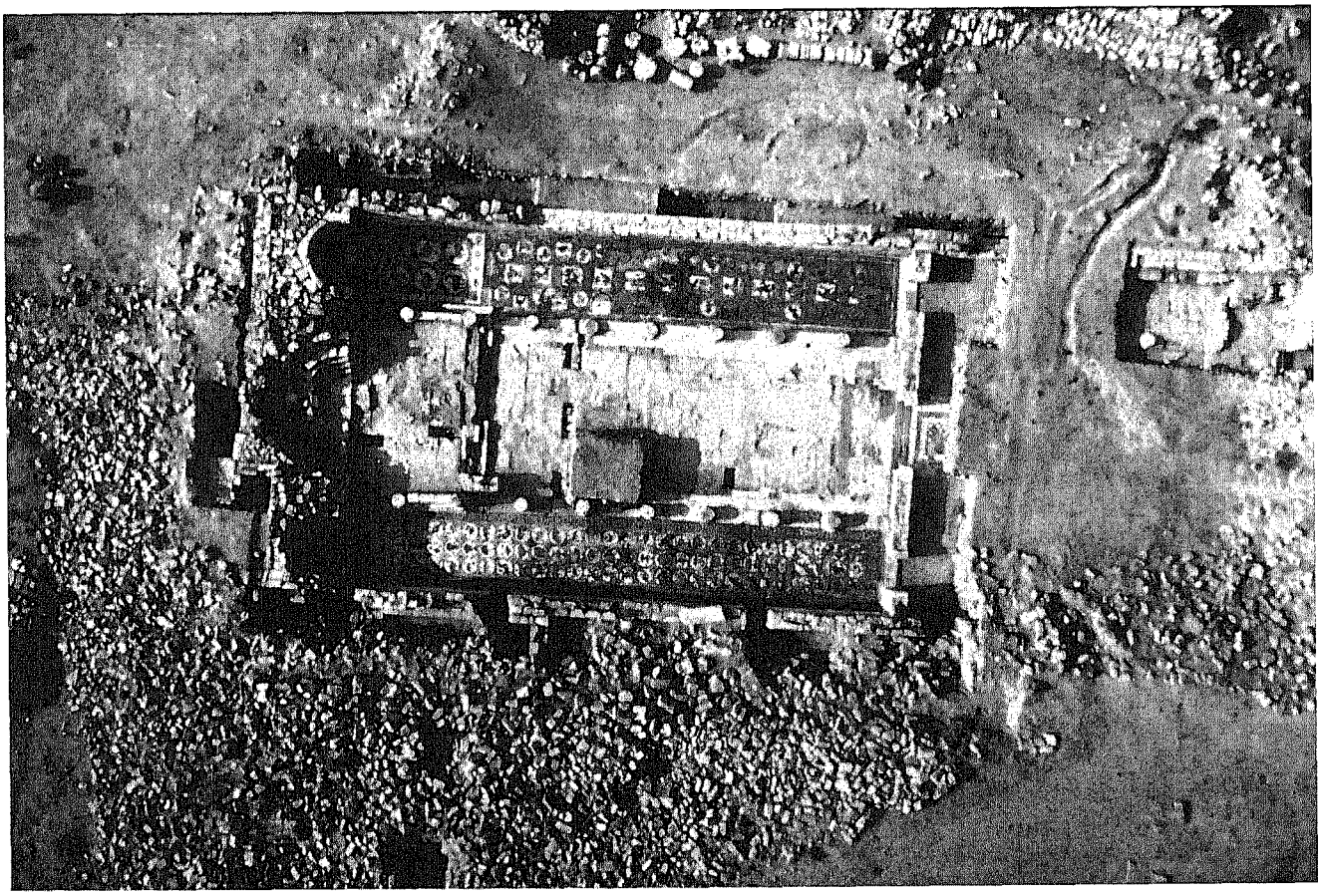
PHILIP C. HAMMOND

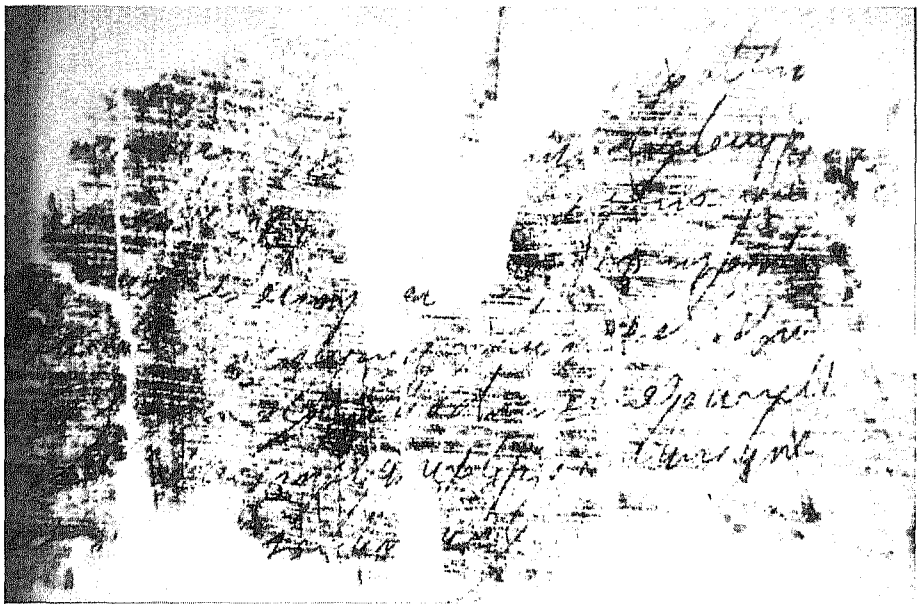
Recent Finds

Since the initial exploration and excavation of the site, recent finds include a southern temple and a Byzantine church. The temple was first explored by Rudolf-Ernst Brünnow and Alfred von Domaszewski, but it was Walter B. Bachmann, in his 1921 revision of the Petra city plan, who postulated the existence of a "Great Temple." While no structures were revealed before the Brown University 1993 excavations under the direction of Martha Sharp Joukowsky, the precinct, which is constructed on an artificial terrace, was littered with carved architectural fragments toppled by one of the earthquakes that have rocked the site throughout its history. In 1990 Kenneth W. Russell discovered the late fifth-century Byzantine church. Following Russell's death, its excavation was directed by Pierre Bikai of the American Center of Oriental Research (ACOR) with principal archaeologist Zbigniew Fiema assisted by Robert Schick and Khairieh 'Amr. These excavations, which ended in 1993, were supported by the United States Agency for International Development and Jordan's Ministry of Tourism and Department of Antiquities.

Southern Temple. Located to the south of the colonnaded street and southeast of the temenos gate, the southern temple represents one of the major archaeological and architectural components of central Petra. This precinct (7,000 sq m) is comprised of a propylaeum, a lower temenos, and a monumental grand stairway that in turn leads to



PETRA: Recent Finds. Figure 1. *View of the excavated church.* (Courtesy ACOR)



PETRA: Recent Finds. Figure 2. *Fragments of the Petra scrolls.* (Courtesy ACOR)

the upper temenos—the sacred enclosure for the temple proper. The southern temple was a white-stuccoed building whose impact must have been dramatic set against its rose-red environment. It is tetrastyle in antis with widely spaced (about 7.50 m) central columns at the entrance and two end columns located about 5 m to the east and west, respectively. The porch columns (approximately 15 m high) plus the triangular pediment and the entablature indicate that its height would have been at least 19 m.

The temple measures 28 m east–west and is some 40 m long. The podium rests on a forecourt of hexagonal pavers; a stairway approaches a broad, deep pronaos that leads up and into the naos, or cella. The naos entry is marked by two columns equal in diameter (1.50 m) to those at the temple entrance but larger than either the eight flanking the cella walls or the six at the rear of the temple (whose diameter is 1.20 m). The naos, or cella, is some 29 m north–south by 18 m east–west. In the interior north a massive anta wall rests on a finely carved Attic base. To the south a two-or-three-storied adytum is dominated by a large, central vaulted arch. Twin-stepped, arched passages lead to paved platforms and a series of steps that give access to the temple cella and/or are an exit. Sculpted fragments of faces and fine, deeply carved architectural elements were recovered on an exterior paved walkway in the western part of the temple.

In the lower temenos large white hexagonal pavers were positioned above an extensive system of canals that can be traced to the temple forecourt. In the western exedra there were thousands of architectural fragments, one of them a capital decorated with elephant-headed volutes, and fragments of limestone friezes of faces, in addition to coins, lamps, Roman glass, and ceramics, including figurines, Nabatean bowls, small cups, and juglets. Elaborate floral friezes and acanthus-laden limestone capitals (carved with the ripple technique) suggest that the temple was constructed at the beginning of the first century CE by the Nabateans, who combined their native traditions with the classical spirit.

Byzantine Church. The tripartite basilica (26 m east–west × 15 m north–south) has three entrances on the west, three apses to the east, and walls preserved some 3 m above a mosaic floor (see figure 1). [*See* Basilicas; Mosaics.] In constructing the edifice, the builders recycled Nabatean and Roman architectural elements, including capitals, doorjambs, and reliefs. Although the structure was modified after a fire, its final form included a synthronon in the central apse, with a chancel platform and marble chancel screens. A stone-paved atrium was located to the west.

The side aisles have mosaic pavements dated to the early sixth century. Three parallel rows of roundels depicting native and exotic animals and vessels are found in the pavement in the north aisle; the eastern portion of the pavement in the south aisle is similar. The remaining central panels portray the Seasons, Ocean, Earth, and Wisdom flanked by birds, animals, and fish. The remains of the central nave consist of a fragmented marble opus sectile floor and a marble stylobate that held a row of columns.

Thousands of glass tesserae (some gilded) indicate that the upper walls, arches, and the central apse were decorated with mosaics. Numerous finds include coins, bronze and iron door fittings, glass, ostraca, fragmentary Nabatean and Greek inscriptions, and a large marble vessel decorated with two lioness-shaped handles. The earliest date found is 537

CE and the latest is 559, but earlier or later dates are not precluded. Thereafter, squatters occupied the atrium. The structure was abandoned in the early seventh century.

In a room adjacent to the church, some 152 carbonized papyrus scrolls (30 m wide and some 5–8 cm in diameter) were discovered in 1993 that represent the largest collection of textual material from antiquity yet found in Jordan (see figure 2). They had been crushed under carbonized shelving, on which they originally had been stored, as well as under about 4 m of stone debris. ACOR has assembled an international group of experts to help in the task of conservation and restoration. Ludwig Koenen, professor of papyrology at the University of Michigan, dates the scrolls to the fifth–sixth centuries. Jaakko Frösén, a conservator at the Academy of Finland, has unrolled twelve of the scrolls, which are written by many hands in a cursive Greek "documentary style." The contents are personal records—lectures, sermons, wills, contracts, and agreements with socioeconomic, topographic, and demographic implications for the mid-sixth century in Palestine.

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MARTHA SHARP JOUKOWSKY

PETRIE, WILLIAM MATTHEW FLINDERS

(1853–1942), British Egyptologist and archaeologist, considered by many scholars to be the founder of modern Near Eastern archaeology. In the course of his long professional career, Petrie excavated more than sixty of the most historically important—and richest—sites in Egypt and Palestine; published well over one hundred excavation reports, general works, and monographs; and wrote almost 450 articles and almost 400 reviews. His lasting importance to the development of Near Eastern archaeology is in his methodological innovations. Petrie was the first excavator in Egypt to recognize the chronological significance of ceramic evidence and, in his 1890 excavations at Tell el-Ḥesi, the first in Palestine to utilize the principles of stratigraphic analysis.

Born in Charlton, Kent, he was a sickly child and was educated at home. From an early age, Petrie showed interest in antiquarian matters: an avid collector of ancient coins, he was also a frequent visitor to the galleries of the British Museum. Under the influence of his chemist father, Petrie was eventually encouraged to take up surveying; his precise, detailed plans of ancient British earthworks and monuments, including Stonehenge, brought him to the attention of the archaeological world. The mystical attraction of Piazzi Smyth's pyramid theories turned Petrie's interest to Egypt. For a survey of the pyramids at Giza, Petrie traveled alone to Egypt in 1881. Ironically, his characteristically meticulous survey, published by the Royal Society, utterly disproved many of Smyth's sweeping mathematical assertions about the design of the Great Pyramid.

Petrie remained in Egypt, where he was employed in 1883 by the newly established Egypt Exploration Fund, and excavated the Delta sites of Tanis and Naukratis, Nebesha, and Daphne. Expressing great dissatisfaction with the financial administration of the fund, however, he set off on his own. Long an admirer of the eugenical theories of Sir Francis Galton, Petrie accepted an assignment to collect accurate measurements and photographs of ancient races as they were depicted in relief on the various temple walls throughout Upper Egypt. The result of this expedition was Petrie's book *Racial Photographs from the Egyptian Monuments* (London, 1887), in which he began to apply Galton's modern ideas about racial mixture and the stability of types to archaeological material.

Petrie's interests and excavation sites were eclectic: in 1887, he discovered a vast cemetery of Roman-period mummies with painted portraits at Hawara in the Faiyum. In 1888, in the Middle Kingdom levels at Lahun and the New Kingdom tombs at nearby Gurob, Petrie perceptively recognized the presence of Bronze Age Aegean pottery. Petrie's initial historical theories in Egypt were based on a collation of finds from widely scattered sites. It was his employment by the Palestine Exploration Fund in 1890 and his subsequent work at Tell el-Ḥesi in southern Judea (Judah), however, that confronted him with the challenge—and opportunity—of utilizing the stratigraphic methods of excavation pioneered by Heinrich Schliemann at Hissarlik in 1870. Although Petrie misidentified the site as ancient Lachish, his excavations there (carried on by Frederick Bliss for several seasons after his departure) inaugurated a new era in Palestinian archaeology. For nearly a century to come, a primary focus of excavation there would be the separation of uniform stratigraphic levels at large tells.

Petrie returned to Egypt in 1891 and explored important sites, including Tell el-Amarna, Coptos, Abydos, Ballas, Hu, Abadiya, and Naqada, at which he introduced his method of pottery seriation to arrange the relative chronology of types. He was appointed professor of Egyptology at the University of London in 1892 and, with his wife Hilda, founded the British School of Archaeology in Egypt in 1906 to support his field research. Race and racial mixture continued to be a main focus of Petrie's historical interpretation; his ideas were fully articulated in his book *The Revolutions of Civilisation* (London, 1911), in which he suggested that "the source of every civilization has lain in race mixture, it may be that Eugenics will, in some future civilization, carefully segregate fine races, until they have a distinct type" (p. 131). This dogma of progress through the triumph of "fine" races was to guide his work for the rest of his life.

With the rise of nationalist agitation in Egypt in the early 1920s, Petrie shifted his work to Palestine, excavating the

sites of Tell Jemmeh (1926–1927), Tell el-Far'ah South (1928–1930), and Tell el-'Ajjul (1930–1934, 1937–1938). At these sites he trained a number of young British archaeologists, including James Starkey, Olga Tufnell, and G. Lankester Harding, who would play prominent roles in Palestinian archaeology in the coming years. In recognition for his life's work, Petrie was knighted in 1923. He spent his last years in residence at the American School of Oriental Research in Jerusalem.

[*See also* British School of Archaeology in Egypt; Palestine Exploration Fund; *and the biographies of Bliss, Harding, Starkey, and Tufnell. In addition, many of the sites mentioned are the subject of independent entries.*]

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PETROGRAPHY. The study of rocks and similar materials in thin sections under a microscope, using high magnifications, is known as petrography. The method has been applied to pottery since the end of the nineteenth century—for almost as long as it has been in use in geology to examine rocks. To make a thin section, a 5-millimeter-thick slice of the object to be examined is glued to a glass slide and then ground to a thickness of 30 microns (0.03 mm). At this thickness most minerals become transparent to light. The petrographic microscope includes several components that alter the light passing through the thin section and provide each mineral with a unique set of optical properties that can be identified under the microscope. Thin sections are inexpensive to prepare; the training to analyze them is not complicated; and they can be stored for future reference and reexamination as many times as necessary.

Petrography is applied mainly to pottery, but also to plaster, stone, and metal artifacts. The method has been used to identify the sources of raw materials in pottery production, to locate the provenance of vessels, to assess the techniques used by potters, and to estimate firing temperature.

The fabric (the combination of raw materials and texture as seen under the microscope) consists of matrix and temper. The matrix consists of clay (of clay minerals too fine to be identified under the microscope) and silty components. By identifying microfauna and silty minerals, the source of the clay can be determined. The temper is the sand-size fraction that, in most cases, the potter added to the clay. Rock fragments, minerals, fossils, and plant material are natural tempering materials; grog (crushed pottery) and ash are temper assembled by potters. The composition of the temper reveals which rocks were used; its texture (shape, sorting, size, quantity) reveals how it was prepared before being added to the clay. Firing temperature can be estimated using optical changes that occur in different minerals at different temperatures. Grain counting, a useful petrographic technique, is used to obtain quantitative information on the various temper components.

Thus, from a thin section which ingredients the potter mixed and in what proportion can be determined, as well as how the materials were processed and fired and the source(s) of the raw materials. This kind of technological information is the advantage petrography offers over neutron activation analysis (NAA), a method mainly used in provenance studies. [*See* Neutron Activation Analysis.] Moreover, using petrography to identify the provenance of a sample does not require a large database of vessels from known sources (such as kiln wastes). A thorough knowledge of the regional geology and the raw materials available can tell a petrographer whether a sample is local. Petrography is particularly useful for analyzing coarse, low-fired ware, when abundant information can be obtained; however, it is also applicable to fine ware. It can be used on its own or as a preliminary study preceding other types of analyses to select representative samples for more expensive or less available techniques.

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Gilead, Isaac, and Yuval Goren. "Petrographic Analyses of Fourth Millennium B.C. Pottery and Stone Vessels from the Northern Negev, Israel." *Bulletin of the American Schools of Oriental Research,* no. 275 (1989): 5–14. Petrography used for stone artifacts with unexpected results and an application of the grain-counting technique in pottery analysis.

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bination with other analytical techniques, demonstrating its effectiveness.

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NAOMI PORAT

PHILISTINES. [*To survey the history of the Philistines as known primarily from the archaeological record, this entry comprises two articles:* Early Philistines *and* Late Philistines.]

Early Philistines

The Philistines were one of the ancient Sea Peoples of unspecified Aegean origin who settled along the coast of Canaan in the Early Iron I period (beginning of the twelfth century BCE), soon after the destruction of the Mycenaean palaces on the Greek mainland. They were a people of cultural and material sophistication who maintained their own sense of cultural identity in their cities and settlements in southern Palestine for about six hundred years.

There are two major sources for the early history of the Philistines after their arrival in the ancient Near East: Egyptian records and the Hebrew Bible. The first specific mention of the Philistines is from the twelfth century BCE (probably 1191 BCE), in the inscriptions and reliefs of the mortuary temple of Rameses III at Medinet Habu in Thebes. The texts refer to a people called the *pršt* or *plšt,* which must be no other than the biblical Philistines. The records describe their defeat, as well as that of other allied peoples, by the Egyptian army led by pharaoh, who repulsed a combined land and sea attack at the mouth of the Nile River. The accompanying battle scenes depict ships with prows decorated with lion or bird heads; the Sea Peoples' warriors wear high feathered headdresses and are armed with straight swords, spears, and round shields. In another scene the women and children are being borne in oxcarts. This information is supplemented by Papyrus Harris I and the Onomasticon of Amenope. Papyrus Harris I also describes Rameses' defeat of the Philistines in which they "are made as ashes." The Onomasticon of Amenope is an encyclopedia of such various subjects as natural history, customs, and foreign peoples. In it the Philistines are reported as dwelling in the coastal cities of Gaza, Ashkelon, and Ashdod. [*See* Ashkelon; Ashdod.]

The Hebrew Bible provides supplemental information on the early history of the Philistines in Palestine and lists the cities of the Philistine Pentapolis as Ashkelon, Gaza, Ashdod, Ekron/Tel Miqne, and Gath/Tel 'Erani (cf. *Jos.* 13:2–3) as well as smaller, semiautonomous centers such as Ziklag (cf. 1 *Sm.* 27:5) and Timnah/Tel Batash (cf. *Jgs.* 14). Other references suggest that their territorial expansion may have reached much farther north and inland, perhaps as far as Beth-Shean. [*See* Miqne, Tel; 'Erani, Tel; Batash, Tel; Beth-Shean.] A number of passages point to the Philistines' technological expertise, suggesting that they possessed a monopoly on smithery (cf. 1 *Sm.* 13:19–23). Their warrior champion, Goliath, is described as having worn a bronze helmet and a coat of chain mail with greaves and having carried a bronze javelin and a spear with an iron tip. Coupled with the description of the battle, whose outcome was decided by a duel between champions, the Goliath narrative is strongly reminiscent of the Homeric epic tales of Greek heroes engaged in single combat.

Modern archaeological investigation of the Philistines began in 1889, when Sir William Flinders Petrie, excavating New Kingdom tombs in the Faiyum discovered evidence of cultural and commercial contacts between Egypt and the Aegean in the fifteenth–twelfth centuries BCE. [*See* Faiyum.] Included among the typically Egyptian tomb goods was Mycenaean pottery that could be dated by the inscribed scarabs found with them. [*See* Grave Goods.] This was followed by the discovery of Mycenaean sherds in Palestine at Tell eṣ-Ṣafi, the presumed site of Philistine Gath. It soon became accepted that a particular repertoire of elaborately decorated red-and-black-painted vessels was the identifying hallmark of Philistine ceramics. Duncan Mackenzie's discovery of similar pottery at Ashkelon in a stratum directly above an earlier thick layer of ash suggested that the Philistines had conquered and razed that flourishing Canaanite city in the twelfth century BCE and subsequently built their own settlement on the ruins.

Recent investigations have expanded upon the Aegean context of Philistine culture with regard to Egyptian, Canaanite, and Israelite cultures, exploring social, economic, and cultic aspects of Philistine life: Ashdod has been extensively excavated and excavations at Ekron/Tel Miqne and Ashkelon are still in progress. Excavations at Tell Qasile near Tel Aviv indicate that Philistine settlement was more widespread than previously thought and its patterns considerably more varied. [*See* Qasile, Tell.]

It is clear from the discovery of underground silos, flint sickle blades, millstones, oil presses, loom weights, and wine jars that the Philistines were not merely the warriors depicted on Egyptian reliefs and in the biblical narratives: they were experienced farmers as well. They were, for the most part, however, urban dwellers, living in well-planned and well-fortified cities with developing industries. The very earliest Philistine levels, exhibited best at Ashdod and at Miqne, show the cities divided into zones: an industrial belt, a central area with monumental public architecture and shrines, and a domestic area. The cities were ringed by thick mud-brick fortification walls. The general plan was more or less adhered to in each successive level as expansion took place.

Philistine cult practices incorporated such Aegean traits as the seated female deity (best exemplified by the numerous

examples found at Ashdod), temples with apses (also known from Ashdod), offering benches (Tell Qasile), votive vessels called kernoi, ritual burial pits, hearth rooms (Miqne, Tell Qasile), and connecting cult and industry—exhibited most clearly in the Late Iron II (seventh century BCE) phases by the four-horned alters associated with the olive-oil industry. [*See* Cult; Olives.] Over the course of time, the Philistines gradually assimilated elements of Semitic and Canaanite beliefs into their own religion. The Hebrew Bible, for instance, mentions the Semitic deity Dagon being worshipped in Ashdod (1 *Sm.* 5:2).

So far, no Philistine burials have been uncovered in any of the major cities of the Pentapolis. However, several cemeteries that may be related to Philistine culture on the basis of tomb contents (e.g., Azor), show great diversity in the manner of interment. [*See* Burial Techniques.] Interment practices included simple single inhumations in earthen graves and jars (Azor) and rock-out, communal graves (Tell el-Farʿah [South], Beth-Shean). Two other Philistine burial customs—both ostensibly borrowed from foreign traditions—are the use of anthropoid clay sarcophagi (cf. Deir el-Balaḥ), modeled after Egyptian examples, and rock-cut chamber tombs reminiscent of Mycenaean burial customs. [*See* Deir el-Balaḥ.] There is also some evidence from Azor that cremation may have been employed, a practice unknown in Mycenaean Greece but documented in Asia Minor.

Glimpses of Philistine mourning customs may be gleaned from terra-cotta female mourning figurines with their hands placed on their head or with one hand placed across the breast that have been found at burial sites at Azor and Tell Jemmeh. [*See* Jemmeh, Tell.] Similar examples are known from the Aegean from the cemetery at Perati on the Greek mainland; from Ialysos on Rhodes; the island of Naxos; and eastern Crete. These figurines are often attached to the rims of Philistine kraters and are similar to large Aegean bowls called *kalathoi* that have figurines attached to their rims.

Four different influences can be seen in the decoration of Philistine pottery: first and most dominant is the Mycenaean. A Cypriot, Egyptian, and local Canaanite influence is also evident in form and decoration. The earliest Philistine pottery has a monochrome decoration, but "classical" Philistine pottery is red-and-black bichrome ware on a white slip. Most of the motifs—birds, fish, spirals, concentric semicircles, chevrons—were borrowed from the Mycenaean IIIC:1b decorative repertoire. At a later stage, the white slip gave way to red slip, hand burnished with dark-brown decoration. Common Philistine shapes are the bowl, krater, stirrup jar, pyxis, amphoriskos, three-handled jar, strainer spout, and juglet pinched in at its middle. Types of cult vessels include ring kernoi, kernos bowls, zoomorphic vessels, rhyta, cup-bearing kraters, and seated female terra-cotta figurines called Ashdoda (named for Ashdod, where they were initially discovered).

Very little is known about the language of the Philistines, except what can be gleaned from the Hebrew Bible. For instance, the title *seren* given to the rulers of the Philistine cities is thought to be Indo-European—perhaps Proto-Greek or Lydian—and related to the Greek word *turanos,* "tyrant." No inscriptions from Iron I Philistine levels have yet been found, although two seals from Ashdod bear as yet undeciphered signs. Some scholars have suggested that clay tablets discovered at Tell Deir ʿAlla may represent Philistine script. [*See* Deir ʿAlla, Tell.] However, both the nature and alphabet of the Philistine language continue to be the subject of controversy.

The Philistines played a significant role in the history of the ancient Near East by furthering the connections between Canaan and the rest of the eastern Mediterranean world. They brought to the region a developed material culture that continued to evolve, even as it was affected by local, indigenous influences. The Philistines were accomplished architects and engineers, artistic potters, textile manufacturers, dyers, metalworkers, silversmiths, farmers, soldiers, and sophisticated urban planners. They played a pivotal role in the political upheavals and population movements that marked the transition from the Bronze to the Iron Age in southern Canaan.

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TRUDE DOTHAN

Late Philistines

The Late Philistine period (Iron Age II, 1000–600 BCE) represents the second and final chapter in the history of an immigrant society as it adapted to the continuous impact of external forces, while maintaining the features that gave it

its own peculiar identity. By the beginning of the tenth century BCE, this dual process was well advanced in Philistia. Most of the material culture traditions of the early immigrant Sea Peoples had disappeared, and new traditions had been adopted from neighboring societies. This process, during which Philistia experienced periods of decline and growth, continued until the end of the Iron Age. The phenomena that demonstrate the long-term regional character of Philistia in Iron II are the continuity of occupation at traditional Philistine sites, the development of Philistine coastal plain material culture traditions, and the dynamics of the behavioral patterns and interactions between Philistia, Judah, and the Neo-Assyrian Empire. [*See* Judah; Assyrians.]

The excavations at Ashdod and Tel Miqne/Ekron, two of the five Philistine capital cities, provide the evidence for the regional character of Philistia throughout Iron II. Thus far, Ashkelon has produced evidence only for the end of the period, and Gaza and Gath (possibly Tel eṣ-Ṣafi), offer little or no secure archaeological data. [*See* Ashdod; Miqne, Tell; Ashkelon.]

Ashdod, following the destruction of its 200-year-old Philistine city at the beginning of the tenth century, was rebuilt in stratum X. This stratum contained pottery characteristic of the end of Iron I, such as bowls with horizontal handles of the "degenerative" Philistine type. It also produced pottery with features that represent new elements of material culture that developed through most of the Iron II period. One such group of pottery forms is Ashdod ware, with its decorative pattern of red-slipped and hand-burnished pottery with black and white bands. Together with the other decorated and coarse ware forms of the Philistine coastal plain ceramic tradition, they belong to a corpus that developed through stratum VI until the end of the seventh century BCE. During these three hundred and fifty years, the acropolis and the large fortified lower city of more than 75 acres were both occupied, although the latter not continuously in all areas.

At Ekron, with the destruction of stratum IV in the first quarter of the tenth century, the large lower Iron I city was abandoned, not to be resettled until the very end of the eighth century. The Northeast Acropolis continued to be occupied, however. Strata III–II (tenth–the eighth centuries) produced new fortifications, monumental architecture, and the continuation of the stratum IV ceramic tradition of red-slipped and burnished decoration. Also, coarse-ware forms, including jars, jugs, and bowls, among others, some of which had developed out of Iron I ceramic traditions, came to constitute part of a new southern coastal tradition. This corpus is fully represented in its final development in stratum I of the seventh century, not only at Ekron, but at Ashdod, Ashkelon, and Timnah/Tel Batash. [*See* Batash, Tel.] It is in stratum I, following the 701 BCE conquest by Sennacherib (see below), that Ekron expanded to more than 75 acres and became an international entrepôt, with the largest industrial center in antiquity known to date for the production of olive oil. [*See* Olives.] The stratum I city also produced five caches of jewelry with two hundred pieces of silver jewelry and silver ingots. [*See* Jewelry.] These were most likely used as currency, vital to the advancement of the multinational Assyrian commercial policies that also involved Phoenician maritime trade. [*See* Phoenicians.] While maintaining its coastal plain traditions in architecture and pottery, Ekron, like Philistia in general, developed into a multicultural society, as indicated by the presence of Israelite, Neo-Assyrian, Phoenician, and Egyptian elements of material culture. At Ekron, these include, among others, the monumental Neo-Assyrian-type palace and cultic objects (e.g., a silver medallion with a Neo-Assyrian motif depicting the goddess Ishtar), Israelite incense-type four-horned stone altars, Phoenicianlike inscriptions (*qdš l'šrt,* "dedicated for the goddess Asherah," and *lmqm,* "for the shrine"), and an Egyptian Hathor sistrum. [*See* Cult; Altars.]

At Ashkelon, to date, only the final (seventh century) Iron Age occupation phase has been exposed on a large scale. This evidence, similar to that at Ashdod and Ekron, but containing a larger sample of imports, has enhanced the scope of material culture features that define the final corpus of Philistine coastal plain material culture. Tell Qasile, Tel Batash/Timnah, and Tell esh-Shari'a/Tel Sera' on the periphery of Philistia provide further evidence of continuity and the impact of other cultures. [*See* Qasile, Tell; Sera', Tel.]

Textual references from as late as the eighth and seventh centuries BCE that reflect Philistia's status as a separate geographic, political, and demographic entity are found in several of the prophetic books of the Bible (*Am.* 1:6–8; *Jer.* 25:20; *Zep.* 2:4; *Zec.* 9:5–8). In them the Philistines are seen as the Israelites' principal "other," or main antagonist. Their separate existence is also documented in Neo-Assyrian texts: in the royal annals, Sargon II cites his 712 BCE conquests of Ashdod, Ekron, Gath; the 701 BCE conquest of Ekron is described in the annals of Sennacherib; in the first half of the seventh century BCE it was recorded in the annals of Esarhaddon that the kings of Ashdod, Ashkelon, Ekron, and Gaza supplied materials for the construction of the palace in Nineveh; in 667 BCE Ashurbanipal, in his royal annals, is quoted as ordering the vassal kings of Ashdod, Ashkelon, Ekron, and Gaza to support his military campaigns against Egypt and Cush; and Nebuchadrezzar's campaign against Ashkelon in 604 BCE and against a Philistine city in 603 BCE (probably Ekron) is described in the Babylonian chronicles. [*See* Nineveh.] The texts use the names *Palaštu* (Philistia), *'Amqar(r)ūna* (Ekron), *Ašdudu* (Ashdod), *Ḫazatu* (Gaza), and *Išqaluna* (Ashkelon) to refer to the region, cities, and people of Philistia.

Philistia's collapse at the end of the seventh century BCE was the result of the cumulative effect of the process of ac-

culturation, accelerated by the new economic patterns established when Philistia became integrated into the Neo-Assyrian Empire in that century and subject to a wide range of cultural influences from Mesopotamia and the Mediterranean basin. The impact was so overwhelming that, by the time of the Neo-Babylonian conquest of 604–601 BCE, Philistia no longer had a sufficiently strong or resilient core culture to survive the destruction of its cities and the deportation of its population.

The ultimate fate of the inhabitants of Philistia is hinted at in the Babylonian ration lists of the first quarter of the sixth century, in which the sons of Aga, the last king of Ashkelon, are mentioned. The final echo of the Philistines can be heard in the second half of the fifth century BCE, in the toponyms from the Murašû archives from Nippur. [*See* Nippur.] They point to ethnic self-identification among the exiles in Babylonia, who are listed by the name of a local region: *Išqalunu,* "Ashkelon," and *Ḫazatu,* "Gaza." With this, the Philistines disappear from the pages of history.

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SEYMOUR GITIN

PHILLIPS, WENDELL (1921–1975), founder of the American Foundation for the Study of Man (AFSM), a nonprofit research organization, and its first president. Phillips received a bachelor's degree in paleontology with honors from the University of California in 1943. In addition to his work in archaeology, he was an explorer, a successful oilman, and an author.

Archaeology, however, was his first love. Phillips led the University of California African Expedition in 1947 in its successful search for fossil hominid remains. While there, he met the Aga Khan, who told him about the ancient kingdoms of South Arabia. Phillips subsequently assembled some of the leading researchers of his day and in 1950–1952 led an expedition to Yemen. The expedition excavated at several sites, including Timnaʿ, the capital of ancient Qataban, and Marib, the capital of ancient Sheba. Despite the fact that the project had to be terminated prematurely, it generated a wealth of information that was later published in detail by specialists. It also gave Phillips the material for his popular book, *Qataban and Sheba,* cited as one of the fifty best books published in the United States in 1955.

Phillips later began working in Oman. Following a thirty-year hiatus, the AFSM continued its work in Yemen. From 1982 to 1987, it sponsored renewed surveys and some limited excavations in the Wadi al-Jubah. While in Arabia and elsewhere, Phillips was given personal oil concessions and leases, ranking him at one time among the wealthiest men in the United States. He was awarded many honorary degrees and was a member of the Explorers Club.

[*See also* Jubah, Wadi al-; Marib; Oman; Qataban; Sheba; Timnaʿ (Arabia); *and* Yemen.]

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JAMES A. SAUER

PHOENICIA. Coined by the ancient Greeks to designate the narrow strip of land between the Lebanon mountains and the Mediterranean coast from southern Syria to northern Palestine, the term *Phoenicia* now generally refers to this region in the Iron Age (c. 1200–332 BCE), even though the culture had earlier antecedents. The following discussion is restricted to these geographic and chronological limits.

The inhabitants of Phoenicia, because of their seacoast location and the region's limited agricultural land, developed a mercantile economy based on the export of products from the abundant coniferous forests that covered the mountains. This was supplemented by a thriving industrial complex for the manufacture of small objects that became the hallmark of their business interests throughout the Mediterranean world. Iron Age Phoenicia was not a nation, but rather a collection of cities built around natural harbors along the coast. While they shared a common culture, these small states remained independent, competing with each other in the international marketplace. A true history of Phoenicia would thus be that of the individual cities; however, it is a

history that cannot be written because there are insufficient textual and archaeological data.

The rare written documents from Iron Age Phoenicia are mostly short funerary inscriptions and brief accounts of temple construction and repair. These texts do not recount history, so that exterior sources, such as contemporary Egyptian and Mesopotamian documents, the Hebrew Bible, and numerous classical writers, must be used. Although there was a native Phoenician literary tradition, this is now known only from quotations in later works, often at third hand. For example, the Roman historian Josephus and the early Christian writer Eusebius preserve portions of histories by earlier classical authors based on still earlier Phoenician originals. Most of the facts and events of internal Phoenician history are gleaned from these and similar works and must therefore be treated with caution.

The archaeological record is inadequate, as many of Phoenicia's principle cities lie beneath modern ones and cannot be examined. Even where excavation is possible, information is disappointing. At Byblos, which has been completely uncovered, for example, most of the Phoenician period is lacking. Sarafand (classical Sarepta) and Tyre have yielded only limited Phoenician remains, and current excavations at Tell Kazel and Tell ʿArqa on the Syro-Lebanese border have discovered small provincial Iron Age towns. Nothing is known of important coastal cities like Arwad, Beirut, and Sidon. Fortunately, there are important cemetery sites of the period near Beirut, Sidon, and elsewhere, and imposing temple complexes at ʿAmrit and Sidon.

History. The end of the Late Bronze Age (twelfth century BCE) was a watershed in ancient history. Throughout the Mediterranean world, socioeconomic systems collapsed, empires disappeared, and a wave of immigrants from the Aegean and western Anatolia moved eastward by land and sea. Dubbed the Sea Peoples by modern scholars, after the Egyptian term for them, they are usually credited with most of the destruction that took place in the eastern Mediterranean. They remain elusive, however, and recent studies suggest they were but one element of a much broader phenomenon. In Phoenicia, there is little trace of these western invaders, and opinion remains divided as to what role, if any, they played there.

The first two centuries of the Iron Age must have been a "golden age" for Phoenicia, in spite of the paucity of data to prove it. Still, the archaeological record and contemporary Egyptian and Assyrian documents show that Tyre, Sidon, Sarafand, Byblos, and Aradus flourished then. As a result of the collapse of the Late Bronze Age palace economies that destroyed all major powers from Greece to the Levant, there was no external interference in the development of the coastal cities. By the beginning of the tenth century BCE, the formation of classical Phoenician civilization was complete, along with a rapidly expanding population indicated by new town sites and cemeteries. The Phoenicians emerged as the chief sea power in eastern Mediterranean waters and, at least as early as the ninth century BCE, began their commercial expansion toward the west. Many reasons have been given for this expansion, but the main stimulus was undoubtedly the search for metals needed for the growing Phoenician manufacturing industry, metals they found in the rich copper mines of Cyprus and in the silver, tin, and copper mines of the Iberian Peninsula.

From the ninth century onward, Phoenicia was subjected to varying degrees of domination by the new empires that succeeded each other in the east. Assyrian kings from Ashurnasirpal II (883–859 BCE) to Ashurbanipal (668–633 BCE) regularly campaigned eastward to the Mediterranean coast. It is clear from the Assyrian annals that while they regularly wreaked punishment and destruction on the Aramean and North Syrian states, they generally did not attack the Phoenician cities but instead exacted tribute. Phoenicia also gave the land-bound Assyrians access to the lucrative Mediterranean commerce from which they extracted additional income.

According to documents from the reign of Tiglath-Pileser III (745–727 BCE) and a treaty between Esarhaddon (680–669 BCE) and the king of Tyre, Assyrian officials were resident at key port cities. They oversaw the shipping there, collecting taxes on the export-import trade and on the felling of cedar trees. As long as the tribute and taxes were forthcoming, Assyrian rule over the Phoenician cities was relatively mild, allowing them a semiautonomous status. While hostile military action may have been undertaken against the Phoenician cities by Tiglath-Pileser III, the first clear indication in the annals is to battles against Sidon and Tyre by Sennacherib (704–681 BCE). The following two rulers describe a second destruction of Sidon and both mainland Tyre and its island stronghold, which, like numerous cities and kingdoms in Assyria's western provinces, had refused to pay tribute. The destruction of Nineveh by the Babylonian king Nabopolassar (626–605 BCE) in 612 BCE ended Assyrian domination in the west. Nebuchadrezzar (605–562 BCE) then led a series of campaigns that brought all of Syria-Palestine under his control. Babylonian rule in Phoenicia was similar to that of Assyria, including annual tribute and taxes and resident officials to assure their payment. A few decades later Nabonidus (556–539 BCE) was defeated by Cyrus of Persia, and the short-lived Babylonian Empire came to a close.

With the creation of an even larger and better-organized Persian Empire under Cyrus (559–530 BCE), Phoenicia, Cyprus, and Egypt formed the Fifth Satrapy (province), whose capital was Sidon. Like the Assyrians and Babylonians, the Persians were interested in the Phoenician commercial ties to the west, but also in the Phoenician fleets and maritime expertise used extensively in Persia's long and ultimately unsuccessful attempt to conquer Greece. The Phoenician cities prospered under the Persians and the whole period (539–

332 BCE) was generally a time of peace. The trade network in which the Phoenicians then played a central role stretched from Gibraltar to Persia, from the Caucasus to Nubia. The introduction of coinage in Phoenicia greatly facilitated this international commerce—at Sidon in about 450 BCE and shortly thereafter at Tyre, Aradus, and Byblos. The material affluence of these cities under the Persians is reflected in the temples at Amrit and Sidon and in the high level of wealth among the populace at large. This prosperous and peaceful life of the Phoenician cities was interrupted several times in the fourth century BCE by local uprisings attempting to get rid of Persian rule. Although such revolts were put down, they were one sign of the unrest and divided loyalties within the Phoenician cities that eventually helped pave the way for the Macedonian conquest in 332 BCE.

It is more difficult to define the role of Egypt in Phoenician affairs during the Iron Age. By the mid-twelfth century BCE, Egypt had ceased to be a power in Southwest Asia. Its foreign policy was reduced to playing one local state against another, to joining Canaanite coalitions against the Assyrians and Babylonians, and to isolated military campaigns of their own. The one attempt to rebuild an empire is credited to Psamtik I (664–610 BCE) and Necho II (610–595 BCE) of the twenty-sixth dynasty. This was brief, however, as Necho II was defeated by the Babylonians at Carchemish in 605 BCE, ending any Egyptian hopes of rebuilding its empire in the region. In the face of the Assyrian and Babylonian empires, Egypt could do little more than safeguard its own frontiers while undertaking a policy of fomenting unrest in Canaan whenever possible. Egypt's northern border was breached in 525 BCE at the battle of Pelusium, when the Persian ruler Cambyses added the Nile kingdom to his expanding empire.

Culture. The Phoenician language is a later form of Canaanite (or West Semitic) used in Phoenicia itself and in North Syria, Cilicia, Cyprus, and elsewhere, preserved in texts dating from the eleventh to the first centuries BCE. Several local dialects can be identified through differing grammatical features. Texts of historical, economic, or religious (other than funerary) content are rare. Phoenician was written from right to left in a consonantal alphabet which, on present evidence, originated in Palestine during the middle centuries of the second millennium BCE. All known texts, however, are inscribed on durable materials such as stone or bronze. Alphabetic writing could well have been used earlier in Phoenicia and elsewhere on a perishable material such as papyrus that has not survived the wet climate of the region. The Phoenicians transmitted this alphabet to Greece, perhaps in about the mid-eighth century BCE, when Greek texts appear in the Phoenician script with a few changes to accommodate the phonemes of the Greek language. Some now argue that this borrowing took place as early as the eleventh century BCE.

The basic characteristic of Phoenician art is its blending of styles borrowed from most artistic traditions of the ancient world. The inventiveness by which the Phoenician artist combined, for example, Aegean, Hittite, and Egyptian artistic forms and motifs formed a distinct style easily recognizable as Phoenician. This style, however, originated in Canaanite antecedents of the Middle and Late Bronze Ages as seen, for example, on North Syrian cylinder seals and the ivories of Ugarit and Megiddo. These illustrate that the Phoenicians of the Iron Age improved upon but did not invent the style that became a hallmark of their civilization.

Phoenician craftsmen excelled in the manufacture of small objects such as gold jewelry, engraved metal dishes, and ivories. They were particularly adept at producing varicolored glass bottles and flasks because the chemical properties of the sand along the Phoenician coast were especially suited to this industry. Among their finest products were scarabs of hard stones based on Egyptian originals but made in a unique Phoenician, or Greco-Phoenician, style. All these objects were easily transported and were an essential element in the Phoenician mercantile economy. Their popularity is evidenced not only by their widespread distribution, but also by local imitations. As Phoenician trade centers were established overseas, immigrant craftsmen set up local workshops, training foreign artists to help meet the demand for Phoenician manufactured items.

The purple dye industry for which the Phoencians are so well known had a similar history. The dye was made from secretions in the Murex marine snail, common around the Mediterranean coastline. Dye installations were already in existence along the Phoenician coast in the Late Bronze Age, but it was in the Iron Age that production reached its height. As they expanded their commercial interests and trade centers, the Phoenicians established dye factories at many sites in the west.

Although they were expert in the production of small objects, Phoenician artists fell short when it came to larger objects in stone, represented mostly by sarcophagi and funerary stelae. While there are some fine pieces, like the marble figures of children dedicated to Eshmun at Sidon and the stone sarcophagi from that site, they are of the Persian and later periods and show the influence of Hellenistic art. Earlier pieces, such as the sarcophagus of Ahiram from Byblos and the newly discovered funerary stelae from Tyre, are clumsy and technically unappealing.

Religion. Most of what is known about Phoenician religious beliefs and practices comes from secondhand sources, primarily classical and early Christian writers and the Hebrew Bible, all of which viewed the Phoenician religion from their own perspective. Philo of Byblos, for example, transmits earlier Phoenician ideas via the euhemeristic approach of his day; statements in the Hebrew Bible, while contemporary to Iron Age Phoenicia, were influenced by the prophetic movement that saw all foreign religious systems as

enemies of Yahweh. Even the Late Bronze Age Canaanite religion, as described primarily in the cultic and mythological literature of Ugarit, is not a sure guide to Phoenician thought because it represents a theological system of an earlier time.

Iron Age Phoenicia itself offers only meager textual and archaeological data. While several Phoenician deities are noted in the texts, little is known of their function and character. No national pantheon can be defined as there was no national political identity that required one; deities were, rather, associated with individual cities. The chief god at Byblos is known only from his title Baal, "The Lord," a common appellation of Phoenician gods, often referred to as "Lord" of a place, city, or attribute. Other "Baals" appear in the Byblian texts, namely, Baal Shamêm, "Lord of the sky," and Baal Addîr, "Mighty Lord." Scholars are divided as to whether these should be considered divine epithets or epithets hypostatized into distinct new deities. Is Baal Shamêm, for example, a deity in his own right or is this merely a title of another, perhaps El, head of the older Canaanite pantheon? All these gods were overshadowed by Baalat Gubla, "Mistress of Byblos," a fertility goddess attested from earlier times and portrayed with the attributes of the Egyptian Hathor. She was the protectress of the city and its kings and was later identified with Aphrodite. Texts from Byblos also mention "the assembly of the holy gods of Byblos," recalling similar divine assemblies at Ugarit and elsewhere.

The chief god of Sidon was "the lord of Sidon," though he is mentioned only once and his personal name is unknown. As at Byblos, a fertility goddess, Ashtart (Astarte), held the preeminent position in the Sidonian pantheon. Ashtart played a minor role in the older Canaanite religion but became the protectress of Sidon and its rulers in Phoenician times. Ashtart was similarly an important goddess at Tyre where she was also known as Tannit, probably an attribute of Ashtart later personified as a distinct goddess in the western Punic world. Another prominent god of Sidon was Eshmun, a god of healing worshipped there from the seventh century BCE in his large temple outside the city. As a god of healing, Eshmun was widely honored. It seems likely that he was the god of healing in the temple at ʿAmrit, known there by his epithet Shadrapa, "the protective spirit of healing." Like Tannit, Shadrapa, originally an attribute, became a separate deity (Satrapes) in Hellenistic times.

The chief god of Tyre was Melqart (**Milk-qart*), "King of the City," unknown before the first millennium BCE. It is generally felt that Melqart was the divinized personification of the ideal Phoenician king, perhaps a semidivine ancestor of the Tyrian rulers and founder of the city. Texts from Phoenicia itself mention Melqart only as a human personal name, but the god does appear in the treaty between Tyre and Esarhaddon of Assyria as one of the principle deities of the city (among whom were Ashtart, Baal Shamêm, and Baal Malage, the latter perhaps a maritime deity). Although maritime deities must have been of great importance to Phoenician seafarers, the extant Iron Age documentation produces only one sure example, portrayed but not named on the earliest coinage of Aradus. Classical sources, of course, are replete with Phoenician gods of the sea such as Baal of Beirut, equated with Poseidon.

The religious role of Phoenician kings is little known. By analogy to contemporary societies, priestly functions were part of a ruler's duties. The stela of Yehawmilk of Byblos shows him before the "Lady of Byblos" apparently officiating at some ritual, echoed by the same scene on a small plaque from Byblos of about the same date. A king and queen of Sidon as well as their son carried the title "priest(ess) of Ashtart" but this may have been a local practice and it cannot be assumed that Phoenician kings in general served as high priests of their city goddesses. Kings built and repaired temples, ruled on behalf of the titular deity of their cities, and were referred to as "the father and mother" of their people, perhaps as the earthly representative of that deity.

While the texts indicate that many temples were active, archaeology has produced little more than the temples of Eshmun (Shadrapa) at ʿAmrit and Sidon. A tiny shrine was found in the industrial quarter at Sarepta and a small temple is known from Tell el-Ghassil in the Biqaʿ Valley outside ancient Phoenicia proper.

Nothing is known of the mortuary beliefs of the Phoenicians, but they were probably similar to those in contemporary Canaanite societies. The funerary texts usually include a wish for a long life. One Sidonian king laments: "I was taken away before my time (to die)." Such statements indicate that the Phoenicians shared the common view that the gods meted out reward and punishment in this life, not the next. There is no mention of the underworld, other than in the curse that any who desecrate a burial will have no place among the *rephaim,* the netherworld inhabitants. What deity presided there cannot be determined; the general opinion is that, by analogy to the Canaanite pantheon, it would be Mot.

Tombs of the period were of several types, including vertical shafts leading to a burial chamber, stone-lined pits, and natural caves. Cemeteries throughout Phoenicia show that both inhumation and cremation were practiced side by side, sometimes in the same tomb, for both adults and children. Whether or not the Phoenicians engaged in child sacrifice, as stated by Hebrew and classical writers, has been debated for decades. Both the linguistic and archaeological evidence are inconclusive, and no scholarly consensus has yet been reached. The recent discovery of a possible tophet, or child cemetery, at Tyre has already produced some new information. A final judgment must await the complete excavation of the site.

[*See also* ʿAmrit; Byblos; Glass; Hittites; Nineveh; Phoe-

nician-Punic; Phoenicians; Semitic Languages; Sidon; *and* Tyre.]

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PHOENICIAN-PUNIC. A Northwest Semitic language of the first millennium BCE, Phoenician-Punic belongs to the Canaanite group of languages (Ammonite, Edomite, Moabite, and Hebrew), distinct from Aramaic. [*See* Proto-Canaanite; Ammonite Inscriptions; Hebrew Language and Literature.] In the continuum of Northwest Semitic dialects of the first millennium BCE, Phoenician-Punic stands at one extreme, Aramaic at the other (Garr, 1985, pp. 205–235). Originally spoken on the coastal strip of what are modern Lebanon and southern Syria, it spread, beginning in the ninth century BCE, to those regions reached by Phoenician merchants or mercenaries—Asia Minor, Palestine, Egypt, Greece, and the Aegean Islands. Following its overseas expansion, Phoenician was transplanted to the colonies it founded on Cyprus and westward into North Africa, Malta, Sicily, Sardinia, and southern Spain, including the Balearic Islands. The name *Punic* is used for the phase of language and the type of script developed in Carthage and used throughout its empire, from the beginning of the sixth century BCE onward. As with all the Canaanite languages, with the exception of Hebrew, Phoenician-Punic is attested mainly by inscriptions. The only literary evidence consists of some Punic passages in the Latin comedy *Poenulus,* by Plautus. Phoenician-Punic personal names are attested in Akkadian, Greek, and Latin transcriptions, while some Phoenician-Punic words are cited in classical sources, as late as St. Augustine (fourth century CE). [*See* Akkadian.]

Chronologically, Phoenician-Punic inscriptions range from approximately the eleventh century BCE (Ahiram, *KAI* 1–2) to the second century CE (Bitia in Sardinia, *KAI* 173). [*See* Ahiram Inscription.] A few earlier inscriptions may also plausibly be identified as Phoenician: a small number of brief texts engraved on arrowheads, from different sources, and some on clay objects (cones) from Byblos, dated to the twelfth–eleventh centuries BCE. [*See* Byblos.] On the other hand, a small collection of inscriptions, called Latino-Punic, dated to the fourth–fifth centuries CE and written in Latin characters (with special signs $ and Σ for ṣ and š), express a developed form of the Punic language.

Phases and Dialects. Phoenician-Punic can be divided into broad chronological and geographic phases. Only the inscriptions from Byblos show a clearly distinct dialect, archaic in respect to the rest of Phoenician. That dialect underwent changes over time that can be classified in three phases, the first two of which are usually called Old Byblian: the Ahiram inscription, preceding the tenth century BCE, which is archaic; the royal inscriptions of the tenth–ninth centuries BCE, which are more developed, especially in respect to the form of the pronominal suffix of the third-person masculine singular (Ø/-W, still -H in the preceding phase); and the inscriptions of the Persian and Hellenistic periods that preserved some peculiarities of the ancient dialect (e.g., the suffix Ø/-W) but also adopted some features of the Tyro-Sidonian dialect (e.g., the relative 'Š; Z in the preceding phases).

All other documents from the Phoenician homeland, as well as from the eastern and western colonies (until the sixth

century BCE) are written in a homogeneous language. It corresponds to the dialect of Tyre and Sidon and has been named Standard Phoenician. [*See* Tyre; Sidon.] This homogeneity was the result of the supremacy of the Tyro-Sidonian area over all of Phoenicia. The identification of northern Phoenician ('Amrit) and Cypriot-Phoenician dialects is problematic. [*See* 'Amrit.]

In the West, the Punic language, with its own distinctive features (mainly phonological and orthographic), is not attested before the fifth–fourth centuries BCE, although some peculiarities probably existed somewhat earlier. After the fall of Carthage (147 BCE), but again probably after the beginning of the second century BCE, Punic underwent a characteristic phonologic and morphologic development: loss of the laryngeal and pharyngeal consonants, the suffix pronoun -M, and the demonstrative pronoun ST and the relative use of MY and M'. This phase is classified as Late Punic.

Grammar. The grammar of Phoenician-Punic may be discussed in terms of its phonology, morphology, and syntax.

Phonology. The consonants and vowels will be treated separately.

Consonants. Phoenician had twenty-two consonantal phonemes, as is shown by its alphabetic series. As compared with the reconstructed Common Semitic system, the velar fricatives *ḫ* and *ġ* had merged with the pharyngeals *ḥ* and *ʿ*; for example, **ʿaḫ,* "brother"; **ġalmat-* > *ʿalmat,* "girl." The four interdental fricatives—*ṯ, ḏ, ṱ,* and *ḏ̣*—had merged as follows: *ṯ* > *š, ḏ* > *z,* and *ṱ* and *ḏ̣* > *ṣ*; for example, **ṯalāṯ-* > *šalōš,* "three"; **ḏ-* > *z,* demonstrative-relative element, **ṱor,* "rock" > *ṣōr,* the name of Tyre; and **ʾarḏ* > *ʾarṣ,* "land/country." This situation is shared by the other Canaanite dialects. As in Ugaritic, *ś* was not distinct from *š*; compare *nś',* "to lift" (Masoretic Hebrew, *nś'*). [*See* Ugaritic; Ugaritic Inscriptions.] Transcriptions indicate that the pronunciation of *š* was probably [ç].

Changing or dropping consonants is attested during the history of Phoenician-Punic, particularly as regards the series of pharyngeals and laryngeals. *Aleph* tends to be dropped in closed or doubly closed syllables: for example, Phoenician RŠ for R'Š, "head/cape" (perhaps in *KAI* 46.1), Punic MLKT, "work" (*CIS* 1.3914.2) for ML'KT (*KAI* 10–11). Punic and Late Punic show a weakening and confusion of pharyngeals and laryngeals, which, in the most recent phase, were dropped in pronunciation and used as vowel-letters (see below). Examples are 'KHN for HKHN, "the priest" (*CIS* 1.246); B'L HMN for B'L ḤMN, the name of the deity (*CIS* 1.302); B'L 'MN (*CIS* 301); 'MŠ for ḤMŠ, "five" (*KAI* 112.3–4). The assimilation of *nun* to a following consonant is characteristic of all Phoenician-Punic (cf., e.g., YSʿ, **yinsaʿ* > *yissaʿ,* "he pulls down" (*KAI* 26.AIII.15).

Vowels. There are no vowels represented in Phoenician orthography, and *matres lectionis* were used only very rarely—for example, in foreign personal names, such as HRN' for the Greek *erēnē,* (*KAI* 56). A system of marking vowels was used, seldom in Punic but frequently in Late Punic, where, at least in some centers, as in Tripolitania, regular use can be observed of the pharyngeal and laryngeal series and of *yod* and *waw* as vowel-letters (*aleph* is used originally for any vowel, then specifically for *o* and *e*; H is used specifically for *e*, but also for any vowel, and, similarly, but more seldom, Ḥ; ʿ is used frequently for *a*, Y for *i*, and W for *u*). From this late usage and from transcriptions it is possible to reconstruct a system consisting of *a, e, i, o, u* and *ā, ō, ū.*

The following developments of Common Semitic vowels and of diphthongs are characteristic. At Amarna the shift **ā* > *ō,* typical of Canaanite, had already occurred. [*See* Amarna Tablets.] In the development of Phoenician-Punic, this shift remains operative. Indeed, every secondary *ā* changed to *ō*; for example, **maqāmu,* "place" > *maqōm* in Phoenician and in Hebrew; however, the original **naša'tī,* "I carried," with the supposed quiescence of *aleph* in a closed syllable, goes to *našōtī* in Phoenician (cf. *nasot,* "I carried," *Poenulus* v. 937; *nasā'tī* in Hebrew). Later, *ō* changed to *ū,* invariably in open, unstressed syllables, but often also in closed, stressed syllables (Krahmalkov, 1992): for example, **ṯalāṯ-* > *šalōš* > *šalūš,* "three" (cf. *salus, Sanctii Aureli Augustini Opera,* section 4, pt. 1, edited by I. Dijvak, Vienna, 1971, pp. 186ff.: *Epistola ad Romanos inchoata Expossitio,* 13). While it has not been proved that every accented *á* changed to *ā* and then to *ō*, there was a tendency for *a* to shift to *o* in stressed syllables. Diphthongs are always reduced: **ay* > *ē* and *a*; for instance, **yadaym-* > *yadēm,* in Latino-Punic *iadem,* "his hands" (dual + suffix; *KAI* 178.1); **aw* > *ō* and *ū*, for instance, **'ittaw-baʿl* (<*'ittahu*), in Greek *ithōbalos* (Josephus, *Against Apion* 1.156, for a personal name), "Baʿl is with him"; and **mawt* > **mōt* > *mūt.* Mouth (Sanchuniaton 34, in *Eusebii Caesariensis Praeparatio Evangelica,* edited by K. Mras, Berlin, 1954, vol. 8), is the name of the deity Mot. Reduction of vowels is attested in pretonic and propretonic syllables: the pretonic *i* is elided in *dobrim,* "saying (pl.)" (*Poenulus* v. 935, < **dābirīm*); the pretonic *a* becomes a vowel of the kind of Hebrew *shewa* in *bynuthi* (*Poenulus* v. 932, **bᵉnūti* < **banāti*).

Morphology

Pronouns. Pronouns take on independent forms in Phoenician-Punic: 1 c. sg. 'NK *'anōki* or *'anīki* ("*anech*" in *Poenulus* v. 995); 2 m. sg. 'T *'atta;* 2 f. sg. 'T *'atti;* 3 m. sg. H' *hu'(a),* Old Byblian H'T, *hu'atu;* 3 f. sg. H' *hi'(a),* Late Punic HY (*KAI* 130.3); 1 c. pl. 'NḤN *'anaḥnū;* and 3 m. pl. HMT *humat(u).* Suffix forms exist for the possessive and object: 1 c. sg., possessive Phoenician, Byblian Ø *-ī,* -Y *-ya;* Phoenician and Punic -Y; object -N *-nī;* 2 m. sg. -K *-kā;* 2f. sg. -K *-kī* (Late Punic -KY); 3 m. sg. Old Byblian -H, -W; Byblian -Ø, *ō,* -W, *w*; Phoenician Ø, *-ō,* -Y, *-yū;* Punic -', *-ō,* -Y, *-yū;* Late Punic, also -M, *-im/-em;* 3 f. sg. Byblian

-H; Phoenician Ø, *-ā*, -Y, Punic -', *-ā*, -Y, *-yā;* 1 c. pl. -N, *-nū;* and 3 m. pl. Byblian -HM; Phoenician *-M, -ōm,* -NM, *-nōm;* 3 f. pl. Phoenician probably -M, *-ēm,* -NM, *-nēm.*

In Byblian and in the earliest phase of Phoenician (Old Phoenician) there is a distinction in the form of the first-person object suffix according to the case of the noun. It was *ī,* attached directly to the stem, and unwritten when the case was nominative and accusative, but it was *-ya,* written -Y, when the noun was in the genitive or in the plural: Phoenician, 'B, *'ab-ī,* "my father" (*KAI* 24.3) and 'BY, *'abī/ya,* "of my father" (*KAI* 5); Byblian, HRBT, *ha-rabbot-ī,* "my lady" (*KAI* 10.2), but L-RBT-Y, *la-rabboti-ya,* "to my lady" (*KAI* 3; *-i-* is the genitive ending), BBNY, "among my sons" *bi-banē-ya* (*KAI* 24.13). Early in Phoenician-Punic (but not in Late Byblian), the orthography -Y extended to all cases (ŠMY, "my name" [acc.], *KAI* 26.C4.8).

The possessive suffix at Byblos of the third-person masculine singular was -H (Ahiram inscription: L'ḤRM 'BH, "to Ahiram his father," l.1; SPRH, "his inscription [nom.]," l.2), or Ø, *ō,* -W (tenth–ninth centuries BCE and in the Persian and Hellenistic periods: YMW, "his days"; ŠNTW, "his years" [*KAI* 4.4]; 'DTW, "his mistress" [gen.; *KAI* 6.10]), according to the case and number of the noun, as in Phoenician (see below). The feminine suffix was -H in Late Byblian (MSPNTH, "its ceiling"; *KAI* 10.6). Phoenician and Punic possessive pronouns have complementary forms according to the noun ending. When the singular noun was in the nominative or accusative, the suffix was vocalic (*-ō* for the masculine, *-ā* for the feminine); it was not expressed graphically in Phoenician but was written -' in Punic: for example, R'Š, **rāš-a-hu* > **rō'š-aw* > *rō-šō,* "his head" (nom.; *KAI* 24.15–16); QL and QL', **qōl-a-hu* > **qōl-aw* > *qūlō,* "his voice" (acc.; *KAI* 38.2, 63.3); and *koulō* (*KAI* 175.4). When the singular noun was in the genitive, the original m. **-hū,* f. **-hā,* combining with the genitive ending *-i,* became *-yū* (masc.) or *-yā* (fem.), written -Y in Phoenician-Punic (Late Punic is also -Y')—for example, L-'DNY, **la-'adōn-i-hu* > *la-'adoniyū,* "to his lord" (*KAI* 17.7). An analogous complementarity appears for the suffix of the third-person plural, which is for the masculine *-ōm,* written -M, after the noun in the nominative-accusative, and *-nom,* written -NM, after the noun in the genitive; for example, QLM, "their voice," **qōl-a-humu* > *qōlōm* (*KAI* 39a.3, b.4); L'DNNM, *la-'adoni-nōm,* "to their lord" (*KAI* 40.5). For the feminine it is probably *-ēm/-nēm* (cf. *msprm,* "their [f.] number," *lknnm,* "that they [f.] might belong" [lit., "for their being"]—cf. Krahmalkov, 1993a).

As regards the plural noun, the suffix of the third-person singular is -yū (masc.), -yā (fem.), written -Y, attached to the ending -ē of the bound plural in Phoenician and in Punic (Late Punic is also -Y')—for example, QL DBRY, "the voice of his prayers" (*KAI* 61.6); LBNY', "for his sons" (*IPT* 14.1). The suffix of the third-person plural masculine and feminine is *-nōm,* written -NM—for example, QL DBRNM, "the voice of their prayers" (Gibson, 1982, n. 16, l. 5); ḤBRNM, "their colleagues" (*KAI* 69.14).

In Late Punic, the picture of the possessive suffixes of the third-person singular and plural, masculine and feminine, is slightly different: for the third-person singular masculine the suffixal form -M (pronounced *-im* or *-em* according to the end of the noun) appears. It was probably used with genitive and plural nouns but it soon extended to the nominative-accusative. Its supposed origin is **-i-hū* > **iw* > *-im; *-ē-hū* > **-ēw* > *-ēm* (Huehnergard, 1991, p. 190). Examples are BNM, "his son" (gen.; *CIS* 1.2805.5); *libinim,* "for his son" (*IRT* 873.4); *baiaem,* "during his life" (*IRT* 828.3); QLM, "his voice" (acc.; *KAI* 77.3). In a similar way, with the complementary use of the variant -', Y of the third-person suffix singular was often lost (cf. SKR DR', "the memorial of his family" [*KAI* 128.2]; QLY, "his voice" [acc.; *KAI* 77.3]).

The object suffix of the third-person (masc. and fem.) singular and plural follows the same rules as the possessive: the complementary distribution of the forms, depending on whether the verbal form ends in a vowel or a consonant. Examples are Byblian YBRK, "may he bless him" (*KAI* 12.4); Punic BRK', "he blessed him" (*CIS* 1 passim); *barakō* (*KAI* 175.4f.); BRKY', "they have blessed him" (*KAI* 105.5); and YBRKYŠ, "may they bless him" (*CIS* 1.5620.4).

For determinative-relative pronouns, Old Byblian has Z *zū* and Standard Phoenician 'Š *'īš.* The use of 'Š, Š, and ŠL is attested to express relationship. For demonstrative pronouns, such as *this,* Old Byblian has ZN and Byblian Z and ZN (fem. Z', only in the Yehawmilk inscription, *KAI* 10 passim). Standard Phoenician and Punic have Z (masc. and fem., differing in vocalization); Z' is attested for masculine in *KAI* 30.2 (ninth century BCE on Cyprus); 'Z, with the prothetic *aleph,* present in the Phoenician homeland and seldom in the western colonies, is frequently used on Cyprus. Late Punic has the innovation ST, used for both genders. 'L (cf. *ily, Poenulus,* v. 938) is the plural for both genders. For *that,* the independent pronouns are used. As adjectives, the demonstratives follow the noun and, with rare exceptions, do not have the article.

As in all Canaanite languages, determination is shown by the preposed article H-. Late Punic orthographies demonstrate the gemination of the following consonant (cf. 'MMQM, *ammaqōm,* "the [holy] place," *KAI* 173.5). The article does not appear in the Old Byblian Ahiram inscription, although it is already present in that of Yehawmilk, MPLT HBTM 'L, "the ruins of these temples" (*KAI* 4.2.f). Regarding interrogative and indeterminate pronouns, MY and M (M' in Punic) are attested, the first for *who?* and *whoever* and the second for *what?* and *whatever.* Interrogative usage is only attested by Plautus (cf. *Poenulus* v. 1010 [*mi* and *mu*]). Compounds are QNMY, "whoever" (*KAI* 14.20, Eshmunazar); M'Š, for example, in M'Š P'LT, "what

I accomplished" (*KAI* 24.4). [*See* Eshmunazar Inscription.] Late Punic and Latino-Punic use MY and M' *(mu)* as relative pronouns: LMY LPNY = Latin *cui primo,* "to whom, for the first time" (*IPT* 27.7); MNṢBT M' P'L' + BN̆['M], "stela that [his] son[s] made" (*IPT* 77.1 = *myngysth mu fel* + Bibi [*IRT* 873.1]). For *every* and *each,* Phoenician-Punic uses KL; for *another,* it uses ZR or ŠNY (lit. "the second"; Hebrew uses 'aḥēr) and 'ḤRY, apparently a noun in a construct state (cf. KL 'ḤRY H[MQDŠ]M, "all the other sanctuaries [?]" [*KAI* 19.9f.] and 'ḤRY HŠ'R, "the rest of the flesh" [*KAI* 69.4, 8]).

Nouns and adjectives. When transcriptions are present, it is possible to verify that Phoenician-Punic possessed the main schemes of Common Semitic. The class of the so-called segolate nouns deserves special mention. Unlike Masoretic Hebrew, these nouns only seldom have an anaptyctic vowel. Examples are **'alp,* "ox," in *lasounalph,* a plant name (Pedanii Dioscurides, *De materia medica* 1.128); **milk,* "king" (or the god Milk), in the personal name ᶠMil-ki-a-ša-pa (Asarhaddon 60.59—see R. Borger, *Die Insehriften Asarhaddons Königs von Assyrien,* Graz, 1959); but **zeraʿ* or **zuraʿ,* "seed," in *zera* (Dioscurides 2.125); *zura* (Pliny, *Nat. Hist.* 24.71); and **sûriš* (?), "root," in *suris* (Dioscurides 2.193).

The inflection of nouns and adjectives is summarized in table 1. The feminine singular retains its original *-t,* as opposed to Hebrew, which has **-at* > *ā* (*â*). As observed, *-at* of the feminine (bound and unbound) was generally pronounced *-ot* (see above). There is no compelling evidence to prove that a long vowel existed between the feminine plural stem and pronominal suffixes, as in Hebrew. *Poenulus* v. 932, *bynuthi,* "my daughters," seems to prove the contrary. The dual is rare, its usage largely limited to parts of the body that occur in pairs, such as hands (cf. Latino-Punic *iadem,* "his two hands" [*KAI* 178.1]).

Declension may have been maintained in the oldest phase of the language. Later, the different forms of the third-person pronominal suffix (and of the first singular in Byblian) indicate preservation of the genitive case ending, at least in the singular bound forms. Only for Late Punic is there evidence of confusion.

Verbal stems. The verbal stems correspond to those attested in Hebrew. There is no evidence before Late Punic of the passive of the D stem (doubled second radical) or of the causative stem. The Ahiram inscription presents two examples of Gt (-t infixed) used as a passive or reflexive: THTSP (fem. subject, ḤTR, the "scepter"), "may it be stripped," and THTPK (fem. subject, KS', "throne"), "may it be overturned" (*KAI* 1.2). The prefix of the causative stem is Y- (H- in Hebrew); consequently, the Dt stem (doubled second radical + t) (Hebrew *hitpael*) must be *yitpael* (perhaps YTLNN, "they used to whimper" [*KAI* 24.10]). As the prefix of the causative normally corresponds to the pronominal suffix of the third-person singular, it is possible that, in its earliest phase, Old Byblian (the Ahiram inscription) still had H-.

Conjugations. The suffix conjugation for Phoenician-Punic has the same consonantal skeleton as Hebrew, with the exception of the third-person feminine singular of the suffixed form, which ends in *-a* (cf. Late Punic NDR' [*CIS* 1.216.3f], and NDR' [*CIS* 1.207.3], "she vowed"); only forms with an object suffix maintain *-t* (cf. Byblian P'LTN [*KAI* 10.2], "she made me"). Vocalization *-tī* of the first-person singular is shown by *Poenulus* v. 930, *calroIthi,* "I implore," and Late Punic KTBTY, "I wrote" (*KAI* 145.6); *-ū* of the third-person plural is shown, for example, by the Late Punic P'L', "they did" (*KAI* 130.5). The prefix conjugation also has the same consonantal structure as Hebrew. Vocalization is not surely attested.

A distinction between indicative and jussive is attested in the third-person plural with the forms ending, respectively, in *-ūn* and *-ū* (cf. YŠ'N, "they shall pay" [*KAI* 60.6], and LKN YDʿ HSDNYM, "so that the Sidonians might know" [*KAI* 7]). A volitive mood *(energicus)* is attested in 'PQN, "may I find" (*KAI* 50.3). The imperative, participle, and infinitive seem to correspond to Hebrew. However, for the passive participle, Late Punic has the orthography BʿRYK, indicating a *qatil* form (CEDAC, Carthage, Bulletin 8, 17ss., 1.3; cf. also personal names, Baric, meaning "blessed," *CIL* 10686).

Particles. Most adverbs and prepositions are Common West Semitic. B- presents the variants 'B-, with the prothetic *aleph,* and BN- expanded with N before suffix pronouns. With the preposition L-, the third-person suffix singular was only vocalic—not written in Phoenician but written -' in Punic. Combinations of prepositions are common: for example, LMNʿRY, "from his youth" (*KAI* 24.12), and LMBḤYY, "during my lifetime" (*KAI* 35.2). The prepo-

TABLE 1. *Inflection of Nouns and Adjectives*

	SINGULAR		PLURAL		DUAL	
	Unbound	Bound	Unbound	Bound	Unbound	Bound
Masc.			-M *-īm*	-Ø *-ē*	-M *-ēm*	-Ø *-ē*
Fem.	-T *-(a)t*	-T *-(a)t*	-T *-ōt*	-T *-ōt* (+V?)	-Ø *-ē*	-T *-at-ē*

sition 'L has the variant 'LT; for "with," Phoenician uses 'T (Heb., 'M). The accusative particle is 'YT (like ancient Aramaic—later, only 'T; for a different use, see Krahmalkov, 1992; and Late Punic *4th Poenulus* 939), which governs the genitive: ŠM' 'YT NDRY "(the deity) fulfilled his vow" (suffix -Y and not -'; but later, ŠLM 'YT NDR', "he fulfilled his vow" [*KAI* 115.1–2]).

To negate, Phoenician-Punic uses 'Y, BL, and 'BL with the indicative mood (the Hebrew L' does not exist). 'L is used for prohibitions.

Syntax. Some syntactical rules have already been mentioned. Some remarks concerning the use of tenses need to be made. Phoenician-Punic did not employ, at least extensively, as a narrative past tense, the so-called conversive *waw* + prefixed form. There may be two cases in Hassan Beyli, *KAI* 25. WYB' (?), "and he came" (1.4) and WYP'L, "and he did" (1.5; cf. André Lemaire, 1983, p. 11). Conversely, as early as the second millennium BCE, the *waw* + suffixed form is frequently used in the apodosis of conditional clauses, with a future or jussive sense: (W'M MLK) WMḤ B'L ŠMM . . . 'YT HMLK H' "(and if a king . . .), let Ba'lšamem destroy that king" (*KAI* 26 A3.18f.). In the Ahiram inscription (*KAI* 1.1f.), W'L MLK . . . 'LY GBL WYGL 'RN ZN . . ., "and if a king . . . should come against Byblos and uncover this coffin . . .," has to be explained in a conditional context.

As a narrative past, Phoenician-Punic often uses the independent infinitive followed by the subject, as WŠKB 'NK, "and I hired" (*KAI* 24.7–8). This "narrative" infinitive can take object pronouns, as in YRDM 'NK YŠBM 'NK, "I brought them down; I settled them" (*KAI* 26.A1.20).

The common use of the L- + infinitive construct to express a future action, sometimes with a jussive or an imperative sense, is peculiar: LKTB H'DMM, "the men shall inscribe (they must inscribe)" (*KAI* 60.4); KL 'Š LNGB T 'BN Z, "every person who shall steal this stone" (*CIS* 1.3784); W'L KL ZBḤ 'Š 'DM LZBḤ, "for every sacrifice that a man shall offer" (*KAI* 69.14).

Scripts. Phoenician-Punic is written from right to left in an alphabet of twenty-two consonantal signs. It developed from a system already known in Syria-Palestine in about 1600 BCE, from which the Ugaritic cuneiform alphabet had also derived. Phoenician-Punic writing exhibits a clear general chronological development, as well as some local peculiarities. It is possible to identify more formal or more cursive styles, even though a really cursive script is present only in a few papyri and in ostraca. [*See* Papyrus; Ostracon.] Phoenician-Punic script is never completely formal, even in the most accurate stone inscriptions. Chronologically, it is possible to distinguish Phoenician, Punic, and Neo-Punic scripts corresponding roughly to Standard Phoenician, Punic, and Late Punic. Phoenician (including the Byblian inscriptions and those from Cyprus and Greece) undergoes an evolution that is, on the whole, characterized by a progressive lengthening and slanting of the shafts and by specific changes in letter forms. Typical are those that affect the forms of *aleph, he, zayin, kaph, lamed, mem, samekh, shin,* and *taw* (cf. figure 1). Local peculiarities can be distinguished, especially in Byblos (Old, Persian, and Hellenistic), on Cyprus, and in Greece. An uneven concentration of documents prevents wide knowledge of local peculiarities (e.g., the Tyrian script itself is virtually unknown).

Punic script cannot be distinguished from Phoenician script before the fifth–fourth centuries BCE. However, unlike the spoken language, some specificities, like the pointed head of *bet, dalet,* and *resh* and the crossbar of *taw,* which cuts the shaft horizontally (cf. figure 1), are already present in inscriptions of the second half of the sixth century BCE (Motya, Pyrgi). Punic is recognizable at first glance by extremely long shafts that are often shaded. The origin of this script, certainly a cursive one, which was typical of Carthage and the territories under its influence, is not yet clear. Punic script continues to be used in the Late Punic phase of the language, but in the second century BCE, and especially after the fall of Carthage, a new variant, called Neo-Punic, predominates. Once again its origin is unknown. It is likely that Neo-Punic derives from a cursive Phoenician script, already present in a less-developed form in Phoenicia no later than the fifth century BCE (some Neo-Punic forms, for instance, are present on Elephantine ostraca). [*See* Elephantine.] It is probable that this variant became the primary lapidary script with the weakening of a strong scribal tradition, especially in the West and with the fall of the metropolis. Typical of Neo-Punic are the shapes of *aleph, he, waw, ḥet, lamed, mem,* and *shin. Bet, dalet, resh, nun,* and *taw,* being very cursive and schematized, tend to resemble each other and may be confused by the reader. Neo-Punic is attested in North Africa until the end of the first century CE. The latest inscription in Punic letters has been found in Sardinia and is dated to the second century CE (*KAI* 173). It shows a developed form of script that is not, however, Neo-Punic. [*See* Scribes and Scribal Techniques; Writing and Writing Systems.]

Typology of Inscriptions. Phoenician-Punic has a corpus of fewer than ten thousand inscriptions. A small number come from the Phoenician homeland and from the eastern Mediterranean (western Asia, Cyprus, Crete, Rhodes, Cos, the Greek mainland). Most, however, come from the western colonies, especially North Africa. At Carthage, mainly from the tophet, more than six thousand texts have come to light. [*See* Carthage.] The main classes represented are votive, commemorative, and funerary. These classes originally had the same or related typologies in all the Western Semitic areas, and it is likely that they spread along with alphabetic writing. As bureaucratic and literary texts were written on perishable material (especially papyrus), there are only very few administrative texts (cf., e.g., the so-called fiscal seals, the Kition temple tarif, *KAI* 37); the Neo-Punic Cussabat ostracon (*IPT* 86); legal texts (cf., e.g., the "Marseille tariff,"

PHOENICIAN-PUNIC. Figure 1. *Phoenician, Punic, and Late Punic scripts.* (1) Byblos, Ahiram, c. 1000 BCE; (2) Cyprus, ninth century BCE; (3) Zincirli, Kilamuwa, late ninth century BCE; (4) Karatepe, late eighth–early seventh century BCE; (5) Abu Simbel, c. 591 BCE; (6) Byblos, Yehawmilk, fifth century BCE; (7) Byblos, Batnoʿam, late fourth century BCE; (8) Sidon, Tabnit and Eshmunazar, late sixth–fifth century BCE; (9) Cyprus, fourth–third century BCE; (10) Gaulos, third–second century BCE; (11) Sardinia, third–second century BCE; (12) Carthage, third–second century BCE; (13) Leptis Magna, late first century BCE–first century CE. (Courtesy M. Amadasi Guzzo)

	1	2	3	4	5	6	7	8	9	10	11	12	13
ɔ													
b													
g													
d													
h													
w													
z													
ḥ													
ṭ													
y													
k													
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KAI 69); and letters (cf., e.g., *KAI* 50, the "Saqqara papyrus"). [*See* Marseille Tariff.] The only existing decree (*KAI* 60, from Piraeus) reflects a Greek formulary. A small number of magic texts exist (the Arslan Tash amulets [Degen and Müller, 1972–1974, vol. 2, pp. 17–36], which are still problematic, a pendant [*KAI* 73], a small papyrus from Malta, and metal sheets found at Carthage and in Sardinia). A few objects (especially seals, but also vessels) bear the name of their owner and a few ostraca (especially from Egypt, Sidon, and Kition) contain mainly personal names.

Votive texts dedicate a certain object (a stela, a statuette, a vessel, but also entire buildings) to a deity, in exchange either for a benefit already obtained, or one desired. In the earliest formularies (Byblos [*KAI* 3–7], tenth–ninth centuries BCE), the word designating the object offered, generally followed by a demonstrative and/or a relative pronoun, occupies the first place. The second is occupied by the verb; then comes the name of the dedicator; and then, at the end, the name of the god who receives the gift (preceded by the preposition L-). A concluding formula, which contains the reason for the dedication—a thanksgiving or a request, or both—may follow; a curse against anyone who dares to touch the gift may also be present. This kind of formulary is used through the entire period of Phoenician-Punic. However, it develops and changes, either in general or peculiar to specific places or occasions. The most important variations are in the placement of parts of the dedicatory text and in the choice of vocabulary. From the beginning of the sixth century BCE in the West and later, although rarely in the East, the name of the god takes the first place. It is followed by the other elements in their usual order (i.e., object, relative pronoun and verb, dedicator, final formulas). This change certainly corresponds to the prominence in that period given to the divine sphere, as compared with the offering. The latter can even become purely symbolic: in place of the real objects, models of vessels or of shrines could be dedicated. The god is not only preeminent, it is also probably in a world separated from that of humanity (earlier, the divine sphere appeared to be simply higher in rank). While in the oldest dedications a beautiful object was made (P'L) for, given (YTN) to, and placed (ŠM) before the god, later, as early as the fifth century BCE, but especially in Hellenistic times, the object is simply a gift (MTNT) or a vow (NDR) that is dedicated (NDR); it gives a merit (ŠM N'M) to the dedicator, so that he can be remembered (SKR), and probably not only during his lifetime (L'LM, "for ever"; cf., e.g., *KAI* 19).

Commemorative texts (or propagandistic inscriptions) appear at the same time as votive ones, or only slightly later. They are the longest Phoenician texts preserved and the richest in linguistic data, especially lexical and syntactical. They relate the high deeds of kings (Kilamuwa, *KAI* 24) or governors (Karatepe, *KAI* 26), under the protection of personal or family gods, and are spread across the whole West Semitic area (cf. the Mesha stela, *KAI* 180; the Aramaic Zakkur inscription, *KAI* 202; the Samalian inscriptions, *KAI* 214–215; and the Aramaic Barrakub orthostat *KAI* 216). [*See* Karatepe Phoenician Inscriptions; Moabite Stone; Zakkur Inscription.] Their main characteristic is the narration in the first-person singular, the text beginning with the personal pronoun 'NK (Aram., 'NH). They are principally attested in the late ninth through the eighth centuries BCE, corresponding to the period of existence of independent city-states. Being in some cases preserved on dedicatory monuments, commemorative texts can also have the function of votive inscriptions: such is the case of the Karatepe text inscribed on a divine statue. However, the structure of the text is not modified (the Zakkur inscription, on the other hand, begins with dedicatory formulas). Their literary style suggests that they may be copies or abbreviated versions of official documents.

Although it is modified, this form survives in later periods for dedications made by kings, of which the best example is the Yehawmilk inscription from Byblos (*KAI* 10). It combines the usual votive structure, written in the third-person singular, with the commemorative style in the first person. Finally, dedications of kings or persons of high rank, from the middle of the eighth century BCE onward (*KAI* 31, from Limassol), may be written in the third person; as in propagandistic inscriptions, however, the name of the sovereign occupies the first place (cf. also, from Sidon, *KAI* 15–16).

Funerary inscriptions are generally simpler. They first mention the funerary monument itself (QBR, "tomb"; ḤDR, "funerary chamber"; 'RN, "sarcophagus"; M(N)ṢBT, "[funerary] stela") and then the name of the deceased. Royal funerary inscriptions, however, all of them from Phoenicia (Byblos and Sidon), have more complicated structures, compared to the dedicatory and commemorative ones. The components of Ahiram's inscription have the same order as those of dedicatory texts: name of the object ('RN), relative pronoun and verb, donor, name of the deceased preceded by L-, the occasion (thanksgiving or request), and a curse. The later Byblian (Batno'am sarcophagus, *KAI* 11) and Sidonian royal inscriptions, on the contrary, show a different structure: the deceased speaks in the first-person singular and the inscription begins with 'NK, as in the earlier commemorative documents. In the Tabnit funerary inscription (*KAI* 13), the presentation is followed by a long curse against an eventual robber; the Eshmunazar text (see above) is more elaborate and recounts the royal accomplishments (Eshmunazar's mother is associated with the young king) on behalf of the gods (the building of temples) and his "merits" toward the Persian king.

Punic and Late Punic, which, from the earliest times, conform to the typologies discussed above, do not attest the commemorative type (royalty is never attested in the West in antiquity; only indigenous Numidian kings wrote in Punic in the Roman period). The votive and funerary texts may

present specific formularies. Peculiar to the western type are the tophet inscriptions (seventh century BCE; *KAI* 61 A–B): votive in structure, they present a technical terminology that has not yet been satisfactorily explained (the "offering" is often designated MLK B'L, MLK 'DM, or MLK 'MR [Lat., *mol/rchomor*], where MLK is probably the name of the sacrifice and the meaning of 'ZRM 'S[T], BŠ[']RM BTM is completely obscure). In Roman times, monumental and funerary texts, sometimes bilingual (in Latin and Punic), may adapt to Punic not only Latin names of specific objects (e.g., QDRYG' = *quadriga; KAI* 122.2), buildings (e.g., P'DY = *podium; IPT* 27.10), and names of functions (e.g., 'YDLYS = *aedilis; KAI* 125), but also entire formularies (cf., e.g., *IPT,* 27).

[*See also* Phoenicians.]

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PHOENICIANS. In spite of recent advances in historical and archaeological research, the story of the Phoenicians remains an elusive one. The broad geographical spread of their civilization, which extended throughout the Mediterranean basin and beyond, makes any synthesis of the subject difficult. The problem is further complicated by the paucity of written and archaeological evidence for their existence in ancient Phoenicia (modern Lebanon). With the notable exception of Byblos and Sarepta (biblical Zarephath), none of the primary Phoenician coastal sites has been systematically excavated below Roman-period occupation levels. For Byblos itself, the evidence is largely restricted to the preceding Bronze Age (third and second millennia BCE), the period antedating the flourishing of Phoenician culture in the Iron Age.

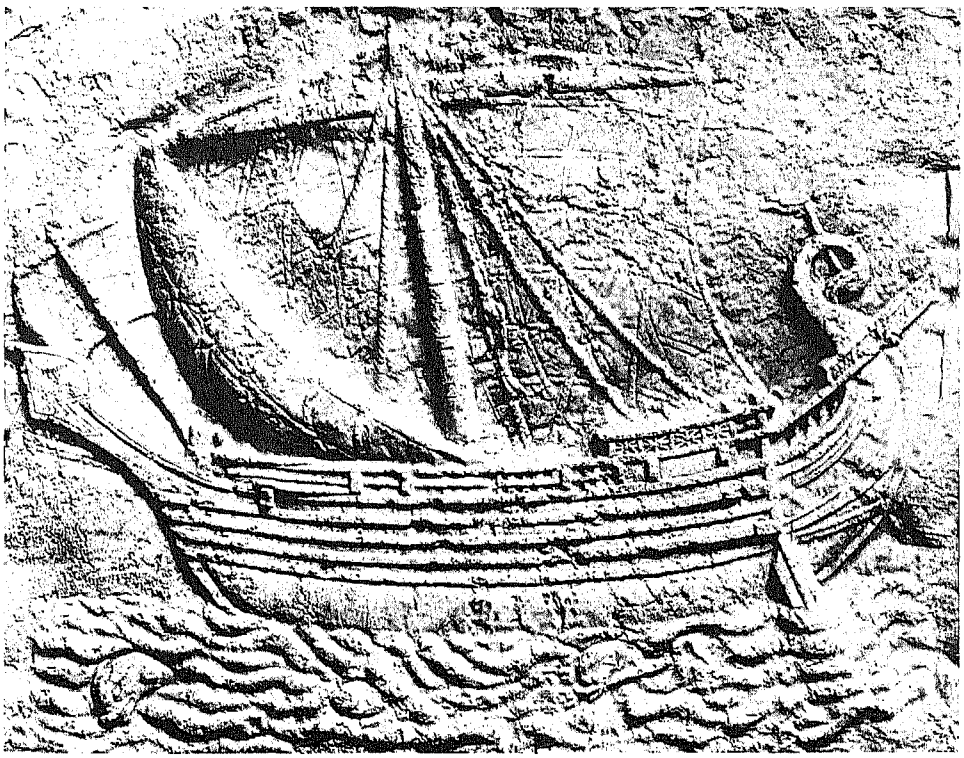
Even the etymology of the term *Phoenician,* which is adapted from the ancient Greek *Phoinikos,* remains unclear (Muhly, 1970). Among other meanings, it signified the color red-purple or crimson, which may have denated the reddish color of the Phoenicians' hair or skin or perhaps their production of a highly prized purple dye. At any rate, it was clearly a term applied to them by others. As for the designation that the Phoenicians applied collectively to themselves, the evidence is unclear. The term *Canaanite* (used broadly in ancient Near Eastern documents to describe the inhabitants of Syria-Palestine) remains the most likely guess.

The origins and ethnic identity of the Phoenicians are also unclear (Röllig, 1983). Classical antiquity has preserved a tradition associating them with the region of the Red Sea; modern scholars, however, have tended to reject this account as an etiological attempt to explain the color associations of the Greek term *Phoinikos* (Röllig, 1983, p. 80, n. 12). At the heart of this issue is the question of the Phoenicians' ethnic relationship to their Levantine predecessors, the biblical Canaanites. The extent to which the Phoenicians were the direct descendants of these Semitic peoples and the degree to which they were affected racially and politically by the later influx of other Semitic as well as non-Semitic western peoples remains an open question.

In geographical terms, Phoenicia is more easily defined. Its heartland consisted of a narrow strip of Levantine coastal plain between the cities of Aradus (modern Arwad) in the north (some scholars would extend this limit to Tell Sukas) and Akko (modern Acre) in the south. Its inland border is defined by the mountainous region comprising the Lebanon and Anti-Lebanon ranges to the east.

Commerce and Industry. In several important respects, the mountains of Lebanon defined the historical outlook of the Phoenicians—on the one hand, by limiting available agricultural land and on the other, by yielding their most valuable and exportable commodity: timber. Maritime trade thus became the linchpin of Phoenician livelihood and economy. The cedars of Lebanon were coveted in antiquity as building material, especially for ships. An active export trade in timber between Byblos and Egypt is attested as early as the Egyptian fourth dynasty under Pharaoh Snefru, c. 2575–2551). As a result of limited resources, Phoenician industry concentrated largely on the production of finished goods from imported materials. Carved ivory and wood, decorated clothing and textiles of wool and linen, stone sculpture, and engraved metals are just a few of the product categories manufactured for the export trade. The most important native industry, aside from timber, was the production of purple dye, for which the Phoenicians were renowned in antiquity. Derived from the murex shell, which was available in Lebanese coastal waters, "Tyrian purple," as it was known in antiquity, was highly prized as a colorant in garments and textiles. Large piles of crushed murex have been found at numerous coastal sites in Phoenicia and abroad, testifying to the large-scale production of this labor-intensive dye.

As commercial traders, the Phoenicians often acted as middlemen for other peoples' goods as well as their own (Herodotus, 1.1). The objectives of long-range trade were precious natural commodities, such as ivory, ebony, sandalwood, precious stones, and exotic spices and aromatics. Phoenician long-distance trade was, however, driven by another category of natural resource—precious metals (gold, silver, tin, and, to a lesser extent, copper, iron, and lead).



PHOENICIANS. *Depiction of a Phoenician merchant ship.* From a Roman-period sarcophagus relief from Sidon. Musée du Louvre, Paris. (Giraudon/Art Resource, NY)

The Phoenicians' search for precious metals was nothing new. Many of their trade routes and ore sources were already established by the Mycenaeans. The Phoenician contribution lay in expanding the scale and geographic scope of such exploitation.

As the primary medium of ancient Near Eastern commercial exchange, silver attracted Phoenician interest above all. At an early date, perhaps by the eighth century, the Phoenicians had begun to exploit the rich silver mines of southern Spain (in the Rio Tinto region initially and later in upper Andalusia). Archaeological evidence would suggest that they had also targeted the silver resources of southwestern Sardinia and northern Etruria, which, like southern Spain, were rich in silver-bearing lead ores. Phoenician skill and artistry in the working of both gold and silver was highly regarded in antiquity, as Homer records (*Iliad,* 23.741 ff.) and as numerous finds of ornately embellished Phoenician vessels and jewelry attest.

Phoenician History, 1200–64 BCE. Despite a long record of activity in the region extending back to the Early Bronze Age, Phoenician culture today is generally regarded as an Iron Age phenomenon associated with the reemergence of the Levantine city-states at the close of the Late Bronze Age. The arrival of the western Sea Peoples around 1200 and their impact upon Phoenicia is a complex and highly debated issue. In contrast to the northern Levantine coast, where the archaeological evidence speaks unambiguously for destruction and discontinuity at sites such as Ugarit, the archaeological picture for the Phoenician cities reveals evidence of less abrupt change and in some instances outright continuity. This phenomenon, coupled with the strong similarities in material record between the early Phoenician and the Cypriot and Philistine assemblages, has led to the speculation that the Phoenicians were not victims but rather allies of these incoming western sea raiders and benefited from their intervention (Bikai, 1992). The events of the late thirteenth century, at any rate, marked a watershed in the political and economic fortunes of the Phoenician city-states. The documentation for this emergent period, although scanty reveals an era of modest economic prosperity for a number of the Phoenician cities, including Sidon, Byblos, and Aradus. Two historical documents of the period—the Egyptian story of Wenamun (c. 1075) and a foundation text of Tiglath-Pileser I (c. 1100)—indicate that the Phoenicians possessed an active mercantile fleet and were engaged in a prosperous timber trade by the early eleventh century.

Archaeological finds document an active reciprocal trade relationship between Cyprus and the southern Phoenician coast. Moreover, excavations at a number of coastal sites along the Akko Plain attest to a strong Phoenician presence in northern Israel. Under King Hiram I, Tyre entered into commercial alliance with its southern neighbor, under David (*2 Sm.* 5:11) and subsequently under Solomon with whom a joint mercantile expedition in the Red Sea was launched (*1 Kgs.* 9:27).

Phoenicia's growing prosperity attracted the interest of Assyria, beginning in the early ninth century. Ashurnasirpal II's reimposition of tribute on the Phoenician coastal cities in 876 set the stage for a period of more than two hundred years of intermittent Assyrian control and involvement in the economic affairs of Phoenicia. By the second half of the eighth century, Assyrian political control over the region tightened and military activity escalated, resulting initially in the Assyrian capture of Phoenician defensive camps and ultimately, under kings Sennacherib and Esarhaddon, in the siege and reduction of the major Phoenician cities, including Sidon and Tyre. Under Ashurbanipal (668–627), Assyrian control over the Phoenician coast eventually lapsed, ushering in a relatively brief period of Phoenician political independence in the latter half of the seventh century. Following a brief and uncertain interval of Egyptian political supremacy in the region, Phoenicia succumbed in the early sixth century to the Babylonians and Nebuchadrezzar (605–562), under whom the city of Tyre was taken after a thirteen-year siege.

In 539 Phoenicia fell under Achaemenid rule, ushering in a prolonged period of relative peace and prosperity for the Phoenician cities, which were now granted a much greater degree of local autonomy than under previous Near Eastern overlords. Sidon assumed prominence, serving as the administrative seat for the Achaemenid fifth satrapy. With the encouragement of the Persians, Phoenician trade and economy flourished. The impact of Egyptian and Greek culture was now increasingly felt through trade and cultural exchange. The Persians themselves benefited militarily and commercially from their control of the prosperous Phoenician cities, whose fleets (especially those of Sidon) contributed substantially to the Persian war efforts in the fifth century.

With encouragement from Greece and Egypt, a number of the Phoenician cities joined in a series of unsuccessful revolts against Persian authority in the fourth century, ending ultimately in the destruction of Sidon in 347. Shortly thereafter, with the collapse of the Persian Empire, Phoenicia fell under Macedonian Greek control, Tyre alone among the Phoenician cities refusing to submit to the Macedonian authorities. Tyre's resistance was met with a successful siege and sack of the city by Alexander in 332.

Despite blows recently inflicted on its two most prominent cities, the Phoenicians (Tyre and Sidon included) prospered as a whole during the ensuing Hellenistic period. During the third century, the region was contested by the two Greek dynastic houses which had emerged in the Near East following the death of Alexander, the Seleucids and Ptolemies. During this time, most of Phoenicia with the exception of Arwad in the north fell under Ptolemaic rule. At the end of the fifth Syrian war in 198, Phoenicia succumbed to Seleucid

control until the final decades of the second century, when the various Phoenician cities regained their autonomy.

Under the Ptolemies and the Seleucids, the process of hellenization in Phoenicia and the Punic (Carthaginian) West accelerated, and numerous Phoenician cities and sanctuaries underwent marked expansion and redevelopment in the Greek style. The period also witnessed the emergence of a number of thriving communities of Phoenician emigrés abroad—on the island of Rhodes and in cities such as Athens and Memphis. Phoenician autonomy ended in 64 with the conquest by Pompey and Phoenicia's incorporation within the Roman Empire. [*See* Ptolemies; Seleucids.]

Phoenician Expansion Abroad and the Punic West. As is attested by numerous ancient accounts of their voyages along the Atlantic coasts of Europe and Africa, the Phoenicians were renowned in antiquity as explorers and navigators. Phoenician exploration laid the groundwork for long-distance trade, which in turn led to the establishment of Phoenician trading posts and relay stations throughout the Mediterranean basin. These were typically situated on offshore islets, promontories, and inlets—wherever safe anchorage was afforded. The majority of these ports-of-call were probably little more than temporary installations (or enclaves within existing harbor towns) and have left little or no archaeological trace.

As for the development of Phoenician trade, a growing number of scattered archaeological finds throughout the Mediterranean attest to a period of incipient or "precolonial" mercantile activity on the part of the Phoenicians, beginning perhaps as early as the twelfth century and persisting through the early first millennium (Negbi, 1992; Niemeyer, 1993). Such incipient entrepreneurial trade may at least partly explain the early foundation dates recorded in the classical sources for the Phoenician cities of Lixus (c. 1180), Cadiz (1110), and Utica (1101). Archaeological proof of Phoenician settlement in the western Mediterranean prior to the second half of the eighth century, however, is presently lacking. Thus, 750 BCE is currently accepted as the starting date for Phoenician territorial expansion abroad.

Unlike the Greek city-states, the Phoenician foundations were not true colonies in the traditional sense, but commercial or industrial facilities of limited scope. A major exception is the city of Carthage, whose urban extent and geographic situation (with extensive agricultural hinterland) clearly identify it as a colonial enterprise. Archaeological work at Carthage has furnished proof of the existence of a large, densely populated urban settlement already in the first half of the eighth century, lending credence to the city's historical foundation date of 814 (Niemeyer in Markoe, 1996).

The subsequent growth of Carthage and other Phoenician settlements within Carthage's cultural and political orbit (in North Africa, Sicily, Sardinia, and Spain) constitute what is known as the Punic horizon. (The emergence of this horizon, while not clearly defined, is usually placed around the mid-sixth century.) The issue of Punic identity, which is based on our often limited understanding of the ethnic and cultural integration between the Phoenicians and the indigenous peoples with whom they settled and traded, is a complex one. As the archaeological evidence shows, various Punic settlements differed widely in character not only from region to region (e.g., Spain and Sicily) but within the same area. This situation is especially true of Tunisia—the Carthaginian heartland—where Punic presence extended inland as well as along the coast. The terminal date of the Punic period is conventionally set in the second century, based on the date of Carthage's destruction (it fell to the Romans in 146 BCE) and the latest attestations of Punic script.

Phoenician Culture: Language, Religion, and Funerary Practices. The language of the Phoenicians represents a later dialect of Canaanite or West Semitic, akin to biblical Hebrew and Aramaic. Its corpus consists of approximately six thousand inscriptions found throughout the Phoenician cultural realm—in the Near East (Anatolia, Syria, Phoenicia, Palestine, and Mesopotamia) and in the Mediterranean basin, including Cyprus, the Aegean, North Africa, Sicily, Sardinia, Italy, Malta, the Balearic Islands, and Spain. Of the once extensive body of Phoenician literature known to have existed, virtually nothing is preserved apart from scattered passages in late classical texts. As for the Phoenician alphabet with its twenty-two consonantal phonemes, the inscriptional evidence presently points to its emergence in the late second millennium (around 1100). Controversy persists over the question of the date and mode of transmission of the Phoenician alphabet to Greece. In spite of recent attempts to place this event in the late second millennium, the current evidence suggests that the process occurred no earlier than the ninth century (McCarter, 1975; Burkert, 1992, pp. 25–33). [*See* Phoenician-Punic.]

The dearth of direct and informative sources on Phoenician civilization in general is even more pronounced for Phoenician religion, a subject that, in spite of recent advances in interpretation, is still poorly understood. Like other polytheistic religions in the Levant, Phoenician worship focused on the processes and phenomena of nature and its cyclical development. Individual deities were local and site specific, often relating to particular places or topographic features considered sacred. A variety of local deities (designated by the generic title of *baʿal* [Phoenician for "lord"]) were associated with mountains: the Amanus, Lebanon, Mt. Zaphon, and Mt. Carmel. Springs and other water sources were often associated with cults of healing and fertility (e.g., the temple of Eshmun at Sidon and its connection with the Yidlal spring). Paired male and female deities, such as Eshmun and Astarte of Sidon, or Baal Hammon and Tanit of Carthage, were frequently associated with individual cities. Many of these, such as Baalat Gubal (the "mistress of Byblos"), were rooted in older indigenous cults

which antedated Iron Age Phoenician practice. Others like Tyrian Melqart ("king of the city") were intimately associated with local dynasties, underscoring the central role played by the deity as emblem and protector of the royal house.

Iron Age Phoenician cults owed much to Late Bronze Age Canaanite practice, as attested by the presence of features common to both religions (i.e., a shared focus on natural and cosmic phenomena, the notion of divine assemblies, the adoration of "dying and rising" gods, and the cult of royal ancestors or *rephaim*). Attention has focused on the innovative features and emerging regional character of Phoenician religion in the Iron Age, a phenomenon evident, among other instances, in the elevation of Astarte and the introduction of (previously unattested) deities like Baʿal Hammon, Baʿal Shamêm, Melqart, and Eshmun (S. Ribichini in Moscati, 1988). (The worship of both Astarte and Melqart at Tyre may, in fact, be associated with the religious reforms of King Hiram of Tyre in the tenth century.) Attention may be drawn also to the emergence of various healing cults centered around deities such as Eshmun, Shadrapha, Ḥoron, and Ṣid.

Unfortunately, the varying traditions associated with Phoenician deities are poorly understood; in many instances, we have little more than the etymology of the names themselves to go on. Such uncertainties extend even to prominent deities such as Tyrian Melqart, whose worship was widely exported to the West (e.g., at Carthage and Cadiz). The identity of Melqart has been variously interpreted, as agricultural, maritime, civic, dynastic, and even netherworld deity. Such ambiguities undoubtedly reflect the adaptability and functional flexibility of Phoenician deities.

Like the gods, the rituals and cultic practices of the Phoenicians are poorly understood. Of the Phoenician liturgy itself, nothing is preserved apart from various formulaic benedictions recorded on Phoenician dedicatory reliefs. As documents reveal, the priesthood was a hereditary institution chiefly involving members of royalty and aristocracy. An inscription of the fifth century from Kition on Cyprus offers some idea of the variety of personnel employed in the service of the goddess Astarte. The list includes scribes, choristers, butchers, bakers, barbers, sacrificers, and prostitutes attached to sacred places. Pictorial scenes on Phoenician ivories and metal vessels depict musicians and dancers (principally female) participating in religious votive processions. Sin- and thank offerings (in the form of incense, perfume, milk, oil, wine, honey, fruit, and bread) were proffered to deities in fulfillment of successful prayers. Votive gifts included models of sanctuaries, plaques and stelae, metal bowls and utensils, weapons, and statuettes depicting the deity or offerer. (Such temple offerings were periodically removed and redeposited in special pits or trenches, known as *favissae*). As surviving documents record, blood sacrifices (involving a variety of animals, including birds) were administered by priests and other temple officiants on behalf of the devotee.

Divination, too, played an important role in Phoenician cult. Signs and omens were variously interpeted through the study of dreams, animal livers, natural phenomena, and communication with the spirits of the dead. Prophecy, delivered through ecstatic revelation (often in consultation with a temple oracle), figured prominently as well.

The various Phoenician cults were governed by a calendar of regular feasts and celebrations which revolved around the agricultural cycle. Attention may be drawn in this regard to the Phoenician worship of "dying and rising" vegetation gods (such as Melqart, Eshmun, and Adonis), whose central rite involved the spring "awakening" or resurrection of the deity following his ritual cremation. Sacred prostitution, which was offered at places of worship and involved young women and boys in the service of Astarte, formed another well-known Phoenician custom. This rite is well documented in the Phoenician realm, especially on the island of Cyprus. Although the evidence for its practice on the mainland is primarily late (second–fourth century CE), the prominence of the cults with which it was associated (Aphrodite/Astarte at Byblos, Heliopolis, and Afka) argues strongly for the antiquity of this sacred practice.

As for the private or popular religious practices of the Phoenicians, what little is known may be gleaned from the archaeological record. The importance of magic and a concern with protection against evil spirits is manifest in the numerous occurrence, in tombs, of prophylactic charms, such as painted ostrich eggs, glass head-beads, terra-cotta masks, and a host of Egyptianizing amulets and talismans (including scarabs). Numerous terra-cotta statuettes of the Egyptian god Bes and the ubiquitous "Astarte" figurines (depicting a nude, often pregnant, female with hands held to or clasped beneath the breasts) attest to the popularity of Phoenician domestic cults concerned with procreation and childbirth.

The far-flung commercial interests of the Phoenicians led ultimately to the widespread diffusion of Phoenician cult. This was particularly true in North Africa, where Phoenician and later Punic religious practice exerted a profound and enduring impact upon the indigenous African populations, particularly in the Tunisian heartland. Phoenician cultic influence in Israel is well documented in the Hebrew scriptures, beginning with Solomon (*1 Kgs.* 11:5]) and culminating, in the following century, under Ahab and the Omride Dynasty (*1 Kgs.* 16:31–32; *2 Kgs.* 8:16–24). Recent archaeological investigation at sites in northern Israel supports the veracity of such biblical accounts. Contemporary inscriptional evidence likewise attests to the adoption of Phoenician cult in north Syria (at Zincirli) and Cilicia (at Karatepe). [*See* Cult.]

No traces have yet been found of any of the great mainland Phoenician urban sanctuaries of the Iron Age. (The great temple [I] at Kition on Cyprus remains the only ex-

PHOENICIANS. *Phoenician statuettes.* Musée du Louvre, Paris. (Alinari/Art Resource, NY)

cavated example of a monumental sanctuary complex in the East [Karageorghis, 1976].) The best written source of documentation remains the biblical description of the Temple of Solomon (*1 Kgs.* 6:2–5), whose form must clearly have reflected contemporary Phoenician models and whose construction was, in large part, due to Phoenician artisans (*1 Kgs.* 5:20, 32). Along the Phoenician coast itself, two Iron Age rectangular shrines of modest proportions have been uncovered—at Sarepta (biblical Sarafand) and Tell Sukas. Both provide important evidence for the emplacement of Phoenician cultic furnishings. In addition to a series of low benches along its long walls, the eighth-century structure at Sarepta contained a rear altar or offering table made of ashlar masonry and a stone socket for a dressed standing stone or *betyl* ("house of God").

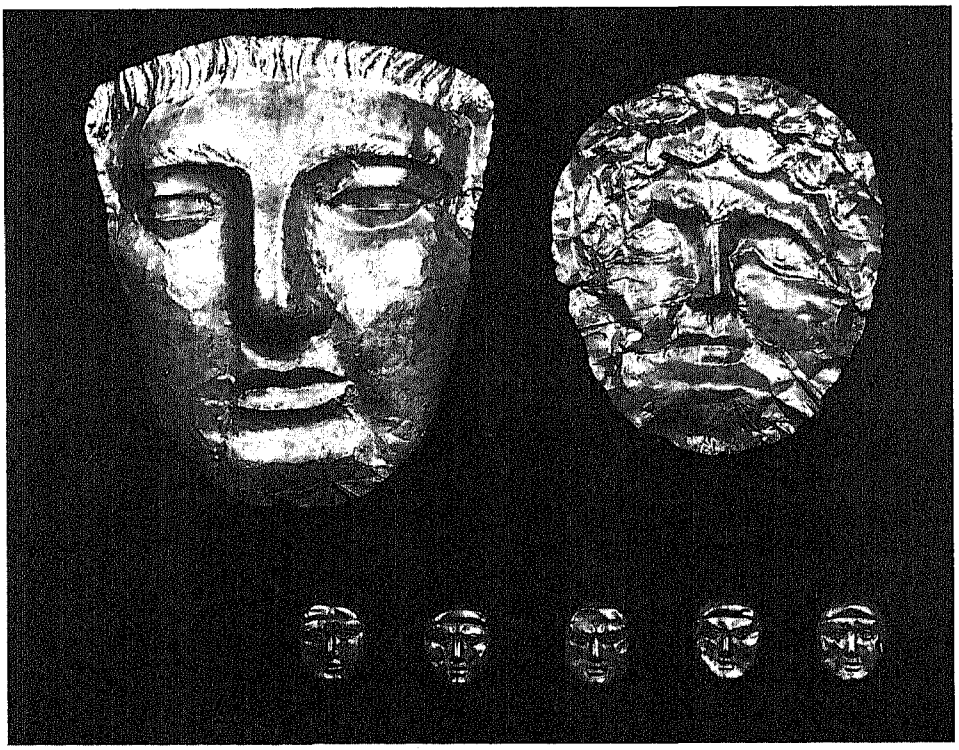
The most monumental example of a Phoenician open-air precinct or enclosure may be found in the temple of Eshmun at Bostan esh-Sheikh near Sidon (sixth–fifth century BCE), a massive quadrangular podium with central chapel situated upon a series of excavated hillside terraces. At Amrit (ancient Marathus), two rock-cut open-air enclosures are also preserved, the larger of the two (the so-called *ma'abed*) consisting of a raised shrine *(naiskos)* set within a rectangular basin or pool surrounded on three sides by a porticoed enclosure.

Regarding the funerary practices of the Phoenicians, numerous excavated cemetery sites, especially in the Punic west, have provided much information (Gras, 1991). The Phoenicians buried their dead in extramural cemeteries generally located well outside of their settlements. The form of burial varied considerably. Deep rock-cut shaft tombs (often with multiple burial chambers) and built or semibuilt chamber tombs of ashlar masonry were favored by the wealthy, and shallow rectangular pits, often slab-lined and covered with a stone lid, were common with the less affluent. [*See* Shaft Tombs; Pit Graves.] The main Phoenician burial rite was inhumation, but cremation was also widely employed, especially in the Archaic period (eighth–sixth century),

when it frequently occurs alongside inhumation in Phoenician burial contexts. (It recurs again in the Punic West during the Hellenistic era.) The practitioners of cremation are assumed to have been foreigners of non-Semitic descent, suggesting that the Iron Age Phoenicians were of mixed ethnic composition. For inhumations, the use of anthropoid stone sarcophagi is widely attested, reflecting Egyptian influence. Phoenician burial ritual is poorly documented; it probably involved some form of ceremonial leave-taking marked by ritual mourning. Surviving evidence suggests that the deceased was wrapped or garbed in linen and anointed with perfumes and other aromatics prior to burial. The wealthy were often elaborately adorned with jewelry (including gold burial masks) and occasionally embalmed, as in the case of King Tabnit I of Sidon. Few surviving texts or inscriptions shed any light on the Phoenician concept of death; a variety of evidence, however, suggests that the Phoenicians believed in an afterlife and in the notion of "rebirth" in the hereafter. The pervasive influence of Egyptian cults on Phoenicia and the widespread belief in a dying and rising god lends support to this assumption. [*See* Burial Techniques.]

The most notorious aspect of Phoenician religion is the practice of child sacrifice. Known as *mulk* in Phoenician, this rite is recorded in various classical texts and in the Hebrew Bible, which refers to the practice of "passing children through fire" (*2 Kgs.* 16:3). Evidence for this phenomenon may be found in the numerous ritual burial precincts or *tophets*, which have been discovered throughout the Phoenician realm: in North Africa, Sicily, and Sardinia. The most extensive *tophet* so far uncovered is at Carthage, where as many as twenty thousand urns with cremated infant and animal remains may have been buried over a six hundred-year period, extending from the late eighth through the second century). Here, as elsewhere, the urns were typically accompanied by stelae bearing dedications to the deities Tanit and Baʿal Hammon. The subject has been recently reexamined by scholars who would argue that the practice was exceptional, undertaken only in circumstances of extreme hardship, and that the *tophet,* far from being a precinct of institutionalized child sacrifice, was actually a cemetery for infants deceased from natural causes (S. Ribicini in Moscati, 1988, pp. 120–122). The extensive archaeological evidence and ancient written documentation, would suggest otherwise, however, and strongly support the existence of this practice and the veracity of the ancient classical accounts (R. J. Clifford in *BASOR* 279 [1990]: 58; see also Lawrence Stager and P. Mosca in Markoe, 1996, for the archaeological and textual evidence for the rite at Carthage).

[*Many of the sites mentioned are the subject of independent entries; see especially* Byblos; Carthage; Sarepta; Sidon; *and* Tyre.]



PHOENICIANS. *Phoenician gold masks from Byblos.* First millennium BCE. Musée du Louvre, Paris. (Giraudon/Art Resource, NY)

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GLENN MARKOE

PHOTOGRAPHY.

[*To treat the uses of photography, its features, and its objectives and techniques in archaeological work, this entry comprises two articles:* Photography of Fieldwork and Artifacts *and* Photography of Manuscripts.]

Photography of Fieldwork and Artifacts

Photography has long been a key aspect of the overall recording system in archaeology. Its purpose is to preserve images of excavated areas and of the artifacts discovered, in order to facilitate analysis and dissemination of the data. Because the end product of an archaeological excavation is an empty hole in the ground, thorough and high-quality photographic control over an excavation is essential.

An advantage of photography is that it is detail rich and neither edits nor simplifies arbitrarily. A disadvantage of photography is that it records everything within its view, and does not edit or focus its perspective. As the archaeologist Mortimer Wheeler noted: "The overriding difficulty of the archaeological photographer is to induce his camera to tell the truth" (Wheeler, 1954, p. 174). If the traditional limitations inherent in the medium (the translation of color and tone to monochrome; the reduction of shape, size, depth, and space to two-dimensional prints) are understood, photographs—along with field notes, plans, and drawings—can preserve what is destroyed by the process of excavation. Indeed, the photograph has the capacity to return a viewer to the original site, jog the memory, and help to notice forgotten details. However, as Peter Dorrell of the Institute of Archaeology, University College London, observed, archaeological photography is "rather like the English language, it is easy to learn and even easier to use badly" (Dorrell, 1989, p. ix).

Historically, there have been four practical uses for photographs in archaeology: to locate and evaluate potential archaeological sites; to preserve data as an integrated part of a comprehensive field recording system; to facilitate analysis and interpretation of the discoveries; and to provide illustrations for published reports as well as lectures and other scholarly accountings.

Development. On an oppressively hot evening in August 1839, several hundred people were packed into the auditorium of the French Academy of Sciences to hear the first

public report of the work of Louis Jacque Mandé Daguerre, who had succeeded in recording natural images on silver-coated copper plates. It was reported that, for the first time, "the rays of the sun were caught and imprisoned" (New York *Morning Herald,* 30 September 1839).

The technical history of photography has been well documented (e.g., Gernsheim, 1971) and its milestones, from the daguerreotype to Polaroid, are well known. Photographing antiquities began in the nineteenth century. Fox Talbot photographed manuscripts, engravings, and busts in his studio on silver-chloride-impagnated paper. In the early 1850s British Museum officials proposed photographing its collection of cuneiform tablets. In 1853 they considered building a studio and darkroom at the museum for photographing images of their Nineveh artifacts for distribution to scholars. However, the museum ran out of funds for both projects (Dorrell, 1989, p. 1).

During the first years of photography, long before the technology had become either convenient, consistent, or reliable, many field expeditions were quick to employ the powerful new tool to document their discoveries. In 1854 Roger Fenton was sent out with the British Army to the Crimea, ostensibly to photograph monuments and artifacts the troops encountered. No archaeological photographs resulted, but his 350 photographs of the Crimean conflict, a decade before Matthew Brady's photographic record of the American Civil War, were the first to be taken on the battlefield (Dorrell, 1989, p. 2). Baron Gros made daguerreotypes of the monuments of North Africa in 1850, and du Camp took photographs of monuments in Egypt, Nubia, Palestine, and Syria during his travels with Gustav Flaubert from 1849 to 1851 (Dorrell, 1989, p. 3) that he made popular and accessible to scholars and the public. The photographs of Tranchand took in Assyria from 1852 to 1855, in Khorsabad, and later in Armenia and Kurdistan, first by daguerreotype and later by calotype, are of remarkable quality, both technically and artistically (see Dorrell, 1989, p. 3, pl. 1).

When Charles W. Wilson of the British Royal Engineers first excavated Jerusalem's walls in 1864 for the Ordnance Survey, he recorded the finds with pencil and pad, holding a candle in his teeth as he crawled through the tunnels bored along the base of the walls. Because the candle would often be extinguished by rising water in the tunnels, Wilson quickly realized the potential of photography and began systematically making photographic images in 1867 (Wilson, 1871, p. 188). [*See* Jerusalem; *and the biography of Wilson.*]

There was at first no practical printing technology for including these new photographs in publications; editors were forced to have the photos transferred to block cuttings, engravings, or lithographs to be printed. Such images are often described in these early reports as "taken from a photograph." In 1880, the classical archaeologist Alexander Conze was the first to use photographs printed on albumen paper, gold-toned and tipped into the pages, in his excavation report of Samothrace (Conze et al., 1880). The images were made on glass "wet plates" that had to be kept moist throughout preparation, exposure, and development. Dry glass plates replaced them in the late 1870s, making photography much more convenient to do. Although flexible film was popularized by George Eastman as early as 1885, most archaeological photographers continued to use glass plates until World War II and view cameras until the 1960s. As late as 1934, W. F. Badè, excavating at Tell en-Naṣbeh, 10 km (6 mi.) northwest of Jerusalem, had to argue for the use of cut film (Badè, 1934, p. 69). [*See* Naṣbeh, Tell en-; *and the biography of Badè.*]

Tilting-bed view cameras, usually full- (6.5″ × 8.5″), half-plate (4.25″ × 6.5″) or quarter-plate (3.25″ × 4.25″) affairs, with their ground glass and black cloths, were long seen as indispensable to proper composition: for preserving the rectilinear perspective of architecture and for obtaining the image size necessary for quality publication photos. View cameras were recommended in certain circumstances into the late 1980s (V. M. Conlon, *Camera Techniques in Archaeology,* London, 1973, p. 1; Dorrell, 1989, p. 21), but by the mid-1970s, 35-mm cameras were the instruments of choice (Harp, 1975, p. 53), largely because of their low cost and ease of use. A few excavations that could afford the larger "medium format," 2.5 sq. in., found the detail greater while retaining the ease of use of the smaller cameras.

Conditions endured by early photographers were difficult: hot developer, dirty equipment, and oil lamps with leaking safelight filters. One photographer, when his camera jammed in the field, had himself sealed in a Bronze Age tomb until he could safely remove the film from the camera. (Badè, 1934, p. 70). Often, photographers would pitch one camel's hair tent inside another to create a darkroom: the working temperatures of the developer and the sound of sand grinding between the glass photographic plates must have been daunting.

William Flinders Petrie decided to introduce photography to his explorations in 1881 and promptly built his own camera. It was made of japanned tin, about the size, he said, of a biscuit tin. The lens had two apertures, with holes of different sizes drilled in a piece of tin that was slid in front of the lens. It employed a drop shutter, also of tin, and a dark sleeve for changing photographic plates. This simple camera, rebuilt several times during his professional career produced photos of extraordinary detail and clarity (Drower, 1985). [*See the biography of Petrie.*]

The first photographs taken from the air were of Paris in 1858, but the use of aerial photography in archaeology was not attempted until 1891, when a British army officer, Charles Close, used free, unmanned balloons flying glass-plate cameras over the ruins near Agra, India. Although his

attempts were unsuccessful, in 1906 P. H. Sharpe, apparently by accident, took aerial photos of Stonehenge in England, producing an impressive vertical image of the entire complex (Deuel, 1969, p. 12; Detweiler, 1948, p. 35). The first underwater archaeological photography was successfully attempted by Antoine Poidebard, a French Jesuit who excavated the harbor installations at Tyre in 1935–1937. Working before the invention of scuba equipment, Poidebard employed helmeted divers and a skin diver holding his breath to map the Phoenician facilities. He photographed the masonry under water, plotted buoys set at critical points, and took aerial photographs; he even took stereophotographs through a glass-bottomed bucket (Bass, 1970, pp. 88–89). [*See* Tyre; *and the biography of Poidebard.*]

During the last decades of the nineteenth century and the first of the twentieth, photography became one of the standard tools in recording excavations and artifacts. Nevertheless, for many decades photography was little more than a way of illustrating monuments, enlivening reports, and providing visual aids for fund-raising efforts. It was not until Wheeler (see above) and his photographer Maurice B. Cookson insisted that site photographs should "reveal every detail of the excavations as they proceeded" (Wheeler, 1954, p. 174ff.) that archaeological photography made the transition from snapshots to scientific recording.

Aerial Photography. As a tool for exploration and recordkeeping, aerial photography can be carried out from a variety of platforms: satellites, aircraft, balloons, kites, and even tall towers. Useful in a rapid initial survey of sites that have excavation potential, air surveys often reveal clear evidence of successive occupations, actual "palimpsests of cultural landscapes," invisible to observers on the ground, that can be readily deciphered. Photogrammetry, the systematic process of aerial survey often used in map production, can provide detailed and accurate mapping for a fraction of the time and cost of a land survey.

Archaeological features appear in aerial photographs in several ways: shadows are visible when photos are taken with low, raking light, allowing the flattened features invisible from the ground to appear; crop marks are the differences in color or density of growth often revealed when plants are growing over underground objects; and soil marks are the visible differences in the color of soil over subsoil installations in a freshly plowed field (Detweiler, 1948, pp. 35–36; Bacon, 1960, p. 303).

At Seleucia on the Tigris, for example, what looked like 8 sq km (5 sq. mi.) of undistinguished sand dunes was revealed from the air to be a grid system of streets interrupted by what proved to be large public buildings (Detweiler, 1948, p. 35). At Gezer, the layout of the site's massive fortifications was first noticed in a balloon photograph, even though the excavators had walked the wall daily for weeks. Periscope cameras were used with great success (and at much less the cost of trial excavations) to inspect Etruscan tombs north of Rome in order to identify those not pillaged in antiquity (Bacon, 1960, p. 304). [*See* Seleucia on the Tigris; Gezer.]

Recording. In recent decades, personnel trained in both archaeological history and photographic technique have been represented on the staff of many excavations. When photography is incorporated into a project's comprehensive recording system, the result is an integrated scheme of documentation that provides a record of progress in the field and of finds, as well as immediate feedback for area supervisors and field directors.

As an excavation progresses, the details of artifacts, structures, strata, and topography contribute to theories of how the site's strata were laid down and what the purpose and function of their tools, buildings, and plans were. Working theories change with the appearance of new data and further reflection. Those emerging reconstructions must be coordinated with the photographic work: photographs should document the evidence as new theories emerge about the sequence of occupation or the purpose of installations, so that when the stratum has been cleared and the level destroyed, the photographic record replaces them.

Because the photographic record must be accurate and comprehensive, considerably more photographs of a site and its objects are taken than will ever be published. However, if details overlooked in the field or considered unimportant take on new significance as the analysis of the finds, plans, and field reports progresses, they often will have been preserved in a well-considered, full-coverage photographic record.

A successful photographic record must be able to fulfill four criteria.

1. *Identification.* Do the photos clearly illustrate the subject? Are the form, outline, and texture of the objects apparent? Are all the features that constitute the character of the subject present in the photograph?
2. *Context.* Do the photos clearly indicate the contextual relationships between the subject and the surrounding area, including vertical relationships (to what has preceded) and horizontal relationships (to other objects and structures in the area)?
3. *Significance.* Have judgments about the identity and importance of the object changed since the photographs were made?
4. *Coverage.* Have enough photographs of the site been taken to assure complete coverage of the subject?

Light and Shadows. The extremes of light and contrast have always posed problems for archaeological photography in the Near East. The light falling on archaeological sites there is about half again as much as on pastoral scenes in Europe and North America. This intense light produces a tonal range between subjects in bright sunlight and those in

shadow that is three times as great as is normally encountered. This reality conspires with the limited chromatic range of most archaeological subject matter—tan stones on tan soil—to produce extreme photographic conditions. Thus, photographs at Near Eastern archaeological sites often are taken in the early morning, before the direct light of the sun hits the site (Wheeler, 1954, p. 175; Wright, 1978, p. 185), or late in the afternoon, just before dusk, when the sun's harshness is diminished, and the light of the reflected sky softens the landscape. (The analog is the north studio light preferred by artists.)

Photographic manuals for archaeology emphasize that areas to be photographed must be meticulously clean, for the camera records every intrusive blade of grass, every distracting bit of debris. Anything that might divert from the subject of the photograph should be made as unobtrusive as possible. Surfaces should be evenly brushed to an artificial smoothness so that they do not appear to be significant elements.

Brushing, stippling, wetting, and careful undercutting to provide shadow lines are common techniques used to emphasize a scene's salient features. As Kathleen Kenyon cautioned: "The only justifiable use [of outlining] is to attract the eye to differences which the rest of the visible evidence confirm" (Kenyon, 1953, p. 138). Elements of a scene can be highlighted but should not be falsified. Occasionally, this may mean that the photograph will be ambiguous, for it should not introduce interpretations that were not apparent at the site. It should be no more (or less) certain than the director's original interpretation.

Usually, only one excavation level is shown in a photograph to avoid confusing the presentation of the occupation sequence; however, a photo of where a garbage pit was dug would also show how it cut through earlier layers. Some images are intended to demonstrate the relationships among strata, a point of view for which the photographer must prepare. The goal is to have the photographs, top plans, and balk sections complement each other, so that the dimensions and location of each locus can easily be cross matched to the images.

Technical Control. Photography depends on the several variables inherent in the mechanical and chemical characteristics of the system; changing exposure and shutter speeds and altering development and printing times contribute to the creativity of the craft. However, controlling and standardizing the system's variables can produce precise, uniform photographic prints. Based on Ansel Adams's zone system, the variables are recalibrated at the beginning of an excavation season: film speed, light-meter readings, and film and paper developing time are integrated into a single system of fixed specifications. Beginning with the precise exposure of each scene, not on the object itself, but on a standard photographic 35 percent "gray card," through to fixed-time print processing, eliminating variables will produce uniform photographs throughout the season (see Wright, 1978).

Special Techniques. Underwater photography imposes challenges that do not exist in recording surfaces on land. Even simple tasks, such as laying out a grid and measuring levels, become major feats of planning and dexterity under water. Although nearly any good-quality camera can be used for underwater photography if enclosed in waterproof housing, there are several special cameras that can be used down to more than 1,000 m. The difference in diffraction indices between air and water (e.g., the "bending" of a pencil in a glass of water), causes distortion unless special corrective lenses are added to the camera or its housing.

Because water absorbs light waves at different rates than air does, it absorbs colors sequentially as the depth increases: red fades under just a few feet of water, then orange disappears, and then yellow vanishes. Only blue remains, which gives underwater color photographs a pervasive azure cast, a problem correctable with artificial flood or strobe lights.

Mosaics can be constructed from a series of overlapping photographs to show an area too large to capture in a single image. Because not all of a site is excavated, cleaned, and prepared for photography at the same time, photos are taken in the course of an excavation, as each area is excavated and exposed. Ultimately, photographs may collectively reveal what no one could have seen in a single glance.

Since Poidebard's early efforts at Tyre, many maritime sites have been photographed with increasingly sophisticated equipment. Notable examples are the massive underwater port facilities at Caesarea Maritima in Israel and largely intact ships, such as the Galilee fishing boat, the Ma'agen Mikha'el boat, and the Uluburun and Yassıada wrecks off Turkey. [*See* Caesarea; Galilee Boat; Ma'agen Mikha'el; Uluburun; Yassıada Wrecks.]

Photography using parts of the electromagnetic spectrum beyond visible light has been employed in a variety of attempts to coax information out of archaeological remains. Infrared (IR) and X-ray photography have been useful in illuminating obscured text on damaged parchment and papyrus manuscripts and in revealing palimpsest text where the original text had been scraped or rubbed off. Both have been used to detect degrees of deterioration for the fragments of the Dead Sea Scrolls. IR also has been used to locate painted floors and other decorations invisible to the unaided eye. Infrared and ultraviolet studies have been performed on the Shroud of Turin and Egyptian mummies have been X-rayed with great success to detect whether the wrappings contain a body or to locate jewelry or other decoration. X-rays also aid in paleopathology (the study of disease and medicine) by helping to determine skeletal structure, malformations, and often the cause of death (a broken neck or crushed skull). [*See* Paleopathology.] On a larger scale, X-rays have been used to examine the great pyramids

at Giza. [*See* Dead Sea Scrolls; Pyramids; Giza.] Multispectrum "false color" imaging has been used in aerial photography, where the normal spectrum colors of green, blue, and red are shifted so the IR image can be seen as red (Dorrell, 1989, p. 206).

Future Technology. Archaeological photography is changing as new technologies are developed. As desk-top and portable computers and digitizing cameras become more powerful and less expensive, photography may become increasingly digital; it is possible to envision the merging of the photographic recording and computer analysis of excavations and the artifacts they produce into a comprehensive system of recording, manipulation, storage, and publication. When the issues of power, speed, cost, storage, and graphic resolution are resolved, computer graphics may unite still photography, computer and video graphics, motion pictures, color slide photos, and databases into a comprehensive system.

"Field digitalization units" may replace cameras at excavation sites, producing images from a computer printer for field notebooks. The system will provide publication-quality images and, with a computer projection unit, "slides" for public lectures. Powerful personal computers and laser color printers may replace the photo lab and chemicals. The camera obscura, the "dark room," and the fixative hypo, which have been necessary since the beginning of photography, may one day be obsolete.

With CAD (Computer Aided Design) and graphics programs to input the data from photos and site plans, a house or a town may be re-created in "virtual reality," allowing the viewer to "walk" from room to room, down streets, and out city gates. Sequences of levels at a site could be assembled so that each phase of a building or a entire town can be viewed on command. It may be possible to re-create the successive stages of a building's construction, destruction, and reconstruction. These creative sequencings could be recorded on videotape for classroom or public use. As in medical imaging, sequence photos in horizontal "slices" of an excavation area could be reconstructed in a computer program to form coherent occupation levels in three dimensions. The caveat is that with digital imaging, a photo can be altered into something that never existed. Ironically, Wheeler's concern (see above) will have come full-circle: instead of coaxing truth from a photographic image, the new concern may well be to avoid falsifying data by manipulating the digital images.

Secure archival storage is possible with optical CD-ROMs. They provide relatively permanent digital storage that will exceed that of silver photographic images, which deteriorate with handling and storage. Unlike duplicates of photographic negatives and prints, the quality of digital copies is as high as that of the originals.

For photographing small finds, available graphics software for personal computers can scan in a photograph (or start with a profile sketch) of a juglet, for example. It can reconstruct the image in three dimensions, rotate it, apply an appropriate texture pattern, light it with full modeling, slice it into sections, and produce photorealistic renderings. It is now possible to return to early excavation reports and digitize their plans, sections, and photographs, including small objects, and from them produce full-color, photorealistic images. Also on the horizon are holographic imagining techniques that will further enhance the realism of photographic representations.

[*See also* Computer Recording, Analysis, and Interpretation; *and* Recording Techniques.]

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ROBERT B. WRIGHT

Photography of Manuscripts

When it comes to the study of ancient Near Eastern documents, visual documentation—that is, the record of what a given ancient text actually looks like—is usually an afterthought. Typically, one encounters technically poor images even more poorly reproduced. On the basis of such inferior images, it is usually difficult for a scholar to evaluate whether the readings published for a given text have validity, and rarely is the visual data sufficiently detailed for one to demarcate the kinds of subtle distinctions that often prove crucial to reading a difficult text correctly. Instead, one is usually forced to rely on "eyewitness" testimony as evidenced in a given editor's transcription and commentary or in his or her representation of the text as a line drawing.

However, in recent years there has been an influx of improved techniques, superior technologies, and new, extremely powerful tools that are compelling scholars to rethink how they visually document ancient documents. Indeed, the traditional mode of documentary visualization—the photograph—is gradually being replaced by the digital image conveyed on a computer screen.

Capturing a visual image of an ancient text has always been a daunting and challenging task. For one thing, the vast majority of ancient texts are hardly preserved in mint condition, that is, as beautiful, legible, comprehensive, and highly photogenic manuscripts or inscriptions. Rather, in the vast majority of cases, they come in small bits and pieces; ragged and warped; blackened with age or faded to nearly nothing; full of worm holes, water damaged, and weathered; gouged and dented; even encrusted with bat guano. In order to capture the textual data on these mutilated objects, considerable technical skill—especially photographic and digital imaging skill—is absolutely required. And here the problem has usually been most acute. This is because those having the technical training to photograph and image process the textual data on ancient objects are, from a scholarly standpoint, illiterate. Hence, although they can frequently produce technically "photogenic" pictures, more often than not these pictures are inadequate in conveying crucial evidence for epigraphical and philological analysis simply because the technician cannot distinguish the "signal" from the "noise." On the other hand, those having the scholarly knowledge crucial for producing the most effective and revealing images of ancient texts lack the technical know-how to produce the images themselves.

In order for optimal visual data to be produced, a different sort of archivist is therefore required, a scholar-technician, trained in the study of both ancient Near Eastern documents, their scripts and languages, as well the skills required to reproduce sophisticated visual imagery. As a general rule, the most effective approach has been to train scholars to be technicians rather than the other way around. The reason is that the skills required for scholarly judgment in epigraphy and philology take years to acquire; in contrast, sophisticated training in documentary photography and computer imaging can be done at a far quicker pace.

Basic Photographic Approaches. Photographic documentation involves several techniques adopted from commercial and forensic photography. Foremost is the electronic, or strobe, flash as a light source. Some curators have resisted flash photography in favor of the more traditional tungsten or quartz photo floodlights, in the mistaken belief that the latter are less damaging to ancient manuscript media than the former. In contrast, Marjorie Shelley, conservator of Prints and Drawings for the Metropolitan Museum of Art, New York, forthrightly voices the consensus opinion among most trained conservators that "the safest lighting for photographing vulnerable material is considered to be electronic flash (strobe)" (*The Care and Handling of Art Objects: Practices in the Metropolitan Museum of Art,* (New York, 1987, p. 72). Besides being far less damaging to ancient texts, the use of strobe offers great advantages in terms of both the crispness of the image and the sharpness of the focus.

The second important innovation has been the use of photographic previewing, utilizing special Polaroid films designed for this purpose. Once again, this is a technique long in vogue in commercial photography—especially where strobe flash is employed. Since it is frequently difficult to predict the play of light with strobe flash as well as the exposure, commercial photographers typically make a Polaroid test once they have established what they believe to be the optimal set up. Then after a short wait (30 to 60 seconds,

depending on the film type) the set up can be verified by examination of the Polaroid test; moreover, the Polaroid shot becomes a "paper light meter" that verifies the correct exposure. Once a satisfactory preview has been achieved, one can proceed with confidence to do a full documentation in permanent, high resolution films.

This previewing technique has adapted extremely well to the documentation of ancient texts. Besides giving the photographer the ability to know in advance that "what you see is what you get," there is a further, very significant advantage inherent in this ability to preview: It offers an opportunity for the expert scholar to control the documentary process. That is, even when the scholar has no photographic expertise, he or she can still review the previews in order to make sure that the picture misses no subtlety in the data. Moreover, with this methodology photography becomes more than merely a means for documentation; rather, it becomes fully integrated into the investigative process itself. The photographic lens is a powerful tool of visualization which can often see things the eye cannot see. It is typical that a polaroid preview will reveal some aspect of the data of a text that was missed by eye, especially if the text is properly lit. Hence, Polaroid-previewing frequently leads to discovery, especially if an expert is available who can take fullest advantage of the data as it is produced on film.

The third basic technique that leads to better documentation of ancient texts can be summarized in a single phrase: more choice. To be more specific, it is essential to document ancient texts employing a variety of films for each set up as well as a range of exposures for each film type. This is in decided contrast to conventional practices of documentation in which, typically, a single exposure is made in only one film type. This requires a single image to carry all the data, and in fact, no single film or exposure is adequate to this task. Once again, this broadening of choice follows the general practice in commercial photography where the tenet, "when in doubt, shoot more" has long held sway. Films must be used in a complementary fashion, thereby compensating for the inherent weaknesses of one film type with the strengths of another. At minimum at least two films should be employed—a high-resolution black-and-white film and a high quality color-reversal, that is, transparency film. The former allows the epigrapher to study a text in greatest detail while the latter allows him or her to clarify ambiguities of shade and color that black-and-white images can distort or mask. Depending on the circumstance, other films should be used as well—for example, infrared-sensitive films for shooting soft-media documents such as the Dead Sea Scrolls. [*See* Dead Sea Scrolls.] Sometimes color-negative film is also a better choice if the image is to be scanned for digitizing. Moreover, it is essential to do a range of exposures—to bracket the shots—in order to insure that there is sufficient latitude to encompass the wide range from light to dark one frequently finds in the ancient materials upon which textual data have been written. [*See* Papyrus; Parchment; Tablet; Writing Materials.]

The fourth basic concept is closely related to this issue of choice in terms of film and exposure: namely, a range in resolution or scale. In the past the custom has been, once again, to force a single image to cover all the data. A far superior documentation can be achieved, however, working at three levels of resolution/magnification.

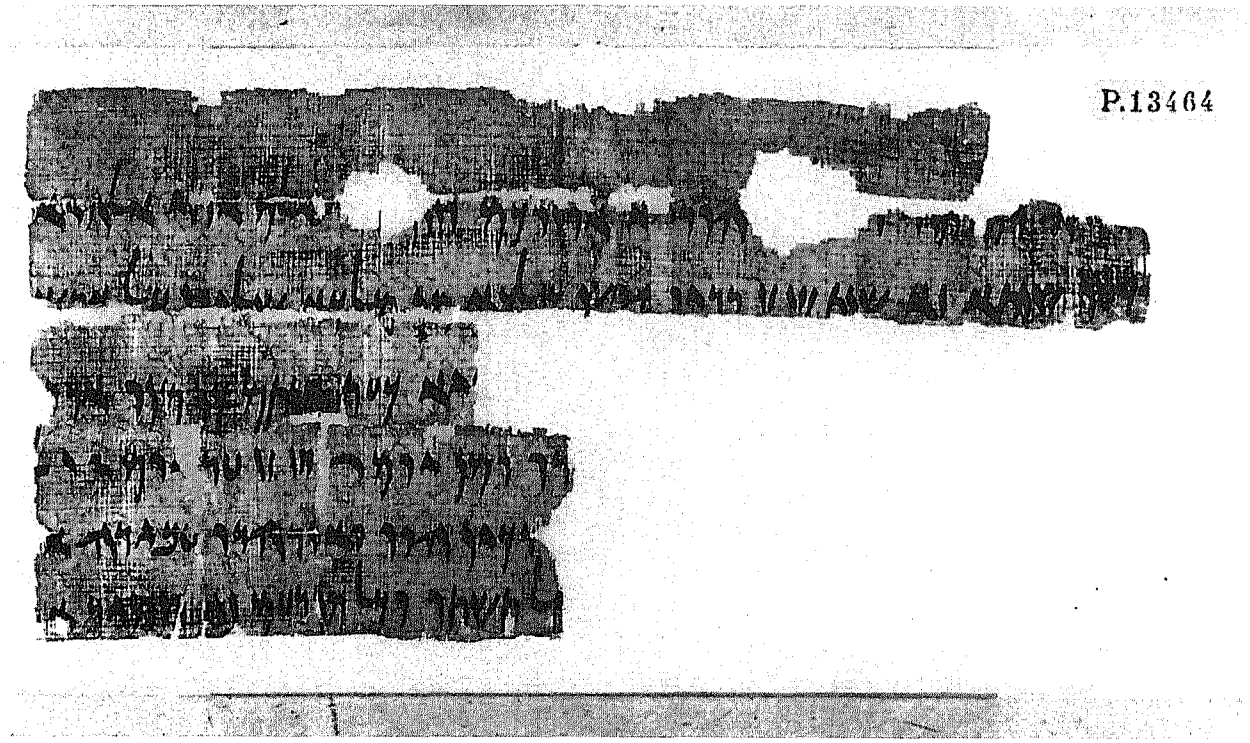
1. *Reference shot.* A text should be photographed in the largest reasonable size—for example, a plate of related fragments, a column of text, or the inscribed face of a stela or clay tablet. Even when the very best films are employed, however, this level of documentation will be inadequate to achieve everything needed.

2. *Section shot.* A second level of magnification, the section shot, is also required. That is, the given artifact is shot in sections at a mid-range magnification. This allows for a fairly close survey of the letters or signs as well as the scribal hand or ductus.

3. *High resolution.* A third level of magnification should be used at very high resolution to target specific problems. Virtually all ancient inscriptions have serious problem areas in which a high-resolution photograph at high magnification does wonders to resolve philological ambiguity. This is especially so if an expert on a particular text can target such areas in advance and give the photographer a "shooting script" by which to plan the documentation of problem areas. Even better, if the expert is also available on site, a significant number of problems can often be resolved as he or she reacts and adjusts the documentation based upon what can be seen in successive Polaroid previews.

Resolution problems are dramatically lessened when larger-format films are used. Unfortunately, 35 mm, the most widely available film size and hence the one most often employed for documentation, is inherently poor in resolution regardless of film type employed. Even more significant limitations in resolution are encountered when a microfiche or microfilm is used for primary documentation. A better choice is a mid-format 120 film ($2\frac{1}{4}$ in. wide) and by far the most effective film size for serious, detailed documentation is the standard professional 4 inch by 5 inch film size. For particularly large documents, it is sometimes even necessary to go to an 8 inch by 10 inch format in order to gain a highly detailed reference shot.

There is a further advantage to working with mid- or large-format films. The cameras that can handle these films virtually all allow for the use of interchangeable film magazines. Hence one can line up a shot, verify it with a Polaroid test using a Polaroid magazine, then proceed to do a permanent documentation with several magazines, each containing a different film—all while the camera itself and the photographic set up remain essentially unchanged. Thus, all



PHOTOGRAPHY: Manuscripts. Figure 1. *Papyrus* 13464 *(recto), known as the "Passover Papyrus," with both top and backlighting.* (Photography by Bruce and Kenneth Zuckerman, West Semitic Research; courtesy Staatliche Museen, Berlin)

the pictures match precisely in format and scale—an invaluable advantage for purposes of comparison at a later time.

Soft Media. Certain artifacts containing textual data are classified as "soft" media—that is, media that are written on pliable, frequently perishable, organic materials such as animal skin (e.g., Dead Sea Scrolls), parchment or vellum (e.g., early medieval codices), and papyrus (e.g., letters and legal documents like those from Elephantine, Egypt). The media of writing is almost always some form of ink applied to the prepared surface.

Since the ink itself has no significant thickness, soft media documents can essentially be treated as two-dimensional for photographic purposes. Nonetheless, it is still of significant value to employ films of sufficient resolution to be able to distinguish the thicknesses of ink strokes—especially as they cross over one another—on the surface. Such data is invaluable for analysis of the order and direction of strokes in a given scribal hand. Depth-of-field problems are usually minimal as long as extra care is taken to make sure that there is close parallel alignment between the plane of the writing surface, the lens and the film plane. This alignment must be checked and readjusted frequently. On those occasions where the surface has buckled or warped significantly, even greater care in focusing must be taken.

The main concern with regard to lighting is to make sure that the illumination is diffuse (what photographers call a soft light) and even. The use of special diffusers known as soft boxes are ideal for this sort of work and will usually serve to eliminate any shadowing caused by undulations in the writing surface. It is almost impossible to light a surface evenly with a single light source; thus, a typical setup involves two strobe lights set precisely opposite each other on either side of the camera and angled downward at 45°.

If it is practical, soft-media documents should be photographed with backlighting; that is, a highly diffused third strobe placed behind the document. Almost all ancient soft-media documents contain holes and cracks, many of which are extremely small. If the document is only illuminated from above, those imperfections may fall into shadow. Particularly with black-and-white images (but also, to some extent, with color) it can be difficult to distinguish such shadows (sometimes as small as a pinhead) from the ink on the writing surface. Furthermore, if the soft-media text is mounted between glass plates (or some similar material), then, from a photographic standpoint, the document will "float" slightly above the surface on which it is being photographed. When lit only from above, the document will cast a distinct shadow against the backdrop. These shadows not only interfere with reading the ink, but can obscure document edges. Once again, back lighting can be employed to

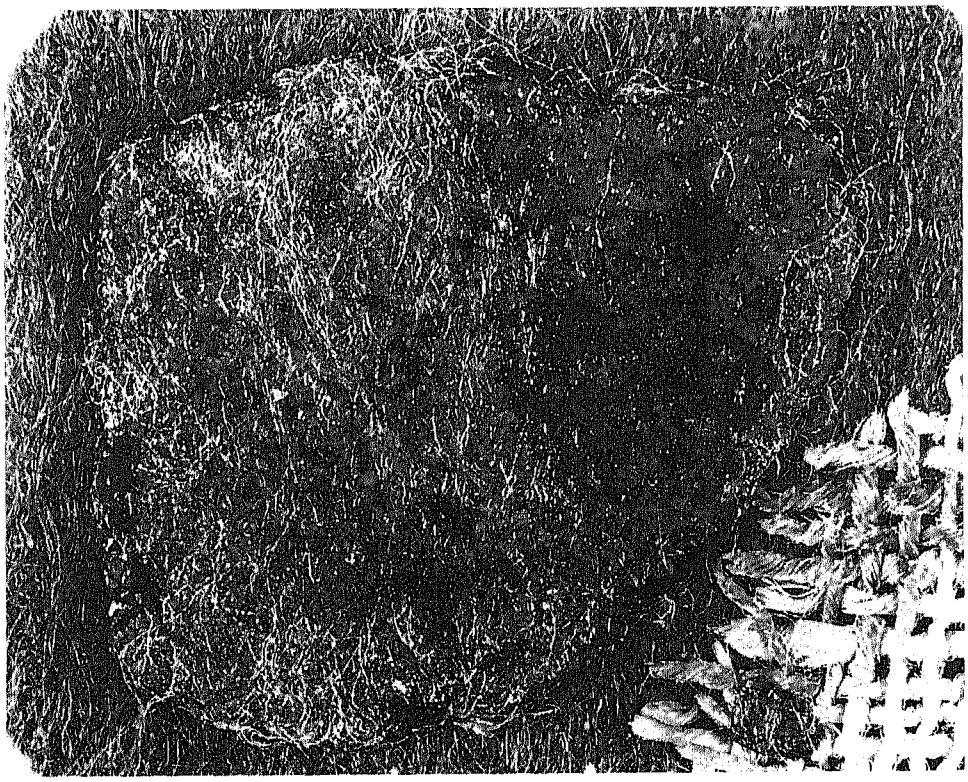
cancel out these shadows so that every edge is sharp and clear, every hole, every hairline crack, no matter how small, distinct from the writing surface. Back lighting offers an added bonus in that it tends to give fine illumination to papyrus and skin grain, thus making the task of matching fragments based on the grain of the writing surface, a far easier endeavor than would otherwise be the case (see figure 1).

A major concern in photographing soft-media texts (typically papyri) mounted between plates is glare. The shiny surface of the mounting plates should be cleaned as well as possible before photographing (even a stray fingerprint can become an occasion for glare), and Polaroid tests must be continually monitored. Glare can be eliminated by using black cardboard and black "gaffer's" tape to mask any reflecting surface.

Considerable success can often be achieved in retrieving information from obscured inks on soft media by photographing and lighting with particular band widths of light, especially ultraviolet and/or infrared illumination. Crucial in this regard is the type of ink employed and the nature of the damage to the writing surface. Where ink has faded, a very effective technique is to photograph the text in black and white with a colored filter over the lens. The filter should match the color of the writing surface—yellow, orange, red, or sepia filters are the most effective. In a black-and-white photograph, the background, correctly filtered, will appear to drop out—either as white or considerably lighter than the surface looks in the visible light spectrum. This, in turn, increases the contrast between the surface and the ink, making the latter more visible. The technique is effective regardless of ink type.

Infrared illumination and photographing in infrared-sensitive film are effective in the opposite scenario: when ink is obscured against a dark or blackened surface—where black is seen against black in visible light. This is typically the case, for example, with obscured ink on the skins of Dead Sea Scrolls. If the inks involved are essentially carbon black in composition, then infrared photographic techniques can deliver surprising, indeed often stunning results for manuscripts that look hopelessly illegible in visible light.

The conventional approach to infrared photography of ancient documents has been to photograph a surface in a relatively broad band of wavelengths. Indeed, the conventional wisdom has been to use a red filter (thereby blocking all illumination beyond red) and to photograph with infra red sensitive films the entire range in which the film is sensitive to infrared illumination. This technique has proven to be generally effective since across the infrared spectrum or-

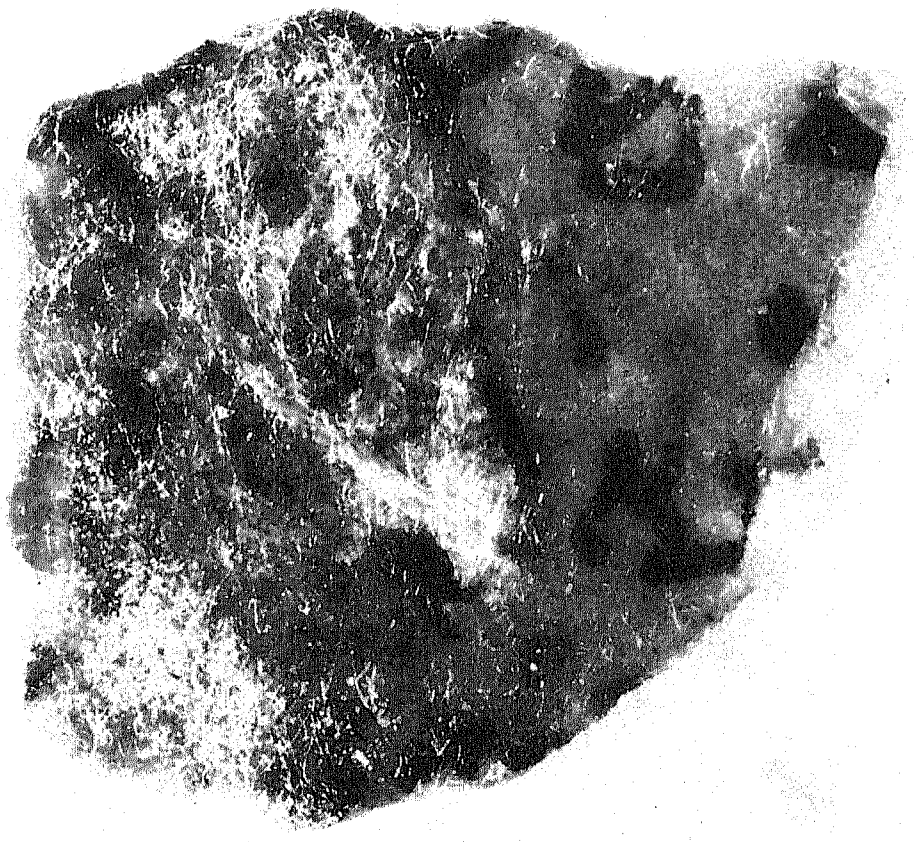


PHOTOGRAPHY: Manuscripts. Figure 2. *Ms* 192614, *fragment C.* A small Dead Sea Scroll fragment as it looks in visible light. (Photograph by Bruce and Kenneth Zuckerman, West Semitic Research; courtesy Schøyen Collection, Oslo)

ganic writing surfaces (animal skin and papyrus) are highly reflective while carbon black ink is not. Thus a surface that appears black in visible light will often drop out as white in a black-and-white infrared image, thus revealing the ink it had previously obscured. On the other hand, when the ink itself has faded against a lighter background, infrared photographic techniques are largely ineffective and generally inferior to the colored-filtration technique discussed above.

Even more dramatic infrared results can be achieved if a target is photographed in discrete narrow bands in the infrared spectrum, where blackened organic materials are not evenly reflective (that is, at given wavelengths they are more reflective). When a surface is photographed in a broad infrared band width, a degree of leveling, or averaging, occurs (i.e., the less reflective are averaged in with the more reflective), thereby lessening the contrast against the ink. A better result is achieved when narrow band-pass filters are used over the camera lens that will only pass illumination where the reflectivity of the surface is optimal. In such instances, startling gains have been achieved that significantly surpass those of infrared photography using the conventional broad band approach (see figures 2 and 3).

After about the fifth century CE, carbon-black inks began to be replaced by what are known as iron-gall inks—inks with a very high iron content as well as tannic acid—extracted from the galls, or irregular growths, that often develop on oak trees. Such inks show up poorly under infrared illumination; indeed, in all areas of the infrared spectrum, they tend to fade away in photographic documentation. On the other hand they respond well to the stimulus of ultraviolet light. That is, under the stimulus of ultraviolet illumination iron gall inks tend to be unusually absorptive.



PHOTOGRAPHY: Manuscripts. Figure 3. *Ms* 192614, *fragment C.* The same fragment from figure 2 photographed in a narrow band of infrared illumination. The fragment is revealed to be part of 1QDan^{b}. Note that at least two letters ('aleph and lamed) are just visible from an underlying layer of skin. (Photograph by Bruce and Kenneth Zuckerman, West Semitic Research; courtesy Schøyen Collection, Oslo)

Thus, in a case where the ink appears in visible light to have faded beyond legibility, under ultraviolet stimulation the ink tracing can often be dramatically retrieved.

While most color and black-and-white films are sensitive well into the ultraviolet spectrum, it is not so much the data in the ultraviolet per se that are the most useful for retrieving information from faded iron-gall inks: it is the fluorescent stimulus that ultraviolet illumination causes in the visible light spectrum that brings out the best data. Thus, the best approach is to use an ultraviolet illuminator (a simple method is to use a filter that only passes ultraviolet light over a strobe flash) and then photograph through a filter that blocks out the ultraviolet. Unfortunately, this technique is not effective for retrieving data from iron-gall inks against a dark background, for example, where the parchment or vellum has darkened due to water staining. In such cases the dark areas of the writing surface become even darker under ultraviolet stimulation and block out the data from the iron-gall ink. Hence it is usually necessary to work with a conventional visible light image in coordination with an image stimulated by ultraviolet light to get the best data from manuscripts written in iron-gall inks.

Occasionally one encounters red-colored inks on soft media, especially scrolls. Such inks usually have a high iron content and seem not to show any especially useful characteristics in either the infrared or ultraviolet range. Colored filtration can be helpful—especially a red filter, which will cause the ink to appear white against the background in a black-and-white print.

Hard Media. Written on durable, usually (but not exclusively) nonorganic materials, hard-media texts are typically pottery, plaster, clay, stone, metal, bone, or gemstones. [*See* Seals; Metals; Bone, Ivory, and Shell.] Ink may be applied to hard writing surfaces (e.g., ostraca, or "pottery sherds"), but more frequently inscriptions are created by carving the surface either through simple incision or impression; occasionally it is done by sculpting or stamping in bas-relief. [*See* Ostracon.]

By far the most common such inscriptions are ostraca, that is, sherds of pottery with ink (usually carbon black) inscribed on either the concave or convex surface, sometimes both. To a large extent, the techniques involved in photographing ostraca are the same as those employed for soft-media manuscripts. The one proviso is that great care must be taken to mount ostraca generally parallel to the film plane, since the curved surface makes depth of field a constant concern. Then focus should be made sharp at the average distance of the curved surface from the film plane. All effort should be made to keep the lens opening as narrow as possible in order to increase the depth of field. If an ostracon is particularly curved, it may be necessary to photograph it in sections in order to compensate for depth-of-field/focus problems.

As with soft-media documents, color filtration increases the contrast between the ink and the writing surface, as described above; it is often extremely effective in increasing the legibility of faded ink on a smooth clay surface. Less effective but still of some value are the infrared techniques noted above. Rarely does such an approach make the ink itself significantly clearer to read; however, an infrared image often is effective in screening out the visual interference that often is the result of the rough or variable texture of the clay. Ultraviolet stimulation has not shown effectiveness in enhancing readings on clay although some gain may be possible when other surfaces are involved, for example, bone. Results similar to those described above for red ink on soft media have been achieved for ostraca as well.

Perhaps the most effective means for making significant gains in readings for ostraca is employing a wetting technique. Considerable caution must be employed when wetting ostraca. Initial testing should be done on a small area of the inked clay to confirm that the ink will not run or otherwise be significantly damaged through the application of water. Only a fine spray of distilled water should be used; the best means of application being short bursts of spray from an airbrush.

When wet, ink traces that are often completely invisible to the eye when the clay surface is dry will suddenly appear. Speed and timing are essential. As an ostracon dries, the ink will begin to fade again. The type of clay and how it was shaped, burnished, slipped, or fired determine the optimal amount of time for photographing—sometimes only seconds. Moreover, when first wet, an ostracon can appear shiny (especially its convex surface) and therefore susceptible to glare reflected from the illumination. Hence, it is sometimes necessary to wait until the surface has dried somewhat to a more matte-like appearance so that this glare problem is minimized.

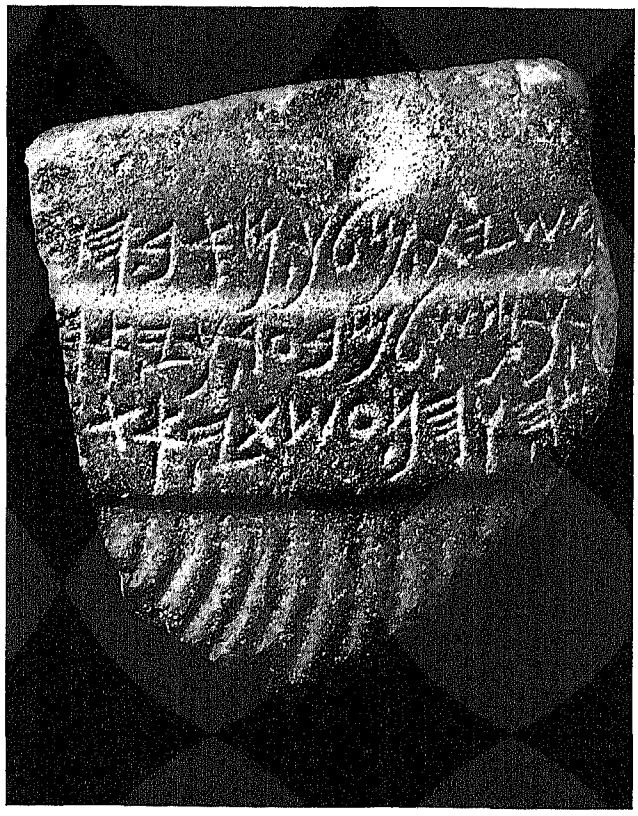
Other hard-media inscriptions pose different problems because they have a third dimension: height and/or depth. Whereas with soft-media texts and ostraca, an even, diffuse light is preferable, for these other types, readings are clarified by establishing shadows; hence, a low-raking, harsh light is generally preferable. Three-dimensional hard-media inscriptions are divided into two broad subcategories: large and small artifacts.

Large artifacts. In most instances, a "key" and "fill" lighting technique is the best for large artifacts. Dominant shadows are established by a low, raking light positioned to bring out the text readings most clearly. If the text is a cuneiform tablet, conventionally this light is placed so that it sweeps down diagonally from the upper left-hand corner. This establishes continuity with the convention of drawn cuneiform signs. [*See* Cuneiform.] Assyriologists conventionally depict signs graphically as seen with a dominant light from the upper left. In general, this is the convention

for other cuneiform drawing (e.g., Ugaritic) as well. The key light should be shifted as irregularities in the surface dictate. With other types of texts, the key is placed where it will best throw the signs into sharp relief—the position being judged by eye and verified by the results of Polaroid testing.

A second light source is typically employed from the precise opposite angle and from the opposite end of the inscribed object, in order to fill and buffer the dominant shadow. This light establishes definition of the opposite end of the signs or letters. This fill light is softer; indeed, it can often be established with a highly reflective white fill card (or sometimes a shinier reflector, such as a mirror) that simply bounces the key light in the opposite direction (see figure 4). Where a stronger fill is needed, a second strobe flash can be used.

In some instances, especially where a surface is curved (as on the incised surface of a jar), dominant, or key, lights are set at both ends of the inscription and are balanced so that they fill for each other. This is also often the best approach for a long, narrow one- or two-line inscription (e.g., on the base of a statue or votive object). In such cases, "fill-fill" lighting is the only proper approach.



PHOTOGRAPHY: Manuscripts. Figure 4. *The El-Kerak Moabite inscription.* Photographed in typical "key-fill" lighting set-up. The key comes from the upper left and the fill is established with a white card at the lower right. (Photograph by Bruce and Kenneth Zuckerman, West Semitic Research in collaboration with the Princeton Theological Seminary; courtesy Department of Antiquities of Jordan, Amman)

Care must be taken regarding the sort of reflectors used with the lights. In some cases (especially where considerable area needs to be covered) a reflector that throws a fairly broad, diffuse light will work; however, when an inscription is shallow (lightly incised or impressed), where it has been worn away (e.g., weathered), or where the bas-relief is minimal (e.g., on a poorly rolled cylinder seal impression) or partially chipped away, a much narrower light is needed to cast harsher shadows to define the letters or signs. As a general rule, the narrower the conduit of the light, the harsher the shadow created. A "snoot" reflector is the ideal tool for throwing such light. A snoot is essentially an open-ended cylinder about 6 inches long through which the light generated from an electronic strobe is converted into a narrow column. Because the light column is so narrow, it can be sent at an extremely low angle relative to the surface being illuminated; thus, the shadows created often throw even the most subtle indentations into startling relief. The major drawback of working with snoots is that their light covers only a limited amount of area. This makes them especially serviceable for detail work (e.g., a close-up of several letters or signs), but less well-suited for larger surface areas. This problem of coverage can be mitigated by stacking snoots; that is, by positioning two or more snoots diagonally on top of each other so that their lights overlap. Using this technique requires care: the lights must be evenly balanced, so that no unevenness is perceived in the transition from the illumination of one light to the next.

When an even narrower column of light is needed than can be projected through a snoot, black paper (or paper that is black on one side and white on the other) can be rolled into a cone (black on the outside, white on the inside) and taped to the end of a snoot. The end of the cone can then be adjusted to deliver a variable column of light, depending on the size of the area needing coverage. This works especially well for detail shots involving one or two letters or signs. A fiber-optic light source with a small probe can also be used, although it is usually not required for large hard-media objects.

Small artifacts. Essentially, three types of small hard-media objects contain inscriptions: seals, seal impressions, and coins. On occasion, other small artifacts are encountered with minute inscriptions (e.g., the Ketef Hinnom silver scrolls from Jerusalem), but the techniques for photographing them do not differ significantly from those used in the three main categories. [*See* Ketef Hinnom.]

Coins. Probably the easiest and best understood techniques are for photographing coins. Because ancient coins are invariably metal, their reflective surface can be used to advantage in delineating iconography and inscriptions. Usually, all that is required is a fairly diffuse light nearly on top

of the target. This can be achieved by employing what is known as a "ring light," that is, an illumination source that literally wraps around the camera lens and projects its illumination down on the target.

Seals. There are two types of seals, stamp and cylinder. The former are typically scaraboid, although other shapes can be encountered. Regardless of a seal's shape, the textual data are found on a stamping surface that is either flat or somewhat rounded. The range of materials for seals is considerable in its variety: from multicolored semiprecious stones (e.g., lapis lazuli, jasper, agate) to single-colored media (e.g., carnelian, shale, limestone, clay, ivory, bone) to nearly clear crystalline stones. Proper lighting is a challenge, since each seal usually involves an individual solution. Still, several basic approaches will yield good results.

If a stamp seal surface is relatively flat and not highly reflective, the key-and-fill technique (see above) is usually effective. A narrow light from a snoot, a coned snoot, or a fiber-optic probe works best as the key; normally, a white card is sufficient as a reflector to bounce back a fill. Care must be taken in establishing the direction of the key light. In cases where the incised strokes of the letters are essentially parallel to the direction of the key light, they will be significantly deemphasized and often will virtually disappear. Hence it is preferable to place the key light in such a position that the beam it projects parallels as few letter strokes as possible. Typically, a diagonal direction works best, although a number of directions should be experimented with. There are instances where no single angle of light is sufficient for gaining the optimal data from a seal of this sort. In such a case, two or several shots should be employed, illuminated from differing light directions in order to give the fullest picture of the letter forms achievable. Obviously, a knowledgeable expert who knows what letters should look like at a given time in a given script is absolutely essential for success in this work.

If a seal's stamping surface tends to be highly rounded rather than flat, a fill-fill approach (see above) needs to be employed—at least two, and sometimes as many as four, light sources should be positioned to cover the surface. For such work, fiber-optic light sources are more serviceable than conventional lights.

If a seal's stamping surface is reflective, it may be almost like a mirror at a particular discrete angle of light. Depending on the polish of the surface and the type of material, this angle can vary from 45° to 70°. Such a reflection is the ideal light in which to illuminate a seal's surface because every aspect of the carving is displayed, down to the finest detail. Indeed, the image often will seem to glow as if lit from within. This reflection cannot be captured in the camera lens if a stamp seal is mounted directly under the camera lens with the stamping surface and the lens plane flat. Rather, the seal should be mounted on a tilt adjusted until the refracted light is bounced into the lens at precisely the optimal angle. Because of this tilt, there is a potential for focusing problems; hence, all effort must be made to achieve the greatest depth of field by closing the lens opening as much as possible (see figure 5). Especially for a seal composed of clear crystal, this is virtually the only way to get a clear picture of the stamping surface.

PHOTOGRAPHY: Manuscripts. Figure 5. *Hebrew seal on a carnelian gemstone belonging to Hananyahu.* The seal was tilted in order to use the reflection of the light off its polished surface to gain optimal detail. (Photograph by Bruce and Kenneth Zuckerman, West Semitic Research; courtesy Harvard Semitic Museum, Cambridge)

Because of the tilt of the seal, the picture can be slightly distorted; however, the image produced will look flat to the viewer. Nonetheless, for greatest precision one should work with a view camera in which both the lens plane and the film plane can be tilted. Then these planes can also be tilted so that the lens and film plane parallel the tilted stamping surface of the seal, thereby minimizing all potential distortion

In so doing, considerable care must be taken to adjust the planes laterally so that they are in the middle of the lens's imaging circle (the maximum viewing circle covered by the lens); otherwise, a phenomenon known as vignetting may occur and part of the image may be cut off. This can be checked in a Polaroid test.

The conventional practice in photographing a cylinder seal is to photograph its impression rolled out on clay. While the impression gives a general sense of the seal's inscription and design, it inevitably the lacks the precision and detail of the real thing. Conventional photographs of cylinder seals show only a portion of the seal; and, because of the curvature of the surface, proper lighting is always very difficult to achieve. Recently however, an approach has been developed that allows one to make a picture of the actual sealing surface as a 360° time exposure. The technique involves an adaptation of panoramic photographic techniques, which employ specially adapted cameras to photograph a scene in a 360° arc.

In panoramic photography, instead of a standard opening behind the lens and in front of the film plane, a small vertical slit allows light onto the film. As an electric motor rotates the camera at a precise and unvarying speed in a 360° arc, a similar, synchronous motor advances the film in the opposite direction at precisely the same speed. Thus, the scene is "wiped" onto the film during a time exposure. For cylinder seals, this setup is adapted by keeping the camera stationary and rotating the seal in a 360° arc on a small turntable. A motor is used that is synchronized to the one moving the film in the opposite direction in the camera. Illumination is placed so that it highlights the area falling under the slit. Once again, the picture is wiped onto the film in a time exposure.

Previewing with Polaroid film will not work with this arrangement, but Polaroid instant slide film can be used for the same purpose. This is a special 35-millimeter film (available in both color and black and white) loaded and shot in a 35-millimeter camera in the conventional fashion. Once a roll is fully exposed, it can be processed in a small, easy-to-operate portable processor made by Polaroid that produces images for viewing in about five minutes. Thus, a test time exposure employing instant slide film can be reviewed on site. Any necessary adjustments can be made before doing a final documentation with archival-quality color and black-and-white films.

Seal impressions. Seal impressions are typically found on clay jar handles or as bullae. In either case, the inscriptions can be photographed using a standard key-and-fill or a fill-fill setup. Because in antiquity seal designs were often made quickly and with little care, the impressions they leave may only be partially clear and frequently so slight as to be invisible in ambient light. The difficulty of getting the light to fall at precisely the right angle for gaining optimal information becomes particularly acute with impressions. The problem is exacerbated with jar-handle impressions in which the seal creates a tiny bowl-shaped indentation that can be difficult to light.

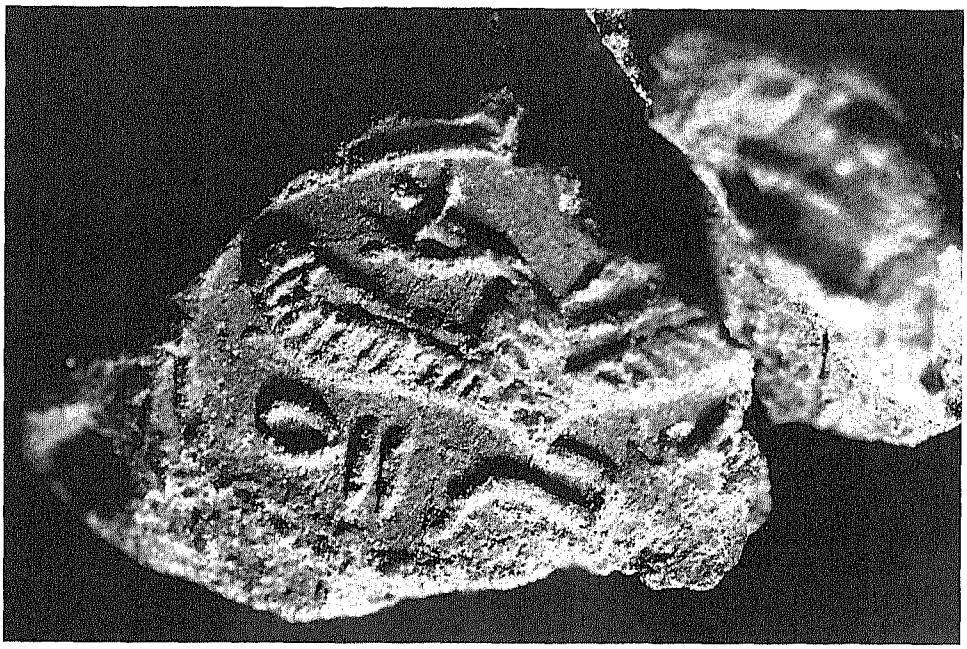
A fiber-optic light probe is best adapted for illumination, but it is difficult to mount a stationary probe. Instead, a hand-held fiber-optic probe, known as a light brush, often proves to be the easiest and most effective approach. These probes are employed in commercial photography to apply artificial highlights to pictures—for example, to create areas of high reflection on ice cubes. Similarly, this probe can be utilized in a time exposure to "paint" a seal impression with light. In some instances, this is done essentially by holding the probe in one position; frequently, however, the best results are achieved by moving the probe during a time exposure of 5–15 seconds, so that its light illuminates areas of the impression from slightly different angles. Experimenting with combinations of movements and angles with Polaroid tests assesses the results. Again, a trained scholarly observer should examine the tests to ensure the best results. "Light brushing" a seal impression in this manner can achieve dramatic results beyond what is possible with any other lighting (see figure 6).

Digital Imaging. Computers translate an image (digital imaging) into a discrete number of small elements called pixels (short for "picture elements") and assign a color and intensity to each pixel (see below). Subsequently, manipulation of the digital information can change the appearance of the image by adjusting contrast and brightness, sharpening, applying false coloring, and "cutting and pasting," to create composite images and other effects.

Digital images are also convenient for archival storage and electronic transmission. Once an image has been digitized, it can be copied over and over again with no loss of image quality. Even as digital storage media technology changes, the data from older media can be copied onto the new and preserved for the next generation with no loss of information. This is not the case when copying film negatives, transparencies, or photographs, where each subsequent copy produces an image somewhat inferior to its parent. In contrast, electronic transmission of data over any of the available networks including the Internet will give the recipient a perfect clone of the original digital image.

The demands placed on digital-imaging technology when dealing with ancient documents are considerable because of the necessity of preserving minute details. This requires the use of the highest available resolution. This demand can handicap even the most state-of-the-art computer system and frustrate the unsophisticated user.

Input. The first task in digital imaging is to deliver the image so that the computer can read it. This can be achieved in one of two ways: direct-image capture (attaching an electronic camera directly to a computer) or scanning a conventional photographic image (a print, transparency, or negative) with a scanning device driven by a computer.



PHOTOGRAPHY: Manuscripts. Figure 6. *Bulla excavated at Megiddo.* The bulla is illuminated by a light brush. (Photograph by Bruce and Kenneth Zuckerman, West Semitic Research; courtesy Israel Antiquities Authority)

Direct-image capture, sometimes called filmless photography, has the advantage of nearly instant preview of the result (the Polaroid of the electronic world); it also has the ability to work in discrete wavelengths of light, including those beyond the sensitivity of film in the infrared range. Various bands within the spectrum can be selected using an electronic device called a liquid crystal tunable filter (LCTF); the infrared reflective properties of documents can be imaged by cameras designed for that purpose. Within the spectral range of color and infrared films, LCTFs or more conventional narrow band-pass filters can be used with conventional photographic cameras to achieve similar results. The disadvantages of direct-image capture are the need usually to be connected to a fairly powerful (usually cumbersome) computer equipped with a CRT (cathode ray tube) color monitor to control the camera operations, view the results, and save the images. Some stand-alone digital cameras can produce good reference images, but the limitations of the system's resolution preclude enlarging them. In such systems there simply are not enough pixels (typically fewer than 1000 across the longest dimension of the image) to deliver a detailed image. High-end digital cameras that produce dramatically more pixels (5,000–6,000 across the image) are not yet available as stand-alone devices, may require three exposures to capture a color image (a technically more difficult procedure because registration has to be maintained for all three exposures), use slow exposure times that in turn require the use of constant bright light sources (a serious drawback from a conservation standpoint for soft-media documents, as noted above), and are priced substantially beyond the costs of even the finest conventional photographic equipment. As a result, for at least the immediate future, conventional photographic methods will be the preferred image-capture technique for reproducing ancient documents.

The breakdown of an electronic image to the point where it no longer looks photographic but like an assemblage of discrete blocks is called pixelization. The unaided human eye will usually not perceive pixelization if there are at least 300 pixels per inch (ppi) in the image being viewed. As a point of comparison, a conventional photographic image contains the equivalent of at least twice this number of pixels and looks considerably better in a side-by-side comparison with a 300-ppi image. In addition, a digital image can break down if there is an insufficient range of gray levels and colors available for display. In order for computer-imaging output devices to produce a black-and-white image of photographic quality, the device must be based on a scan that contains some 256 levels of gray (sometimes referred to as an 8-bit image). Similarly, a full-color image of photographic quality requires a file with approximately sixteen million colors (called a 24-bit color image: eight bits each of red, green, and blue—if using an additive color system—or eight bits each of cyan, magenta, and yellow—if using a subtractive color system).

As the above statistics suggest, a digital image of any sig-

nificant resolution involves a tremendous amount of data. For example, to scan a standard 4 by 5 inch original negative without significant pixelization, in order to enlarged it to 11 by 14 inches, the digital image would have to encompass 3,300 × 4,200 pixels for a total of 13.86 million pixels. For a black and white image with 256 levels of gray, this represents 13.86 megabytes (MB) of data; for a full-color image, it represents a considerable 41.58 MB—all for a modest enlargement of less than three times the size of the original. The original 4 by 5 image would need to be scanned into the computer at a pixel density of at least 840 ppi. A 35-millimeter original would need to be captured into the computer at approximately 2,800 ppi.

If the minute details of an image at high magnification are needed, even larger files sizes will be necessary. It is here that the intelligent application of imaging technology becomes important. Just as in conventional photography, only those areas of special concern to the scholar should be digitized at the highest resolutions. (The significance of these numbers will become even more evident in the discussion of film scanners below.) The hybrid use of high-magnification photos digitized with a modestly high-resolution film scanner may be the most efficient use of both technologies.

Scanners. There are three broad categories of scanners: flat-bed scanners, Charged Coupled Device (CCD) film scanners, and drum scanners. Flat-bed scanners look and appear to operate much like a desktop copying machine. A photo (usually a paper print) is placed face down on a glass plate, a cover is lowered over the photo, and a linear light and CCD scanning array pass under the photo to capture the data. Some units are equipped with transparency adapters that allow the device to scan negatives and transparencies. These units are usually limited to 300–600 ppi. Some units make up for this deficiency by adding pixels through software, using a process called interpolation. These extra pixels are not real data, and the images produced should not be confused with images based on true optical data.

Film scanners project a focused image on a CCD that may be linear (in which case the CCD is swept across the image plane) or rectangular (in which there is a rectangular array of sensers that directly captures the image). Color filters may be used to achieve three successive scans to capture a full-color image. The better film scanners have true optical resolution of 1,000–3,000 ppi and can detect more than 256 levels of intensity for each primary color. The ability to record information in more than 256 levels enhances an image's level of detail, especially in its brightest (highlights) and darkest (shadow) areas. Only a few of the high-end film scanners will support large-format (4 × 5 in.) originals. These large-format devices are also slow and require perhaps as much as 10–15 minutes to complete a high-resolution color scan to produce digital files as large as 50 MB.

The best digital scans are obtained with drum scanners. These devices require that the film be mounted on a clear cylindrical drum that is spun at high speed while a very fine point of light is focused on the film. The resulting changes in light intensity and color are measured by a photo multiplier tube (PMT). PMTs are inherently better at detecting light then CCDs. As a result, drum scanners achieve higher resolutions and greater density ranges than any of the other devices discussed above. Drum scanners are also the most expensive and slowest of the choices. However, for the highest quality work, where the application demands file sizes of 100 MB and more, drum scanners are the only choice.

Eastman Kodak has produced a system of film scanners that create files on CD ROMS (compact disks that are "read only" and cannot be edited) called Photo CD. The files on these disks are available in a variety of sizes. The highest resolution is available only on the Pro-Photo CD version, which is capable of scanning a 4-×-5-in. negative or transparency to a file that, when opened with the appropriate software, contains about 70 MB of data. The Kodak system, designed for commercial operations, is very fast; as a result, the cost of the scans is reasonable. A Pro-Photo CD can contain approximately twenty–twenty-five reasonably high-resolution images. Pro-Photo CD is a good place to start for editing images with large file sizes.

Computer enhancement. Once the image of interest is digitized, there are excellent software packages on various computer platforms that can be used to improve and otherwise manipulate images. The manufacturers of imaging-editing programs are constantly improving their products.

When processing large images, work should be limited to selecting areas of interest. Some programs feature a proxy system that enables the user to apply effects to a low-resolution version of the image and subsequently apply identical effects to the high-resolution version while the computer is unattended. Tools that "float" one image or a portion of one image over another are very useful for comparing individual letter shapes in documents or in reconstructing, in a scribe's own hand, a partial letter or words and phrases in lacunae.

Still, such tools cannot be used with impunity. It is necessary to establish protocols for moving and restoring textual data so as not to create a "fake." In any publication or presentation of digital images, both the original and the altered image should be shown; moreover, the manipulations should be documented, explained, and preferably illustrated in detail.

It is also possible to undo effects applied to an image. Image manipulations in some programs only allow the last action to be reversed, whereas others allow unlimited undoing. The power of image processing to correct poorly exposed photographs, sharpen areas in poor focus, build composites, rebuild fragmented texts, cut out individual letters to build script charts, add interpretations by drawing on or electronically tracing over a photograph, and combine photographs made with various filters or at wavelengths beyond the visible are just a few of the tools available to a scholar equipped with a computer and some imaging software.

Many of these approaches to processing and enhancing data have only just begun to be applied by epigraphers and philologists. As this work progresses, the toolbox of techniques easily available to the scholar will undoubtedly grow, thereby dramatically enhancing the ability to see what could not hitherto be seen.

Image processing is one of the most demanding tasks a computer can perform. To work efficiently the computer must be equipped with a fast and powerful processor, have large and fast disk-storage capacity to handle the large files involved, have a high-quality monitor and fast video card with adequate video ram (VRAM), and, most important of all, have very large quantities of internal random access memory (RAM). A further prerequisite is a means of permanent storage beyond the computer's internal hard disk. At the moment, high-capacity tapes, such as digital audiotape (DAT) systems and recordable CD-ROMs, are the storage media of choice. Storage can be increased even more by means of a technology called image compression, which can reduce image sizes for storage. Such compression programs must be used with caution, however, because some programs are designed to discard "unimportant" image data. Such forms of compression may be acceptable for storing images for casual study, but for more rigorous storage, only programs employing "lossless compression" should be used.

Output .To produce hard-copy output from digitally enhanced images (i.e., images in tangible form, equivalent to a photographic print), the choices are as varied as on the input side. They range from relatively inexpensive laser and ink-jet printers to much more expensive film recorders that can convert a digital file back into a photographic image. Presently, the best compromise is device called a dye-sublimation (dye-sub) printer. Dye-sub printers produce nearly true photographic quality output at a reasonable price. Sizes are limited typically to 8 by 10 inches, but some models can produce 11 by 14 inch output. For even larger dimensions, high-quality ink-jet devices can produce nearly photo-quality output up to poster size. This is usually achieved by adding extra pixels through interpolation; as mentioned above, however, this method does not add real resolution to the picture.

Image output devices can print directly onto photographic paper or transparency materials at 300 ppi. The output is almost indistinguishable from photographic prints but is now limited to 8 by 10 inches. These are relatively large machines, approximately the size of a freestanding office copier, and are more costly than dye-sub printers, making them practical only in an institutional setting.

If hard-copy output is the primary goal, it is important to balance the resolution of input and output. Sufficient data should be available to produce quality output on the printer or film writer. However, there is little point to processing more data than the output device can handle as this needlessly slows down the processing time without tangible benefit. As already mentioned, in order to have a hard-copy image of photographic quality, it must have in the range of 300 ppi. Higher resolutions are only desirable if images are to be examined under magnification.

Permanence is a problem with dye-sub and ink-jet output: both are subject to fading and physical damage from handling unless special precautions are taken. Some dye-sub printers now apply a protective coating on hard-copy images to protect them from scratching, fingerprints, and rapid ultraviolet fading. Some ink-jet services also offer special fade-resistant dyes and archival paper to create a more permanent image. Ironically, the best means of obtaining hard-copy output, especially for long-term storage, is to record an image back onto a piece of film. The best film recorders can produce output indistinguishable from a camera-made original. Needless to say, achieving an optimal result means beginning with a high-resolution drum scan and image processing the resulting large file.

For purposes of publication, it may not be necessary to produce hard copy or film output at all. Publishers may prefer to receive the digital image file for direct input into their page-makeup system. If the images are to be included in a CD-ROM publication or as part of a multimedia publication, a digital file is ideal. In fact, digital editions of texts are certainly coming in the near future, probably with CD-ROM as the mode of dissemination. Such editions are the ideal tool for scholars, because they offer far superior visual data than could ever be obtained in the photographic reproductions in a conventional book. Moreover, the data invite interaction because they are ready for downloading into computer-imaging and enhancement programs.

Photographic/Digital Recommendations. In the final analysis the large-format camera is still the most suitable tool for the recording of textual data on ancient documents. Digital imaging can then be performed on the high-resolution films. Indeed, today digital scanning, retrieving, and processing of an original film image is now the superior means of getting the most usable data from an ancient inscription and is certainly superior to the chemical processing of a film image in the darkroom. Film should be scanned at high resolution and high bit depth and stored to archival media such as CD-ROM. Processed images should be likewise digitally archived. For hard-copy output dye-sub printers are the most practical at this time; however, prints on dye-sub media should not be considered archival. The best long-term approach for making archival hard copies of digital images is to write the processed images back to film with a high-resolution film recorder.

[*See also* Codex; Libraries and Archives; *and* Scrolls.]

BRUCE ZUCKERMAN and KENNETH ZUCKERMAN

PIGS. The pig, *Sus scrofa,* was domesticated in the Near East from two wild subspecies, *S. s. attila*—a habitant of Turkey, Iran, and Iraq—and *S. s. libycus*—common to the

eastern Mediterranean and Egypt. The earliest evidence for domestic pig comes from Hallan Cemi in southeastern Turkey. Based on morphological changes and mortality patterns, domestication is dated by radiocarbon analysis to c. 8500 to 8000 BCE. This preliminary new evidence supersedes the well-known morphological evidence for domestic pig (shortening of the skull and teeth) found at the Neolithic site of Jarmo in northern Iraq, dated to c. 6500 to 6000 BCE. A few sites, particularly in Anatolia, show extensive exploitation of the animal in later phases of the Neolithic. In the Levant, one molar documents pig domestication at Tell Judeideh, a site on the Plain of Antioch, shortly after 6000 BCE. Husbanded pigs spread to the southern Levant by 5000–4000 BCE, at such sites as Tell Turmus in Israel. Pigs were a mainstay of the Levantine diet in the Late Neolithic and Chalcolithic periods, preceding the advent of complex society. Domestic pigs were present in the Nile valley by the Gerzean period (c. 3500–3000 BCE). A number of principles underlie the distribution of pigs. Environmental factors are primary because pigs require habitats receiving more than 300 mm of rain per year or the presence of marshlands. In all periods, increased moisture is predictive of swine exploitation. Pigs also prefer a forested habitat; some of the overall decline in swine husbandry seen over the sweep of Near Eastern history is the result of a steady deforestation of much of the environment.

With the emergence of complex society in the Early Bronze Age, factors beyond environment influenced the use of pigs. Based on the faunal record in the Levant, pigs were a rural subsistence strategy, becoming particularly important in periods and places of decreased political centralization. In general, pigs are substantially less abundant in the whole of the Near East after the onset of the Middle Bronze Age. An exception is the first wave of Philistine settlement, a phenomenon more likely an example of the worldwide pattern in which immigrants in the first phase of settlement turn to pig husbandry than a reflection of ideology. Because the animal reproduces more rapidly than other domestic stock, it provides a quick and abundant source of protein. Certainly, in later phases of Philistine settlement, pig husbandry declines abruptly. Throughout the rest of the Iron Age in the Levant, pork is only a marginal addition to the larder.

Swine were uncommon in other parts of the ancient Near East after the onset of complex society, again with a few exceptions. Pigs were a dietary mainstay at the Early Bronze Age city of Leilan in Syria. Other large and politically important sites in the same region, Lidar Höyük and Korucutepe in modern Turkey, for example, show continued exploitation of the pig into the Late Bronze Age. Hittite texts indicate that the animal was used in ritual contexts, though perhaps not those of the official cult. In southern Mesopotamia—though the faunal record is very sparse—a few large sites, such as Isin, even as late as Neo-Babylonian times, have significant amounts of pig remains. Cuneiform texts indicate that the animal, which lived as a loosely controlled urban scavenger, was held in low esteem. In Egypt, pigs are very infrequently mentioned in texts or depicted in art. Osteological evidence shows that their exploitation was related to the intensity of political control of the economy. Additionally, pig consumption in Egypt was related to social class. The comments of Herodotus about the status of swine herds are reflected in much earlier remains from Amarna, where pork was the food of the working class.

The dietary laws of the Hebrew Bible, a product of the Priestly source (dated variously from the eighth century BCE to the Persian period in the sixth century BCE) were composed when and where swine husbandry was a nearly invisible pursuit, at least on the basis of the archaeological record. The inclusion of the animal in the list of prohibited species would therefore seem to be the incorporation of a region-wide bias into the biblical tradition rather than a theological innovation directed toward pigs.

[*See also* Animal Husbandry.]

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BRIAN HESSE

PIT GRAVES. Simple, or pit, graves consist of a hole cut into sand, rock, or tell debris, to accommodate a body or a collection of bones with mortuary provisions. The cist grave is a more elaborate stone-lined version of a pit grave. Southern Levantine pit graves are either intramural (within settlements), cut into the tell debris (Natufian, Neolithic, Chalcolithic, Middle Bronze Ages), or in extramural cemeteries (Late Bronze, Iron Ages). The deceased were laid

either in a flexed position on their side (Natufian–Middle Bronze Ages) or extended on their back (Late Bronze–Iron Ages).

In the Natufian period (10,500–8,500 BCE), intramural graves with one or more individuals were grouped and marked at the surface. At Naḥal Oren, bodies were interred in shallow pits in a designated area around a large stone-built hearth. The single, paired, or multiple bodies, adorned with ornaments, usually lay in a flexed position with the head facing north. Limestone mortars resembling stone pipes placed near several burials have been interpreted as marking the grave location and establishing a conduit between the worlds of the living and the dead (Stern, 1993, vol. 3, p. 1168). At the northern Jordan Valley site of ʿEnan, tomb 9 apparently housed a family (six skulls, plus three adults, one adolescent, and four children). In later burials, many bones were covered with red ocher, and graves were marked with large, flat standing (?) stones, similar to the Naḥal Oren mortars (Stern, 1983, vol. 2, p. 392).

Most Neolithic burials date from the Pre-Pottery Neolithic (PPN) period (8500–6000 BCE). Intramural, primary burial in a contracted position continued from the preceeding period. A PPN innovation was to remove adult skulls, without jaws, to keep in groups in the house, while the bodies were buried under the house floor or in an open space (Jericho, Naḥal Oren). In several cases, skulls were plastered and shells inlaid for eyes, to give a lifelike appearance (ʿAin Ghazal, Jericho). The arid conditions in Jericho have preserved bone needles and points (perhaps used to fasten the clothing of the dead or their wrappings) and traces of matting.

Beginning in the Chalcolithic period (4300–3300 BCE), while the majority of adults were buried in extramural cave and shaft-tomb cemeteries, infants, children, and adults under special circumstances were still being interred beneath house floors. At Beersheba, infants and children lay in the fetal position on their right side; some of the burials were provided with fine pottery vessels.

Pit burial virtually ceased in the region during the Early Bronze Age, but was reintroduced from the north in MB II (2000–1550 BCE). Beginning in MB IIA, intramural pit burial was practiced at sites from Ugarit south to Tell el-ʿAjjul (Dan, Jericho, Lachish, Megiddo, Tell el-Farʿah [South]). One or two mature individuals, positioned on their side with a small selection of pottery vessels and jewelry, were buried in a pit cut into the earth beneath their home or in the courtyard. During this same period, children were interred in jars under the house floor.

The northern-inspired MB intramural pit graves were succeeded by Egyptian-inspired extramural or isolated pit-grave cemeteries in the Late Bronze Age (1550–1200 BCE). Extramural pit-grave cemeteries reached their height of distribution through the Egyptian-administered or influenced lowlands in LB II (1300–1200 BCE; e.g., at Tell Abu Hawam, Tell el-Farʿah [South], Tell es-Saʿidiyeh, Tel Zeror). One person, and rarely two or three, were provisioned with bowls for food, jugs with dipper juglets for liquids, and luxury items such as imported pottery, jewelry, and metal objects.

The pattern of burial practices changed little from the Late Bronze Age through all the social and political upheavals of the Iron Age (1200–586 BCE). Pit and cist graves remained the predominant lowland burial type throughout the Iron Age (Achziv, Tell el-ʿAjjul, Ashdod, Megiddo, Tell el-Farʿah [South]). One or more individuals, of any age or either sex, were laid out on their back, with hands outstretched along their sides or crossed on the chest or pelvis. Continuing the LB practice, bowls and jars were characteristically provided. The lowland distribution of pit graves for individuals diverged markedly from the highland practice of multiple burial in caves. It may be that the lowland cultural group collectively referred to in the Bible as Canaanites practiced pit burial as opposed to the highland Israelites and Amorites.

[*See also* Cave Tombs. *In addition, most of the sites mentioned are the subject of independent entries.*]

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ELIZABETH BLOCH-SMITH

POIDEBARD, R. P. ANTOINE (1878–1955), officer, explorer, and missionary of the Jesuit order, which he joined in 1897. Born in Lyon, Poidebard was sent to study at Tokat (Turkey), where he learned Turkish and Armenian. He was ordained as a priest in 1910 and sent as a missionary to Armenia from 1911 to 1914. During World War I, he enlisted as a military chaplain with the rank of officer-interpreter in the French military mission in the Caucasus. After having shown his mastery among the Armenians in Erevan, he was sent to Georgia, which was, at that time, independent and at war with Russia. From 1924 onward, he was posted in Beirut.

As a reserve officer, Poidebard was transfered to the air force. During his flights on the edge of the Syrian desert, he noticed that, in a certain light, it was possible to distinguish ruins that though just barely covered, were imperceptible from the ground. Excavations later allowed him to confirm the accuracy of his observations. He involved himself in pioneering research in the border areas between inner Syria and the steppe. The results are available in two majors works as yet unequaled: *La trace de Rome dans le désert de Syrie* and, in collaboration with René Mouterde, *Le limes de Chalcis*.

Poidebard's research methodology was then innovative: observation in flight (at an altitude that might vary but that would be near 300 m for the best light conditions) and above all later verification of the find, either upon landing or through subsequent exploratory expeditions. The result is a work of the first order, with one volume of text and one of plates. Poidebard demonstrated the existence, to the east of Syria, at the edge of the steppe, of a complex network of military routes and small forts representing the successive extensions of the empire from Trajan's time to Justinian's; he described the network's organization, distinguishing above all the presence of an inner and outer boundary line.

In the *Limes of Chalcis,* Mouterde and Poidebard began with Malalas's allusion to *to Limiton Chalkidos*. They then searched the land for vestiges of routes and forts that would permit them to verify the existence of the lines and to understand the organization of this defensive system installed around the ancient village of Chalcis, modern Qinnishrin. [*See* Qinnishrin.] There are many reasons to think that the Limiton Chalkidos was not in reality a "border" in the strategic sense of the term, but that it merely designated the extent of the city. The authors did, however, locate, map, and date a number of very important sites, unknown before their efforts, that proved that in the Byzantine period there was a considerable extension east of the territory occupied by garrisons. While the work does not prove the validity of its initial hypothesis, it reveals the dynamism of the history of the campaigns in northern Syria in the Roman and Byzantine periods. Poidebard was again a pioneer when he applied his method to locate the vanished port of Tyre and study the ancient arrangement of the port of Sidon, the subject of two other works. [*See* Tyre; Sidon.] According to those who knew him, Poidebard was courageous, warm, and cordial. With the perspective of hindsight, he belongs to a small group of men, more imaginative adventurers than researchers in the academic sense of the word. The merit of their enterprise, rather than the possible weakness of their scientific work, should be emphasized. At the time they undertook their research, conditions of instability prevailed. They did things on a vast scale, turning to new methods that have since proven their usefulness. Poidebard died in Beirut, his last years saddened by attacks of amnesia.

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GEORGES TATE

Translated from French by Melissa Kaprelian

POOLS. A pool is an unroofed, built installation, designed to store runoff or spring water, whose length and width are always greater than its depth. A pool requires very thick walls built of large stones (a minimum of 1 m and a maximum of 14 m as the Israin pool in Jerusalem), usually with smaller stones filling in the gaps. An impermeable material was inserted between the stones for reinforcement and to ensure against seepage. A thick layer of plaster applied to the walls after their construction prevented percolation of the water; plaster was also applied to a pool's floor, which often was smooth, bare rock. The corners of the pool were usually curved or formed by two obtuse angles to prevent cracks from developing at weak spots in its perimeter.

Many pools were built in low-lying areas, such as riverbeds, whose topography facilitated construction, as well as the drainage of runoff. A dam was generally first built across the riverbed. The bedrock was then plastered and used as the floor of the pool, longitudinal walls were built along the slopes of the ravine (incorporating the naturally exposed rock), and an upper cross-wall was constructed. This method was used to build the Sultan's Pool and Solomon's Pools in Jerusalem, as well as many others. [*See* Jerusalem.] A pool's large surface area results in a great deal of evaporation—a major drawback because it is virtually impossible to roof such a large area.

Pools were used to store and to regulate the supply of drinking water, as well as water for bathing, swimming, and irrigating gardens and crops. The water entered the pool at its most elevated point, flowed through a filtering basin where heavier materials (detritus, wood, and soil) mixed in the water stream could settle. Pools used for regulating water flow had openings at the bottom, through which the water continued to flow toward its destination. Pools were usually rectangular or trapezoidal; only rarely were they circular.

The most ancient pool so far discovered is at Ai (Khirbet et-Tell) and dated to the Early Bronze Age. [*See* Ai.] It forms part of a system for draining runoff. The capacity of this pool is 1,800 cu m and its maximum dimensions are 29 × 25 m; it is 2.5 deep. Red clay was used for caulking. Other pools from the same period have been found at Arad in Israel's Negev and at Jawa in Jordan's Black Desert. The storage volume for the pool at Arad has been estimated to be 2,000 cu m; at Jawa seven pools were discovered behind dams in the wadi below the city, with a total capacity of

about 22,000 cu m of water. These were intended primarily to supply drinking water for the city's inhabitants. [*See* Arad, *article on* Iron Age Period; Jawa.]

The Hebrew Bible mentions several pools: the Old Pool, the Upper Pool, the Lower Pool, the King's Pool, the Artificial Pool, and the Siloam Pool in Jerusalem; as well as pools in Hebron, Gibeon, Samaria, and Ḥesban. Only few of these have been identified. [*See* Hebron; Gibeon; Samaria; Ḥesban.]

The largest pools, Solomon's Pools and one of the pools at Jericho, date to the Second Temple period. Solomon's Pools form part of one of the most impressive and largest water installations in the land of Israel. As part of the water supply system for Jerusalem they served a dual purpose: to regulate the water supply and to store water (reservoirs). The total capacity of the pools is 180,000 cu m; the maximum dimensions of the largest pool are 177 × 83 m; it is 12 m deep. At Jericho, the Musa Pool is the largest reservoir pool (220 × 160 m and 21.5 m deep). It too dates to the Second Temple period. Several swimming pools have been discovered from this period as well, at Jericho (92 × 40 m) and Herodium (70 × 46 m and 3.5 m deep). [*See* Jericho; Herodium.]

During the Second Temple period there were twelve pools in Jerusalem that had originally been quarries and that were subsequently used secondarily for defense purposes.

During the Roman and Byzantine periods in many locations in the Galilee, on Mt. Carmel, and in Samaria, pools were the center of village life. [*See* Samaria.] Their water was used for livestock, laundry, drinking, and bathing. Two large pools at the center of the site of Shivtah in the Negev served as one of the major water sources for that town. A pool on the outskirts of Sepphoris was probably used for swimming. [*See* Sepphoris.] Some of the Byzantine monasteries in Israel also had water installations that included pools, such as Deir Kal'ah in Samaria, whose three pools have crosses engraved on their walls.

From the beginning of the Early Arab period and onward, the development of waterworks in Israel was neglected; only a few pools have been discovered from this period, such as the decorative pools at Hisham's palace and the irrigation pool at 'Ein-'Evrona. During the Crusader period a pool was constructed near the Damascus Gate in Jerusalem known as Lac de Leger. No pools are known to have been built in later periods, but Solomon's Pools continued to be used until the middle of the twentieth century.

[*See also* Aqueducts; Hydraulics; Hydrology; Irrigation; Reservoirs.]

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TSVIKA TSUK

Translated from Hebrew by Ilana Goldberg

POPULATION. *See* Demography.

POTTERY. *See* Ceramics.

PRESERVATION. *See* Restoration and Conservation.

PRIENE, ancient Ionian city (37°38′ N, 27°17′ E) situated on the southern slopes of Mt. Mycale, just north of the Meander River, near the Aegean coast of Turkey, across from the island of Samos. Priene now lies about 15 km (9.3 mi.) inland, but it was originally much closer to the sea; silt carried downstream by the Meander River continues to push the coastline ever westward.

The identification of Priene is secured by numerous inscriptions found on the site. Archaeological investigation began with the expeditions of the British Society of Dilettanti to Ionia in the eighteenth and nineteenth centuries. Extensive excavations were carried out by the Berlin Museum from 1895 to 1899 (Wiegand and Schrader, 1904). A German team resumed investigation of the site in 1977.

The history of Priene may be traced back to at least 700 BCE, but the current site was apparently not settled until the mid-fourth century; the original location of the city remains unknown. The area of new Priene falls into two parts: to the south, a lower city (the main area of occupation), built on gently sloping ground; to the north, an acropolis on a high hill, separated from the lower city by steep cliffs.

Both acropolis and lower city are surrounded by fortifications, enclosing a total area of about 40 ha (99 acres). The lower city was laid out on a grid pattern, oriented north–south and covering an area of about 15 ha (37 acres). The grid is based on a block size of approximately 47.2 m × 35.4 m (160 × 120 Ionic feet). In the center of the city, a nearly square area of three blocks (two full blocks plus two half blocks) was reserved for the agora (marketplace). Northwest of the agora, an area of the same size was set aside for the sanctuary of Athena. The construction of the fortifications, the layout of the city grid, and the basic town-planning all seem to have been parts of the original urban design.

The Ionic temple of Athena rests on a high terrace that dominates the lower city of Priene. The temple was designed by Pytheos, a celebrated architect, and dedicated by Alexander the Great, probably in 334; construction apparently was not finished until the Augustan period (27 BCE–14 CE),

however, when the temple received a supplementary dedication to the emperor. The agora and associated structures were also built up over several hundred years; the agora reached its final form, in which it was surrounded on all sides by stoas (portico-like structures), in the second half of the second century. To the east lies a small sanctuary, dedicated either to Zeus or to Asklepios. North of the agora are the *bouleuterion* (council house) and *prytaneion* (administrative headquarters); the former building is unusually well preserved and had an estimated seating capacity of 640 persons.

Other public buildings and lesser sanctuaries are scattered throughout the city. Of these the most important are the theater and the lower gymnasium and accompanying stadium. The theater is built into the hillside on the northern edge of the city grid. The seating area may be as early as the founding of the city in the mid-fourth century; the stage building is somewhat later, but it is still one of the earliest and best-preserved buildings of this type known. The lower gymnasium lies just inside the fortifications on the southern edge of town. It has been dated to the mid-second century, and consists of a colonnaded exercise ground with a row of rooms on the north side, including a large classroom, whose walls are inscribed with the names of hundreds of schoolboys. The stadium lies east of the gymnasium and is the only major building at Priene oriented according to the natural hillslope, rather than the city grid.

Priene is unusual in the preservation and extensive excavation of its residential districts, in which approximately seventy houses have been revealed. These houses, four to a block on average, vary both in size and plan; the state in which they survive is that of the late Hellenistic and Roman periods (second century BCE–fourth century CE), however, and it is possible that they were originally more uniform. Features of these houses often singled out as typical are a square room *(oikos)* on the north side of the house, entered by way of a simple porch *(prostas)*, which opens in turn on an interior court.

There is little new building of the Roman era at Priene, probably because the ever-advancing coastline caused the economic fortunes of the city to decline. Several churches were built in late antiquity, and the city remained the seat of a Christian bishop until the Seljuk conquests of the thirteenth century CE.

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CHRISTOPHER RATTÉ

PROTO-CANAANITE. In the latest thorough treatment of Proto-Canaanite inscriptions (Sass, 1988), twenty-two inscriptions in a quasi-pictographic script from southern Canaan are accepted as representing Proto-Canaanite. They show the evolution, although with many gaps, of the script from the early seventeenth to the twelfth centuries BCE, by which time a script very similar to that of the earliest Phoenician inscriptions had clearly evolved. [*See* Phoenician-Punic.] Depending on the date ascribed to the Proto-Sinaitic inscriptions, written in a similar script, the inscriptions from Canaan either provide the earliest examples of alphabetic writing or come soon after the Sinai inscriptions. (An earlier chronology for the Sinai inscriptions is deemed the more likely. [*See* Proto-Sinaitic.])

The state of preservation of the Proto-Canaanite inscriptions is generally even poorer than that of the Proto-Sinaitic inscriptions. The identification of their script as West Semitic alphabetic rests on its formal similarity with the earlier Proto-Sinaitic script, on the actual decipherment of a minority of the texts, and on the formal evolution toward the script known as Phoenician. Whereas the inscriptions from Sinai are in stone and are relatively long and well preserved, the Proto-Canaanite inscriptions are usually very brief and for the most part are written on pottery, either whole pieces or sherds (ostraca), and have suffered through the millennia. [*See* Ostracon.] For these reasons, there is very little textual material that can be identified with certainty as Proto-Canaanite.

The clearest example of a meaningful Canaanite text is the Lachish Ewer inscription, discovered in the 1933–1934 excavations at Tell ed-Duweir/Lachish and dated to the thirteenth century BCE (Tufnell et al., 1940, frontispiece, pp. 49–54, pls. LI A: 287, LX: 3; Sass, 1988, pp. 60–61, figs. 156–160). [*See* Lachish.] The script is still reasonably close to its pictographic origins and reads {mtn . šy [---]ty 'lt [. . .]}. The first word has been interpreted as a common noun meaning "gift" or as the proper name *Mattan.* Frank M. Cross (1954, pp. 20–21) has plausibly reconstructed the first lacuna as containing the preposition *l,* "for," which may even be partially visible, and the first two letters of the title *rbt,* "lady." The word *'lt* is the standard West Semitic word for "goddess" and could either be a title or function as a divine name. Thus, this text can be interpreted as meaning "a gift of tribute [for the La]dy, the goddess of [. . .]," or perhaps "(From) Mattan: a tribute [a La]dy 'Ilat [. . .]." In any case, the preserved text fits plausibly with the object

itself, a large decorated urn found in a temple, inspiring confidence that, had the object been found intact, it would have been possible to decipher the entire inscription.

At the other extreme of comprehensibility are four lines of the five-line inscription on an ostracon from 'Izbet Ṣarṭah that has been dated to about 1200 BCE (Kochavi, 1977; Demsky, 1977; Cross, 1980, pp. 8–15; Puech, 1983, pp. 563–567; Sass, 1988, pp. 65–69, table 6, figs. 175–177). [*See* 'Izbet Ṣarṭah.] One line (line 1 or 5, depending on whether the text is read from top to bottom or from bottom to top) is certainly an abecedary, the earliest attested from southern Canaan. [*See* Alphabet.] This abecedary clearly represents the short twenty-two letter alphabet, but the other four lines have so far defied interpretation. It appears likely, therefore, that the West Semitic alphabet was in this instance used to write a text in another language, as yet unidentified. Although it is illegitimate to use this text to call into doubt the West Semitic and alphabetic character of all the Proto-Canaanite inscriptions (Garbini, 1978), this example does show that no given inscription can be considered West Semitic with certainty until it is satisfactorily deciphered (Garbini and Durand, 1994, p. 39).

Forming somewhat of a link between the Proto-Canaanite inscriptions and those in Phoenician is a series of inscriptions on arrowheads, of which the number of known examples is now approaching thirty (Bordreuil, 1992, p. 212, n. 34; Cross, 1992; Cross, 1995), that is dated to about 1100–900 BCE. Some were found in excavations at Bethlehem and in Lebanon, but they have appeared for the most part on the antiquities market. [*See* Bethlehem.] The standard inscription consists of only a personal name, usually preceded by the word *ḥṣ*, "arrow"; sometimes a title is indicated. One, for example, reads {ḥṣ zkrb'l mlk 'mr}, "arrow of Zakarba'al, king of Amurru" (Starcky, 1982). The function of the inscribed arrowheads is uncertain (Sass, 1988, pp. 72–75; Cross, 1992, p. 25*), and the fact that they have been discovered in two rather widely separated locations constitutes an enigma.

It is plausible to assume that the Proto-Canaanite inscriptions represent the use of the West Semitic alphabet to write the local Canaanite dialects as early as the end of the Middle Bronze period (mid-second millennium BCE). The earliest inscriptions in a similar script presently known are from northern Canaan and Syria—the arrowheads and the very rare and brief "Phoenician" inscriptions dating to before 1000 BCE (primarily from Byblos). [*See* Byblos.] The existence of the Ugaritic alphabetic writing system, which seems to reflect an existing linear alphabetic script, makes it reasonable, however, to posit that a system similar to that used for Proto-Sinaitic and Proto-Canaanite was also in use in the north at the latest by the middle of the second millennium BCE.

[*See also* Writing and Writing Systems.]

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DENNIS PARDEE

PROTO-SINAITIC. During excavations in 1904–1905 led by W. M. Flinders Petrie at the ancient Egyptian turquoise-mining site in west-central Sinai known as Serabit el-Khadem, ten inscriptions were discovered that were written in a pictographic script that was not Egyptian. [*See* Sinai.] All were engraved in the local sandstone. Petrie (1906, pp. 129–132) reported immediately on these inscriptions, and the texts were published in facsimile in 1917 (Gardiner and Peet, 1917, nos. 345–355; see Gardiner, 1917, pls. III–V). Working from these inscriptions and an eleventh known from a squeeze taken a few years earlier (Weill, 1904, p. 154, no. 44), Alan Gardiner (1916) deciphered the crucial word *bʿlt*, "lady," identified the script as West Semitic alphabetic, and proposed an Egyptian origin for the alphabet. [*See* Alphabet.] Since those first steps, another twenty certain Proto-Sinaitic inscriptions have been discovered and nearly as many dubious proposals have been made (Sass, 1988, pp. 8–50, table I).

As Gardiner (1916, pp. 6–14) observed in his pioneering study, the Proto-Sinaitic letter forms appear to reflect the pictographic form of West Semitic letters according to the so-called acrophonic principle: the sign represents the object corresponding to the name of the letter, while the first letter of the name corresponds to the consonantal phoneme in question. For example, a bovine head represents /ʾ/, and the West Semitic word for *bovine* is *ʾalp-*; a human eye represents /ʿ/, and the word for *eye* is *ʿayn-*; and a human head represents /r/, and the West Semitic word for *head* is *raʾš-*, or *riʾš-*. That the forms of the Proto-Sinaitic signs are to be explained by the acrophonic principle has been accepted by all who identify the script as the precursor of the later West Semitic alphabetic scripts (e.g., Naveh, 1982/1987, pp. 23–27).

Whether this early pictographic form is in fact the earliest known depends on the dating of the inscriptions. No single inscription is dated with certainty and the associated Egyptian finds date from late twelfth dynasty (c. 1800 BCE) to the early New Kingdom (Thutmose III). Joseph Naveh (1982/1987, pp. 26–27), for example, unquestioningly accepts the later date, and thereby places some Proto-Canaanite inscriptions earlier than the Proto-Sinaitic, while Sass (1988, pp. 135–144, pp. 158–159; 1991, p. 4) rejects the dating of some objects on which inscriptions were engraved to the New Kingdom, finding the best parallels in the twelfth dynasty. [*See* Proto-Canaanite.] Accepting Sass's conclusions means that the Proto-Sinaitic inscriptions represent the earliest known attestations of West Semitic alphabetic script. This does not necessarily lead to the conclusion that the alphabet was invented at Serabit el-Khadem, however, for there is insufficient data on the social status of the West Semites who worked there. It is unlikely, in any case, that slaves or uneducated workers would have invented the alphabet. If the Sinai inscriptions do in fact reflect the invention of the alphabetic writing system, they imply the presence there of a West Semite trained in Egyptian who would on the spot have had the idea of reducing the many Egyptian signs to a small number of signs representing the consonantal phonemes of his own language. In fact, the Proto-Sinaitic signs may well represent the borrowing of the pictographic principle from Egyptian hieroglyphs (Sznycer, 1972, p. 1394; 1974, pp. 7–9; Sass, 1988, p. 161)—which in theory could have taken place in any of the centers of Egypto-Canaanite contact since the beginning of writing in Egypt in the late predynastic period. [*See* Hieroglyphs.] According to Benjamin Sass (1991, pp. 24–27), the Egyptian use of certain signs in a quasi-alphabetic fashion for the rendition of foreign names is best attested in the Middle Kingdom, and this usage provides the best contact for the invention of the alphabet by a West Semite. Whatever the relationship may be of the Proto-Sinaitic inscriptions to the invention of the alphabet, the fact that they were carved on stone has meant that this very early group of witnesses to early alphabetic writing has survived to this day in reasonably good condition.

Although claims of virtually complete decipherment have been made (e.g., Albright, 1966; Colless, 1990), and at the other extreme it has been claimed that no decipherment is yet possible (Garbini, 1976, 1980, pp. 89, 103), the most careful treatments (Sznycer, 1972; Sass, 1988, pp. 159–161) accept the decipherment of only a few words. These few words, however, appear sufficient to identify the script as alphabetic and the language as West Semitic: *bʿlt*, "lady"; *mʾhb*, "beloved"; *rb nqbn*, "chief of the mine(rs)." Although they are best identified as West Semitic words, no precise linguistic identification is possible (Garbini and Durand, 1994, p. 34). Until sufficiently well-preserved inscriptions are discovered to permit a full decipherment, such is the hypothesis that commands the highest probability.

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DENNIS PARDEE

PTOLEMAIS, provincial capital of the Libyan Pentapolis from the time of Diocletian (284–305 CE) until the beginning of the fifth century CE (32°40′ N, 20°55′ E). Ptolemais occupied a coastal position 88 km (55 mi.) west of Cyrene and 105 km (65 mi.) northeast of Benghazi (ancient Euesperides/Berenice). Random pottery finds suggest that it may have already served as a harbor facility by the late seventh century BCE. Nonetheless, the name of the settlement during the Archaic or Classical periods has not survived. Eventually Ptolemy III (262–221 BCE) refounded it as Ptolemais, and it is as a Hellenistic, Roman, and Byzantine center that the town is best known. It came into Roman possession in 96 BCE and flourished until various poorly understood factors (perhaps tribal incursions and the silting up of its harbor) forced the city to cede its role as the head of the provincial government to nearby Apollonia-Sosuza. Although the invasions under Amr ibn al-ʿAṣ in the seventh century CE brought an end to the Greek settlement, recent excavations provide clear evidence for a continued occupation well into the Islamic period.

Excavations that had been undertaken by Italian archaeologists between the two world wars were later extended by the Libyan Department of Antiquities and were directed by Richard Goodchild and others. Carl Kraeling undertook a major clearance in the later 1950s for the University of Chicago, and more recently, various British archaeologists have conducted tests of both the harbor and land portions of the site for the Society for Libyan Studies.

The main harbor basin was sheltered by a small promontory to its west on which stands an ancient pharos (lighthouse). The urban plan occupies a rectangle about 1,650 × 1,400 m (5,413 × 4,593 ft.) with two major cardines (north–south streets) and five *decumani* (east–west streets) creating standard blocks of 180 × 36 m (590 × 118 ft.). The east–west Road of the Monuments was lined with *cippi* or stone bases carrying honorific statues, as well as decorated with a triple-arcaded triumphal arch of the time of Constantine. Although little remains of the Hellenistic defensive walls apart from elements of projecting rectangular towers set out at regular intervals, the Tocra gate to the west is still imposing. Traces exist of an amphitheater (see plan, item 1) in the northwest corner, a hippodrome (27) to the south and three theaters (7, 9, 28). Urban water needs were partially met by the Court of the Cisterns (10), whose seventeen underground vaulted cisterns had a combined capacity of more than 8.5 million gallons, and a nearby open public reservoir (12) supplied an additional 26 million gallons. Private cisterns and an aqueduct from Wadi Habbun 24 km (15 mi.) to the east supplied the remainder of the city's water. Although the nearby extramural quarries are honeycombed with chamber tombs, the most impressive expression of funerary architecture is unquestionably the Qaṣr Faraoun, modeled after the pharos at Alexandria, that lies a short distance west of the city. The more important later civic monuments include the city's Byzantine baths (15), its ducal headquarters (23), and the important fortified church (2).

The private town houses of the wealthy, providing some of the best examples of their type thus far uncovered in the Pentapolis region ("land of the five cities"—Cyrene, Apollonia, Ptolemais, Tauchira, and Berenice) have been the target of considerable recent investigation. The substantial "Palazzo delle Colonne" (13), which was built around two peristyles, occupies the entire width of a city block and half its length. Known since the 1930s, it remains the most familiar monument of Ptolemais, as well as a model for ur-

ban villa construction throughout the eastern Mediterranean region.

Ptolemais has yielded a number of important inscriptions, including a copy of the price edict of Diocletian and a decree of Anastasius. The local museum contains important sculptures and other locally discovered artifacts. Despite what has been accomplished, much remains to be excavated inside the walls, and useful survey should be undertaken some day in the neighboring environs.

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DONALD WHITE

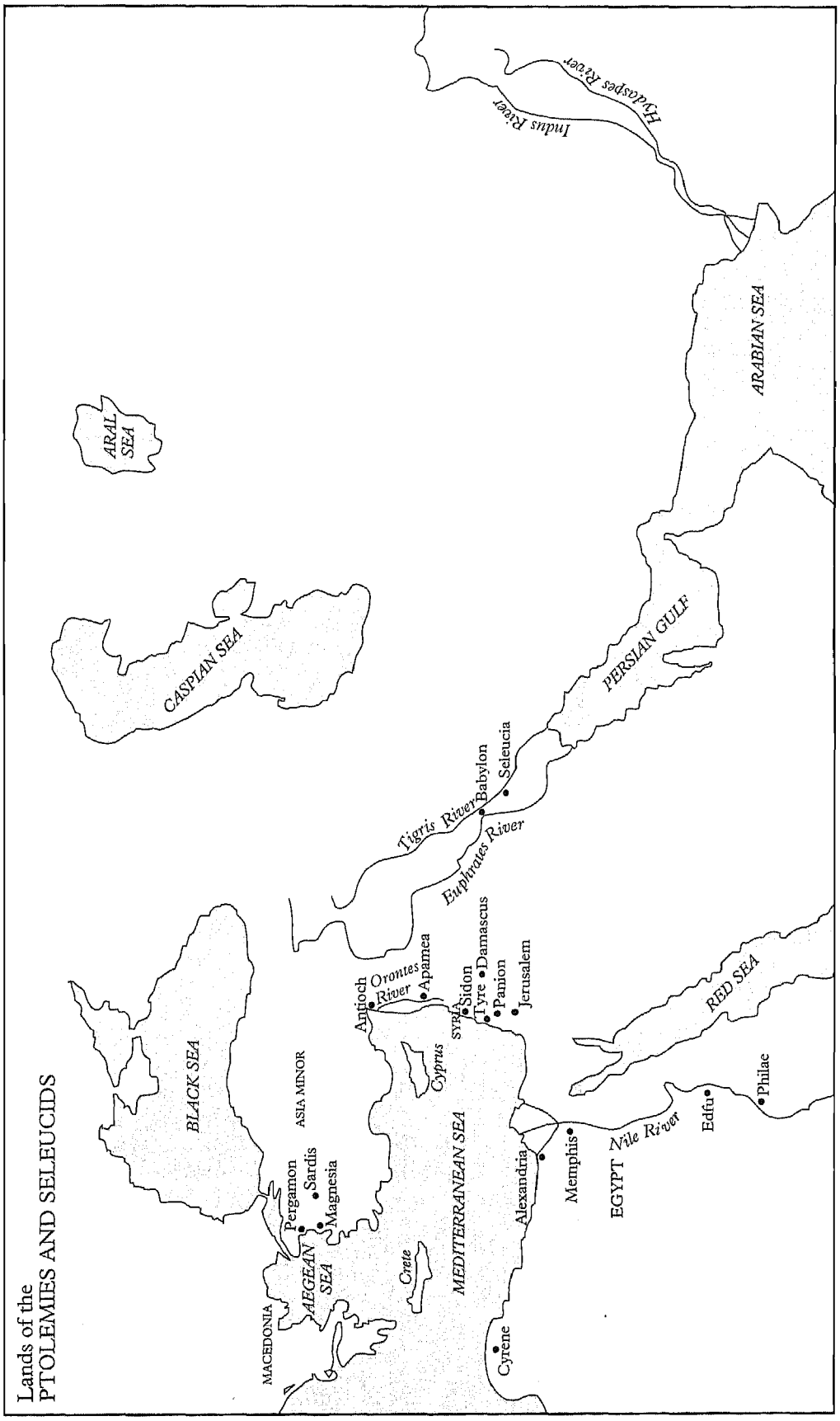
PTOLEMIES. Ptolemy, a general of Alexander the Great and the author of a history of Alexander (now lost), received Egypt as his domain as a result of the partitioning of the empire following Alexander's death. Ptolemy was crowned king of Egypt in 304 BCE. This date marks the beginning of the Ptolemaic dynasty that ruled Egypt until 30 BCE, when the Romans conquered the country.

From the outset the Ptolemies were crowned at Memphis, Egypt's traditional capital (although firm evidence exists only for the crowning ceremony of Ptolemy V). The first four Ptolemies were extremely active in foreign policy and ruled over many regions outside Egypt, including Cyrene, Cyprus, southern Asia Minor, some of the Aegean islands, and Palestine. Most of these regions were lost between the end of the third and the second centuries BCE.

The Ptolemies were well aware from the start of their rule how to conduct themselves as kings both for the Greek colonizers of Egypt and its native population. For the latter, they were Pharaohs who had been Horus and upon their death had become Osiris. In Egyptian temples they were considered Egyptian deities. The temples they erected for the indigenous population followed traditional Egyptian temple architecture but with some Hellenistic additions, such as at Philae and Edfu. The literature composed by native Egyptians such as Manetho (third century BCE) seems to be full of legitimations of the dualism their reign reflected, of their pharaonic and Hellenistic traits. As the Greek rulers of Egypt, however, they stressed their Greek aspects, recruiting Greek *philoi* ("friends of the king"—namely, his advisory board), speaking Greek in the royal court, appearing on their coins as Greek deities, and founding Greek temples. They also supported the many Greek scholars who gathered in Alexandria around the Mousseion (Museum, a kind of academy), and some of the Ptolemies were ardent collectors of Greek manuscripts. Thus, the Ptolemies posed, to varying degrees, as dualistic kings.

During the Hellenistic era (323–30 BCE) the Ptolemies faced several crucial challenges. Foremost was dealing with Egypt's internal dynastic power politics, which became more troublesome in the second and, in particular, the first centuries BCE. They also had to contend with a strong local priesthood, which played a leading role among native Egyptians. Two documents from the Hellenistic period reflect those tensions: the Canopus document (238 BCE) and the Rosetta Stone (196 BCE). Finally, the Ptolemies had to confront harsh international power politics, especially in their relationships with the Seleucids and Macedonians (until the downfall of Macedonia in 168 BCE). Throughout the third century BCE, Egypt fought the Seleucids at least five times, in the so-called Syrian Wars—about most of which we have little information. Egypt had the upper hand in Palestine in the third century BCE. Some useful information concerning economic activities during Ptolemaic rule in Palestine is preserved in the Zenon papyri.

At the turn of the century (204 BCE), following the death of Ptolemy IV, Philip V of Macedonia and the Seleucid king Antiochus III made a pact to divide Egypt's overseas possessions between them. This brought about the Second Macedonian War (Rome and her Greek allies against Macedonia, in 200–197 BCE). The Seleucid Empire, under Antiochus III, annexed Palestine after the battle of Panion, in which he crushed the Ptolemaic army. The Ptolemies also lost many of their other possessions outside Egypt. Rome defeated the Seleucids in the so-called Roman-Syrian War (192–189/88 BCE), and then crushed Macedonia (in the Third Macedonian War in 172–168 BCE), the beginning of their more intensive intervention in the affairs of the ancient Near East. During the second century BCE, Rome often supported Egypt against the Seleucids. Antiochus IV's well-attested second invasion of Egypt in 169/68 BCE illustrates Rome's position vis-à-vis Ptolemaic Egypt at the time. The Roman envoy issued an ultimatum and Antiochus obeyed: he left Egypt, which he had wished to treat as his own domain. Later, it was Ptolemaic Egypt, along with Pergamon and Rome, that supported the Seleucid pretender Alexander Balas against Demetrius. Rome was interested in a weak Egypt but supported it against other powers in the region. From the end of the second century BCE onward, the Ptolemaic dynasty declined sharply, with Egypt embroiled in the continuous strife among the Ptolemaic princes.


Lands of the
PTOLEMIES AND SELEUCIDS
ARAL SEA
CASPIAN SEA
Indus River
Hydaspes River
ARABIAN SEA
PERSIAN GULF
Tigris River
Babylon
Seleucia
Euphrates River
BLACK SEA
ASIA MINOR
Antioch
Orontes River
Apamea
SYRIA
Sidon
Tyre
Damascus
Panion
Jerusalem
Cyprus
RED SEA
Pergamon
Sardis
Magnesia
AEGEAN SEA
Crete
MEDITERRANEAN SEA
Alexandria
Memphis
EGYPT
Nile River
Edfu
Philae
MACEDONIA
Cyrene

Ptolemaic Egypt was organized into forty districts called nomes. Every *nomos* was subdivided into *topoi*. The *nomos* was managed by the *nomarches*, apparently until the third century BCE, when their functions were gradually taken over by the *stratēgos*, who had until then been in charge of the army in the district. The *stratēgos* was assisted by an *oikonomos*, who was in charge of finances, and by a *basilikos grammateus*, who administered the district's land register. All of these magistrates received their orders from the *dioikētēs*, the chief administrator of Egypt, stationed at Alexandria, the new capital. High officials in Ptolemaic Egypt in the time of the first Ptolemies were recruited mainly from among the Greek colonizing stratum of the society; later, people indigenous to Egypt were also recruited, provided they were Hellenized. The same pattern held for the higher ranks in the Ptolemaic army.

Like other Hellenistic armies, the Ptolemaic army was composed of mercenaries (from Crete, Greece, and Asia Minor) and soldiers who received allotments *(klērouchiai)* and were recruited when needed. Even indigenous Egyptians were recruited, such as the twenty thousand Egyptians who participated in the battle of Raphia (217 BCE). This recruitment of Egyptians led to unrest, however, when they demanded more freedom from Ptolemaic rule.

The economy of Ptolemaic Egypt was based on tightly centralized management. There was intense commercial activity in the Greek cities (of which there were only three), and particularly in Alexandria. The cities were the main consumers of imported goods, as well as of goods from the *chōra* (the land around the cities). The lands of Egypt were divided into the *gē basilikē*, "the king's land"—and therefore under his direct control—cultivated by Egyptian farmers who received part of the crops; *gē en ephesei*, land the king alloted to soldiers *(gē klērouchikē)* and senior magistrates in the Ptolemaic bureaucracy *(gē en dōrea)*; and land owned by the temples *(gē hiera)*, perhaps a third of all Egyptian lands.

The Egyptian legal system also was dualistic in character. The Greek population adhered to Greek law while the native population followed the local law. Ptolemaic Alexandria was famous for its rich cultural life, which included being an important center of Jewish life in the Greco-Roman period.

[*See also* Egypt, *article on* Postdynastic Egypt; *and* Seleucids.]

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DORON MENDELS

PUBLIC BUILDINGS. Although frequently used, the term *public buildings* is somewhat misleading when applied to palaces, temples, storehouses and other administrative units, which were not intended to serve the "public": they were built exclusively to meet the needs of the ruling class and should, thus, be labeled elite structures. [*See* Palace.] Along with fortification systems, elite structures signify the architectural manifestation of the institutions controlled by the ruling class—political, military, administrative, religious, and economic. In many cases elite structures were built on a monumental scale, with a unique plan that expressed the high status of their users. The architecture of elite structures thus became an ideological tool used by rulers to sustain social order and their high standing within it.

Temples. Ceremonial, cultic structures usually are referred to as temples. [*See* Cult.] The earliest example of this type is the colossal round tower assigned to the Pre-Pottery Neolithic A period at Jericho. [*See* Jericho.] The tower apparently served as a podium for a brick-made ceremonial structure that was not preserved (Bar-Yosef, 1986). Entry into this shrine was through an inner staircase incorporated within the solid building.

From the Chalcolithic period throughout the Iron Age, monumental temples in Israel were constructed either as a broad-room house type or in the long-room style (Ottosson, 1980). A group of temples common in the Middle Bronze Age IIB throughout the Late Bronze Age is identified as monumental symmetrical temples or Syrian temples (Mazar, 1992). Temples with a long-room or with a broad-room hall are included in this category, despite the basic difference between the two architectural types. In Mesopotamia, a third type of temple was common, the bent-axis temple. All other cultic structures should be considered composite in type.

Unlike modern churches, synagogues, and mosques, which serve the community for cultic ceremony, ancient temples were considered to be the dwelling place of the gods. [*See* Churches; Synagogues; Mosque.] The presence of the deity was exhibited by a statue or a stela, usually erected on a podium. The participants in the ceremonies gathered in the courtyard outside the temple. The basic shape of the sanctuary dictated the level of intimacy the builders of the temple allowed the worshippers with their deity. In a broad-room temple, the platform for the deity was usually placed next to the rear wall, in line with the central entrance, providing a close and direct view from outside. In a long-room temple, the podium was set in the back and could not be seen by most of the audience. The bent-axis temples common in Mesopotamia totally prevented a view of the deity.

Broad-room temple. Like broad-room houses, broad-room temples were the prevalent form of rectangular buildings in ancient Israel (Herzog, 1980). Compounds consisting of a broad-room temple encompassed by a fence had

been commonly used as ceremonial-cultic centers since the Chalcolithic period. Typical examples are the compounds at ʿEin-Gedi and Teleilat el-Ghassul. [*See* ʿEin-Gedi; Teleilat el-Ghassul.] The continuity of this plan into the Early Bronze I period is evident in the plans of Megiddo stratum XIX and the Ḥartuv compounds. [*See* Megiddo; Ḥartuv.] The EB II broad-room temples at Ai and Megiddo XVIII apparently were also incorporated into such compounds. [*See* Ai.] The broad-room temple is the dominant type in EB III, as attested in the plan of the White Building at Tel Yarmut, at Beth-Yeraḥ (where the structure was surrounded by circular silos), and in the temples at Bab edh-Dhraʿ and Khirbet ez-Zeraqun in Jordan. [*See* Yarmut, Tel; Beth-Yeraḥ; Bab edh-Dhraʿ; Zeraqun, Khirbet ez-; Granaries and Silos.] The EB III temples of Megiddo strata XVII–XV present an architectural combination of a broad-room plan with a portico of the megaron (long-room) house type.

The later history of the broad-room temple type is notable in MB IIA temples at Nahariya and Kefar Shemaryahu and in the MB IIB temples at Hazor (stratum 3 in area H). [*See* Hazor.] The latter temple was built with heavy walls, and two towerlike rooms were added to the front of the broad room. This temple is usually listed among the Syrian-type temples, although most temples in this category were long-room sanctuaries. Excavations at Tell el-Ḥayyat in Jordan uncovered a sequence of four temple phases, at the same location, covering the entire Middle Bronze Age (Magness-Gardiner and Falconer, 1994). [*See* Ḥayyat, Tell el-.] Other temples in the Jordan Valley are known from Kfar Ruppin and Tel Kitan. [*See* Jordan Valley; Kitan, Tel.] An almost square temple dating to LB II was exposed at ʿAin Daraʿ in northern Syria, but the broad-room form was reintroduced into the religious architecture of the Iron Age, as evidenced by the temple at Arad. [*See* ʿAin Daraʿ; Arad, *article on* Iron Age Period.] The form was further utilized in the Hellenistic temple at Lachish. [*See* Lachish.]

Long-room temples. The long-room form was popular in the northern part of the ancient Near East (Heinrich, 1973). Typical long-room temples have been uncovered at MB IIB Megiddo and Shechem. [*See* Shechem.] At both sites the structures had been rebuilt and reused during the Late Bronze Age. A smaller long-room temple was erected on the high tell at Hazor in LB I. Long-room temples were common in Syria: since the late third millennium BCE at Tell Chuera, the first half of the second millennium BCE at Tell Mardikh (Ebla), and in the second half of the second millennium BCE at Tell Munbaqa (Mumbaqat) and Tell Meskene (Emar). [*See* Chuera, Tell; Ebla; Emar.] Solomon's Temple in Jerusalem was also constructed on the long-room principle.

Palaces. The political elite operated and resided in the same building, namely the palace. The presence of palaces indicates a considerable accumulation of wealth and power in the hands of the ruling family. In the Early Bronze Age, well-defined palaces appeared later than temples and fortifications. At Arad the excavator identified a palace in the largest residential unit in stratum 2, dating to EB II (Amiran and Ilan, 1992). However, other scholars doubt this attribution and assume that the palace at Arad stood on one of the site's summits. Nevertheless, the structure lacks any monumental qualities. If it was a palace, it reflects a very low level of social stratification. It is only for the EB III period that buildings are found that clearly justify the term *palace.* One such structure was exposed in strata XVII–XVI at Megiddo and another in the lower city at Tel Yarmut. The latter building consists of a rectangular wall with internal buttresses covering an area of 84 × 72 m. The northwestern wing of the building was filled with a series of rectangular rooms that served as dwelling and storage units. The rest of the space was utilized as an open courtyard. The large palace at Tel Yarmut indicates a crystallization of the political role of the urban elite.

During the Middle Bronze Age, the palace became the dominant building in cities. Large palaces, commonly arranged around internal courtyards, have been uncovered throughout Syria and Palestine. Large structures are known in Syria at Mari, Ebla, and Alalakh and in Israel at Hazor, Tel Kabri, Megiddo, Shechem, Aphek, Tell el-ʿAjjul, and Tel Seraʿ. [*See* Mari; Alalakh; Kabri, Tel; Aphek; ʿAjjul, Tell el-; Seraʿ, Tel.] During the Late Bronze Age, builders erected palaces next to the gate area and not on the city's acropolis. Examples of the shift are observable at Ugarit and Alalakh in Syria and perhaps also at Megiddo. [*See* Ugarit.] Locating the palace near the city gate provided rulers with a protected royal compound, while the rest of the city was enclosed only by the rear walls of an outer belt of houses.

During the thirteenth century BCE, isolated palaces were erected over the ruins of several Canaanite cities. [*See* Canaanites.] These were relatively small and compact structures (about 25 × 25 m) with a central hall surrounded by rows of rectangular rooms on all four sides. The roofing over the central hall was supported by wooden pillars, as indicated by the stone bases found. Such buildings may have been used as a residency for the Egyptian governor at the administrative sites of Beth-Shean, Tell el-Farʿah (South), Tel Seraʿ, and Deir el-Balaḥ (Oren, 1992). [*See* Beth-Shean; Farʿah, Tell el- (South); Deir el-Balaḥ.] At other sites, such as Aphek and Tel Gerisa, the palaces were inhabited by the local rulers. [*See* Gerisa, Tel.] Some of the LB palaces were also used in the Iron Age IA, during the first half of the twelfth century BCE.

Few examples of palaces are known from the eleventh century BCE: building 2072 in stratum VIA at Megiddo is the clearest one. From the tenth century BCE onward, a new type of palace appeared, called the *bit-ḫilani.* It consisted of a broad-room main hall and a broad-room porch with a pillared facade wall. Palaces attributed to this type (founda-

tions only) were uncovered in stratum VA at Megiddo (buildings 1723 and 6000). These palaces were constructed of ashlar masonry with drafted margins. Proto-Aeolic capitals may have adorned the buildings, but they, as most of the wall stones, were removed and reused by builders in later periods. Characteristic examples of *bit-ḫilani* palaces were exposed in North Syrian cities dated to the ninth-eighth centuries BCE—Zincirli, Carchemish, and Tell Ta'yinat. [*See* Carchemish.] Monumentally built palaces, but of no distinct type, have been exposed at Lachish (strata V–III), Samaria, Hazor, Ramat Raḥel, and Beersheba (Fritz, 1983). [*See* Ramat Raḥel; Beersheba.]

Following the Assyrian conquest, palaces with characteristics of royal Assyrian architecture were constructed in northern Syria, northern Israel, and Transjordan. [*See* Assyrians.] These were rectangular buildings, often built over a raised podium, with a central courtyard surrounded by rooms. On one side a reception wing contained a large audience hall, usually entered through a doorway whose threshold was ornamented with horseshoe-shaped stones. Additional Assyrian elements include a shallow niche in the reception room and a bathroom with a drainage system. Examples have been found in stratum III at Megiddo (buildings 1369 and 1052), below Tel Hazor (Kibbutz Ayyelet ha-Shaḥar), and at Buṣeirah in Edom. [*See* Buṣeirah.] Later development of this type in the Babylonian and Persian periods can be observed in the Lachish "residency" and in stratum III at Hazor (Reich, 1992).

Silos, Storehouses (or Stables), Treasuries, and Scribes' Chambers. The agricultural basis of ancient economies and the fact that taxes in kind were paid by farmers necessitated the erection of storage facilities by the ruling administration. [*See* Agriculture.] Foodstuffs were redistributed as supplies for military forces, cult functionaries, merchant caravans, and other dependents of royal courts.

The simplest form of storage was achieved by silos for grain. An elaborate example is seen in the large granary complex at Beth-Yeraḥ, which contained nine circular silos (arranged around a broadroom temple; see above). The round structure behind temple 4040 in stratum XVI at Megiddo also seems to be a stone base for a granary made of bricks, rather than an altar. [*See* Altars.] In MB and LB city-states, rooms within the royal palace were used for storage.

Structures built specifically for administrative purposes are observed from the late eleventh century BCE onward, throughout Iron II. The best-known type is the tripartite pillared building found all over ancient Israel: at Tel Hadar, 'Ein-Gev, Hazor, Tell Abu Hawam, Megiddo, Tell Qasile, Beth-Shemesh, Tell el-Ḥesi, Beersheba, Tel Malḥata and Tel Masos. [*See* Hadar, Tel; 'Ein-Gev; Abu Hawam, Tell; Qasile, Tell; Ḥesi, Tell el-; Masos, Tel.] Wide scholarly debate exists regarding the functional interpretation of these buildings, whether stables (Holladay, 1986), storehouses (Herzog, 1973), army barracks (Fritz, 1977), or markets (Herr, 1988). [*See* Stables.] They should be identified with the biblical term *miskenot* (2 Chr. 32:28). The assemblage of objects found in the three tripartite pillared buildings at Beersheba suggests that these houses contained not only the foodstuffs for redistribution but also pottery vessels and other household tools, assumingly delivered to the state functionaries acting in the region.

Elongated rooms without pillars have been found at several sites: at Hazor (next to the tripartite pillared building), at Lachish, Megiddo, and Samaria. [*See* Samaria.] These long halls (up to 30 m long at Lachish) may be interpreted as treasuries for weapons and other precious objects. [*See* Weapons and Warfare.] Such materials did not require the light and ventilation offered by the pillared buildings. These structures may be identified with the biblical *osarot* in *2 Chronicles* 32:27 (Herzog, 1992).

A third type of building contained a series of adjacent units, each of which included a long corridor flanked by two or three square rooms. These structures served the city administrators as recording and documentation centers and have been found in several Iron Age cities. This type of house may be the scribe's chamber of Jeremiah 36:12 (Avi-Yonah and Yeivin, 1955, pp. 118). This attribution is based primarily on the scores of administrative documents found at Samaria in one such house, known as the Ostraca House. Similar houses have also been found at Megiddo (building 1482 in strata VA and IVB) and Hazor (stratum VB in area B).

Water-Supply Systems. A supply of water was essential to every settlement (Miller, 1980). However, it was military considerations that dictated the need to provide city dwellers with direct access to a water source from within the city walls. With this type of water system, a city under attack could sustain a durable siege. Every fortified city can be expected to have found some kind of solution for this necessity. Indeed, from the first urban phase of EB II, a large cistern was exposed at Ai and some kind of a reservoir existed at Arad. [*See* Cisterns; Reservoirs.] A circular water system hewn in the rock at Tel Gerisa is attributed to MB IIA. The straight, sloping tunnel at Gezer is dated to MB IIB, and a deep well is attributed to Iron I at Tel Beersheba.

In Iron II, the systems became considerably more elaborate (Shiloh, 1992). In the northern part of Israel a natural water source (spring or water table) was reached through a deep shaft and sloping tunnel. Such systems are found at Hazor, Megiddo, Gibeon, and Ible'am and in Warren's Shaft in Jerusalem. [*See* Gibeon; Jerusalem.] In the southern regions, water was directed into reservoirs from a source outside the city. A well-preserved system at Beersheba consists of a staired shaft, five plastered reservoirs, and a feeding tunnel. The system could be filled by floodwaters from the nearby wadi. The same principle, but with a spring as the source, was used in Hezekiah's Tunnel in Jerusalem, at Qadesh-Barnea, and possibly also at Beth-Shemesh. [*See* Qa-

desh-Barnea; Beth-Shemesh.] At Arad, underground cisterns were fed by a rock-hewn channel, to which water was brought in containers from the well at the foot of the hill. At Tell es-Saʿidiyeh, an ascent of constructed stairs led from the top of the mound to the spring at the base of the hill.

[*See also* Building Materials and Techniques; Fortifications; *and* Temples.]

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ZE'EV HERZOG

PUBLIC HYGIENE. *See* Medicine.

PYRAMIDS. For more than a millennium—from the twenty-seventh century BCE to the early sixteenth century BCE—pyramids served as monumental funerary structures (tombs) for the kings of Egypt and sometimes also their principal queens. Pyramids have a square base and four sloping, triangular sides (most have an angle of incline of between 50 and 54 degrees) that meet at the top and are oriented toward the cardinal points. There were two major periods of pyramid construction: the Old Kingdom (third–sixth dynasties, c. 2700–2190 BCE) and the Middle Kingdom–early Second Intermediate period (mid-eleventh–thirteenth dynasties, c. 2033–1633 BCE). From the fourth dynasty onward, each pyramid had its own name.

The Egyptian word for pyramid, *mr,* is of uncertain origin. The hieroglyphic determinative (meaning sign) in the word shows a *pyramid* with one side of an enclosure wall around the base. The English word *pyramid* comes not from the Egyptian term, but from a Greek word, *pyramis,* meaning "wheaten cake."

Most Old Kingdom pyramids were built in the Memphite necropolis, which stretches about 80 km (50 mi.) north–south from Abu Roash to Meidum, along the edge of the desert plateau west of the Nile River. Pyramid complexes were built close enough to the river to facilitate the hauling of heavy stone blocks on sledges from river barges to the construction site, where they were dragged up ramps and set into position with the aid of levers. The core of an Old Kingdom pyramid generally was of local limestone, with the smoothed casing blocks made of fine limestone from the quarries at Tura on the east bank of the Nile, south of Cairo; the lower levels of some pyramids were faced with granite blocks.

From the fourth dynasty onward, the standard pyramid complex contained several basic elements: a valley temple where the king's body underwent purification and mummification, a mortuary temple for the daily cult of the deceased king, and a long connecting causeway, all on the east side of the pyramid; one or two enclosure walls around the pyramid itself; and a small pyramid south or southeast of the main pyramid, perhaps for the spirit (Egyp., *ka*) of the dead ruler. The passage leading to the burial chamber normally began on the north side of the pyramid in the Old Kingdom, but was switched to one of the other sides in the twelfth dynasty. A pyramid-shaped stone *(pyramidion)* served as the capstone for the pyramid. Finally, there might be one or more subsidiary pyramids or shaft tombs for important queens.

The history of Egyptian pyramids begins in the early dynastic period (first–second dynasties, c. 3100–2700 BCE). At that time, both royalty and important officials were interred in funerary structures now known as mastabas (Ar., "benches"). These tombs, which first appeared just prior to the first dynasty, were so named because they looked like the benches outside the homes of modern Egyptians. Early mastabas had a rectangular mud-brick superstructure with internal cells and a flat top, and a subterranean burial pit

(often divided by walls into a series of chambers). Some first-dynasty mastabas at Saqqara had a brick-enclosed mound of rubble and sand immediately above the burial pit. The outer support for these internal mounds developed into a series of brick-encased "steps," or terraces (as in the case of tomb 3038 at Saqqara, attributed to King Anedjib or his reign). Already in the early first dynasty, a long pit was sometimes dug outside the mastaba's enclosure wall to contain a boat, perhaps intended for use by the deceased in the afterworld. (Boats occur in conjunction with both royal and private mastabas during the early dynastic period; in the Old Kingdom these ships have been found only with royal burials.) In addition, small models of buildings of uncertain function were occasionally constructed outside the tomb (e.g., at tomb 3357 at Saqqara, attributed to King Aha or his reign). An innovation of the second dynasty was the conversion of the mastaba superstructure into a mass of rubble enclosed in brick, with an increase in the number of rooms in the substructure. Another change was the use (at Helwan, on the east bank of the Nile) of stone for some architectural elements in private tombs.

The "step pyramids" of the third dynasty mark the transition from mastaba to pyramid. The most famous of these structures is the Step Pyramid of Netjerikhet (later known as Djoser) at Saqqara. The architect of this extraordinary complex was Imhotep. The Step Pyramid began as a square mastaba built entirely of limestone blocks (the oldest preserved building in Egypt made entirely of stone). Subsequently, the mastaba was enlarged on all four sides to form a rectangular structure, and a series of progressively smaller "mastabas" was placed on top of it. The resulting tomb had six levels and was about 62 m (204 ft.) high. A deep shaft beneath the original mastaba led to the burial chamber and a network of rooms and corridors.

A conglomeration of buildings set within a rectangular limestone enclosure wall nearly 10 m (33 ft.) high surrounded the Step Pyramid. A courtyard southeast of the pyramid was flanked on its east and west by a series of small dummy structures; this complex was designed to allow Netjerikhet to perform his periodic jubilee ceremony (Egyp., *heb-sed*) in the afterworld. A mastaba with subterranean chambers at the southern end of the Step Pyramid complex may have served as the king's cenotaph. The engaged columns in the Step Pyramid complex are the oldest known columns in Egypt; the builder's failure to let the pillars stand alone may reflect his lack of confidence in the structural integrity of stone columns.

The fourth dynasty saw the construction of the earliest as well as the largest of the true pyramids. The first king of the dynasty, Snefru, built two pyramids at Dahshur. The southern pyramid is often called the Bent Pyramid because it has a change in angle about halfway up the sides. The later, northern pyramid was designed from the start as a true pyramid. Snefru also completed as a true pyramid a step pyramid possibly started by his third-dynasty predecessor, Huni, at Meidum. Because of a structural failure, the outer casing of that pyramid later collapsed, leaving the structure looking like a pyramid having three steps.

The pyramids erected at Giza by several pharaohs of the fourth dynasty—Khufu (Gk., Cheops), Khafre (Gk., Chephren), and Menkaure (Gk., Mycerinus)—are the best-known monuments of ancient Egypt. The largest of the three great pyramids, that of Khufu, originally contained an estimated 2,300,00 blocks weighing an average of 2.5 tons, stood about 145 m (481 ft.) high, and was 229 m (756 ft.) long at the base of each side. The structure has three burial chambers: an unfinished one below ground level, a second chamber (popularly known as the Queen's Chamber) just above the base of the pyramid, and the magnificent King's Chamber near the center of the structure. The King's Chamber was lined and roofed with huge granite blocks and was reached through a 46-meter-long (153 ft.) ascending corridor known as the Grand Gallery. Herodotus reports that one hundred thousand men labored twenty years to build Khufu's pyramid, and another ten years to construct its causeway. Regardless of whether these figures have a factual basis, large numbers of workmen would have been available during the annual flood season, when work in the fields came to a halt.

On the eastern and southern sides of Khufu's pyramid was a series of pits for the royal funerary barges. One of these boats was uncovered in 1954 in a pit immediately south of the pyramid. When reconstructed, the ship, built mostly of Lebanese cedar, was found to be approximately 43 m (143 ft.) long.

Close to the Giza pyramids is a series of small pyramids for some of the queens, while nearby there are extensive fields of mastaba tombs for major officials, important mortuary priests, and members of the royal family. On the north side of the valley temple of Khafre's pyramid is the Sphinx, an enormous rock sculpture (about 72 m [240 ft.] long and 20 m [66 ft.] high) in the form of a recumbent lion with a head that is a representation of the king himself.

The last ruler of the fourth dynasty, Shepseskaf, constructed a tomb at Saqqara known as the Mastabat Fara'un. Built in the form of a huge stone sarcophagus with a vaulted roof, this structure lies outside the evolutionary path of the Old Kingdom pyramid.

Change and innovation highlight pyramid construction in the fifth–sixth dynasties. A gradual weakening in the authority of the central administration resulted in a decline in the size of the mastaba fields, many officials choosing to be buried in provincial cemeteries rather than near their king. The pyramids themselves were smaller than their fourth-dynasty predecessors and often had cores of small limestone blocks. The pyramids of the fifth dynasty were built at Saqqara (for Userkaf, Djedkare Isesi, and Wenis) and Abu Sir (for Sahure, Neferirkare, Neuserre, and an unidentified

king), while the pyramids known from the sixth dynasty were all built at Saqqara (for Teti, Pepi I, Merenre, and Pepi II).

Fifth-dynasty pyramid complexes are notable for their use of columns with plant-shaped capitals; the expanded use of reliefs in the temples and causeway; and, starting in the pyramid of Wenis at the end of the dynasty, the writing of inscriptions collectively known as the Pyramid Texts on the walls of the burial chamber and corridors. These magical texts, which include spells designed to protect and assist the king in the afterworld, as well as hymns and prayers to the gods, regularly occur in pyramids through the eighth dynasty.

The pyramid complexes of the sixth dynasty are remarkably similar because the funerary complex of the first king of the dynasty, Teti, was used as a model for those erected later by Pepi I, Merenre, and Pepi II. The pyramids of these four kings have the same height (about 52 m) and the same base length on each side (about 79m); are all made of small stones held together with mud and an outer casing of Tura limestone; and are part of mortuary complexes having the same overall layout. The complex of Pepi II is the best preserved and most interesting. Outside the enclosure wall are miniature versions of the king's complex for three of his queens; each of these complexes had its own subsidiary pyramid as well as Pyramid texts.

The First Intermediate period (seventh–mid-eleventh dynasties, c. 2190–2033 BCE) witnessed a sharp decline in pyramid building. The country's internal disarray left it without the highly centralized authority required to construct, decorate, and staff such large mortuary complexes. In such circumstances, only a few pyramids were built: the best known is that of an eighth-dynasty ruler, Ibi, in the southern sector of Saqqara. His pyramid, which lacks a valley temple and causeway, is made of mud brick (a forerunner of the pyramids of the Middle Kingdom). At the end of the First Intermediate period, the Theban kings of the early eleventh dynasty were buried in long *saff* (Ar., "row") tombs cut back into the rock; at least some of these tombs were surmounted by small brick pyramids.

The reunification of Egypt in the mid-eleventh dynasty and the transfer of the capital at the beginning of the twelfth dynasty to Itjtawy near Lisht in the Faiyum region inaugurated the Middle Kingdom. Although the mortuary temple of the eleventh-dynasty ruler Nebhepetre Mentuhotep at Deir el-Bahri is now thought to have been surmounted by a flat roof rather than a pyramid, about a dozen true pyramids are attested for the twelfth–thirteenth dynasties. These were built at Dahshur, Mazghuneh (situated just south of Dahshur), and in the Faiyum region (at Lisht, Lahun, and Hawara).

Twelfth-dynasty pyramids were larger than those built during the fifth and sixth dynasties. One king, Amenemhet III, built two pyramids—one at Dahshur (which was abandoned after a partial structural collapse) and another (his actual burial place) at Hawara. Classical writers later described his enormous mortuary temple at Hawara as the Labyrinth.

Middle Kingdom pyramids differ considerably from earlier ones. Although the first twelfth-dynasty pyramid—that of Amenemhet I at Lisht—was made entirely of stone (including many removed from Old Kingdom pyramid complexes), those of his three immediate successors (Senwosret I, Amenemhet II, and Senwosret II) had interior stone walls with rubble and/or sand fill. Later Middle Kingdom pyramids were constructed of brick with a casing of limestone blocks.

The other principal development in pyramid construction during the Middle Kingdom was the emphasis placed on the security of the royal burial. The entrance to the passage leading to the burial chamber was shifted from the north face to one of the other sides. Some other devices used in (unsuccessful) efforts to protect the dead king included blind corridors and false shafts, ingeniously set portcullis blocks, large granite plugs, trap doors, and sarcophagi cut from huge monolithic blocks of stones.

Information on the people who built pyramid complexes comes mainly from the excavation of a town occupied by the workmen for Senwosret II's pyramid at Lahun. (Excavations have recently begun on an Old Kingdom workmen's village at Giza.) This planned town, surrounded by a nearly square enclosure wall and divided by a long wall into two main sections, contained a number of mansions for senior officials as well as many parallel rows of small houses for ordinary workmen and artisans.

Three unfinished mud-brick pyramids are known from the thirteenth dynasty—two at Saqqara (one belonging to Khendjer, the other being anonymous) and one at Dahshur (for Amenyqemau). No pyramids have survived from the late Second Intermediate period (the fifteenth–seventeenth dynasties, c. 1648–1540 BCE), but there are references in a late New Kingdom document known as the Abbott Tomb Robbery Papyrus to pyramids associated with the royal tombs of the seventeenth dynasty at Thebes. Observations made by nineteenth-century observers indicate that these small mud-brick pyramids had one or more interior chambers, were topped by a stone *pyramidion*, and sat on the hillside above the rock-cut tombs.

The first king of the New Kingdom, Ahmose, constructed a small pyramid at Abydos to serve as a cenotaph for his grandmother, Tetisheri; this solid structure was made of rubble and small stones and was held together by a stone facing. Through most of the New Kingdom, Egyptian royalty was buried in less obtrusive, rock-cut tombs in western Thebes (in the Valley of the Kings and the Valley of the Queens), while the mortuary temples were erected out on the plain, well away from the tombs.

The pyramid continued in use in New Kingdom (c. 1550–

1069 BCE) Egypt and Nubia in conjunction with private tombs. Such tombs are especially well known at Deir el-Medineh and Dra'Abu 'n-Naga in the Theban necropolis. Typically they had a small steep-sided mud-brick pyramid topped by a stone *pyramidion* set above a columned portico or chapel.

No pyramids were built in Egypt after the New Kingdom. Later on, however, the pyramidal tradition was revived for kings as well as some queens and princesses in the northern Sudanese kingdoms of Napata (c. 900–300 BCE) and Meroë (c. 300 BCE–300 CE). Small pyramids (all fewer than 30 m high) were built in the Napatan royal cemeteries at el-Kurru and Nuri, and subsequently in the Meroitic royal cemeteries at Gebel Barkal and Meroë. These steep-sided pyramids had a chapel on the east side and the burial chamber cut into the rock below the pyramid. Initially they were built of stone, but later pyramids at Meroë were constructed of stone over a rubble core and, finally, of brick.

[*See also* Abydos; Egypt, *article on* Dynastic Egypt; Giza; Meroë; *and* Saqqara.]

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Q

QADESH-BARNEA, site identified with Tell el-Qudeirat in northern Sinai (30°38′ N, 34°27′ E; map reference 0949 × 0064), a central camp for nomadic and seminomadic tribes in the Negev-Sinai deserts. Encompassing about three-quarters of an acre, the site, which overlooks the Wadi el-Qudeirat ravine, is situated just to the west of 'Ein-Mishpat, the Sinai's most bountiful spring (the biblical "waters of Meribah" of, for example, *Nm.* 20:13).

In the biblical tradition, Qadesh-Barnea played an important role in the Israelite wilderness wanderings. It was the site from which Moses, at God's command, sent a group of twelve men, one from each tribe, to investigate the Promised Land (*Nm.* 13:26). Later it was where the king of Edom, meeting with another delegation, denied the Israelites permission to pass through his realm on their way to Canaan (*Nm.* 20:14). Kadesh is also where Miriam, the sister of Moses and Aaron (*Nm.* 20:1) died and was buried. However, the lack of any material at Qadesh-Barnea earlier than the tenth century BCE, especially datable pottery, calls the biblical traditions into question. The Exodus stories, in their present form, may have originated instead in the period of the monarchy, when pilgrimages to the site may have begun. The traditions would then be best understood as etiologies.

In 1914 C. L. Woolley and T. E. Lawrence found the first remains at Qadesh-Barnea, fortress with eight towers (see below). [*See the biographies of Woolley and Lawrence.*] In 1956 a team led by Moshe Dothan for the Israel Department of Antiquities partially excavated the fortress, further exposing its ground plan and dating it. Rudolph Cohen excavated for ten seasons between 1976 and 1982, during which he completed the exposure of the upper fortress and uncovered two additional fortresses, each built on the remains of the other following a succession of destructions and indicating occupation at the site from the tenth through the sixth centuries BCE, probably with periods of abandonment. Cohen also discovered, built on the remains of the last fortress, an unfortified settlement dating to the fifth–fourth centuries BCE.

Lower Fortress. The earliest—and apparently the smallest (27 m in diameter)—of the three fortresses dates to the tenth century BCE. Its remains indicate that this lower fortress was made up of casement rooms arranged in an elongated circle around a central courtyard. Thick layers of ash above the floors in the rooms contained the wheel-made vessels typically found at tenth-century BCE sites in Israel as well as handmade Negebite ware.

An adjacent settlement, made up of several buildings and silos, was uncovered 5 m below the surface just west of the fortress. It too dates to the tenth century BCE. At the northwestern edge of the site, a room (about 4 × 6 m) lined with stone benches was found in one of the buildings.

Middle Fortress. In the eighth century BCE following what appears to have been a long period of abandonment after the lower fortress was destroyed, a second fortress was erected over its remains. The design of this second, or middle, fortress differed from that of the first: it was rectangular (about 40 × 60 m) and had eight towers protruding from an outer wall (4 m wide, preserved to a height of 1.8 m). The fortress itself was surrounded by an earthen rampart supported by a revetment wall (2.5 m tall) and by a 4-meter-wide fosse that was 2.5 m deep on all but the south side, where the fortress was protected by the steep wall of the wadi.

Two silos, one rectangular (3.8 × 5.5 m) and the other round (2 m in diameter), were found inside the fortress. Just outside the north wall of the fortress, flanked by two of the eight towers, were four stone-built granaries, the largest measuring 1.8 m in diameter. West of the granaries, a clay oven *(tabun)* was found in a room (3 × 4 m) abutting the wall of the fortress.

Among the material remains were wheel-made vessels characteristic of the eighth and seventh centuries BCE and many examples of Negebite ware. Two ostraca were found, one the base of an oil lamp and the other the rim of a Negebite bowl; each carries a fragmentary Hebrew inscription that is probably part of a name.

The internal structures indicated three settlement phases, which demonstrates that the middle fortress was inhabited for a long period of time. The principal phase was distinguished by the division of buildings inside the fortress into northern and southern blocks separated by a street (3.5 m wide). The remains of five mud-brick structures (each about 10 m long) were uncovered in the northern block. These structures also were separated from each other by narrow

streets (1.5 m wide). In the northwestern block, adjacent units (each 7 × 10 m) contained five elongated rooms (about 2.5 × 4 m) and mud-brick installations showed evidence of fire damage. South of the adjacent units a plastered channel and cistern were uncovered. The cistern (about 10 m in diameter), which was twenty-five steps deep, could hold about 180 cu m of water and was fed via the channel by a spring outside the fortress. [*See* Cisterns.]

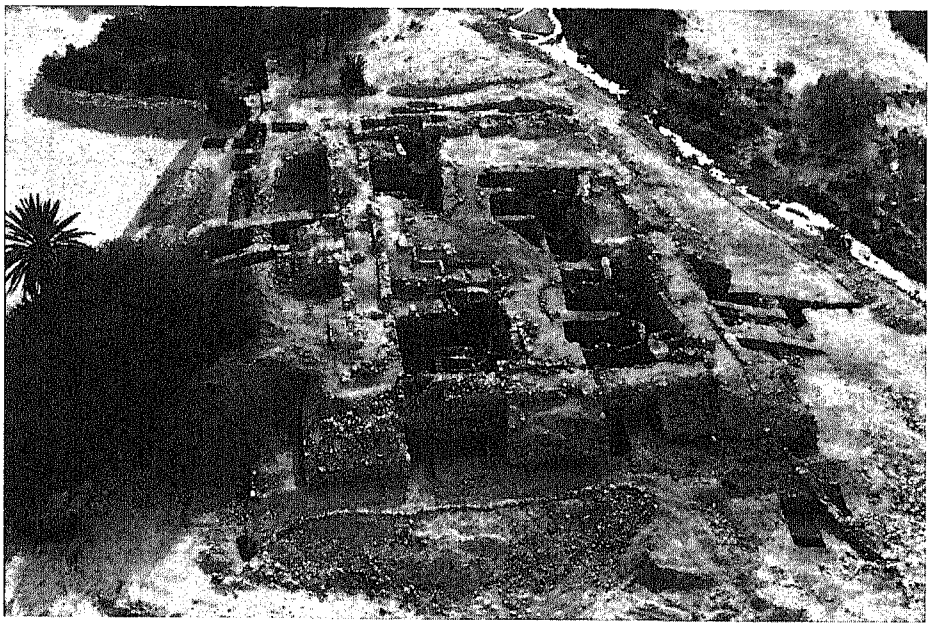
Upper Fortress. Not very long after the middle fortress was destroyed—possibly in the mid-seventh century BCE—another fortress was built on its remains. This third, or upper, fortress also was rectangular; it made use of features of the second fortress, but its outer wall was ringed by about twenty casement rooms. As a result, although the fosse was still useful, the earthern rampart had to be brought into alignment with the casements' outer wall.

The internal plan of the upper fortress differed importantly from that of the second in that its inside structures were not divided into distinct blocks. In the northwest corner of the upper fortress was a rectangular building (10 × 25 m) with three elongated rooms whose floors were covered with a thick layer of ash and to which access was through an open courtyard (10 × 15 m). At the western end of the stone-paved courtyard a round mud-brick structure (1.9 m in diameter) was preserved to a height of 1.2 m. As was the case with the two earlier fortresses, an abundance of pottery was found on the floors of structures inside the upper fortress, both sherds and complete specimens, including wheel-made vessels characteristic of the seventh and sixth centuries BCE and of Negebite ware. Because the level of the fortress had been raised, the number of steps to enter the cistern was increased.

Many ostraca were found throughout the upper fortress. East of the cistern and alongside the casement rooms on the south, a large ostracon was found in a building with many rooms. Of these inscribed sherds, one (22 × 23 cm) consists of six columns of numbers and measurements in a hieratic script. The numbers are arranged in columns of one to ten, ten to one hundred (in units of ten), one hundred to one thousand (in units of one hundred), and one thousand to ten thousand (in units of one thousand), and may have been used to practice arithmetic. Another ostracon (10 × 15 cm) has three columns of script, mostly numbers. The last column is the clearest: it contains a series of hieratic numerals that reaches 800; next to each number is inscribed *grh*, the Hebrew word for the smallest unit of weight then known (about half a gram). A third ostracon (45 × 45 cm), consisting of the Hebrew letters *zḥṭ*, probably is a fragment of an abecedary.

The upper fortress was most likely destroyed by fire in a violent attack. The destruction likely took place concurrently with the conquest of Judah and the destruction in Jerusalem of the First Temple in 586 BCE.

Postexilic Period: An Unfortified Settlement. In the northern and southern parts of the upper fortress, two small rooms dating to the postexilic period (fifth–fourth centuries BCE)—the period following the return of the Exiles from Babylon—were found that had been used by an unfortified settlement. The casements of the Early Iron Age fortresses also provided temporary housing for the new settlers. Most



QADESH-BARNEA. *General overview of excavations.* (Courtesy R. Cohen)

of the finds from this period, including imported Greek ware, however, were recovered from pits. Among them was a *yhd* seal impression, found elsewhere as well in postexilic Judah, and an ostracon containing the Hebrew words *'skr ṭb* ("offering" or "merchandise").

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QAL'AT AL-BAHRAIN, site in the Arabian Gulf, located on the north coast of the island of Bahrain, with an areal extent of about 18 ha (46 acres), and its largest settlement (26°13′28″ N, 50°28′45″ E). Excavations began at the site in 1954, when Peter Vilhelm Glob and a Danish team from the University of Aarhus's Prehistoric Museum Moesgård, initiated work that was to continue uninterrupted until 1965. A follow-up season was carried out by T. Geoffrey Bibby in 1970, and in 1977 a new program of excavations, concentrating principally on a Parthian/Early Islamic fortress to the north of the main mound, was begun by the French archaeologist Monique Kervran. During the 1980s, the Bahrain Department of Antiquities carried out extensive restoration of the sixteenth-century Portuguese fort that crowns the site. In 1988 the French excavations were resumed under the direction of Pierre Lombard, who began work near the site of an Iron Age building originally exposed by the Danes, in a project which is still in progress.

The occupation of Qal'at al-Bahrain dates to about 2400 BCE. Late Early Dynastic and/or Early Akkadian-related pottery, as well as sherds of painted Umm an-Nar pottery from the Oman peninsula occur in the settlement's basal city I levels alongside a local "chain-ridged" ware typical of Bahrain and the adjacent parts of the northeast Arabian mainland during that period. Soft-stone weights (imported from Oman) and cubical chert weights of Harappan type also appear in late city I contexts. At the beginning of the period known as city II (c. 2100 BCE), a distinctive stamp-seal form appears. The earliest so-called Persian Gulf seals are round, with a high, grooved boss and display animals and other nonhuman motifs. Nearly a dozen of the earliest seals also bear short Harappan inscriptions together with a humped bull (zebu) shown in profile. The iconography suggests that an Indian element in the population, or trade with India, played an important role at the site in the late third millennium.

In about 2000 BCE, a 3.5-meter-thick stone wall with a rubble core was built around the settlement. A system of lanes and streets, with well-planned houses, was exposed in the Danish excavation of levels dating to this period. A more developed seal type (Dilmun seals) with incised lines and four dotted double circles on the boss was in use from about 2000 to 1700 BCE. Seals of this type show a complex iconography that includes a wide variety of human, animal, and architectural features. Certain iconographic and stylistic details suggest that Dilmun glyptic may have influenced Anatolian glyptic of the Old Assyrian caravan period (e.g., at sites like Acemhöyük). Links to Isin-Larsa and Old Babylonian Ur are also clear, both from cuneiform and glyptic evidence. An Amorite element, perhaps originating on the mainland opposite Bahrain, appears to have been present at Qal'at al-Bahrain as well, for at least one cuneiform text found there contains several Amorite personal names.

City III shows strong ties to the Kassite state, and a sizable proportion of Kassite pottery types appears in Qal'at al-Bahrain's ceramic assemblage of the mid-second millennium BCE [*See* Kassites.] A large building from that period, which contained thousands of burnt date stones, has been identified as a storehouse. Above this level, in city IV levels, is a building complex that is, in some ways, reminiscent of Neo-Assyrian and Neo-Babylonian palace architecture. Ceramic bathtub coffins, with close analogues in Neo-Babylonian Mesopotamia, were buried in the ruins of the building after its abandonment. City V represents the Hellenistic and Parthian occupation of the site, probably extending into the Early Sasanian period; city VI was the designation used for the later Islamic remains. A square fortress with round corner towers, originally excavated by the Danish expedition and later reinvestigated in 1977–1983 by Monique Kervran for the Centre Nationale de la Recherche Scientifique, was probably founded in the second or third century CE under Parthian or Characene influence and then rebuilt and reused in the thirteenth century. Imported Chinese ceramics and coins bear witness to the existence of far-flung trade with East Asia at this time. The largest monument on the site, however, is a fortress originally built by a local Arab dynasty and taken over and remodeled by the Portuguese in the six-

QAL'AT AL-BAHRAIN. *View of Qal'at al-Bahrain.* The Portuguese fort lies in the background, the Neo-Assyrian building complex in the foreground. (Courtesy D. Potts)

teenth century. The fortress, which is shown clearly on Portuguese drawings of the period, was surrounded by a dry moat. As the main ancient settlement on the north coast of Bahrain island, Qal'at al-Bahrain was ancestral to the later population centers of Bilad al-Qadim and Manama.

[*See also* Bahrain; Dilmun.]

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QAL'AT SIM'AN (Ar., "sanctuary of St. Simeon"), site situated on a promontory overlooking the 'Afrin Valley, at the heart of the Syrian *tetrapolis* in Antiochea, 60 km (37 mi.) from Aleppo; 80 km (50 mi.) from Antioch, 140 km (87 mi.) from Apamea, and 180 km (112 mi.) from Latakia.

Although some of the earliest visitors to the site published descriptions and drawings (A. Drummond, 1754), it is since the middle of the nineteenth century that this monumental group of buildings has been the subject of exploration and detailed publications. Melchior de Vogüé completed the first important study of the site, and those by M. van Berchem and E. Fatio, Howard C. Butler, J. Mattern, D. Krencker, and Georges Tchalenko followed. Since 1980, Jean-Pierre Sodini and Jean-Luc Biscop have made regular expeditions for purposes of excavation and survey, under the aegis of the French Institute of Archaeology of the Near East (IFAPO) in Damascus. [*See the biographies of Vogüé* and *Butler.*]

The promontory the sanctuary occupies is the site of the column where St. Simeon practiced his asceticism from 412 to 459. According to Tchalenko, the sanctuary is on an artificial platform formed by the leveling of the north–south ridge and by the embankment of the east and west flanks. The monuments cover a surface of approximately 1,200 sq m. The buildings are divided into two groups: to the north, a cross-shaped martyrion, a monastery, and a conventual tomb; and to the south, a baptistery bordered by a church and propylaeum. In between are many inns on the east, west, and south. A sacred way from the village of Telanissos (Deir Sim'an), situated below, leads to the sanctuary from the south; this sacred way, with shops on both sides, passes through an arch and then climbs the slope to the propylaeum.

Verifying the date of the construction of Qal'at Sim'an remains elusive. What is known is that in 472/73, the date the life of St. Simeon was written in Syriac, there was as yet no edifice around the column. By 517, however, monks from Apamea were making pilgrimages to the sanctuary. Its construction should be placed in the context of the politics of Zeno: St. Daniel had learned from him that he had had the relics of St. Simeon transported from Antioch to Constantinople, and so between 471 and 474 a martyrion was constructed to shelter them. It was perhaps on the urging of St. Daniel, and finally to appease the religious discord dividing the patriarchate of Antioch, which was well within the line of the Henoticon (482), that Zeno had the martyrion built around the column on which the first of the Stylites had lived. The work must have been finished before 491/92, for by that time the church at Basufan, a partial copy of the sanctuary of Qal'at Sim'an, had been built. For an enterprise of this magnitude, it took a relatively short amount of time to build. Tchalenko calls attention to the results of that haste: faulty connections in the different decorative elements of the martyrion, demonstrating that the gantry had been open in many places at once. [*See* Martyrion.]

The martyrion is made up of four three-naved basilicas positioned in the form of the Greek cross. [*See* Basilicas.] The basilicas meet again in the shape of an octagon formed by eight large arches. The column of the saint (18–20 m high), stands in the center of this arrangement. Only the rocky base and a block of stone of the column remain, perhaps because it was cut up to be sold as relics. The column was square-cut and had three superimposed shafts. The saint lived on a platform enclosed by a railing. Of the eight arches, four open onto the basilicas and the other four onto small apses which made the links. The largest of the basilicas is on the east. It is the true sanctuary in which the liturgy unfolds. It ends in three projecting apses. The west basilica, which opens to the outside, has the function of a rostrum. The cult of the saint was therefore disassociated from the divine cult, which had its center around the octagon. The south basilica is preceded by a narthex to which access was through a great central arch of two arches of weaker bearing.

The monastery, which is adjacent to the martyrion to the southeast, includes a two-story building with porticoes on three sides (there is none on the east), placed at right angles. The porticoes form, with the martyrion's south and east basilicas, a rectangular court that opens to the outside onto a small church. Outbuildings were joined to the principal building.

To the north of the martyrion, the collective tomb is an example of a one-nave basilica. [*See* Tombs.]

The southern group of buildings includes, most importantly, the propylaeum, which is situated 80 m south of the baptistery: it opens with two series of three arches onto a vast space bordered to the south and west by inns and to the east by the baptistery. [*See* Baptisteries.] The inns are one-story buildings that open on one side, like the houses, and are preceded by pillared porticoes. The baptistery is an octagon inscribed in a square. The principal room is square in plan. It is topped by an octagonal drum covered by an eight-sided pyramidal roof and flanked by three long rooms replaced on the east by an apse that contains the baptismal tank. Entrance and egress are by means of stairs located in side rooms, not in the central room.

Qal'at Sim'an poses three archaeological problems: how the octagon of the martyrion was covered; its place in the evolution of the architecture and ornamentation of churches in Syria's limestone massif; and the duration of its occupation.

By observing and identifying fallen blocks, Krencker was the first to show that the octagon was not originally open but covered. He proposed a wooden dome, an untenable hypothesis because wood would have been too heavy for the stone construction on which it must have rested. Taking its span into account, an exterior diameter of 29 m, with a height of 18 m, the drum, with a height of 10 m, on which the roof would have exerted its force, would have inevitably been dislocated. (It is made of courses not exceeding 90 cm in width and its blocks are laid on top of each other without mortar or another bonding substance. Tchalenko has proposed an eight-sided pyramidal roof, like that of the baptistery. To reduce the load and the lateral thrust, he suggested that there were intermediate supports between the column and the pillars bearing the arches of the octagon. In the tenth century, at the time of the Byzantine reconquest, the floor of the octagon was recovered with tiles. Sodini and Biscop removed that floor, under which a beaten-earth floor revealed no trace of the base of an intermediary pillar. They hypothesize that the roof was in fact an eight-sided pyramid, as Tchalenko thought, but that it covered the entire surface of the octagon.

The second problem, the place of Qal'at Sim'an in the religious architecture of the limestone massif of northern Syria, has been studied by Butler, Tchalenko, Charles Strube, F. W. Deichmann, Sodini, and A. Naccache. For Butler, Qal'at Sim'an marks a break in the architectural and ornamental evolution of the churches of the massif, in which methods and ornamentation appear that were to experience wide diffusion in the churches of the sixth century, and notably in the basilica of Qalbloze, which he dates later than St. Simeon. Tchalenko, however, followed by Strube and Deichmann, placed the construction of Qalbloze in about 450, before that of Qal'at Sim'an. He established also that the church of Bettir, close to Qalbloze in the Jebel el-A'la, and dated by inscription to 471, was a pared-down copy of its neighbor—each using pillars, rather than columns, to support the great arches of the nave, in a pure local tradition.

This long-accepted view is now challenged by Sodini and Biscop, who show that Bettir combines two stages (perhaps three according to Naccache) and that the inscription dating

the church refers only to the first stage; they show further that the inscription describes a one-nave basilica, which owes nothing to Qalbloze. The terminus ante quem of 471 for Qalbloze thus disappears. In one study (Biscop and Sodini, 1984), the two authors show that the apse of Qal'at Sim'an combined two superimposed rows of columns. This feature gave the basilica a plan constituting a truly ornamental overlaid order. The other churches of northern Syria with columned apses show the same device, but incompletely: they were imperfect copies and Qalbloze does not belong to the category.

Naccache, in his work on the churches of Antiochea, drew up a complete inventory of ornamental innovations at Qal'at Sim'an that had also been found in later churches. If Qalbloze is dated to about 450, these innovations would have had to have existed without imitation for nearly forty years before being reprised at Qal'at Sim'an. It is thus preferable to reestablish the evolution of the decoration of churches by saying that the great edifice of Qal'at Sim'an, constructed by the state, owes its form to a foreign master worker and that its innovations were imported.

On the third problem, the duration of occupation at the site, the excavations have been less helpful. It is known, from Michael the Syrian, that the sanctuary was burned in about 546 and that it was then that the octagon became open—a description confirmed by Evagrius after his visit in about 561. According to him, the neighboring peasants used to go into the sanctuary with their beasts of burden and dance around the column. The monastery was in use until nearly the second third of the tenth century. The emperors of Byzantium, Nikephoros II Phokas (963–969) and John I Tzimiskes, reconquered the occidental part of northern Syria. The soldiers who occupied Qal'at Sim'an evicted its monks and turned the sanctuary into a fortress to guard the border that henceforth separated the empire from the emirate of Aleppo. It was they who built the surrounding wall and the towers that still stand and who placed a tiled floor in the octagon (see above). The Byzantine garrison remained in place until the end of the eleventh century and the conquest by the Ottoman Turks. Sodini's excavation in the area west of the baptistery attests to an occupation uninterrupted until the Mamluk period.

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GEORGES TATE

QARQUR, TELL, site located less than 2 km (1 mi.) east of the Orontes River and about 7 km (4 mi.) south of Djisr Choghour, the major crossing point on the Orontes for the road from Aleppo to Latakia, Syria (35°44′ N, 36°20′ E). The fertile Orontes Valley at this point is about 10 km (6 mi.) wide. Tell Qarqur is situated at the northern end of the portion of the valley known as the Ghab. The Ghab was once a marshy area that extended south for about 42 km (26 mi.) to Asharneh. According to inscriptions on temple walls at Luxor, in antiquity Egyptian New Kingdom pharaohs hunted elephants in the marshy area. Much later, the Carthaginian Hannibal trained soldiers there in the art of using the elephant in warfare.

Tell Qarqur has been equated with Karkara/Qarqar mentioned in the records of Shalmaneser III (958–824 BCE) and Sargon II (721–705 BCE) of Assyria. The texts mention that the site was destroyed several times. In Shalmaneser III's monolith inscription it is called the royal residence of King Irhuleni of Hamath. In the annals of the second year of Sargon II it is mentioned as the favorite city of Iaubi'di, king of Hama. Both Assyrian rulers fought battles in the vicinity of Karkara/Qarqar and confronted the king of Hama and a coalition of armies from states in Syria and Palestine. The coalition of twelve kings against Shalmaneser included Ahab of Israel, Ba'asa of Ammon, and a contingent of Arab camel riders.

The equation of Tell Qarqur with Karkara/Qarqar is still not confirmed. Excavations were undertaken by the American Schools of Oriental Research in 1983 and 1984 under the direction of John Lundquist and resumed in 1993 under the direction of Rudolph H. Dornemann. They indicate quite clearly that Tell Qarqur was a major site during the ninth and eighth centuries BCE, the period that includes the two Assyrian rulers mentioned above. The total 55 acres covered by the site may have been occupied then. Iron Age II material was found close to the surface on the highest part of the mound, in area B, in area C (on the western side of the tell), in area A (in a gateway area), and in area D (on the lower portion of the mound).

The tell consists of two portions, a high, 20-acre southern tell and a lower, 35-acre northern tell. Excavation has been limited to the four areas mentioned. Pottery from the Ayyubid, Umayyad, Byzantine, Roman, Hellenistic, and Persian periods has been found scattered over the entire surface of the mound; however, only limited architectural remains of any of these periods have been encountered so far. The most

extensive excavations have concentrated on the gateway area (area A), where several Iron IIA phases have been encountered as well as other substantial wall foundations. Inside the gateway a 2-meter-wide stone-paved street has been traced to 15 m beyond the gateway; the street is covered in places by 3 m of later erosional deposits washed into the area. The ceramic inventory parallels very closely the 'Amuq phase O materials of the ninth and eighth centuries BCE. Red-burnished platters and characteristic jar and cook-pot rims are well represented, as are typical painted wares and imported Cypriot pottery.

Bronze Age walls were found downslope in area A, but the most extensive evidence for earlier occupation on the site comes from pottery found in fills associated with the gateway complex. MB II pottery is present in addition to a very complete third-millennium sequence. This raises the possibility that the name of the site may have continued for many millennia and that the reference to a Qarqar in Egyptian execration texts may prove to be associated with Qarqur as well.

A few sherds indicate still earlier material on the site. Dark-faced burnished and impressed sherds of the Neolithic period are contemporary with phases A–B on the 'Amuq plain to the north; painted sherds demonstrate the Ubaid tradition of 'Amuq phases E–F; and beveled-rim bowl rims and triangular lug handles indicate the 'Amuq phases F–G range of the Uruk through Early Bronze I periods.

EB remains include ceramic materials well known from the 'Amuq area, from the early reserved-slip wares, cross-combed metallic ware sherds, and diminutive ring bases that go with cyma-recta profiled cups, to later plain simple and scrabbled wares with distinctive washes and painted and incised bands. Also well represented are sherds of red and black burnished or "Khirbet Kerak" ware with its typical range of colors and shapes and incised and molded decoration.

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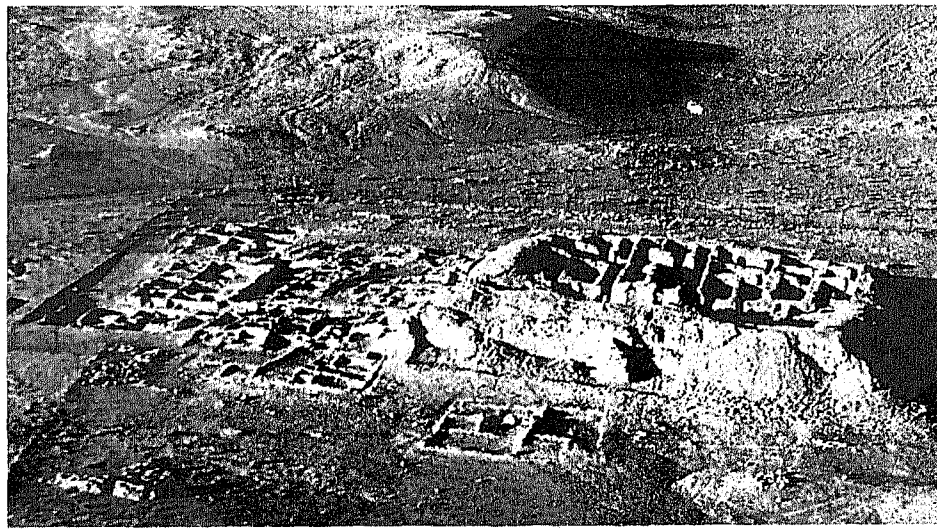
RUDOLPH H. DORNEMANN

QARYAT AL-FAU, site located in southwestern Saudi Arabia at the escarpment of Wadi al-Dawasir and the Tuwaiq Mountains on the ancient transpeninsular trade routes linking the South Arabian states not only with Arabian trade centers but with neighboring countries. The site is located at the mouth of a dry channel, al-Fau ("the gap"), from which the village acquired its name. Sabaean inscriptions refer to it as Qaryat or Qaryat Dhat Kahl, a deity whose life-sized figure is found on the mountain adjoining al-Fau.

The site was discovered accidentally by officials of the Saudi Arabian Oil Company in the 1940s. In 1952 H. St. John Philby, Jacques Ryckmans, and P. Lippens visited the site and wrote about its archaeological importance. Albert Jamme, with the collaboration of Saudi Arabia's Department of Archaeology and Museums, in 1969 made a study of the Sabaean rock inscriptions on the Tuwaiq Mountains



QARYAT AL-FAU. Figure 1. *Architectural remains of the suq at al-Fau.* (Courtesy A. T. al-Ansary)

flanking al-Fau. In 1971 Abd al-Rahman al-Ansary surveyed the site and undertook excavations the following year.

Twenty seasons of excavations were conducted from 1972 to 1994 that unearthed a full-fledged settlement with unique features and an enormous number of artifacts. The work revealed an advanced stage of civilization that had flourished between about 300 BCE and 300 CE. Stratigraphy revealed two phases at the site: the Minaean period and the Kindite period. The former lasted from the third century BCE to the beginning of the first century CE, and the latter from the first half of the first century BCE to the end of third century. For a certain amount of time, the two overlapped and coexisted.

The site's geographic location was the main factor contributing to the rise and flourishing of civilization at al-Fau. This is manifested in the large variety of small finds and architectural remains, recovered through excavation: coins; pottery and stone vessels; glass; jewelry; metal objects, including figurines; textiles; ivory and bone objects; inscriptions; and frescoes. The architectural remains include a double-storied market, or *suq* (30.25 × 25.20 m), which is so far unique in Arabia, with well-planned shops, a courtyard, corridors leading to the shops, staircases, wells, and lavatories (see figure 1). Built of stone and mud brick, its wide doors are capped with semicircular lintels.

Al-Fau's five temples are also unique: they are the only ones discovered to date within Saudi Arabia. They are devoted to the gods Shams, Sin, Wud, Abat, and al-Hawar, and seem to belong to different periods. The figurines found inside and outside the temples resemble those from Syria, Egypt, and the Mediterranean basin, suggesting foreign links and influences in religion and civilization at al-Fau (see figure 2). The lower portion of an alabaster statuette was recovered from the Wud temple along with an incense burner for burning aromatics for the god. [*See* Incense.] From a room adjoining the Wud temple were recovered bronze figurines of Herakles and Hippocrates. The blending of different architectural elements is evident in the general plan of the temples, which are rectangular and similar to those found in contemporary South Arabian states as well as at the Awratian temple at Altin Tepe in Anatolia. All the inscriptions, are in South Arabian. [*See* South Arabian.]

The site's social organization is demonstrated by the variety of burial tombs. Three groups of tombs for three categories of people were distinguished: kings, nobility, and the general population. The tombs are underground, permanent stone structures with arches over the doorways and stairs. Rectangular sections, or chambers, to accommodate several peole, suggest that these were family tombs. The tombs are like underground houses. A Sabaean inscription on one tombstone reads "The tomb of Mu'awiyah ibn Rabia al / al-Qahtani king of Qahtan and Mudhhyg built by. . . . / His servant Haf'am ibn Beran of al-tl. . . ." Gold jewelry was recovered from one of the tombs. [*See* Tombs; Grave Goods.]

QARYAT AL-FAU. Figure 2. *Statuette of Harpocrates found during excavation of al-Fau.* (Courtesy A. T. al-Ansary)

Its municipal planners assigned particular areas for the different town functions—the king's palace, the market, religious shrines, public buildings, tombs, and so forth. A residential area with well-planned houses, streets, lanes, hotels, rest-houses, water channels, a water-storage tank, overns, hearths, and lavatories gives a vivid picture of the life and society in the town in pre-Islamic Arabia. By all standards, apparent from the artifacts, its society was learned and advanced.

A variety of pottery (coarse, fine, and glazed) for different domestic purposes has been used in dating the town. Some

sherds, inscribed in South Arabian, bear the name of the god Kahl or the name of the Ḥimyarite king. [*See* Ḥimyar.] Nabatean sherds found at al-Fau suggest commercial relations with the Nabateans who ruled in north-western Arabia. [*See* Nabateans.] Soft-stone vessels with geometric designs similar to those found in the Arabian Gulf states were recovered from the houses at al-Fau. They probably were locally made, for the raw material was available nearby, in Saudi Arabia, at ad-Dawadmi, aṭ-Ṭa'if, and Hajlah-Abha, among other sites.

The Kinda kingdom minted its own silver and bronze coins in various denominations for domestic consumption and for commercial transactions with traders passing through it. The coins depict their god Kahl and bear the monogram of Kahl in South Arabian. Their nature and mode of manufacture suggest the profound influence of the South Arabian states.

Wall paintings found in the settlement depict daily life, socioeconomic conditions, manners, customs, costumes, and leisure activities. Among the scenes depicted are a hunt, chasing game, royalty on horseback, and a man holding on to a camel. Animals, fruits, and naked people are also depicted. The paintings also carry rather short inscriptions in South Arabian.

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ABDUL RAHMAN T. AL-ANSARY

QASILE, TELL, small mound (14 acres) located on a sandstone ridge on the northern bank of the Yarkon River, about 1.5 km (1 mi.) from the Mediterranean coast (today in the center of a northern suburb of Tel Aviv). The ancient name of the site is unknown, but it may be one of the towns of the tribe of Dan in the region of the Yarkon, such as Harakon (*Jos.* 19:46). The site's proximity to the river and the coast made it a convenient harbor for trading ships. In the Iron Age I, its location made Tell Qasile a commercial center, a role formerly played by the Canaanite town at Tel Gerisa, on the opposite bank of the river. While maritime trade was probably a major feature in the town's economy, agriculture was as well. A relatively large number of hippopotamus bones found at the site suggests that the animal was part of the local diet.

The site came to the attention of scholars in the late 1940s, when two Paleo-Hebrew inscriptions incised on potsherds were found on its surface. One reads "Gold of Ophir (belonging) to Beth-Ḥoron, thirty shekels." The second reads "(Belonging) to the king, one thousand and one hundred [units] of oil . . . Hiyahu.")

Excavations at the site were conducted by Benjamin Mazar from 1949 to 1951 and in 1959, and by Amihai Mazar from 1971–1974 and from 1982–1992, on behalf of the Institute of Archaeology of the Hebrew University of Jerusalem and the Ha-aretz Museum in Tel Aviv.

Iron Age I: Urban Development. The major period of occupation at Tell Qasile was in Iron Age I (twelfth–eleventh centuries BCE). The town was probably founded by the Philistines in connection with their expansion from the nucleus of their settlement in the heart of Philistia. Philistine bichrome ware was introduced during this period (c. 1150 BCE), replacing the earlier Philistine monochrome pottery, a local product made in the Mycenaean IIIC style. The latter pottery was not found at Tell Qasile, but bichrome ware was abundant in the earliest occupation level on the mound (stratum XII). It continued to appear in large quantities in the following level (stratum XI) and to some extent also in the third level (stratum X). In stratum X, however, a local decorative style appeared, characterized by black paint on red slip, a degeneration of the original Philistine pottery.

Strata XII–X represent the town's gradual development, with transitions unmarked by violent destruction. However, stratum X, the level in which the town reached the peak of its urban development and economic prosperity, came to a violent end, probably as a result of King David's annexation of the coast north of Jaffa to his kingdom in the early tenth century BCE.

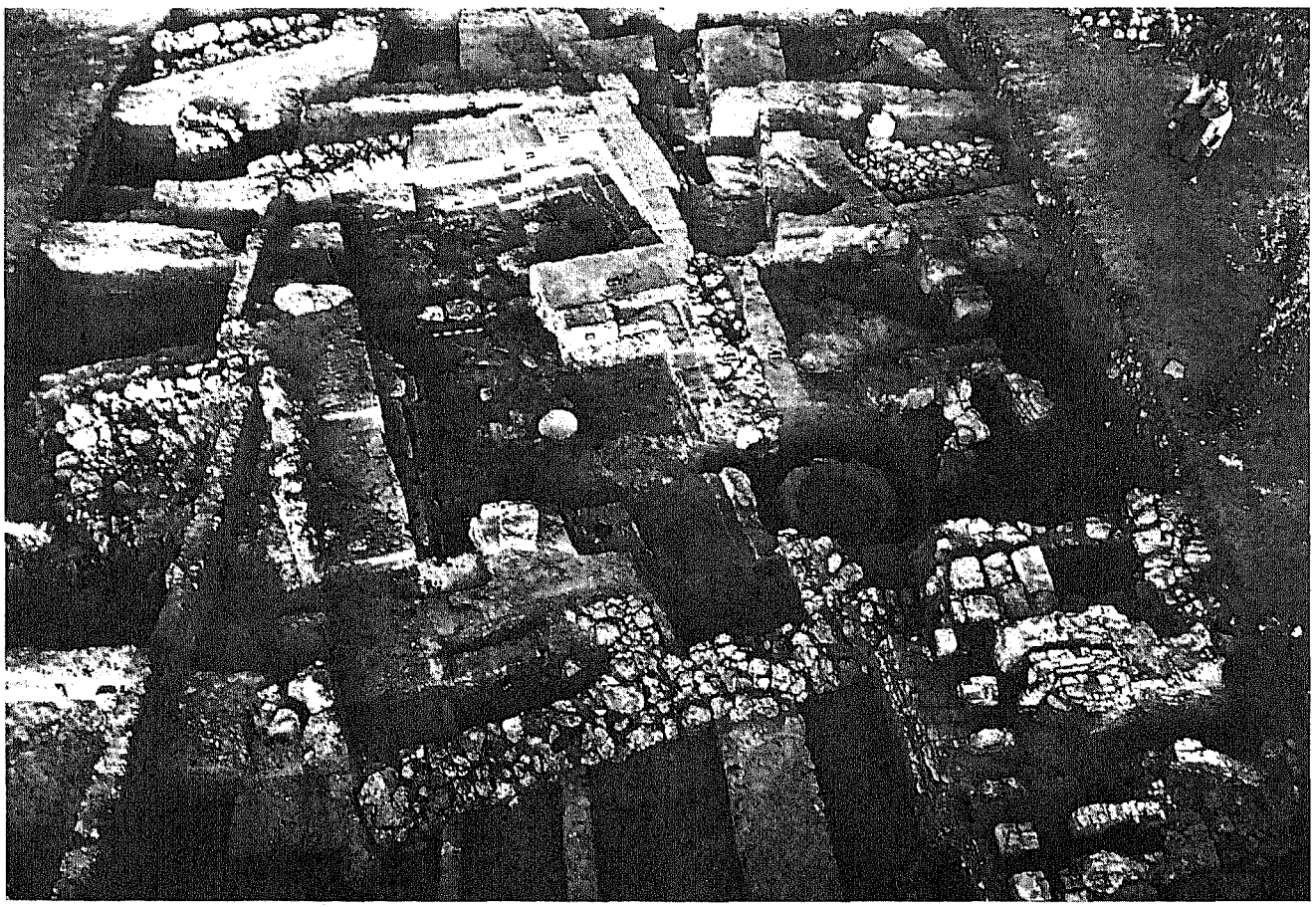
Evidence of the town's urban development in Iron I was uncovered over a large area: more than 2,500 sq. m were excavated. In its earliest phase (stratum XII), the town was only partially built up. Thick deposits of gray ashy earth in the remaining large open areas constitute evidence of a comparatively long occupation. Mud-brick structures without stone foundations were built on bedrock in this stratum. A public building south of the temple (see below) had a large hall with benches along the walls and a hearth at its center. The latter element is foreign to Canaanite architecture and may reflect Aegean or Cypriot traditions brought by the Philistines from their homeland.

In the following phase (stratum XI), more substantial buildings were erected with stone foundations and a mud-brick superstructure. Many of the stratum X buildings had

probably been founded in stratum XI, yet their exact plans in stratum XI are not entirely clear. In the third phase (stratum X), the town was fully developed. As a result of the fire that destroyed the town, its mud-brick walls were found fired and, thus, well preserved. The excavations revealed a careful planning, with an orthogonal grid of streets that created clearly defined blocks of buildings. In a residential quarter in the southern part of the mound, seven houses, almost identical in plan, were excavated. Most of them are rectangular (about 100 sq m), of the pillared house, or four-room house type. [*See* Four-room House.] Such houses are one of the cultural features that characterize various ethnic groups coexisting during the Iron Age I in ancient Palestine. The structures contained a central space (open courtyard?) with a roofed side space paved with flagstones that was probably used as an animal shelter. This side space was separated from the courtyard by a row of four or five pillars made of wooden beams standing on end on stone bases. On one or both sides of the courtyard were additional rooms. In the courtyard itself were various installations: baking ovens, grinding stones, wine presses, looms (piles of up to forty clay loom weights were found in almost every house, evidence for home industry). In one house a bronze workshop was found that contained a circular kiln and two smelting crucibles. Each of the houses contained dozens of pottery vessels; some houses had storerooms, each containing more than fifty storejars of about 20 liters in volume. The storejars were probably used as portable containers in the trade of liquid commodities such as wine and oil. They would have been transported by the ships anchored in the Yarkon.

Two public buildings were also constructed in this quarter: a storehouse composed of a rectangular hall divided by two rows of pillars (one of the earliest examples of the storehouses that became common in the Iron II period). Another building probably served an administrative function: it contained three rectangular storerooms, in addition to a number of other rooms, and a large hall. No fortifications could be detected because of severe erosion along the edge of the mound. However, on the western slope of the mound, a short segment of a thick mud-brick wall was recovered that may be a remnant of a city wall.

Iron Age I: Sacred Area. The Iron Age sacred area at Tell Qasile is the only one in ancient Philistia that has been completely excavated. It exhibits extensive architectural



QASILE, TELL. Figure 1. *View of the Philistine temple (stratum X), looking east.* (Courtesy A. Mazar)

changes over a comparatively short time. The architecture and many of the cult objects from its sanctuary are unique. Although rooted mainly in local Canaanite traditions, some Aegean and Cypriot components are recognizable.

In stratum XII, a modest shrine was constructed on bedrock: a one-room structure (outer dimensions 6.4 × 6.6 m) with benches along its walls and a raised platform in front of the entrance, which was at the center of the east facade. A large courtyard with an auxiliary room was found east of the shrine. In stratum XI, the older shrine went out of use and was replaced by a larger temple with stone walls (outer dimensions 7.75 × 8.50 m). The entrance was at the end of the east facade; inside the building benches lined the walls and an inner room served as a treasury. The holy of holies was probably in a niche opposite the entrance. Attached to the temple on the west was a small mud-brick shrine with a bent-axis approach, benches lining its walls, and a raised platform in its southwestern corner. In the large courtyard in front of the temple were two attached auxiliary rooms. A *bothros* (Gk., a pit where sacred objects were buried) found in the courtyard contained layers of animal bones, discarded cult vessels, and many pottery vessels. The plans of both the temple and the shrine are unknown in Canaanite architecture. This unique combination of a main temple and a side shrine with a bent-axis approach recalls the somewhat earlier sacred complex at Philakopi, on the island of Melos.

The stratum X temple represents a rebuilding and enlargement of the previous structure (see figure 1). An antechamber was added on the east, enlarging the building to 8 × 14.5 m. The antechamber created a bent-axis approach to the main hall. Stepped plastered benches were constructed along the walls of the antechamber and the main hall. The roof of the latter was supported by two cedar-wood columns that stood on cylindrical stone bases running along the hall's long axis. A raised platform was located opposite the entrance to the main hall; behind the platform a narrow cell was used perhaps as a treasury. A courtyard north and east of the temple was enclosed by stone walls. In the courtyard in front of the temple the square foundation of a sacrificial altar was found. The small shrine of the previous stratum continued in use, but with its own fenced courtyard and an auxiliary room used as a kitchen.

A considerable number of ceramic cult objects was found in the sanctuary. Some are based on local Canaanite or Egyptian traditions, while others are original shapes with almost no precedents. Among them is a plaque showing the facade of a shrine and two figures of what may be goddesses that were intentionally destroyed in antiquity; an anthropomorphic vessel with breasts serving as spouts (see figure 2); a lion-shaped cup made in a tradition known from Ugarit and paralleled at other Iron I sites settled by Sea Peoples; a large jar with five openings that may have been used to hold sacred plants in the temple; various cylindrical stands decorated with animal and human figures; and offering bowls

QASILE, TELL. Figure 2. *Anthropomorphic libation vessel found in the Philistine sanctuary.* (Courtesy A. Mazar)

decorated with bird figurines. Among the metal objects were an iron knife with bronze rivets and an ivory handle that ends in a ring-shaped pommel and a bronze ax/adze, both known in the Aegean and Cyprus but foreign to local Canaanite traditions.

The Iron I culture at Tell Qasile as revealed in the dwellings and sanctuary retains many Canaanite characteristics; it can therefore be assumed that indigenous Canaanites were an important component of the local population. However, the abundance of Philistine pottery and the appearance of Philistine motifs on several cult objects, as well as cultural elements that retain Aegean traditions, lead to the conclusion that Philistines founded the site and were the leading element in its social structure.

Following the violent destruction and burning of stratum X, the town was rebuilt, in the tenth century BCE. The two strata that can be dated to this period (strata IX–VIII) give

evidence of the town's partial rebuilding. The new town was a pale reflection of its predecessor—smaller in area and much less densely built. Some of the older buildings were reconstructed with modifications, but other houses went out of use and paved open spaces replaced them. Stone-lined silos were found in several places. The ruined stratum X temple was reconstructed to some extent, but it is doubtful whether it was a roofed structure in this phase. Around it was a large open space that was occasionally repaved with a new lime floor. The pottery in this period is characterized by red slip and hand burnishing, typical of the tenth century BCE; Philistine painted pottery disappeared altogether.

It seems that during this period Tell Qasile served as a port town for the united kingdom under David and Solomon. The town was probably destroyed by Pharaoh Sheshonq on his return to Egypt from Megiddo. Yet, it is difficult to say whether he destroyed stratum IX or VIII. If the former is the case, than stratum VIII denotes a partial rebuilding of the town after this destruction, in the ninth century BCE.

End of the Iron Age. After a long gap in occupation, a small settlement was founded at Tell Qasile in the late seventh century BCE. Agricultural installations found around the tell are evidence of a small farm. However, the Hebrew inscriptions mentioned above hint that the site had been an administrative and trading center in the eighth–seventh centuries BCE.

Persian Period. A single building with a frontal fenced courtyard probably served as an agricultural or administrative center in the fifth–fourth centuries BCE. Refuse pits from this period were dug around the building, and a square well was found at the foot of the mound. Imported Greek pottery is evidence of maritime trade connections. The site may have been destroyed during the conquest of Alexander the Great.

Late Periods. Evidence of some limited activity during the Hellenistic and Roman periods was found on the summit of the mound. A large building with rows of pillars may have been a marketplace. In the Byzantine period a small village was scattered over and around the mound. A synagogue with a Samaritan inscription was found at the foot of the mound, and a bathhouse was uncovered on its summit.

In the Early Islamic period a caravanserai was located at the summit of the mound. In the Middle Ages a small sugar factory was constructed there, probably to process the sugar cane being grown in the vicinity.

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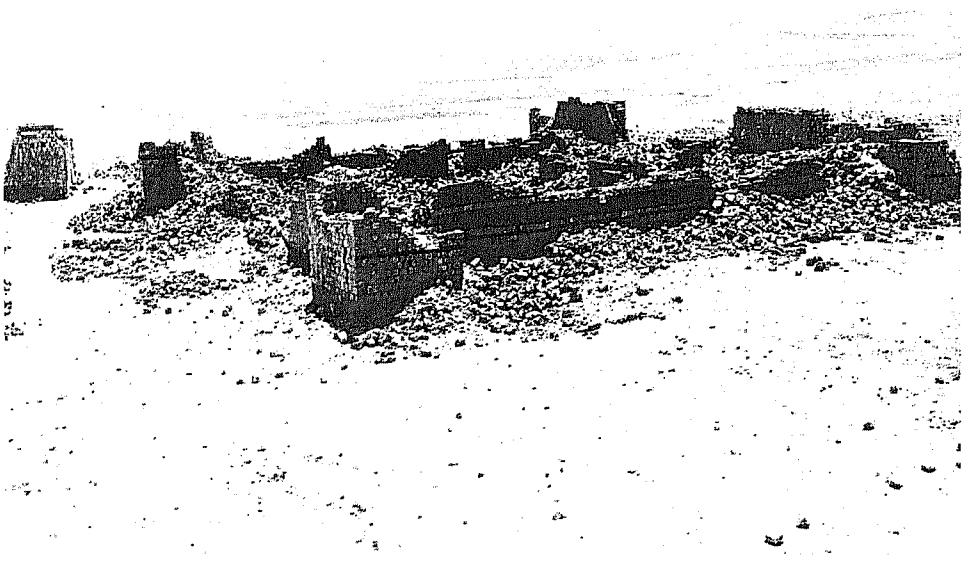
AMIHAI MAZAR

QAṢR AL-ḤALLABAT, site located in Jordan (32°06′ N, 36°20′ E), 25 km (15.5 mi.) northeast of Zerqa, 55 km (34 mi.) northwest of Azraq, and about 18 km (11 mi.) from the nearest point (to the northwest) of the Via Nova Trajana. It comprises a conglomerate of separate and widely spaced units that include a *qaṣr* ("castle"; see figure 1), a mosque, a huge reservoir, and eight cisterns dug into the western slope and into the plain alongside the reservoir. The site also includes an irregularly shaped agricultural enclosure with an elaborate system of sluices and a cluster of poorly built houses that extends to the northwest of the reservoir. To these units should be added the bath complex at Ḥammam aṣ-Ṣarāḥ, 2 km east of the castle.

The Princeton Archaeological Expedition to Syria, under the direction of Howard C. Butler (1907–1921), visited the site twice in 1905 and 1909. They drew plans of the castle and mosque, published numerous inscribed stones, and mentioned the reservoir, at the bottom of which they had pitched their camp. The remains are also mentioned by, among others, Rudolf-Ernst Brünnow and Alfred von Domaszewski, Henry Field, G. Lankester Harding, Nelson Glueck, Aurel Stein, Jean Sauvaget, and L. W. B. Rees. Rees published a vertical aerial view that reveals many of the ancient remains associated with the castle. [*See the biographies of Harding, Glueck, and Sauvaget.*] More recently, Ḥallabat was the subject of detailed investigation by David Kennedy (1982), who published a new plan for the castle and additional inscribed stones, and by Fawwāz Touqan, who emphasized the Early Islamic aspect of the site. Between 1979 and 1985, five seasons of excavation were carried out jointly by the Department of Antiquities of Jordan and La Maison de L'Orient Méditerranéen de Lyon. In the course of these excavations, the plan of the mosque was confirmed and the agricultural enclosure investigated. In addition, all the rooms along the north, south, and east walls of the castle were cleared to floor levels, and eleven probes, placed inside the rooms and outside the castle, penetrated the floors down to bedrock. The pottery sherds the probes in the castle produced cannot be assigned earlier than the Umayyad period (661–750 CE). This would indicate that, in the last phase of construction, the earlier occupational debris and whatever floors existed within the castle were thoroughly removed. That there was a pre-Umayyad building, however, is beyond doubt, confirmed by the ceramic evidence from outside the castle as well as by the fact that the enclosure and partition

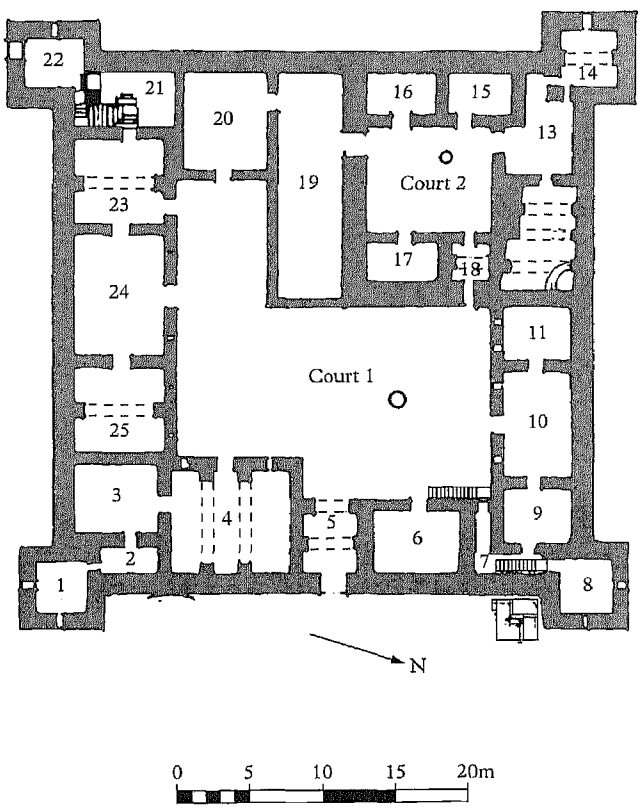


QAṢR AL-ḤALLABAT. Figure 1. *General view of the ruins.* (Courtesy G. Bisheh)

walls were set on the outer edges of earlier walls. This may explain the anomalous plan of Qaṣr al-Ḥallabat compared to other Umayyad buildings.

The plan of the castle (see figure 2) is square (44 m to the side), with square towers and a single entrance in the eastern wall. A central courtyard paved with flagstones is surrounded on three sides by a series of oblong and nearly square rooms. The northwestern quadrant is occupied by a structure that also consists of a central courtyard surrounded on all but the south side by a number of rooms. This quadrant, which is set apart from the rest of the castle, may have been a low-status area reserved for servants. There is a cistern in each of the two courtyards.

Two inscriptions are thought to have some bearing on the architectural phases of the castle: one in Latin, dated to 212 CE that refers to the construction of a *novum castellum;* and the other in Greek, dated to 529 CE. Excavations and clearance work inside the castle uncovered a total of 146 Greek inscriptions—as well as two in Nabatean, one in Safaitic, and a fourth in modern Armenian—engraved on regularly cut basalt stones. [*See* Safaitic-Thamudic Inscriptions; Nabatean Inscriptions.] The vast majority of these inscribed stones belong to an edict issued by the Byzantine emperor Anastasius (491–518) for the administrative and economic reorganization of the Provincia Arabia. It is quite likely that all of the inscribed stones were brought from a nearby settlement, possibly Umm el-Jimal, and reused as building material during the Umayyad reconstruction of the castle. [*See* Umm el-Jimal.] In the course of this reconstruction, the castle was elaborately decorated with carved stucco, frescoes,



QAṢR AL-ḤALLABAT. Figure 2. *Plan of the castle.* (Courtesy G. Bisheh)

and colored mosaics, thus transformed from a fortified building into a palatial residence. The transformation was accompanied by a remarkable development of the site, apparent in its extramural mosque, agricultural enclosure with its elaborate irrigation systems, and the bath complex at Ḥammam aṣ-Ṣarah.

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GHAZI BISHEH

QAṢR AL-ḤAYR AL-GHARBI, one of the two desert estates of the Umayyad caliph Hisham (r. AH 105–125/724–793 CE) that is part of a group of ten structures extending for 20 km (12 mi.) and connected by a sophisticated system of water channels starting at the Kharbaqa dam on the northern fringes of the Jabal Rawaq. The caliph resided mostly at Rusafa in Syria, the former Sergiopolis, between Palmyra and ar-Raqqa. He first commissioned the Palace of the Western Game Park, about 180 km (112 mi.) southwest of Rusafa, built in about AH 109/727 CE; shortly thereafter he commissioned the Palace of the Eastern Game Park (Qaṣr al-Ḥayr ash-Sharqi), dated to AH 110/728–729 CE, about 70 km (43 mi.) southeast of Rusafa. [*See* Rusafa; Raqqa, ar-; Qaṣr al-Ḥayr ash-Sharqi.] Antoine Poidebard (1930) carried out an aerial and topographical survey and Daniel Schlumberger excavated the site in 1936–1938. [*See the biographies of Poidebard and Schlumberger.*]

The Kharbaqa dam is a mighty construction 345 m long and more than 20 m high that originally created a storage lake of more than one square kilometer. From it the water is channeled north in a surface canal. About 4 km (2.5 mi.) away is an almost square building (63 × 58 m), supposedly a Roman post on the Strata Diocletiana. About 11 km (7 mi.) farther north the channel's first bifurcation conducts the water west, to the palace proper, and to an isolated bath in the immediate vicinity. About 2 km later the main channel leads to a square pool (60 m on each side). Close by, a second western bifurcation leads to another square structure (55 × 55 m), probably a caravanserai, with a reused Roman doorframe inscribed with an Arabic text commemorating its construction in AH 109/727 CE, now exhibited in the Damascus Museum; two wings project from the facade: one contains a small oratory *(masjid)* and the other a water trough. About 500 m along the main canal, a side channel operates a water mill (about 5 × 7 m), a clear indication of local grain production. The neighboring courtyard structures to the east of the mill have not yet been excavated. To the west another barrage (i.e., a dam) with a 560-meter-long wall, in the shape of a horseshoe, from which the collected rainwater was conducted to the garden at the northwestern end of the complex. The large, walled, rectangular garden compound (1,050 × 440 m) is subdivided into square compartments (80 m on each side). It is watered by the main canal, which originates at the Kharbaqa dam, more than 18 km (11 mi.) away, and occasionally by the surplus rainwater from the horseshoe barrage. This pleasure ground, accessible through two portals accentuated by flanking columns, may have been a game park, as the traditional name of the site suggests. [*See* Irrigation.]

The focal point of this artificial oasis is the square building (about 72 m on each side) initially distinguished by double stories and exceptionally rich architectural decoration, which obviously served as the part-time residence of Caliph Hisham. Of its original splendor almost nothing remains. Only half of the tower of a monastery founded in 559 by the Christian Ghassanid ruler al-Harith ibn Jabala, to which the palace was attached, dramatically surmounts the surrounding field of ruins. In a new wing of the Damascus Museum, the building's original entrance has been reconstructed by the architect Michel Ecochard from the excavated fragments, including the facade's stucco decoration and the upper story's stately reception rooms, in which plaster sculptures, fresco floors, ornamented window grills, and wood lintels are exhibited. The sumptuous decoration program was evidently executed by artists from various parts of the Umayyad Empire. They created an architectural masterpiece that borrows from classical Syrian as well as Sasanian (Persian) features. [*See* Umayyad Caliphate.]

Although an Umayyad origin, based on the inscription in the caravanserai (see above), is generally accepted for the palace and most of the other structures, the excavators assumed that the artificial oasis was first designed in the Roman period. They thus dated the Kharbaqa dam to the second or third century, assuming the existence of a pre-Islamic military post on the ancient road crossing the Syrian desert. An extensive Umayyad estate that included agricultural land, gardens, and a game preserve seems a reasonable benefactor for the construction of a sophisticated irrigation project that depended on a water supply from the sizable res-

ervoir the monumental dam created. The dam, therefore, probably also originated in the Umayyad period.

Eventually, the history of the site may reach back into the Roman period, but the first attested building activity so far is for the Ghassanid monastery tower incorporated into the palace by Caliph Hisham shortly before AH 109/727 CE (see above), when the new oasis in the desert, at the crossroad of major nomadic routes, was installed as a visual symbol of imperial might. The tower probably fell into disuse soon after Hisham's death in AH 125/743 CE. Its partial reactivation in medieval times is attested by a restoration inscription of AH 583/1187 CE on the massive Ghassanid tower, and by later construction in the palace area identified by Jean Sauvaget (*La poste aux chevaux dans l'Empire des Mamelouks*, Paris, 1941) as a way station of the Syrian postal route, established by the Mamluk sultan al-Ẓahir Baybars (r. AH 658–676/1260–1277 CE). [*See* Ayyubid–Mamluk Dynasties.]

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MICHAEL MEINECKE

QAṢR AL-ḤAYR ASH-SHARQI, site located about 110 km (68 mi.) north-northeast of Palmyra, Syria, at the northern end of a flat steppic area, at the foot of a low mountain chain, the Jebel Bishri. This is more or less the area in which the rains from higher altitudes gather toward the plain and occasionally flood it. It is also located at the approximate place where the Baghdad to Aleppo and Damascus to ar-Raqqa routes cross. Long assumed to be a Roman defensive establishment against nomads, Qaṣr al-Ḥayr has now been shown to have been one of the many early Islamic foundations that cover the entire area from the Euphrates River to the Gulf of ʿAqaba.

Because of its spectacular ruins, which are visible from afar, the site has been recorded by travelers since the first decade of the nineteenth century. It was partially mapped and surveyed by the more thorough explorers, such as the Czech Alois Musil, of the decades before World War I. During the French Mandate, the site was surveyed by André Gabriel and entered into the various reconstructions of Late Antique and Early Medieval Syria by René Dussaud. It was the subject of an extensive archaeological investigation directed by Oleg Grabar under the auspices of the University of Michigan and Harvard University between 1964 and 1972. The results of those excavations were published in 1978 (see Grabar, 1978). The material remains are in the archaeological museum in Palmyra.

The site (7 sq km, or roughly 2.75 sq. mi.) is enclosed by a wall 15 km (9 mi.) long. The wall has been provided with sluices and retaining walls at strategic points where sudden flooding could become harmful. The technology of these waterworks seems to have been imported from southern Arabia and Yemen rather than to be indigenous to Syria. At the northern end of this enclosure three buildings were erected. The largest, a square of about 167 m to the side, was provided with four gates leading up to a large central open area surrounded by a portico. Around the central area, twelve approximately equal squares were mapped out with a single course of stones. They included four backyards in the corners, one mosque, one oil press, and seven dwellings, each of which had a central porticoed court and rooms of varying sizes around the portico. The living unit nearest to the mosque had elaborate stucco decoration of vegetal and geometric motifs and may well have been an official building. An inscription, now gone, identifies this enclosure as a *madinah,* "a city"—although the word should probably be understood in its earlier meaning, "estate." In spite of the enclosure having been laid out at one time, the various units were not completed together or with the same construction techniques. The inscription dates the foundation of the enclosure to 728–729 CE and the rule of the caliph Hisham. However, the wall decoration and some of the material remains indicate that much of the "city" was not really in full activity before the early ninth century.

The second building is a well-preserved and massive square (70 m to the side) monument with a single entrance, walls preserved to a height of more than 11 m, and corner towers that offer views of the terrain for miles. Around a porticoed courtyard, the interior consisted of large numbers of high and dark halls vaulted in a brick technique hitherto unknown in Syria. These halls appear to have existed without any amenities or apparent differentiations in function. The second floor has not been preserved, but such evidence

as exists suggests the repetition of the same plan. The excavators have interpreted the building as a work of commercial architecture, as a caravanserai for the repose of travelers and the safeguarding of goods; the huge area surrounding it would have served for animals.

The third major building was a bath, typical in all respects of the Early Islamic baths that came out of the architectural traditions of Late Antiquity. In addition, cisterns and complex systems of canals distributed water to the walled enclosures. Ceramic finds also point to the existence of rather simple and short-lived residential quarters to the north of the main buildings. [*See* Baths.]

Excavation made it possible to establish the history of the site. It was planned in Umayyad times as an estate for agriculture and trade (perhaps the Zaytunah of medieval Arabic texts). Using remains from earlier Roman and Palmyrene monuments, the site was completed and flourished throughout the Early ʿAbbasid period (until about 900). It was then almost completely abandoned. It was revived as a small and miserable twelfth–fourteenth-century city, and then finally abandoned in about 1350. The material culture of all but the first of these periods can be reconstructed from excavated fragments and from analysis of the architectural remains.

[*See also* Qaṣr al-Ḥayr al-Gharbi; *and the biography of Dussaud.*]

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OLEG GRABAR

QAṢR AL-MESHATTA (Ar., "palace of wintering"), site located on the edge of the Jordanian desert (31°49′ N, 36°28′ E). At approximately 200 m above sea level, al-Meshatta commands a strategically broad view in all directions and is the largest and most ambitious of the Islamic palaces in Jordan. The site was discovered by H. B. Tristram in 1865 (*The Land of Moab,* London, 1873). Its date and origin were once disputed, but it is now generally accepted as an Umayyad structure and is identified as the work of Caliph al-Walid II (r. 743–744 CE).

The *qaṣr,* or palace, is a square, walled enclosure constructed of burnt clay brick (144 m to a side) and is flanked by polygonal towers at its corners. Two octagonal salient angles, to the right and left of the entrance, formed a splendid limestone facade (60 m long, 5 m high) covered with highly formalized ornaments and sculpture carved in delicate relief. Only a few lower courses are preserved.

The carvings on the facade of the palace are of floral, animal, and geometric motifs: bold rosettes; large, rhythmic triangles; looped and grape-laden vine stalks; birds; lions; acanthus leaves; and great octagons. The motifs in the decorations varied from bastion to bastion, and the work of several distinct hands can be discerned. Some of the motifs are essentially Hellenistic, while others show a Sasanian (Persian) influence, especially in the frontal poses of animals, with candelabra forms or double wings. The other sides were undecorated. Almost the entire palace facade was given as a gift to the German Kaiser Wilhelm II by the Ottoman sultan Abdülhamid, just before World War I. It was removed and dispatched to Berlin, where it was set up in the Kaiser Friedrich-Museum (Pergamon Museum).

The palace itself is considerable in size but had only one entrance, which led to the living quarters (see above). Those quarters were arranged in three sections, separated from one another by large rectangular courts. The courtyards apparently were used to stable camels and horses and to store goods. The palace mosque was sited in the traditional position, inside and to the right of the main entrance. [*See* Mosque.]

The palace interior, including a three-apsed hall, remained in various stages of completion. Some walls and vaults were built with light-brown fired bricks. There is symmetry throughout, created by its plan, on an axis, with a tendency to compartmentalization, often into three sections. The vaulting systems are essentially Mesopotamian in style, but the masonry is Hellenistic. The style of the carved decoration is both Sasanian and Hellenistic, a fusion of the two traditions in Umayyad architecture.

[*See* Palace.]

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ADNAN HADIDI

QAṢR BURQUʿ, structural complex in northeastern Jordan comprising a tower and rooms that surround a small courtyard (32°40′ N, 37°50′ E). The buildings were constructed next to a large seasonal pool whose water-storage capacity was at some time augmented by a stone dam. The site lies on the eastern edge of the basalt *harra,* some 150 km (93 mi.) beyond the *limes Arabicus,* in a zone that receives between 50–100 mm of rain per year. The main inner "desert" route from North Arabia (Jauf/Dumatha) to Damascus and Palmya passes near the site; many east-west routes lead through the *hammada/wudiyan* to the Euphrates River in the east.

Several building phases have been identified. The first consisted of a massive rectangular tower of at least four stories, probably more than 12 meters high. The tower had only one small door and a few narrow ventilation slits in the upper levels. Larger openings may once have existed near the roof line. At ground level there are three chambers, one of which has a low rounded transverse arch. The upper floors were stone corbeled. Excavations into the foundations did not reveal conclusive dating evidence, although it is clear that the tower must predate at least 700 CE. Its original function is, similarly, uncertain. It could have been built as a watchtower to control the site's water resources or as a hermit's tower (Syr., *burga*). The project may have been financed by the Ghassanids in the sixth century, the period in which the dam must have been built. It was repaired and rebuilt often.

At some time between the towers' construction and 700 CE, a series of rooms was built in a rough square surrounding the tower. These buildings consist of a round structure that may have been a windmill, several small storage rooms, five or six long rooms, and a small, two-storied tower at one corner. The "windmill" has a small cross carved on the lintel of its entrance; one of the rooms leads to a small apse under a possibly pointed arch. These features suggest a monastic function for the buildings. Several gravestones were found inside these structures, among them two with (undated) Greek inscriptions, mostly lists of names. Excavations at several points along the walls have produced both Umayyad and pre-Umayyad pottery. The new buildings at Burquʿ may have served as a monastery between the sixth and the early eighth centuries. An Arabic inscription in Kufic script was cut into the lintel of the doorway into one of the long rooms. The lintel may have been reused. The inscription is dated to 700 CE. It tells of rooms (Ar., *buyut*) being built on behalf of the Amir Walid, son of Abd al-Malik (Umayyad caliph, 685–705). Walid's gift may be viewed in the light of Abd al-Malik's diplomacy with the bedouin, notably the Kalbi in the Badiyat ash-Sham, in order to assure the succession of his son. The room with the apse has also been identified as a humble version of an audience chamber, rather than a chapel. It may, like the rest of the buildings, have served both of these functions at various times, as well as others—which can be subsumed under the notion of a *badiya,* a formal venue for tribe-state relations. Qaṣr Burquʿ may still have functioned as a Monophysite monastery in Kalbi territory well into the eighth century. How long after the eighth century the place was used, and for what purpose(s), is not known. The next epigraphic evidence comes from an Arabic inscription, dated to the early fifteenth century, mentioning the "discovery" of the Kufic inscription of al-Walid.

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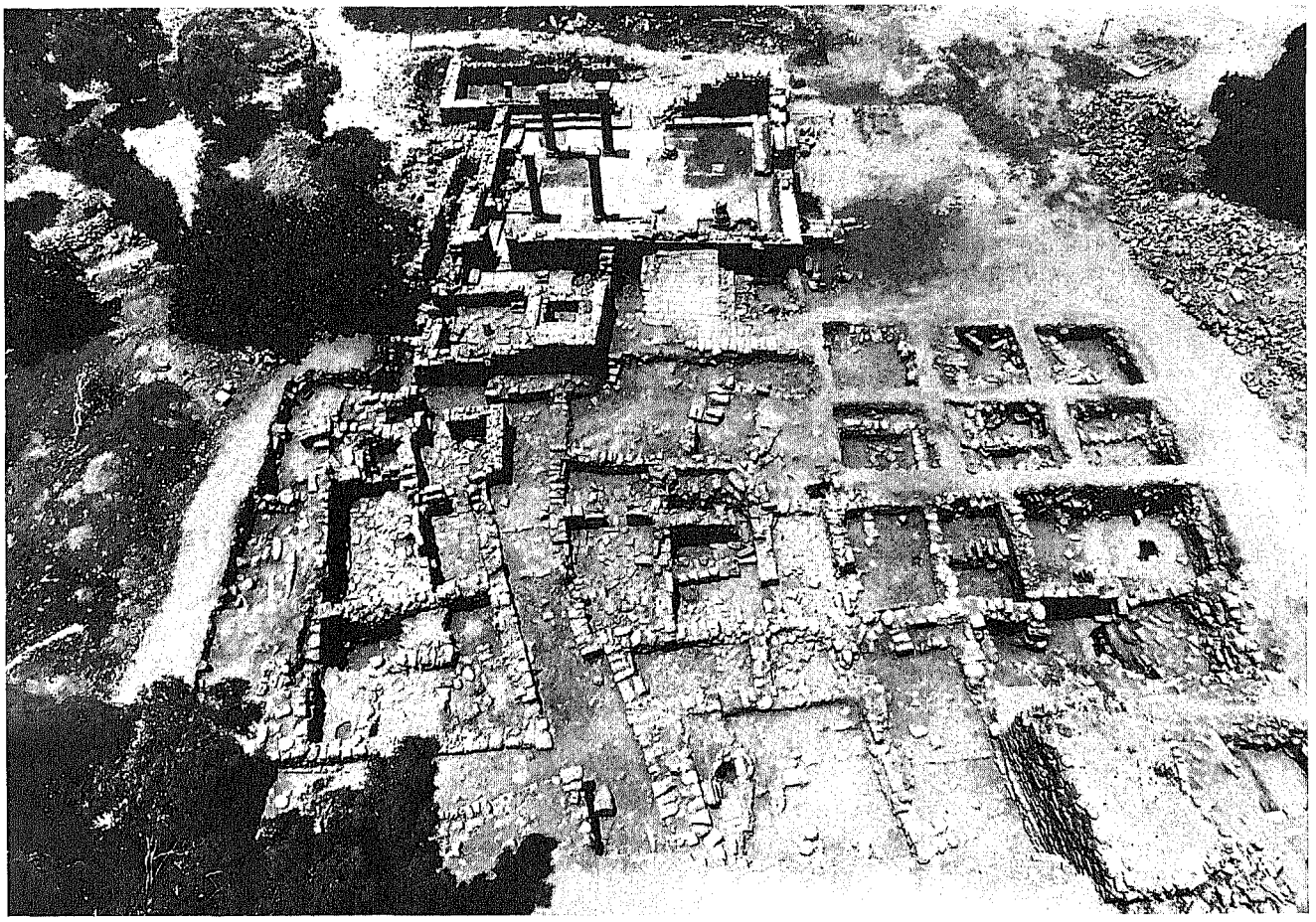
S. W. HELMS

QAṢRIN, site located in the central Golan Heights, approximately 13 km (8 mi.) northeast of the Sea of Galilee and 1 km southeast of the modern city of Qaṣrin (32°59′15″ N, 35°42′15″ E; map reference 2161 × 2661). The site's ancient name is unknown. It was first recorded and identified by Gottlieb Schumacher during his surveys of the region in 1884; he revisited it in 1913 and described "Kiṣrin" as a "small Bedouin winter village with a group of beautiful oak trees and old ruins" (Schumacher, 1888, p. 194). The name *Kiṣrin,* perhaps derived from the Arabic word *qaṣr,* meaning "fort" or "palace," may refer to the monumental ancient remains visible to the inhabitants of this nineteenth- and twentieth-century village (see figure 1).

During archaeological surveys of the region in 1967, Shmaryahu Gutman identified the remains of an ancient synagogue inside the modern Syrian village of Kiṣrin. Subsequent surveys by Dan Urman from 1969 to 1971 revealed numerous architectural elements originally belonging to the synagogue and several ancient Hebrew and Aramaic inscriptions. In 1971–1972, Urman initiated excavations in the synagogue, which continued under the direction of Muni Ben-Ari (1975–1976) and Zvi Maʿoz (1978). From 1982 to 1984, Rachel Hachlili, Ann Killebrew, and Zvi Maʿoz conducted a new series of excavations in the synagogue; from 1983 to 1990, Killebrew directed excavations in the adjacent



QAṢRIN. Figure 1. *General view of the site, looking west toward the synagogue.* The village houses, before reconstruction, are in the foreground with house B to the left. Complex C is to the right and house A is next to the southeast corner of the synagogue. (Courtesy Israel Antiquities Authority)

village. Approximately 1,500 sq m, or nearly 10 percent of the site, has been uncovered.

The excavators identified nine strata at Qaṣrin. Ceramic finds and fragmentary architectural remains indicate that the site was inhabited during the Middle Bronze II (stratum IX), Iron II (stratum VIII), Hellenistic (stratum VII), and Late Roman (stratum VI) periods. The main periods of occupation were the Late Roman through Early Islamic periods (synagogues A and B, strata V–IV); the Mamluk period (mosque, stratum II); and the late nineteenth century–1967 CE (stratum I).

Late Roman–Early Byzantine Periods (Stratum VA–B). The construction and use of synagogue A span stratum VA–B) (fourth–fifth centuries CE). The earlier phase of the village, VA, dates to late third–mid-fourth centuries CE, based on pottery assemblages found in the structures and coin hoards, including a deposit of nine thousand coins hidden under a stratum VA courtyard floor. Stratum VB (late fourth–fifth centuries CE) follows the earthquake of 363 and is characterized by the continued use of synagogue A and the repair of the village houses.

The earliest monument, synagogue A, was nearly square (15.2 × 15.3 m), with two rows of three columns each. Its main entrance was located in the northern facade wall, with a side entrance in the western wall. The hall was lined with benches on three sides, and a stone platform was constructed against the southern wall, facing Jerusalem, to hold the Ark of the Law. Artifacts sealed below the white plaster floor of synagogue A included Late Roman period pottery sherds and a coin minted in 218–219, indicating a late third- or early fourth-century date for the building's construction.

Most of the village houses built at the same time as synagogue A continued in use until the mid-eighth century, but were remodeled numerous times. The plan of a typical domestic unit at Qaṣrin consisted of a large, rectangular multipurpose room *(traclin;* Lat., *traclinium),* a smaller rectangular storage room, a sleeping loft above the storage room, and an unroofed courtyard. Additions to this typical do-

mestic unit included small storage spaces or indoor kitchens. Generally, several of these household units were connected to form a large complex, or insula, inhabited by several generations of an extended family.

Byzantine–Early Islamic Periods (Stratum IVA–B). Synagogue B, constructed on top of synagogue A, marks the beginning of stratum IVA (sixth century). Although the general plan of the two synagogues is similar, in synagogue B the northern facade wall was extended northward for 2–2.5 m, increasing the size of the synagogue, necessitating two rows of four columns each. The building's exterior measurements became 15.4 m along the north wall; 14.95 m along the south wall; 17.95 m along the east wall and 17.4 m along the west wall. Two surfaces are related to synagogue B's use: an earlier mosaic floor (stratum IVA), dated to the sixth century by coins found inside the benches along the rebuilt northern wall of synagogue B; and a later plaster floor (stratum IVB) laid over the dismantled mosaic floor, dated to the seventh century, based on a coin hoard found sealed below the plaster floor.

During stratum IVA–B, a street and drain were added to the area outside and adjacent to the northeastern half of the synagogue, converting it for use as a public space. Most of the original domestic structures remained in use during the period, and the village reached its maximum size (approximately 5 acres).

Analysis of the faunal evidence from the strata V–IV village reveals that sheep and goat were the largest category of species, followed by cattle and then chicken. The relative percentages of different domesticated livestock indicate that animal production, consumption, and processing occurred at the household level. In addition to the rearing of sheep, goats, and cattle, the economic base of the Byzantine village was diverse, depending mainly on household production of cereals, wine, and a surplus market production of oil.

The synagogue remained in use through the mid-eighth century. Based on the uniform direction of the superstructure's collapse, the destruction of this synagogue is attributed to the earthquake of 749. In the village, several rooms showed signs of reuse by squatters (stratum III) on top of the collapsed rubble.

Mamluk Period (Stratum II). Following a settlement gap of nearly five hundred years, the site was reoccupied during the Mamluk period (thirteenth–fifteenth centuries). The inhabitants constructed a mosque (8.1 × 15.5 m) in the northern third of the ruined synagogue, reusing several of the earlier walls and architectural elements. The southern wall and its niche *(miḥrab)* were added then. The poorly preserved Mamluk village covered the entire 5-acre Byzantine site.

Faunal analysis for the Mamluk period indicates that cattle were far more numerous than previously at Qaṣrin. The more specialized approach taken by the stratum II inhabitants and the relatively higher proportion of cattle suggest participation in a larger market economy.

In the nineteenth century, bedouin resettled the site, repairing ancient structures or constructing new houses reusing the ancient basalt building stones. The stratum I site was in use until 1967.

[*See also* Golan; Mosque; Synagogues; *and the biography of Schumacher.*]

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ANN KILLEBREW

QATABAN, pre-Islamic state in southern Arabia, located in modern Yemen. Adjoining Sheba on the northwest and west, Ausan on the south, and Ḥadhramaut on the east, Qataban, at its zenith, included a territory of mountains and valleys extending from Bab al-Mandeb to the sands of the Ramlat as-Sabʿatayn on the north, and to the western border of the Ḥadhramaut on the east.

Qataban is not mentioned in the Table of Nations (*Gn.* 10), or elsewhere in the Hebrew Bible, probably because it was not an independent kingdom at the time of writing. Qataban was known to Strabo (*Geography* 16.4.2–4, 19, 22–25) as Cattabania and to Pliny the Elder (*Natural History* 6.26.104; 32.153–55, 160–62; 12.30–35, 41) as Gebbanitae (i.e., Qatabanians), in conjunction with international trade in frankincense and myrrh. Both mention Timnaʿ, the Qatabanian capital—spelled "Tamna" by Strabo, and "Thomna" by Pliny the Elder—as an important city on the incense route. Pliny reports that Timnaʿ was 1487.5 (Roman) miles from Gaza.

Exploration and Excavation. Early visitors to Qataban include G. Wyman Bury (1898–1899), who recorded inscriptions at Timnaʿ, its capital; Stewart Perowne (1938), who described Timnaʿ and collected artifacts; and Nigel Groom (1948), a British political officer. Timnaʿ, its cemetery, and Hajar Bin Ḥumeid, a town under the aegis of Timnaʿ, were excavated in 1950 and 1951 by an expedition of the American Foundation for the Study of Man, organized and led by Wendell Phillips, with William Foxwell Albright as archaeological director. During the 1980s, investigations in Qataban were resumed under the direction of J. F. Breton for the French Archaeological Mission in Sanʿa. [*See* Hajar Bin Ḥumeid; Timnaʿ.]

History. Although settlement in Qataban can be traced from the eleventh to tenth centuries BCE, human occupation probably goes back a millennium or so earlier, to at least a Neolithic stage of cultural development. Linguistic evidence seems to indicate that southern Arabia was populated by various waves of migration from the Levant and Mesopotamia. Qataban, Ma'in, and Ḥadhramaut share common language characteristics: the use of the *sh* prefix for the causative verb form and third-person pronouns, corresponding to structure and usage in East Semitic, such as Akkadian. Saba' (Sheba) differs in employing the *h* prefix for causative verbs and third-person pronouns, as is common in Northwest Semitic, such as Canaanite and Hebrew. Early pottery recovered in archaeological excavations appear to support a similar diversity of sources. Immigrants brought many cultural features to southern Arabia from their homelands. With the passage of time and the selective acceptance of indigeneous and foreign ideas and designs, a distinctive South Arabian culture emerged and soon prevailed throughout the region.

As in Sheba, centralized authority prevailed in Qataban. The first royal inscriptions of Hawfi'amm Yuhan'im, son of Sumhu'alay Watar, appear in the late seventh–early sixth centuries BCE, when rulers were known as *mkrb (mukarrib),* a title perhaps meaning "priest-king." Inscriptions of this period are written either left to right, or boustrophedon (the direction of successive lines is right–left and then left–right). At about the end of the fifth century BCE, Qataban freed itself from Saba' (Sheba) and became a dominant power along with Ḥadhramaut and Ma'in. Rulers adopted the title "king," which was used thereafter. Qataban conquered Ma'in in the second century BCE, but later lost the southwestern part of its kingdom to Dhu-Raydan, which had joined with Saba'. Thus, the zenith of Qatabanian power extended from the fifth to the first centuries BCE. In the first century CE Qataban was conquered and Timna' was burned in a great conflagration; soon after, it was incorporated into the kingdom of Ḥadhramaut.

The economy was based on subsistence agriculture, trade in frankincense and myrrh, and transshipping South Asian products. Farmers developed flash-flood irrigation systems that were more ingenious than the constant-flow systems of the ancient Near East. Well irrigation was utilized year round for crops.

Religion seems to have been highly organized, with temples ranging from simple to elaborate. The principal deity of the Qatabanian pantheon was the moon god 'Anbay. This is to be expected among a people heavily involved in the caravan trade, in which the advantages of traveling at night included the precise navigational aid of the night sky. The supremacy of the moon over the sun is represented in a pair of Hellenistic sculptures, each featuring a bronze lion (the sun) and small boy rider (the moon). The boy controls the lion by holding its chain, attached to its collar, in one hand and a small dart in the other, which were found inside the South Gate of Timna' by the American Foundation excavators in 1950.

[*See also* Ḥadhramaut; Marib; *and* Sheba.]

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GUS W. VAN BEEK

QATAR. The State of Qatar occupies a small peninsula roughly 160 km, (99 mi.) long and, at most, 80 km (50 mi.) wide (about 10,437 sq km, or 6,471 sq. mi.), on the east coast of the Arabian Peninsula. It borders the Eastern Province of the Kingdom of Saudi Arabia and the Western Region of the United Arab Emirates (UAE). A generally flat, semidesertic area with a maximum elevation of 120 m above sea level, Qatar's topography ranges from a limestone plateau (Dukhan Heights) opposite Salwa Bay on the southwestern side of the peninsula, through sandy desert throughout most of the interior, to low-lying *sabkha,* or salt flats, along much of the east coast.

The archaeological exploration of Qatar dates back to 1956, when a Danish expedition from the University of Aarhus, under the direction of Peter Vilhelm Glob, discovered several lithic sites and burial mounds there during a brief visit. This was followed by Danish fieldwork, concentrating mainly on lithic sites, between 1957 and 1964, and ultimately by the publication of the first major work on Qatar's prehistory by Holger Kapel (1967). In 1973 a British team, led by Beatrice de Cardi, conducted a season of survey and excavation (di Cardi, 1978). An important French mission under the direction of Jacques Tixier worked in Qatar from 1976 to 1982 (Inizan, 1980; Hardy-Guilbert, 1984), and in 1988 a Japanese team under the direction of Masatoshi A. Konishi, Takeshi Gotoh, and Yoshihako Akashi returned to the site of Umm al-Ma', the scene of some preliminary investigations by the Danish expedition thirty years earlier, to excavate two burial cairns (Konishi, 1989).

Kapel grouped the lithic material discovered by the Danish expedition into four categories: Qatar A, a Middle Paleolithic industry in the Levalloiso-Mousterian tradition; Qatar B, a Mesolithic blade-arrowhead industry; Qatar C, a Late Mesolithic scraper culture; and Qatar D, a Neolithic industry characterized by tanged and barbed arrowheads and fine, pressure-flaked bifaces. The work of the French mission showed conclusively, however, that all of the material assigned to groups A, C, and D is late prehistoric, dating principally to the late fifth and fourth millennia. This is borne out by the presence, on some sites belonging to this group (such as Khor F.P.P., an abbreviation used to designate this particular site at Khor, of which there are many), of imported pottery from Mesopotamia of the Ubaid 3–4 type.

The earliest material found by any of the teams working in Qatar is Kapel's Qatar B (e.g., at Shagra), excavated by the French at site 36 near Acila in western Qatar. This complex includes blade arrowheads that compare closely with material found on Pre-Pottery Neolithic B sites in Syria and Israel; it probably represents the remains of the hunting camps of a mobile population that originated in the Syro-Palestinian desert region and colonized eastern Arabia sometime around 5000 BCE. Pollen analysis suggests that site 36 may have been situated alongside a lake ringed by halophytic plants, reeds, and trees, no doubt a watering hole that attracted game.

The later prehistoric sites, on the other hand, provide evidence for the intensive exploitation of fish (particularly Sparidae) and shellfish (*Turbo,* Veneridae, and oyster). The local population at this time was in contact with Ubaid-period Mesopotamia. This was demonstrated, inter alia, by the presence of small numbers of Ubaid 3–4 sherds in the simple pit burials the French team excavated at Khor F.P.P. At least two other exotic materials, carnelian and obsidian, also reached Qatar at this time as beads.

Qatar's later pre-Islamic past is poorly represented in the archaeological record. An early to mid-second millennium BCE site at Khor excavated by the French mission yielded small numbers of Barbar city II red-ridged sherds, probably originating on Bahrain, as well as a small amount of so-called Wadi Suq pottery with close parallels at Tell Abraq in the UAE. These were found in connection with the stone foundations of several small huts or tents. The British team similarly found red-ridged pottery at the site of Bir Abaruk 3. The presence of large quantities of the shellfish (gastropod) *Drupa concactenata* at Khor led to the suggestion that purple dye may have been produced at the site, but some malacologists dispute this.

Some slight indication of Qatar's occupation during the Hellenistic and/or Parthian period was provided in 1961–1962 by a single sherd found outside of a cairn burial excavated by the Danish team. It belongs to a type of pottery well represented at the major Hellenistic metropolis of Thaj, in northeastern Saudi Arabia. In 1962–1963 the Danish mission carried out excavations at a settlement on Ras Uwainat Ali, just north of Dukhan on the west coast of the peninsula, where more Thaj-type pottery was recovered. The presence of the toponym *Kadara polis* (cf. Qatar) on Claudius Ptolemy's map of Arabia and of the tribal name *Catharrei* in Pliny's *Natural History* (6.32.149) also gives a hint of occupation in Qatar in the Hellenistic/Parthian period. Contemporary, or just slightly later, remains of Parthian or Sasanian date were also discovered at Mezruah, south of Khor, where the Danish expedition uncovered two camel burials, one of which contained a glass vessel. Comparable camel burials are now known in Oman, the UAE, eastern Saudi Arabia, and Yemen.

The Islamic archaeology of Qatar was investigated by Claire Hardy-Guildbert for the Centre Nationale de la Recherche Scientifique between 1977 and 1986, when an inventory of more than two hundred monuments was made. Excavations were also conducted by the French team in 1979 and 1982–1983 at the site of Murwab, a large rural site covering about 125 ha (309 acres) in northeastern Qatar. Material dating to about 800–850 CE was recovered during the course of excavating a small fort, private houses, two mosques, and a cemetery. The most important later Islamic site in Qatar is surely al-Huwaila, which appears on Carsten Niebuhr's map of the Arabian Gulf as Huäle. (Niebuhr was the surveyor on the Danish expedition of 1761–1767 charged with exploring Arabia.) Al-Huwaila was the principal town on Qatar until the nineteenth century. Finally, at various points along the east coast of Qatar, cup marks, small holes, gaming boards, and representations of ships have been carved into the surface of rock outcrops. Although the dating of these features is difficult, it has been suggested that they are the work of pearl divers working off the coast of Qatar in the last several centuries who whiled away their free time playing board games and carving pictures of local seacraft.

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QINNISHRIN (Ar., "eagle's nest"; Chalcis ad Belum), settlement located in North Syria about 28 km (17 mi.) south-southwest of Aleppo (39°46′ N, 41°10′ E). The local name for the place was already attested in the Talmud and has always remained alive among the Arab population; it certainly derives from the widely visible, striking limestone mountain on whose south slope the settlement lies. It was one of many new Syrian cities founded by Seleucus Nicator (Appianus, *Syria* 57; Kai Brodersen, *Appians Abriss der Seleukidengeschichte,* Munich, 1989, p. 156).

The identification of the city is supported by the *Itinerarium Antonini* (Antonine Itinerary), according to which it lies 29 km (18 mi.) south of Beroea (Aleppo) on the way to Emesa (Homs), and by the *Tabula Peutingeriana* (Peutinger map), which on the way from Antioch to Beroea incorrectly gives a distance of 47 km (29 mi.). It is at least clear that Chalcis lay on a geographical crossroads and formed one of the centers in North Syria. Claudius Ptolemaeus (*Geog.* 5.18) mentions it as the chief city of the district of Chalcidike, a region he places between the Chalybonitis and the Apamene, proceeding from east to west. To differentiate it from Chalcis ad Libanum, Pliny (*Nat. Hist.* 5.19) calls the place in question Chalcis ad Belum. According to a new and convincing interpretation, Belus refers to the Qoueiq River and not to the easternmost foothills of the Syrian limestone mountain range opposite the flat, arable land stretching toward the Euphrates River (Balty, 1982). Strabo (16.2.11) mentions only the district of Chalcidike, which he says is inhabited primarily by the Skaenites (tent dwellers), a nomadic population expressly differentiated from the Arabs that displayed only a low standard of civilization. This remark, recorded during the Augustan period, is pertinent because it contrasts with numerous pieces of archaeological evidence from the imperial and early Christian periods. That evidence bears witness to dense settlement of the area and suggests a change from a nomadic mode to a larger and more fixed one, which in turn should have had an effect on the makeup of the population of Chalcis.

The first concrete historical events after the founding of the city are recorded for the year 145 BCE, when Diodotos Tryphon from Apamea, at the beginning of a revolt against Demetrius II, captured Chalcis with the help of the native leader Malchos, or Iamblichos, and then became the first non-Seleucid to ascend the Seleucid throne (Grainger, 1990). [*See* Seleucids.] In 92 CE the coins show the beginning of a new era, providing a basis for the plausible supposition that at this time the city was "freed" by a native dynast (who could have been a successor of Iamblichos or Malchos). Like many other places ruled by local dynasts, it was made completely subject to Roman administration (Grainger, 1990, pp. 132, 162). In 256 CE, Sapor I overran the "limes of Chalcis" (Malalas 295.17), whereupon he completely captured Syria and Antioch. This historical notice provided modern researchers with a name for the section of the limes between the Euphrates and the mountains of Palmyra (Poidebard and Mouterde, 1945). After that, however, Chalcis must have again been considered a secure place because, in 363 CE, the population of the Euphrates fortress Anatha was resettled there (Ammianus Marcellinus 24.1.9). In 529 CE it was again devastated by the Ghassanid leader al-Mundhir (cf. D. Feissel, "Remarques de toponymie syrienne," *Syria* 59 [1982]: 326).

During Justinian's Persian wars, his general, Belisarius, moved south via Chalcis (Procopius, *De Bellis Persicis* 1.18.8; 90.21; 181.3). After being captured by Chosroes, the city had to ransom itself with 200 pounds of gold (Procopius, *De Bellis Persicis* 1.205.5). Furthermore, Procopius reports in two places that after the withdrawal of the Persians, the fortifications of Chalcis were renewed under Justinian in 550 and were also supplemented with an outwork. If there is no oversight on the part of the author here, perhaps both Chalcis ad Libanum and Chalcis ad Belum are meant (Procopius, *De Aedificiis* 2.11.1.8). An inscription from Qinnishrin preserved in situ as a door lintel (Jalabert and Mouterde, 1939, no. 348) further specifies that the city wall was built by Isidorus of Miletus, a nephew of Justinian's chief architect of the same name (cf. Procopius, *De Aedificiis* 1.1.24). After the Battle of the Yarmuk in 636, the city was finally conquered by Abu Ubayda in the course of his conquest of North Syria. Furthermore, in the Umayyad period the city possessed a military garrison and remained the chief city of the djund Qinnishrin. After being destroyed a number of times, in the eleventh century it finally lost its significance to Aleppo (Elisséeff, 1986).

The ancient settlement, like the modern one, lay on a plain between two mountains. The Nebi Is, a foothill of the northern limestone mountain range, lies to the northwest; to the south there is a fortified tell. To the north, the Qoueiq River forms a natural boundary. The remains of the settlement that are visible on the surface have been mapped and described (Monceaux and Brossé, 1925; Jean Lauffray in Poidebard and Mouterde, 1945, p. 7, plan 1). No excavations have been carried out. Accordingly, it can only be reasonably assumed that the pre-Greek settlement lay on the eastern tell. This still shows an approximately trapezoidal fortification wall along the flanks of the hill and can be designated as the upper city. Its wall is certainly older than the walling off of the lower city that can be ascribed to Isidorus of Miletus; however, it would be difficult to provide a more precise date. Only a number of unconnected traces of foundations and ruins have been preserved of the city's architecture. The massiveness of the foundations and the use of columns of Egyptian granite show that presentation architecture was a element here. The large quarries on the

south slope of the Nebi Is that extend up to the settlement provided abundant construction material for the building activity in Chalcis. Numerous hypogea, with arcosolia arranged in a cross-shaped pattern, were situated here. Some of the burial chambers are decorated with reliefs.

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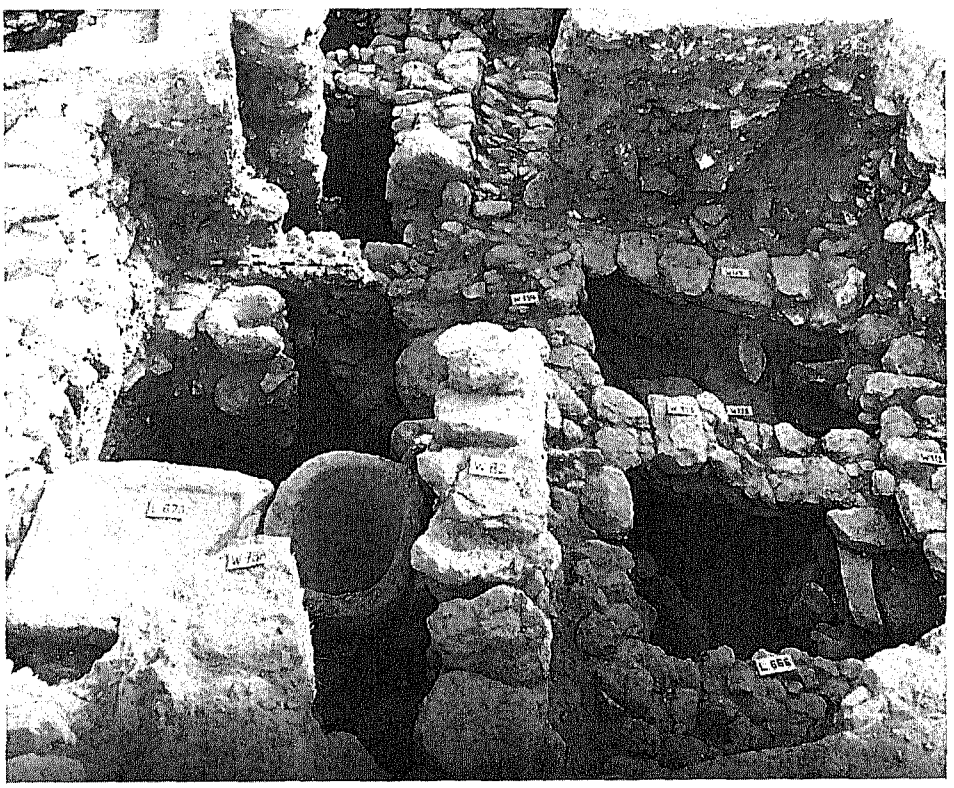
RÜDIGER GOGRÄFE

Translated from German by Susan I. Schiedel

QIRI, TEL, (Heb., Hazorea) village site situated on the eastern end of a spur of the Carmel ridge that slopes steeply into Naḥal Shofet, near the site's main water supply (map reference 1611 × 2278). Tel Qiri is approximately 2 km (1.2 mi.) southeast of Tel Yoqneʿam, the major site in the vicinity, of which it was undoubtedly a satellite. The pottery, coins, tombs, and other remains noted in various surveys here range in date from the Neolithic to the Early Arab period, but no historical identification has ever been suggested. A considerable part of the site has been damaged by modern building activity. When rescue excavations were begun in 1975, less than half of its original area (estimated at approximately 2.5 acres) was intact. Today, the entire site is covered by modern houses. Tel Qiri was excavated between 1975 and 1978 as part of the Yoqneʿam Regional Project, under the direction of Amnon Ben-Tor, on behalf of the Institute of Archaeology of the Hebrew University of Jerusalem.

The main period of occupation at the site was in the Iron Age, of which an accumulation of about 4 m was noted. Remains of earlier as well as later periods were also encountered, some represented only by isolated small finds such as coins and sherds. Stratum numbers were assigned only to periods for which there are architectural remains. The uppermost remains of the later periods (strata I–IV) were severely damaged across the site by recent building activity, so that the Ottoman, Crusader, and Umayyad periods are represented only by stray finds. A few isolated walls of what were apparently private houses date to the Byzantine–Early Roman periods. Remnants of an impressive public building,



QIRI, TEL. *Israelite houses and agricultural installations.* Ninth–eighth century BCE. (Courtesy A. Ben-Tor)

with a large paved courtyard, date to the Hellenistic period. A few walls, which are not part of a coherent plan, and some twenty rock-cut tombs in the higher, western part of the site, are dated to the Persian period. An anthropological study of the bones indicates that the interred population was not local but is related to types common in Iran. Some of the tombs were reused in the Roman period.

Five strata of the Iron Age (strata V–IX), divided into twelve phases, were identified that form a continuous sequence. Most of the buildings remain in use during several phases. A significant change in the plan of buildings is noticeable only once in the sequence: in the transition from stratum VIII to VII—that is, from Iron I to Early Iron II. This change may reflect the arrival of the Israelites: neighboring Yoqneʿam was thoroughly destroyed at that time, whereas at Tel Qiri the transition seems to have occurred peacefully. The ceramic repertoire indicates an occupation beginning in the twelfth century BCE (stratum IX), including Philistine ware and collar-rim storejars, down to the eighth century (stratum V), characterized by an Iron IIB assemblage. The agricultural nature of the site is clearly indicated by the large number of silos scattered throughout and by a large oil press. Agricultural remains include mainly wheat, peas, vetch, and olive pits, while sheep and goats constitute about 80 percent of the faunal remains. Of particular interest is a building of regular plan in stratum VIII, in which a fine assemblage of clay vessels, cultic in nature, and a few dozen right foreleg bones of goats and sheep, undoubtedly remains of the right thigh offerings (*Lv.* 7:32–33), were found.

Two strata (X–XI) are associated with earlier periods. Walls of residential structures, found in a deep section cut into the eastern slope of the site, belong to the Middle Bronze Age. Sherds from the Early Bronze Age, including gray-burnished and band-slip wares, as well as Chalcolithic churn and cornet fragments, indicate occupation during those periods. A few narrow stone walls, a stone-lined silo, and a large assemblage of stone tools and sherds, including dark-faced burnished ware, probably represent the first settlement at Tel Qiri and are attributed to the Late Neolithic period (second half of the fifth millennium BCE).

QIRI, TEL. *Cultic vessel assemblage.* From stratum VIII, eleventh century BCE. (Courtesy A. Ben-Tor)

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AMNON BEN-TOR

QITAR, EL- (Til-Abnu in Hittite hieroglyphs), Late Bronze Age mountain fortress, located on the right bank of the Euphrates River in Syria, about 60 km (37 mi.) south of Carchemish, at a narrows from which traffic along the river could be controlled and where the Tishreen dam is under construction. Excavations were conducted at el-Qitar in 1976 by the Milwaukee Public Museum under the direction of Rudolph Dornemann; from 1982 to 1985 by Thomas L. McClellan for the University of Melbourne; and in 1986–1987 by McClellan for the University of Chicago. Prior to excavation, large portions of the settlement's layout were visible on top of the mountain and on a lower eastern spur; their plans were recorded, utilizing kite photography and photogrammetry.

Ceramics and radiocarbon dates indicate that the main period of occupation was in the fifteenth century BCE, possibly under the loose suzerainty of the Mitanni. Reoccupation during the fourteenth–thirteenth centuries BCE of this military position was probably under Hittite direction. Earlier occupation from the Middle Bronze Age was largely masked by subsequent construction, but portions were excavated of what may have been an official residence, the Orthostat Building (its rooms were lined with limestone orthostats). Traces of Early Bronze IV material (third millennium) were also recovered within the lower settlement. During the Hellenistic period, four tumuli were constructed on the northern part of the mountaintop and graves were located nearby. A stone circle grave, probably from the Roman period, was found near the water's edge, in the lower settlement.

In the Late Bronze Age (and possibly earlier) the upper and lower settlements were connected by a rock-cut stairway. A fortification wall could be traced along the western and southern sides of the upper settlement that connected to a North Tower, the Lower West Gate, and a South Tower. Streets divide the settlement into several residential blocks.

Triangular in layout, the lower settlement was on a spur that jutted into the river. The mountain's steep slope protected the base of the triangle; the two other sides were defended by fortification walls, the northeastern portion utilizing the natural cliff line along the river. The settlement was divided into blocks of houses; some buildings were constructed against the fortification walls and opened onto streets that ran parallel to the walls and led to the River Gate.

The LB fortifications consisted of curtain walls, made of large, irregularly cut limestone blocks, as were towers and two city gates. Both the River Gate and the Lower West Gate were designed with two sets of shallow piers of limestone orthostats. The absence of public buildings is notable, although one structure (building 10) had two rooms that contained benches and platforms. Although originally identified as a temple or shrine, this interpretation is called into question by the many domestic houses nearby at Munbaqa with similar installations.

Objects from the Late Bronze Age included a Middle Assyrian cuneiform tablet with a Syro-Hittite sealing on it whose hieroglyphs may identify the site as Til-Abnu. It is an adoption contract in which more than twenty personal names are Hurrian. A silver cache weighing 2.5 kg contained bent and broken pins, medallions, and blanks.

Although neither the domestic architecture nor the artifacts hint at the site's military function, its mountain setting identifies it as a fortress. Among the faunal remains many species were present: seven domesticated species (including numbers of Equidae—the horse *Equus caballus*, donkey, mule, and wild half-donkey), nine wild mammals (including beaver, fox, wild boar, brown bear, and Indian elephant), and sixteen bird species. This large number of hunted animals, compared to other sites on the Middle Euphrates, may indicate the inhabitants' privileged or military status.

[*See also* Euphrates Dams, Survey of.]

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THOMAS L. MCCLELLAN

QITMIT, ḤORVAT, site located along the eastern margin of a broad valley some 10 km (6 mi.) south of Tel Arad (31°11′00″ N, 35°03′10″ E; map reference 1564 × 0660) in Israel. The site is on a long, flat, stone-covered hilltop whose slopes are stepped flint cliffs. Naḥal Qitmit (Wadi Qatamat), cuts the hilltop off from the surrounding range of hills.

Ḥorvat Qitmit lies within a radius of approximately 5–10 km (3–6 mi.) of other contemporary sites—Tel ʿAroʿer, Tel Masos, Tel ʿIra, Tel Malḥata, Tel Arad, Ḥorvat Ṭov, Ḥorvat ʿUza, and Ḥorvat Radum. It is located between two major ancient roads: one that leads to the "Land of Edom" to the east and one to the Negev highlands to the southwest, within sight of Tel ʿIra, Tel Malḥata, and Tel Arad. No permanent water sources are known to be within its immediate vicinity, but wells near Tel Malḥata probably served as a water supply for Qitmit in antiquity. Ḥorvat Qitmit is a one-period site from the end of the seventh century BCE, erected directly on the limestone bedrock. The site covers an area of about 650 sq m. It consists of two complexes on its west side: A and B; each comprises a number of rooms, a courtyard with various installations, and two enclosures (nos. 114 and 60). Complex A consists of one structure with three rooms, a *bāmâ* ("platform"), bounded on three sides by a stone wall (hereafter referred to as the *bāmâ* enclosure); and a stone basin and an altar, also apparently enclosed by a stone wall (hereafter referred to as the altar enclosure).

The structure is rectangular and measures 10.5 × 5 m, with each room opening to the south for its entire width. Podiumlike wall segments, whose upper courses consist of large, flat stones, were erected perpendicular to the entrances in all three rooms. It is fairly clear, however, that these podiumlike elements served no structural function. Rather, they should be seen as elements of the room's furniture. They may have served as a table on which rituals were performed in the room's entrance spaces.

The platform, or *bāmâ,* measures 1.25 × 1 m. It was built of medium-sized fieldstones directly on the bedrock and is preserved to a height of about 30 cm. It was enclosed on three sides—south, east, and west—by straight walls; its northern side, which faces the rooms, was left open. Crevices and hollows in the rock were filled with pebbles and the entire surface completely covered with a heavy coat of plaster, creating a table with a smooth surface for placing cult vessels around the *bāmâ.* The altar enclosure (locus 24) is located south of the rooms, near the eastern wall of the *bāmâ* enclosure, on a smooth rock surface that slopes to the southeast. It comprises a stone altar, a basin, and a pit enclosed by an elliptical or circular wall.

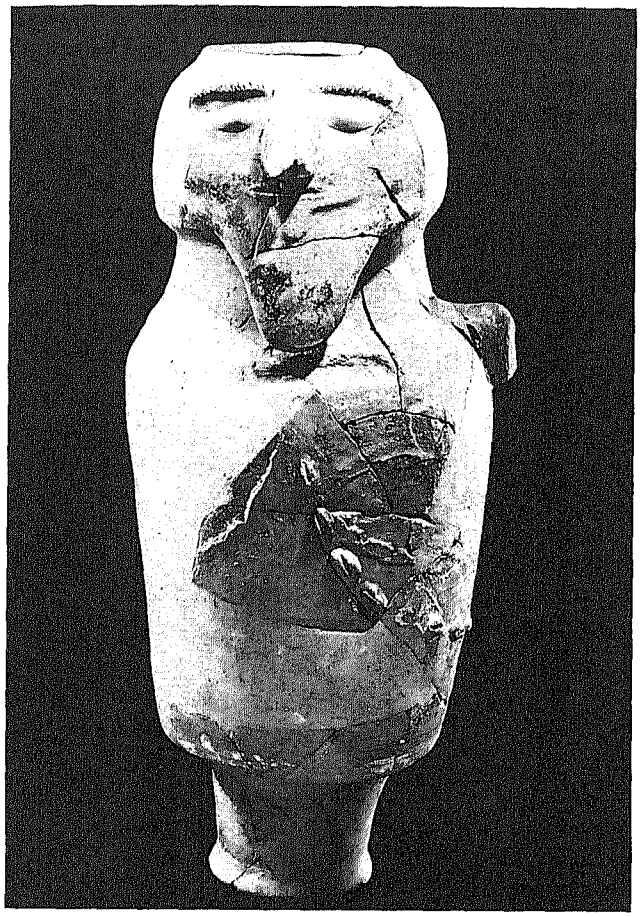
Complex B was erected on level ground about 15 m north of complex A. Enclosed by a massive wall (1.20 m thick), it contains a number of rooms and an open courtyard. Near the southeast corner of room 108, a rectangular flintstone was found in situ, probably a *maṣṣēbâ* (a ritual standing stone, 0.8 × 0.6 × 0.3 m). An area (1.3 × 1.1 m) in front of the courtyard was paved with small flintstones slabs framed by rectangular stones.

Most of the finds are from complex A. They were scattered over the enclosure area, concentrated either in groups on the rock surface or in the shallow earth layer. The largest quantity is from the *bāmâ* enclosure. The finds include various clay figurines, different types of ceramic cult stands, pottery vessels, bronze and stone artifacts, and seashells.

The pottery from the site can be divided into three groups: domestic vessels, Edomite-type vessels, and vessels widely found at sites in Judah and Transjordan. Five potsherds bear fragmentary incised inscriptions (four from complex B and one from complex A). One consists of only a single line, too fragmentary to be interpreted, with the exception of the letters *qws* in the middle, the name of the principal Edomite god, Qos. The same name is found in another inscription on a rim fragments of a krater and in a bronze stamp from complex A.

The largest accumulation of iconographic finds was ex-

QITMIT, ḤORVAT. Figure 1. *Three-horned goddess.* Height, 13 cm. (Photograph by Avraham Hay; courtesy I. Beit-Arieh)



QITMIT, ḤORVAT. Figure 2. *Anthropomorphic stand.* Height, 60 cm. (Photograph by Avraham Hay; courtesy I. Beit-Arieh)

posed in the *bāmâ* enclosure. In addition to everyday pottery vessels, more than one hundred ceramic figurines, statues, reliefs, stands, and cultic vessels were discovered in this area. The figurines depict humans and animals (sheep, cattle, and birds). All the large animal figurines are hollow; some were punctured with small holes both on their sides and underneath their tail. Of special interest are the head of a three-horned goddess (see figure 1), a sphinx with a bearded human head, the body of an animal (perhaps a lion) that has wings spread loftily upward, and assorted anthropomorphic stands (see figure 2).

Cultic vessels include chalices covered with pendant pomegranates as surface decoration; fragments of a square, windowed stand; and perforated incense bowls. The pottery figurines and cultic stands are tentatively interpreted as closely related to the eastern Mediterranean traditions embodied in Phoenician culture.

The shrine at Qitmit in the Judean Desert is indicative of relations between Edom and Judah at the end of the period of the Judean kingdom. It may be construed as evidence of Edomite domination of several regions in Judah at the end of the First Temple period or a few years later. The biblical prophets' wrathful denunciations of Edom, along with expressed sentiments for revenge, reflect a historical reality of dire conflict between the two kingdoms that may have had many causes (*Jos.* 34; 63:1–6; *Jer.* 49:7–22; *Ez.* 25:12–14, 35:1–6; *Jl.* 4:19; *Am.* 1:11–12). The most plausible explanation of this enmity may be Edom's attempt to exploit the weakness of the Judean kingdom at the very time that the latter was engaged in a life-and-death struggle against the Babylonian army.

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ITZHAQ BEIT-ARIEH

QOM, KHIRBET EL-, small hilltop site 20 km (12 mi.) west of Hebron at the border of the Shephelah and the Judean foothills (map reference 1465 × 1045). It is probably to be identified with the Makkedah of *Joshua* 10.

Khirbet el-Qom was discovered after the 1967 war by the Archaeological Survey of Israel and then excavated by William G. Dever in salvage campaigns in 1967–1968, sponsored by the Hebrew Union College in Jerusalem. The principal find was a recently robbed Iron Age cemetery on the slopes below the modern Arab village. In addition to dozens of pieces of pottery dated to the ninth–seventh century BCE, there were recovered Hebrew shekel-weights; an inscribed decanter reading "(Belonging to) Yaḥmol"; and a bowl reading "El" (or "God"). Several of the eighth-century BCE tombs recleared and planned were typical Iron Age bench-tombs. Tomb I had an inscription to the left of the doorway into one chamber reading "Belonging to ʿOphai Ben-Nethanyahu; this is his tomb-chamber." Over the doorway the lintel read "Belonging to ʿUzza Bat-Nethanyahu." A longer inscription from tomb III read:

> Uriyahu the Governor (or singer) wrote it.
> May Uriyahu be blessed by Yahweh,
> For from his enemies he has been saved by his a/Asherah.

The reference to "his (i.e., Yahweh's) a/Asherah" is problematic, but it is now paralleled almost exactly by eighth-century BCE inscriptions from the Judean fort-sanctuary at Kuntillet ʿAjrud in the eastern Sinai. [*See* Kuntillet ʿAjrud.] Some scholars prefer to see in "asherah" merely a symbol of the old Canaanite Mother Goddess, such as the treelike effigies condemned in many passages in the Hebrew Bible.

Others see evidence here for the continuation of the cult of the Asherah, "Asherah" being either a hypostatization of some aspect of Yahweh, or perhaps his consort.

In 1971 John S. Holladay, James F. Strange, and Lawrence T. Geraty conducted soundings in the modern village. These were scattered Early Bronze Age remains, but the principal settlement was that of the tenth–early sixth century BCE. Part of the cyclopean Iron Age wall is still visible, and remains of a two-entryway gate were brought to light.

The Babylonian destruction evidently ended the Iron Age site, but several domestic houses of the fourth–third century BCE were found, reusing earlier dwellings. In some of the rooms were ostraca, six in Aramaic, one in Greek, and one bilingual text of nine lines. The latter records a transaction between a certain "Qos-yada" and a Greek named "Nikeratos," noting the payment of 32 drachmas. The date given is the 12th of Tammuz, year 6, no doubt of Ptolemy II Philadelphus, or 277 BCE.

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WILLIAM G. DEVER

QUADRANT PLAN. The standard method for laying out a large site is the grid plan, according to which the site is configured like a checkerboard in 5-meter squares and each square is given an identifying control number. Although a large site can be effectively controlled in this way, the grid plan is overly complex for digging a small area, which does not require numerous squares.

At small sites, especially round ones, therefore, the quadrant plan is utilized. It involves dividing the site into four areas, or sections, by drawing 90 degree intersecting lines through its center, which produces a quadrant, each quarter of which is then numbered. When opposite quadrants are dug, the balks of their axes reveal the full stratigraphy of the area. Thus, it is not necessary to dig all four quadrants: four balks have been exposed, providing the stratigraphical history of the entire area.

An area is divided into quadrants following a full site survey. The survey will determine where the most productive excavation areas are likely to be found and where the first trenches should be dug. The use of subsurface interface radar, magnetometers, and aerial infrared photography enhances the surface survey by locating stone structures beneath the surface. In countries whose entire landscape has been plotted onto a national grid and for which elevation benchmarks exist, site surveys correlate with the grid and utilize quadrant plans within its framework.

[*See also* Excavation Strategy; Grid Plan; *and* Site Survey.]

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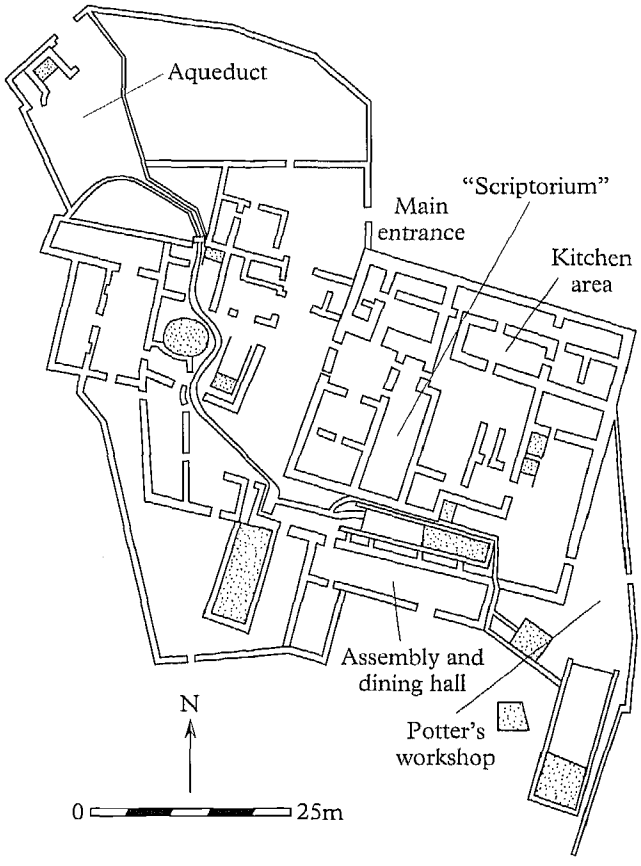
JOHN MCRAY

QUMRAN, site located near the northwestern shore of the Dead Sea, 12 km (7 mi.) south of Jericho, some 32 km (20 mi.) north of 'Ein-Gedi, and 21 km (13 mi.) east of Jerusalem (31°44′18″ N, 35°27′30″ E; map reference 193 × 127). The ruins of Qumran stand on a marl terrace, 338 m below sea level, at the foot of cliffs edging the Judean Desert, whose caves yielded part of the remarkable manuscripts known as the Dead Sea Scrolls.

The site was visited in the nineteenth century by Félicien de Saulcy, Baron Rey, Claude R. Conder and Horatio Herbert Kitchener, and Charles Clermont-Ganneau, when it was known as Khirbet Yahud (Ar., "ruins of the Jew") or Khirbet Qumran ("the grayish spot," according to E. H. Palmer, *The Survey of Western Palestine: Arabic and English Name Lists,* London, 1881, folio 18, p. 345). Wadi Qumran, which is the lower course of the Kidron Valley runs along its southern edge. John M. Allegro (*The Copper Scroll from Qumran,* Transactions Glasgow University Oriental Society, 1959–1960, p. 64) proposed a synonymy between *Qimrôn,* which is not attested textually, and the Kippah torrent mentioned in the Copper Scroll from nearby Cave 3, along which there is a place called Sekaka. Other proposals for the ancient name of the khirbeh ("ruins") are de Saulcy's Gomorrha, Martin Noth's Ir ha-Melah (Heb., "salt city," from *Jos.* 15:62, for which Pessah Bar Adon proposes 'Ein Ghuweir: "Another Settlement of the Judean Desert Sect, *BASOR* 227 [1977]: 22–23); Allegro's other synonym, Meṣilla (*Zec.* 1:1, 8), which may be Josephus's Bemeselis (*War,* 1.4.6); and, for its last period of occupation, Meṣad Ḥasidin (Heb., "Fortress of the Hasidim/the Pious"), known from document 45 from the nearby Wadi Murabba'at caves as having played a role during the Second Jewish War (134–135 CE; J. T. Milik, *Discoveries in the Judaean Desert,* vol. 2, 1961, p. 163).



QUMRAN. *Plan of the site.* (Courtesy R. Donceel)

Except for the tomb cleared in 1873 by Clermont-Ganneau, the Qumran ruins were first excavated in November-December 1951 by a small team led by Fr. Roland Guérin de Vaux, director of the École Biblique et Archéologique Française (EBAF) in Jerusalem, and G. Lankester Harding, for the Department of Antiquities of Jordan, with technical assistance (restoration and photography) from the Palestine Archaeological Museum of Jerusalem (now the Rockefeller Museum). Five campaigns followed regularly between 1953 and 1958 under de Vaux's direction. (Work was suspended in 1957 because of the Suez conflict.) The neighboring site of 'Ain Feshkha was also uncovered, evidencing the same historical periods, but with an additional occupation in the Byzantine period. The caves were further explored between and during the seasons in the field.

Between December 1959 and April 1960, a year after the Franco-Jordanian excavations, Allegro undertook deep soundings at a series of Qumran loci (at twenty-nine, mostly peripheral, locations), causing damage under certain walls. Extensive restoration was subsequently carried out by Jordan and then Israel, during which other discoveries were made ("Chronique archéologique," *Revue Biblique* 73 [1966]: 147). Solomon H. Steckoll excavated ten tombs in the main cemetery, which the de Vaux team had only partially explored (principally Joseph T. Milik and Henri de Contenson). There are traces of unofficial digging there in recent years.

A comparison of the photographs taken in the 1950s and 1980s shows the extent of the damage caused by excavation, erosion, and tourism—many installations and some loci having entirely disappeared. De Vaux proposed the following chronology of the site's occupational phases:

1. *Period Ia.* The Iron Age fortress was reoccupied at the end of the second century BCE, in the reign of Alexander Jannaeus or even of his predecessor, John Hyrcanus (134–104 BCE).

2. *Period Ib.* The site's greatest expansion and wealth took place prior to the earthquake in spring 31 BCE that caused its abandonment for most of the reign of Herod the Great (37–4 BCE).

3. *Period II.* Reoccupation took place between 4 and 1 BCE (see de Vaux, 1973, p. 36), a date de Vaux determined from a hoard of 561 silver coins discovered in locus 120. All are from the mint of Tyre, mostly tetradrachmae but also didrachmae. The earliest may date back to the Seleucid kings, but the majority comes from the autonomous mint of Tyre; the latest date is 118 of the Tyrene era, that is, 9/8 BCE. The hoard, in three different pots, must have been hidden between then and 1 BCE/1 CE. De Vaux suggested that this was during the site's period of temporary abandonment, after which life continued along the same lines it had prior to the earthquake.

4. *Period III.* The locality was taken by a Roman detachment during the First Jewish War either at the end of June 68 CE, or immediately afterward. Some of the ruins were restored by a small garrison that may have been stationed there for about ten years, until the entire region had been completely pacified (by the time of the fall of Masada, in 73 CE). The site was then abandoned for about half a century. Traces of a wall and some coins signify that what was left of the buildings knew a brief reoccupation, related to the Second Jewish War.

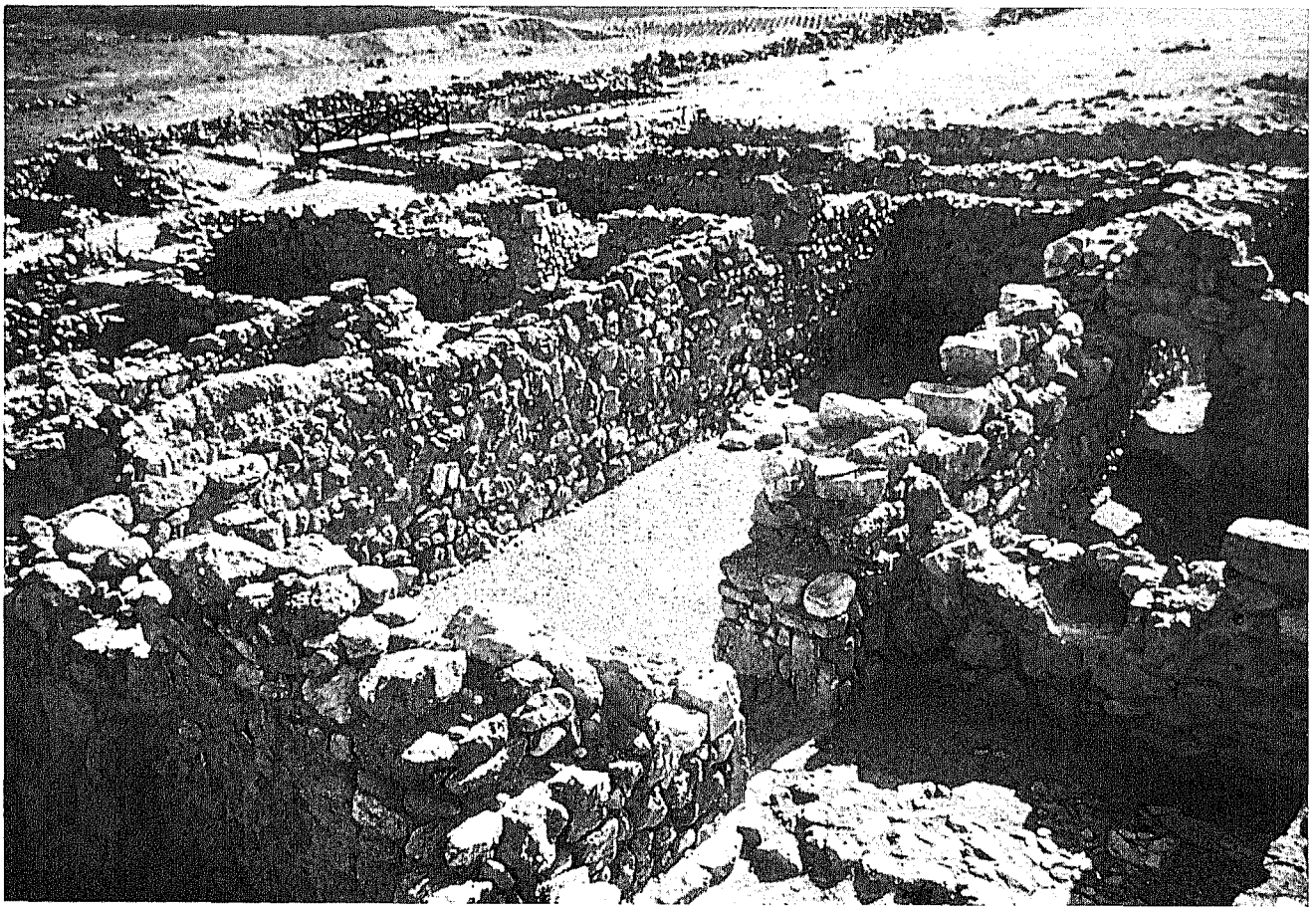
De Vaux's outline has been contested on some significant points. Milik, one of his field collaborators, questions whether the site had been completely abandoned during Herod's reign, as well as the chronology of the successive Ib and II periods of locus 84/89 (the "crockery" room found near to what de Vaux interpreted as a refectory, great quantities of which are intact; cf. Milik, 1959, p. 55, and de Vaux's response, 1973, pp. 11–12). Ernest M. Laperrousaz (1976) disputes the use de Vaux made of the coins, especially of the silver ones, to date the Hellenistic occupation (cf., e.g., Philip R. Davies, "How Not to Do Archaeology—The Story of Qumran," *Biblical Archaeologist* 51.4 [1988]: 204; Davies also favors lower dates). Laperrousaz sees the site first abandoned at about the time of Pompey's conquest of Palestine, in relation to the 67–63 BCE Jewish internecine war; conse-

quently, the earthquake, for which de Vaux's evidence has frequently been disputed, would have taken place while the site was abandoned. De Vaux's distinction between phases Ia and Ib, which he admits is not clear ("Fouilles de Khirbet Qumrân," *Revue Biblique* 63 [1956]: 551), is rejected by many archaeologists.

The building techniques used at Qumran are strikingly basic. Walls are of local rough-hewn stone and dry joints, but mortar and stucco were used generously for their faces. Most of the internal fittings—seats, benches, cupboards, raised platforms—and a few walls are of unbaked mud brick, carefully plastered over. Most door and window frames, of local soft coral limestone, were finished with care, while column bases and drums carry traces of a stucco revetment. De Vaux retraced the evolution of the architecture at Qumran from an Iron Age rectangle to a wider and more complex settlement; the tower, which still dominates the center of its north flank, was built in period Ib and restored after the earthquake according to him. The hypothesis that it was there from the start was made by a team member, R. F. M. du Buit (*Le Monde de la Bible* 4 [1978]: 22).

The site's most striking feature is its important water system. The volume of water that can be collected per year has been estimated at some 100,000 liters (Laperrousaz, 1976, p. 107). This water is caught in natural basins in the Wadi Qumran torrent situated upstream and is brought to the site by an aqueduct that is in all ways comparable to those of neighboring Hasmonean fortresses and residences. Passing through decantation basins, it is then distributed among the different cisterns. Except for one round cistern (locus 110), that appears to have been built in the Iron Age, all are rectangular, though of different sizes. There are two small, neatly finished reservoirs that the excavators maintain are baths—ritual or not (locus 138, northwest, near one of the entrances, and locus 68, southeast; cf. de Vaux, 1973, p. 132). The annual local rainfall is less than 100 mm in ten to twenty days, and Qumran has no springs. About 3 km south, and on even lower ground, 'Ain Feshkha enjoys the water of several somewhat briny springs.

The buildings, at ground level, mainly consist of what the excavators describe as collective facilities (e.g., a refectory, places to wash, workshops, ovens, mills, stables, and lavatories). De Vaux interpreted the plastered furniture from the upper floor of locus 30 as proving the existence of a scrip-



QUMRAN. *The so-called "Scriptorium."* (Courtesy ASOR Archives)

torium, an installation in which texts were copied. The cemetery is notable for its tombs' orderly distribution although their north-south, rather than east-west, disposition is not traditional for a Jewish population.

The precise chronological framework de Vaux proposed and the abundant archaeological material from the site have become a chronological point of reference for archaeologists working on this period of Near Eastern history (cf. Paul W. Lapp, *Palestinian Ceramic Chronology, 200 B.C.–A.D. 70*, New Haven, 1961; p. 12). De Vaux's finds included numerous very fragmentary items not selected for the inventory and the publication but that were kept and marked with their date and place of discovery. Except for the few dozen artifacts used to illustrate his preliminary reports and his only, relatively short, synthesis (see *Archaeology and the Dead Sea Scrolls*, 1973), the finds were left unpublished, much as those of the more recent excavations at the site. The EBAF launched the final publication of all the finds on the occasion of its centenary (Donceel and Donceel-Voûte, 1994).

At the time of the excavations, the pottery, including the lamps, together with the material from the caves, appeared to be unique when compared with same-period sites (cf. de Vaux, 1973, pp. 17–18, in which he is slightly more reserved on this point than in the French edition, pp. 13–14). However, Lapp (1961) had already shown that certain Qumran I and II pottery shapes were akin to other Hellenistic and Eastern Terra Sigillata wares. The initial publications say little about other categories of objects that might be significant for the history and chronology of Qumran, such as the stone- and glassware, and the metal objects, mainly tools, which offer insights into everyday activities. More than twelve hundred coins were recovered from all over the site, including several hoards. Organic material—wood, reeds, and palm leaves—was found, but no scrolls were discovered in or among the buildings.

Endeavoring to explain the topographical relationship between the site and the nearby scroll caves, and struck by characteristics that, according to him, only communal life could explain, de Vaux proposed an occupation of the buildings in periods I and II by a monastic community of Essene inspiration ("Fouilles de Khirbet Qumrân," *Revue Biblique* 60 [1953]: 104). He was encouraged by the contents of certain Qumran cave scrolls and the indication of a dwelling place of the "Essene" sect, localized as having 'Ein-Gedi "underneath them," by Pliny the Elder (*Nat. Hist.*, 5.17.4). De Vaux and other supporters of a Qumrano-Essenic theory have been accused of forcing the archaeological evidence from Qumran, and from other nearby sites, into the frame of this theory (see Norman Golb, "Who Hid the Dead Sea Scrolls?" *Biblical Archaeologist* 48.2 [1985]: 68–82).

With the increase in comparative archaeological material for the region of ancient Syria-Palestine, other hypotheses have been formulated. Scholars such as Golb, for example, have underlined the military character of the site's defensive features; as early as 1914 Gustaf Dalman had suggested that Qumran had been a Roman fort (*Palästina Jahrbuch* 10 [1914]: 9). Even though the tower is sturdy, especially in its last phase, the circumference of the site would not be easily defended; the long east wall, to which de Vaux also attributed a ritual function (separating the worlds of the living and the dead in the cemetery on the east), encloses the large southern terrace that is characteristic of the site; it may have been a cultivated area because it received water from the central system and its outlets, as from cistern 71, at the southern end of the buildings. This may have served to irrigate a vineyard—as Robert Donceel was able, in 1988, to identify a wine-press in the isolated southern locus 75—and/or other plantations, in relation with regional products, such as palm dates, or balsam, well known from classical authors. Indeed, Qumran pottery counts a good number of a type of narrow-necked, round-bellied juglets, one of which was found intact in a nearby cave still containing a vegetable extract, which is akin to the famous essences retrieved from such shrubs as the Balsamodendron Opobalsamon that were among the area's main economic assets in antiquity (J. Patrich and B. Arubas, "A Juglet Containing Balsam Oil(?) from a Cave near Qumran," *Israel Exploration Journal* 39 [1989]: 43–59).

The finds at the site include quantities of soft limestone objects: chip-cut mugs, small jugs, deep dishes and bowls, as well as lathe-turned vessels such as flat-based semi-globular goblets and large pedestalled urns, often finely ornamented with a fluted band. Lamps show a diversity of clays, production methods, and shapes. The few "cornucopia" lamps, the series of current, small, "Herodian" anvil nozzled types, and an unusual, large and long-nozzled model are wheel turned. Molded lamps can be delphiniformic, or carry simple radiating designs or richer vegetable motifs. The blown glassware is quite abundant and presents some rare colors and mold-blown pieces, the shapes being mostly of small bowls, balsamaria, and bottles. The pottery includes some fine wares, such as "painted Jerusalem" plates, Hellenistic black ware, Western and Eastern A Terra Sigillata, beside vast quantities of common wares for the table, cooking, and storage, among the more remarkable of which are the cream ware with combed and punched decoration, the large lopsided flasks, and the delicate shapes of cups, bowls, and rimmed plates.

The archaeological remains at Qumran included at least three stone staircases to upper floors and comprised both a complex of industrial installations—workshops, various shallow basins, tall plastered earthen vats, different kilns and heating installations—and a residential core that includes the multistoried tower and an upstairs dining room (de Vaux's scriptorium; see P. Donceel-Voûte, "'Coenaculum'—la salle à manger à l'étage du locus 30 à Khirbet Qumrân sur la Mer Morte," *Res Orientales* 4 [1992]: 61–84). These workshops, the few defensive structures, and the number of coins found

at the site suggest economic activities whose yield was great. Roads and far-reaching defensive systems had been built in the area well before the common era, as part of the exploitation of salt and bitumen from the Dead Sea, while all of the Jericho region, which may have included Qumran and 'Ain Feshkha, traditionally produced and traded precious vegetable essences and the various yields of its extensive palm groves.

The date of the necropolis is still considered uncertain. Part of the excavated tombs were found in one of the fill levels, maybe the same as those, in the northern part of the site, which the excavators described as having an inverted stratigraphy (sounding A). In 1956 grave 26 was found dug into earth that contained a Herodian lamp, of the type common in de Vaux's period II of the site (ending in 68 BCE). For other graves, stone blocks had been reused to build the tomb's side chamber. However, Carbon-14 datings confirmed the antiquity of the necropolis. It included more than eleven hundred burials, remarkably poor and deep, and regularly laid out, which suggests a strong organization for quite an important human group (a religious community, according to de Vaux, or possibly an abundant labor force, eventually "forced," with distinct funerary practices).

Certain rooms offer evidence for occupational periods more numerous than those described in print by the excavators (e.g., the case of locus 4 "council hall") or for a denser later occupation (probably second century CE) of the settlement (e.g., loci 32 and 36).

[*See also* Essenes; Dead Sea Scrolls; *and the biographies of Harding and Vaux.*]

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ROBERT DONCEEL

QURAYYAH, site located in northwest Arabia (28°47′ N, 36°00′ E), about 63 km (39 mi.) northwest of Tabuk. It lies near the main pilgrim and trade route through the peninsula connecting Yemen with the Levant. Qurayyah is situated in a region of broken sandstone hills and gravel plains which, though barren throughout most of the year, receives flash floods in the spring from the higher granite mountains to the west. It was mentioned by nineteenth-century European travelers such as Augustus Wallin, Richard Burton, and Charles M. Doughty but not visited and described until 1906, by Bernard Moritz. The next European visitor seems to have been St. John Philby in 1951, who left a reasonably accurate account of the visible remains. The first real archaeological exploration was not undertaken until 1968, however, when a team from the University of London made a rapid survey of the site and its surroundings, described by Peter J. Parr et al. ("Preliminary Survey in N. W. Arabia, 1968," *Bulletin of the Institute of Archaeology, University of London* 8–9 [1970]: 219–241, pls. 21–42). Archaeologists from the Saudi Arabian Antiquities Department have made a few minor soundings at the site, but it remains poorly explored and recorded. Any account of its historical and cul-

tural significance is, thus, necessarily tentative and speculative.

Qurayyah's ruins comprise three main elements. The first is an isolated hill, the citadel (about 1,000 × 350 m), whose nearly vertical sides rise some 50 m above the surrounding terrain to a flattish summit. The summit is divided into three parts by two walls built of thin slabs of the local shale (approximately 1.40 m thick at their base and 3 m high). Several towers attached to them and a possible gateway are visible. The remains of other buildings on the summit are of the same masonry style and may be watchtowers or aboveground tombs. The second element appears about 200 m away, at the foot of the citadel: the remains of a small settlement (about 400 × 300 m) are surrounded by a stone wall now largely buried by wind-blown sand. Finally, over many square kilometers to the east the third element, the outlines of small fields can be traced, delineated by single lines of stones and crossed by stone irrigation channels. Extensive areas of these fields are enclosed by substantial stone walls, mostly covered by sand but similar where visible to the walls on top of the hill. Only three other structures are visible whose style of ashlar masonry is very different, and they clearly are later than the other remains. They exhibit architectural features characteristic of the Nabatean/Roman period.

Despite the lack of detailed examination and excavation, it seems evident that these remains (with the exception of the three late buildings) form part of a single contemporary occupational complex. An idea of their date can, at present, only be gained from the surface pottery. This includes quantities of a distinctive ware decorated with naturalistic and geometric motifs derived from the Aegean and Egypt and reminiscent of Late Bronze and Early Iron Age decorated pottery found elsewhere in the Levant. However, that the ware was locally made is indicated by the number of sherds lying near a ruined kiln and has been confirmed by petrographic analysis. This Qurayyah painted ware has also been discovered at other sites, notably at Timnaʿ in the Wadi ʿArabah in Israel, by Benno Rothenberg, where it is associated with Egyptian copper mining and smelting installations dated by inscriptions to the nineteenth dynasty (c. 1300–1150 BCE). [*See* Timnaʿ (Negev).] The main occupation at Qurayyah is thus tentatively attributed to this period.

This part of Arabia is usually identified with ancient Midian. According to the Hebrew Bible, Moses took refuge there after he murdered an Egyptian overseer and married the daughter of its ruler, Jethro; these events are usually also dated to the time of the nineteenth dynasty. In the Bible the Midianites are portrayed as pastoralists and camel raiders, but if Qurayyah is, as the evidence suggests, a Midianite settlement, this picture needs revision. [*See* Midian.] The inhabitants of Qurayyah built fortification walls and practiced irrigation agriculture; they almost certainly were participating with the Egyptians in the metallurgical industry at Timnaʿ. Judging from the location of the site, they may well have already been active in the incense trade. Although this interpretation of the evidence is controversial, so is the part played by Egypt in this "urban" development (Parr, 1988, 1993; Bawden, 1992).

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PETER J. PARR

QUṢAYR ʿAMRA, site located 85 km (53 mi.) east of Amman, Jordan, and 32 km (20 mi.) southwest of the oasis of Azraq (31°48′ N, 36°33′ E). This bathhouse complex was built in the first half of the eighth-century CE on the Jordanian steppe, unconnected to any visible earlier settlement. The Austrian Orientalist-explorer Alois Musil discovered the monument in 1898. Soon afterward, he made two additional trips to the site, the third in the company of a painter, A. L. Meilich, who copied the frescoes that cover virtually all the interior surfaces, which the Academy of Vienna published in 1907. Following Musil's rediscovery, the paintings became smoke blackened by bedouin campfires. Visitors and passersby caused additional damage by scratching their names on the frescoes. Perceiving the precarious condition of the paintings, the Department of Antiquities of Jordan commissioned a Spanish team from the National Museum of Madrid to clean them. This task was accomplished in three seasons of work (1971–1973).

The complex is built of roughly shaped, hard limestone blocks, except the doorjambs and the monolithic lintel above the main doorway, which are of basalt. The plan consists of three main elements: a rectangular audience hall, a bath complex, and hydraulic structures.

The audience hall is divided into three bays by two slightly pointed transverse arches that spring from low pilasters. The bays are roofed by three tunnel vaults; on the axis of the entrance doorway a tunnel-vaulted alcove is flanked by two small, poorly lit rooms paved with colored mosaics. The northeastern corner of the audience hall is occupied by a shallow fountain pool. To the east of the audience hall is a bath complex consisting of three small rooms corresponding to the apodyterium, tepidarium, and caldarium. The floors of the second and third rooms rested on basalt supports; the

space between the supports allowed for the circulation of hot air (hypocaust). On the east side of the caldarium is a tunnel-vaulted passage; at the far end, below this passage, are the strokehole and furnaces. The passage opens onto an unroofed enclosure that served as the stroking area and for fuel storage. At a distance of 5 m to the north is an elevated water tank, along-side which is a deep masonry-lined well. Immediately to the west of the well two piers of masonry stand opposite each other alongside a low circle; originally there must have been a third pier in the middle. These piers formed part of the apparatus for drawing water from the well into the water tank. From the elevated tank two feeder pipes set in slab-covered channels led to the fountain pool in the audience hall and to a plastered tank set above the furnace.

The first impression to strike the visitor to Quṣayr ʿAmra is the sharp contrast between the rough appearance of the exterior walls and the extensive paintings, in the interior (see figure 1). These paintings include bathing and hunting scenes, dancing, athletes practicing, wrestlers, gift bearers, various activities connected with the builder's trade, as well as a cluster of isolated scenes of pastoral life. The dome of the caldarium is decorated with the constellations of the Northern Hemisphere and the signs of the zodiac.

It has long been recognized that the roots of these paintings lay in the Greco-Syrian artistic tradition, apparent in the themes adopted from the classical repertoire: flying angels; putti; the personifications of history, philosophy, and poetry identified by accompanying Greek inscriptions; and the flamboyant representions of bathing scenes. However, a closer look at the figural representations shows that more than one style existed concurrently in the paintings—from elegantly formed shapes whose poses differ to formalized Byzantine figural representations and compositions of clumsy proportions and woodenlike, frozen shapes drawn schematically with heavily charged brushstrokes. These styles sum up the possibility of assimilation of the various local artistic traditions enriched by Eastern ideas. Another striking feature of these paintings is their rich and varied iconographic repertoire. The themes are very diverse with no apparent unity or relationship to each other. The scenes of dancing females, hunting figures, and figures listening to music were considered by Oleg Grabar to be reflections of royal pleasures and pastimes, *majlis al-lahwa* ("a place used for ceremonial entertainment"), in which the life of the prince was expressed through his association with hunting, banqueting, and dancing—amusements common in the Sasanian court. It is also likely that such themes were stock motifs and subjects in the decorations of high-quality baths.

Quṣayr ʿAmra was not a residential building. It may have served as a stopping place for caravans of high government officials and civil servants traveling from the Belqa to Iraq and the Hijaz via Wadi es-Sirḥan.

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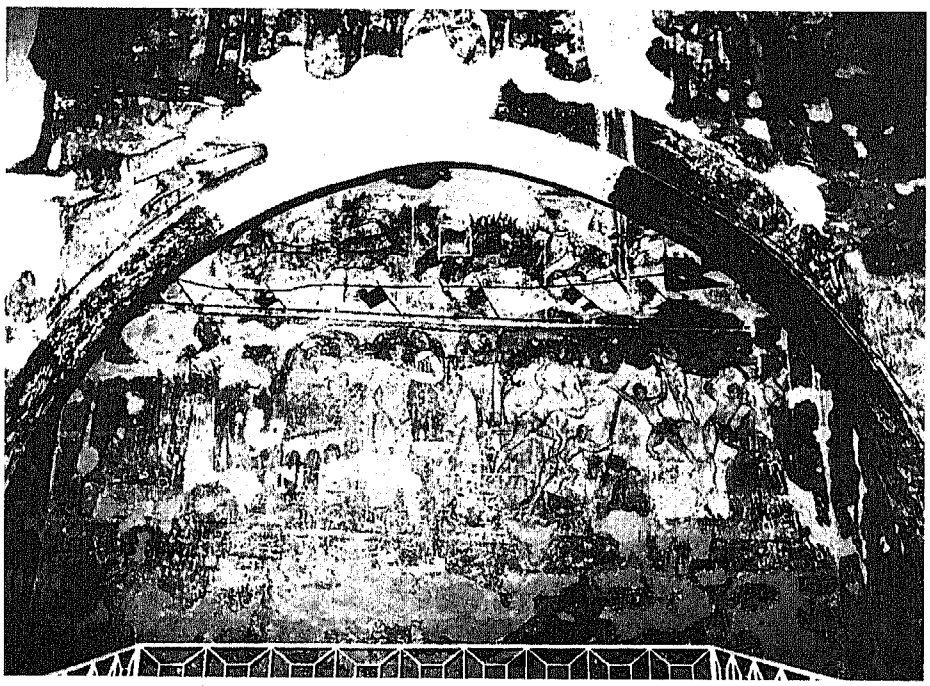

QUṢAYR ʿAMRA. Figure 1. *Interior paintings of the audience hall, looking west.* (Courtesy G. Bisheh)

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GHAZI BISHEH

R

RABUD, KHIRBET, site located south of Hebron, surrounded by the namesake river Wadi en-Nar, a region that experiences meager precipitation (31°25′ N, 35°01′ E; map reference 151 × 093). For water sources, residents of Khirbet Rabud depended on cisterns and two wells, about 3 km (2 mi.) north of the site.

Based on topographic clues in the Hebrew Bible, Kurt Galling identified the site with biblical Debir ("Zur Lokalisierung von Debir," *Zeitschrift des Deutschen Pälastina-Vereins* 70 [1954]: 135–141), an identification challenged by William Foxwell Albright ("Debir," in *Archaeology and Old Testament Study,* edited by David Winston Thomas, Oxford, 1967, pp. 207–220), who believed Debir to be his own site, Tell Beit Mirsim. [*See* Beit Mirsim, Tell.] However, recent surveys in the Judean hill country and the excavation of Khirbet Rabud support Galling's proposal: Khirbet Rabud and biblical Debir are located in the same southern Judean district as ʿAnab, Socoh, and Eshtemoa (*Jos.* 15:49); Khirbet Rabud is the only Late Bronze Age city located south of Jerusalem (the Bible depicts Debir as the major Canaanite city in the area [*Jos.* 11:21, 15:15–17; *Jg.* 1:11–15]); and the town is located in a dry region that depended on cisterns and an upper and lower water source (the Wells of ʿAlaqa), like the ones described in the story of Achsa, daughter of Caleb, in *Joshua* 15:19 and *Judges* 1:15. [*See* Judah.]

In 1968–1969, Moshe Kochavi directed excavations at the site on behalf of Tel Aviv University's Institute of Archaeology. Rescue excavations were also carried out at several robbed burial caves, part of the large burial ground, ʿUsh eṣ-Ṣaqra, across the wadi. Because, like many hill country sites, most of Khirbet Rabud is eroded to bedrock, remains of ancient occupation were discerned only in a narrow strip adjacent to the city wall, in two trenches, A and B, on the mound's western slope.

Early Bronze Age I and IV sherds were found in the cemetery and in the excavated areas. A stone wall running along the mound's lowest terrace on the northwest was encountered in trench A and dated to the Late Bronze Age. Four strata of the fourteenth–thirteenth centuries BCE were associated with this wall. LB I sherds found on the mound and in its cemetery may indicate an earlier date for the construction of the LB city wall. The LB II pottery from trench A and from the cemetery included a high percentage of imported Mycenaean and Cypriot wares. An Iron I stratum and a tenth-century BCE cistern were also exposed at the lower part of trench A.

A massive stone wall, 4 m wide and about 1 km long, had been noted prior to the excavation. It encircles about 5 ha (12 acres) of this 6-ha (15 acres) mound and was encountered in both trenches and dated to the ninth century BCE. The wall was built in straight sections, in uneven lengths, with half-meter projections at their joints. The topography of the site suggests the existence of a gateway on the southeastern slope, where the modern hamlet of Khirbet Rabud now stands.

A major destruction level, with large amounts of pottery and other finds lying in the ashes, was detected in both trenches and attributed to Senacherib's campaign against Judah in 701 BCE. Two stamp seals inscribed in Hebrew, ŠLM BN 'Ḥ' ("Shalom son of Aha") and a four-winged *lamelekh* seal, found in this stratum fit the suggested chronological horizon. In the seventh century BCE the city wall was doubled in width and a small, unwalled suburb, Khirbet Rabda, was built at the foot of the mound. Some buildings from the Persian period and a Roman lookout tower represent the end of the site's occupational history.

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MOSHE KOCHAVI

RADANNAH, site located on the northern perimeter of Ramallah, 16 km (10 mi.) north of Jerusalem on a ridge surrounded on three sides by deep valleys with perennial

springs (map reference 70835 × 553305). It was, therefore, strategically located with regard to security. Radannah is not mentioned in the Bible and remains essentially anonymous. Yohanan Aharoni (1971) proposed identifying the site with biblical 'Ataroth (*Jos.* 16:5, 18:13), a border town between Benjamin and Ephraim.

Four seasons of excavation were conducted at the site (about 32–40 acres) between 1969 and 1974 by Joseph Callaway and Robert Cooley on behalf of the Israel Department of Antiquities. Its occupational history includes four phases. The earliest evidence is represented by a few Early Bronze I sherds and no definable structures. The second and third phases appear to be an Iron Age I settlement comprised of five–six structures that give evidence of their original construction and subsequent remodeling. Settlers of unknown origins seem to have arrived at the site toward the end of the thirteenth century or early twelfth century BCE, lived through two phases of village life, and then disappeared in the middle of the eleventh century BCE. Ashes and disturbed architecture indicate that this phase was terminated by a violent destruction. After a long period of abandonment there is evidence of a fourth occupational phase, during the Byzantine period. The site was excavated in three major areas (R, S, T), moving east–west.

The first and fourth phases suggest minimal human activity, whereas the second and third phases point to a well-preserved single-period site with a relatively well-developed material culture. A common feature of the Iron I settlement is the pillared house. [*See* Four-Room House.] A large room was divided by hewn pillars or stacked stone piers to support the roof beams, and there was a chamber at the back. Multiple chisel marks were preserved on the top and sides of the hewn pillars. Benches were built against the outer wall of the largest room, and in one case they were cut into bedrock on two sides. A hearth was located in the center of the room. Bell-shaped cisterns for water storage and silos for grain storage were regular features in the houses. These pillared houses were clustered around the top of the ridge, leaving a common open space in the middle area of the settlement that probably served as an animal enclosure and storage space for grain. Below the settlement the hillsides were shaped by agricultural terraces.

An abundance of cereal food-processing tools was found throughout the site, including large, well-worn saddles and querns, stone mortars and pestles, rubbing stones, and flint sickle blades. There is considerable evidence for primitive metalworking. Fragments of crucibles, some with slag adhering to the inside, were discovered, along with pieces of tuyeres, or bellow tips. Numerous bronze objects were identified along with three iron implements.

Other significant finds include an inscribed jar handle with three letters in Proto-Canaanite script and a large multihandled krater. A channel built into the Krater's upper wall terminated in spouts on the inside of the bowl, each of which is in the shape of a bull's head. A cultic function may be inferred. Large collar-rim storage jars were recovered throughout the site.

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ROBERT E. COOLEY

RAMAT RAḤEL, site located on a hill midway between Jerusalem and Bethlehem (31°40′ N, 35°15′ E; map reference 1708 × 1275). Yohanan Aharoni excavated the site for four seasons between 1954 and 1962 under the auspices of the Hebrew University of Jerusalem, the Israel Department of Antiquities, the Israel Exploration Society (IES), and the University of Rome. In 1984 Gabriel Barkay excavated there for Tel Aviv University and the IES. In 1931 Benjamin Mazar and Moshe Stekelis excavated a burial cave south of the site for the Palestine Exploration Society. Five main strata were identified dating from the Iron Age IIC through the Early Arab period. The ancient name of the site is unknown, although Aharoni suggests that it may be Beth-ha-Kerem; Barkay rejects this identification.

Stratum VB was founded on bedrock. Though little remains of its architecture, there is some evidence of a casemate wall and a stone quarry. Two seal impressions similar to impressions known from Tel Nagila and Lachish mention "to Shebna [son of] Shahar." [*See* Lachish.] One hundred and seventy *lmlk* stamped handles, of both the two-winged and four-winged varieties, were found in constructional fills used in stratum VA. Private seal impressions were also recovered, some of whose names correspond to seals from Tell en-Naṣbeh, Beth-Shemesh, and Lachish. [*See* Naṣbeh, Tell en-; Beth-Shemesh.] The *lmlk* handles found in fills below stratum VA surfaces help date stratum VB to the reign of Hezekiah. The destruction of the site can be attributed presumably to Sennacherib's campaign of 701 BCE.

A new citadel, dated to the late seventh–early sixth centuries BCE, was constructed in stratum VA. A double wall

system, enclosing 2.5 acres, partially surrounded the citadel. The area between the walls and the citadel was intentionally leveled with extensive fills. Only fragments of the outer wall were excavated and it appears to surround the citadel only partially. The citadel itself is rectangular (56 × 72 m). It consists of the fragments of two buildings along the western and northern sides of its inner casemate wall. The casemates functioned as storerooms. In the center of the eastern wall a paved opening served as a gate and led to a well-plastered courtyard. A second, smaller gate was found to the south of the main gate. A hewn tunnel outside the citadel may originally have been linked to a narrow postern along the north wall. Architectural elements from the citadel include fine ashlar masonry, header-stretcher construction, the remains of ten proto-Aeolic capitals (see figure 1), carved stone crenelation fragments, and carved stone window balustrades. These types of balustrades are identical to those portrayed in Phoenician ivory plaques depicting the "woman in the window" motif. A small quantity of Assyrian Palace ware was found, along with a sherd depicting a seated individual. Originally, this painted sherd was thought to imitate an Assyrian pictoral style. However, Shulamit Geva (1981) has suggested that this sherd better reflects Aegean traditions. Rosette stamp impressions, which may have been used as royal sealings after the seventh century BCE, were also found. A seal impression "to Eliakim, steward of Yochin" is identical to seal impressions from Tell Beit Mirsim and Beth-Shemesh. [*See* Beit Mirsim, Tell.] The high quality of the ashlar masonry, the types of architectural adornments, and the overall site plan are reminiscent of Samaria and suggest a Phoenician influence [*See* Samaria; Phoenicians.] The use of these distinctive architectural elements, along with the small finds, supports the contention that Ramat Raḥel was indeed a royal citadel, perhaps during the reign of Jehoiachin.

The Late Persian/Early Hellenistic ceramic assemblage dates stratum IVB to the fourth century BCE. This stratum is poorly preserved, but two hundred and seventy seal impressions were recovered. The wide variety of inscribed seal impressions includes the use of name *Jerusalem,* Yehud stamps, and private names. The anepigraphous seal assemblage is also rich and diverse. Most of these seals belong to Stern's type A, which depicts lions in various positions (Stern, 1982).

The Herodian remains of stratum IVA are limited to scattered architectural fragments and burial caves on the slopes. Stratum III is dated to the late third century CE, when the site was utilized by the Roman Tenth Legion. The Church of Kathisma and a monastery from stratum II date to the Byzantine period (fifth–late seventh centuries). The last use of the site (stratum I) was in the Early Arab period.

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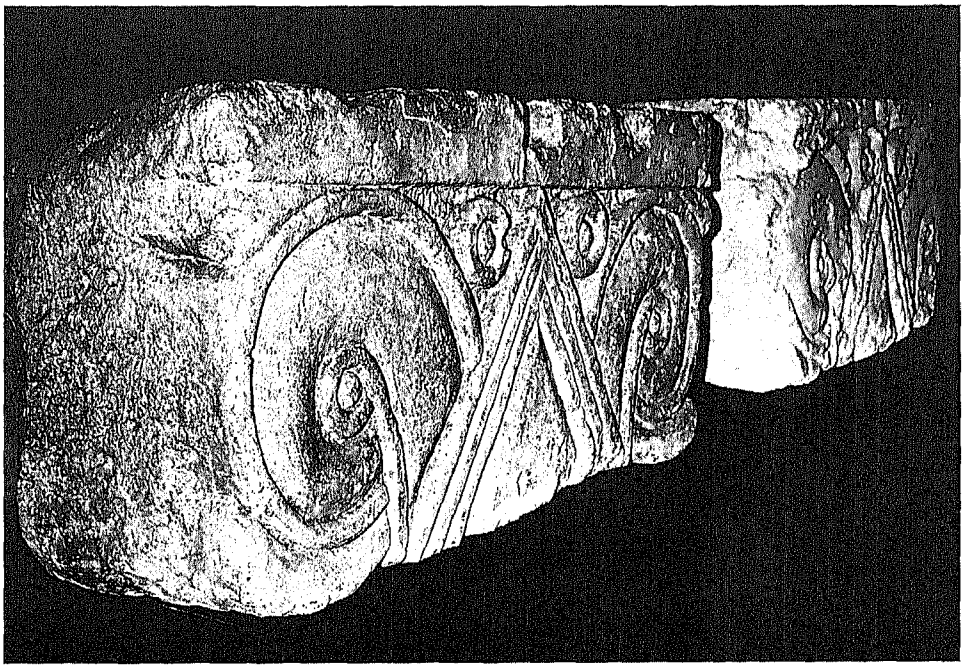

RAMAT RAḤEL. Figure 1. *Proto-Aeolic capital.* (Courtesy ASOR Archives)

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J. P. DESSEL

RAMLA, site located at the crossroads leading from Israel's western seacoast (Jaffa) to Jerusalem on the east, and from Syria in the north to Egypt in the south, about 4 km (2.5 mi.) south of Lod (map reference 138 × 148). The name *ar-Ramla* is believed to derive from the Arabic word *raml*, meaning "sand," referring to the sand dunes of the region. Ramla was the only new city founded in Palestine during the Islamic period; its founder was Sulayman, son of 'Abd al-Malik, who, as governor of the Jund Filastin, established his capital there. This must have taken place sometime between 712 and 715, when Sulayman became caliph after his brother Walid I.

The first excavation at the site was conducted by Jacob Kaplan in 1949, on behalf of the Ministry of Religious Affairs and the Department of Antiquities of Israel. The excavation focused on the White Mosque, which was at the core of the first buildings constructed at the site in the eighth century. Excavation established that the mosque was built in the form of a quadrangle (93 × 84 m), with its walls oriented to the cardinal points. The right half of the mosque deviates some 6° to the north of the traditional east–west orientation. The major remains are the foundations of the east and west porticoes, the *qiblah* wall (the wall oriented toward Mecca) on the south with its *miḥrab* (niche) in the middle, and two rows of massive pillars running parallel to the *qiblah* wall. These remains appear to be from a later restoration under the Ayyubids, after the Crusader period, as there are clear remnants of cross vaulting for the roof. The mosque's most prominent feature is its square minaret, which was rebuilt in the Mamluk period and still preserves an inscription giving the name of Sultan Muhammad ibn Qala'un and the date AH 714/1318 CE. Another building was discovered in the center whose function is as yet unidentified (it may be an ablution basin). Three subterranean cisterns were revealed in the courtyard.

In 1965 Myriam Rosen-Ayalon and Avraham Eitan, on behalf of the Israel Department of Antiquities and Museums, conducted an excavation that concentrated on the southwestern part of the town; they also made several smaller-scale trial soundings that contributed to understanding the city's topography and urban development in antiquity.

A large number of finds—mainly pottery, but also glass, stone, and metal—were recovered immediately beneath the surface. The material was homogeneous in character and could be ascribed to the eighth or beginning of the ninth century CE. Although this suggests a relatively brief period of occupation, four settlement levels were distinguished, the lowest resting directly on virgin soil. The nature of the finds, together with evidence of elements of installations, points to what might have been a potter's workshop.

In 1973, in the southeastern part of the town, (the Old Quarter), in the courtyard of a private house, Magen Broshi excavated a mosaic pavement comprised of three "carpets." Two are geometric compositions reminiscent of pre-Islamic patterns; the third bears an inscription of a Qur'anic verse in an early Kufic script set within an arch supported by two columns. The ceramic material found with the mosaic also lay on virgin soil, confirming the eighth-century date.

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MYRIAM ROSEN-AYALON

RAQQA, AR-, site located on the eastern (left) or Mesopotamian (Syrian Jezireh) bank of the Upper Euphrates River, where the river meets its tributary, the Balikh River. Facing Deir az-Zor, Mari is to the east and Hama to the

west; facing Harran, to the north, Palmyra is to the south-southwest.

Today, ar-Raqqa is the capital of the governorate of ar-Raqqa, one of fourteen that constitute the Syrian Arab Republic. The name is as old as the Islamic domination of Syria: the area was peacefully conquered by 'Iyad ibn Ganm in AH 18/638–639 CE.

Medieval Muslim historians such as al-Baladhuri and geographers such as Yaqut used its post-Islamic name, whose Arabic meaning corresponds to its topography: according to Yaqut, it means "flat land, marshland, or soft land." In fact, the city is situated on the flat, soft, partial marshland of the Euphrates Valley. Ar-Raqqa is identified with a pre-Islamic city known by three different names—Nicephorion, Callinicos, and Leontopolis—and most probably founded during the Seleucid era (third century CE). Cuneiform texts from Mari (second millennium BCE) had situated the city of Tutul at the same site. It is commonly believed that Tutul must be identified with Tell Bi'a, 800 m north of ar-Raqqa (see below). Recent discoveries at the tell itself in 1990 confirmed this identification.

Between AH 18/638 CE and AH 155/772 CE, the only major architectural changes at the site were the building of a Friday mosque, markets, and probably some extramural extensions. In AH 155/772 CE, the 'Abbasid caliph Abu Ja'far al-Manṣur, after having built the round city of Baghdad as a new capital of the caliphate, ordered a similar city built west of old ar-Raqqa/Nicephorion. He named it ar-Rafiqa ("the companion"). His grandson, Harun al-Rashid, made ar-Rafiqa/ar-Raqqa his permanent residence for thirteen years (AH 180–192/796–809 CE). During this period, the sister cities witnessed an urban explosion. The area north of them became residential, full of spacious palaces and mansions for the caliph Harun ar-Rashid and members of his family and court. A large canal, 16 km (10 mi.) long, which terminates in marshes near the Balikh River, was dug to carry water from the Euphrates to the area.

After some periods of instability, the city was revived under the Zangid Atabeg Nur ad-Din and the Ayyubids in the twelfth–thirteenth centuries CE. The fourteenth-century geographer Abu al-Fida' reported that in 1258 the Mongols devastated ar-Raqqa.

European travelers began visiting ar-Raqqa in the sixteenth century. The first archaeological exploration there was conducted in 1907 by the German scholars Frederich Sarre and Ernst Herzfeld, who photographed and sketched its ruins. The French Geographical Institute took the first aerial photographs in 1924, introducing scholars to the palaces of Harun ar-Rashid and the course of the canal. The first archaeological excavation carried out in ar-Raqqa was by Maurice Dunand and Raymond Duru (1944–1945). They unveiled the northeastern part of a representative building labeled palace A, which lay about 400 m north of the city wall (see below). Between 1966 and 1970, Kassem Toueir of the Department of Antiquities and Museums of Syria resumed the excavation of palace A. This rectangular building (140 × 110 m) is oriented east–west and has annexes on the south. It is constructed of mud brick and whitish limestone plaster. On the west are corner towers, buttresses, and a gate. The coins found refer to Harun al-Rashid and his successor, al-Ma'mun (early ninth century CE). Thin-walled subdivisions of rooms and halls indicate a rehabitation in the twelfth–thirteenth centuries.

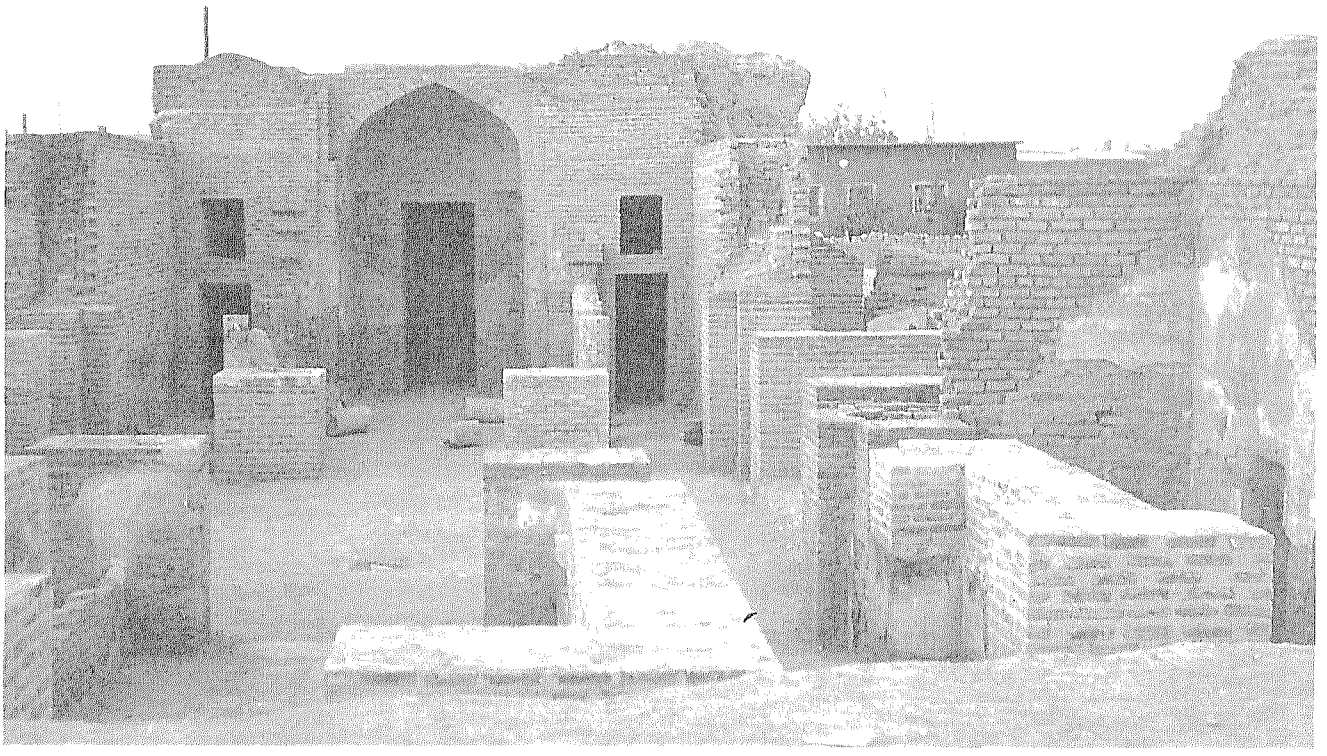
Between 1950 and 1954, Nassib Saliby, also for the Department of Antiquities, excavated three palaces (B–D) some 1,200 m northeast of the city wall that resemble palace A. A painted inscription in palace B is attributed to the son of Harun al-Rashid, al-Mu'taṣim.

Beginning in 1982, Michael Meinecke of the German Archaeological Institute, Damascus, excavated three palaces some 800 m north of the city wall that are similar to palaces A–D and also show evidence of rehabitation in the twelfth–thirteenth centuries. Between 1977 and 1990 Kassem Toueir excavated and restored the Qaṣr al-Banat, a palace of the period of Harun al-Rashid in the southeastern part of ar-Rafiqa. The building, whose perimeter has not yet been revealed, is constructed entirely of baked bricks and consists of a central courtyard with fountains in the middle that are shaped like eight-pointed stars. Four iwans open to the four sides of the courtyard. The building was erected on virgin soil, which dates it to the foundation of the city in 772 CE or shortly afterward. It was reused in the twelfth–thirteenth centuries as a storehouse and workshop for producing glazed Raqqa ware.

The Great Mosque (108 × 92 m), in the northern part of the city, within the city wall, was also erected when the city was founded. Built of mud brick with a baked-brick coating on the outer faces of its walls, it is the second-largest mosque in Syria (after the Umayyad mosque in Damascus). Its square courtyard and the round towers buttressing its corners and sides follow the Iraqi model, but its three-aisled division and its prayer hall's gabled roofing follow the Syrian type (Damascus mosque).

The Department of Antiquities is also clearing and restoring the unique horseshoe-shaped city wall (1,500 × 1,500 m) with its double enceinte and intervallum. The wall, the only surviving one of the Early 'Abbasid period, is massive, buttressed with round towers at regular distances, and built of mud brick with baked-brick coating. The outer wall was thinner than the inner one. The only surviving gate on the outer wall, known as the Gate of Baghdad, is in the southeastern corner. It is constructed entirely of baked brick and is richly decorated in the Hazarbaff technique (arranging bricks in the face of a wall in a way that creates an ornamental design). The outer wall has disappeared since 1980, but its original height, if it followed the Baghdad example, would have been about 20 m.

In 1983, Kay Kohlmeyer, on behalf of the Department of



RAQQA, AR-. *Qaṣr el-Banat after excavation and restoration.* (Courtesy K. Toueir)

RAQQA, AR-. *Corner room of Qaṣr el-Banat.* (Courtesy K. Toueir)

Antiquities and the German Institute made soundings in the area of old ar-Raqqa/Nicephorion, currently the suburb al-Mašlab, in order to observe its pre-Islamic rectangular city wall (1,200 × 650 m). The wall is 2.5 m thick and built of baked brick. It dates to the time of Justinian (first half of the sixth century).

Since 1980, Eva Strommenger (1981) has been excavating at Tell Bi'a, some 800 m north of ar-Raqqa/Nicephorion. In addition to unveiling third- and second-millennium BCE material in the 1990 season (including part of a royal palace similar in plan to the palace at Mari and cuneiform tablets confirming identification of Tell Bi'a with Tutul), she uncovered two mosaic pavements with Syriac inscriptions referring to the building of a Christian monastery (sixth century), which is, perhaps, to be identified with the much-celebrated Early 'Abbasid church/convent of Dayr Zakkai (Krebernik, 1991, 1993).

[*See also* 'Abbasid Caliphate.]

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KASSEM TOUEIR

RAS, TELL ER- (32°12′30″ N, 35°17′30″ E), site located on top of one of the northernmost peaks of Mt. Gerizim (Jebel et-Tur), 831 m above sea level, overlooking the short, narrow east–west pass between Mt. Gerizim (881 m above sea level) and the higher Mt. Ebal (940 m above sea level) to the north. On the western watershed of the pass 350 m below the tell, lies Nablus (ancient Neapolis), the largest city in Samaria. Jacob's well (Bir Yaqob) and Tell Balaṭah (ancient Shechem), once the chief city of the Samaritans, lie at the entrance to the pass on the eastern watershed. On the highest peak of Mt. Gerizim, 750 m south of Tell er-Ras, an expanse of limestone bedrock, devoid of structure, marks for the Samaritan community the location of their temple. Nearby are the octagonal remains of the Theotokos church built in about 484 CE by the emperor Zeno and the remains of fortifications built around the church by the emperor Justinian in about 532 CE. Farther south lie the Hellenistic remains of the walled Samaritan town of Lozeh.

Charles W. Wilson of the Survey of Western Palestine examined Tell er-Ras in 1866 and noted it was a partly artificial mound containing building remains. A century later, Robert J. Bull of Drew University discovered frusta of red Aswan granite columns at the foot of Mt. Gerizim and, in a search for the structure from which the columns came, led a team, formed initially from the Drew-McCormick Expedition to Tell Balaṭah, to excavate Tell er-Ras 1964, 1966, and 1968. The tell, 120 m long by 80 m wide, covered with limestone chips and marble architectural fragments, was isolated from the rest of Mt. Gerizim by an east–west fosse approximately 100 m long, 30 m wide, and 8 m deep cut into the limestone bedrock. Stratigraphic excavation uncovered the remains of building A (21.48 m long north–south × 14.14 m wide), with a three-stepped stylobate, a 8.24 m × 3.05 m pronaos and a 8.24 m × 10.13 m naos, a marble floor, and Corinthian captial fragments. The .85-meter-diameter Aswan granite column frusta discovered at the foot of Mt. Gerizim matched the diameter of the column bases excavated at the tell. Building A was identified as a tetrastyle, prostyle, pseudoperiptal temple centered on a platform 64.91 m long north–south × 44.21 m wide. The platform, made up of earth, rubble and cement, was encompassed by a rectangle of stone walls 9 m high and 2 m thick. At the northern end of the platform, a 7.74-meter-wide staircase descended to a broad esplanade of green marble squares and areas of patterned mosaic. The esplanade served as the upper terminus of a very long and very steep stairway that led from the city of Neapolis up the side of Mt. Gerizim to Tell er-Ras. In 1968, Bull excavated eighty of the 7.50-meter-wide stairway steps, some cut into bedrock, some arranged in flights of five steps or more between landings, some with evidence of marble facing, and all on a line from a point beside the mosque, Rijal el-'Amud, at the foot of Mt. Gerizim, to the temple at Tell er-Ras.

In the second and third centuries CE, the reverse of coins struck at the Neapolis mint exhibited the likeness of a tetrastyle, peripteral temple at the top of a mountain peak. A stairway ran from a colonnade at the mountain's base up the mountain side to the temple on top (Hill, 1914, pp. 48–50, pls. 5–7). The earliest and most detailed coins were issued under Antoninus Pius (138–161 CE) and the last and least detailed, under Volusianus (251–253 CE). Marinus of Nea-

polis (fl. 440 CE) indicated that the emperor Hadrian had built a temple to Zeus Hypsistos on Mt. Gerizim (Photius, *Bibliotheca* 242.348B. 18–20). A stairway of three hundred steps *(gradii)* on the side of Mt. Gerizim was reported by the Bordeaux Pilgrim (fl. 333 CE; *Itineraarium Burdigalense* 587.3), but Epiphanius (315–403 CE; *Libri de XII Gemmis* 258) stated that the stairway contained more than fifteen hundred steps, a number confirmed by Procopius of Gaza (d. 440 CE; *Commentarii in Deuteronomium* 440). The discrepancy in the number of steps reported in the stairway was due to the fact that broad steps or platforms were discovered at intervals of five steps or more in the line of steps up the side of the mountain. The Bordeaux Pilgrim counted the platforms *(gradii)* while Epiphanius and Procopius knew or counted the individual steps.

The temple was modified in the third century when six vaulted cisterns were built in front of and against the north platform wall necessitating a new approach to the temple. In the fourth century, earthquakes collapsed the vaulted cisterns, filling the cisterns with voussoir and architectural elements from the temple. The latest coins recovered from the sealed silt layers of the cisterns were those of Julian II (360–363 CE).

In 1966, beneath the foundations of the Zeus temple, Bull excavated a second major structure, building B, 20.94 m long north–south × 20.04 m wide and 8.50 m high. Stratigraphic excavation disclosed that building B was founded on the leveled bedrock of Tell er-Ras at 819 m above sea level and constructed of at least eighteen courses of unhewn limestone slab taken from the local geological bedding planes and laid in without mortar. No construction was found internal to building B. Its geometric form was roughly that of a half cube with approximately 4,000 cubic m of limestone slab laid in courses with obvious care and precision. It was first assumed that building B was a foundation built by the Roman builders of the Zeus temple, but after further excavation, it was discovered that building B stood in the center of a rectangular courtyard of stone walls 60 m long × 40 m wide and 1.50 m thick made of unhewn stone and without mortar. The 7-meter-high courtyard of walls rested on leveled bedrock and a gateway 7.50 m wide was found at the center of the north courtyard wall. The 2-meter-wide walls of the Zeus temple platform, built of ashlar and mortar, were constructed against the standing 1.50-meter-wide unhewn stone walls that formed the building B courtyard. After building B at the center of the double-walled courtyard was stabilized with revetments of rubble and cement, the courtyard was filled earth and stone to form the massive platform on which the Zeus temple stood. Thick layers of sterile white *huwwar* were found in trenches dug against the sides of building B. The tip lines of the *huwwar* visible in the balks of the trenches beside building B have an angle of repose for the dumped *huwwar* that indicates it was dumpted from a height two or more meters higher than the discovered hight of building B. Prior to building A, building B and at least part of its courtyard had been covered by layers of sterile earth that contained no dating material. Below the *huwwar,* earth, rubble, and cement makeup of the temple platform and at the bottom of the walls in the northeast corner of the building B courtyard, pottery dating from the third and second centuries BCE was found. Also in the lowest silt layers of a rock-hewn cistern found beside the steps of the temple platform, water vessels of the third century BCE were recovered.

From 1983 to 1988 Yitzhak Magen of the Israel Department of Antiquities uncovered additional stairways and extensive Hellenistic remains on Mt. Gerizim, including Lozeh.

The identification of building A with the Zeus temple at Tell er-Ras seems assured. The identification of building B is less clearly understood. The fact that a massive, carefully fashioned structure of unhewn stones was constructed on the leveled bedrock of Mt. Gerizim and surrounded by a courtyard of walls built of unhewn stone indicates that a major building complex predated the Zeus temple at Tell er-Ras. Limited ceramic evidence indicates that the building B complex was standing in the third century BCE. The massive size of the building B complex, its location directly above the ancient Samaritan capital city of Shechem, and its third-century BCE date suggest it was part of the Samaritan temple that Josephus (*Antiq.* 11.302ff., 13.255ff.; *War* 1.62ff.) notes was built on Mt. Gerizim and modeled after the Jerusalem temple.

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ROBERT J. BULL

RA'S AL-HADD, site located in the Sultanate of Oman (22°31′ N, 50°47′ E), at the point where the Arabian coast turns from running southeastward to running southwestward and the Gulf of Oman joins the Arabian Sea. The Arabic name, meaning "headland of the limit," corresponding roughly to "Land's End," describes its situation and has been used since before AD 1500 when the Portuguese recorded the toponym.

A small modern town stands on the neck of a sandy promontory which encloses a shallow lagoon, with low hills behind. Though strategically placed, the region has little fresh water, but marine resources are abundant. Archaeological remains, scattered at different sites (designated HD 1–HD 27) across some 1,000 ha (2,470 acres) and representing most periods from modern times back to 4000–3000 BC or earlier, document substantial continuity in lifestyle coupled with long-distance trading relations overseas. Remains of fish, shellfish, and turtles dominate the organic finds from excavation; there is also evidence for dates, today grown in inland oases with which there are close traditional links. Donald Whitcomb (1975) first drew attention to the Islamic remains. Bronze Age material was identified in 1986 by Julian Reade, who directed excavations during 1988, 1989, and 1992. The site complements nearby Ra's al-Junayz.

The earliest site identified, HD 2, is a midden producing small flints and molluscs, to be dated before 3000; terebralia shells suggest the presence of a mangrove swamp in the lagoon. At HD 6, dating to about 3000–2500, there is evidence for the use of copper and of distinctive large flint tools, and for the manufacture of stone and shell ornaments; contemporary tombs at HD 10 are circular stone structures with corbelled roofs.

HD 1 (c. 2500–2000), has stone ovens (for fish preparation) and much cooper, including fishhooks and a bun ingot; there are a few bronze pieces. Pottery was introduced during the occupation of HD 1 and mainly comprises Mature Harappan types, including one inscribed with two Indus signs. Buildings of this phase have not been located. The mangroves were declining. An aceramic village at HD 18, beside the lagoon, with subrectangular stone house-footings, is tentatively dated about 2000–1500.

Early "Iron Age" tombs abound on the hills. Those excavated at HD 9, perhaps dated about 1000, are stone, roughly oblong in shape, often abutting on one another. Copper or bronze arrowheads and some pottery vessels recall Wadi Suq types. There are many beads, stone vessels, and scraps of copper or bronze bowls. No contemporary settlement has been identified, but a Late Iron Age village was established at HD 21 (perhaps c. 500 BC), significantly located on the hills out of sight of the sea and exploiting animal rather than mainly marine resources. The village comprises agglomerations of rounded rooms and yards, with stone footings to the walls. The pottery is mainly a very coarse gritty ware similar to that found at Samad (in central northern Oman).

Hellenistic-Sasanian settlement has not been securely identified, but traces of a well-built stone structure with rectangular walls suggest a strongpoint near the lagoon. Islamic occupation is widely attested, and the HD 2 area on the promontory is rich in sherds dating from before AD 1000 to recent times. Plain and glazed wares probably derive from Oman, the Gulf, Iran, India, and Pakistan; Chinese and African wares are common. Excavations at HD 4 exposed a building of coral blocks. There is much glass, and evidence exists for the manufacture of lapis lazuli and carnelian beads. An oyster midden extends beside the sea.

The modern town has developed around a castle, which may have been built within a century of AD 1700, because no older traces were observed during restoration work about 1990.

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JULIAN E. READE

RAS EN-NAQB, a commanding promontory, located near a village of the same name, in the mountainous region

of southern Jordan (29°55′ N, 35°30′ E). A long-term, ongoing research program, directed by Donald O. Henry and sponsored by the University of Tulsa, the American Center of Oriental Research, and the Jordanian Department of Antiquities was initiated in the vicinity of Ras en-Naqb in 1977. By 1994, exploration of approximately 32 square kilometers had resulted in the discovery of more than 130 prehistoric sites with occupations spanning the late Lower Paleolithic through the Chalcolithic periods. The research focused on understanding the prehistoric human ecology and the evolution of human adaptation in the area.

Excavation exposed Middle Paleolithic, Upper Paleolithic, Epipaleolithic, Neolithic, and Chalcolithic occupations at twenty-nine sites. Paleoenvironmental studies of pollen, geological, and faunal evidence recovered by excavation generated paleoclimatic reconstructions covering much of the last sixty-five thousand years.

Strategy of Transhumance. Perhaps the most significant result of the research was establishing the length of time (on the order of sixty-five thousand years) the inhabitants of the region had followed a transhumance strategy. To utilize transhumance, the area's prehistoric groups followed an annual settlement schedule that involved seasonal shifts to different elevational belts, ranging from 800 to 1,700 m above mean sea level. Such a settlement schedule enabled them to exploit area-specific resources seasonally. This meant occupying an elevation when it offered optimum creature comforts.

Transhumance is typically associated with pastoral nomads, such as the modern bedouin. Few research efforts have yielded the quantity and diversity of evidence confirming the strategy for such a temporal sweep during the Paleolithic era, however. Comparing sites by elevation revealed a time-transgressive pattern. This pattern showed an asymmetry within several data sets (e.g., site area, thickness of cultural deposit, artifact density, artifact inventory) that was linked to the different elevational belts. Pleistocene settlement remains (Middle, Upper, and Early Epipaleolithic periods) in the high-elevation belts reflected short-term, warm-season camps. Pleistocene on the low-elevation belts revealed apparent settlement remains from long-term winter camps. In contrast, sites occupied at the end of the Pleistocene and Holocene (Natufian and Chalcolithic) reversed the pattern: sites indicating long-term winter camps were found in the high-elevation belts, whereas small, ephemeral camps were found in the lowlands.

Lower Paleolithic. Wadi Qalkha, identified as a Late Acheulean site, exhibited an artifact-bearing horizon near the top of a 30-meter-thick section of alluvial silts and sands. A geomorphic study placed the alluvial fill in the last interglacial period. The lithic assemblage is composed mainly of finely fashioned ovate handaxes.

Middle Paleolithic. Tor Faraj and Tor Sabiha are rockshelters with extensive Levantine Mousterian deposits. The differences in natural setting and artifacts between the two sites suggest that they represent winter (Tor Faraj) and summer (Tor Sabiha) segments of an annual cycle of transhumance. The artifact assemblages are dominated by Levallois points. Microscopic analysis suggests that most of the points were hafted and used for various tasks, ranging from cutting to scraping and to use as projectiles. Amino acid racemization and uranium series dates indicate that the occupations were contemporaneous, archaeologically, dating to about 62,000 BP. Examination of the pollen, sediments, and animal remains from the deposits points to very dry climatic conditions during the time of occupation.

Upper Paleolithic. The rockshelter sites of Tor Hamar, Tor Aeid, and Jebel Ḥumeima contain the most important of several Upper Paleolithic occupations. Based on artifact analysis, these occupations include both Ahmarian and Levantine Aurignacian industries. The Ahmarian horizons at Tor Hamar and Tor Aeid most likely date from about 38,000 to 29,000 BP, whereas Jebel Ḥumeima's Levantine Aurignacian occupation may be somewhat younger. The Upper Paleolithic deposits, formed of pinkish silt, yielded pollen that traced a succession from slightly humid conditions (represented by trees and grasses) to drier conditions (defined by desert shrubs).

Epipaleolithic. About 40 percent of the sites encompassed by this research belong to the Epipaleolithic, an interval of considerable cultural-historic complexity. Five cultural-historic complexes (Qalkhan, Kebaran, Geometric Kebaran, Mushabian, and Natufian) were identified, with the Qalkhan being newly defined and unique to southern Jordan. At a more specific taxonomic level, new industries were identified within the Kebaran (Early Hamran), Geometric Kebaran (Middle, Late, and Final Hamaran), and the Mushabian (Madamaghan).

1. *Qalkhan occupations.* Characterized by a large triangular point type, Qalkhan occupations have been recovered from several sites, including Tor Hamar. The industry has been fixed stratigraphically between Upper Paleolithic and Kebaran horizons at the site of Wadi Aoud, in area B (although without radiometric dates).

2. *Kebaran complex occupations.* Represented by Early Hamran assemblages, Kebaran occupations were identified in the stratified deposits of several rockshelter sites, of which the most important are Jebel Hamra and Jebel Misraq. Dated to between 18,000 and 15,000 BP, these occupations were linked to quite moist conditions, as indicated by high frequencies of tree (especially oak) and grass pollen.

3. *Geometric Kebaran complex occupations.* Represented by Middle, Late, and Final Hamran assemblages, Geometric Kebaran occupations occur within several stratified rockshelter deposits adjacent to Pleistocene lake beds in the lowlands, as well as in open-air sites in the uplands. The most important of these include Jebel Hamra, Qa Salab, and el-Quweira. The cultural-stratigraphic sequences tracing the Late and Final Hamran at Qa Salab and el-Quweira are of special significance: they show a progressive change in di-

agnostic microlithic artifacts—lunates replace trapeze-rectangles—that suggests an age immediately preceding the Natufian (i.e., 14,000–13,000 BP). Pollen evidence indicates that dry conditions during the Middle Hamran (c. 15,000–14,000 BP) were followed by warm, moist conditions during the Late Hamran—which, in turn, were replaced by dry, cold conditions during the Final Hamran.

4. *Natufian Complex.* Represented by early (Wadi Judaiyid) and late (Wadi Aoud, area A) phases of occupations, the Natufian deposit at Wadi Judaiyid yielded rich flint and bone assemblages radiometrically dated to about 12,500 BP. It is one of the earliest Natufian sites yet recorded. The presence of wild sheep remains in the deposit is also noteworthy, for this significantly extends the species's known biogeographic range. Paleoenvironmental data point to an initial extension of the dry, cold conditions of the Final Hamran followed by climatic amelioration and a return to drier conditions during the Late Natufian (after c. 11,000 BP).

Neolithic and Chalcolithic. The Neolithic is poorly represented in the research area, but Chalcolithic sites dating to about 6,000 BP are common. These sites reflect an economy based on pastoral nomadism following a transhumant settlement strategy. Material culture inventories include a wide range of ground stone, worked bone, pottery, and a microlithic flint industry. Stone-lined pit houses and stone corrals occur at several sites, the most important of which include Jebel el-Jill and Jebel Queisa.

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DONALD O. HENRY

RAS IBN HANI (Ar., "cape of Ibn Hani"), site extending 2.5 km (1.5 mi.) into the Mediterranean Sea, 8 km (5 mi.) north of old Latakia (35°35′ N, 35°44′ E). Ras Shamra (ancient Ugarit) is 4.5 km (3 mi.) northeast, about 1.6 km (1 mi.) inland, and Cyprus is 100 km (62 mi.) across the sea. The cape is 0.4–1 km wide; its rocky western part, originally an island, was eventually connected with the coast by sand deposits. Two bays offer good harbors for small ships.

Hellenistic and Roman remains were noted as early as the eighteenth century. They include (Hellenistic?) moles in both bays and a large, built Late Hellenistic tomb with loculi. An archaeological mound was reported by Gabriel Saadé (1964). A Late Bronze Age tomb was accidentally discovered and subsequently excavated by the Directorate General of Antiquities of Syria in 1973. A joint Syrian and French expedition, headed by Adnan Bounni and Jacques Lagarce, with Elisabeth Lagarce and Nassib Saliby, began work in 1975, holding its twentieth season in 1995.

Excavation began on the southern slope and summit of the tell (9.40 m above sea level). The examination of walls in areas where modern buildings were under construction led to the discovery of a Hellenistic city wall (third century BCE). In 1977, work was initiated near the Bronze Age tomb, close to the northern coast of the cape; excavation has gradually been concentrated on that area.

In the thirteenth century BCE, the last century of the Late Bronze Age, a complex of palaces and residencies was built by a king of Ugarit. [*See* Ugarit.] The site offered excellent possibilities for controlling seaborne traffic. Two main areas have been excavated. The Southern Palace covers more than 5,000 sq m. [*See* Palace.] Its construction was an enormous undertaking: sand was dumped 4 m high on the natural rock, between the 1.80-meter-thick walls, to raise the levels of the floors. Despite the scarcity of finds, such a building could only be interpreted as a royal palace. On its northeastern limit, it is maintained and protected by an embankment faced with an ashlar wall.

The Northern Palace covers about 2,000 sq m. Its unusual

plan allows only one obligatory way to circulate through the entire building (i.e., having entered a group of rooms, one must return to the main passage in order to reach any other group). Staircases lead to the upper story(ies). Each group of rooms around the main, paved courtyard seems to have a specific function: an office and archive on the east; a possible throne room with a two-columned porch on the north; and two areas devoted to metallurgical activities on the west. The eastern part of the palace also produced an administrative archive. To the east, another building, considered a satellite of the administrative building, held a bread-making workshop with two large ovens *(tannurs)* and a toilet provided with a seat.

The finds were few, but significant, and include two groups of tablets. The first group, mostly in Ugaritic, sometimes in Akkadian, illustrates nearly all types of texts attested in Ugarit, except contracts: letters to and from the king, the queen mother and officials; ritual, magical, and lexical texts; and administrative documents. [*See* Ugaritic; Akkadian.] They shed considerable light on Ugaritic culture and show that the Northern Palace belonged to a queen of Ugarit, perhaps to King ʿAmmishtamru II's (c. 1260–1230 BCE) mother. According to one of the letters, the city could have been called Biruti. The second group of texts is exclusively administrative: receipts and memoranda, "banking" practices apparently used a silver standard. A clay sealing bears ʿAmmishtamru II's name.

The ashlar-built chamber tomb matches the aristocratic sepulchers of Ugarit. A stepped dromos leads to a rectangular corbeled chamber. [*See* Tombs.] At the farther end is a closet, connected with the chamber only through a narrow hole. The purpose of this annex is not clear. Looted in antiquity, the tomb still contained local, Cypriot, and Aegean material of the fourteenth–thirteenth centuries BCE.

Workshops were numerous in this palace. One was devoted to cutting and polishing hard stone with emery. In the metal workshops, the main find was a mold for "oxhide" copper ingots—a large and thick slab of beach sandstone with the shape of the ingot hollowed in its upper surface. Based on analysis, the copper came from Cyprus. Oxhide ingots (rectangular with concave sides and elongated corners) have been recovered by the hundreds in the Mediterranean area. Copper was one of the staple commodities of LB trade, and considerable quantities were imported by Egypt from Alashiya (Cyprus?), Syria, and the Aegean. The Ras Ibn Hani mold, the only one ever found, is a document of utmost significance for the technology of ingots and the implication of Ugarit in the metal trade.

West of the Northern Palace another, similar building held two large kilns, one built into a platform (2 × 2 m) accessible via four steps. The palace had been nearly deserted before it was destroyed by heavy fire, early in the twelfth century BCE apparently by "Sea Peoples" whose precise nature is a debated question. On a part of the ruins that was leveled, small dwellings were built bordered by perpendicular streets. The painted pottery recovered, of types common on Cyprus and in Palestine in the twelfth century, are considered to be the last development of Mycenaean pottery, suggesting that this settlement was founded by the very sackers of the Ugaritic city.

Destructions and rebuilding phases alternate during the twelfth–tenth centuries BCE. New types of pottery show connections with Cyprus, but also with Hama on the Orontes River. With al-Mina, Ras el-Bassit, and Tell Sukas, Ras Ibn Hani is one of very few sites in the area containing information about this period, the Early Iron Age. [*See* Hama; Bassit; Sukas, Tell.] No architectural remains were recovered for the remainder of the Iron Age, but settlement was uninterrupted until the early fifth century BCE at least.

In the Hellenistic period, a fortified city, nearly 1 km long, was built on the cape. A list of mercenaries and Ptolemaic coins point to the Lagid king of Egypt, Ptolemy III (246–221 BCE), as its founder. In 246, he conquered Seleucia and Antioch. [*See* Seleucia; Antioch on Orontes.] The city at Ras Ibn Hani was probably meant to secure these new possessions against an attack from Seleucid Laodicea (Latakia). It demonstrates that the king's domination reached much farther south than had been thought. The city wall is rare testimony of the Hellenistic art of fortification in this region. Mainly the wall's eastern part has been studied by Pierre Leriche, a member of the Ras Ibn Hani expedition. It comprised an inner wall of large blocks, with massive foundations supporting coffered masonry, an outer wall of boulders, and a fosse. Alternately square and U-shaped towers protected the curtain and a gate opened into a circular area surrounded by columns.

Ras Ibn Hani probably returned to Seleucid hegemony under Antiochus III, in about 200 BCE. Life went on eagerly during the second and part of the first centuries BCE, as demonstrated by stamped amphora handles, bronze coins, clay figurines, and rich pottery finds. At some time in the first century BCE, a stronghold was built, reusing part of the ancient city wall. It was destroyed violently, perhaps the first decades of the Roman conquest of Syria, around 30 BCE. The site experienced a final revival from the time of Constantine (fourth century CE) to Justinianus or to the early seventh century CE. Remains of large houses, fishing and agricultural tools, small bronze coins, and a necropolis illustrate the life of a medium-sized city. The diversity of the pottery, with many imports, is nevertheless typical of the prosperity and overseas connections of this coastal area.

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ADNAN BOUNNI and JACQUES LAGARCE

RAS SHAMRA. *See* Ugarit.

RAWLINSON, HENRY CRESWICKE (1810–1895), known as the "father of cuneiform." Rawlinson was born in Oxfordshire, England. While an officer cadet in the East India Company in 1827, he demonstrated a remarkable ability for languages, mastering five Oriental languages in a very short time. In 1833, he was one of a party of British officers sent to reorganize the shah of Persia's army. Posted to Kurdistan, he decided to attempt a decipherment of King Darius's trilingual inscription on the Great Rock of Bisitun, commemorating that monarch's victory over five rebel chiefs. Over the next decade, Rawlinson copied and deciphered the Old Persian, Elamite, and Babylonian texts, establishing that Babylonian was a Semitic, polyphonic language.

Rawlinson shares credit for the decipherment of cuneiform with the Irish cleric Edward Hincks and the Frenchman Jules Oppert, who worked on vowels, syllables, and word values. He was appointed British consul in Baghdad in 1843. This gave him ample time to work on the cuneiform tablets Austen Henry Layard found at Nimrud and Nineveh, which he identified as Assyrian cities. In 1850–1851, Layard unearthed the royal archives of the Assyrian monarch Ashurbanipal at Nineveh. It was Rawlinson who realized the crucial importance of this unique library with its grammars and rich archives and arranged for their study in the British Museum. Rawlinson excavated on his own account only once, at the ziggurat of Borsippa, near Babylon, in southern Mesopotamia, in 1853, where he unearthed the commemorative cylinders that recorded how Nebuchadnezzar, king of Babylon had rebuilt and repaired the temple. He resigned from the East India Company in the same year. In later life, Rawlinson continued in cuneiform research. He fostered long-term research on the Ashurbanipal collection, which yielded the celebrated Deluge tablets, deciphered by one of his protégés, George Adam Smith, in 1872.

[*See also* Bisitun; Cuneiform; Nimrud; Nineveh; *and the biographies of Layard and Smith.*]

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BRIAN FAGAN

RECONNAISSANCE, ARCHAEOLOGICAL. *See* Survey, Archaeological.

RECORDING TECHNIQUES. Archaeologists document the process of removing debris and successive occupational remains in a controlled excavation by means of recording techniques. By its nature, archaeological excavation is a nonrepeatable experiment, destroying its evidence as it produces data. Any information not recorded accurately and fully when a site is being excavated is knowledge lost forever. The goal of archaeological recording is to document fully how and where each element encountered in a site's systematic excavation was found and recovered. The degree of detail provided in such an effort is determined by an excavation project's research design.

Excavations differ in how they are organized, but generally a series of 5-×-5-meter squares in the same portion of a site are grouped into a "field" or "area." Each square is established by a project surveyor or an architect, who maintains a large-scale plan of the site grid and the specific location of each excavation area in relation to the grid. [*See* Grid Plan.] A staff member is assigned to supervise each area and is responsible for ensuring that all excavation activities at the location are comprehensively documented. This documentation is in both descriptive and graphic form and is entered in a notebook that contains the excavation season's records for the area.

Daily activity in each square is recorded in a running commentary that creates a daily log of excavation. Details such as the changing of loci, brief descriptive assessments of characteristics of new loci, notable finds, or questions regarding occupational activities are recorded, as are lists of recovered materials sent to laboratories for further analysis. For each

day, a precisely scaled top plan of the excavation unit is prepared, showing not only new architectural elements encountered in excavation but also, by shading or coloration, indicating where various soil loci or artifact concentrations were located. The end-of-day elevations of each locus, which chart the daily progress of revealing successive cultural deposits, are also a normal part of field recording. As the excavation of an area progresses, informal photographs of significant features often are taken to allow for the clear identification of loci and related features. [*See* Photography, *article on* Photography of Fieldwork and Artifacts.] Many excavations use instant photographs for this purpose, with the resulting prints being glued into the area supervisor's notebook.

Because working in the field presents many possibilities for overlooking essential information, most excavations use a variety of supplementary recording forms in an attempt to ensure complete documentation. The registration and description of each soil locus and each architectural unit (e.g., walls, doorways, cisterns) and special features such as burials are recorded on special forms usually maintained by the area supervisor.

As artifacts are uncovered in the field, the use of field tags becomes an integral part of the recording system. Most tagging systems utilize some form of reference to the specific excavation location, the soil locus from which the artifact came, and some designation of the class of the artifact (metal, glass, ceramic) that will guide the registrar in further processing the item and the project expert in evaluating it.

Once an occupational level is fully excavated, the results are recorded by some combination of architect's drawing, formal photography, and section drawing. [*See* Architectural Drafting and Drawing.] The excavation architect prepares a precisely scaled drawing of the full excavation area, showing all relevant features. The excavation photographer takes several carefully planned photographs of the area, seeking to show as completely as possible the relationships of the various features to each other. The area supervisor prepares a section drawing showing at least one face of the balk in the excavation area in which all soil layers will have been distinguished and labeled. [*See* Balk.] These primary recording elements are frequently among the more important of the published forms of excavation documentation.

Once the excavation of an area has been completed, the supervisor is responsible for writing up a final report, summarizing the main periods, or phases, of occupation and connecting the area's various features to them. While much of the excavation's recordkeeping up to this point has been descriptive, the area report is interpretive, correlating soil loci and architectural elements into a coherent picture of human activity. This final area report becomes part of the area notebook and of the permanent record of the excavation in an area. Other records are usually inserted in the notebook as well: field reports of ceramic dating and identification, preliminary coin reports, and flora and fauna reports.

While every excavator strives to maintain a comprehensive documentation of an excavation, there are always conditions that call for a balance between recording the detail of every facet of excavation and the practical limitations of fieldwork. Each excavator is confronted with the need to determine which information is of such central importance that time and money should be allocated for its retrieval and recording. These decisions are made on the basis of the project's research design, which not only should address the general goals of the excavation but also should include some consideration of the analytical processes and recording techniques to be used to meet those goals. Collecting and recording vast amounts of information about issues that are of limited analytical value may only complicate the excavation process and the eventual publication of its research results.

The development of increasingly computerized fieldwork has meant significant time saving for archaeological recording. Laser transits generate digitalized data that can be readily converted into a variety of renderings, making it possible to produce top plans of excavation areas with greater accuracy and speed. The use of digitalizing imaging equipment, still in its infancy in archaeological fieldwork, may enable archaeologists to produce images of an excavation's progress that can be further enhanced to show greater or fewer details, in ways that are impossible with conventional instant photography. Establishing local computer networks on a site now allows field excavators instant access to the results of specialized analyses of materials from across the site; as a consequence, excavation techniques or sampling strategies can be adjusted to the data flow. As more powerful portable computer equipment becomes available to excavation projects, field recording will be the beneficiary.

[*See also* Computer Recording, Analysis, and Interpretation; Excavation Tools; *and* Excavation Strategy.]

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Dibble, Harold L., and Shannon P. McPherron. "On the Computerization of Archaeological Projects." *Journal of Field Archaeology* 15 (1988): 431–440. Report on the successful computerization of field recording for the excavation of a European prehistoric site. While written before the ready accessibility of powerful portable equip-

ment, the authors' insights on the need to incorporate computer recording at the inception of a project's development are still valuable.

McMillon, Bill. *The Archaeology Handbook: A Field Manual and Resource Guide.* New York, 1991. Very readable work for a general North American audience, with a brief chapter devoted to the recording process (see pp. 102–110).

Meyers, Carol L., and Eric M. Meyers. "Recording and Reporting: New Challenges in Archaeological Research." *Eretz-Israel* 23 (1992): 80–86. Readable essay on the use of quantification in archaeology, its applicability to studies in the world of the Bible, and the potential that computerization may hold for enabling such studies to appear in published form with greater rapidity.

Raab, L. Mark. "Laboratory Automation: Computer-Linked Measurement Devices and Videomicroscopy." *Journal of Field Archaeology* 20 (1993): 219–224. Brief overview of the problems and one working solution to automating the measuration and registration of artifacts in the archaeological field lab.

Schiffer, Michael B., et al. "The Design of Archaeological Surveys." *World Archaeology* 10 (1978): 1–28. Excellent overview of the interrelated problems of research design, methodology, and recording of archaeological fieldwork.

KENNETH G. HOGLUND

REFERENCE WORKS. There are numerous reference works available to those studying archaeology and the ancient Near East. What follows is a corpus of the most significant recent volumes, with emphasis on English-language works. The first section covers the ancient Near Eastern world; the second section offers a selective survey of the New Testament (Greco-Roman) world, but does not repeat those works in the first part that cover both the Hebrew Bible and the New Testament. The annotations attempt to give the scope of each work along with its strengths and weaknesses.

Ancient Near Eastern World

Primary sources in translation

Charlesworth, James H., ed. *Old Testament Pseudepigrapha.* 2 vols. Garden City, N.Y., 1983–1985. Over fifty scholars introduce, translate, and annotate more than sixty ancient texts. Despite its unevenness, inconsistent inclusion criteria, and the need for a revision, this remains the definitive work.

Coogan, Michael David. *Stories from Ancient Canaan.* Philadelphia, 1978. Readable translations of four important myths from ancient Ugarit.

Lichtheim, Miriam, comp. *Ancient Egyptian Literature: A Book of Readings.* 3 vols. Berkeley, 1973–1980. [Annotation]

Matthews, Victor H., and D. C. Benjamin. *Old Testament Parallels: Laws and Stories from the Ancient Near East.* New York, 1991. Readable translations of ancient Near Eastern texts designed for students.

Pritchard, James B. *Ancient Near Eastern Texts.* 2d ed. Princeton, 1955. Abridged in *The Ancient Near East.* 2 vols. Princeton, 1958–1975. Literal and traditional translations of the more important texts of the ancient Near East, none too readable and somewhat dated.

Smelik, K. A. D. *Writings from Ancient Israel: A Handbook of Historical and Religious Documents.* Translated by Graham I. Davies. Louisville, 1991. Translations are limited to inscriptions from Israel and Jordan, dated to 1000–500 BCE, and selected for their historical and religious value.

Commentaries. There are many commentary series and numerous commentaries on individual books of both the Hebrew Bible and the New Testament. Most are devoted to biblical books rather than ancient Near Eastern literature, and the use of archaeological data varies widely. Two recent texts, both by Philip J. King, which set a superb standard for deploying archaeological information to illuminate the text are *Amos, Hosea, Micah: An Archaeological Commentary* (Philadelphia, 1988), and *Jeremiah: An Archaeological Companion* (Louisville, 1993).

Anchor Bible. Garden City, N.Y., 1964–. Multivolume series. Individual commentaries vary immensely in the use of archaeological information. Originally intended for the educated general reader, the series (nearly complete) has evolved into lengthy technical works for scholars.

Brown, Raymond E., Joseph A. Fitzmyer, and Roland E. Murphy, eds. *The New Jerome Biblical Commentary.* Englewood Cliffs, N.J., 1990. Revision of the 1968 edition, with significant additional material. The most comprehensive coverage of any one-volume Bible commentary available. Extensive topical articles do full justice to the archaeological data, with an extremely useful subject index for locating such information. However, the scholarly style and verse-by-verse format is tedious and difficult.

Bruce, Frederick F., ed. *The International Bible Commentary.* Grand Rapids, Mich., 1986. The best of the one-volume conservative commentaries, including topical articles on archaeology and the Bible. Makes good use of archaeological information, but needs a subject index.

Hermeneia. Philadelphia and Minneapolis, 1971–. Multivolume series. Lengthy technical commentaries on individual books, with varying use of archaeological information.

International Critical Commentary on the Holy Scriptures. Edinburgh, 1895–. Multivolume series. Standard technical coverage, but the archaeological information is too old to have value. The series is being extended and renewed, with new commentaries in preparation.

Mays, James Luther, ed. *Harper's Bible Commentary.* San Francisco, 1988. Mainline, up-to-date, readable scholarship with an emphasis on literary analysis and very

limited use of archaeological information. Includes good maps and a map index, but no subject index.

Word Biblical Commentary. Waco, Texas, 1982–. Multivolume series, nearly complete. Fairly technical evangelical critical commentaries, with varying use of archaeological information.

Bible atlases. Bible atlases can be divided into reference and student works. Reference atlases generally feature extensive color photos and maps with textual commentary. Student atlases, less expensively produced are also more reasonably priced and often available in paperback editions.

Bahat, Dan, with Chaim T. Rubenstein. *The Illustrated Atlas of Jerusalem.* New York, 1990. Excellent maps and line drawings by Carta. Bahat is the official archaeologist for the city of Jerusalem. The text serves the general reader well, but specialists will find some issues addressed too briefly.

Baines, John, and Jaromir Málek. *Atlas of Ancient Egypt.* New York, 1980. Includes color photos and maps. The nontechnical text deals with individual sites, the cultural setting, and Egyptian society.

Beek, Martinus A. *Atlas of Mesopotamia.* Translated by D. R. Welsh. Edited by H. H. Rowley. London, 1962. Though somewhat dated, includes good maps and black-and-white photos.

Beitzel, Barry J. *The Moody Atlas of Bible Lands.* Chicago, 1985. Reference Bible atlas. Balanced, conservative treatment with excellent color maps designed to aid the colorblind. The geographical commentary is exhaustive and often too detailed for the general reader. Archaeological data is minimal but current. A gazetteer would be helpful.

Bimson, John J., and John P. Kane. *New Bible Atlas.* Wheaton, Ill., 1985. Student Bible atlas. Balanced conservative approach, organized according to archaeological periods, with extensive discussion of important sites and archaeological methods and limitations. The color maps and illustrations are well coordinated with the text. This is the best of the student atlases, along with *The Harper Concise Atlas of the Bible* (Pritchard 1991).

Freeman-Grenville, G. S. P. *Historical Atlas of the Middle East.* New York, 1993. Designed for the general reader, with an emphasis on the medieval and modern Middle East. Includes excellent maps by Carta; the brief commentary is accompanied by many smaller maps.

Gardner, Joseph, ed., with Harry Thomas Frank. *Reader's Digest Atlas of the Bible.* Pleasantville, N.Y., 1981. Reference Bible atlas. Mainstream approach, lavishly illustrated with excellent color maps. The accessible text, now somewhat dated, is augmented with an informative gazetteer. The volume would be more useful geographically if the maps were gridded and clear topographical distinctions shown.

Pritchard, James B., ed. *The Harper Atlas of the Bible.* San Francisco, 1987. Reference Bible atlas. Mainstream scholarship, visually beautiful, with excellent maps and illustrations. The large size and high production cost of the horizontal maps restrict use. A scripture column should be added in the site index and more focus placed on geographical features.

Pritchard, James B., gen. ed. *The Harper Concise Atlas of the Bible.* New York, 1991. Student Bible atlas. Mainstream approach. An abridged version of the *Harper Atlas of the Bible* (Bimson and Kane 1985), with some improvements and most of the maps retained. Selected commentary has been rewritten and improved.

Rainey, Anson F., et al., eds. *Macmillan Bible Atlas.* 3d ed. New York, 1993. Reference Bible atlas. Standard work, revised and improved.

Rasmussen, Carl G. *Zondervan NIV Atlas of the Bible.* Grand Rapids, Mich., 1989. Reference Bible atlas, notable for its visual quality, with excellent color maps (especially the block maps depicting physical features) and numerous illustrations. The conservative commentary is written for the general reader, with an extensive gazetteer. Occasionally the coordination between text and maps is not apparent.

Rogerson, Joseph W. *Atlas of the Bible.* New York, 1985. Reference Bible atlas. Mainstream commentary, with lavish use of color illustrations and maps. The regional approach to historical geography is helpful, but the maps should be more colorful and less cluttered. The gazetteer should be expanded.

Archaeological dictionaries. Dictionaries that cover archaeology broadly, for instance, *The Facts on File Dictionary of Archaeology* (New York, 1983) or *The Cambridge Encyclopedia of Archaeology* (New York, 1983), provide limited coverage of the ancient Near East. The reader would find much more information in the following works.

Ben-Tor, Amnon, ed. *The Archaeology of Ancient Israel.* New Haven, 1992. Eight Israeli scholars have collaborated to provide the full sequence of archaeological periods for sites in ancient Canaan from the Neolithic to Iron III. The volume is effectively illustrated with color and black-and-white photos, maps, and line drawings. Technological advances and cultural transitions are discussed with a minimum of technical language. Information on sites and artifacts provide both specific topical data as well as an excellent overview.

Blaiklock, Edward M., and R. K. Harrison, eds. *The New International Dictionary of Biblical Archaeology.* Grand Rapids, Mich., 1983. Twenty scholars cover a wide range of topics and provide brief bibliographies, although the articles are uneven in quality and becoming dated. Includes black-and-white photos and sixteen pages of color photos in the center of the volume.

Mazar, Amihai. *Archaeology of the Land of the Bible, 10,000–586 B.C.E.* New York, 1990. Advanced survey from an Israeli perspective.

Negev, Avraham, ed. *The Archaeological Encyclopedia of the Holy Land.* 3d ed. Englewood Cliffs, N.J., 1990. More than twenty American and Israeli archaeologists contribute about six hundred entries covering approximately ten millennia, from the earliest societies down to the Arab conquest. Includes a glossary of archaeological terms and about three hundred black-and-white photos, charts, and maps. Generally reliable and up to date, but coverage is more limited than Stern.

Pfeiffer, Charles F., ed. *The Biblical World: A Dictionary of Biblical Archaeology.* Grand Rapids, Mich., 1966. Pioneering effort when it appeared, but the archaeological information is badly dated now. Includes articles on texts (e.g., Sinuhe, Enuma Elish), people (e.g., Moab, Moabites), and sites (e.g., Masada).

Rast, Walter E. *Through the Ages in Palestinian Archaeology: An Introductory Handbook.* Philadelphia, 1992. A more popular survey than Mazar by an American archaeologist.

Sasson, Jack M., et al., eds. *Civilizations of the Ancient Near East.* 4 vols. New York, 1995. A welcome addition to the secondary literature, this work is a very useful and ambitious collection of essays on many aspects of the ancient Near East. It is particularly strong in areas of the history and literatures of the region but touches less systematically on the physical and cultural aspects of ancient society.

Stern, Ephraim, et al., eds. *The New Encyclopedia of Archaeological Excavations in the Holy Land.* 4 vols. Jerusalem and New York, 1993. Definitive work (revised and updated from the 1975–1977 edition), covering excavations in Israel and parts of Jordan, Syria, and the Sinai Peninsula. Features some four hundred articles by international scholars (primarily Israeli) on 420 sites as well as regions and topics (i.e., "Churches, Monasteries, and Synagogues"), with excellent bibliographies. Each site is discussed in detail, often by the original excavator.

Bible dictionaries

Achtemeier, Paul J., ed. *Harper's Bible Dictionary.* San Francisco, 1985. Balanced mainstream approach. Excellent presentation of up-to-date archaeological information written by many of the leading scholars in their fields. Bibliographic data is limited, even in the longest articles. Includes excellent color maps, numerous illustrations, and an index. Overall this is the best one-volume Bible dictionary, but it is becoming dated.

Bromiley, Geoffrey W., ed. *The International Standard Bible Encyclopedia.* 4 vols. Grand Rapids, Mich., 1979–1988. The definitive conservative work, almost completely revised from the 1915 and 1929 editions. Delays in publication have produced some unevenness. Generally balanced approach; many articles interact with the full range of critical scholarship.

Butler, Trent C., ed. *Holman Bible Dictionary.* Nashville, 1991. About 5,000 popularly written articles (without bibliographies), authored by 250 teachers and ministers, with lavish use of color illustrations and maps and fairly balanced use of archaeological information. Conservative approach. A good Bible dictionary for the general reader.

Buttrick, George A., ed. *The Interpreter's Dictionary of the Bible.* 4 vols. Nashville, 1962. Remained the definitive work until the publication of *The Anchor Bible Dictionary* (Freedman 1992), although because of the latter's uneven quality, this volume is still very useful, especially in philological studies. A supplementary volume was published in 1976.

Douglas, James D., ed. *The New Bible Dictionary.* 2d ed. Wheaton, Ill., 1982. Excellent presentation of archaeological information with good bibliographies for the longer articles. Includes a comprehensive index useful for locating archaeological information, but no map section or color photos. Balanced conservative approach, but slightly dated, making this a close second to *Eerdmans* (Myers 1987) as the best conservative Bible dictionary.

Freedman, David Noel, ed. *The Anchor Bible Dictionary.* 6 vols. New York, 1992. The definitive work in English, with over six thousand entries authored by nearly a thousand contributors. The articles and bibliographies are extensive, up to date, and often written by the leading international scholars. Archaeological information is comprehensive and includes articles on the newest approaches. However, the selection of sites and coverage given to those included is uneven, for instance, there is no article on Carchemish, and the article on Hazor is less than one page. Though the arrangement is alphabetical, the forthcoming index volume will help the reader to make full use of the massive amount of information.

Mills, Watson E., ed. *Mercer Dictionary of the Bible.* Macon, Ga., 1990. The best coverage of extra-biblical literature, with signed contributions by more than 225 scholar/teachers and bibliographies. Features up-to-date archaeological information but fewer (1,450) entries than other Bible dictionaries; limited but visually attractive illustrations; and color maps (but no map index). Succeeds well as a volume designed for students and classroom use.

Myers, Allen C., ed. *The Eerdmans Bible Dictionary.* Grand Rapids, Mich., 1987. The best conservative Bible dictionary, a revision and translation of *Bijbelse Encyclopedia* (1975), with substantial additions of up-to-

date archaeological information. Articles are balanced (though unsigned) and frequently accompanied by bibliographies. Includes excellent color maps by Hammond, but no map index. No other color illustrations and a limited number of black-and-white photos make this dictionary less visually appealing.

Flora and Fauna

Cansdale, George S. *All the Animals of the Bible Lands.* Grand Rapids, Mich., 1970. Comprehensive discussion of animals, birds, and fish, with drawings and pictures (some in color), plus good indices.

Zohary, Michael. *Plants of the Bible.* New York, 1982. Handbook to all the plants of the Bible, with bibliography, index, and about two hundred color illustrations.

Dissertations. Often technical and difficult to read, dissertations nevertheless represent a source for the most current research available. The *Dissertation Abstracts International* (Ann Arbor, Mich., 1938–) provides abstracts of the latest archaeological dissertations from all over the world (although coverage of European dissertations is limited). Section A of *DAI* covers the humanities and social sciences, with several relevant categories for the archaeological researcher (anthropology, archaeology, history: ancient, religion, biblical studies, language: ancient, etc.), as well as a keyword title index and an author index. *Religious Studies Review* (Atlanta, 1975–) notes completed dissertations as well as research in progress. The *Zeitschrift für die Alttestamentliche Wissenschaft* (Berlin, 1881–) lists dissertations in progress.

Indices and bibliographies

Annual Egyptological Bibliography. Leiden, 1947–. The most comprehensive annual bibliography of ancient Egypt, with numbered abstracts classified in ten sections, and author and title indices.

Art Index. New York, 1929–. Indexes several journals devoted to art and archaeology, with a separate section for book reviews. Well indexed.

Elenchus Bibliographicus Biblicus. Rome, 1920–. The most comprehensive annual biblical bibliography, indexing virtually every relevant journal, as well as newsletters and occasional publications. Archaeology and the ancient Near East are very well covered. Extensive indices are very helpful. Unfortunately, there is a delay of a few years before publication.

Heizer, Robert F. *Archaeology: A Bibliographical Guide to the Basic Literature.* New York, 1980. Almost five thousand unannotated items, with a very thorough review of the literature.

Hospers, J. H., ed. *A Basic Bibliography for the Study of the Semitic Languages.* 2 vols. Leiden, 1973–1974. Volume 1 has chapters devoted to several languages, written by specialists, and a section on comparative Semitics. Volume 2 covers all aspects of Arabic. Includes almost ten thousand entries, but no annotations or index.

Humanities Index. New York, 1974–. Separated from the *Social Science and Humanities Index* in 1974, with significantly improved humanities coverage. Indexes several journals dealing with archaeology, with a separate section for book reviews.

Hupper, William G. *An Index to English Periodical Literature on the Old Testament and Ancient Near Eastern Studies.* Metuchen, N.J., 1987–. Five volumes of this projected ten-volume series have appeared to date. Indexes English-language works in over six hundred journals of archaeology, history, language, science, and theology from 1793 to 1970. The special value of this index is the extensive coverage of nineteenth- and twentieth-century articles, including many on archaeology which are compiled in no other source. Includes articles not found in Part I of Vogel's bibliography. Not yet indexed.

Index of Articles on Jewish Studies. Jerusalem, 1969–. Valuable for Hebrew-language publications, but not especially useful for archaeology. Includes festschrifts and several journals not indexed elsewhere. Well indexed.

Keilschriftbibliographie. Rome, 1940–. Published as part of the periodical *Orientalia.* Biannual index for the ancient Near East arranged alphabetically in a continuously numbered list, with subject and name indices. This index does for the ancient Near East what *Elenchus* does for the Bible.

Langevin, Paul-Émile. *Biblical Bibliography.* 3 vols. Quebec, 1972–1985. Covers journals and some books from 1930 to 1983. Well indexed with many subcategories dealing with archaeology. Organization of biblical sections by verse references make the biblical sections very useful. Includes an introduction in five languages.

Purvis, James D. *Jerusalem, the Holy City: A Bibliography.* 2 vols. Metuchen, N.J., 1988–1991. The definitive bibliography on all aspects of Jerusalem.

Religion Index One. Chicago, 1949–. Originally titled *Index to Religious Periodical Literature.* Indexes journals relating to a much broader spectrum of topics than *Elenchus,* including biblical archaeology, but ancient Near Eastern coverage is limited. Features subject, author, editor, and scripture indices.

Religion Index Two. Chicago, 1960–. Companion to *Religion Index One,* with additional indexing of multi-authored books, series, and festschrifts.

Vogel, Eleanor K., et al. "Bibliography of Holy Land Sites." *Hebrew Union College Annual* 42 (1971): 1–96; 52 (1981): 1–92; 58 (1987): 1–63. The definitive bibliography of individual sites in Israel and parts of Jordan

and Syria. Each articles brings the bibliography up to date to the time of publication. Also available in offprint.

New Testament (Greco-Roman) World. Archaeology has not been utilized as much to illuminate the New Testament as it has for the Hebrew Bible. The following list is very selective. In addition, many items above deal with both the Hebrew Bible and the New Testament, and will not be relisted in this section.

Primary sources in translation

Hennecke, Edgar, Wilhelm Schneemelcher, and Robert McL. Wilson, eds. *New Testament Apocrypha.* 2 vols. Rev. ed. Philadelphia, 1991–1992. The revision brings the translation fully up to date.

The Loeb Classical Library. Cambridge, Mass. The most extensive collection of Greek and Latin texts with English translations.

Robinson, James M., ed. *The Nag Hammadi Library in English.* 3d ed. San Francisco, 1988. Thorough revision of the Gnostic texts, and the definitive translation of the world's leading Gnostic scholars.

Atlases

Cornell, Tim, and John Matthews. *Atlas of the Roman World.* New York, 1982. Excellent color maps and pictures and a popularly written text. Includes a gazetteer, index, and bibliography.

Levi, Peter. *Atlas of the Greek World.* New York, 1980. Excellent color maps and pictures and a popularly written text. Includes a gazetteer, glossary, index, and bibliography.

Meer, Frederik van der, and Christine Mohrmann. *Atlas of the Early Christian World.* Translated and edited by Mary F. Hedlund and H. H. Rowley. London, 1966. Older and still valuable standard work which should be supplemented by the Levi and Cornell/Matthews volumes.

Archaeological dictionaries and textbooks

Finegan, Jack. *The Archaeology of the New Testament: The Mediterranean World of the Early Christian Apostles.* Boulder, Colo., 1981. *The Archaeology of the New Testament: The Life of Jesus and the Beginning of the Early Church.* Rev. ed. Princeton, 1992. Companion volumes, the latter extensively revised from the 1969 edition. Fairly detailed archaeological review, lavishly illustrated, with an alphabetical list of ancient sources, an index of biblical references, and a general index.

McRay, John. *Archaeology and the New Testament.* Grand Rapids, Mich., 1991. The most comprehensive and up-to-date undergraduate textbook available in this field.

Pauly, August, and Georg Wissowa, et al., eds. *Real-Encyclopädie der classichen Altertumswissenschaft.* Stuttgart, 1839–. The definitive reference work covering all aspects of classical antiquity. A supplement, *Der Kleine Pauly,* 5 vols., edited by Konrat Ziegler and Walther Sontheimer (Stuttgart, 1964–1975), is more accessible than the original publication.

Rousseau, John J., and Rami Arav. *Jesus and His World: An Archaeological and Cultural Dictionary.* Minneapolis, 1994. A work that includes entries on sites, customs, and artifacts relating to the New Testament; to be used critically.

Stillwell, Richard, et al., eds. *The Princeton Encyclopedia of Classical Sites.* Princeton, 1976. Covers sites that show remains from the Classical period, mid-eighth century BCE to the beginning of the sixth century CE, with the exception of Early Christian sites of the fourth and fifth centuries. Includes maps, map indices, and a glossary, but no illustrations or drawings. Helpful bibliographies accompany each article.

Dictionaries

Ferguson, Everett, ed. *The Encyclopedia of Early Christianity.* New York, 1990. Helpful overall, but often inadequate on excavations.

Hammond, N. G. L., and H. H. Scullard. *The Oxford Classical Dictionary.* 2d ed. Oxford, 1970. The best single-volume reference work, though somewhat dated. Articles are signed and include bibliographies.

Bibliographies

L'année philologique: Bibliographie critique et analytique de l'antiquité gréco-latine. Paris, 1928–. The definitive annual bibliography of Greek and Latin philology. Includes helpful indices of collections, ancient authors, modern authors, humanists, and geography.

Charlesworth, James H. *The New Testament Apocrypha and Pseudepigrapha: A Guide to Publications with Excursuses on Apocalypses.* Metuchen, N.J., 1987. Introduction to and extensive bibliography on Christian extracanonical writings dating from 125 to 425.

Oster, Richard E. *A Bibliography of Ancient Ephesus.* Metuchen, N.J., 1987. Extensive bibliography of ancient Ephesus, including archaeological aspects.

Scholer, David M. *Nag Hammadi Bibliography.* Leiden, 1971. The definitive bibliography of Nag Hammadi, updated annually as "Bibliographia gnostica" in *Novum Testamentum.*

Other

Ferguson, Everett. *Backgrounds of Early Christianity.* 2d ed. Grand Rapids, Mich., 1993. Encyclopedic work covering Hellenistic-Roman and Jewish backgrounds to

early canonical Christianity. Includes archaeological remains.

Meshorer, Ya'acov. *Ancient Jewish Coinage.* 2 vols. Dix Hills, N.Y., 1982. Definitive work on Jewish coins.

White, L. Michael. *Building God's House in the Roman World: Architectural Adaptation among Pagans, Jews, and Christians.* Baltimore, 1990. Traces the architectural development of the meeting places of Christians from the earliest evidence until after Constantine.

VICTOR H. MATTHEWS and JAMES C. MOYER

REHOVOT (Ar., Ruḥeibe), site located 32 km (18 mi.) southwest of Beersheba, 11 km (7 mi.) southwest of Elusa (Ḥaluṣa), and 22 km (13 mi.) northeast of Nessana, on the northeast side of Wadi Ruḥeiba. Positioned on the biblical Way of Shur (*Gn.* 16:7; 20:1), this second-largest Negev city (after Elusa) functioned as an important caravan stop and, in the Byzantine period, as a rest stop for pilgrims traveling between the Sinai desert and Jerusalem, as the Byzantine khan and stable excavated in area C and the city's four churches indicate.

The Hebrew name of the site (Reḥovot) derives in modern times from the similarity of its Arabic name (Ruḥeibe) to the biblical Reḥovot, where a patriarchal well was located (*Gn.* 26:2). The huge, ancient well (largest in the Negev), located outside the town near a now-destroyed Byzantine bathhouse, was mistaken for the well mentioned in *Genesis.* The ancient name of the site is not known, although it is probably one of the towns mentioned inNessana papyrus 79, as Yoram Tsafrir argues (Tsafrir, 1993, p. 295).

Excavations carried out by Tsafrir from 1975 to 1979 and in 1986 indicate that the site was founded in the first century BCE/CE and terminated in about 700. The presence of post-abandonment Arab squatters in the site's north church and the absence of Arab glazed pottery indicate the probability of such a date. Estimates of the site's size vary in the literature, but the most recent estimate by Tsafrir of about 30 acres, with a population of about 4,800 at the city's height in the Byzantine period, is probably best.

Very little of the site has been excavated: some domestic housing (areas A and B), the khan and stable (area C), and only two (one partially) of the city's four churches (Tsafrir, 1988). Partial excavation of the central church (area D) revealed a well-preserved synthronon in a single-apsed building. Extensive excavation of the northern church revealed one of the largest triapsidal church buildings in the Negev, erected in several stages, with a chapel to the north and a large atrium that may have functioned as a monastery at the southern end of the nave. The dedicatory inscription dates its construction to the mid-sixth century. The most remarkable feature of this church is its crypt, equipped with a stairway for pilgrims to visit and venerate the unknown saint buried there.

The 1986 excavations carried out at the site under the auspices of the Institute of Archaeology of the Hebrew University of Jerusalem and the University of Maryland gave welcome stratigraphic precision to particular areas (Tsafrir and Holum, 1987–1988 and 1988). On ceramic grounds, the southern edge of the town (area B) cannot have been built before the fifth or sixth centuries CE; and the floor of the stable house (area C) overlay pottery of the first centuries BCE/CE. In addition to excavations carried out in the Byzantine cemetary, work in the atrium of the North Church (area E) yielded a Kufic officer's inscription with the earliest epigraphic mention of 'Amr ibn al-'Aṣ, the conqueror of Byzantine Palestine.

Studies of the names of the city's inhabitants (as revealed by dedicatory and cemetery inscriptions) indicate a preponderance of Greek personal names of Nabatean and Arab origin in the early sixth century. They are replaced by a preponderance of Semitic personal names by the end of the century (Gutwein, 1981). This pattern seems to be reinforced by the small skeletal sample recovered and published, which indicates a nomadic, rather than either Jewish or Greek, ethnic type. Among the skeletal samples are those of three females, which are significant because so little is known about female skeletons in general.

[*See also* Churches; Ḥaluṣa; *and* Nabateans.]

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Gutwein, Kenneth C. *Third Palestine: A Regional Study in Byzantine Urbanization.* Washington, D.C., 1981.

Shereshevski, Joseph. "Urban Settlements in the Negev in the Byzantine Period." Ph.D. diss., Hebrew University of Jerusalem, 1986. In Hebrew with English summary.

Tsafrir, Yoram, and Kenneth G. Holum. "Rehovot—1986." *Excavations and Surveys in Israel, 1987/88* (1987–1988): 89–91.

Tsafrir, Yoram, and Kenneth G. Holum. "Rehovot-in-the-Negev: Preliminary Report, 1986." *Israel Exploration Journal* 38 (1988): 117–127.

Tsafrir, Yoram, et al. *Excavations at Rehovot-in-the-Negev,* vol. 1, *The Northern Church.* Qedem, vol. 25. Jerusalem, 1988.

Tsafrir, Yoram. "On the Pre-Planning of Ancient Churches and Synagogues: A Test Case—The Northern Church at Rehovot in the Negev." In *Christian Archaeology in the Holy Land, New Discoveries: Essays in Honour of Virgilio C. Corbo,* edited by Giovanni Claudio Bottini et al., pp. 535–544. Studium Biblicum Franciscanum, Collectio Maior, 36. Jerusalem, 1990.

Tsafrir, Yoram. "The Early Byzantine Town of Rehovot-in-the-Negev and Its Churches." In *Ancient Churches Revealed,* edited by Yoram Tsafrir, pp. 294–302. Jerusalem, 1993.

Tsafrir, Yoram, and Kenneth G. Holum. "Rehovot-in-the-Negev." In *The New Encyclopedia of Archaeological Excavations in the Holy Land,* edited by Ephraim Stern, vol. 4, pp. 1274–1277. Jerusalem and New York, 1993.

DENNIS E. GROH

REISNER, GEORGE ANDREW, (1867–1942), American Egyptologist. Born of German-American parents in Indianapolis, Reisner obtained a Ph.D. from Harvard University in Semitic history and languages in 1892 and received a traveling fellowship to continue his studies in Germany, where he became fascinated by ancient Egypt. In 1899 he entered into an agreement with Phoebe Apperson Hearst to direct excavations at several sites in Egypt on behalf of the University of California. From 1905 until his death he worked almost continuously for the Harvard University–Museum of Fine Arts (Boston) Egyptian Expedition. Reisner died at his house behind the Great Pyramid of Giza, where he had spent most of his adult life.

Although he held academic appointments, primarily at Harvard University, and was curator of the Egyptian Department at the Museum of Fine Arts, Boston, (1910–1942), Reisner spent most of his time in the field. He worked longest at Giza, but many other areas also drew his attention including Deir el-Ballas and Nag ed-Deir (Upper Egypt), Samaria (Israel), and Lower Nubia (Sudan). Reisner set the highest standards in field methods, insisting on meticulous recordkeeping in all aspects of excavation. He was among the first to use complete photographic recording as a standard field technique. Although he spent only three seasons at Samaria (1908–1910), his work there greatly influenced Byro-Palestinian archaeology.

Reisner's contributions on a scholarly level were no less important. The publications of his fieldwork were unusually complete, both as catalogs of remains recovered and as detailed historical and cultural syntheses. His *History of the Giza Necropolis,* volume 1 (1942) and *The Development of the Egyptian Tomb Down to the Accession of Cheops* (1936) remain two of the most important works published on these subjects. He made another lasting contribution by training a succeeding generation of Egyptologists and archaeologists in his meticulous scholarly and field methods.

[*See also* Giza; Samaria.]

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PATRICIA V. PODZORSKI

RENAN, JOSEPH ERNEST (1823–1892), French philosopher, Semitist, historian of religions, archaeologist, and prolific writer. Ernest Renan was born at Tréguier in Brittany, the third and last child of Philibert Renan, a marine merchant, and his wife Magdeleine Féger, a grocer. Destined to the priesthood, he studied rhetoric, theology, Latin, and Hebrew at the Grand Séminaire de Saint-Sulpice in Paris but left the seminary to do graduate work at the Sorbonne. He completed his doctoral degree in 1852 with a dissertation on Ibn Rushd (d. 1198) "Averroes et l'Averroïsme, essai historique."

In 1856 Renan married and joined the Académie des Inscriptions et Belles-Lettres. He published his translation of the *Book of Job* in 1859 and a year later, of the *Song of Songs.* In 1860 Renan was given the opportunity to lead an archaeological expedition to Phoenicia, where his research focused on four areas: Ruad/Aradus, Tortose/Antarados, and Amrit/Marathus; Jbail/Byblos; Saïda/Sidon; and Sour/Tyre. He began by excavating at Byblos; two months later he went to Sidon and the region of Tyre, where he opened several more digs. Until his departure for France in late 1861, Renan traveled widely in Phoenicia and Palestine. He began publishing his monumental *Mission de Phénicie* in Paris in 1864. Completed in 1874, the survey details his exploration and excavations in Phoenicia. The work is topographical, historical, ethnological, descriptive, and archaeological.

Upon his return from the Near East, Renan was elected professor of Hebrew, Chaldean, and Syrian at the Collège de France. His opening lecture upset the college's clerical faction and his lectures were suspended within the week. However, the government allowed him to lecture at home and did not deprive him of his title or salary. Within imperial circles Renan enjoyed the protection of Prince Jérome Bonaparte and Princess Mathilde.

In 1863 he published his *Life of Jesus* (vol. 1 of *Les Origines du christianisme*). The work questions scientifically the supernatural in the Gospels and was reprinted ten times before the end of the year. It generated such fierce attacks that Renan was forced to spend the summer of 1863 in Jersey and Brittany. The book was translated and published outside France in 1864. A revised thirteenth edition was published, he was dismissed from the Collège de France by the Ministry of Culture, and he was appointed assistant director of the Department of Manuscripts at the Bibliothèque Imperiale, all in that same year. His professorship was reinstated in 1870, after the Franco-Prussian War and the fall of Napoleon III.

Meanwhile, in 1866, he published *Les Apôtres* (as vol. 2 of

Les Origines du christianisme) and in 1867 initiated the *Corpus Inscriptionum Semiticarum*. Elected to the Académie Française in 1878, he received the Legion of Honor *(grand officier)* in 1888. Renan died in Paris after a long illness.

[*See also* Byblos; Phoenicia; Sidon; *and* Tyre.]

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HAFEZ K. CHEHAB

RESERVOIRS. A large natural or an artificial underground space enhanced to store large quantities of water, primarily for drinking, is known as a reservoir. Water storage is essential to life in regions where there is no rainfall during part of the year and the total amount of precipitation is low enough to require conservation of water from one period to the next: winter to summer, night to day, and a rainy year to a drought year. Syria-Palestine abounds with reservoirs created for this purpose.

Reservoirs were either hewn from natural rock or built of stone; sometimes both engineering methods were combined. In several cases, large supporting pillars were constructed to hold up the installation's ceiling. The walls were thickly plastered, usually with a layer 5–10 cm thick, to prevent loss of water from percolation.

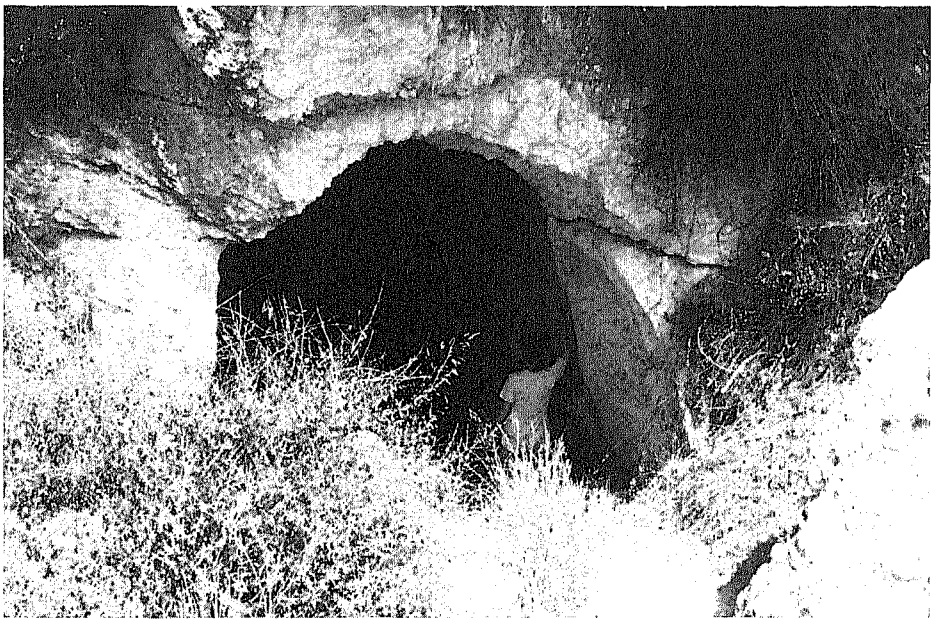
The earliest reservoirs discovered in the region are small and should properly be designated cisterns. The earliest reservoir in the land of Israel was discovered at Hazor and dates to the Middle or Late Bronze Age. [*See* Hazor.] This reservoir, located beneath a Canaanite palace, is shaped like a cross or a clover leaf and is coated with white plaster. The water entered the reservoir by means of a monumental drain made of basalt. Its volume is 150 cu m.

Two reservoirs for the collection of runoff are known from the Iron Age II period: at Beth-Shemesh, at Eitam, and at Beersheba. [*See* Beth-Shemesh; Beersheba.] The reservoir at Eitam is a system of natural caves whose volume is 240 cu m. The Beth-Shemesh reservoir is hewn out of soft, chalky rock; it is square and has four extensions and a capacity of 500 cu m. Both reservoirs display a double layer of plaster, one gray and the other yellow. The one at Beersheba has a volume of about 600 cu m and the plaster is similar to the one at Beth-Shemesh.

During the Second Temple period (Hellenistic and Early Roman periods) several reservoirs were cut out of the rock to serve the desert fortresses at Sartaba (nine reservoirs with a total capacity of 5,000 cu m), Duk (Dagon/Mt. Quarantale; nine reservoirs with a capacity of about 2,000 cu m), Cypros (four reservoirs, one with a volume of 500 cu m), Hyrkania (twenty-four reservoirs with a capacity of 20,000 cu m), Herodium (four reservoirs), and Masada (twelve reservoirs with a volume of 40,000 cu m). [See Herodium; Masada.] The water reached the reservoirs by means of conduits or aqueducts that either diverted water from flash floods, collected runoff, or conveyed water from natural springs, such as at Cypros (phase II).

Also from the Second Temple period are the thirty-four reservoirs beneath the Temple Mount in Jerusalem, whose total capacity is 36,000 cu m. The largest of these, with a volume of 12,000 cu m, located not far from the al-Aqṣa mosque, is called the Small Sea; it is the largest ancient reservoir in the region. [*See* Jerusalem.]

In the Roman and Byzantine periods, many more reservoirs were hewn or constructed. At Sepphoris, a sausage-shaped reservoir was hewn from the rock with a volume of 4,300 cu m (see figure 1). [*See* Sepphoris.] A reservoir at Beit Ras (Capitolias) in Jordan has a similar shape and size to the one found in Sepphoris. [*See* Beit Ras.] In Jerusalem, the domed reservoir of the Nea Church, built of two longitudinal galleries and two cross galleries, has a total volume of 3,500 cu m (its wall has an inscription dating it to the reign of Justinian). The built reservoir at Tiberias has a volume of 2,000 cu m; and the partly hewn and partly constructed reservoir at Hippos/Susita has a volume of 1,500 cu



RESERVOIRS. Figure 1. *Entrance to the reservoir at Sepphoris.* (Courtesy E. M. Meyers)

m. [*See* Tiberias.] These large reservoirs were fed by aqueducts, with the exception of the ones in Jerusalem. In the Byzantine period, large reservoirs were built for the monasteries in the Judean Desert. The Martyrius monastery has a reservoir of 2,000 cu m; the Haritun monastery has a reservoir of 1,000 cu m and walls decorated with crosses.

In the Early Arab period, four underground reservoirs were built in the city of Ramla (the Pool of Arches and three located next to the White Mosque). [*See* Ramla.] These were fed by an aqueduct that originated at Tel Gezer; their total volume is 10,000 cu m. Numerous pillars support these reservoirs' ceilings. In the Crusader period, reservoirs were built inside fortresses to collect runoff; especially well known are those at Qal'at Nimrod and Belvoir (Kokhav ha-Yarden). In the Ottoman period a large reservoir was built at Acre/Akko underneath the courtyard of the Jazzar mosque, which had been a Crusader church. This reservoir was the terminal point for the Kabri aqueduct. [*See* Akko; Kabri, Tel.]

[*See also* Aqueducts; Cisterns; Hydraulics; *and* Hydrology.]

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Translated from Hebrew by Ilana Goldberg

RESISTIVITY. Subsurface electrical resistivity surveying exploits the fact that soil masses and rocks are able to conduct electricity because water in their interstices contains dissolved mineral salts and/or humic acids of biological origin. Measurement equipment includes a set of four or more electrodes, an electrical source, and a metering device. Survey technique involves placing the electrodes in the ground at regular intervals in a linear array and then connecting them sequentially in pairs to respective positive and negative voltage sources. Electrical resistance is measured as voltage is passed through the ground between the electrodes. The resistivity is the ratio of the applied voltage to the magnitude of the current. Ditches and pits with loose silts and soils generally show low resistivity readings, while structures and deposits with clay, brick, and stone will be relatively high. Testing is most successful when the linear transverse runs perpendicular to subsurface features—across ditches or stone or brick walls.

Soil resistivity measurement has been used by geologists and civil engineers since World War I. However, the first major application to archaeological work was only made in 1946, by R. J. C. Atkinson (1953), on a group of Neolithic monuments at Dorchester, England. One advantage of resistivity testing is that deep-current penetration can be ob-

tained with only short probe insertion because the depth of electrical penetration is governed by, and is roughly equal to, the spacing between the electrodes. Another advantage is that the equipment setup is simple and of reasonable cost—although the development of more modern and sophisticated electronic instruments and of complicated probe array systems may now belie that claim. The advent of magnetic detection in the late 1950s provided archaeologists with an alternative tool to supplement the linear-array limitation of resistivity survey by providing a means for sweeping coverage of a survey area. [*See* Magnetic Archaeometry.]

Like other systems that test subsurface conditions, the resistivity surveyor must contend with a multitude of variables within the test environment. Stone-filled soils make inserting probes difficult and produce erratic resistivity results; dry, sandy soils are often incapable of conducting current; and subsurface features parallel and adjacent to the array transverse may skew resistivity readings. Accordingly, while analysis of resistivity readings can help the archaeologist to develop a plot of assumed subsurface features, "ground truth" can be finally determined only by excavation.

[*See also* Survey, Archaeological.]

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JOE D. SEGER

RESTORATION AND CONSERVATION.

To discuss restoration of monuments is to speak of a very vexed and controversial matter—and to avoid the controversy is to avoid the substance. The social factors standing behind restoration are complex (and mutually antagonistic), the interests to be served in the monument itself are conflicting, and in some essential respects the technical means available are limited to nonexistent. Thus, popular expectations may be quite out of proportion to possibilities. It is possible to exhibit ancient monuments for the short term in a manner agreeable to contemporary taste, but very frequently this does little to preserve them across the ages. On the other hand it is possible to preserve them well (e.g., by building a shelter over them or, in extremis, by burying them), but this is often at the expense of exhibiting them in an agreeable manner. There is no magic in the words *conservation* and *restoration* to ensure perfect preservation and exhibition concurrently. All that is material is subject to decay, stones and men alike. Sometimes results can be achieved which will last for more or less limited time. Results can not always be achieved. And no results can be guaranteed for ever. In the final instance perhaps the restorer must serve his generation.

Origin and Theory of Restoration. The theory of restoration of monuments is very well developed. It originated in specific circumstances in western Europe during the nineteenth century but is now reckoned to be of international application. Nonetheless, since the theory is based on European concepts of aesthetics and history, there is no reason why this should be so, and it would always be quite reasonable for another region to reject this theory in favor of one based on different cultural values—for example, on those of Confucianism or Islam. However, as yet this attitude has not been manifested in practice.

The concept of restoration emerged out of the historicism of the Romantic movement *sub specie* the Gothic Revival and the basic principle was established in the polemics surrounding its enunciation. The first person to deal systematically with the term and the activity (both novelties) was Viollet-le-Duc (1814–1879). Both in word and deed he proclaimed a concept of restoration which was immediately refuted (in theory) by his English contemporaries Ruskin and Morris. For Viollet the subject of restoration was the "form" of the building, its style—the Zeitgeist which the builders had realized (or sought to realize) in their structure. Thus, the restorer must be a master of building history together with all the techniques of construction necessary to reproduce perfectly the exact style in question. Metaphysically considered, Viollet's approach was Platonic (and he was much concerned with the ideal castle or church). In their often unsuccessful efforts to prevent its practice in England, Ruskin and Morris denigrated this theory, which they called the worst form of destruction.

Metaphysically considered their understanding was Aristotelian. The monumental form was a quality of the material—it was embodied in the material and existed nowhere outside of it: destroy the surviving material and you destroy the monumentality. The problem of restoration was thus how to preserve the surviving material in such a manner as to exhibit its monumentality to maximum effect. This has remained ever since the basic principle of restoring monuments and thus the controversy between three men of great genius (expressed equally in literature, art, and society) on the correct manner of caring for Gothic churches in nineteenth-century England and France has been extended automatically to monuments of all types, periods, and places (e.g., by influence to the newly independent countries of Greece and Italy and by colonialism to the ancient Near East).

This basic concept was systematized and elaborated a century later in the aftermath of World War II. In the first instance the enormous destruction by high explosives in Europe made restoration an issue of the moment. Supervening on this was the anticolonialism and prointernationalism which expressed itself emphatically on the cultural plane (cf. the idea of UNESCO). As a result, Rome became the international center for restoration of monuments, with a spe-

cial provision for disseminating its teaching to underdeveloped countries. Men of great practical experience and/or acute analytical disposition refined experience into principles during the mid-twentieth century, and it is those principles which have since been applied in restoration work in the Near East. As a condition precedent to any discussion of this work, it is therefore necessary to outline the principles on which it is based. (Even if this is restricted to a cursory naming, it will show the severe conflicts inherent in the activity).

Restoration distinguishes itself from simple repairs, renovation, and rebuilding by having as its subject monumentality. An architectural monument reminds the viewer of some significant human experience; it calls to mind history and does so through art. That is, it can be viewed in an aesthetic instance and in a historic instance. Monumentality is incorporated in a twofold manner: as material and image, structure and aspect (this latter be it noted only partly of human design being partly of natural development over time). Both structure and aspect are equally constituted in the building material and are equally proper vehicles for intervention by the restorer. All interventions are per se undesirable and are to be limited to the minimum necessary (in restoration very definitely "least is most"). They operate via two modes: by removal and by addition. Restoration by removal is directed to the aspect and can be astonishingly rewarding. The attendant problem is that of periods: it may be difficult to decide between the aesthetic significance of one period and the historic significance of another. Addition of new material can be to the aspect or to the structure. Addition to the aspect must be kept to the minimum and never be practiced for its own sake. It must proceed by way of representation not reproduction: that is, it must always be clearly seen to be not original (otherwise it is falsification), but this distinction in appearance should not detract from the surviving monumental aspect. In short, restoration does not consist in reproducing the appearance of the monument as originally constructed, far less as it would or should have appeared in some ideal circumstances as Viollet le Duc taught. With additions to the structure, the limiting consideration is possible adverse reaction between old and new material. Thus, the safest practice is to consolidate the structure with the same material as the original.

The first step in restoring damage to monumentality is the investigation of the causes of damage. These may be human or natural, catastrophic or continuous. And it is based on the understanding of these causes that interventions are decided on to provide either for better preservation and/or better exhibition of the monument, but regrettably these two claims are often irreconcilable.

The prerequisite analysis of any restoration project into its constituent problems according to the above-mentioned categories is straightforward. However, difficulty arises in the endemic conflicts between the various categories: between the historic instance and the aesthetic instance; between monumental demands and functional demands; and the bitter conflict between exhibition and preservation. The analytical categories bring these conflicts into consciousness, so that an intervention is only made in some interest and with an awareness of its damage to another.

The nature and incidence of these conflicts vary according to the class of monuments, and in this connection, monuments can be classified as follows.

1. *Archaeological ruins.* When only vestiges of the original building survive (often retrieved by clearance or excavation) and the original integrity of the monument cannot be recognized. The ruin is thus the subject of the intervention and not the original building.

2. *Ruined monuments.* These are structures which are no longer functional as monuments but where the original form is or can be made recognizable; here the original building is the subject of the intervention.

3. *Living monuments.* Where the monument is still in use for its designed purpose (church, mosque) but the art by which it was built no longer survives, great problems arise between monumental and functional interests and it is by no means assured that any restoration qua monument will prove acceptable to the current functional interest.

4. *Modern monuments.* The monument is built entirely within the artistic and social framework of contemporary society. These are exceptional to the theory and can be treated in the same way as other contemporary buildings (maintained, repaired). The new work will be matched up with the old and a normal building inscription will satisfy the demands of history.

Practice in the Near East. As the place of origin of civilization, the Near East contains monuments of all types and ages, from the earliest Neolithic to recent Islamic times. Furthermore, because of its archaeological interest, new monumental remains are continually being unearthed. Almost the entire region was under Ottoman (or quasi-Ottoman) rule until the present century. The Ottoman authorities made provision for archaeological excavation and in special instances they permitted the excision of monumental remains for transport to European museums. However they did not receive the practice of restoration of monuments. This was introduced only with colonial (mandatory) administrations, in the twentieth century, namely French activity in the Maghrib, Syria, and Egypt, and Italian activity in Cyrenaica and Tripolitania. The British antiquities services in Iraq, Palestine, and Transjordan did not carry out routine restoration work but provided for some exceptional projects only. The striking majority of these activities dealt with Greco-Roman building but some work on Pharoanic remains was carried out in Egypt and there was also work on Early Christian and Mediaeval remains (Crusader or Arab castles, etc.). All the work was done more or less in the light of the above theory and certainly no local or regional style

of restoration was evolved. This colonial activity, however, was only a curtain raiser to the large-scale restoration programs instituted in the region from the 1960s onward (often provided with international funds and/or international "experts").

Archaeological ruins. Very successful work has been carried out with archaeological ruins all over the Near East (e.g., in Tripolitania, Cyrenaica, Jordan, Syria, etc). It is much appreciated by the public and arouses little if any controversy. With appropriate landscaping it is equally at home in frequented antiquities sites and in remote deserted regions. The ruined aspect which is the subject of the work is maximized by setting up any coherent fragments and arranging *disjecta membra* in a systematic fashion, without any additions in the interest of the original form. Column drums, which often form the principal surviving material on classical and Early Christian sites, are its stock-in-trade and thus the colonnaded streets of the hellenized Orient are excellent vehicles. Familiar scenes from, for example, Palmyra, Jerash, Petra, and elsewhere illustrate this "anastylosis." One complicated factor here may be the presence of mosaics. Their exhibition in situ greatly adds to the picturesqueness of the ruins but in this event their preservation will inevitably demand measures which compromise the overall aspect.

The situation is very different with less durable remains which nonetheless may be of considerable monumental value in the historic instance. It may be possible to exhibit, and also preserve to some degree, vestigial rubble walls by regular seasonal consolidation, but this site maintenance is a heavy burden on departmental budgets. The critical problem of mud-brick remains will be referred to in this conclusion.

Ruined monuments. These form the core of restoration projects in the Middle East—temples, tombs, theatres, triumphal arches, towers, and so forth, sometimes more or less standing, sometimes more or less fallen to the ground and more or less buried. Architectural scholarship finds relatively little difficulty in correctly placing the surviving remains and engineering resources permit their effective reintegration. The difficulty here is the question of the aspect of the "new work." And, even within the rule of "representation without reproduction," taste in this matter changes as drastically as that in restoration of sculpture.

Some types of monuments are especially rewarding to restore. Underground (or rock cut) monuments of interior architectural development provide for their own preservation after their internal aspect has been restored (cf. e.g., the Greco-Roman cemeteries in Alexandria and the pharaonic Tombs of the Kings at Thebes). However even this advantage is not proof against tourist invasion. Other types of favored monuments are those of vertical development, for example, the monumental gate, triumphal arches, tetrapylons, and so forth. Here the plan generally involves the repetition of a standard element (e.g., a pier) and the new work can be safely concentrated on the lowest preserved element leaving the surviving remains of the others to maintain the original monumental aspect.

Ruined monuments are the class which has been subject to rescue operations occasioned by the epidemic of dam building in the later twentieth century. The dismantling, transfer and re-erection of ashlar masonry is a straightforward operation (but regrettable unless absolutely necessary). The excellence of the result is largely dependent on sympathetic new siting (cf. the transfer of the Nubian Temples consequent on the building of the High Dam).

Living monuments. Although recently medieval mosques and the like have been restored in Cairo, Iraq, and Iran, the restoration of living monuments has not been as prominent in the Near East as much as in Europe. The conflict of monumental and functional interest here can be insuperable and it is to be noted that the established Church of England from the beginning has refused to allow the fabric of its cathedrals to pass into the care of the Ancient Monuments Commission. Similarly when structural instability occasioned by earthquake necessitated restoration of the Church of the Holy Sepulcher in Jerusalem, the work was controlled and carried out by church authorities. Here a half-dozen sects had to reconcile their claims, and with these was involved a very acute problem of conflicting periods (i.e., Byzantine = Eastern Churches, Crusader = Western Churches). On the other hand an example of good cooperation between the monumental authority (Antiquities Department) and the functional authority (Orthodox church) exists in Cyprus, where functioning mid-Byzantine churches have been restored by the antiquities service with the good offices of the church.

However of recent years a related problem has emerged in the Near East—what might be called conversion restoration, or transferred function. Arab castles make good antiquities offices, Ottoman city gates good cultural centers, and so on. Above all is the question of site museums which everyone agrees are a good thing, and if some salient ruin can be restored and converted to this end there is a double gain. Yet, such restoration can be completely beyond or contrary to the general dictates of theory. In this event instead of killing a reasonably preserved monument with a mass of new work, the better solution may be to take a suitable plan (e.g., a basilica) where only vestiges survive and rebuild its form, with complete freedom to detail according to functional requirements.

Somewhat similar considerations apply to ancient theaters. On occasions the superb siting of a rock-cut Greek theater (e.g., Kourion, Cyprus) recommends very strongly that it be put into commission for staging theatrical performances (particularly in conjunction with festivals). Quite frequently so far as the cavea is concerned there is virtually not a block in place, although it may be perfectly possible to work out the scheme of the seating quite accurately. In

such case, it is reasonable to rebuild the cavea out of new stone and leave the scaena untouched, allowing the performances to provide their own sets. In this way a restricted passage of fine masonry will not be "killed" and an excellent venue will be provided for performances. On the other hand to reproduce the elaborate architectural ornament of a *scaena frons* in new work is a monumental error.

Another allied category of restoration work has become of great importance in the Near East—"ethnological restoration." Palaces and palatial houses fallen into decay during the previous century or so have been renovated and rebuilt according to the original model to serve as ethnological museums or otherwise to illustrate the traditional life of the region (Emir Shihab's palace at Beit ed-Din in the Lebanon; the Azm palace at Damascus together with numbers of instances in Isfahan and Shiraz).

Modern monuments. This class of monuments, which normally only comes into consideration with catastrophic destruction by war or natural disasters, has acquired great importance in the Near East because of drastic social changes in the last generation. The almost instant disappearance of traditional domestic architecture has evoked concern for preserving and exhibiting what relics can be salvaged, with the consequent designation of "Old Towns," "Traditional Quarters," and so forth. All this stands within the theory of modern monuments since artisans and craftsmen still survive who can carry out this work and their continued survival can be promoted if this becomes an established activity. The challenge here is to establish the social framework so that the restored buildings remain alive.

The principles reviewed here have a fragile foundation and may seem somewhat recondite. However, surprisingly they are generally apprehended by the public, and public condemnation quickly attaches to illogical solutions founded on no principle at all.

Difficulties in restoration are not in consolidating the structure of ancient monuments. With the resources of modern engineering this can be done without impairing the aspect of the monument. The abiding difficulty is in preserving the aspect from deterioration by weathering or action of time without impairing the exhibition. A small mud-brick building was constructed in antiquity with the expectation that its fabric might survive for a generation or so. Yet, when the ruins of these structures are dug up out of the ground, the mere fact that they are ancient ruins raises the expectation in common belief that they can/should be made to survive indefinitely with their agreeable aspect agreeably exhibited. It is commonly thought that some (liquid) preparation is available which can be sprayed on to delicate surfaces (decaying stone or mud brick) which will consolidate and preserve them without damaging their aspect. Many such preparations have been publicized but hitherto none has been found to give satisfactory results for any extended period of time—and many have done great damage. This is the "elixir of life" which is lacking in restoration of monuments—or the lack could equally well be described as that of the simplest and most basic technical device.

Finally a great difficulty in restoration is not technical but social. This is the difficulty of carrying out restoration of monuments according to the accepted theory free from social interests which operate directly to the destruction of monumentality. Proposals to make circus grounds or popular entertainment centers out of an ancient monument's site can have no place in the discussion of the theory of restoration.

[*See also* Conservation Archaeology; Field Conservation.]

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G. R. H. WRIGHT

RIFA'AT, TELL, site located 35 km (22 mi.) north of Aleppo, Syria, in the middle of a village of the same name (36°5′ N, 37°1′ E). The village is 5 km (3 mi.) east of the Aleppo-I'azaz road and about 14 km (9 mi.) southeast of the modern city I'azaz. Tell Rifa'at is strategically positioned on the plain between the Qouiq River in the east and Jebel

Sama'an in the west. It is the largest tell in the area and is about 360 m above sea level.

The tell itself is composed of two parts: the citadel and the lower city. The citadel (30 m high and 142 × 142 m at the top and 250 × 233 m at its base) stands approximately in the middle of the lower city. The citadel is freestanding, with extremely steep slopes; the lower city is partially occupied with modern houses.

The inhabitants of the village Tell Rifa'at reported that the old name of the site was Arpad, an identification that can be made on etymological and geographical grounds as well. In antiquity, Arpad was the capital city of the Aramean state of Bit-Agusi. The Aramean kingdom emerged in the tenth century BCE and appears in Assyrian texts as the land of Arpad or as the land of Bit-Agusi. Like all Aramean kingdoms in Syria and Mesopotamia, Arpad paid tribute to the Assyrian kings approximately every year. Arpad finally lost its independence in 740 BCE, when it was made a province and given an Assyrian governor.

The equation of Tell Rifa'at with Arpad remains a hypothesis, however, for none of the excavations at the site succeeded in recovering sufficient evidence for the identification. Limited excavations on the tell have been conducted. From fall 1924 to spring 1925, the Czech philologist Bedrich Hrozny excavated Tell Rifa'at and identified it as biblical Arpad. Hrozny abandoned his investigation after three months without publishing a report. Only a very brief report appeared in a Prague newspaper, *The Central European Observer* (16 July 1929, p. 512). In 1956, 1960, and 1964, an expedition from the Institute of Archaeology, University of London, directed by M. V. Seton-Williams undertook excavations at Tell Rifa'at, during which the team made soundings and distinguished five levels, from the Chalcolithic period (fifth–fourth millennia) through the Roman period (first–fourth centuries CE).

According to Seton-William's preliminary reports (1961, 1967), the old city of Arpad had been surrounded by a very strong brick fortification wall. In the northwestern part of the tell his team unearthed a monumental limestone staircase that led through the fortifications and was later in date, probably Greco-Roman. On the western side of the tell he discovered a large palace (923 m wide and 30 m long) with a large porch with two columns and a great paved courtyard. The palace was flanked by two rooms, in front of which there had been a large hall. The palace belongs to the first millennium BCE.

Seton-Williams also discovered the east gate in the Bronze Age city wall. The gate's first phase belongs to the sixteenth–fifteenth centuries BCE. In its last phase, it was 3.90 m wide, was lined with limestone orthostats, and had a drain 60 cm wide running down the center of the passageway. The entrance area was paved with limestone and basalt slabs and broken glazed bricks.

Among the small finds recovered by Seton-Williams are stamp seals—seventh–century BCE Assyrian and sixth–century BCE Neo-Babylonian and Achaemenid—and elaborate and common style Mitannian cylinder seals; Late Bronze and Iron Age terra-cotta figurines, among them numerous examples of the so-called Scythian horseman and an Astarte plaque; a limestone Aramean grave stela (0.57 m high and 0.37 m wide) depicting a banquet; and eight fragments of Assyrian cuneiform tablets and a fragment of an inscription in Phoenician.

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ALI ABOU ASSAF

RIMAH, TELL ER-, also known as Tell Ermah, site located in northern Iraq (36°15′ N, 42°37′ E), 13 km (8 mi.) due south of modern Telafar and 65 km (40 mi.) west of Mosul. Austen Layard, under the auspices of the British School of Archaeology in Iraq, visited and described the site in 1850, and Seton Lloyd, under the auspices of the University Museum of the University of Pennsylvania, surveyed it. The walled city of the second millennium BCE enclosed an area about 600 m in diameter. British and American excavation teams, led respectively by David Oates and Theresa Howard-Carter, worked jointly from 1964 to 1966; the British worked alone there from 1967 to 1971.

Occupation of the site goes back to prehistoric times, although excavation did not reach the lowest levels. A building with pitched brick vaults was dated to about 2000 BCE and several cylinder seals, perhaps heirlooms, were found that are earlier than the Old Babylonian period (c. 1900–1600 BCE).

Early second millennium texts show that Tell er-Rimah benefited from the caravan trade passing between Aššur and central Anatolia. The temple was the central and highest feature of the city, which was walled. The temple may have been built by Shamshi-Adad I of Assyria. It sits on two massive terraces that are approached via a monumental staircase from a courtyard. The temple faced roughly eastward and was backed on its west side by a solid tower, or ziggurat. The shrine inside the temple could be reached directly from the main door by passing through a central courtyard. An internal stairway in the northeast corner of the building led to the roof, and perhaps also to a shrine on top of the tower. The exterior facades were decorated with semiengaged

mud-brick columns imitating the trunks of two kinds of palm trees. Similar architectural decoration is known from Larsa, on the temple of the sun god; at Tell Leilan in the Upper Khabur; and on the so-called bastion of Warad-Sin at Ur. Clay tablets consisting of administrative letters and records were found in the temple of this phase and beside the main stairway. The temple may have been dedicated to the storm god Adad or to the goddess Geshtin-anna. In it were found two sculptured heads of Humbada and a stone relief of a goddess between palm trees.

A palace, perhaps contemporary with the temple, was built on virgin soil to the northeast of the temple. Most of one wing was excavated, which included a throne room with a dais. A small number of early Old Babylonian personnel lists was found in the wing. That palace was demolished almost to ground level and replaced by a new building that followed a slightly different alignment, perhaps soon after the death of Shamshi-Adad I. In it were found letters, records, and seal impressions indicating association with four rulers: Hatnu-rapi, a contemporary of Zimrilim of Mari, now identified from Mari texts as a king of Qaṭṭara; Ashkur-Addu, also contemporary with Zimrilim, identified from Mari texts as a king of Karana; Zimrilim, king of Mari, whose official seal was found impressed on two envelope fragments; and Aqba-Ḥammu, brother-in-law of Ashkur-Addu, whose wife Iltani was at the center of the main archive of letters and administrative records and who appears to have ruled the city as a vassal of Hammurabi of Babylon after the latter brought the reign of Zimrilim at Mari to an end.

The kingdom to which Tell er-Rimah belonged is now thought to have contained two major cities, Karana and Qaṭṭara, that were alternatively named according to the residency of the current ruler. Therefore, it is still uncertain from the Old Babylonian evidence whether the site is Karana or Qaṭṭara. A foundation inscription of a king of Razama, found out of stratigraphic context, may be loot from a siege of that neighboring city.

During the Nuzi period, in the third quarter of the second millennium, the site was still extensively occupied, with a large administrative building and domestic houses built over the old palace area. Much fine glass and frit work was found, especially in connection with a small domestic shrine, and many cylinder seals, but no inscribed material. Texts of the period found at Nuzi mention a Karana, but that may refer to another town with the same name on the Lower Zab, depending on the interpretation of the texts. The temple continued in use.

During the Middle Assyrian period, in the last quarter of the second millennium, the temple and domestic structures continued to flourish under the aegis of Assyrian kings. Business records found in the temple, mainly concerned with tin and barley, date to the reigns of Shalmaneser I and Tukulti-Ninurta I. The place name *Qaṭṭara* is frequently attested in them; Karana does not occur. In texts of this time from Aššur, both Karana and Qaṭṭara are found, but without indications for locating them.

The site was completely abandoned after the Middle Assyrian period. It was partly resettled in the Neo-Assyrian period, but the old temple was not restored. Under the Assyrian king Adad-Nirari III, it belonged to the province of Rasappa and was renamed Zamahe. There, the semi-independent governor Nergal- (or Palil-) Eresh set up a stela beside the altar in a small, new temple dedicated to Adad, built into the north side of the old temple mound. The new temple had a different alignment, and its entrance on the northeast gave direct access to the cella through a long hall. The entrance to the cella was decorated with stone pillar bases in the shape of lion heads with huge, protruding dagger-blade tongues; it featured a gigantic lion-headed bird made from a bitumen core. The stela recorded the titles and deeds of Adad-Nirari III, including his taking tribute from Syrian rulers and from Jehoash of Israel, as well as new settlements built in the vicinity by Nergal-Eresh; the latter part of the inscription was erased in antiquity. A tablet recording a real estate transaction by Nergal-Eresh also was found.

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STEPHANIE DALLEY

RITUAL BATHS (Heb., *miqvaʿot;* sg., *miqveh;* lit. "a gathering of water"). A *miqveh* is a built water installation whose construction complies with tenets of Jewish law *(halakhah),* and in which the observant Jew, disrobed, purifies him- or herself through total immersion. In the late Second Temple period, the Jews developed an elaborate system of regulations concerning matters of ritual purity, based on biblical law but emended and influenced by the dominant contemporary religious interpreters of the time (e.g., Pharisees and Saduccees). In the early stages of the practice, a state of purity was achieved through immersion in a natural body of water—a spring, river, or lake. Eventually, however, the demand for pools of natural water to service the community was met via the introduction of the *miqveh.*

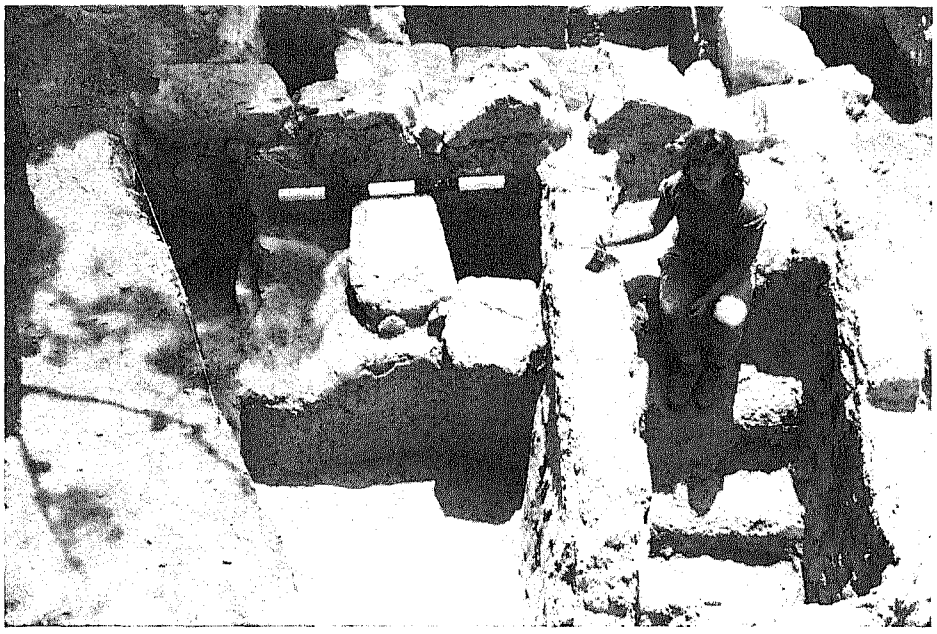
To draw a distinction between a ritual immersion and ordinary washing, the sages decreed that the *miqveh*'s waters should be "in the hands of heaven," distinct from waters that are "in the hands of man." They decreed that *miqveh* waters meeting the following requirements have intrinsic powers of purification. The *miqveh* was to be cut into bedrock or built directly into the ground—it could not be a precast container. It was not to be filled with drawn (i.e., "in the hands of man" and therefore impure) water. Only rainwater that collected by itself into the *miqveh* (i.e., by gravity) was acceptable. Spring water led by aqueduct was also permissible. The *miqveh* must hold a minimum volume of 40 *seʿah* of water (somewhat less than a cubic meter). The water in the *miqveh* must maintain the natural appearance of water (meaning, for example, that oil finding its way into a *miqveh* defiled it, even though all other requirements were met). The rabbis did not set regulations for the shape or the number of steps leading into the *miqveh,* which is attested in the archaeological record, as installations are found in various shapes and with differing numbers of steps.

The main rabbinic sources for the tradition are the tractates *Miqvaʿot* in the Mishnah and Tosefta. These are compilations of *halakhot* ("religious regulations") prescribing the minimal requirements for a *miqveh* and of discussions of problems already solved by the sages regarding the use of this installation (they are not manuals of instruction for how to build a *miqveh*).

Archaeologist Yigael Yadin first drew attention to the installation in the excavations on Masada (1963–1964). However, it was not until the findings from Nahman Avigad's excavations in the Jewish Quarter and those of Benjamin Mazar near the Temple Mount, both in Jerusalem, that *miqvaʿot* began to be studied formally. Such installations have been found in large numbers in archaeological contexts in Israel, mainly in bathrooms in the basements of every one of the large private houses dated to the first century BCE and the first century CE until the year 70, where they appear in addition to cisterns, bathtubs, and footbaths. A recent comprehensive study by Ronny Reich (1990), based on the above-mentioned excavations and others, has proven the identification of these installations with the *miqveh* known from the written sources and has defined their characteristics and significance.

The lower part of the *miqveh* typically was cut into bedrock, while its upper part was built and roofed with a barrel-shaped vault or, alternatively, also hewn completely out of bedrock. Its average size was 2 × 4 m. The steps in the *miqveh* usually occupy its entire width and have risers about 25–30 cm high; the lowest step usually has the highest rise (60–70 cm) and one or two small auxiliary steps are cut at the bottom expressly to overcome this height. The tread of the steps also varies in depth. In many cases a step with a deep (50–70 cm) tread alternates with two–four 30-cm steps enabling the use of the *miqveh* in different water levels. Variations of *miqvaʿot* occur: there are installations with a narrow staircase attached to one or two sides of the basin (typical to Hasmonean Jericho), and *miqvaʿot* equipped with two adjacent openings (instead of one) and/or a low built partition (10–30 cm high) that divides the staircase into two lanes (to separate the descending impure person from contact with the ascending purified individual), a type typical mainly to Jerusalem.

Miqvaʿot are filled with rainwater during the first rainstorm of each year. The chief operational/maintenance problem with *miqvaʿot* in ancient Israel was guaranteeing a constant supply of pure water throughout the year in a land with a long rainless season (April–November). The sages decreed that a minimum volume of 40 *seʿah* can also purify drawn water; thus, a solution for maintaining the purity of the water was simply occasionally to add drawn water to the *miqveh* as long as the amount of the original pure water in the pool was more than 40 *seʿah*—instantaneously purifying the drawn water (which was probably the common means to purify additional amounts of water). In addition, an operational device is in evidence based on the principle given in the Mishnah that any body of water linked to the water in a valid *miqveh* becomes equally pure: at a few sites (Masada, Herodium, and Jericho, and in a few examples in Jerusalem) a pair of *miqvaʿot* were excavated that are linked at their rims by a pipe or channel. Both *miqvaʿot* were initially filled with pure rainwater, but only one was used for ritual immersion (in later periods the unused one is referred to as an *oṣar,* "treasury"). When the water in the *miqveh* in frequent use became dirty, it was replaced with clean drawn water (still unqualified for purification). When the stopper was pulled from the connecting pipe, and momentary contact occurred between the two bodies of water, the water



RITUAL BATHS. *A plaster bath with steps, from excavations at Sepphoris.* (Courtesy E. M. Meyers)

from the "treasury" purified the freshly drawn water. This procedure could be repeated as often as required. The method was used only rarely in the Second Temple period, probably reflecting the habits of certain religious/social segments of Jewish society at that time, but is obligatory today.

In addition to domestic *miqvaʿot* and those excavated near the gates of the Temple Mount in Jerusalem are examples excavated in the palaces and mansions of the Hasmonean and Herodian dynasties in Jericho (which were supplied by spring water conducted by aqueducts) and at Masada, Herodium, and Cypros. Others have been found at Qumran, Gezer, Gamla, and elsewhere, in rural areas near oil and wine presses. The latter examples enabled commodities to be produced in a state of ritual purity.

Frequently used in the Second Temple period in Judea (Judah) and the Galilee, *miqvaʿot* were absent from the Late Hellenistic and Early Roman world. Like Jewish inscriptions and symbols, the *miqveh* is a clue (an architectural one) for identifying a Jewish presence at sites. After the Romans destroyed Jerusalem and the Temple in 70 CE, the need for ritual purity was considerably minimized, resulting in a sharp decline in the number of the *miqvaʿot* in use, which is attested in the archaeological record. From an average frequency of two–three installations per private house (in Jerusalem), the number declined to one–two *miqvaʿot* per village or neighborhood at most sites. (Although the site of Sepphoris in Galilee seems to present a much higher rate of frequency in the period after 70 CE.) In medieval Europe the installation rate was also one or two per Jewish neighborhood.

[*See also* Personal Hygiene; Public Baths. *In addition, most of the sites mentioned are the subject of independent entries.*]

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RONNY REICH

ROADS. A region's geopolitical history cannot be understood without a basic knowledge of its roads. The roads and highways in the ancient Near East determined its demographic patterns to a large degree because population centers generally developed along them. Moreover, the locations of roads dictated, or at least prescribed, the movements of armies, merchants, and ordinary citizens. Consequently, they exerted a profound influence on a region's development and history.

Road Dimensions. In order to bear the traffic of wheeled vehicles such as chariots, carts, and wagons, roads in the ancient world were generally two or more lanes wide. In Mesopotamia, for example, city streets were often several meters wide. Aiburšabum Street in Babylon was as much as 20 m wide in its excavated sections. Other excavated streets

in Babylon varied in width from 2 to 10 m, most having been about 3–6 m wide. In Neo-Babylonian warranty deeds from Babylon and Erech, "broad streets" (Akk., *sūqu rapšu*) and "narrow streets" *(sūqu qatnu)* are frequently mentioned. Sennacherib boasts that he broadened Nineveh's market streets for the passage of the "royal road" and made this road 62 large cubits (about 30 m) wide. Open roads were also wide, probably averaging 3–6 m. The Assyrians rarely encountered roads too narrow for their wagons and chariots. According to their records, they drove freely throughout the land and considered it a matter worthy of note when they met with narrow roads outside Assyria.

In Egypt an Old Kingdom road was discovered leading to the alabaster quarries east of el-Amarna; it was 5 m wide, with two branches, one 9 m and one 3 m wide. A road system discovered in the environs of el-Amarna comprised roads approximately 5 m wide, with rows of stones marking the edges. Another network of roads from the Old Kingdom has been traced in the region of the Second Cataract of the Nile. These also were about 5 m wide, with one widening to 8 m as it approached the fortress of Mirgissa. Evidence indicates that most open roads in ancient Egypt were relatively wide. Rameses II boasted that he marched northward to Qadesh with his infantry and chariotry, with his army "traveling on the narrow paths as if on the roads of Egypt."

The same picture holds for Syria-Palestine. From the excavated remains it appears that streets in this region were generally 2–3 m wide (as found, for example, in the Iron Age strata at Megiddo, Tell Deir ʿAlla, Tell Qasile, Tell en-Naṣbeh, Beth-Shemesh, Ashdod, and Tell Beersheba), with streets 4.5 m wide being fairly common (for example, in Iron Age levels at Megiddo, Tell Qasile, Gezer, and Beth-Shemesh). Evidence suggests that open roads in ancient Israel were typically two lanes wide (3–4 m), although roads of three or more lanes also undoubtedly existed (wider than 5 m).

During the Roman period, roads in the ancient Near East were generally two to four lanes wide. Roman roads discovered in the Judean Wilderness measured from 3 to 12 m in width. One of the Roman roads through the Beth-Shean valley measured 9–10 m in width—at least the width of a modern five-lane highway.

In the Byzantine period, the standard width of streets in Palestinian cities seems to have been 5.4 m. More than a dozen streets this wide have been excavated in Jerusalem alone, and additional examples have been found elsewhere in the Near East, including Gerasa in Jordan and Dura-Europos in Syria. On the other hand, the main streets of cities were much wider: those in Jerusalem, Samaria, and Gerasa/Jerash, for example, were 22 m wide, four times the width of the average street.

Until the Roman period, roads in the open countryside were generally unpaved, and city streets were only occasionally paved. (Josephus's assertion that Solomon paved the roads leading to Jerusalem with black stones [*Antiquities* 8.7.4] is anachronistic.) No paved road from the pre-Roman period has been found in Palestine, and unpaved thoroughfares are assumed in the biblical literature—briers, thorny bushes, and other plants may be found growing in a road (cf. *Hos.* 2:6 [Hebrew, verse 8]; *Prv.* 15:19, 22:5). The same was generally true throughout the Fertile Crescent. According to a third-millennium inscription from Sumer, when Agade fell and the Gutians took over the land, these barbarians "made the weeds grow tall on the highways of the land." Even stretches of the Persian Royal Road often became impassable mud holes, in which, on one occasion, the retreating Greeks repeatedly became stuck. In the Letter of the Satirical Scribe, the road through the Megiddo pass is described as filled with boulders and pebbles and overgrown with reeds, brambles, briers, and "wolf's paw."

Road Construction. Certainly the technology of paving existed in the pre-Roman period (Walter Andrae, *Alte Feststrassen im Nahen Osten*, Leipzig, 1941). Aiburšabum Street in Babylon, like similar streets in ancient Mesopotamia, was constructed with a technique almost matching that of the Romans: a foundation layer of bricks was set in asphalt, a surface of heavy limestone slabs was laid over it, and the joints were sealed with more asphalt. Other examples of such paving include the processional streets discovered in Aššur, the approach road at Khorsabad, and the paved streets Sennacherib constructed in Nineveh. In Egypt, approach roads to temples were often paved.

In Israel, paving is attested as early as the Early Bronze Age, witnessed, for example, by the paved street at Beth-Yeraḥ near the Sea of Galilee. Examples of other paved streets from pre-Israelite periods include a cobbled street at Shechem, from the Middle Bronze II period, and a paved street from the Late Bronze period discovered at Jaffa. Paving is also well attested in the Iron Age. The Iron Age streets at Tell Deir ʿAlla were paved, and the paving was regularly refurbished. The main street of the Israelite city of Dan was paved with stone. Cobbled streets from the Iron Age include the 3.5-m-wide street discovered at Ashdod and the tenth–ninth-century BCE street found at Gezer. At Megiddo the approach road to the city gate (eleventh century BCE) was paved with a hard, cementlike plaster on a crushed-stone base. The parapet and retaining wall on the outside and inside of the roadway were also of rubble and plastered like the roadway.

It was the Romans, however, who brought to the ancient Near East the practice of paving open highways; and during the Roman era many of the thoroughfares of the region were paved. The technology of Roman roads, featured superb foundations, adequate drainage, and one or more layers of cement or stone paving designed to last for centuries (see Forbes, 1934, 1965; and Casson, 1974, pp. 163–175). The

remains of many of these paved Roman highways can be seen throughout the Near East.

Preparation of road surfaces during the pre-Roman period is occasionally referred to in contemporary records. The Assyrian king Tukulti-Ninurta I recounts that during his campaign against the mountainous Nairi-lands, he cut through the mountain ranges with copper pickaxes and widened their closed paths. Tiglath-Pileser I describes how, in his campaign against the land of Kutmuhi, he attacked the rugged highlands and their difficult paths with copper pickaxes, improving the roads so that his chariots and army might advance. When Sargon II encountered a road too difficult for his chariots, he summoned his engineering corps to hew out a better one. When the road was completed, he marched ahead, followed by his chariotry, cavalry, army, and baggage train. Nebuchadrezzar recounts how he opened passes to make a road for transporting cedars. The tool most often referred to as employed in road preparation is the *akkulu,* a pickaxe often used otherwise for hewing building blocks and tunneling through mountainsides.

In Egypt, road construction is also occasionally mentioned in the records. During the twelfth dynasty, Thuthotep describes how he employed miners, quarrymen, and others to help hew a rocky trail, whose rugged surface was hard stone, to create a smooth road along which he was attempting to haul a 60-ton block of stone. From the remains of Egyptian roads from the pre-Roman period, it appears that road preparation in Egypt consisted of leveling out a track by scraping smooth the surface and lining the sides with the scrapings and gravel.

In the Hebrew Scriptures, the process of road building is apparently alluded to in *Isaiah* 40:3, 57:14, and 62:10 and in *Malachi* 3:1. There, too, the procedure appears to have involved simply "clearing" *(pinnâ)* the roadway and "smoothing" *(yiššēr)* and "leveling" *(sālal)* the surface.

Generally, the government was responsible for both constructing and maintaining roads. Road maintenance and repair were regularly carried out during the spring, following the damage done by the winter rains (Mishnah, *Sheq* 1:1 and *Mo'ed Q.* 1:2; B.T.; *San.* 11a).

Road Markings. Roads were generally named according to their destinations. The "Uruk Road" was, thus, the name of a Mesopotamian road that led to Uruk. This custom was common throughout the ancient Near East. In the Hebrew Scriptures, for example, the "Beth-Shemesh Road" mentioned in *1 Samuel* 6:12 was the road that led to the town of Beth-Shemesh; the "Bashan Road" (*Nm.* 14:25; *Dt.* 3:1) was the highway leading to Bashan; and the Beth-Gan Road (*2 Kgs.* 9:27) was the road leading to Beth-Gan. The major exception to this practice would appear to be the designation "the king's highway." However, this designation, which occurs in Sumerian *(kaskal lugal),* Akkadian *(ḫarrān šarri),* Aramaic *('ōraḥ mālkā'),* and Hebrew *derek ha-melek),* was not the name of a road but a descriptive designation of a particular kind of road, to be translated "the main road" or "the public road."

Roads do not generally appear to have been marked by signs in the pre-Roman period. In Egypt a road dating from the Old Kingdom that led to the alabaster quarries east of el-Amarna was marked by a series of cairns constructed of black stones, limestone, and flints. Similar markers were used in the road network in the el-Amarna region during the Late Kingdom. Although in Mesopotamia Sennacherib set up stelae along his great processional road in Nineveh, they are not to be equated with road markers in the open countryside, for which there is little evidence in Mesopotamia. In the Hebrew Bible, road markers similar to those used occasionally in Egypt may be alluded to in *Jeremiah* 31:21 *(ṣiyyunîm).* The Romans, on the other hand, marked their highways with inscribed mile markers, many of which can still be seen along Roman roads in the Near East.

Because few clearly identifiable physical traces of roads in the ancient Near East prior to the Roman era have been discovered, reconstructing their courses is inferential, involving at least four lines of evidence. First, there are the historical sources: for example, the highway that went from Bethel to Shechem, passing west of Shiloh, is mentioned in *Judges* 21:19. Second, lines of ancient settlements, revealed by archaeological excavations and surveys, can be testimony to the existence of an ancient thoroughfare. Cities, towns, villages, way stations, and forts, for example, tended to grow up along roads. Long after a road had fallen into disuse and disappeared, settlement ruins attested to its erstwhile existence. Third, the courses of later routes—Roman, medieval, and nineteenth-century—may preserve the courses of earlier, unpaved roads they simply followed. Finally, an area's geographic and topographic conditions determined to a large degree the courses roads took: mountain passes, river fords, harbors, easily traversed valleys, ascents, and springs attracted roads; whereas deep canyons, high mountains, swamps, deserts, and unfordable rivers were natural barriers to be avoided.

[*See also* Carts; Chariots; Transportation.]

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DAVID A. DORSEY

ROBINSON, EDWARD (1794–1863), American biblical scholar, philologist, and explorer. Although Robinson belongs to an era before the inception of modern archaeological excavation in Palestine, his influence on the later development of the discipline was enormous. In his utilization of historical sources, linguistic evidence, and physical explorations throughout Palestine and the Sinai Desert, Robinson was among the first to attempt to reconstruct a historical geography of the Holy Land based on scholarly research rather than ecclesiastical tradition.

Born in Southington, Connecticut, Robinson, the son of a Congregationalist minister, was educated at Hamilton College. After briefly studying law, he returned to Hamilton as an instructor in Greek and mathematics. He published a detailed commentary on the *Iliad* in 1822. After ordination as a Congregationalist minister, he devoted himself to biblical studies under the guidance of Moses Stuart at the Andover Theological Seminary. Robinson subsequently spent several years in Germany, becoming familiar with the latest techniques of historical research and textual criticism. A theological conservative, he returned to America intent on utilizing these methods in defense of the historical reliability of the biblical text.

In 1831, Robinson accepted a professorship in biblical literature at Andover and founded the *American Biblical Repository,* a journal devoted to biblical research. After publishing lexicons of the Hebrew and New Testaments, Robinson accepted a position on the faculty of the Union Theological Seminary in New York City. Before assuming his teaching responsibilities, however, Robinson set off in 1838 on an extended exploration of Sinai and Palestine, in which he hoped to establish the historical geography of the Holy Land as a serious and systematic discipline.

Robinson was well aware that the initial attempts at sound geographical identifications for localities mentioned in the Bible were for the most part desultory and unsystematic, based on the often haphazard guesses of Western travelers. He was therefore determined to prepare his own exploration carefully. His most important achievement in this respect was gaining the services of Eli Smith, an American missionary, fluent in Arabic and a long-time resident in Lebanon. During the course of his ambitious three-month journey in 1838 from Suez to Beirut, Robinson and Smith succeeded in identifying dozens of previously overlooked biblical localities, speculated on the ancient landscape of the country, and formulated a system of linguistic rules to account for the transformation of ancient Hebrew geographical terminology into modern Arabic.

Robinson and Smith's analysis of the transformation of geographical terminology was deeply influenced by contemporary German comparative philology, with its theoretical emphasis on linguistic "degenerationism." That theory, which Robinson had studied under the philologists Wilhelm Gesenius and Emil Rödiger and the geographer Karl Ritter, posited the existence of several original, primitive languages (suggestively named for the migrating sons of Noah: Hamitic, Semitic, and Japhetic), each of which had undergone distortion and grammatical deterioration over the centuries. The modern geographical terminology of Palestine, Robinson believed, was the result of "a truly national and native tradition," which was "deeply seated in the genius of the Semitic languages," through which the transformations from Hebrew to Aramaic to Arabic could be traced (Robinson, 1841, vol. 1, p. 255).

The goal, then, in Robinson's study of the historical geography of Palestine was "a first attempt to lay open the treasures of biblical geography and history still remaining in the Holy Land; treasures which have lain for ages unexplored, and had become so covered with the dust and rubbish of many centuries, that their very existence was forgotten" (*ibid.,* p. xi). The distinct intellectual strains of conservative American Protestantism and German scientific linguistics were merged in the service of Robinson's brand of biblical geography. The impact of this scholarly undertaking was far-reaching: a new, modern territorial entity was effectively defined through the replacement of an existing

landscape of Arabic place-names with a "biblical" geography.

Robinson's three-volume report on his expedition, *Biblical Researches in Palestine, Mount Sinai, and Arabia Petraea* (Boston, 1841) quickly became a standard work. An additional volume, *Later Biblical Researches in Palestine and the Adjacent Regions* (Boston, 1856), was based on an expedition to Palestine Robinson undertook in 1852, again in the company of Eli Smith. The continuing influence of Robinson's work can be seen in its use by the British-sponsored Survey of Western Palestine (1871–1882), which followed Robinson and Smith's linguistic lead by compiling an encyclopedic list of Arabic place-names and their relationship to biblical localities.

Plagued by poor health and failing eyesight in later years, Robinson was gradually forced to restrict his teaching and research responsibilities; yet, by the time of his death, he was already regarded as the father of a uniquely American brand of biblical geography.

[*See also* Biblical Archaeology; Historical Geography.]

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NEIL ASHER SILBERMAN

ROMAN EMPIRE. The lands around the Mediterranean have been politically and administratively united only during the Roman period. For four centuries (first to fourth century CE) Rome presided over an empire that at its height around 200 CE covered some 5 million sq km extending from central Scotland to northwestern Saudi Arabia. Complete control was achieved only in the first century BCE. Even in the fifth century CE when barbarian kingdoms emerged in the western half, the Byzantine Empire lived on in the east for an additional one thousand years.

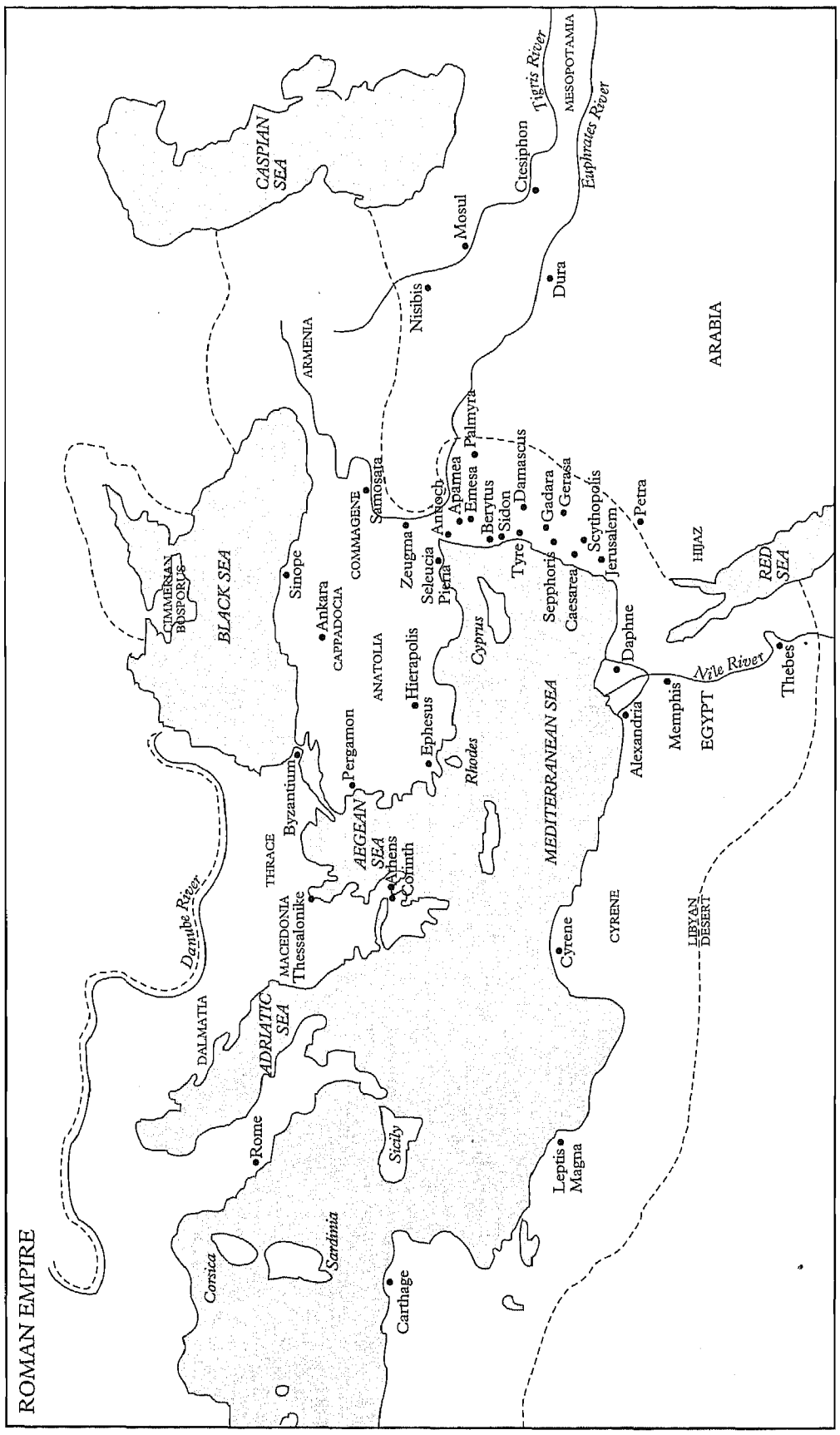
Beginning with the province of Asia (western Anatolia) in 133 BCE Rome embarked on a series of conquests that culminated in 30 BCE with the overthrow of Cleopatra's Egypt. For the Near East in the narrower sense, there were provinces of Syria (63 BCE); Judaea (70 CE), later called Syria Palaestina; Arabia (106 CE), and Mesopotamia (198 CE). Direct administration in the first century BCE was restricted mainly to the northwest where the major cities of Hellenistic Syria were located. Later acquisitions extended direct control to the Gulf of ʿAqaba and to the Tigris at Mosul. Military expeditions saw Roman armies campaigning as far as the Caspian Sea, Persian Gulf, and Yemen.

Government was in the hands of a *legatus* (called *praefectus* in Mesopotamia) drawn from the imperial aristocracy. Equipped with a slim and largely unprofessional bureaucracy, these officials controlled their extensive provinces through a combination of delegation to internally self-governing cities and the threat of intervention by an efficient and ruthless army. In addition to the cities and often extensive territories that were administered by local aristocracies, there were various principalities and petty kingdoms. The emperor Augustus (30 BCE–14 CE) swept away many of these in Syria, but some well-known allied states remained. Best known is Herod the Great's Judaea, but longer lasting was the Nabatean kingdom, which was only annexed in 106 CE.

The quality of government improved after the civil wars (49–30 BCE). The monarchy of Augustus replaced the Roman republic. Governors resided in palaces in their provincial capitals but were often absent on tours of assize (legal and juridicial) centers or on campaigns. Their primary responsibilities were security, the administration of justice, and the collection of tax. Despite the great Jewish rebellions (66–70, 116–118, and 132–135 CE) the eastern empire enjoyed a long period of largely peaceful, stable administration for nearly three centuries. [*See* Bar Kokhba Revolt; First Jewish Revolt.]

Eastern Cities. Greco-Roman civilization was essentially urban, and the East had many cities. Antioch and Alexandria reached populations of about 200,000 to 250,000. There were many other great cities, such as the provincial capitals at Ephesus (Asia), Ancyra (Galatia), Nisibis (Mesopotamia), and Caesarea (Palaestina) with scores of others, mostly of already great antiquity. The pattern of cities—overwhelmingly pre-Roman in origin—was largely determined by geography: fertile soils, trade routes and ports, and strategic requirements. Most of the cities in greater Syria were on or within fifty miles of the coast.

The Roman impact was superficially modest. A few new cities, *coloniae,* were founded in southwestern Anatolia, with fewer still in Syria, although Berytus (now Beirut) grew into one of the great cities of the East. But this overlooks the contribution of the allied rulers who founded Greco-Roman cities, some of which—Herod's Caesarea Maritima in Palestine is the outstanding example—flourished and helped transform the character of the region. The real impact of


ROMAN EMPIRE
CASPIAN SEA
BLACK SEA
CIMMERIAN BOSPORUS
ARMENIA
MESOPOTAMIA
Tigris River
Euphrates River
Ctesiphon
Mosul
Nisibis
Dura
Sinope
Ankara
CAPPADOCIA
COMMAGENE
Samosata
Zeugma
Seleucia
Pieria
Antioch
Apamea
Emesa
Palmyra
Berytus
Sidon
Damascus
Tyre
Gadara
Gerasa
Sepphoris
Caesarea
Scythopolis
Jerusalem
Petra
HIJAZ
RED SEA
ARABIA
Cyprus
Rhodes
Hierapolis
Ephesus
Pergamon
ANATOLIA
Byzantium
THRACE
Danube River
DALMATIA
MACEDONIA
Thessalonike
AEGEAN SEA
Athens
Corinth
ADRIATIC SEA
Rome
Sicily
Corsica
Sardinia
Carthage
MEDITERRANEAN SEA
Cyrene
CYRENE
LIBYAN DESERT
Leptis Magna
Alexandria
Daphne
Memphis
Nile River
EGYPT
Thebes

Rome on the urban landscape was more subtle but important. Peace and stability provided the ideal conditions which permitted growth, prosperity and development. It was only in the Roman period that most cities achieved their fullest flowering.

Under Roman prosperity civic architecture flourished. Theaters, stoas, and gymnasia became regular features of Greek cities in the Roman Empire. The Roman contribution, however, was uneven. The basilica is rarely found in the East. The amphitheater occurs in such "Roman" cities as Berytus and Caesarea Maritima but is otherwise rare. In contrast, the hippodrome and that quintessentially Roman structure, the monumental arch, were popular features. Probably the best-preserved hippodrome in the empire is at Tyre, and there are fine combinations of city gate, hippodrome-stadium, and monumental arch at Gadara (Umm Qeis) and nearby Gerasa (Jerash) in Palestine in what may be an example of civic rivalry. Public amenities were most developed in the Roman period, whether the great public baths or aqueducts, such as those to be seen still at Caesarea (drawing water from 14.5 km distant), Apamea (75 km long), and around the cities of eastern Cilicia.

Overall, however, the greatest Roman contribution was grandeur. It is most striking in the treatment of the main streets. Broadened, lengthened, flanked by shady colonnades and shops, they became monuments in their own right. The street at Antioch in Syria two miles long, is known only from excavation. Their character can be seen readily at Apamea also in Syria, Gerasa, and elsewhere. [*See* Cities, *article on* Cities of the Hellenistic and Roman Periods.]

Art and Architecture. Despite numerous Greco-Roman features, the eastern cities lay in an alien environment. At Palmyra in Syria, for example, the column brackets that were intended for statues are a native embellishment. In most cities the pre-Roman tradition of post-and-lintel architecture remained dominant in the face of Roman preference for brick-faced concrete, and there was a continued confident Hellenistic artistic tradition.

At Samosata the native rulers used *opus reticulatum,* diamond-shaped facing stones on a concrete core, even on their city walls, a construction style rarely found outside Italy. At Caesarea Maritima, Herod the Great evidently employed not just Roman engineers and craftsmen but Roman techniques and material for his great artificial harbor. In Herod's palace at Masada, however, the wall paintings were of Alexandrian (Hellenistic) style. Most representational art of the period is known to us only through the many fine mosaics to survive—more than three hundred at Antioch and Daphne alone and many more superb examples from Apamea, Zeugma, Palmyra, and Scythopolis in Syria-Palestine, reflecting a vigorous Hellenistic style of three dimensionality and illusionism. Where wall painting does survive extensively, it is in peripheral areas, providing the evidence for a continuing oriental tradition. At Dura-Europos, for example, a city with a strong army presence, the figured scenes in the synagogue are in the unrealistic, frontal poses of the Near East. Even the third-century painting in the temple of Bel at the same site depicting the Roman tribune Julius Terentius sacrificing with his soldiers, is in the same style. [*See* Wall Paintings.]

Sculpture was common. Full-size bronzes such as that of Hadrian from Tirat Zevi near Scythopolis are rare anywhere, but there is much fine heavily classical stone statuary and relief sculpture from the towns. Once again, native tastes remained vibrant. Best known are the relief sculpture and depictions on tombstones from northern Syria, especially Palmyra, where it is the staring frontal pose which strikes the observer rather than the Greek of the inscription. Syrian style was exported to imperial art where it appears in the relief portraits of Septimius Severus (193–211 CE) and his family on the Porta Argentariorum in the Roman forum. The porphyry sculpture of the four tetrarchs now at St. Mark's Cathedral in Venice is perhaps the most obvious example of Palmyrene tradition in the art of the Roman East (Rice, 1968, pp. 52, 390).

Popular art and architecture remained little changed: mud-brick and pisé (clay) for houses in many areas, stone orthostats (supports) and arches in the villages of the largely treeless limestone massif of northern Syria and the lava lands of the Hauran. Amongst the sedentary population, artwork tended to be cruder versions of traditional oriental forms. The thousands of so-called Safaitic graffiti of the desert and semidesert often reveal the tastes of the nomads for scenes of everyday life, especially hunting and herding. [*See* Building Materials and Techniques, *article on* Materials and Techniques of the Persian through Roman Periods.]

Religion and Funerary Practices. The deified Roman emperors and the "classical" deities were certainly worshiped in the eastern empire; nonetheless, the Greco-Roman pantheon figured only superficially in local cults. The god of Doliche in northern Syria may have been called *Jupiter,* but he was an oriental syncretism, Jupiter Dolichenus, clad in Hellenistic military costume and standing on the back of a bull. The important excavations at Dura-Europos illustrate the complexity and diversity of religious belief. Worshipers had access to Palmyrene deities such as Bel and Atargatis, Greco-Roman personifications of Nemesis and the Fortune of Dura, and to a synagogue. Alongside these mixed practices, the army was engaged in the official commemoration of defied emperors and the gods of Rome, as we know from a unique military religious calendar (see Welles et al., 1959). In the south the important Nabatean sanctuary at Si in the Hauran and numerous smaller Nabatean temples and "high places" continued to flourish under Roman rule, giving way to Christianity only in the third century. In the northwest, too, oriental religions dominated. The oriental priest of the cult of Atargatis at Hierapolis is depicted in traditional long robe and conical hat. At Emesa,

Diadumenianus, priest of the sun god Elagabalus, became emperor in 218.

The most famous temples of Roman Syria were those at the great sanctuary of Heliopolis at Baalbek. Nominally dedicated to a Roman triad of Jupiter, Venus, and Mercury, they rapidly became powerful, elevated, oriental deities, the temples themselves incorporating features alien to Roman tradition. Monumentality on the scale of Baalbek was not a Roman innovation, but it was surely Roman wealth and determination that finally completed the vast sanctuary. At a much lower level at Dura, we find small, irregular mud-brick temples to Semitic deities that are quite unlike even the semi-classical monumental stone versions at Palmyra.

Funerary practices, too, were less touched by Roman rule, much of the impact being superficial. Notable native traditions which continue are the great tower tombs of Palmyra and Dura and the royal examples at Emesa, and the superb rock-cut tomb facades of Petra in Jordan and Meda'in Saleh in Saudi Arabia. Even when cremation was the common practice in much of the Roman Empire through the first to third centuries CE, inhumation remained the norm in the East. The well-to-do were interred in stone sarcophagi or in niches in rock-cut tombs such as those which are found in the cemeteries of Roman Zeugma. Also found at Zeugma and elsewhere in northern Syria, are a handful of tumulus graves, a fashion most strikingly found in use among the rulers of Samosata farther north. A novel feature, which does reflect a characteristically Roman fashion, is the great increase in the erection of inscribed stelae. Most carry little more than a brief text—usually in Greek—but many bear relief portraits of the deceased. Throughout much of the Near East, however, symbols of the Sun are common on tombstones, especially the eagle, which also implies apotheosis.

ROMAN EMPIRE. *Roman tomb in Syria.* Dated to the second century CE. (Courtesy D. L. Kennedy)

Material Culture. Throughout the East the material culture of the pre-Roman societies continued. The novelty was less one of new characteristically Roman artifacts than a broadening of the range and quantity. Finds are generally much more abundant and the drier conditions of much of Syria and Egypt have preserved even organic materials from human hair through textiles to wood and foodstuffs. Especially useful are the huge numbers of papyri recovered in Egypt and, now, from similar conditions around the Dead Sea at Dura-Europos and in Mesopotamia.

Coinage became more abundant with the proliferation of both local and imperial mints. Many towns such as Zeugma, Damascus, Pella, Philadelphia (Amman), and even little Areopolis (modern Rabba, Jordan) occasionally struck their own coins, but the principal imperial mints in the Near East were at Antioch and Alexandria. Glass is much more common too, best preserved when recovered among grave goods. Pottery is well made and includes the major fine wares of the Roman world, the red-gloss wares known as Eastern sigillata and African red slip. Metalwork, especially in bronze, is common too for jewelry, tools, and household cult images. [*See* Coins; Glass; *and* Ceramics, *article on* Ceramics of the Hellenistic and Roman Periods.]

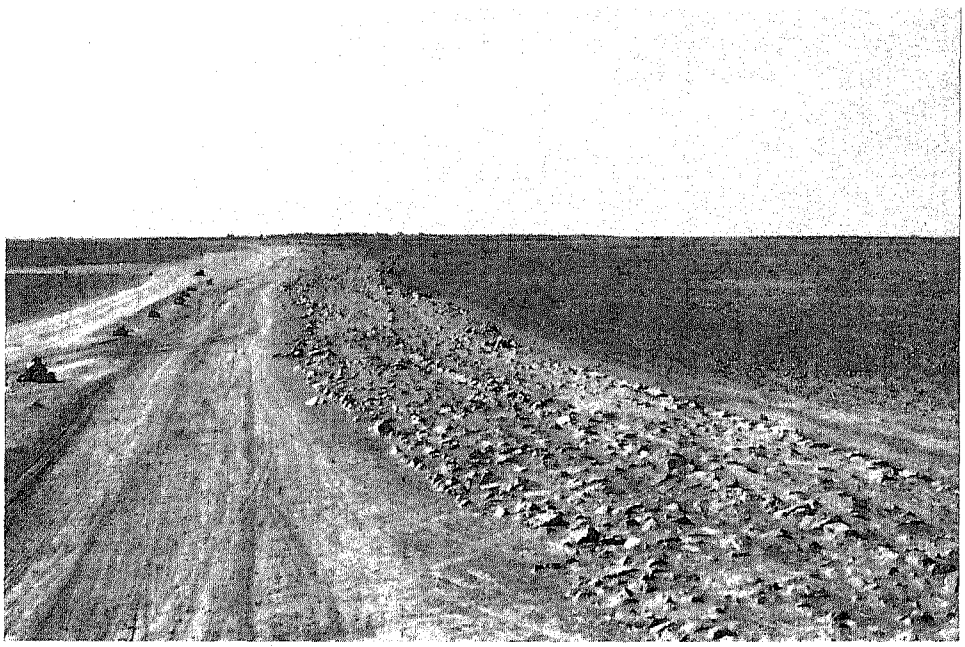
Rural Areas. Agriculture was already well-developed and widespread in the Near East and Roman rule brought no great technological breakthroughs. What Rome did contribute, however, was the long period of sustained peace which permitted the easier spread of ideas and what may have been the fullest expansion of agriculture until modern times. For the former, it was the spread of technical inventions, largely those developed at Alexandria in the Hellenistic and early Roman periods. For example, the geographer Strabo describes a water screw used for raising water from the Nile to the Roman fortress at Babylon in Egypt in the early first century CE; half a century later an example is attested epigraphically on the Euphrates near Samosata. No certain trace has yet been found anywhere in the Near East of the characteristic Roman practice, so common in Europe and parts of North Africa, of centuriation—dividing the landscape up for colonists into great regular squares of, typically, 776 yards. Farmsteads dated to the Roman period are emerging in large numbers from the landscape surveys now

so common in Jordan and Israel in particular. In the marginal regions of the Hauran in southern Syria into which agriculture spread very fully in the Roman period, old air photographs preserve traces of fossilized field systems probably belonging to the Roman and Byzantine settlements in their midst. Not the Roman centurial squares but fairly regular long, narrow strip fields, marked by stone boundary walls. The pattern emerging from field surveys is uneven, but the impression is of a densely settled landscape in which even in marginal regions with inadequate rainfall, pre-Roman methods of water harvesting, permitted farming to be sustained for generations. [*See* Agriculture.]

In supply, communications, and transport there was a major impact. The change was brought about not so much by Roman engineering skill as by the opportunity for development of native traditions in the construction of dams, reservoirs, and cisterns which now abound in the region. The Romans, however, were great bridge builders and many of the finest surviving examples are to be seen in the Near East, especially those on the tributaries of the Euphrates around Samosata. Many ancient roads became Roman highways, and scores of new roads were constructed, creating a network that in scale and quality was unsurpassed till the nineteenth and twentieth centuries. Superb examples can be viewed all over the region from the frontier roads of the upper Euphrates, through the desert roads of Syria and Arabia, to the great highways which bound together the region as a whole. The ancient coast road of the Levant, the Via Maris to Egypt, was paved and marked by milestones under Roman rule, other roads were built to join Palmyra to the Euphrates and southwards to Damascus, and numerous new surfaced roads connected the towns of the Near East to one another. Especially notable is the Via Nova Traiana in Jordan where not just the road but even the regular towers and groups of inscribed milestones at each Roman mile is often visible. Terrain was no impediment, as the zigzags which carry the Via Nova across the great slash of Jordan's Wadi el-Mujib attest. [*See* Transportation; Roads.]

Trade and Industry. The remarkable sea captain's handbook, *The Periplus of the Erythraean Sea* (c. 40–70 CE), provides details of trade between Egypt and India, which is confirmed by finds of Roman artifacts, including terra sigillata (at Arikamedu in Tamil Nadu) and coins (in southern India and Sri Lanka). Trade provided a wider range of items from distant points within the empire and beyond. Thus amphorae attest to wine imports from the Aegean, fine red-gloss terra sigillata to trade with Gaul and the province of Africa, and numerous marbles can be traced to their origins in Asia Minor and North Africa, the Aegean, and Italy. Exotic commodities from outside the empire include Chinese silk from a Palmyrene tomb, lapis lazuli from the Hindu Kush in Afghanistan, ivory from Sub-Saharan Africa, amber from the Baltic. To facilitate trade, not only Caesarea Maritima but also Seleucia Pieria were given sophisticated artificial harbors to supplement the many others along the coast from Cilica to Egypt. At Antioch, the river Orontes was tamed by canals, which allowed goods to be brought upriver, possibly as part of a military supply route linking the Mediterranean to the Euphrates.

Industries included the dyeworks of the Levant, fulling at Antioch, silk weaving at Damascus, and the production of fine linen, jewelry and glass. Natural resources were exploited: copper from the Wadi 'Arabah, the cedar forests of Lebanon, and bitumen from the Dead Sea.



ROMAN EMPIRE. *Via Nova Trajana, looking south.* (Courtesy D. L. Kennedy)

The nature and role of Roman influence on provincial economies is keenly debated. Although most scholars accept that there was little direct intervention, the needs of the frontier armies, the effects of taxation, and the impact of transforming large areas into imperial estates, will certainly have brought about changes in scale, character and direction. More passively, peace and political unification permitted the gradual filtering of ideas around the region as a whole. In agriculture, the ubiquitous olive presses still to be seen on the limestone massif illustrate one area of development, and recent surveys and examination of air photos have revealed how farming penetrated even the more marginal areas.

Roman Army. The work of the military is much harder to trace. We know that upward of one hundred thousand soldiers were based in the eastern provinces, over half in greater Syria but, unlike the West, few of their bases have been located or investigated. Most are known only from literary references or artifacts, such as military tombstones and stamped tiles. There is a legion fortress at Satala in northeastern Anatolia, and the outline of that at Bostra in Arabia is visible from the air, but the location of a first-century fort has been excavated at Tell el-Hajj on the Euphrates, revealing typical round corners, which contrast with the possibly second-century fort at Ḥumeima in Jordan where the circuit has small projecting towers. The best evidence comes from the third century CE, when the Diocletianic *castella* or fortresses appear along the desert fringes of Syria and Arabia. Part of the explanation for the spotty attestation for military structures seems to be that troops were largely based in earlier periods in the towns where the evidence is lost or hidden. The classic case is at Dura-Europos, where excavation has revealed how an entire quarter within the town walls had been taken over—indeed, walled off—by the military. The garrison built new, characteristically Roman military structures, such as barrack blocks, and also made use of what was there, as in the case of the temple of Azzanathkona, which became the regimental archive. Finally, the East has superb examples of Roman siege works; not just the well-known first-century CE example at Masada, but another at Machaerus, in Jordan. There are also second-century examples at Battir and Naḥal Ḥever in Israel and a possibly third century example at Hatra in Iraq. [*See* Fortifications; *article on* Fortifications of the Hellenistic and Roman Periods.]

Population. Ethnic Italians were rare outside the administration and army; even Greeks were few and scattered in the newer urban centres. Many urban natives throughout the eastern provinces, however, became Hellenized in language and, to some extent, culture. In greater Syria the native population was largely Semitic. Latin is rare in inscriptions; Greek is much more common. Indigenous languages such as Palmyrene and Nabatean are preserved on numerous inscriptions; even more startling is the survival of tens of thousands of so-called Safaitic graffiti scratched on the rocks of the harra (the boulder-strewn southern part of the Syrian desert) and hammada (the gravel- and pebble-strewn parts) farther south, attesting to a degree of literacy and self-awareness amongst the nomads. [*See* Greek; Latin; Palmyrene Inscriptions; Nabatean Inscriptions; Safaitic-Thamudic Inscriptions.]

Soldiers from distant provinces settled and intermarried in the East. Traders and refugees from the Parthian (Persian) Empire came as well. In crude terms we can measure the size of the military impact. Initially most of the approximately 100,000 soldiers were foreigners, but there continued to be recruitment from throughout the East as well as beyond—Italians in the legions and Thracians, Gauls, Moors, and Goths in the auxiliary regiments.

An inscription (*ILS* 2683) records the tally of 117,000 *homines* (probably those citizens of tax-paying age) at Apamea in Syria one of the larger cities, under Augustus. Antioch may have reached 250,000 in habitants. Archaeology can assist. Scholars will dispute likely and possible population densities, and must make subjective allowances for the amounts of open space. Nevertheless, broad population parameters may be calculated for individual towns from the extent of area walled; at Samosata, for example, the walls run for 5 km (3 mi.). Then there is the impressionistic value of the numbers and supposed sizes of towns. There is also the evidence of field survey for the size and number of sites of all kinds in the Roman period. Finally, there is the mounting evidence for the extent and intensity of agriculture, implying a large population. At its peak, a population of thirty to fifty million persons may have lived between Bosphorus and Cyrenaica in the second century CE and about ten million in greater Syria.

Future of Research. Roman sites abound in the Near East. Cities have always been attractive to archaeologists, but excavation has extended now to military sites—especially in Jordan—and field survey has produced rich harvests of "Roman" sites of all kinds. The pressing need today for the understanding of the Roman period, as for other historical eras, is for salvage of the many sites threatened not only by population growth and land development but also by hydroelectric projects and other irrigation schemes.

[*See also* Byzantine Empire. *In addition, most of the sites mentioned are the subject of independent entries.*]

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DAVID L. KENNEDY

ROWE, ALAN (1891–1968), British archaeologist and Egyptologist. Born in Horshonds, Essex, England, Rowe spent his early years in Australia. Between 1922 and 1928 he worked at Beth-Shean on the Palestine Expedition of the University of Pennsylvania Museum. He was director from 1925 to 1928. Rowe uncovered a series of Canaanite temples, which he partially published in 1940. Full publication and reanalysis of the Beth Shean excavations has lowered the dates and produced a new evaluation of much of the material (Kenyon, 1970, p. 219; James, 1966). The site is being reexcavated by Amihai Mazar for the Hebrew University of Jerusalem.

From 1923 to 1925 Rowe worked as assistant to George A. Reisner at Giza, Egypt, where in 1925 he discovered the fourth-dynasty tomb of Hetepheres J, wife of Pharaoh Snefru and mother of Khufu (Smith, 1956, pp. 144–145). From 1929 through 1931 Rowe directed the University Museum's excavations at Meidum, Egypt, for which he provided detailed documentation of the earliest classic "residence-cemetery" of the Old Kingdom, including the funerary temple and causeway to the pyramid, which dates to the end of the third and the beginning of the fourth dynasty (Rowe, 1931). In 1934 he undertook minor explorations at the site of Gezer for the Palestine Exploration Fund. In 1936 Rowe published his important *A Catalogue of Egyptian Scarabs, Scaraboids, Seals, and Amulets in the Palestine Archaeological Museum.* From 1942 to 1943 Rowe reported twice to the British War Office in Cairo on the state of monuments in Cyrenaica, formerly an ancient Greek kingdom in Libya. This activity led to Rowe's excavations (1952, 1955–1957) around the ancient capital Cyrene for the University of Manchester (Rowe, 1956, 1959). While curator at the Greco-Roman Museum in Alexandria (1940–1949), he explored the remains of ancient Athribis (also Kom el-Atrib or Tell Atrib) near Benha in the central Delta. From 1945 to 1946 he excavated the temple and enclosure of the god Serapis (discovered in 1943) at Alexandria (Rowe, 1946, 1957). In 1950 he joined the faculty at the University of Manchester, where he remained until his death in 1968. During this time, when not in the field, Rowe wrote about the archaeology of Egypt, its western desert, and other areas of the Near East (Rowe 1953–1957, 1961).

[*See also* Beth-Shean; Cyrene; Gezer; Giza; *and the biography of Reisner.*]

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ROBERT H. DYSON, JR.

RUJM EL-HIRI (Ar., "stone heap of the wild cat"), a large Bronze Age megalithic complex also known as Rogem Hiri and Gilgal Rephaim, situated in the central Golan, about 16 km (10 mi.) east of the northern shore of the Sea of Galilee (map reference 2254 × 2573), about 515 m above sea level. With major occupational remains from the Early and the Late Bronze Ages, the site consists of a massive, carefully constructed central cairn roughly 20 m in diameter and 4.5 m high, encircled by several concentric stone circles. The outermost circle is about 156 m in diameter and 500 m in circumference. The 2.5-meter-high and 3.5-meter-wide stone rings are sporadically connected by a series of short radial walls. There are two monumental entryways to the complex, one facing the northeast and the other the southeast. The cairn, circles, and hundreds of dolmens—the straight, shallow stone walls that surround the monument—constitute a large megalithic complex that is one of the most impressive archaeological stone monuments in the southern Levant. Petroglyphs have been reported both from the monument and from areas neighboring it.

Rujm el-Hiri was discovered during the 1967–1968 archaeological survey of the Golan Heights. Initial explanations for the function and the date of the complex described it as a ceremonial center, a defense enclosure, a central storage facility, a large burial complex, a center for astronomical observations, and a calendrical device. Rujm el-Hiri yielded almost no surface artifacts, limiting the possibilities for dating it. Tentative dates offered for the site were usually within the temporal framework of the third millennium BCE, although both slightly earlier and later dates were also suggested. The ongoing debates over the date and the function of Rujm el-Hiri triggered the Rujm el-Hiri Project (1988–1991), directed by Yonathan Mizrachi of Harvard University, as part of the Land of Geshur Project of Tel Aviv University, in cooperation with the Israeli Antiquities Authority. The research program at Rujm el-Hiri was designed from the outset as a long-term, problem-oriented multidisciplinary effort, including a large excavation project, a geophysical survey program, a lichenometric study, and a comprehensive study of the geometry and astronomy of the complex. A preliminary geophysical survey provided data on subsurface elements and valuable information on the central cairn: data from a magnetometer survey suggested that the cairn was built on a naturally elevated basalt formation. Based on the radar data, several targets were identified within the central cairn, one of which was excavated and turned out to be a carefully constructed burial chamber. Seismic data helped in isolating areas with deep stratification for future excavations. Four main excavation areas were opened in the circular complex: NE-I and NE-II in the northeast quadrant, SW-I in the southwest quadrant, and cairn I in the central cairn. Excavation exposed substantial examples of architecture in the northeast gate and the central cairn and a dromos-based burial chamber measuring 2 × 2 m within the central cairn. The looted chamber contained the remains of a dozen carnelian beads, arrowheads, and three gold earrings.

Excavation and survey data, lichenometric studies, and studies of the geometry and astronomy of the complex indicate that the concentric stone circles and the two gates were already in place by the later part of the third millennium BCE. By contrast, evidence excavated from the central cairn and analysis of the geometry of the complex all point to the surprising possibility that the cairn in its present format was extensively used, and probably built, sometime during the late second millennium BCE. Although alternative reconstructions are possible, it appears that Rujm el-Hiri is a LB megalithic cairn built within a preexisting EB monumental complex, rather than a single contemporary EB monumental complex built around a megalithic cairn (for the latter view, that the LB material represents a secondary usage of the cairn, see Kochavi, 1989).

During the mid-third millennium BCE, a large ceremonial center was erected at Rujm el-Hiri. The complex reflects such care in engineering and design that there can be little doubt that the alignments of the architecture were intentional and meant to manifest notions of religion and cosmology and permanently record culturally significant alignments (e.g., alignments associated with the agricultural calender) by using the entryways and the radial walls as alignments fixing devices for both celestial and noncelestial elements or phenomena. This EB monument served as a socioeconomic and a political central place for the local third-millennium urban populations—the inhabitants of the Golan enclosure sites. Concurrently, the site served as a spiritual focal point for these populations, a node at which religious ceremonies associated with ritual observations

were performed. The fact that the Rujm el-Hiri complex falls within the temporal horizon in which complex society and subsequent urbanization emerged in this region is of special significance. Thus, Mizrachi interprets the hypermonumentality of the complex as a means of symbolizing power through the conspicuous consumption of energy, control of which is the fundamental measure of power in complex, urban societies.

By the late second millennium BCE, the central cairn was built in its present format. This reconstruction is plausible in light of the accumulated evidence for construction and reuse of dolmens in the late second millennium that has been reported from other sites in neighboring areas and from the northern Golan. It is known from the astronomical and geometric analyses that during this time the complex could not have functioned as a celestial-bodies alignments-fixing device. This observation, as well as the nature and the association of the late second-millennium material recovered, leads to the suggestion that the primary function of the complex during the Late Bronze Age was associated with burial. Something during the post-LB era, Rujm el-Hiri ceased being a focus of ceremonial or burial activity, and its primary function shifted toward something more earthly. It seems that by this time the large stone complex had been used as a source of construction material, a cattle pen, a storage place, and perhaps even as a defense post.

[*See also* Dolmen; *and* Golan.]

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YONATHAN MIZRACHI

RULE OF THE COMMUNITY. The abbreviated title of the *Rule of the Community* is 1QS; the *1Q* indicates that it comes from the first cave at Qumran to yield manuscripts. The original find was made in 1947, and the text, photographs of its eleven columns, and a transcription into Hebrew characters were published by their editors, Millar M. Burrows, John C. Trever, and William H. Brownlee, in 1951. The *S* in the abbreviated title represents the Hebrew word *serek* ("rule"), which occurs several times in the scroll. The closest analogy to the scroll's contents is to be found in the rules of monastic orders, with their mixture of disciplinary directives and idealistic exhortation. The *Rule* reveals the internal organization of the Qumran community, whose institutions, many believe, identify its members as Essenes. Surveys of research into the scroll have been published by Hans Bardtke and Mathias Delcor (851–857).

Ten badly damaged manuscripts of the *Rule* were found among the thousands of fragments scattered in Cave 4 at Qumran. One other extremely fragmentary copy (5Q11) was found in Cave 5 (Milik, 1962). Fragments detached from the scroll when it was removed from the cave were published by Dominique Barthélemy and J. T. Milik (1955, pp. 107–130). They are the *Rule of the Congregation* (1QSa) and the *Book of Blessings* (1QSb). All these texts are now available in volume 1 of the Princeton Theological Seminary Dead Sea Scrolls Project edited by J. H. Charlesworth.

On paleographic grounds, Nahman Avigad (1958, p. 71) and Frank M. Cross (1961, p. 258, n. 116) assign 1QS to the first quarter of the first century BCE. Neither it nor any of the extant copies of the *Rule* is the original. Hence, the composition of the *Rule* in its present form must be dated sometime in the second century BCE (Cross, 1967, p. 120).

The earliest commentators noted, but did not analyze, the scroll's composite character (Dupont-Sommer, 1953, p. 90; Wernberg-Møller, 1957, p. 56, n. 49). Although acute in their observations, the attempts of Jürgen Becker (1963, pp. 39–42) and Alfred R. C. Leaney (1966) to define the scroll's component elements ultimately proved unsatisfactory because they failed to explain how and why the elements were assembled. Jerome Murphy-O'Connor (1969) was the first to suggest a general hypothesis of composition; his conclusions were accepted with minor modifications by Jean Pouilly (1976). Their hypothesis integrates the partial hypotheses of their predecessors (Denis, 40–44; Duhaime, 1977; and von der Osten-Sacken, 1969, pp. 17–27) and has raised no decisive objections (Schürer, 1986, vol. 1, p. 383; Davies, 1987, p. 60). It postulates that 1QS developed in

four stages in order to meet the community's changing needs.

The first stage of development (1QS 8:1–10a, 12b–16a, 9:3–10:8) represents the manifesto in which the Teacher of Righteousness proposed the establishment of a community in the desert to the Essenes (Murphy-O'Connor, 1974, p. 237; Knibb, 1987, p. 127). The community would be a spiritual temple (1QS 8:5) in which spiritual sacrifices (1QS 9:4–5) are offered to expiate the sins of the land (1QS 8:6, 10). Its core would be composed of priests (1QS 9:7).

The second stage, consisting of two interpolations (1QS 8:10–12a, 8:16b–9:2), was inserted into the manifesto not long after the community was established (Knibb, 1987, p. 136). The manifesto continued to define the community, but legislation to deal with failures of obedience had become necessary.

The third stage reflects a completely different social situation. The community's need to redefine itself as a democracy (1QS 5:1–13), to enact legislation for the conduct of a general assembly (1QS 6:8–13), and to admit new recruits (1QS 6:13–23) suggests that the original idealism had been institutionalized. The casuistry of the penal code (1QS 6:24–7:25) confirms the inference that we have here the problems typical of a late stage of development in a large community (Weinfeld, 1986).

The fourth stage is designed to counteract the community's descent into formalism by revitalizing its spiritual life. It bracketed stages 1–3 with material taken from the liturgy of the renewal of the covenant (1QS 1:1–3:12, 10:9–11:22), during which members recommitted themselves. The addition of 1QS 4:23b–26, which stresses the crucial importance of individual decision, adapted the originally independent *Instruction on the Two Spirits* (1QS 3:13–4:23a) to the same end (Duhaime, 1977). Such indirect appeals were strengthened by new legislation regarding the quality of entrants and the continuous study of the Law (1QS 5:13b–6:8).

[*See also* Dead Sea Scrolls; Qumran.]

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JEROME MURPHY-O'CONNOR, O.P.

RUMEITH, TELL ER-, site located near the northern border of Jordan and the town of Ramtha (map reference 247 × 212). The site's excavator, Paul W. Lapp, identified it with Ramat-Gilead based on the apparent linguistic similarity, its location, and the occupational evidence. The site's small size could disqualify the identification, but it is the only excavated site in the area whose occupational history corresponds to the biblical record. Tell el-Ḥusn, for example, the largest site in the area with any archaeological remains, has not been excavated.

In a sounding at Rumeith in 1962, sponsored by the American Schools of Oriental Research (ASOR), Lapp investigated the occupation on the mound, and he uncovered Hellenistic and later material to the east, which, without substantial architecture, seemed to indicate only transient oc-

cupation. He returned for a six-week excavation in 1967 with the additional sponsorship of the Pittsburgh Theological Seminary, limiting the second campaign to the fort on the mound, which had been occupied for about two centuries during the Iron Age. Lapp investigated the four Iron Age strata (VIII–V) by clearing the northeast quadrant of the fortress down to bedrock and clearing a portion of the southeast quadrant along the east wall. The plans of the four strata were recovered and ceramic groups whose typology is Syrian were collected.

The contours of the mound suggest that the stratum VIII fort, believed to be Solomonic, was symmetrical (approximately 37 × 32 m). Its mud-brick walls were about 1.5 m thick and the north wall had a recessed gate. Excavation to bedrock revealed a leveling operation prior to construction. The destruction debris above the stratum VIII floors was as much as a half-meter thick. The stone grinding implements, craters and bowls, ovens, and bins recovered indicate that the occupants had produced and processed grain. In stratum VII (probably when the site was under the control of the Arameans), which followed soon after the stratum VIII destruction, a stone defense line more than 1.5 m wide was built of very large and roughly dressed boulders around the mud-brick fort. Thin walls divided the space between the stone and mud-brick walls into casemates and the earlier gateways were reused. The Arameans may have converted the site into a border fort. About 2 m of destruction debris preserved the stratum VII plan and assemblages of pottery and stone implements that show a distinct Syrian influence of the mid-ninth century BCE. The destructions could date to the reigns of Jehoshaphat and Ahab or to Ahaziah and Jehoram.

The stratum VI occupation could be attributed to the Arameans and Hazael's extending Syria's borders to the south. The entire area within the walls of the stratum VI fort had been leveled in order to construct a platform out of thick gray clay. The houses in the southeast quadrant consisted of two rooms with a cobbled floor and evidence of a stairway to the roof. The lower half-meter of the 50-cm-thick walls was constructed of small rough stones topped by mud brick. Ceramic assemblages, found on the floor in the thick destruction layer, dated the destruction to about 800 BCE, possibly relating it to Joash's defeat of the Arameans at Aphek.

The strata VI and V occupations extended beyond the fortress walls, but there was no sign of their defenses. Inside the lines of the fort, the stratum V walls were preserved to a height of 1.5 m. Rooms were filled with destruction debris that may belong to Tiglath-Pileser III's 733 BCE campaign in Palestine.

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RUSAFA (Old Syriac, Rasappa; in Ptolemy, Rēsapha; Lat., Rosapha, Risapha; since the sixth century CE also Sergiopolis; Ar., Ruṣāfat Hishām), site located 180 km (112 mi.) east of Aleppo, Syria, and 35 km (22 mi.) south of the Euphrates River. Excavations were conducted by the German Archaeological Institute from 1952 to 1965 under the direction of Johannes Kollwitz and since 1975 of Tilo Ulbert.

To date, no traces of a pre-Roman settlement have been found. The most recent excavations have recovered evidence for the presence of the Roman army beginning in the first century CE (see below). In about 300 CE the Christian officer Sergius suffered a martyr's death in the Diocletianic limes fort of Rusafa (Vita Ss. Sergii et Bacchi, Acta Martyrum, Analecta Boll. 14, 1895, 373ff.). The fort later grew into a city that prospered as a result of the number of pilgrims visiting the grave of St. Sergius. It became in the fifth century the seat of a bishop and later of a metropolitan. In the Byzantine period (sixth century), the city was fortified (Procopius, *de Aedificiis* 2.9.3–8). From 724 to 745 it was the residence of the Umayyad caliph Hisham and was a Christian/Islamic city until the Mongol invasion of Syria in 1259–1260. The site has been uninhabited since.

In the sixth century the fortification walls were expanded to enclose a rectangular city area of 21 ha (62 acres). Their four monumental main gates and fifty towers have been largely preserved. Vaulted cisterns in the southwest area of the city also belong to this period. In 1986, in the course of investigating the ancient city's water supply system, it was possible to determine that there had been a dam outside the walls that collected the water from winter and spring rains and directed it into the city. Through a complicated canal system, the water flowed into four giant cisterns, whose annual levels would have sufficed for about six thousand inhabitants for one year, based on an assumed use of 10 l per person. In addition, each residential unit possessed its own cistern for collecting rainwater. Deep shafts, from which the saline groundwater could be drawn for watering livestock and gardens, were also distributed throughout the city.

The investigation of a residential quarter in the vicinity of the cisterns showed a continuity of settlement in the same stone houses from the sixth to the thirteenth century CE. The most recent excavations also permit a better understanding of the system of streets and open squares in the city. The sixth-century public buildings, such as the forum, baths, and pilgrim lodgings, have not yet been excavated. It is the ruins of the city's large churches that have determined Rusafa's

appearance and that were the object of past investigations. [*See* Churches.] The oldest preserved church (Basilica B) was erected in the early sixth century on the site of an earlier structure. [*See* Basilicas.] The most recent excavations have produced finds from the first century CE from under its floor (the evidence of the first phase of Roman occupation on the Syrian limes). The so-called Central Building also dates to the sixth century; this is a church that manifests both a basilican and a centralizing architectural schema. Basilica A, the bishop's church probably originally dedicated to the Holy Cross, also housed the relics of the city's patron, St. Sergius, from the Early Byzantine period until the city's demise in the thirteenth century. In antiquity, this basilica, with its wide arcade (54.40 m long, 28.60 m wide, and preserved to a height of 18 m), suffered repeated earthquake damage; however, in contrast to the two other large Christian buildings at the site, it was always repaired. Both a baptistery and a residential building for the metropolitan were annexed to the basilica. [*See* Baptisteries.] A spacious peristyle courtyard in the northern part of the church was probably reserved for pilgrims. The grave itself was housed in the especially artfully outfitted subsidiary room in the north, next to the basilica's apse.

The large three-nave mosque of Hisham built in the pilgrim courtyard in the early eighth century is evidence of the probably peaceful coexistence of the Christian and Islamic communities at Rusafa at the start of the Umayyad period. [*See* Mosque.] During this period, a *suq* ("market") was established to the west of the mosque and the church. To judge from the finds, it was still functioning into the thirteenth century. The few rooms excavated so far have given valuable indications about the types of crafts produced (metal handicrafts, dye-works). In 1982 a hoard of five gilded silver vessels decorated in niello was discovered concealed in a pottery vessel in the pilgrim courtyard. This unique treasure was restored in the Rheinisches Landesmuseum in Bonn, Germany, and is now on display in the National Museum in Damascus. It consists of votive offerings to the grave of Sergius that were hidden shortly before the Mongolian invasion. All of the pieces date to the twelfth–thirteenth centuries; some were made in Syria, partially following western models. At least two of the other vessels came from western workshops and has reached the Near East in conjunction with the Crusades. Especially interesting is the drinking vessel that belonged to Raoul I of Couzy, a French noble, who took part in the Third Crusade and fell in the Battle of Akko in 1193. His own coat of arms and that of his family are engraved on the cup.

Inside the city, the fourth of the large basilicas (the so-called Basilica C, a columned basilica from the fifth–sixth centuries with a surrounding step podium) has also been investigated, as has a khan (a caravanserai within the walls). Research into the extensive construction outside the city walls has begun. This includes a fortified Late Antique suburban villa, occupied until the Umayyad period, and the so-called al-Mundir building, probably a reception hall of the sixth-century Ghassanid ruler of the same name. In an area south of Rusafa, the remains of large buildings constructed from mud bricks can still be recognized. One was excavated by Katarina Otto-Dorn during the first Rusafa campaign in 1952 and published as the Palace of Hisham. The most recent excavations have revealed a garden pavilion, richly decorated with stucco, that is also dated to the Umayyad period. It belonged to another very extensive palace area.

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Translated from German by Susan I. Schiedel

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SAFAITIC-THAMUDIC INSCRIPTIONS. Old Arabian script was used from perhaps as early as the eighth century BCE to as late as the fourth century CE, undergoing alterations as it spread across the vast Arabian Peninsula. Of the regional varieties, it is those conventionally termed Thamudic and Safaitic that appear in North Arabia. Occasionally, finds have been made of Old Arabian texts in the Levant of the Hijaz variety called Dedanite and Lihyanite, but the vast majority are concentrated at al-ʿUla (Dedan) in the Hijaz. The terms *Thamudic* and *Safaitic* are commonly used as conventional labels for these North Arabian inscriptions. They are in a South Semitic script and appear mainly on the desert fringe of the Levant. It is commonly assumed that the script evolved from South Arabian through the influence of Dedanite and Lihyanite, with the various script types of Thamudic developing from those earlier writing systems and ending with the Safaitic texts. The language of the Thamudic and Safaitic texts represents the linguistic family of what has been called Early North Arabian. The most distinguishing linguistic feature of these dialects is the use of the definite article *h-*.

Thamudic texts are found throughout the Arabian Peninsula and represent the oldest of the North Arabian texts. The concentration of such texts in the northern Hijaz led initially to their ascription to the tribe of Thamud, known from the Assyrian annals and the Qur'an. Attempts have also been made by some scholars to associate the users of the script with the descendents of the Midianites. Neither theory has gained acceptance. The earliest forms of the script seemed to have emanated from the North Arabian oases of Tayma' and Dedan in the Hijaz, from which they spread elsewhere. [*See* Tayma'; Dedan.] In 1937, Fred V. Winnett proposed classifying the texts into five types labeled A–E, suggesting a sequential chronological and geographic development for the script. The problem with this classification is that the categories are not ironclad: some texts exhibit the characteristics of more than one group. Primitive forms also appear with more evolved forms of the script, defying any simple chronological arrangement of the texts. In 1970, Winnett revised the categories into geographic designations, with Najdi (B), Hijazi (C, D), and Tabuki (E) replacing the older categories. Both systems are still utilized for convenience, in full recognition that further modification is needed. [*See the biography of Winnett.*] The now more than fifteen thousand recorded Thamudic texts are mainly graffiti, containing the name and patronymic of an individual, sometimes with a petition to a deity or an individual and accompanying phrase. Their laconic nature makes dating precarious.

Safaitic inscriptions primarily appear in southern Syria, northern Jordan, and northern Saudi Arabia, but a few isolated finds have been made in western Iraq, on Lebanon's coasts and Biqaʿ Valley, and as far afield as Pompeii, Italy. The name *Safaitic* is derived from the *ṣafa,* the basalt desert southeast of Damascus, Syria; the term is, however, a misnomer resulting from the initial discovery of the texts in the region in 1857. Most of the fourteen thousand published texts are concentrated in the basalt desert, or *ḥarra,* of northeast Jordan and neighboring southern Syria. Literally thousands more exist in this region and need to be recorded. The main contributors to the decipherment of the texts were Joseph Halévy in 1877, F. Praetorius in 1883, and E. Littmann in 1901. The latter was the first to recognize that the alphabet consisted of twenty-eight letters comparable to the Arabic alphabet. Some of the Thamudic E, or Tabuki, texts have a more marked similarity with the orthography of Safaitic than the common varieties of Thamudic and have been designated South Safaitic by some. The texts frequently contain extensive geneaologies that trace the lineage back to an eponymous ancestor; they sometimes include an individual's social group or tribe *('l),* along with various formulae and religious petitions, with occasional allusions to some historical event. The date is normally of an unidentifiable or ambiguous nature.

Few of the Safaitic texts can be dated with any precision, but they seem generally to begin as early as the first century BCE and cease probably by the fourth century CE because they reflect no evidence of any Christian or Islamic influence. The overwhelming impression is that they mainly stem from the first century CE, based on references to the Herodian dynasts, Nabatean kings, and Roman authorities, as well as the "Jews" *(yhd),* Itureans *(yṯr),* and Persians *(mḏḫy).* Because most of the Thamudic and Safaitic inscriptions are found in the remote desert regions of North Arabia, some

distance from settled regions and villages, they have traditionally been perceived as the product of a nomadic population. Many of the texts speak of seasonal migrations with flocks and herds and many are accompanied by rock-art drawings of camels and horses, suggesting that pastoralists are the authors. Others, however, speak of attachments to villages and express intimate knowledge of political developments and imperial authorities, implying a population that was not just on the fringe of the sedentary population. The deities mentioned in the texts also include the Syrian Baʿal Shamin and Nabatean Dushara—cults associated with the shrines and temples of the settled population. Additional texts are being found scattered along the villages and settlements of the Transjordanian plateau and southern Syria.

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SAFAR, FUAD (1913–1978), Iraqi archaeologist. Born in Mosul, Safar studied at Safed College in Palestine (1931–1932) and then graduated from the American University in Beirut (1933) with a degree in history and archaeology. He continued his studies (1934–1938) on a scholarship at the Oriental Institute of the University of Chicago, where he earned a master's degree. Upon returning to Baghdad, he joined the antiquities department, where he began his career as Iraq's most outstanding excavator and archaeologist.

In 1940–1941, Safar and Seton Lloyd excavated Tell ʿUqair in Lower Mesopotamia, whose material belongs to the Uruk and Jemdet Nasr periods. The remarkable painted murals in a temple from the Late Uruk period (c. 2800 BCE) remain the only known examples from predynastic levels in southern Mesopotamia. In 1942 Safar directed the excavations at the Islamic city of Wassit, near the modern town of Kut, built by al-Hajaj, the Umayyad governor of Iraq. He subsequently published the results of the excavations in 1952. This publication is the only source of information about one of the most important Islamic ruins in Iraq. Safar joined Seton Lloyd again in 1943–1944 at Hassuna, a small mound south of Mosul, where they identified a new Chalcolithic culture with distinctive pottery. In 1948 Safar and Lloyd began excavations on the ancient mound of Eridu, which proved to be of great importance in understanding the origin of the Sumerians and the development of the religious beliefs of ancient Mesopotamians. A sequence of eighteen occupation levels was established. A small temple belonging to the late Ubaid period was found at the top of the mound and primitive chapel founded on clean sand was uncovered on the lowest level.

Safar's excavations undertaken at the Parthian-Arab site of Hatra in 1950 are still underway. He directed only the first few seasons himself, but greatly influenced the subsequent fieldwork. He published numerous articles about the site, particularly its Aramaic inscriptions. [*See* Hatra Inscriptions.] In 1951–1952, Safar was one of the founders of the Faculty of Archaeology at the University of Baghdad, in which he lectured in addition to his work at the Department of Antiquities. In 1956, Safar was appointed inspector general of excavations, a post he held until his death, with the exception of a brief period when he was director general of antiquities.

Fuad Safar died in an automobile accident while on his way to inspect the international rescue excavations in the Hamrin basin. His work covered nearly all of Iraq's major historical periods, and his interpretation of his discoveries was influential. His students are today distinguished archaeologists in Iraq.

[*See also* Eridu; Hassuna; Hatra; *and the biography of Lloyd.*]

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ṢAFUṬ, TELL, site located geologically on the central Transjordan plateau at 927 m above sea level, overlooking the amply watered Baqʿah Valley, whose agricultural activities it administered on behalf of ancient Ammon (32°5′10″ N, 35°40′20″ E; map reference 228 × 168). Today, the tell stands within the northwest boundary of Greater Amman, just north of Suweileh and east of the modern village after which it is named. It is on the main Amman–Jerash road. In

antiquity, Tell Ṣafuṭ also functioned as gatekeeper on a main access route to the capital of Transjordan, Rabbat Ammon, approximately 12 km (7 mi.) to the southeast.

Selah Merrill visited Tell Ṣafuṭ in 1868 and named it as one of four major sites surrounding Amman. Subsequent published accounts of tours of biblical lands included Tell Ṣafuṭ on the Transjordanian leg of the journey. An archaeological survey by Alexis Mallon in 1934 noted the existence of rampart fortifications built of large stones. Mallon suggested that the ancient name of the place was Nobah (near Jogbehah, cf. *Jgs.* 8:11) Roland de Vaux (1978, p. 590), has, however, shown that Nobah of *Numbers* 32:42 has to be located elsewhere. Surveys by Nelson Glueck (1939) and de Vaux (1938) noted the importance of Tell Ṣafuṭ relative to controlling the Baqʿah Valley. Except for some foundation stones of a (possibly square) tower, practically no architecture remained on the surface. In the mid-1950s, however, the rerouted Amman–Jerash road carved its way past the tell, cutting off a portion of the southern sector. Farah Maʿayeh (1960) and de Vaux (1960) believed that the bulldozing revealed a Middle Bronze Age glacis.

Further widening of the highway occasioned initial excavations in 1982 that are, under the direction of Donald Wimmer, jointly sponsored by Seton Hall University (New Jersey) and the Department of Antiquities of the Hashemite Kingdom of Jordan. The new cut revealed flat, geologically laid stratigraphy that the bulldozer had cut at an angle, giving the false (but frequently cited) impression of a glacis. Five seasons of excavation followed (1983, 1985, 1987, 1989, 1995). Material cultural remains clearly correlate with other Ammonite sites: the Amman citadel, Tell el-ʿUmeiri, Tell Jawa, and Umm ad-Dananir. [*See* Amman; ʿUmeiri, Tell el-.]

At Tell Ṣafuṭ excavation activity has been divided into areas A–J, omitting I. Squares are generally 5 × 5 m but no larger. Area A contains five squares at the eastern end of the southern slope, where the largest highway cut was made; to the north and adjacent to area A, area B contains nine squares, and, continuing in counterclockwise fashion, area C rises to the summit through three 5 × 10 m squares directly west of area B, with four more squares directly north of these three. South of area C, separated from and lower by 10–15 m because of the highway cut, was the now almost totally eroded area D, two squares to bedrock shaved to a 45 degree angle by bulldozers in the 1950s. Area E has a single shallow square that is off the tell and across the wadi to the east; area F has one square, on the northern perimeter defense wall, directly across from areas A and B; area G has a single Iron Age tomb (fragment) and is where two probes were made, along the wadi at the northern base of the tell, that were occasioned by construction activity; area H has two squares on the hill across the wadi to the east; and area J has twelve squares on the southeast slope of the tell, where the surface has been excavated only to expose architecture in order to forestall modern development.

Major architectural remains on the tell itself date to the Late Bronze Age and the Late Iron Age into the Persian period. Some reuse of architectural materials on the summit in the Byzantine period is clear, but the material culture remains from the Middle Bronze Age and Hellenistic period are scant. Late Roman ware seems to be continuous with the Byzantine ware off the tell in area E and across the wadi in area H, where the overview of the valley seems to have moved permanently by Islamic times. Two seasons of diachronic excavation penetrating vertically reached LB architecture built directly on bedrock (areas B, D) or virgin soil (area A). In subsequent seasons understanding the Late Iron phases was sought by synchronic excavation, which exposes as much material from a single period as possible.

Settlement at the site was fully underway in the Late Bronze Age, when a major perimeter defense wall was constructed running through area B into area J. It enclosed a stone structure (square B.5) into which a mud-brick superstructure had collapsed, crushing a once-gilded bronze LB deity and associated sacred vessels. In all likelihood, despite destruction layers elsewhere on the tell, this enclosed sacred area, possibly a temple or shrine, and the perimeter wall continued in use through the Iron Age. In the adjacent square (B.4), Iron I pottery characterized a few intervening layers under an extensively expanded Late Iron occupation that had overflowed earlier walls, including a lower Late Iron perimeter defense wall that, by itself, had already more than doubled the area of concentrated architecture.

To date, no inscriptions have been recovered, but several seals and seal impressions, mostly on jar handles, have been. Tell Ṣafuṭ boasts of an excellent repertoire of Ammonite painted pottery reconstructed from sealed destruction layers. [*See* Ammon.] Terra-cotta pillar figurines complemented the seated bronze deity of this Ammonite agricultural administrative center, where fertility religious beliefs undoubtedly prevailed. The high point of life at the tell seems to have occurred under Assyrian and then Babylonian hegemony. [*See* Assyrians; Babylonians.] The discovery of a four-winged Assyrian-type scarab stamp seal was accompanied by probably locally made Assyrian-type bottles and bowls. A Late Babylonian seal impression that was once affixed to a document was also found (Wimmer, 1987a, p. 281).

After a modest Byzantine-period presence, settlement activity moved to the east. Tell Ṣafuṭ was then used only for burials (on the summit) and farming (along the terraces).

[*See also* Transjordan; *and the biographies of Glueck and Vaux.*]

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DONALD WIMMER

SAḤAB, site located about 12 km (7 mi.) southeast of Amman, Jordan, in a transitional zone between the highlands and the desert. It has a long history of occupation, extending from the Late Neolithic/Chalcolithic period (fifth and fourth millennia) to the Late Iron Age. After the sixth century BCE, the site was probably abandoned until the Medieval Arabic period (eleventh–thirteenth centuries CE) as evidenced by the Ayyubid–Mamluk handmade sherds found there.

Neolithic/Chalcolithic Periods. Saḥab was largest in area during its earliest period of habitation, when it supported itself with extensive agriculture and evidently produced an abundance of food. This agricultural abundance is demonstrated by the large number of storage facilities both inside houses and outside in courtyards. A unit was excavated in area E that consists of several rooms (built of mostly unhewn stone) surrounding a courtyard in which large storage pits were cut into virgin soil and lined with small stones. These settlers coexisted with cave dwellers: caves were found in areas A, B, Cave C, and D. Some show a series of floors, the uppermost of which date to the Early Bronze Age. It is quite possible that the inhabitants continued to live in caves even after the main Neolithic/Chalcolithic settlement was deserted or destroyed.

Transitional Period. There appears to have been a transitional period just prior to the beginning of the Early Bronze Age, in which there was no permanent settlement at the site. In area E, above the Neolithic/Chalcolithic levels, several fragmentary walls were uncovered. These wall remains do not conform to any definite architectural plan. The present evidence suggests that the site was a seasonal settlement toward the end of the fourth millennium, probably at the very beginning of the Early Bronze Age (Kathleen Kenyon's Proto-Urban period). Related to this transitional period were two burial jars with human skeletons and a reused pit with seven–nine animal burials excavated in area E.

Bronze Age. The Early Bronze Age proper is represented at Saḥab by a number of sherds found in a sounding in area B; they were not associated with any structure. During the first and second seasons of the 1972–1973 excavations, two caves reused as burials in the Middle Bronze Age were excavated in areas A and B north of the site. Each of the graves has a deep shaft dug into earlier deposits. The shaft leads to a pavement on which the skeletons and objects were placed. In the last excavation campaign of 1980, close to the center of the site, part of an MB fort connected to a typical glacis rampart was excavated. The area was too limited to recover more definite information about the extent of the MB settlement. In another area (area H III), a massive MB wall was excavated. Unfortunately, no direct connection between it and the rampart in area GII can yet be established because the area between them is covered with modern houses. Saḥab is probably the closest of the MB II forts to the desert

area, and its location must have been significant in defending the highland from attacks from the desert.

The Late Bronze Age is well represented but because of the location of the modern settlement, investigations were mainly restricted to the LB town wall. Most of the portion excavated (nearly 75 m) is in the western part of the LB settlement (areas G II, G III, B IV). Soundings made in other areas of the tell to the south and southeast (areas H III, H IV), to the east (area H II), and to the north (areas H II, B019) allow the reconstruction of the town wall; the inner part of the LB settlement remains largely unexcavated. What is left from the LB wall are, in effect, its foundations, sunk in earlier deposits in the form of a deep trench lined on both sides with large- and medium-sized stones, which most probably served as a secret corridor. The complete enclosure appears to have been symmetrical—oval with rounded angles—and oriented north–south along its long axis.

The LB town may have had a long occupation, from the fifteenth into the late thirteenth centuries BCE. The earlier date is based on a seal impression on a typical LB storage jar handle found in association with the foundation trench of the town wall. The scene as a whole is typical of the period at about the time of Thutmosis III of the eighteenth dynasty. It combines the three signs of seated sphinx, uraeus (snake), and god beard. In front of the sphinx (at the left of the scene) is an ankh.

The pottery associated with the town wall shows a range of types, including imports and imitations of Mycenaean pieces, as well as examples of local ware. Although the final pottery analysis is not yet complete, it appears that the types represented cover most of the Late Bronze Age up to the late thirteenth century BCE. Information about the inner structure of the LB town comes primarily from an important public building partially uncovered in area E, south of the main mound. It consists mainly of a long, massive wall (more than 17 m long) with a projecting towerlike room. The building's inner parts appear to be under a deep accumulation of Iron Age deposits and modern structures that have made excavation difficult. Apart from a rich LB–Iron Age tomb excavated by Rafik Dajani in 1968 (Dajani, 1970), no other LB tombs were found in the course of the 1972–1980 excavations.

Iron Age. The Early Iron Age settlement is well represented and—at least on the west and north—seems to extend beyond the LB town. Domestic architecture from this period appeared in most of the areas (A, B, D, E, E/W, H, G). The evidence, though, is fragmentary and does not give a clear picture of Iron I. Two houses have almost complete ground plans. In general, the houses (especially in area B) follow a pattern of rectangular rooms that were, in most cases, plastered with stones. In one of them, in area A, a large number of storage jars (pithoi) were excavated. Since their excavation at Tell Beit Mirsim, these jars have been designated collared-rim jars. William Foxwell Albright and others considered them evidence for the presence of early Israelite settlers in Canaan. However, more recent research (Ibrahim, 1978) concludes that the makers of this type of jar cannot be ethnically identified. The jar was, however, produced on a large scale in central workshops and played an important role in storing products and in the trade of various parts of Bilad ash-Sham, ("Greater Syria") in the Early Iron Age. [*See* Beit Mirsim, Tell; *and the biography of Albright.*]

Some of these twelfth-century storage jars bear seal impressions or fingerprints (Ibrahim 1978; 1983, pp. 48–50). One seal impression, identified on the rims of two jars, shows an animal with long horns followed by a human being raising his hands. Another impression of a roughly circular seal, repeated three times on a single jar, depicts two seated animals: an ibex on top and a lioness below.

It is not obvious to what extent LB structures were reused in the Iron I period, but in area GII (squares 15–17) it was evident that part of the LB town wall was reused in the Iron I for domestic housing. This continuity can also be observed in the continuous reuse of the tomb excavated by Dajani in 1968 (see above) that was in use in the LB I(?)–II until the Iron I–II periods. Certain LB bronze weapons and pottery types, including bowls, small craters, jugs, dipper juglets, and flasks, were also found in the Iron I tomb in area C excavated in 1972 (Ibrahim, 1972).

The Iron II period was attested mainly in area B019, where an extensive architectural complex and a piece of the town wall have been uncovered. It could also be found in area GII and in two soundings in the center of the site and in the deep bulldozer cut at the north edge of the excavated area in E. During the Iron II period, the walled town became smaller but better planned than it had been in Iron I. Its eastern border is defined by the town wall on that side of the site. A small area in the center, to the south, probably of the same wall, was visible on line with the area excavated in B019. This wall cannot extend much farther north because there was no Iron II material in area A or B fewer than 10 m from this wall. In area GII, in the west, the Iron II settlement goes beyond the LB town wall. The excavated evidence shows that the walled settlement was planned.

The main architectural complex in area B019 consists of rectangular rooms oriented north–south. The largest is a spacious, rectangular, pillared room in the center of the excavated area. Four pillars of large stones were built in a row along the central length of the room. There are at least two other rooms on the west that join with this one to form a house or unit separated by a corridor from another unit in the west. Another pillared room was excavated in area GII. It resembles the one mentioned above but is smaller. It is clear that these columns supported the roof of large rooms and probably had a special function within the architectural unit. On the basis of the finds from area B019, the pillared house at Saḥab most probably served as an industrial and

perhaps a commercial and guest facility. The finds include a large number of loom weights of two main types (conical and round), weights in at least three units, and various tools and pots made of stone and basalt, used mainly for grinding and polishing. The pottery included storage jars and red- and black-burnished pottery with bowls and platters often slip painted in bands inside and outside. Some of the bowls and small jars were painted with dark, thin bands.

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MOAWIYAH IBRAHIM

SA'IDIYEH, TELL ES-, large double mound tentatively identified as the biblical Zarethan, situated in the central Jordan Valley, approximately 1.8 km (1.1 mi.) east of the Jordan River, on the south side of Wadi Kafranja (32°16′15″ N, 35°35′00″ E; map reference 2046 × 1861). The higher of the two mounds lies to the east, rising to about 40 m above the present plain level. Approximately 20 m below the summit, the Lower Tell extends from the western side as a benchlike projection. Altogether, the site occupies an area of about 10 hectares (25 acres).

The first detailed archaeological survey of the site was undertaken by Nelson Glueck during his Survey of Eastern Palestine between 1939 and 1947. His collections of surface pottery indicated a long history of occupation from the Chalcolithic period to the Byzantine era. In 1953, small-scale soundings were made by Henri de Contenson at yet a third element of the site, Tell es-Sa'idiyeh et-Taḥta, a small, almost imperceptible mound lying about 400 m west of the Lower Tell. A thin occupation layer was found, with flints and pottery, dating to the Middle Chalcolithic period (fourth millennium).

It was not until 1964, however, that large-scale systematic excavations were begun at the main double mound. Between 1964 and 1967, four seasons were undertaken by a University of Pennsylvania expedition directed by James B. Pritchard. In 1985, a new campaign of excavations was initiated by Jonathan N. Tubb on behalf of the British Museum; to date (1993), seven seasons have taken place.

Combining the results of the two expeditions, the earliest remains so far excavated belong to the Early Bronze II period. At this time, occupation was extensive, covering not only the Lower Tell, but also, in all probability, the base area of the Upper Tell.

On the Lower Tell, three main areas have yielded significant and sophisticated architectural remains. In the best-preserved exposure, part of a large domestic complex shows a suite of carefully planned and well-constructed rooms built of mud brick on stone foundations (see figure 1). This complex, together with most of the buildings revealed in the other excavation areas, is assigned to stratum L2, which was destroyed by fire toward the end of the first quarter of the third millennium.

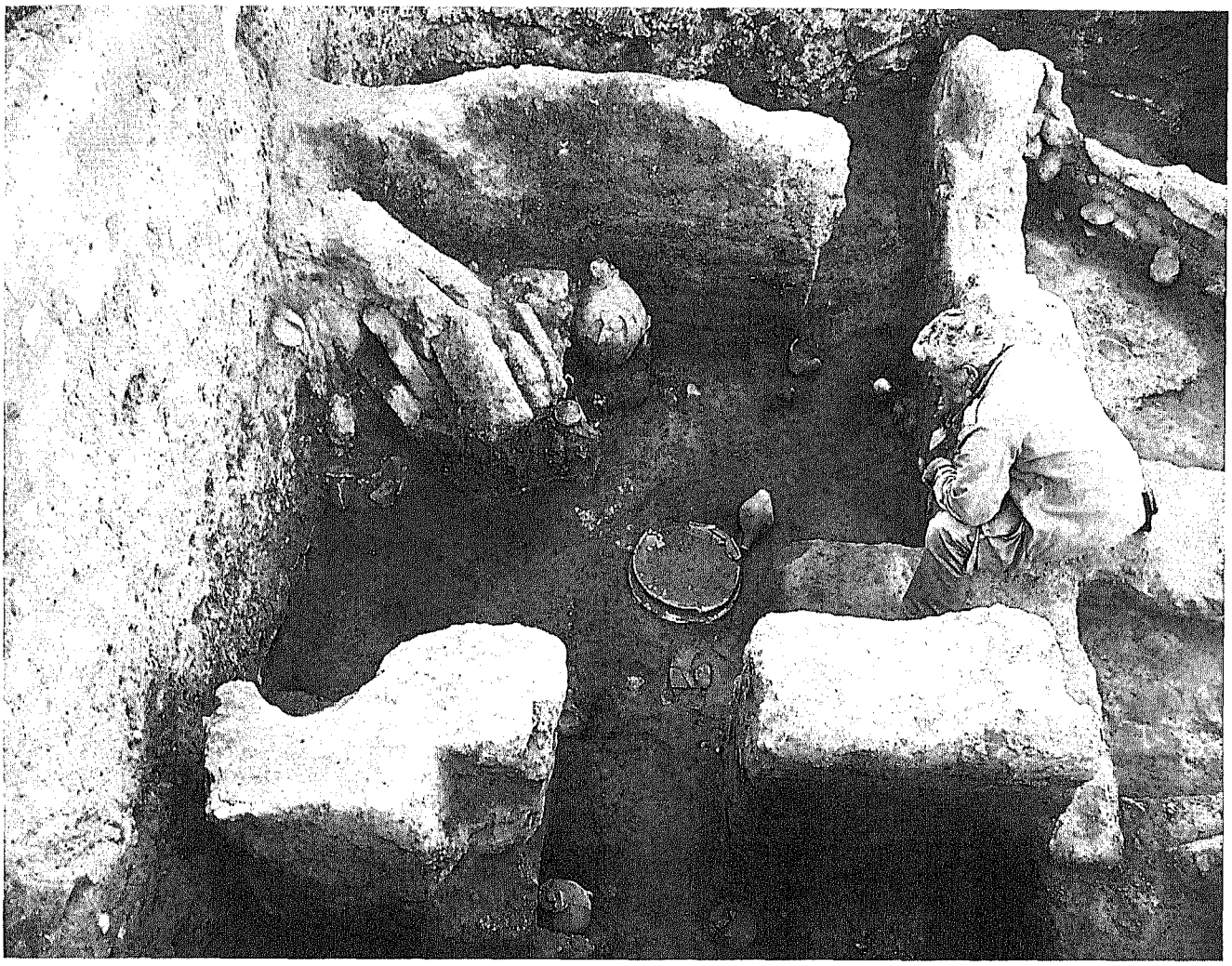
Following the destruction of L2, there seems to have been some short-lived occupation within the burnt ruins. This somewhat ephemeral phase of campsite occupation (stratum L1) is characterized by the patching and modification of surviving L2 structures, with only minor and poorly constructed additions.

Stratum L1 has all the appearances of a temporary squatter occupation. It is not yet known whether occupation continued uninterrupted on the eastern. Upper Tell; however, as far as the Lower Tell is concerned, it appears to have been completely abandoned until the very end of the Late Bronze Age, when it became the site of an extensive and intensively used cemetery.

Between 1985 and 1992, some 480 graves were excavated in an area toward the center of the mound; fifty had been excavated on the north side by the Pennsylvania expedition. Of the total, about 5 percent can be attributed to the Late Iron–Persian periods; the remainder, possessing datable finds, can all be assigned to LB III (end of the thirteenth, beginning of the twelfth centuries BCE). The graves show considerable variety with regard to construction method, disposition of the deceased, grave goods, and burial customs—indicative indeed of a mixed population.

Many of the graves consist of simple pits without further elaboration. In some instances, use was made of structural elements (foundation stones, mud bricks) from the underlying EB occupation to create kerbs or markers. Toward the center of the area, a group of more elaborate graves was found. These should more correctly be considered tombs and were clearly intended to be partially visible above ground level: they are constructed of purpose-made mud bricks and roofed with slabs of the same material.

The grave goods and burial practices pertaining to the Sa'idiyeh cemetery make it quite clear that the site was under Egyptian control during this period. The richness and variety of the finds indicate society's affluence. Large numbers of bronzes have been found—vessels, weapons, and orna-



SAʿIDIYEH, TELL ES-. Figure 1. *Early Bronze Age house.* This residence was destroyed by fire around 2700 BCE. The photograph shows the nature of the destruction debris and a fine collection of pottery vessels on the floor. (Courtesy J. N. Tubb)

ments—many of them Egyptian in style. It is, however, the seals, amulets, stone vases, items of jewelry and ivory objects which most clearly display Egyptian craftsmanship. More significantly, perhaps, the burial practices also appear to be Egyptian in origin: the use of linen for wrapping the burial gifts and for the tight binding of the deceased.

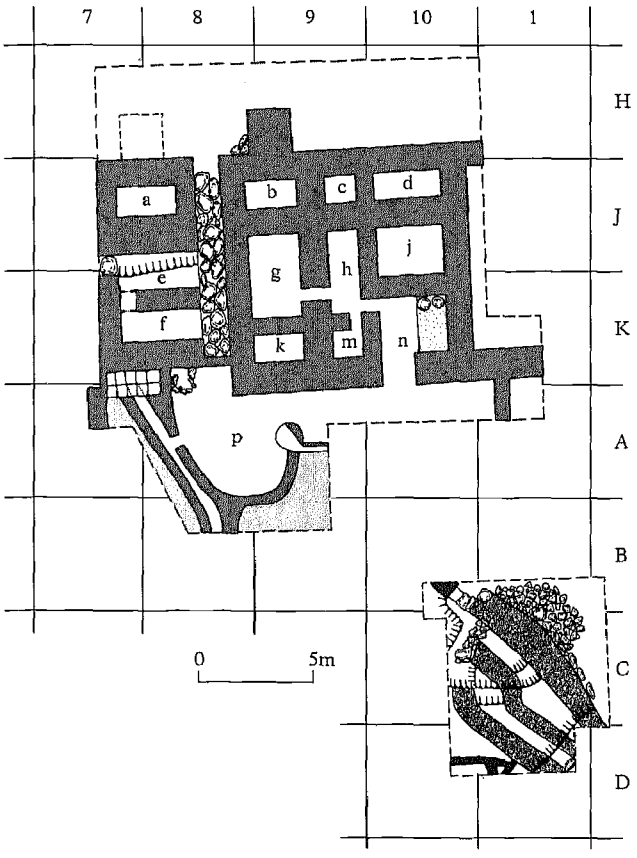
One of the most interesting and important burial types found in the cemetery is the so-called double pithos, in which the deceased was enclosed in a "coffin" composed of two large storejars joined shoulder to shoulder. This type of burial, represented at Saʿidiyeh by twenty-seven examples, while extremely rare elsewhere in ancient Palestine, is quite commonly found in LB cemeteries in southern and southwestern Anatolia. Its occurrence in some number at Saʿidiyeh may well indicate the presence within the population of an alien, perhaps Sea Peoples, element—not altogether unexpected for a city under Egyptian control. The results of the cemetery are supplemented by those from the Upper Tell, where excavation revealed remains of the contemporary settlement. [*See* Jar Burials.]

Stratum XII, the lowest phase of occupation so far reached on the Upper Tell, has been examined in three excavation areas. Toward the center of the mound, parts of a large and impressive public building were found whose plan and construction methods conform to the so-called Egyptian Governors' Residency. This type of building, known from a number of Egyptian-controlled sites west of the Jordan River (e.g. Beth-Shean, Tell el-Farʿah [South]), is characterized by a peculiarly Egyptian method of construction which, for example, utilizes deep brick foundations instead of the more usual stone.

On the west side of the tell, behind a substantial casemate

city wall, a second administrative complex has been partly excavated (see figure 2). Termed loosely the Western Palace, this complex consists of a series of rooms, courtyards, and chambers laid out on either side of a narrow passageway which leads through the city wall to the exterior by means of a small opening (possibly a postern). The complex's most interesting features are a pair of interconnecting vaulted cisterns and a semicircular pool with an elaborate system of inlet and outflow channels. That the pool was concerned with commercial activities rather than purely domestic functions is clear from the large number of storejars of Egyptian design found at its base. It is possible that this pool served as a cooling tank, perhaps for storing wine.

The third main structure which can be assigned to stratum XII is the water-system staircase, beautifully constructed out of stone and cut into the tell's north slope. Having descended the mound in a series of broad, shallow steps, the staircase turns 90 degrees at the base and continues down through a flight of much steeper steps to a depth of some 8 m below plain level. At this point, the two sidewalls curve in to enclose a small semicircular pool; the water is supplied to the system by an underground spring and fed into the pool by a skillfully manufactured conduit.



SA'IDIYEH, TELL ES-. Figure 2. *Plan of the Western Palace complex.* Twelfth century BCE. (Courtesy J. N. Tubb)

The stratum XII architecture and the contemporary cemetery provide clear evidence for an Egyptian presence at Sa'idiyeh during the twelfth century BCE. It seems likely that the city was a major taxation center or entrepôt, serving the needs of the Egyptian Empire during its final phase under the pharaohs of the twentieth dynasty.

Stratum XII was destroyed by fire toward the middle of the twelve century BCE, when use of the Lower Tell cemetery also came to an end. The site appears to have been abandoned for some time following, perhaps for as long as one hundred years. Toward the end of the eleventh century BCE, a rather ephemeral phase of campsite occupation (stratum XIB) was established within the now silted-up stratum XII ruins. Consisting of little more than beaten-earth surfaces, fireplaces, and postholes—presumably for shelters—this phase seems to have been preconstruction rather than post-destruction. In any event, stratum XIA, which follows it, represents a very restricted occupation. It remains, which can be dated to the early tenth century BCE, have only been found near the center of the tell. A single, rather poorly constructed building was excavated which, for reasons of its proportions and ground plan, is thought to be a type of temple. It is bipartite, with the smaller room to the rear. This rear room, or sanctuary, had a plastered bench against the back wall, incorporating an inset niche; a burnt area with an incense stand and a pile of gazelle bones was found in front of the niche.

Little can be said of the next three phases (strata X–VIII). Again, they appear to represent restricted and poor settlements which, in the area examined, consisted of roughly paved, cobbled courtyards with traces of flimsily built mud-brick walls.

The next important period in the site's history appears with stratum VII (late ninth–early eighth centuries BCE). Perhaps as a consequence of the renewed occupation of Transjordan by the Israelite king Jeroboam II, Sa'idiyeh underwent a major expansion at this time. Stratum VII, extensively excavated by both the Pennsylvania and the British Museum expeditions, shows a densely packed settlement consisting of houses, stores, workshops, and industrial installations arranged on a well-planned grid of intersecting streets and alleyways. For the first time since stratum XII, a city wall encircled the settlement. Weaving and textile preparation seem to have been the main industrial activities: many hundreds of clay loom weights were found in what must have been workshops, often in distinctive alignments indicating the configuration of the looms.

Almost all of the stratum VII housing units had bathrooms containing both basins and toilets, suggesting that cleanliness and sanitation were major concerns of the inhabitants. The best-preserved example consisted of a raised room approached by three steps. Inside was a large plastered basin and a sitting-height mud-brick pedestal with a comfortably rounded seat made of fine mud plaster. Both units could be

flushed through with water, being provided in each case with inlet and outflow channels, the latter leading to a combined soak-away drain (a drainage basin that does not have a constructed conduit) in the courtyard below.

By the end of the first decade of the eighth century BCE, the prosperity of the city had declined; stratum VI, which succeeded VII without any evidence of a catastrophe of any sort, shows Sa'idiyeh, once again, as a small settlement confined to an inner zone on the tell's surface. Fortunes must have revived, by the middle of the eighth century BCE, however, for stratum V is extensive. It has a new city wall and is similar in most respects to stratum VII, with the same pattern of workshops and industrial units arranged on a grid. In stratum V, however, the plan is even more strictly formalized, with insulae of workshop complexes, all with very similar internal room arrangements. Again, like stratum VII, the emphasis of the industry was on textile manufacture. Stratum V was relatively short-lived. It was destroyed by fire around 720 BCE, perhaps by the Assyrians. Although the inhabitants probably had time to escape, some of their unfortunate animals were abandoned: several burnt-out stalls have been excavated, each containing the charred bones of equids (donkeys).

The destruction of 720 BCE was one from which the city never really recovered. Stratum V was succeeded by an enigmatic phase (stratum IV) represented solely by large numbers of deep, unlined storage pits which had contained animal fodder. During the Persian period (fifth century BCE), an administrative building, or perhaps a fort, was established on the highest point on the Upper Tell (the so-called acropolis), but remains of any contemporary settlement (stratum III) have proved to be elusive. It may well be that occupation moved to the as-yet completely unexplored eastern side of the mound. Certainly some occupation is indicated by the presence in the Lower Tell cemetery of a number of graves of this period.

The Persian period building on the acropolis was replaced by a similar, but larger fortress in the Hellenistic period (stratum II); by then, however, the presence at the site may have been little more than token or strategic: no finds from this period have been found anywhere else on the site. The Roman period (stratum I) is represented by a solitary watchtower guarding the northwest corner of the Upper Tell. The very last traces of occupation consist of a single-roomed farmhouse on the Upper Tell and what may be a type of khan, or caravanserai, on the north side of the Lower Tell, both dating to the seventh–eighth centuries CE.

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JONATHAN N. TUBB

SAID NAYA (Sardenay, Saydeneia), predominantly Christian settlement located about 20 km (12 mi.) northeast of Damascus on one of the high plateaus of the Qalamun Mountains, which comprises a section of the Anti-Lebanon range (37°43′ N, 40°40′ E). Following the orientation of the mountain chains, the high valley stretches out in a north–south direction. The chief routes from Damascus to Emesa/Homs and farther on to North Syria described in ancient itineraries seem, however, not to have touched this region. They led north either through the Biqa' plain via Heliopolis/Baalbek in the west or via a route that lay farther east. Consequently, the identification with the Danaba mentioned in the Peutinger map, which was championed in the older literature (J. L. Porter, *Five Years in Damascus,* London, 1855), cannot be maintained. Monuments from the Roman imperial period demonstrate that the place had a certain significance then.

There are two explanations of the place name. In the first it derives from the Old Syriac *sayda* ("lady") and *naya* ("our"). According to this explanation, the name of the cloister on the cliff that dominates the entire area was transferred to the city. The second and more popular explanation is closely connected with one of the legends of the founding of the cloister (see below); according to this variant, the name means "hunting place" (Old Syriac *seid,* "to hunt"; *dnaya,* "place"). Old Syriac was still spoken in Said Naya in the nineteenth century CE. It is possible that a Christian

legend attached itself to a local place name, but more exact details are unknown.

Three rock tombs are located below the cloister and are dated to 198 CE (W. H. Waddington, *Inscriptiones grecques et latines de la Syrie,* 2562o, vol. 3 of Philippe Le Bas, *Voyage archéologique en Grèce et en Asie Mineure,* Paris, 1870). The tombs are decorated with reliefs of deceased couples. In the older literature these were often misinterpreted as pictures of saints.

A mausoleum in an area to the east, below the cloister, is today Peter and Paul's Church, a windowless rectangular building on three steps. A small entrance door is located in the east side; a partially worked outline of a base and a ledge are the only architectonic decoration on this otherwise undated building (second–fourth centuries CE?). The interior is in the form of a cross with three large arcosolia formed from massive blocks. In one of the building's resulting massive corner pilasters, a stairway leads to the roof. (Jean Lassus, "Deux églises cruciformes du Hauran, *Bulletin d'Études Orientales* 1 [1931]: 45–48).

St. Mary's Cloister, which is Greek Orthodox, is today occupied only by nuns (in the Middle Ages it was occupied by nuns and monks). There are various versions of the founding of the cloister in numerous legends; however, there are no certain historical or archaeological data. Since the Middle Ages it has been repeatedly visited, even by European travelers (the first known visitor was Magister Thietmar in 1217), because of the Mary icon, which was already widely known. According to the earliest travelers, the cloister was founded either by a pious lady from Damascus or by a monk from Jerusalem. Ernst H. Maundrell (*Voyage d'Alep à Jérusalem à Paques en l'année 1697,* Paris, 1706) mentions the legend that is today most popular and disseminated by the Orthodox patriarchy. In it the cloister was founded in 547 by Justinian, before whose eyes, during the course of a hunt, a gazelle transformed itself into an image of the Virgin Mary on the spot of the current cloister. There are other widely different legends concerning the icon's age and origin. Later variants report that Eudoxia, the wife of the emperor Theodosius, brought this picture painted by St. Luke the Evangelist to Said Naya and built a cloister for the icon there. In the foundation of the current, drastically renovated and enlarged structure, some masonry may be ancient; however, clearer indications of a date are absent.

Deir Mar Tuma, to the west, above the settlement, is a church integrated into a Roman building that was in the form of a small porticoed temple with a north–south orientation. There is no inscription to provide information about the building's original purpose. It stands in an ancient rectangular precinct that was hewn into the cliff and constructed from massive blocks. In the immediate vicinity are other rock tombs and rooms hewn into the cliff, one of which was designated a meeting room by Richard Pococke, (*A Description of the East,* London, 1743–1745).

The Cherubim Cloister is located on a 2,011-meter-high mountain peak northwest of the settlement. Numerous ruins show that a very holy shrine has stood there since at least the early imperial period. A series of rock-cut rooms is associated with later use as a hermitage.

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RÜDIGER GOGRÄFE

Translated from German by Susan I. Schiedel

SALAMIS, fortified city on Cyprus, settled in the eleventh century BCE. Located on the eastern coast of Cyprus on the northern side of the Pediaios River where it enters Famagusta Bay approximately 7.5 km (4.6 mi) north of Famagusta. Salamis was one of the leading cities on the island from the earlier Iron Age through the Late Roman period. A portion of the city was occupied until at least the early eighth century CE and probably as late as the twelveth century CE. Although the architectural and sculptural remains of Salamis always have been visible, it was not until the 1860s and 1870s that the epigraphical finding of the first European visitors identified the church and monastery of Apostolos Varnavas immediately to the west of the site as part of the ruins of Salamis.

According to the legend of the eighth to fifth century BCE, the Homeric hero Teukros, son of Telamon, who was the king of the island of Salamis in the Saronic Gulf in Greece, founded the city in 1184 after the Trojan War. Actually the settlement was established in the mid- to late eleventh century BCE, probably as a consequence of the destruction by earthquake(?) and abandonment of the nearby Late Cypriot city of Enkomi, about 2 km (1.25 mi.) inland to the southwest. [*See* Enkomi.] The estuary of the Pediaios River may have silted up around this time, making Enkomi inaccessible directly to the Mediterranean. The southern portion of the city was occupied continuously from the eleventh through second centuries BCE. This region then appears to have been uninhabited until the late fourth century CE. The city was the metropolis of the island under the Ptolemies from the end of the fourth through the second century BCE when this role shifted to Nea-Paphos. At its height Salamis covered about 150–275 ha. Major earthquakes shook the city in 16/17, 76/77, 342, and 394 CE. A revolt by the Jewish population in 116/117 CE caused extensive damage within the city. Under the aegis of the emperor Constantius II (344–361 CE) the city was rebuilt after the earthquake of 342. In his honor the new city was called Constantia and resumed its earlier

position as the metropolis of the island. The Arab raids, beginning in 647/48 CE, resulted in more destruction. Although there is evidence for limited reoccupation in the late seventh through early eighth centuries CE, including a defensive fortification built around the basilica of Ayios Epiphanios, most of the urban area was abandoned. The remnants of the large residence called L'huilerie ("the olive press") provide evidence of continued use in this section after the seventh century.

Exploration and Excavation. Small sections of the ancient city were inhabited through the twelveth century CE. Marble and granite architectural fragments and an inscribed statue base from the gymnasium were used in some late medieval and Venetian buildings in Famagusta demonstrating that the ruins of the city were accessible in the thirteenth through sixteenth centuries. The first published description of Salamis was in 1862 by Melchior de Vogüé, William Waddington, and Edmond Duthoit. Luigi Palma di Cesnola and later his brother, Alexander, were the first non-Cypriots to "excavate" at Salamis (1866–1878). In 1888 D. G. Hogarth published his observations of his visit. Formal excavations of the western and northern cemeteries and a Roman house with floor mosaics were carried out by Max Ohnefalsch-Richter in 1880–1882 for the British Museum under the direction of Charles Newton. H. H. Kitchener and G. Hake excavated more tombs in the western cemetery in 1882 for the South Kensington Museum (now the Victoria and Albert Museum). The Cyprus Exploration Fund organized by the British Museum, the Ashmolean Museum (Oxford), and the FitzWilliam Museum (Cambridge) and led by J. A. R. Munro and H. A. Tubbs in 1890 and 1891 opened up many trenches within the city itself. Another British team consisting of A. S. Murray, A. H. Smith, and P. Christian excavated more tombs in 1896 in the western cemetery for the British Museum.

In 1913 J. L. Myres and G. E. Jeffrey worked at the "prison/tomb of St. Catherine/Haghia Haikaterini" in the western cemetery. Jeffrey in 1923–1925 and Joan duPlat Taylor in 1933 carried out small-scale excavations of primarily Late Roman structures. In 1952 the Department of Antiquities began regular large-scale excavations within the city which continued until 1974. The systematic excavation of the western cemeteries by the Cypriot Department of Antiquities began in 1957 first under the direction of Porphyrios Dikaios and then from 1962 to 1967 by Vassos Karageorghis. A French expedition from the Institut F. Courby, Université de Lyon, dug in the southern section of the city from 1964 to 1974, focusing on the Temple of Zeus and the Late Roman Christian basilica called Campanopetra. In 1973 N. C. Flemming undertook a preliminary underwater survey of the harbor facilities of Salamis.

Major Remains. The earliest remains of the city date to the late eleventh century BCE: French tomb no. 1, a cult place (through the sixth century BCE), and the southern rampart. Iron age elite burials were located in various extramural cemeteries: "Royal tombs" (c. 800–500 BCE), Cellarka (c. 700–400 BCE), and Koufoumeron (c. 550–500 BCE). There were extramural sanctuaries dating to the sixth century BCE to the west around Apostolos Varnavas (site A; Great Goddess/Aphrodite) and to the south at Toumba (site G). Tumulus/tomb 77 represents the funerary pyre and cenotaph of King Nikokreon(?), the last king of Salamis, and his family, about 311 BCE. The Temple of Zeus Olympios (Zeus Salaminios?) was first constructed in late second century BCE and a ramp was added at the end of first century CE. It was destroyed by earthquakes in 332 and/or 342 CE. To the north of the temple there was an elongated porticoed forum or "Agora" (site C), probably constructed before 22 BCE and then reconstructed in the first or second century CE.

At the north end of the forum a large rectangular cistern or loutron with a vaulted roof was built during reign of Septimius Serverus (fl. 193–211). It was fed by an aqueduct from the spring at Kythrea. An elevated arched section is preserved southeast of Ayios Sergios. The gymnasium (site B) probably existed in the second and first centuries BCE. There were major building phases and repairs to it at the beginning of the first century CE and again during the reigns of Trajan (fl. 97–117) and Hadrian (fl. 117–138). After damage by the fourth-century earthquakes, it was restored as public baths by Justinian (fl. 527–565) then abandoned. Adjacent to the gymnasium there was a xystos or stadium with eight rows of seats on the north. A propylaeum entrance or vestibule (c. 100–150 CE?) on the western end opened on a north–south colonnaded street leading from the gymnasium to the theater. The theater was built at end of first century BCE. It was reconstructed after earthquake of 76/77 CE with additional repairs and reconstruction under Hadrian. Further modifications followed in the third century CE. Following its destruction by the fourth-century earthquakes the stage was rebuilt in a crude fashion about 375–425. Abandonment occurred in the sixth century CE. The amphitheater built in the late first century CE completed the city's entertainment complex.

Ayios Epiphanios (site H) was the earliest and largest Christian basilica on the island. It was built in 375–400 and later partially reconstructed. This "cathedral" of Epiphanios, the first archbishop of Salamis (fl. 368–403), was enclosed within a limited defensive circuit around the core of the city. The wall was built in the early seventh century in response to Arab raids. After the basilica was destroyed in 447/48 by the Arabs, a church was built immediately to the southeast to replace it in around 698. This church was rebuilt in the ninth century and continued in use through at least 1344.

Three important edifices were built around 470–500. The "Campanopetra" Christian basilica and monastery (? site E) is one of the largest and most refined known on the island. After 647 the baptistery was turned into a chapel. Immedi-

ately to the west across a street was an official residency. Nearby was a large elite residence, "L'huilerie" (see above). Following its destruction during Arab raids squatters inhabited it in the mid- to late seventh century. Afterward the complex was divided into at least three independent structures, one of which was an olive oil pressing establishment. They were occupied through the twelfth century.

[*See also the biographies of Di Cesnola, Dikaios, Hogarth, Kitchener, Myres, Newton, Ohnefalsch-Richter, and Vogüé.*]

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SALLER, SYLVESTER JOHN (1895–1976), American Franciscan archaeologist based in Jerusalem. S. J. Saller was born in Petosky, Michigan. He entered the Franciscans in 1913 and was ordained a priest in 1922. He taught at the Franciscan house of studies in Teutopolis, Illinois, until he was invited to study Scripture at the Antonianum in Rome in 1928. After two years in Rome he moved to the school's Jerusalem campus, where, two years later, he graduated as a lector generalis in Scripture. From 1932 until his death, he remained, with rare exceptions, in Jerusalem, as a professor at the Studium Biblicaum Franciscanum (SBF). There he taught biblical archaeology and Greek and directed excavations on Mt. Nebo (Siyagha, Jordan), at 'Ein-Kerem, and at Bethany. His two-volume work on Nebo inaugurated the SBF's publication series. He also helped launch and edit the SBF's periodical *Liber Annuus* (1950–). Saller initiated the SBF's Collectio Minor (Minor Series) with his study of Bethphage. He followed this with the important "Catalogue of the Ancient Synagogues of the Holy Land" (*Liber Annuus* 4[1954]: 219–246), updated and separately printed in the Collectio Minor (Jerusalem, 1969, 1972).

Saller was elected a member of the Palestine Archaeological Council during the British Mandate and was religious superior in the SBF community (in the Flagellation Convent, on the Via Dolorosa); he generally avoided the limelight, living the life of an exemplary friar. His principal articles are to be found in *Liber Annuus.*

[*See also* Franciscan Custody of the Holy Land; Nebo, Mount.]

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SALT. Although salt is an essential mineral in the human diet, it is generally believed that hunter-gatherer and fishing groups do not require it as a diet supplement, whereas agriculturists do. In addition to its dietary role, salt has many industrial uses. It is employed, for example, to treat hides, preserve fish, and separate silver from gold (the cupellation process). Salt occurs naturally in various forms, and its method of extraction varies accordingly. In Western Asia, rock salt has been mined (e.g., in northern Arabia, Anatolia, Assyria, Yemen); sea salt has been evaporated (e.g., on the west coast of Turkey); and certain salt-rich plants may occasionally have been used to produce salt, as in parts of Africa (Potts, 1984). Salines, however, present another, easily accessible source of salt. The intense heat in the Near East evaporates the saline solution leaving the crystalized salt behind. Extraction can then take place by digging the salt out of the ground, often in the form of "bricks" of salt that can be transported by pack animals.

The ubiquity of salines throughout the Near East has meant that it was always the most important source of salt in antiquity—particularly Mesopotamia, Syria, and Anatolia. Cuneiform texts contain a number of pertinent references. The profession of salt gatherer *(mun-ur4)* is attested at Fara in the early dynastic period, and designations for leather bags for salt (Sum., *kuš-dùg-gan-mun;* Akk. *tukkan ṭâbti*) are found in lexical lists. A list of salines (Ugar., *ṣṣ* or *ṣiṣūma*) and their harvesters (?) is contained in a pair of Ugaritic texts (*Palais Royale d'Ugarit,* vol. 5, 96 and 97). The division of a saline (Akk., *eqil ṭâbti*) between the kings of Ugarit and Siyannu is mentioned in a letter from Mursilis II. Prices for salt are specified in Ur III economic texts, as well as in the laws of Eshnunna (sec. 1: A i 14). Ur III sources also mention bricks of salt (*sig4-mun;* e.g., *Ur Excavation Texts,* III 1021), while a text (*Ur Excavation Texts* III 1498) which lists 20 *sìla* of salt in the inventory of a goldsmith's workshop during the reign of Ibbi-Sin points to the practice of the salt method of cupellation in Mesopotamia by the late third millennium.

In addition to its utilitarian uses, salt played a role in ancient Near Eastern cultic practices. This is best exemplified in the *Maqlû* series: "O salt, created in a clean place, for food of gods did Enlil destine thee, without thee no meal is set out in Ekur, without thee god, king, lord and prince do not smell incense" (tablet VI: 111–119, trans. T. Jacobsen). Salt was burned in a number of different Assyrian and Hittite magical spells, ceremonies, and incantations. It was included in ritual meals prepared for Ishtar and other deities, and was strewn on the ground at the conclusion of certain rituals performed at Aššur. Finally, salt was a component in a number of ancient Mesopotamian medicinal recipes. The Akkadian idiom "to eat the salt of a person" *(ṭâbat PN leḫemum)* signified the making of a covenant or arriving at a reconciliation.

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SALVAGE EXCAVATION. [*To treat the archaeological process known as salvage excavation, this entry comprises an overview of the method's procedures, objectives, potentials, and limitations, and a study of specific salvage excavation operations in Israel.*]

An Overview

Stepped-up destruction of the world's archaeological heritage has been a by-product of the intensified economic and industrial development of the later twentieth century. Confronted with this challenge, archaeologists have scrambled to rescue what evidence they can. In the Near East, salvage archaeology began in earnest in the 1960s, when the first large-scale dam construction projects were announced, initiated to harness hydroelectric power and to facilitate large-scale agricultural development. Faced with the imminent flooding of sites in the threatened river valleys, national antiquities organizations, often in concert with UNESCO, or-

ganized salvage programs and encouraged archaeologists to excavate doomed sites. Salvage excavation has become an increasingly important concern in Near Eastern archaeology. In Syria, for example, new excavation permits granted in recent years have almost exclusively been limited to salvage projects, and such trends may well persist if not intensify.

The major dam projects in southwest Asia have largely been in the valleys of the Euphrates and Tigris Rivers and their tributaries. [*See* Euphrates; Tigris.] Sponsoring countries include Syria (the Tabqa and Tishrin dams on the Euphrates, and the Khabur dams), Turkey (the Keban, Karakaya, Atatürk, Birecik, and Karkam dams on the Euphrates and a set of dams on the Tigris), and Iraq (the Hamrin dam on the Diyala, Saddam/Eski Mosul dam on the Tigris, and Haditha/Qadisiyah dam on the Euphrates). [*See* Khabur; Hamrin Dam Salvage Project; Diyala; Eski Mosul Dam Salvage Project.] The archaeological heritage is also threatened by the trend toward large-scale agricultural intensification: regions formerly cultivated with traditional technologies and methods are now subjected to mechanized agriculture with tractors and deep plowing. Such activity results in the destruction of archaeological sites as well as such off-site features as ancient roads, canals, and sherd scatters. The North Jezireh project in northern Iraq is an example of a salvage operation organized specifically to collect archaeological evidence from an area of some 800 sq km (496 sq. mi.) targeted for agricultural development.

Other types of economic development also encroach. The important Neolithic site of ʿAin Ghazal near Amman, Jordan, was discovered when highway construction damaged it; more recently the site was endangered by real estate development. [*See* ʿAin Ghazal.] In Beirut, plans for massive urban renewal in the downtown area precipitated salvage excavations of the ancient city below. The developers are said to be planning the integration of excavated remains into the modern constructions with an eye to the cultural and touristic value of those remains—an increasingly common practice. [*See* Beirut; Tourism and Archaeology; Restoration and Conservation.]

There has been relatively little discussion of methodologies for mounting salvage projects in the Near East. Generally, national antiquities organizations sponsor surveys of threatened regions that locate sites for excavation (Whallon, 1979). After survey, excavation projects are speedily organized to sample as much as possible before sites are destroyed. Unfortunately, haste only compounds the problem of the site's destruction: the archaeologist cannot return to check the results after the site has vanished.

Although the destruction of archaeological sites can only be viewed as a calamity, there are some positive aspects to salvage archaeology. One is the concentration of intensive archaeological efforts in specific geographic areas, facilitating an unusually comprehensive and coherent understanding of regions and their changes through time. In the case of the Euphrates valley, continual dam construction resulted in an almost unbroken zone of archaeological research from the Keban dam area in eastern Turkey to the Tabqa dam in Syria. Because of the association with dam projects, large-scale salvage operations are typically focused on (and biased toward) riverine communities.

Coordination of salvage excavations, both foreign and locally sponsored, is usually undertaken by the national antiquities organizations, which often organize international symposia of scholars involved in salvage work (for published proceedings on symposia held in Iraq, for example, see *Sumer* 35 [1979], 40 [1982], 42 [1983]). Such cooperation allows archaeologists to compare results and work toward an integrated perspective of societal changes in the relevant regions. Antiquities organizations have also offered inducements for foreign participation in salvage work, by providing labor, equipment, housing, and even financial support (in the case of Iraq), and permission to retain and exhibit a portion of the excavated museum-quality objects (Syria).

A second "blessing in disguise" provided by salvage projects is their tendency to compel archaeologists to concentrate their efforts on "peripheral" or "marginal" regions that would otherwise be neglected in favor of the urban heartlands (e.g., Uruk, Babylon, Aššur, Mari). The investigation of marginal areas has produced surprising results that the core areas could never have yielded. For example, excavations at Mureybet and Abu Hureyra in the Tabqa dam region supplied crucial data on the transition from mobile hunting-gathering to Neolithic agricultural lifestyles, providing evidence that sedentary village life preceded agriculture by several millennia. [*See* Mureybet.] Excavations in the Euphrates valley in Syria and Turkey have provided testimony of a southern Mesopotamian "expansion" and colonization of the region coincident with the appearance of the first urban societies in southern Mesopotamia (Uruk period, c. 3600–3100 BCE). A rich body of material has been obtained from a range of relevant sites, including the full-fledged colonies of Habuba Kabira and Jebel ʿAruda (Syria), smaller outposts like Hassek Höyük (Turkey), and southern Mesopotamian "enclaves" in local towns, as at Hacinebi (Turkey). [*See* Habuba Kabira.]

The Hamrin salvage region in Iraq and the Middle Khabur project in Syria have both revealed networks of specialized small third-millennium communities apparently associated with (and established by?) emerging urban centers. The results indicate that the development of urban civilization had a significant effect even on marginal rural areas, where local resources were mobilized or exploited within newly established regional economic systems. Unexpected results have also been supplied by excavations in more recent historical periods. The excavations at Khirbet-ed Diniye (ancient Haradum) in the Haditha dam region exposed a centrally planned small city of the Old Babylonian period

(c. 1800 BCE); the thirteenth-century BCE cuneiform archives from the city of Emar in the Tabqa dam area have provided an invaluable textual source for a prosperous Late Bronze Syrian city, supplying an alternative model from that of Ugarit. [*See* Emar; Ugarit.]

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Salvage Excavation in Israel

Also known as rescue excavation, the term *salvage excavation* does not appear in Israel's Antiquities Law of 1978; it is, rather, a technical term used, since the early 1960s, by officials of the Israel Antiquities Authority (IAA, previously the Israel Department of Antiquities) to describe small archaeological excavations IAA archaeologists conduct at sites discovered and damaged in the process of building and highway construction and other development work. In the last thirty years, nearly two thousand licenses have been issued for such excavations.

A salvage excavation is not planned and prepared for in the way that a large-scale archaeological excavation is, with the specific goals of providing a key to a historical or an archaeological problem, within a time frame of several seasons stretching over many years. Instead, it is organized in a matter of days, conducted under time pressure, and in a general environment and under physical conditions inimical to its goals and objectives: to learn as much as possible in a short time about a site and to register, describe, and photograph a maximum of its archaeological data. The archaeologist assigned to a salvage excavation has had no time to study the site to prepare for the dig. He or she learns about it, appreciating its importance and special contributions to the archaeology and history of the land, only as the excavation proceeds. The small size and scope of such an excavation does not, however, diminish its importance.

One of the principal limitations of a salvage excavation is that it is conducted in the part of the site threatened with destruction, which is not always the most important area in terms of its history and material culture.

The initial archaeological information recovered from a salvage excavation is published in the IAA's *Hadashot Arkheologiyot* (Hebrew) and its English version, *Excavations and Surveys in Israel*. Final reports are published in *'Atiqot* (English and Hebrew), the IAA's official journal.

In recent years, salvage excavations have been carried out in several of Israel's larger cities (Jerusalem, Beersheba, Ashkelon, Qiryat Ata), where intensive development work has been underway to provide housing for new immigrants.

Tens of salvage excavations in Jerusalem alone have provided archaeological data of cardinal importance. For example, the "Third Wall," segments of which had already been revealed through excavation, was excavated in 1990 by Vassilios Tzaferis, Alexander Onn, and Nurit Feig when new road construction uncovered additional sections, as well as the remains of an American monastery and a number of Armenian inscriptions.

Discoveries at other salvage excavations necessitated by roadwork in Jerusalem in 1990 include the Tomb of Caiaphas, the high priest in whose time Jesus was tried and sentenced, found during Zvi Greenhut's excavations in East Talpiyot (Ya'ar ha-Shalom). Salvage excavations directed by Ronny Reich in the Mamilla Street area, where a major development project is underway, led to the discovery of several Iron Age and Byzantine period tombs: a huge Byzantine burial cave containing hundreds of human remains was found adjoined by a small chapel whose walls are decorated with frescoes. One such fresco represents an angel facing to the right and extending its arms. In adjacent excavations, Aren Maeir exposed an aqueduct built in the third or fourth century CE that was in use through the Middle Ages. Parts of this aqueduct had previously been exposed north and west of this area.

The 1990 construction and expansion of Jerusalem's suburbs have resulted in a large number of salvage excavations in the area. At Pisgat Ze'ev, Rina Avner uncovered a Byzantine monastery, part of a complex that included an oil press, flour mill, and wine presses. In a later phase, prior to its destruction in a fierce conflagration, this complex served as an inn. Other parts of the same suburb revealed a site dating from the Early Bronze IV–Early Arab period, whose Roman-Byzantine remains include a complex system of

buildings and installations: three *miqva'ot* (ritual baths), a lever-and-screw oil press, and a wine press (excavated by Jon Seligmann, 1990); a large Persian period fortress (60 × 70 m) with an outer casemate wall (uncovered by Yonatan Nadelman, 1990); and a Second Temple period farmstead with an adjacent hidden cave, *miqveh,* wine press, and underground oil press (excavated by Eli Shukron, 1991). [*See* Jerusalem; Ritual Baths.]

In Beersheba, building construction in the Ḥorvat Maṭar area in 1990–1991 exposed an Early Arab farmhouse excavated by Itzhaq Gilead and Steven Rosen. The farmhouse was built on top of a monumental Byzantine building that in turn was erected over scanty Chalcolithic remains. The walls of the Byzantine structure were plastered and were faced either with mosaics or red paint; its floors were paved with plastered stone slabs. Nearby, several farmhouses from the Iron Age and Byzantine periods were uncovered. At the construction site of a shopping mall northwest of the Beersheba central bus station, Yehudah Govrin unearthed twenty-five Byzantine graves in 1988–1989. At Naḥal Kovshim, in northern Beersheba, where building construction is planned, buildings dating to the Byzantine period were uncovered during excavations directed by Pirhiya Nahshoni, Yulia Ustinova, and Hayim Bar-Ziv. Remains included several structures, a complex of rooms arranged around a courtyard, a bell-shaped cistern, and a cistern and plastered sediment pool connected by clay pipes. Remains of a Chalcolithic settlement were also evident at the site and included twelve cisterns containing pottery. Of note is a violin-shaped limestone figurine. [*See* Beersheba.]

In the Afridar neighborhood in Ashkelon, salvage excavations directed by Baruch Brandl and Ram Gophna uncovered a site dating to the Early Bronze Age I. Massive wall remains from a large public building were located throughout the site. Seven rooms have been identified. A locally manufactured Egyptian-type bowl was found top of a staircase in one of the rooms. One of the earliest Canaanite copper daggers found in Israel was unearthed in these excavations, along with a considerable amount of Egyptian pottery, providing invaluable information regarding the Egyptian presence in the country's southern coastal region in the EB I.

Application for a building permit in Qiryat Ata, an eastern suburb of Haifa, led to salvage excavations in 1990 by Eliot Braun and Amir Golani at a site covering more than 240 acres. Several well-preserved EB I oval structures were uncovered, oriented east–west. One of the structures was destroyed by fire. At a second site in Qiryat Ata, salvage excavations were conducted in a previously robbed burial cave damaged during foundation work on a building. The cave contained several clay saroophagi.

Salvage excavations were conducted in northern Israel during construction of the new Tefen-Karmiel road. Three Middle Bronze I burial caves, containing skeletal remains, pottery, and a bronze dagger, were discovered and excavated by Mordechai Avi'am in 1990. Each cave comprised at least two burial chambers.

Preparations for laying a water pipe at Bab el-Hawa, near Quneitra, revealed a 400-acre ancient site. Moshe Hartal's excavation of 1988–1990 unearthed, among other remains, an elongated Byzantine structure built over an Iron II building. The walls and doorjambs are of smoothed basalt blocks and still stand more than 2 m high. Of the eight rooms uncovered, two had round pottery installations (*tabuns* or silos). The building was used from the fourth–seventh centuries CE, with various changes made to its floors, doorways, and walls. Ceramic remains included imported ware and eight hundred decorated lamps. Also found were nine hundred coins; bronze, bone, metal, and glass jewelry; cosmetic utensils; and a stone seal carved with a seated figure milking a goat. The settlement was probably involved in animal husbandry (as evidenced by the hundreds of animal bones found), weaving, and milling and was most likely Christian (a large number of cruciform pendants were unearthed, and many of the lamps were decorated with crosses). A stone-built tomb was also discovered at the site containing pottery, human skeletal remains, animal bones, and turtle shells that may have been associated with funerary rites.

A group of interconnected rock-out caves was uncovered during construction work at Gush Ḥalav. The caves date to the first–second centuries CE and were probably used for storage. Their concentration indicates the location of ancient Gush Ḥalav. One cave, excavated in 1989 by Emanuel Damati and Hana Abu 'Uqsa, revealed four chambers and a corridor. Round and triangular hollows dug into the walls were used as shelves. Pottery and forty-one lines of graffiti were also found.

Ṭirat ha-Carmel was the cemetery of a large settlement in existence from the Roman–Byzantine to the Early Arab period. Twenty-two of its sixty caves were excavated in 1990 by Shalom Yankelevitch; those belonging to the Roman and Byzantine periods were irregular in plan and contained clay saroophagi. The Early Arab period caves were arcosolia caves containing burial troughs. All the caves had been looted, so that the finds were out of context: bronze coins; shell, bronze, and glass jewelry; pottery; glass vessels; and cosmetic objects. Of note is a fragment of a blue duck-shaped glass vessel. The site is first mentioned in Crusader sources as having been named after the Christian saint Jean of Tyre.

In the Tel Aviv area, during a sounding conducted in 1989 by Yossi Levy along the projected "Netiv Ayalon North" Project, a (Samaritan?) burial complex consisting of a courtyard and two chambers was uncovered. Finds included skeletal remains, pottery, lamps, jewelry, coins, and glass dating to the second–third centuries CE.

At Gelilot, during road-widening work on one of the area's main arteries in 1990, Levy uncovered rock-out wine

presses characteristic of the Late Roman and Byzantine periods, including a treading surface, pools, and collection vats; an underground storehouse; a bathhouse, whose hypocaust and tepidarium are now partially excavated; a subterranean *miqveh* complex (with steps and a step bench, an entrance, and a threshold) covered with several layers of plaster (evidence of its extended use); a bell-shaped cistern used secondarily as a refuse pit; and a burial cave consisting of an entrance and small burial chamber that had been pillaged and thus produced few finds. All were probably used by a Late Roman period Samaritan agricultural settlement. [*See* Samaritans.]

In the south, in Israel's Negev desert, Chalcolithic remains were discovered during preparations for roadwork on the Kissufim-Katif road at Naḥal Kissufim. Excavations directed by Yuval Goren and Peter Fabian revealed limestone ossuaries containing human bones, pottery, and a bird figurine engraved in ivory. A large pit contained remains of a least ten burials. West of this area, which was damaged in the construction, was an underground rectangular burial chamber. Several shallow pits contained clay ossuaries. Small rectangular niches, one of which held an ossuary, were carved into two of the chamber's walls. Offering vessels were also found, some containing organic material. People of esteemed social status were probably buried there. Individual and group burials were also found around the periphery of the chamber, accompanied by very simple pottery forms. A secondary burial of three individuals was found nearby. The pottery at this site suggests a strong connection with the sites along Israel's coastal plain.

Several tumulus burials, including nine that are well-preserved, were uncovered when construction began in a new residential suburb on the outskirts of Eilat. Excavation in 1988–1989 by Uzi Avner and Israel Hershkovitz revealed that most were secondary burials and include the skeletal remains of at least one child. Finds included Neolithic arrowheads, grinding stones, flint scrapers, a sandstone bowl and fragments, pottery, and beads. An MB IIB cooking pot and a complete, primary male burial were found nearby, the first remains of this period found south of Tel Masos and Tel Malḥata.

An Iron II burial cave containing the fragmentary skeletal remains of ten people and dozens of pottery vessels was uncovered during road building operations at Ḥorvat ʿAnim. Yeshayahu Lender's 1989 excavations revealed a single burial chamber with arcosolia hewn into three of its walls.

[*See also* Israel Antiquities Authority; Survey of Israel.]

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RUDOLPH COHEN

SAMARIA, site located 56 km (35 mi.) north of Jerusalem (map reference 168 × 187) and west of the Ephraimite watershed, rising to a summit height of 430 m above sea level at 32°17′ N, 35°12′ E, near the center of the Northern Kingdom of Israel. Samaria overlooked the main road (Via Maris) connecting Egypt and the Southern Kingdom of Judah with the strategic Jezreel Valley and northern routes to Phoenicia and Damascus. Its biblical names *Šāmîr* (*Jgs.* 10:1–2) and, somewhat later, *Šōmĕrôn* (*1 Kgs.* 16:24 *et passim*), mean "watch" or "Watchman." Both designations stem from an original **qātil* participle and reflect successive changes in the pronunciation of that verb form (**šāmir-u* → **šōmir* → *šōmēr*). The name of the site's earliest recorded private owner, *Šemer,* represents a secondary nominal formation from this verbal antecedent.

Archaeology. Excavation at Samaria began in 1908 with the Harvard expedition directed by Gottlieb Schumacher. George Andrew Reisner and architect Clarence Fisher succeeded him in the second phase of the project, which ran from 1909 to 1910. Their combined efforts concentrated on the western half of the summit and exposed a substantial portion of the Israelite royal palace and, immediately to its west, a sizable storeroom complex. Reisner called the latter feature the Ostraca House because of the discovery inside of more than one hundred laconic shipping dockets recording the transfer of various commodities (primarily wine and oil) to the capital during the early eighth century BCE, in the time of Jehoash/Jeroboam II (see figure 1). [*See* Samaria Ostraca.]

Between 1932 and 1935, five institutions (mostly from England and Israel) sent a Joint Expedition to Samaria under the leadership of John W. Crowfoot. As primary field supervisor in the royal quarter, Kathleen M. Kenyon introduced new techniques of debris-layer analysis to the project. She exposed a north–south section across the entire summit east of Schumacher's and Reisner's earlier excavations. In the final reports, Kenyon held that Samaria's pottery provided crucial guidelines for evaluating the stratigraphic history and ceramic traditions at other Iron II sites in Palestine. Her publications quickly became the standard references for studying Samaria and the early Iron Age II generally; moreover, Aegean archaeologists began mooring their chronologies to Kenyon's proposed framework at Samaria.

Though Kenyon found some Early Bronze Age I pottery on the rock surface, most remains came from the Iron Age. Here she distinguished eight major building phases (periods I–VIII) and concluded that periods I–VI spanned the earliest Iron Age II occupation under Omri to the Assyrian destruction of Samaria in 722/21 BCE. Kenyon also believed that each new building phase corresponded directly to a shift in ceramic tradition. Appealing to *1 Kgs.* 16:24 to buttress her archaeological interpretations, she argued decidedly against any Iron Age occupation of Samaria earlier than Omri's reign.

Prior to Kenyon's official publication of the pottery (1957), however, Roland de Vaux (1955) suggested that her two earliest ceramic phases actually predated all Omride building activities and indicated an Iron I occupation of the site. Whereas this view merely questioned the direct correlation of architectural and ceramic periods, George Ernest Wright (1959) later proposed a formal distinction between them. Other contemporaneous studies by William Foxwell Albright (1958) and Yohanan Aharoni and Ruth Amiran (1958) agreed that the earliest Iron Age pottery predated the first royal architecture at Samaria. The resulting controversy stemmed mainly from differences in archaeological method and interpretation.

Kenyon's assertion that *1 Kgs.* 16:24 precluded any occupation on the hill prior to Omri compelled her to correlate the earliest ceramic remains with the earliest royal architecture and to assign both to Omri. Although the earliest Omride courtyard lay several depositional layers above bedrock, Kenyon's system demanded that she associated all Iron Age pottery lying directly on the bedrock (and often mixed with scrappy Early Bronze Age remains) with that higher floor level. Having started this way, she dated each successive floor level by the material found beneath it. Wright and others, however, proposed dating these surfaces by the material lying directly on them. In fact, both systems had merit; they simply addressed different aspects of the same methodological issue. Kenyon's approach yielded a floor's *terminus post quem* (construction date), whereas Wright's provided its *terminus ante quem* (occupational dates).

The early studies that challenged Kenyon's principles of dating had only her published pottery to evaluate. More recent ceramic (Stager, 1990) and stratigraphic (Tappy, 1992) investigations have examined unpublished material to determine the original findspots of the pottery and thereby settle the unanswered questions. The results have confirmed a pre-Omride occupation of Samaria and have associated the Iron I pottery there with various nonmonumental architectural features resting immediately on or set into the rock surface (remains of a possible beam press, numerous rock cuttings, storage pits, separator vats, and cisterns). A narrow reading of *1 Kgs.* 16:24, therefore, can no longer support Kenyon's proposed chronological framework for Israelite Samaria.

Kenyon's initial pottery analysis raised hopes that the strict stratigraphic controls that presumably attended her excavation method might strengthen typologies for the ninth–eighth centuries BCE. However, Tappy's recent stratigraphic study has shown that much of the published pottery came from secondary or disturbed contexts, while those pieces from primary contexts often came from deposits several layers above or below the floors and architecture they purportedly dated. When analyzed typologically against ceramic groups from traditional and more recently excavated sites, the pottery recovered from these deposits supports the new stratigraphic analysis. The collective attributes of vessels such as bar-handle bowls, cup-and-saucer forms, lentoid flasks, collar-rim store jars, and Early Iron Age krater, chalice, and cooking pot rims point to a significant Iron I

SAMARIA. Figure 1. *Ostraca house.* (Courtesy Reisner-Samaria Archive/Semitic Museum, Harvard University)

occupation for many of the levels exposed in Kenyon's large section across the summit and labeled "periods I–II."

In short, while Kenyon correctly associated the first monumental building activities with the early ninth-century Omride dynasty, recent studies have demonstrated the need to adjust her proposed ceramic chronology. Pottery Periods 1–2 belong to as early as the eleventh (possibly late twelfth) century BCE. It does not follow, however, that we should automatically shift the pottery from Pottery Period 3 upward to fill the resultant gap in the Omride era. In fact, only some of the Pottery Period 3 wares can relate to the Omrides. Other vessels in that assemblage must remain in Jehu's time period, while a significant number extend into the early eighth century. Clearly, we have many fewer stratigraphically secure archaeological data pertaining to ninth-century Samaria than the excavation report implies. Therefore, we must exercise caution when relying on the published materials from Samaria to establish or adjust chronologies at sites elsewhere in the Levantine and Aegean worlds.

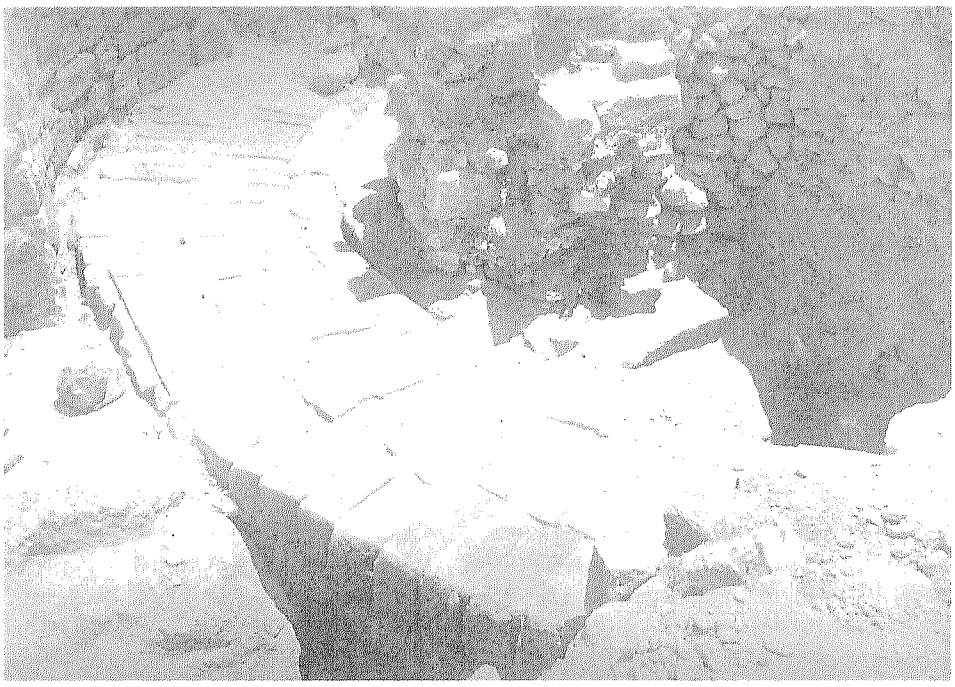
History. When Omri rose to power over Israel in the early ninth century BCE, he soon moved the capital from Tirzah to Samaria (*1 Kgs.* 16:21–24). Together with Ahab, his son and successor, Omri subsequently transformed this one-time family estate of Shemer into a cosmopolitan royal city complete with impressive fortification walls, a palace, large courtyards with rectangular pools, public buildings, and storerooms. Ahab's politically motivated marriage to the Sidonian princess Jezebel opened the way to Phoenician wealth and religious influence. Later biblical references (*1 Kgs.* 22:39; *Am.* 3:15, 6:4; *Ps.* 45:9 [MT]) to ivory-appointed houses preserve a memory of the site's grandeur, confirmed by the discovery of numerous ivory furnishings spanning the period from Ahab to Jeroboam II. At the same time, Ahab's syncretistic tendencies won him the scorn of the religious establishment, epitomized in the figure of Elijah (*1 Kgs.* 17–19), whose victory against the prophets of Baal on Mount Carmel enhanced the credibility of the monotheistic Yahweh Alone Party. With backing from this faction, comprised mainly of prophets, ultra-conservative social groups such as the Rechabites, and undoubtedly some segments of the military, Jehu seized control of the throne in Samaria sometime around 842 BCE (*2 Kgs.* 9–10). Nevertheless, long after this event the Assyrians continued to refer to Samaria as the House of Omri.

Over a span of roughly 150 years (c. 870–722 BCE), fourteen Israelite kings ruled from Samaria as the city became Israel's political and cultural center, the undisputed "head of Ephraim" (*Is.* 7:9). Yet its newly acquired centrality also made Samaria the clearest and most dangerous symbol of opposition to the Southern Kingdom of Judah and its cult in Jerusalem. This deeply rooted north–south schism and the Judahite perspective taken in the final Deuteronomistic History produced a critical treatment of the rulers and activities at Samaria in the Hebrew Bible, while extrabiblical sources (Mesha Stele; Assyrian annals) often pointed to the capital's regional and international prominence. The complexities attending both textual and archaeological investigations into the Israelite period have led historians to concentrate their research on this phase of the city's existence.

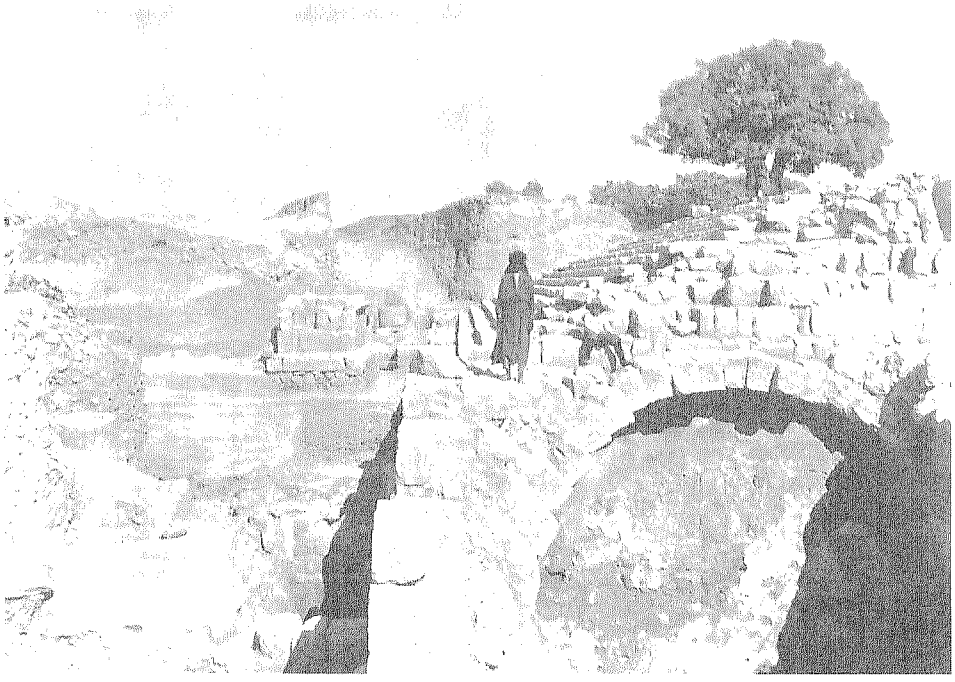
In 722/21 BCE, Assyrian armies led by Shalmaneser V and Sargon II besieged and occupied Samaria, deporting large numbers of Israelites and resettling the site primarily with South Arabians (*2 Kgs.* 17; the Display, Bull, Khorsabad Pavement, and Cylinder inscriptions of Sargon). Though excavators recovered few building remains from this occupation, an Assyrian stele fragment (attributable to Sargon II), pieces of various cuneiform tablets (some apparently representing a letter to Avi-ahi, the local governor), and significant quantities of Assyrian palace ware attest to Samaria's use then as an administrative center. Following Assyrian rule, the city passed into the hands of each successive world power. Although archaeology has revealed little from the subsequent Babylonian period, *Jeremiah* 41 alludes to the site's occupation during that time.

From the late sixth to the late fifth centuries BCE, Persia retained Samaria as an administrative center. Concurrent efforts to restore and strengthen Jerusalem rekindled old antagonisms between the two cities (*Ez.* 4; *Neh.* 2, 4, 6; *1 Esd.* 2). Though few architectural remains survive from these years, excavators did recover a .25 m-thick deposit of fertile brown soil spread over a 45 × 50 m area of the summit. This area surrounded the district governor's palace and seems to have served as a large garden similar to those found elsewhere in the Babylonian-Persian empires. Small finds from this period include seal impressions in both Neo-Babylonian and Achaemenid styles; fragments of an Achaemenid throne; a fifth-century Athenian coin; three Sidonian coins (from the reign of Abdastart I, 370–358 BCE); painted and incised limestone incense altars; an alabaster alabastron; fourteen Aramaic ostraca (bearing dates from the late sixth to early fourth centuries); plus significant quantities of black- and red-figure, white-ground, and black-burnish wares imported from the Aegean world during the late sixth to late fourth centuries BCE.

The conquests of Alexander the Great initiated the turbulent Hellenistic period throughout the Levant. Following Alexander's death, the Ptolomies and Seleucids competed bitterly for control over Palestine. At Samaria, a series of beautifully constructed round towers and a subsequent massive defense wall (4 m thick) with square towers attest to the political vicissitudes of the time (see figure 2). The round towers, originally misdated to the Israelite period, stand 8.5 m high, with diameters ranging from 13 to 14.7 m. They represent some of the most impressive Hellenistic architecture unearthed anywhere in the country. Significant quantities of Megarian bowls and fragments from thousands of



SAMARIA. Figure 2. *Hellenistic round tower.* (Courtesy Reisner-Samaria Archive/Semitic Museum, Harvard University)



SAMARIA. Figure 3. *S-2 foundation of Herodian stair.* (Courtesy Reisner-Samaria Archive/Semitic Museum, Harvard University)

Rhodian stamped jars reflect Samaria's international commercial contacts during this era. Late in the period (c. 108/07 BCE), the Hasmonean high priest John Hyrcanus (135/34–104 BCE) led an assault against the city, destroying much of the so-called Fortress Wall and bringing Samaria temporarily under Judean control (Josephus, *Antiquities* 13.275–281; *War* 1.64–65).

Following Pompey's conquest of Palestine in 63 BCE, Samaria underwent its period of greatest physical change. The provincial governor, Gabinius (57–55 BCE), rebuilt its walls and residential areas and established a forum with an adjoining basilica northeast of the summit. But the most dramatic program of construction came under Herod the Great (Josephus, *Antiquities* 15.292; *War* 1.403), who renamed the city Sebaste (a Greek name honoring Emperor Augustus) and commissioned the Augusteum, a summit temple (35 × 24 m) with portico and cella, all situated on a platform whose retaining walls stood 15 m high. A 21-m-wide staircase led from the forecourt up 4.4 m to the temple proper (see figure 3). Other impressive features, including another temple and altar dedicated to the goddess Kore and a large stadium (230 × 60 m), lay on the city's north and northeast slopes, then enclosed by an outer city wall more than 3 kilometers (almost 2 mi.) in circumference (encompassing roughly 160 acres). A main entrance gate, flanked by two massive round towers, stood west of the city, and shops of all kinds lined the columned street (12.5 m wide) that angled around the south side of the hill and eventually approached the summit from the east.

Under Constantinian rule, in the Byzantine period, Samaria-Sebaste sent bishops to councils at Nicea, Constantinople, and Chalcedon and to the Synod of Jerusalem. Few remains from this period have survived. Between this time and the Middle Ages, tradition identified Samaria as the burial site of John the Baptist, and two separate shrines marked the proposed resting places of his body and head.

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RON TAPPY

SAMARIA OSTRACA. Inscribed broken pieces of pottery (ostraca) recording the delivery of wine and oil to Samaria, the capital of Northern Israel, in the late first/early second quarter of the eighth century BCE were excavated at Samaria in 1910 by George A. Reisner of Harvard University. They are now in the Archaeological Museum in Istanbul. There are sixty-three ostraca as published by Reisner and forty others that he considered too illegible to publish. Nevertheless these latter ostraca are useful for study of the shapes of individual letters of the alphabet. These ostraca comprise the earliest corpus of Hebrew writing and were inscribed by a number of distinguishable hands. Their fine cursive script is pen drawn, with ink, in the early Hebrew forms derived from Phoenician. F. Briquel argues, however, that the language of the ostraca is a dialect of Hebrew (*Journal Asiatique* 274 [1986]: 478–479). In constructing a relative typology of early Hebrew scripts, the ostraca provide priceless evidence for how the forms of the alphabet developed, including how letters were made. They flow in a style that resembles Egyptian hieratic writing.

The ostraca could be dated with reasonable accuracy to a period considerably earlier than the destruction of samaria in 722/21 BCE. As if discarded, they were found widely scattered in the fill beneath the floor of a large building complex that, after it was built, underwent reconstruction of rooms and doorways before the fall of the city. Some of the ostraca bear the Egyptian hieratic numerals for 5 and 10, indicating the fifteenth year of the king, which dates them as far back as Jeroboam II (786–746), as has been clear since 1966, when Yohanon Aharoni wrote that the numerals on the Samaria Ostraca are to be read with the Egyptian values (Aharoni, 1966). Finally, a typologically later form of writing than that on the Samaria Ostraca is known on a type of pottery that is datable to the last period before the fall of the city, according to Kathleen M. Kenyon (Crowfoot, 1957).

The ostraca functioned as an accounting system when aged wine and refined oil were delivered from towns to the royal city. There is, however, a division of opinion over the precise function of the inscriptions. The issue centers on the identity of the person whose name on the ostraca is preceded by the preposition *lamed.* Frank M. Cross and Ivan Kaufman, following Yigael Yadin, have held the view that this person, now commonly referred to as the *l*-man, was a property owner who sent the wine or oil to the city of Samaria as tax paid in kind, and that the ostraca are records and perhaps receipts for goods received and credited to the *l*-man. There are eleven named *l*-men in the Samaria Ostraca. The other main point of view, held by Anson Rainey, is that the *l*-man was an official who resided in Samaria, was favored by the king, and received the commodity from land given to him by the king. He was, in effect, providing for himself from the produce of his land. The ostraca in this case were directives that the commodities be sent to the official for his use. Rainey's argument is detailed, and it fits some Ugaritic inscriptions in which the preposition *lamed* means "to" with reference to a person named (Rainey, 1988). Whether it holds for the Samaria ostraca is not entirely clear.

The ostraca show that the towns related to the *l*-men are clustered around the city of Samaria, within a radius of 6–13 km (4–8 mi.), with only two exceptions, and that all are within the tribal area of southern Manasseh. None are in Ephraim, which would rule out identifying the operation with the administration of the first Solomonic district. The configuration suggests local sources for wine and oil, rather than a broad system of taxation. The reading of some town names has been clarified, as is *spr* (Sefer) earlier read as *sq.* The *qoph,* which Reisner identified as an "S-headed" type is now understood to be a joined *pe* and *resh.* Sefer, if identified with modern Saffarin, locates the clan of Shemeida, as Cross has pointed out (1961).

A number of new readings of personal names have come to light in the ostraca as has a significant sociological datum: while the ratio of Baal names to Yahwistic or non-Baal names is 7:11. (Albright, 1956), all but one of the Baal names belong to men secondarily listed who appear to work for an "*l*-man."

The Samaria Ostraca are important to the study of the early Hebrew language and writing practices. Their precise function is elusive and will probably only become clearer with future discoveries and research.

[*See also* Samaria.]

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IVAN T. KAUFMAN

SAMARITANS. The origin of Samaritanism and the Samaritans is in the second–first centuries BCE, as an ancient off-shoot of Judaism. This date is now generally accepted by scholars of Samaritanism. The Samaritans themselves still hold the view that a schism occurred in the time of Eli, the priest at Shiloh (*1 Sm.* 1:9, 2:11). According to Samaritan tradition Eli, "the insidious one" (Samaritan *Book of Joshua,* ch. 43), left Mt. Gerizim and settled in Shiloh, where "he gathered the children of Israel into a schismatical sect" (Samaritan *Book of Joshua,* ch. 43; cf. also Abu 'l-Fatḥ, *Kitāb al-Tarīkh,* ch. 10). Jewish tradition, on the other hand, holds that Samaritanism arose after the fall of the northern kingdom when, according to *2 Kings* 17, Israelites were deported and pagans were settled in their stead. The same view was current in early scholarship. Gradually, it was realized that it was untenable and that the split between Jews and Samaritans must have occurred much later. On the basis of *Ezra* 4:1–5, many thought that the separation had taken place after the Exile, in the time of Ezra. It is now clear, however, that in the early post-Exilic period there was no real break, only the beginning of tensions between northern and southern Israelites. Thus, the prehistory of the Samaritans, as it were, begins then. The history of the Samaritans proper (as opposed to the Samarians, or inhabitants of Samaria, and "proto-Samaritans"—i.e., northern Israelites in the time leading up to the break) begins in the Maccabean period, with the hostilities they endured from the southern Israelites, which culminated in the destruction of their temple by John Hyrcanus in approximately 110 BCE. [*See* Samaria.] Jerusalem and its Temple ceased to be of importance to the northern Israelites, whose main defining criterion became their exclusive orientation toward Mt. Gerizim. Although the two communities went their separate ways, they did have contacts with each other throughout the centuries.

During Byzantine and Muslim rule, the number of Samaritans dwindled rapidly, until there were fewer than two hundred individuals left. It was only in the twentieth century that their numbers increased from approximately 139 in 1909 to 560 in 1994. Today the Samaritans live in two centers, Nablus and Ḥolon, the latter a southern suburb of Tel Aviv. However, from the Hellenistic period to the eighteenth century CE a far-flung diaspora existed whose traces are to be found in literary, epigraphic, and archaeological sources. Samaritans have lived in Egypt, Greece, Syria, Italy, and North Africa.

As a branch of Judaism, Samaritan religion shares its foundations. The Samaritan Bible, however, comprises only the Pentateuch but excludes the Prophets and Writings. The Samaritans do not of course recognize rabbinic writings; they developed their own traditions, albeit in a less structured and canonical form than those of the Jews. They also have their own Aramaic Targum, their specific liturgy and liturgical compositions, and their chronicles.

The center of Samaritanism is and has always been Mt. Gerizim (map reference 175 × 178) south of Nablus, ancient Shechem. [*See* Shechem.] According to Josephus, the Samaritans built a temple on the mountain in the time of Alexander the Great (*Antiq.* 11:302–347) that was destroyed two hundred years later by John Hyrcanus (*Antiq.* 13:255–256; *War* 1:63). Before Yitzhak Magen's recent excavations on the main peak (map reference 175 × 178), which began in 1984, archaeological finds had suggested that the temple mentioned by Josephus stood on Tell er-Ras (map reference 1761 × 1793), a lower peak of Mt. Gerizim, north of the main peak. [*See* Ras, Tell er-.] Beneath the Roman temple to Zeus, built in the time of Antoninus Pius (138–161 CE) and probably renewed by Caracalla (211–217 CE), a large

SAMARITANS. *Roman coin of the city of Neapolis.* Depicts Roman temple to Zeus at Tell er-Ras. Second/third century CE. (Photograph by R. Pummer)

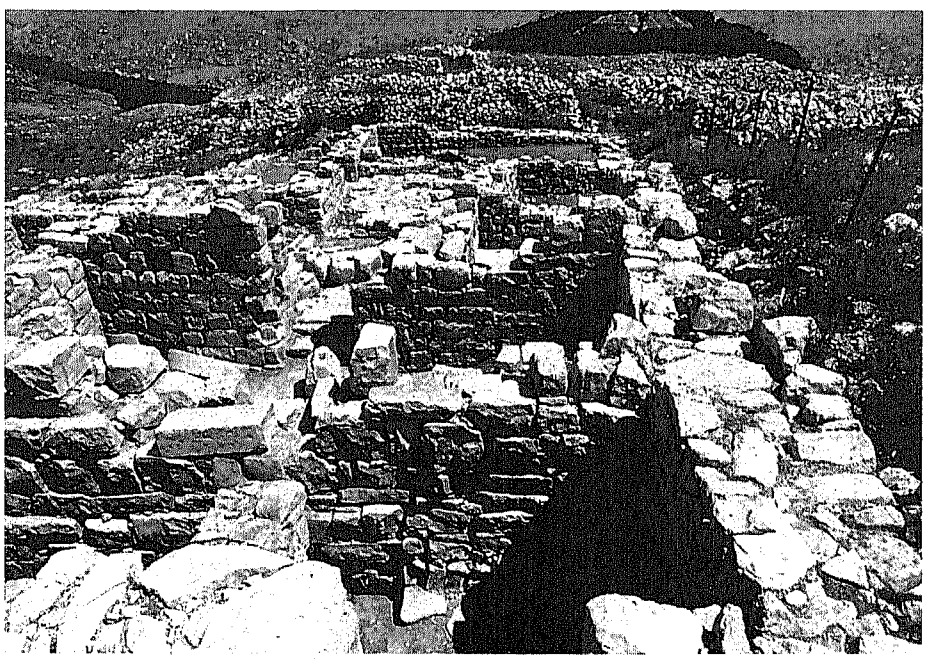
structure was discovered that was thought to have been somehow connected with a Hellenistic Samaritan sanctuary, a hypothesis subsequently questioned. Magen's extensive excavations on the main peak (1995 was the twelfth season) have, however, brought to light remains of a large settlement from the Hellenistic period.

The fortified city on Mt. Gerizim was approximately 40.5 hectares (100 acres) in size; it was built in about 200 BCE, in the time of Antiochus III (223–187 BCE), and destroyed by John Hyrcanus (134–104 BCE) between 114 and 111 BCE. The finds include sections of the city wall, towers, large dwellings and service buildings, oil presses, storage jars, lamps, numerous coins, and inscriptions in Hebrew, Aramaic, and Greek. Magen identifies an area of more than 2 hectares (5 acres) on the summit as a sacred precinct, enclosed by a wall and accessed via a 10-meter-wide staircase ascending from the west. The excavations in 1995 have brought to light remains of a gate and enclosure walls from the Persian period. Ashes and bones found at the site have been dated by the C-14 method to the fifth century BCE. The implications of the new finds have yet to be assessed. The Hellenistic pottery and coins found under the temple to Zeus and dating from the second century BCE come, in Magen's opinion, from the Hellenistic city on the main peak (see his article in *New Encyclopedia of Archaeological Excavations in the Holy Land,* Jerusalem and New York, 1993, vol. 2, p. 489).

Outside Samaria, Samaritan settlements are known from literary and epigraphic sources, the most important of which are Damascus, Egypt, Athens, Delos, Corinth, Rome, and Syracuse. From a seventh-century CE literary source, Samaritans are known to have lived also in Carthage (*Vat. gr.* 1502, fol. 175). No archaeological remains, apart from inscriptions, that can be identified as Samaritan have been uncovered in the diaspora. It should be kept in mind for the literary sources, that the occurrence of such terms as *Samareus, Samaritēs,* and *Samaritis* are not unequivocal references to Samaritans in the religious sense; they may well be, and probably often are, an ethnic designation characterizing colonists from Samaria. Only terms such as *Samaritai tēn thrēscheian (Corpus Papyrorum Judaicarum,* sixth century CE) or *Israeleitai hoi aparchomenoi eis hieron Argarizein* (two inscriptions found on Delos and tentatively dated to the third/second and second/first centuries BCE respectively); clearly designate Samaritans by religion. Inscriptions engraved in Samaritan script or in Greek and Samaritan letters are of course also clear indications.

In antiquity, the Samaritans used a modified form of Hebrew script, known as Samaritan script, although for inscriptions they also utilized Greek; Samaritan script remains distinctive of the group. Its immediate ancestor is the Hebrew script of the end of the Second Temple period. The languages used by the Samaritans in antiquity were Hebrew, Aramaic, and Greek. They began to use Arabic in the Middle Ages. Eventually, a hybrid Samaritan Hebrew language developed.

Samaritan material culture in Greco-Roman times and in the Byzantine era was practically indistinguishable from its



SAMARITANS. *Hellenistic remains.* Section of the Hellenistic city recently unearthed on the main peak of Mt. Gerizim and, in the background, Tell er-Ras. (Photograph by R. Pummer)

Jewish counterpart. In the last analysis, only the presence of Samaritan script allows the attribution of remains to the Samaritan sphere. In Samaria, the fact that the area was inhabited primarily or exclusively by Samaritans is another means by which the provenance of material remains can be determined.

On the basis of the latter criterion, oil presses, *miqva'ot* ("ritual baths") jars, oil lamps, and tools excavated at Qedumim (map reference 165 × 179), located 10 km (6 mi.) west of Nablus, have been identified as Samaritan. Similarly, a considerable number of oil lamps found in the region of Samaria are considered to be of Samaritan origin, even though only a very small number are inscribed in Samaritan script. The symbols on the lamps are the same as on Jewish lamps—the *menorot* ("candelabra") and other cultic implements used in the Temple in Jerusalem. The Samaritan lamps exclusively are decorated with daggers or knives and ladder or steplike designs as well. The former may be connected to the Offering of Isaac, the latter to the staircase leading from Neapolis (Nablus) up to the temple on Tell er-Ras, although the latter was a Roman temple. A number of sarcophagi were found that were called Samaritan, even though the same type was also found outside the area of Samaria; they clearly show Roman and Jewish influences.

The city of Samaria probably began minting coins in about 375 BCE and continued to do so until 333/32 BCE. The coins bear the inscription *šmryn*, either in full or in various abbreviations; it is not clear whether this refers to the city or the region. Much discussed are those coins bearing the name *yrb'm*. However, the evidence of these coins is too vague to shed light on the development of Samaritanism, or proto-Samaritanism.

Roman coins from the cities of Samaria depict emperors and symbols from Greco-Roman mythology. Of particular interest are the city coins of Neapolis minted between the reigns of Antoninus Pius and Volusian (251–253 CE), with a gap in the reign of Septimius Severus (193–211 CE). They depict Mt. Gerizim with a colonnade at its foot, a staircase leading up to a temple, and a second, smaller structure on the second peak. Whereas the identity of the latter building is unknown, the temple must represent the Roman temple to Zeus built in the second century CE on Tell er-Ras. The many gods and goddesses, together with their temples or cult places, depicted on the coins from Neapolis after Domitian (81–96 CE), are testimony to the predominantly pagan character of the city. Under Domitian the city coins of Neapolis do not depict any pagan symbols. Some scholars therefore believe that this was out of regard for the Samaritan population. In contrast, contemporary coins of the city of Samaria, a Roman settlement at the time, do bear symbols proper to the worship of Kore/Persephone.

Although it was known from literary sources and inscriptions that the Samaritans had a number of synagogues during the Roman-Byzantine period, archaeological remains of some of them were only recently uncovered. They are identified as Samaritan either by mosaic inscriptions in Samaritan script or by their location within the core area of the Samaritan settlement. To the former category belong synagogues in Shaalbim (map reference 148 × 141), Beth-Shean (197 × 213), and Ramat Aviv (131 × 167); and to the latter, Ḥusn Ya'qub in Nablus, Mt. Gerizim, Khirbet Samara (1609 × 1872), El-Khirbe (1671 × 1846), Ṣur Natan (Khirbet Majdal) (1508 × 1832), and Kefar Faḥma (167 × 199). Epigraphic evidence shows that Samaritan synagogues also existed outside of Palestine: in Thessalonike, or Delos, and in Syracuse. Literary evidence alone is available for the existence of a Samaritan synagogue in Rome in the sixth century CE. The synagogues in Palestine were built in the fourth/fifth–sixth/seventh centuries CE. They were probably destroyed during the Samaritan revolts in the sixth century; some were rebuilt in the late Byzantine period. The synagogue on Delos has been tentatively dated to the third/second century BCE, the one in Thessalonike to between the fourth and sixth centuries CE, and the one in Sicily to the third/fourth centuries; the existence of a Samaritan synagogue in Rome is inferred for the fifth century CE.

The architecture and mosaic art of Samaritan synagogues are virtually identical to those of Jewish synagogues. Differences exist in the orientations of the buildings—toward Mt. Gerizim rather than Jerusalem—and possibly also in the complete avoidance of the depiction of living beings on mosaics, which no Samaritan synagogue has but some Jewish synagogues do. Because a large part of the region of Samaria still awaits thorough archaeological exploration, the picture that has begun to emerge can only be considered preliminary.

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SAMARRA. [*This entry comprises two articles treating the remains of the Chalcolithic and Islamic periods, respectively.*]

Chalcolithic Period

Located on the Tigris River some 96 km (60 mi.) north of Baghdad (34°13′ N, 43°52′ E), Samarra was a capital of the 'Abbasid caliphs in the ninth century CE. It was built for the most part by al-Mu'tasim (833–842) and his son al-Mutawakkil (847–861), and it remained the seat of government for fifty-six years before the capital was moved back to Baghdad. Next to the Great Mosque at Samarra still stands the minaret known as Malwiyah. It has an external spiral staircase and has been thought by many to be a descendant of the ancient Mesopotamian ziggurat or temple tower.

There is a long history of exploration and excavation of the Islamic city of Samarra, but of special interest to the archaeology of early Mesopotamia was the find of Chalcolithic period remains by Ernst Herzfeld in 1904–1905 and published by him in 1930. Beneath some private houses of the ninth century CE was a layer of earth approximately 1.5 m (5 ft.) thick, a stratum resting apparently on virgin soil. Badly preserved unstratified simple inhumations accompanied by a very distinctive handmade painted pottery were recovered from this layer. The stratum was so disturbed that it was impossible to determine proper grave groups. As this was the first time such pottery was excavated, it came to be known as Samarra ware, and the duration of time in which it was produced is known as the Samarra period or phase.

Usually of a medium thickness, Samarra ware is relatively well made. In many small vessels, however, the ware is very thin. Because a wide range of firing temperatures were used, the ware varied in color. In many cases the pottery was overfired and even vitrified. The matte-finish painted decoration also varied in color ranging from reddish earth tones to a deep black. Much of the paint was also what is now a gray green. The painted designs included geometric patterns as well as abstract animal and human motifs. The painters often exhibited an extraordinary sensitivity to design problems and produced "tour de force" pieces like jar necks made into the faces of women with "coffee-bean" shaped appliques for eyes.

The Samarra pottery is distributed over a wide geographical area ranging from north of Baghdad and the foothills to the east of Baghdad throughout the central part of northern Mesopotamia. Some of the major sites in which the ware has been found include the following: Chogha Mami to the east of Baghdad in the Mandali region, Tell Songor, and Tell Rihan in the Hamrin region of the upper Diyala, Tell as-Sawwan next to Samarra north of Baghdad, Mattarah near Kirkuk, Shemshara in the Rania plain in the northeast hills, Hassuna south of Mosul, Yarim Tepe in the Sinjar, and Baghouz in the west on the upper Euphrates. The archaeological remains associated with this pottery are part of a distinct culture of village farmers that dates to the first half of the sixth millennium and may begin as early as the late seventh millennium. At some sites the Samarra culture stands alone while at others the pottery coexists with traditional pottery of the Hassuna culture. At Hassuna itself the Samarra pottery first appears in Hassuna III–IV and continues to be found in the later levels of that site. It seems clear that the Samarra ware is an import into Hassuna. The fact that so much of the pottery was repaired in antiquity would suggest that it was a valued commodity. The stratification of Hassuna also indicates that chronologically the Samarra phase overlaps with the Hassuna period which begins somewhat earlier. The more recent excavations at Yarim Tepe I would support the conclusions derived from the Hassuna excavations. The archaic phase of the Hassuna culture is represented at Yarim Tepe I by levels 8 through 12, and the "standard" Hassuna pottery characterizes levels 1 through 7. Painted Samarra ware first appears in level 6. Generally, the Hassuna sites are situated further north than the majority of Samarra sites; however, the stratigraphic situation at Tell as-Sawwan, where the Samarra pottery first appeared in Level III along with Hassuna wares, indicates that the Hassuna potteries extended further south in Mesopotamia than is sometimes assumed.

Evidence would suggest that the Samarra culture overlapped with the following Halaf period, an archaeological phase characterized by a new painted pottery first found at Tell Ḥalaf in the Khabur region of northern Syria. Some Ḥalaf pottery dating to the early Halaf period was found at Samarra itself, although the sherds from Samarra do not include any of the famed polychrome painted pottery of the later part of the Halaf period. [*See* Ḥalaf, Tell.]

Besides Yarim Tepe in the Sinjar, comparatively extensive exposures of Samarra period remains have been excavated further south at such sites as Tell as-Sawwan and Chogha Mami where there is evidence that farming was dependent on irrigation. At Tell as-Sawwan the third level of the settlement had a defensive wall and a protective ditch at least three meters wide. Impressive large mud-brick buildings with T-shaped plans were found, and beneath the first and earliest level there were very rich graves with stone idols and stone vessels of superior workmanship. No pottery accompanied these burials that must predate the actual appearance of Samarra pottery at Tell as-Sawwan and belong to an early Hassuna or even Proto-Hassuna period of the second half of the seventh millennium. At Chogha Mami the excavators distinguished a late phase of Samarra pottery which was termed "Transitional Ware." This pottery is related to pottery in Iran and to pottery of the early Ubaid period in the south of Mesopotamia. It forms an important chronological link between north and south. It is now clear from the excavations at Tell el-'Oueili that there is a phase in the south earlier than the period represented by the Chogha Mami "Transitional Ware" probably contemporary in part with the earlier Hassuna.

[*See also* Hassuna; 'Oueili, Tell el-.]

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DONALD P. HANSEN

Islamic Period

Samarra, capital of the 'Abbasid caliphate from 836 to 892 CE, located on the left bank of the Tigris River, 96 km (60 mi.) north of Baghdad, Iraq (34°13′ N, 43°52′ E). It may be the largest archaeological settlement site in the world.

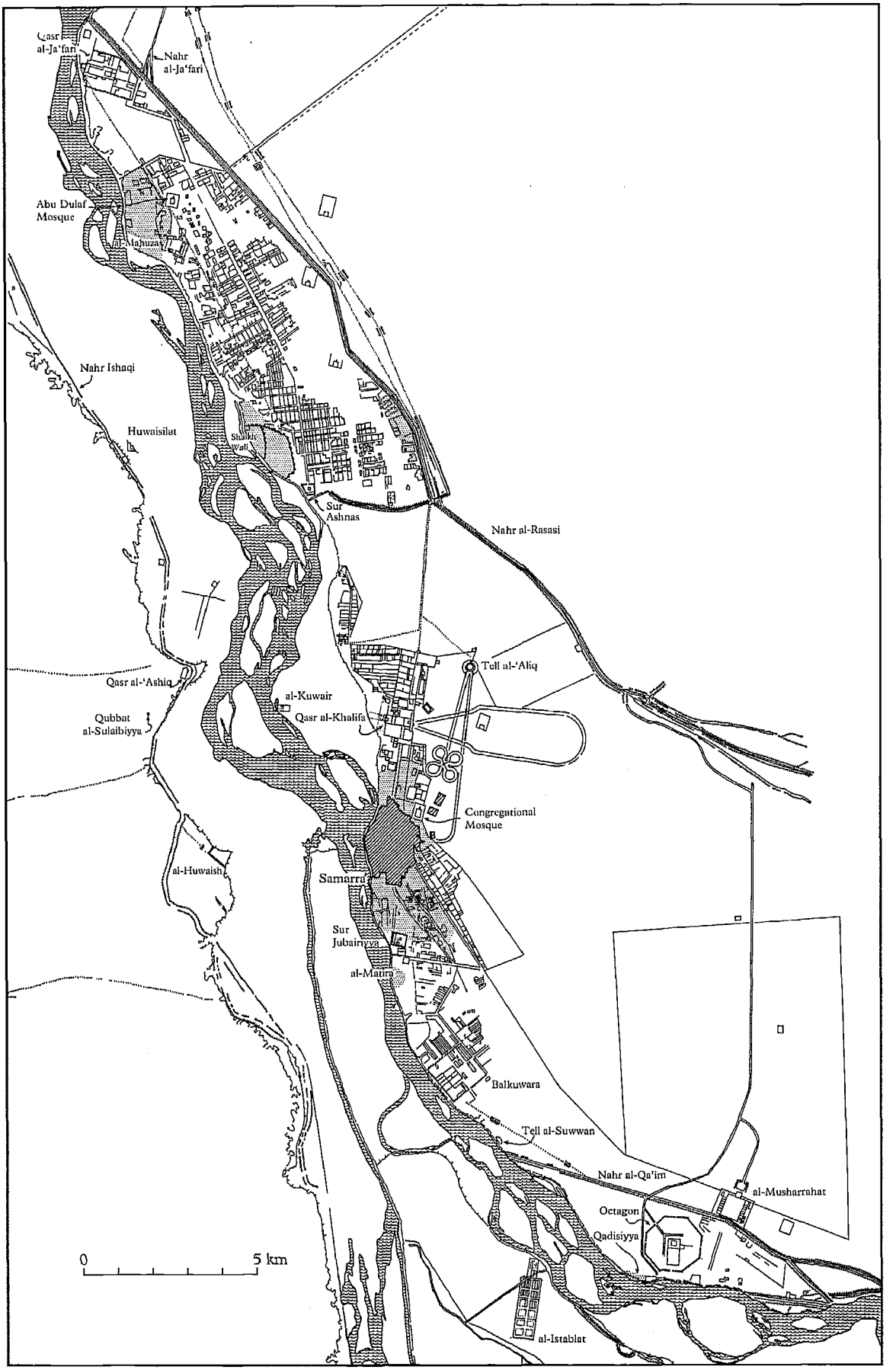
History. Before the advent of Islam, Samarra was known only as the site of a fort near which the Roman emperor Julian the Apostate was killed in battle in 364 CE. In the sixth century CE the Sasanian king Khusrau Anushirvan dug the Qatul al-Kisrawi, a northern extension to the Nahrawan canal, which watered the left bank of the Tigris below Baghdad. There were two inlets north and south of Samarra: the modern Nahr al-Rasasi and the Nahr al-Qa'im. A palace was built at the entrance to the first, and a monumental tower, the Burj al-Qa'im, at the entrance to the second. The 'Abbasid caliph Harun al-Rashid (786–809) added the Qatul Abi al-Jund, whose inlet lay south of Samarra (now largely eroded), and built a palace city there called al-Mubarak.

The caliph al-Mu'tasim (833–842) sought a new site for a city after disturbances between the population of Baghdad, and the Turkish army corps. In 836 he settled in Samarra, formally called *Surra man ra'a* ("He who sees it is delighted"). Although considered a city, Samarra was mainly a court residence and cantonment of the 'Abbasid army.

Al-Mu'tasim's second successor, Ja'far al-Mutawakkil (847–861), the greatest of the builders of Samarra, doubled the size of the city and is credited with nineteen palaces. Mutawakkil was murdered in 861, and during the following decade the leaders of the Turkish corps made and unmade four caliphs. In 892 al-Mu'taḍid (caliph, 892–908) returned to Baghdad. During the 880s the city declined rapidly, contracting into the market areas of the 'Abbasid city. Today it is a small town whose economy is supported by the pilgrimage to the tombs of the Shi'i Imams al-'Askari and al-Hadi.

Archaeology. The site was first worked on by the French architect Henri Viollet, who dug soundings in the palace in 1910. The first major excavation was the German Samarra Expedition (1911, 1913), directed by Ernst Herzfeld. The expedition conducted rapid large-scale excavations of nineteen sites in twenty months. The series *Ausgrabungen von Samarra* (Herzfeld, 1923–1948) published most of the finds and a history of the city, but not the excavations themselves. The major architectural findings were summarized by K. A. C. Creswell (1940). The Iraq Directorate-General of Antiquities initiated excavations 1936 that are still underway. In the 1980s Alastair Northedge, in an archaeological survey, recorded surface remains on behalf of the British School of Archaeology in Iraq and excavated soundings at Qadisiyya.

The site extends for 50 km (31 mi.) along the bank of the Tigris and consists of 57 sq km (35 sq. mi.) of mounds whose arrangement reveals the lines of avenues and plans of buildings in aerial photographs. Samarra is, thus, an excellent subject for the application of the principle of horizontal stratigraphy and comparison of archaeological evidence with historical texts. 'Abbasid building construction at Samarra used fired brick, mud brick, and pisé. About 5,700 'Abbasid buildings have been identified. While only



SAMARRA: Islamic Period. *Plan of the site.* (Courtesy A. Northedge)

one or two major phases of construction can be seen over much of the site, four sites, representing pre-Islamic towns on the bank of the Tigris, have a complex stratigraphy extending from the Sasanian period to the thirteenth century CE.

Octagon of Ḥusn al-Qadisiyya. Ḥusn al-Qadisiyya, a regular octagon 1,500 m in diameter, is an unfinished complex; only its mud-brick outer walls were built, but the lines were laid out for a mosque, a palace, a central square, and three avenues. Historical sources suggest an identification with the palace of Harun al-Rashid, al-Mubarak, whose construction was abandoned in 796.

Dar al-Khilafa (Jawsaq al-Khaqani). The main palace of al-Muʿtasim, a vast complex of 125 ha (309 acres), included a block of reception halls, excavated by Herzfeld in 1913. The halls were fronted by a triple *iwan* known as the Bab al-ʿAmma. Behind them was a large rectangular courtyard, two *birka*s ("sunken pools"), a polo ground, and a residential palace to the north. The *birka*s, excavated in the 1980s, were cut into the conglomerate, one square and one circular, each surrounded by a four-*iwan* plan of rooms for occupation in the summer. Herzfeld identified the complex as the Jawsaq al-Khaqani, but the palace is more likely to have included both the official palace of Muʿtasim (the Dar al-ʿAmmi) and the residence (al-Jawsaq).

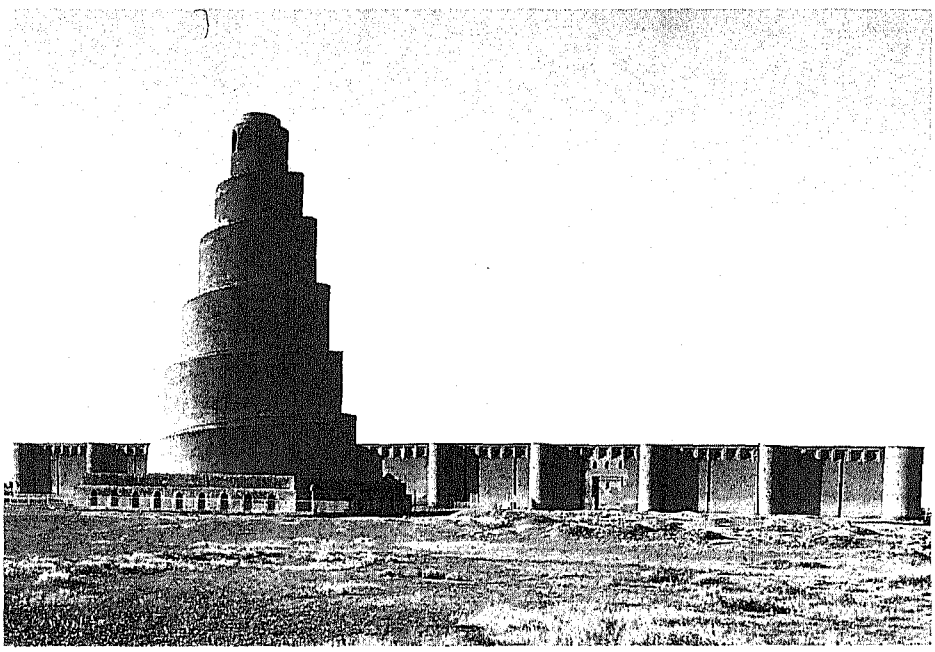
Military cantonments. The military cantonments (Ar., *qatiʿa*) all follow a similar plan that includes a major palace, a number of lesser residences, a ceremonial avenue, and a grid of streets. Istablat and Balkuwara are walled; others are not. The troops were quartered in houses rather than barracks; al-Muʿtasim arranged for the purchase of Turkish slave girls for marriage partners, in order to avoid the mixing of Turks with the indigenous population.

In the north, and separated from the main city, the cantonment of the Turkish general Ashnas was built outside the walls of the former Sasanian town of Karkh Fairuz. The palace, now called Sur Ashnas, is quadrilateral, with a mosque in the center. Adjacent to the Dar al-Khilafa, the cantonment of Khaqan Urtuj has a palace facing onto the steppe. South of Samarra, and at first separated from it, the cantonment of the Central Asian Iranian prince Afshin was built at Matira, with a square palace on the river, now called Sur Jubairiyya.

In the 850s a new cantonment for Mutawakkil's son al-Muʿtazz was built in the south, at Balkuwara, with a rectangular palace facing the river, set in an 1,171 meter square enclosure. The reception halls, excavated by Herzfeld in 1911, form a square block with a central dome chamber and four *iwans* in a cruciform pattern.

Al-Istablat is a cantonment on the west bank of the Tigris, with a rectangular palace and a second walled rectangle. The rectangle contains a partly finished cantonment, 2.5 km (2 mi.) long and 500 m wide. It is apparently the short-lived palace of al-ʿArus, constructed in the 850s by al-Mutawakkil and demolished a decade later.

Congregational mosque of al-Mutawakkil. Between 848/49 and 852, al-Mutawakkil built a new congregational mosque (239 × 156 m) that was, for a long time, the largest mosque in the Islamic world. Its exterior is marked by semicircular buttresses and a minaret 52 m high, with an external



SAMARRA: Islamic Period. *Congregational mosque of al-Mutawakkil.* (Courtesy A. Northedge)

spiral ramp. This unusual style of minaret is apparently derived from the Assyrian ziggurat (cf. Khorsabad) and provided the inspiration for European depictions of the Tower of Babel.

Al-Mutawakkiliyya (al-Jaʿfariyya). In 859 al-Mutawakkil began a new caliphal city to the north, called al-Mutawakkiliyya. The new main palace, al-Jaʿfari, has its reception halls at the junction of the Tigris and the Qatul al-Kisrawi, while residential blocks spread for 1.7 km to the east. A major avenue, 98 m wide, leads south to Sur Ashnas, with palaces and houses on either side. In 861 Mutawakkil was murdered and al-Mutawakkiliyya abandoned. The mosque of Abu Dulaf, bordering on the preexisting town of al-Mahuza, was the congregational mosque for al-Mutawakkiliyya and a smaller replica of Mutawakkil's congregational mosque at Samarra, with a spiral minaret and fired brick arcades supported on piers.

Racecourses. To the east of the city, in the steppe, are three racecourses for horse racing. Two are out-and-back courses, each 10.42 km (6.5 mi.) long, and 80 m wide. One has a rest house for the caliph and a viewing mound, Tell al-ʿAliq, on which Herzfeld found a small pavilion. The third is a closed cloverleaf, 5.31 km (3.3 mi.) long, also with a central viewing pavilion. A fourth, linear course, 9.78 km (6.1 mi.) long, and 104 m wide, lies adjacent to the Turkish cantonments at al-Karkh.

Hunting parks. A quadrilateral enclosure (9 × 6 km, or 5 × 4 mi.) to the southeast appears to be a *hayr,* or "hunting park"; a palace on the south, at al-Musharrahat, faces a basin. A second park, to the north of the al-Jaʿfari, has a double enclosure wall with four gates and a viewing mound at Tell al-Banat.

[*See also* ʿAbbasid Caliphate.]

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ALASTAIR NORTHEDGE

SAMOSATA (Tk., modern Samsat; Ar., Sumaisat; Syr., Semisat), ancient capital of Commagene, located on the right bank of the Euphrates River, 64 km (40 mi.) downstream from the river's rapids and 116 km (72 mi.) upstream from Zeugma (Pliny, *Nat. Hist.* 5.85), 21 km (13 mi.) from Tarsus in Cilicia, and 19 km (12 mi.) from Edessa in Osrhoene. It occupies a site of confluence with the Marsyas River.

W. F. Ainsworth visited its ruins in 1836 and V. Moltke in 1838; it was the late publications of Carl Humann and Otto Puchstein (1890), however, that provided a plan and illustrations. Finally, in 1896, David G. Hogarth and Vincent Yorke published four of the site's inscriptions. No excavation is known to have been undertaken or published. The site has been in danger of disappearing since the great dams on the Euphrates were constructed.

The site lent itself admirably to the development of a large city: it is on a plain 1,200 m wide lying between the Euphrates on the west and a mountainous area on the east—a position that destined it to be an important crossroads on a north–south axis. It supplied the Euphrates valley and the valley between Osrhoene and Cilicia with access through the passes in the Anti-Taurus Mountains. [*See* Cilicia.]

The oldest evidence of the existence of Samosata is a Hittite stela that reveals that the city already had its name. During the Assyrian period it was the capital of Kummuh. It survived the attacks of the Assyrian kings until Sargon II reduced it to an Assyrian province. It became the capital of the kingdom of Commagene, which Pompey entrusted in 62 or 61 BCE to King Antiochus I, son of Mithridates Kallinikos. His reign is known for the building projects he undertook at Arsameia, which his ancestor Arsames founded and where his father Mithridates had his tomb, as well as for the monumental tomb he had made for himself at the summit of Nemrud Dağı. Its enormous seated statues of gods and of kings reflect a Greco-Oriental art in which Persian influences, notably in dress, combine with the purest Greek style. These composite traits testify to the mixed civilization that characterized Commagene.

From 17 to 38 CE, the kingdom was merely a Roman province. Caligula reestablished the dynasty in the person of Antiochus IV, but Antiochus was accused of collusion with the Parthians under Vespasian, who then authorized the governor of Syria, L. Caesennius Paetus, to annex Commagene

(72 CE). Vespasian sent the sixteenth Flavian Legion to occupy Samosata. The legion sprang into action and was cited in Trajan's war against the Parthians in 114. Samosata's fame in the third century is owed to Lucien and the bishop Paul, who was deprived of his office for his heretical ideas. According to the Peutinger map, Samosata is at the convergence of five routes that lead to Melitene, Comana, Heracome, Tarsus, and Zeugma. In the fourth century, Libanios described it as a large, heavily populated city. It may have suffered misfortune in 531, under Justinian, when the area was ravaged by Arab tribes allied with the Persians (Procopius 1.17.22f.). Under Heraclius it was conquered by the Arabs and became Muslim, but it was briefly reconquered many times by the Byzantines, in 700, 836, 858, 872, 927, and 958. Moltke (see above) identified a fragment belonging to a decorated marble entrance that was no doubt Byzantine.

The city was fortified during the Roman period and, according to Strabo and Lucien, it had a basilica of which no trace remains. Its murals, on the other hand, have survived, with many alterations, but without their layout being greatly modified. The city's perimeter is nearly 8 km long, and its border on the east, for 2 km, is the Euphrates. The acropolis (45 m high) lies to the south of the city, rather than at its center. Remains of walls belonging to a house from the Roman period were seen at the foot of the acropolis, on the south side. At the beginning of the twentieth century the south side of the city was the best preserved, but there were no more than one hundred houses in the village. Today, the village is a medium-sized town.

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GEORGES TATE

Translated from French by Melissa Kaprelian

SAN'A, since 1990 the capital of the unified Republic of Yemen, located 2,200 m above sea level, in the middle of a plain between tall mountains, through which the Yislaḥ pass (altitude 2,700 m) enables communication with the south and another, the bin Ghaylan pass (altitude 2,300 m), with Marib in the east; there are no obstructions to the north (15°21′ N, 44°13′ E). The walled city is cut by Wadi al-Sa'ilah, and encompasses about 100 ha (247 acres) with about six thousand tower houses (multi-story brick, stone, and wood houses) built in it.

San'a has its roots in prehistory. Pre-Islamic San'a is known primarily from late sources that recount its history. Very few inscriptions have been found in San'a, and sources from elsewhere mentioning it are rare. A Swiss Mission directed by J. Schneider began excavations in San'a, as yet unpublished, in the Bayt al-Ambassi.

The only available stratigraphy of the Old City of San'a was salvaged from a pit sunk in the courtyard of the Imam 'Ali mosque, at the site of the house where 'Ali ibn Abi Ṭalib, the first Shi'i Imam, reportedly stayed during the lifetime of the Prophet, on the edge of the contemporary suq. Daily life in San'a takes place in the upper stories of the tower houses, so that leveling operations, which leave little more than wall stumps on the ground floor (where animals and grain were kept), limit the value of the archaeological material, as human living floors are not preserved.

The observed stratigraphy is no earlier than the seventh century CE, but pottery suggests that settlement at the site of the mosque may date to the late prehistoric period (c. second millennium BCE) in Yemen. The sherds and wall stumps found there, along with reused bits of monumental architecture encountered elsewhere in the city, confirm textual sources indicating that San'a was a town of at least 7 ha (17 acres) in the first centuries CE, with commercial, residential, public, and religious areas. It continued to grow during the centuries of upheaval as the Sabaean rulers gave way to the Ḥimyarites, who were overthrown by the Ethiopians and Sasanians before adhering to Islam. [*See* Sheba; Ḥimyar; Ethiopia; Sasanians.] Under the 'Abbasids, San'a was increasingly subjected to local pressures: the native Yu'firid dynasty competed with both the Fatimids and the 'Abbasids, as well as the emerging Zaydis. [*See* 'Abbasid Caliphate; Fatimid Dynasty.] Serious damage may have been done to the city in about 905 CE and again in 911 CE, when it changed hands, but this may not have taken place, being merely slanderous accusations against the Fatimid general Ibn al-Faḍl. San'a probably grew to about 50 ha (124 acres) before the period of Ayyubid hegemony. [*See* Ayyubid–Mamluk Dynasties.]

A Sabaean inscription records the presence of an Awa sanctuary at San'a that has been interpreted as indicating that San'a was a supratribal Sabaean national center. San'a was also a Sabaean *maḥram,* a "protected place." The name *San'a* is interpreted as meaning "well fortified"; it was the base of Sabaean military operations against the southern and western areas. Texts occasionally refer to San'a as Azal, perhaps related to Uzal (*Gn.* 10:27).

A Sabaean king named Ilisharaḥ is cited in later Muslim sources as having constructed the Ghumdan palace in about the middle of the third century CE, when the city was very prosperous. It was a very large building with windows of thinly cut, transluscent alabaster and bronze lions at the corners that "roared" when the wind blew. The ruins of the Ghumdan palace form a large mound facing the eastern

doors of the Grand Mosque, reputedly built in about 630 CE (during the Prophet's lifetime) in the Sasanian governor's garden.

The citadel is situated on a rock outcrop on the eastern edge of the city. Within its walls are both a fortified acropolis and a lower town. The oldest structures yet identified appear to date to the ninth century CE, but there may be earlier material. Urban San'a grew from the citadel to the west, rather than from the area of the Ghumdan east, as the etymological connotation of *San'a* can only be applied to the citadel. To the west of the citadel is the site of an enormous church built by the Axumite general and ruler Abrahah at the time of the Ethiopian occupation, in about 540 CE.

[*See also* Yemen.]

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DAVID A. WARBURTON

SANIDHA, small village lying in the Troodos Mountain foothills, adjacent to the southern coast of Cyprus, 20 km (12.5 mi.) northeast of Limassol (34°49′ N, 33°12′ E). The Late Bronze Age ceramic manufacturing site, however, is situated 1 km (.6 mi.) northeast of the village at the locality Moutti tou Ayiou Serkou at an elevation of 520 m (1,706 ft.). No other sites are known in the area, but a detailed field survey has not been undertaken. The discovery of the Late Bronze Age site in 1988 was accidental, and it highlights the potential archaeological wealth of the mountain zone. Following an extensive collection of surface material, an initial season of rescue excavation, under taken by Ian A. Todd for the Vasilikos Valley Project, was necessary in 1990 because the site was destined for significant agricultural disturbance. The second and third excavation seasons were undertaken in the autumn and spring of 1991–1992.

Attention was drawn to Sanidha because of the dense scatter of Late Bronze Age White-Slip II sherds on the surface. The concentration is greater than that on any other known Cypriot site. Some wasters (sherds deformed in firing) were identified, and the surface survey suggested that the site must have served a specialized function. The surface ceramics comprised White-Slip and Monochrome types, but almost none of the other types such as Base Ring, which commonly occur on the surface of settlement sites. In addition to ceramics, quantities of "brick" fragments were also found. These "bricks" are formed of mud and vegetable matter with parallel sides, rounded ends, flat bottoms, and curved tops. No complete "bricks" were found, and all fragments showed evidence of firing or burning. According to the surface survey the site measures about 675 × 325 m (2,215 × 1,066 ft.) and was certainly large, even if not used for a long duration.

Three seasons of excavation have failed to reveal any pottery kilns in situ, but abundant evidence has been retrieved which derives from different stages in pottery manufacture. Several activity areas were located consisting of extensive scatters of sherds and other artifacts in one place in association with shallow pits. Two larger pits were filled with rubbish, probably derived from nearby manufacturing activities. Around the edges of one pit were found approximately five hundred well-preserved "brick" fragments in association with small amounts of sherds. In the other, large quantities of sherds were found, but only few and poorly preserved "brick" fragments. Such variety within a small area is characteristic of Sanidha.

Few scientific analyses of White-Slip ware have been conducted, but it seems that all the required raw materials for the manufacture of pottery were available locally, including timber for fuel, water, clay, and the minerals necessary for the temper. "Bricks" of somewhat similar shape to those at Sanidha were used in a Roman kiln at Tell Qasile in Israel and in modern kilns in Crete. All available evidence, therefore, suggests ceramic production as the purpose of the Sanidha site. Further excavations are planned, and a program of ceramic analysis will be undertaken to establish the sites in Cyprus and abroad to which the ceramics were traded.

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IAN A. TODD

SAQQARA, largest and most important necropolis in Egypt (29°50–53′ N, 31°13′ E), stretched out along the desert plateau west of the capital city of Memphis for 6 km (3.7 mi.). At Abu Sir and Giza just to the north and at Dahshur to the south there are pyramid cemeteries. Altogether these desert sites comprise one vast cemetery that served the

Memphite region for more than three thousand years, from the first dynasty until the rise of Christianity in Egypt (c. 2920 BCE–late second century CE). The name is derived from Sokar, Memphite god of the dead, and carries over to Arabic as the name of the nearby village, Saqqara.

Located along the edge of the north escarpment, the earliest monumental tombs at Saqqara are those of the first dynasty. The site was excavated by James E. Quibell in 1912 and by Cecil M. Firth in 1932. The most extensive excavations were those of Walter Emery from 1936 until 1952. Influenced by the impressions on mud sealings of pottery in the tomb chambers, Emery initially understood the great mud-brick mastabas with elaborate "palace facade" niches as tombs of high officials. He later changed his mind and assigned several of the fourteen mastabas to first-dynasty kings beginning with Hor-Aha, whom most Egyptologists equate with Menes, first king of the dynasty. According to literary tradition, Menes established Memphis as the new capital. There followed an Egyptological dispute that pitted the tombs of Abydos against the Saqqara mastabas as the actual, as opposed to symbolic, burial place of these earliest kings. Although the argument is unresolved, most Egyptologists accept that the Saqqara mastabas do belong to high officials of the first dynasty (Kaiser, 1969, 1981; Kaiser and Dreyer, 1982; Kemp, 1967; Stadelmann, 1985; Trigger, 1983).

Saqqara has about thirty pyramids, fifteen of which are king's tombs, the rest being for queens or royal children. Egypt's first pyramid, and first major monument in stone, is the third-dynasty Step Pyramid, which rises in six courses to 140 m (460 ft.) and still dominates the Saqqara plateau (see figure 1). It was built for King Djoser (c. 2630–2611), whose Horus name, Netjerikhet, found in the chambers of the complex, is the only one of Djoser's five official names inscribed in the pyramid. The structure is surrounded by a great rectangular enclosure with "dummy" models in stone of courtyards and reed and wood shrines that were actually used in Memphis for ceremonies, rituals, and administration. The stone simulation magically function for the king and his court into the afterlife.

The Djoser pyramid had no real precedent, except for the great enclosure at Abydos of Khasekhemwy (died c. 2650), last king of the second dynasty although it is a mud-brick rather than a stone monument Sekhemkhet, who ruled just after Djoser, attempted another step pyramid in a rectangular complex just to the southeast of the latter, but it was left unfinished. The only fourth-dynasty monument at Saqqara is the huge mastaba-shaped tomb, the "Mastabat Faraoun" in the southern part of the site. It was built for King Shepseskaf, who ruled after Menkaure, builder of the third and smallest pyramid at Giza. All the other fourth-dynasty pyramids, which were built on a gigantic scale, were erected at Meidum, Dahshur, and Giza. With the collapse of the fourth dynasty, however, the first fifth-dynasty king, Userkaf (2465–2458) returned to Saqqara to build his pyramid just off the northeast corner of the Djoser enclosure.

During the reigns of the next three kings (Sahure, Neferirkare, and Neuserre), pyramid building, now on a smaller scale with a standard design, moved to Abu Sir, until Djedkare Isesi built the first of the pyramids, known as Ḥaram

SAQQARA. Figure 1. *Step pyramid of Djoser.* In the foreground are subsidiary shrines. (Photograph by J. S. Jorgensen)

es-Shawaf, at South Saqqara. Unas (c. 2356–2323), last king of the fifth dynasty, built his pyramid just off the southwest corner of the Djoser enclosure. Because it is so far out in the desert, this pyramid had an extraordinarily long causeway to a valley temple and a harbor, the ruins of which are just beside the modern entrance to Saqqara. Unas was the first king to inscribe within his burial the *Pyramid Texts,* which were Egypt's oldest funerary literature and the precursor of the later *Coffin Texts* and the *Book of the Dead.*

Teti, first king of the sixth dynasty, located his pyramid to the northeast of Userkaf's. The other pyramids of the sixth dynasty, belonging to Pepi I, Merenre, and Pepi II, are all in south Saqqara. The name of the pyramid of Pepi I, Men Nefer, is the origin of the name of the capital city, Memphis. Jean Leclant and Jean-Philippe Lauer are excavating the sixth-dynasty pyramids, carrying out conservation work, and studying the *Pyramid Texts* in the inner chambers of these pyramids. In the Pepi I complex, south of the king's pyramid, they found four subsidiary queens' pyramids, names of two of the queens, and four obelisks.

Zahi Hawass excavated around the pyramid-temple of Queen Iput, one of the wives of Pepi I. A stela that must belong to the Djoser complex was found; it contains the name Netjerikhet within a palace-facade emblem known as a *serekh,* which is surmounted by a falcon wearing the double crown of Egypt with repeating registers below alternating with enclosed jackals and lions (Hawass, 1994).

The king's family and court officials were buried near their ruler's pyramid in tombs that became larger and more elaborately decorated as the period progressed. The scenes of everyday life sculptured on the walls insured a magical supply of commodities for the deceased in the Afterlife. Some of the finest of these Old Kingdom tombs are in the Saqqara necropolis. The most famous is the tomb of Ti (Wild, 1953–1966), a high official of the fifth dynasty who served kings Neferirkare and Neuserre. Ti's tomb, found by Auguste Mariette, is north of the Serapeum. [*See the biography of Mariette.*] Other fine tombs include the fifth-dynasty burials of Ptahhotep and Akhethotep south of the Djoser pyramid, the "Two brothers tomb" of Niankhkhnum and Khnumhotep in the line of the Unas causeway, and the sixth-dynasty tomb of Mereruka in front of the Teti pyramid.

King Ibi of the eighth dynasty built a small brick pyramid to the east of that of Pepi II. Its small size indicates the dramatic disintegration of the Old Kingdom at the end of Pepi II's long reign. East of the pyramid of Teti are the remains of another small pyramid that may date to the ninth or tenth dynasties of the First Intermediate Period (c. 2150–2040). At the southernmost end of Saqqara are two thirteenth-dynasty pyramids, one of which belongs to a king named Khendjer.

During the New Kingdom (beginning c. 1550 BCE), Memphis became the second capital of Egypt after Thebes. The sons of kings used the site as a base for their military training. Amenhotep II left an inscription inside his temple located northeast of the sphinx indicating his military training. Although the administration was established in Thebes and that city became the place of burial for the officials of Upper Egypt, those who controlled Lower Egypt lived in Memphis and were buried in Saqqara.

Most of the tombs are dated to the eighteenth-dynasty reigns of Amenhotep III, Amenhotep IV (known as Akhenaten) and Tutankhamun. Geoffrey Martin reexavated the tomb that Horemheb built for himself before he became pharaoh, while he was still the overseer of the army. Martin also found the tomb of Maya, the treasurer of King Tutankhamun. Alain Zivie found the tomb of the vizier Aper-El, whose name was shortened to Aperia. He served as the prime minister of Lower Egypt in the fourteenth century BCE under King Amenhotep III and under his son Akhenaten. The tomb was discovered in 1987. In addition the funerary room, full of funerary equipment and other furnishings, was discovered hidden behind the stair. Zivie found other tombs, such as the tomb of the royal scribe and chief of the granaries Mery-Sekhmet, who lived in the nineteenth dynasty. Sayed Tawfik has excavated the New Kingdom cemetery south of the causeway of Unas for Cairo University. He found the tombs of the officials in charge of Lower Egypt during the Ramesside period.

The Serapeum lies southwest of the Djoser pyramid. When Mariette discovered it in 1852, there was an avenue lined with sphinxes leading from the escarpment of the Saqqara plateau to the opening in the desert floor. This avenue gives access to vast underground galleries with individual caverns for burial of the successive sacred Apis bulls, each one considered an incarnation of Osiris. The burials began in the reign of Amenhotep III and continued into the Ptolemaic and Roman periods. One of the latest ruins of antiquity at Saqqara is the monastery of St. Jeremias, located southeast of the Unas Pyramid and dated to 43 CE. The architecture and painting from this site are among the finest of Coptic remains.

[*See also* Pyramids.]

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SARCOPHAGUS. From the Greek *sarx* ("flesh") and *phagein* ("to eat"), a sarcophagus (pl., sarcophagi) is a container for the primary burial of a human corpse. Sarcophagi were widely used throughout the ancient Near East.

Made of wood, clay, or stone, sarcophagi range in size from small specimens like the Jebel el-Mukabbir sarcophagus (2.02 × 0.65 × 0.56 m) to the very large examples found in catacomb 20 at Beth-She'arim (approaching 2 × 1.5 × 0.75 m) in Israel. [*See* Beth-She'arim.] Stone sarcophagi were typically hollowed out from large blocks of basalt, limestone, or marble, with limestone being the most common material used. The rims of stone sarcophagi are typically at least 10–12 cm thick, although R. H. Smith has reported on several samples with rims as thin as 4.5 cm (Smith, 1973). The interiors of many sarcophagi feature a rounded headrest at one end, indicating the expected orientation of the corpse. Most specimens bear ornamentation on the sides and/or lid, including decorative friezes, gabled lids, acroteria on the corners of lids, and carrying handles on the short sides. Decorations frequently appear only on those sides of a sarcophagus that remained visible after placement in the burial site. Sarcophagi stand on two brackets running beneath the short sides, on feet located under each corner, or on a flat bottom.

Anthropoid clay sarcophagi appear as early as the fourteenth century BCE, in Bronze Age graves at Deir el-Balaḥ, southwest of modern Gaza. [*See* Deir el-Balaḥ.] Such burial containers, in the form of a human body (including representations of facial features, hands, feet, and calves) were first introduced into Canaan from Egypt during the Late Bronze Age. Similar anthropoid sarcophagi are also known from Iron Age sites in Jordan, including Saḥab, Jebel el-Quṣur and Dibon, and in Lebanon during the Persian period in and around Sidon. In each case Egyptian influence is present, as anthropoid sarcophagi had been employed in Egypt since about 1900 BCE. [*See* Saḥab; Dibon.]

One of the earliest examples of an ornamented sarcophagus is the Ahiram sarcophagus from the Early Iron Age (early tenth century BCE) at Byblos. Decorative friezes on its sides and lid include depictions of King Ahiram, votive ceremonies, and recumbent lions that typify Phoenician art during this period, particularly in their increasingly Syrian (rather than Egyptian) themes and motifs.

Greek influence becomes evident during the Persian period (late fifth century BCE) in, for example, the so-called Satrap Sarcophagus from Sidon. It bears decorative friezes depicting scenes of a banquet, a procession, and the Persian court. Interpretation of these scenes is vexed by the question of whether they represent episodes from real life or visions of the afterlife: is the deceased being remembered as he was, or is he being depicted as heroized among the divinities? The possible presence of mythological elements, including perhaps Dionysus and Pluto, renders such questions problematic, and the likelihood of polyvalent symbolism cannot be discounted.

Mythological symbolism is certainly present—indeed, is prevalent—in decorated sarcophagi from the Roman period, especially from the second and third centuries CE, when primary burial in sarcophagi was very widely practiced by pagans. Three specimens from Caesarea Maritima in Israel, for example, are extensively ornamented with Dionysiac scenes of satyrs, maenads, erotes, and even Leda and the

SARCOPHAGUS. *Lid of a sarcophagus.* From Beth-Shean, dated to the Iron I period. (Courtesy ASOR Archives)

swan; several sarcophagus reliefs from Tyre from the second century CE also feature elaborate mythological scenes of Achilles and Dionysus. A basalt sarcophagus from Umm Qeis (Gadara) in Jordan from the third century CE bears a depiction of Dea Syria at each end. Such decorations seem to express hopes for immortality in the afterlife through mythic union with the gods. [*See* Umm Qeis.]

Jewish sarcophagi from the Roman period, by contrast, are noteworthy for their geometric and floral rather than mythological decorative themes. Specimens from Benyamina; Dominus Flevit, Mt. Scopus, and Sanhedria in Jerusalem; Nablus; and Rosh ha-ʿAyin all feature carved friezes of geometric design on their anterior faces or lids, without iconic representations. As such, these sarcophagi cohere with patterns of decoration on Jewish ossuaries from the Roman period typically ornamented with compass-drawn rosettes. Later, by the third century CE, Jewish sarcophagi at Beth-Sheʿarim display images of lions, eagles, shells, and masks; even there, however, mythological depictions are generally lacking, except in the Leda sarcophagus discussed by Michael Avi-Yonah (1967).

Early Christian sarcophagi appear outside of Palestine by the third century CE, exploiting and transforming typical pagan mythical motifs. Decorative depictions of Jonah in particular symbolize Christian hopes for resurrection.

[*See also* Burial Techniques.]

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SARDINIA. The largest island in the western Mediterranean, Sardinia is within easy sailing distance of Italy, North Africa, and southern France. Its coasts tend to be rugged and lacking in maritime approaches, but the west and south have some safe harbors, where Phoenician, Punic, and Roman cities arose. Although there are very few high mountains, Sardinia is a mountainous region. About 20 percent of the island is comprised of low-lying plains with adjacent terraces to about 200 m; about two-thirds of the island's surface lies between these zones and the 500-m line.

Disregarding the still enigmatic Paleolithic period, the beginning of Sardinia's prehistory can be dated to the arrival of cardial impressed ware early in the sixth millennium. From the earliest period, Sardinia was in contact with Corsica, Liguria, Lombardy, and Provence, as is attested by the presence of Sardinian obsidian in those regions. This earliest Neolithic culture evolved into the Middle Neolithic culture known as Bonu Ighinu (c. 4500–4000 BCE). The obsidian trade produced in Sardinia ceramic parallels with a wide range of cultures in the 5500–4000 BCE horizons from northern Italy and Provence. The size of the known early sites suggests that society was based on small bands, perhaps no more than individual extended families, whose economy was based largely on herding, foraging, and the small-scale cultivation of barley, wheat, and legumes. Settlement in the Bonu Ighinu period was more widespread and more developed. Local groups began to exercise control over the obsidian sources and trade was probably mediated through the coastal villages. These factors suggest the development of social and economic hierarchies, which find their material manifestations in jewelry and fine pottery in mortuary contexts. During this period the first indications of cultural interactions occur, either direct or indirect, with the Balkans and the eastern Mediterranean.

By about the end of the fifth millennium, Bonu Ighinu had evolved into the Late Neolithic San Michele or Ozieri culture (c. 4000–3400 BCE). This was a period of profound, often rapid, changes and marked increases in prosperity that began in the eastern Mediterranean (notably in Gerzean Egypt) and southeastern Europe and rippled westward. Except for a few habitations in caves, Ozieri was a culture of unwalled open-air villages with marked social and economic hierarchies. During the latter phases of this period, large stone architecture makes its first appearance at the sacred site of Monte d'Accoddi-Sassari, an artificial "high place" with a ramp and village. The presence of copper and silver allows us now to consider the Late Neolithic as transitional to the Chalcolithic, or Copper, Age, which on Sardinia is almost coterminous with the third millenium BCE and is transitional to the Bronze Age culture known as Nuragic. Large stone architecture now developed into the first defensive structures, suggesting a further evolution of society and economy. Extrainsular contacts include the late fourth-/early third-millennium Copper Age cultures of southern France, Iberia, Italy, and Sicily, the latter being the probable mediator of more widespread parallels with material from the eastern Mediterranean.

During the Copper Age, megalithic architecture produced fortifications known collectively as protonuraghi, es-

sentially rectangular, ovoid, or circular raised platforms on top of which one or more huts were constructed. These eventually evolved into corbeled tholoi, or true nuraghi, the characteristic feature of the Bronze Age. Most nuraghi were simple, single-towered structures, but some were made more elaborate by the addition of a walled courtyard, sometimes with a second tower in it. A few walled courtyards, apparently through a series of additions over time, became even more developed, until, by about 1200 BCE, a small number of them had been transformed into veritable fortresses with multiple-towered, interconnected external bastions.

Most, if not all, nuraghi had associated villages, but there are many nuragic villages without nuragic towers. With few exceptions, the huts in these villages are circular stone constructions that would have supported thatched roofs; their interior diameters range from about 5 to about 8 m. In some cases, several huts are interconnected, appearing to form part of a single domicile; in an apparently later development, groups of interconnected huts appear around a courtyard, each group remaining isolated from its counterparts, perhaps the dwellings of the village's elites. Evidence for the social and economic activities of nuragic villages is exiguous. Faunal remains attest to the continued importance of hunting alongside stock raising and cultivation, and many villages have yielded evidence for the production of wool and cheese. Copper and bronze were worked in some villages, but it is excessive to suggest that these were widespread cottage industries. An extensive obisidian industry continued.

Probably the most important and certainly the most visible of nuragic cults is that of water. In its most fully developed form, the water cult focuses on sacred wells, most of which are associated with nuragic villages. Many of these sacred sites have yielded remarkable amounts of bronze objects, jewelry, and imports. Some of the sites were surely the religious centers of tribes or confederations whose names are known from later texts and inscriptions, but any attempt to make direct correlations seems futile. It was at such centers that the Romans would find attacking the natives most efficient.

There is virtually no evidence in Sardinia of external contacts in the late third and early second millennia, apart from late bell beakers and the remarkably close parallels, perhaps fortuitous, between indigenous pottery and that of the northern Italian Polada culture. By about 1400 BCE, however, if not earlier, Sardinia was an integral part of a commercial network that extended from the Near East to northwestern Europe. The principal eastern component of this network was Cyprus, and it seems that the peak period of the Sardinia-Cyprus nexus was the twelfth century BCE; it is evident that the connection continued to the end of the second millennium, or even beyond, when it can be considered part of the Phoenician trade. During the high-water period of Cypriot trade, Sardinia was also in direct and/or indirect contact with the Mycenaean world. It is arguable that indigenous Sardinians, known in the east as Sherden, were carriers of some of the eastern material found on the island.

An inscription that may date to the eleventh century BCE and some bronze figurines found at nuragic sites and dated to around 1000 BCE provide the first clear evidence for Phoenician contacts, probably at this time no more than the sporadic or periodic visits of merchants making ports of call on their way to or from the Iberian Peninsula. Contact with Iberia put Sardinia from the tenth to the eighth century indirectly in contact with the broader world of the west, and it may be that Phoenician Sardinia was the mediator between the Atlantic world and the Italian mainland. Three Sardinian bronze figurines found in the Cavalupo tomb at Vulci have been interpreted as evidence for (surely not unique) marriage relationship between Sardinian and Villanovan aristocrats.

In the eighth and seventh centuries, BCE the Phoenicians began to develop permanent settlements. Shortly after the middle of the sixth century, Carthage directly intervened in Sardinia by sending an expeditionary force that was at first defeated; over the course of the next century, however, the Carthaginians vigorously and successfully pursued a policy of active imperialism which resulted, in around 450 BCE, in the establishment of an interior frontier system. By the fifth century, the Phoenician coastal settlements and some more recently established Punic ones had arrived at a mature level of urbanization; they would continue to evolve and play important social and economic roles throughout the Roman period and into the Middle Ages. After the establishment of the Punic internal frontier, Carthaginian influences on the native populations—both within their sphere of control and beyond—intensified, imported goods at native sites increased dramatically, and some rural colonies were founded.

As far as we can tell from surviving accounts, Sardinia played a minor role in the First Punic War between Rome and Carthage, although in the earliest phases of the conflict it would have seemed destined to be a major battleground. In 238 or 237 BCE, in response to Carthage's Mercenary War, the Romans, in a complete transformation of policy, sent a naval expedition to the island. When Carthage expressed indignation at Rome's action and informed the Romans that they were preparing to recover the island, the Romans declared war, causing the Carthaginians to abandon their claim to Sardinia and to pay an additional indemnity of 1,200 talents. The consul of 238, Tiberius Sempronius Gracchus, with a fleet and troops, took possession (probably in 237) of Sardinia without a struggle—that is, he established control over the Punic cities of the littoral. From this began a long series of wars in the interior and the gradual transformation of the island into a Roman province, one of the chief suppliers of grain to the imperial capital. Roman

culture, including the Latin language, supplanted the indigenous culture, elements of which, nonetheless, survived for centuries, as is best evidenced by the fact that some natives were still worshiping wooden and stone idols in the late sixth century CE, undoubtedly a continuation of customs that had evolved from the Neolithic. Pre-Roman words (including the Punic *mitza* for "spring" or "fountain") persist in the modern Sardinian language, the closest to Latin of all Romance languages. As excavation and archaeological surveys have demonstrated, a very large number of indigenous sites continued to be occupied, or were reoccupied, during the Roman period, especially during the high empire. Some of these indigenes have left us epigraphic records of their names, such as, Tarammon, Urseccur Tertelli (filius), Miaricora Turi (filius), and Asadiso Osurbali (filius).

Punic culture also survived. We know from Cicero's speech in defence of Scaurus, who had governed the island in 55, that the ruling class of the city of Nora still had Punic names (Aris, Bostar), a phenomenon repeated elsewhere. The magistrates *(sufetes)* in the city of Cagliari, perhaps in about 40 BCE, were named Aristo and Muthumbal, and the name of the modern city of Oristano evidently derives from the landholdings of someone name Aris (i.e., *ager Aristanus*). In Cagliari, the atrium of a Roman house had a mosaic floor with the symbol of the goddess Tanit. At Bithia, coins associated with the votive deposits made to the Egyptian god Bes continued into the time of the early empire; and the temple to that deity was restructured by the people—*sufetes* and other citizens—an activity recorded on a neo-Punic inscription from the late second or early third century CE.

Very little is known of the formerly Punic cities during the Republican and early imperial periods. Even where extensive excavations have been conducted, scholarly interest has focused on the imperial and the Punic periods. Tharros and other cities (Othoca, Neapolis, Sulcis/Sant' Antioco, Bithia, Nora, Cagliari, Olbia, Cornus) became relatively more prosperous and well appointed during the high empire, but they were probably not excessively depressed in the interval. The extensive agricultural settlements in the hinterland, which archaeological survey has recently elucidated, required a port to export their products and to import, if nothing else, the black-glazed wares and Dressel-1 amphoras that are often the only witnesses to the villages' existence.

In the fifth century CE, the Romans were replaced by the Vandals, who were soon ousted by the Byzantines. Traditionally, in Sardinia the Dark Ages begin earlier than elsewhere. However, archaeological evidence is beginning to provide a clearer picture of Late Roman and early medieval Sardinia than was available only a few years ago, when the evidence consisted largely of literary and legal texts along with a few inscriptions; although the gaps in our knowledge are so great that many years of research will be required to provide adequate documentation, the trend is manifest. For example, the importation of African Red-Slip Ware, which continued long after the Vandal conquest of the island c. 450 CE, reveals that trade and economic life continued. It invites a vastly different understanding of life in Sardinia between about 450 and 600 CE than was possible when the only evidence was the pages of Procopius: if nothing else, we now know that the countryside was much more populated than it had seemed to be. Our knowledge of early Christianity is constantly increasing, almost annually revising an outdated conclusion (that Sardinia was largely pagan) based on a single literary text. Most importantly, recent years have witnessed a revolution in our understanding of the impact on Sardinia of the Byzantine world, which began with Justinian's reconquest in 533/34. Future research should allow us eventually to fashion a more comprehensive analysis of the processes by which Sardinia was transformed between the fifth and eleventh centuries CE.

[*See also* Carthage; Cyprus; *and* Phoenicians.]

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SARDIS, site located in western Anatolia about 100 km (62 mi.) due east of Smyrna (Izmir), where the valley of the Hermus River (Gediz çayı) meets the foothills of Mt. Tmolus (Boz dağı). Sardis has always been identifiable because the toponym (Sart today) has survived, occurring in many ancient in situ stone inscriptions. The factors that account for the growth and prosperity of the city are the natural corridor of the river valley, which connects the Aegean coast with the interior of Anatolia; the fertility of the valley and of

mountain highlands; the perennial water source of a mountain stream, the Pactolus River (Sart çayı), which empties into the Hermus; and the security of a high spur of Mt. Tmolus, which provided a defensible place of refuge (a citadel or acropolis) and mineral resources, notably gold (for which the Pactolus with its placer deposits was the most famous source in antiquity).

History. The oldest stratified occupation dates to the Late Bronze Age (c. 1500–1400 BCE), but Early Bronze Age and Neolithic artifacts have been recovered out of context. In the first millennium, Sardis was the chief city of the Lydians, an Anatolian people who occupied the central western river valleys, especially those of the Hermus and Kayster (Küçük Menderes çayı), and who spoke an Indo-European language (belonging to the Palaic-Anatolian subgroup). The Lydian language is known from a relatively small number of texts (somewhat more than 110), mostly from Sardis and mostly dedicatory and funerary inscriptions on stone and pottery. Before the seventh century their history (under a five-hundred-year-old Heracleid dynasty that traced its descent from Herakles) is shadowy. From about 780 to 546, under their aggressive Mermnad dynasty (and successive kings Gyges, Ardys, Sadyattes, Alyattes, and Croesus), the Lydians were masters of an empire in western Anatolia that extended as far east as the Halys River (Kızılırmak çayı). Around 546 the Lydian Empire was conquered by the Persians, under Cyrus the Great, who besieged and captured Sardis and made it the capital of an important *satrapy* or viceroyalty, named Sparda, like the city. Sardis was the chief western terminus of a major administrative route, the Persian "royal road," which originated at Susa in Iran.

During more than two centuries as a western outpost of the Persian Empire, Sardis played a role in Persian relations with the Greeks. Capture and burning of the lower city by Athenians and Eretrians around 498 during the Ionian revolt led to the Persian Wars of 490 and 480–479; and Sardis was a stopping place for King Xerxes and his forces before their invasion of Greece in 480. The Athenian Alcibiades was a guest and councilor of the satrap Tissaphernes at Sardis in 412–411, where King Lysander of Sparta visited the satrap Cyrus the Younger, younger son of King Darius II, in 405. Sardis was the mustering place for Cyrus the Younger's ill-fated expedition with ten thousand Greek mercenaries against his brother, King Artaxerxes II, in 401. The Spartan king Aegesilaus won a victory over troops of satrap Tissaphernes in 395, which resulted in the latter's disgrace and execution. The Athenian admiral Konon was briefly imprisoned at Sardis by the satrap Tiribazus, in 392. The terms of the Peace of Antalcidas or the King's Peace, favorable to Persia and Sparta, were announced at Sardis in 387.

Persian rule ended in 334 when Sardis surrendered to Alexander the Great, who restored "to Sardians and other Lydians the ancient *nomoi* (customs or laws) of the Lydians" (Arrian, *Anabasis Alexandri,* 1.17.3–8). In the Hellenistic Period, Sardis was controlled first by Antigonus and Lysimachus, around 323–281. During part of this time, it was the residence of Alexander's only full sister, Cleopatra. Then Sardis was ruled by the Seleucid kings from 281 to 190 BCE and next by Pergamon from 190 to 133. During Seleucid rule, the city was for a time headquarters of the rebel Seleucid prince Achaeus, uncle of the legitimate king, Antiochus III, who besieged the city and captured and executed Achaeus in 214. Antiochus's reparations to Sardis thereafter were recorded in an inscription on the Metroon at Sardis. After the bequest of Attalus III of Pergamon in 133, Sardis became part of the Roman province of Asia.

In Roman times, Sardis was the principal city of a *assize* or judicial district *(dioecesis, conventus),* which included twenty-seven or more other settlements of Lydia and Phrygia. In 17 CE extensive destruction by an earthquake, which also damaged eleven other cities of western Anatolia, was the occasion for a five-year tax remission and a grant-in-aid of ten million sesterces from Emperor Tiberius. Sardis was visited by the emperors Hadrian and Marcus Aurelius with Commodus and perhaps also by Lucius Verus and Caracalla.

With Diocletian's provincial reorganization in the late third and early fourth centuries CE, Sardis became capital of the province of Lydia within the larger diocese of Asiana. Under Diocletian or Constantine I it was the site of a weapons factory. Beginning in the first century CE, Sardis was an important center of Christianity, as one of the "seven churches which are in Asia" (*Rev.* 1:11; 3:1–6) and the seat of a high-ranking bishop until 1369. It also had a privileged Jewish community. (Josephus, *Antiq.,* 12.147–153; 14.235, 260). The city barely escaped capture by the Goths in 399, may have been raided and partly sacked by the Sassanian Persians in 616, was taken by the Arabs in 716, and was in Turkish hands intermittently from the eleventh century, permanently from the beginning of the fifteenth century.

Topography, Monuments, Culture. Sardis grew up around the high acropolis, mainly at the edge of the Hermus plain on the north side, also in the Pactolus Valley on the west side. Some settlement regularly existed on the acropolis summit. Cemeteries were located at the periphery of settlement, mainly in hilly terrain of the Pactolus Valley and also 8 km (5 mi.) away to the north on a low limestone ridge (Bin Tepe) located between the Hermus plain and the Gygaean Lake or the Lake of Koloe (Marmara Gölü). Of satellite communities—villages, hamlets, farms, military outposts—in the surrounding plain and mountains, some are named in ancient texts (e.g., Kombdilipia and Tbalmoura in a Hellenistic inscription on the temple of Artemis; and Metallon, in Nonnus, *Dionysiaca* 13.464–478), and some are known from sites and their archaeological remains (e.g., Dedemezari and Karadut).

Little is known about the nature and extent of settlement in the Late Bronze Age and early centuries of the first mil-

lennium BCE. The Lydian city of the sixth century probably covered at least 115 hectares (285 acres), over which excavated occupation remains are distributed). As topography and later settlement patterns suggest, the city may have spread over twice as much land. (Herodotus, 3.4.2, judged Kadytis [Gaza] in Palestine comparable to Sardis in size.) The lower city was partly surrounded by a fortification wall, and the acropolis had its own triple-walled fortifications (Arrian, *Anabasis Alexandri,* 1.17.5; Lucian, *Charon,* 9). A few segments of them survive. Residences (some associated with small glass industry), perhaps a market, a quarter near the Pactolus stream where gold and silver were separated from placer (waterborne or glacial deposits) electrum, and a modest altar (probably associated with the goddess Cybele), are known from excavation. Also attested by archaeological work is a chthonic cult attested by ritual offerings in the form of dinners. Immature dogs are the main course. Each offering included a pitcher, cup, dish, iron knife, and cooking pot with dog skeleton buried near houses. A temple of Cybele and palace or palaces of the Lydian kings are cited in literature (for the temple, see Herodotus, 5.102; Plutarch, *Themistocles,* 31; for the palace[s], see Xanthus of Lydia cited by Nicolaus of Damascus; see Felix Jacoby, *Die Fragmente der griechischen Historiker* [Berlin and Leiden, 1923–1958], 90.44[7]; Vitruvius, 2.8.9–10; Arrian, *Anabasis Alexandri,* 1.17.6).

Ordinary houses were built with walls of mud-brick on fieldstone socles and roofs of reed construction. Grander buildings had terra-cotta roof and revetment tiles with molded and painted decoration (figural, floral, and pattern motifs in red, black, and white), and precisely cut ashlar (dressed) masonry in white limestone and marble. The physical size and conceptual grandeur of several monuments testify to the wealth and power of the Lydian capital: the massive 20 m (65.5 ft.)-thick fortification wall of the lower city; the terracing in white, crisp, ashlar masonry that regularized and redefined natural slopes of the acropolis; the huge tumuli (two with diameters exceeding 350 m [1148 ft.]) and dramatic landscape created by them in the cemetery at Bin Tepe.

Lydian culture of Sardis attested in the archaeological record combines Anatolian and Greek traditions. Anatolian are the tumulus and rock-cut chamber tombs, some pottery shapes (notably the *lydion* unguent container) and decorative conventions (distinctive varieties of Anatolian bichrome and black-on-red wares, and the highly distinctive "marbling"). Greek are the architectural ornament, including the terra-cotta roof and revetment tiles and their motifs, as well as the Ionic repertory (column design, moldings, pattern, individual motifs) in stone; sculptural motifs, design, and style (e.g., *kouroi, kourai,* lions), many vessel forms, mainly attested in pottery (column crater, skyphos); and the alphabetic writing system (adapted with certain changes). Conceivably Greek cultural components may have been more prominent at Sardis than at other settlements of Lydia (the Lydian archaeological record of which is still little known) because of greater foreign contacts at the capital. If so, however, it was well entrenched, as is shown by the use of Greek design for plain and ordinary pottery of the seventh and sixth centuries, and by close similarities to Greek forms in the shapes and decoration of earlier Sardis pottery, about 1300–700. Anatolian and Greek motifs can be originally combined, as in the highly decorative painted pottery called Ephesian ware, probably made at Sardis and elsewhere in western Anatolia in the seventh and early sixth centuries. Some design features are at home in both western Anatolia and Greece and probably reflect a shared cultural heritage.

There is little evidence for cultural interchange with Mesopotamia or Iran (although Lydian contact with Assyrians, Babylonians, and Medes is reported by the Assyrian records of Ashurbanipal and by Herodotus (1.16, 73–74, 77). The "nomadic" animal style of some objects probably reflects the presence at Sardis of Cimmerians or Scythians.

Persian conquest initially had little effect on the material culture of Sardis, except in lavish art forms (plate, jewelry, glyptic). Cults of Sardis during the Persian era include those of Artemis of Sardis, attested by Lydian grave epitaphs and by a monumental altar in the Pactolus Valley (perhaps the one cited by Xenophon, *Anabasis,* 1.6.7); Artemis of Koloe, whose sanctuary by the Gygaean Lake is reported by Strabo, 13.4.5/626, and is attested by Lydian grave epitaphs; and Zeus Baradates (perhaps Ahuramazda of the Zoroastrian religion), known from a Greek inscription of Roman imperial times that refers to his statue and *adyton* in the time of King Artaxerxes. Gardens and hunting parks *(paradeisoi)* of the satraps Tissaphernes and Cyrus the Younger are reported in literature (Xenophon, *Oeconomicus,* 4.20–24; Diodorus, 14.80.2).

Early in Hellenistic times the altar of Artemis of Sardis in the Pactolus Valley was greatly enlarged and a huge temple built to the east of it. The temple faced west, like the temple of Artemis at Ephesus, which may have been the model. A metroon of more modest size (perhaps a successor of the Temple of Cybele reported by Herodotus, 5.102, and the same or the successor of one cited by Plutarch, *Themistocles,* 31) is attested by marble blocks inscribed with correspondence between the Seleucid King Antiochus III; his queen, Laodike; and the Sardians. A gymnasium is cited in one of the same inscriptions; and a theater, city walls and gates, hippodrome, and temple of Zeus Olympius (vowed by Alexander the Great) are cited in the literature (Polybius, 7.15–18; Arrian, *Anabasis Alexandri,* 1.17.3–6).

City institutions, cults, and monuments of Roman times are documented in greater number than for any other era. Most major Roman archaeological features postdate the earthquake of 17 CE. A series of vast terraces on the lower slopes and skirt of the acropolis supported many buildings. Two or three gymnasium-bath complexes (one of them pos-

sibly a basilica), a theater, stadium, and large pseudodipteral temple are known from archaeological remains, as are additions to the temple of Artemis of Sardis (pseudodipteral peristyle, cella-partition wall, perhaps designed to create separate halls for cults of Artemis and Zeus Polieus). A mud-brick building reportedly once the palace of Croesus served for the *gerousia,* council of elders (Vitruvius, 2.8.9–10). An agora, nearly twenty fountains, an *odeion,* and many cults with sanctuaries and temples, including those of Hera, Demeter, Mēn, and Augustus and Gaius, are attested in inscriptions. A goddess called Kore, represented in Roman sculpture and on coins of Sardis as a semi-aniconic image (analagous to the Ephesian Artemis type) may belong to a pre-Roman cult.

In late Roman times (fourth–seventh centuries CE), the urban traditions of a great metropolis were maintained but with increasing strain. Major buildings, colonnaded thoroughfares (one with a tetrapylon or four-sided arch), and commodious, multiroom private residences were repaired, rebuilt, or freshly created, often substantially constructed and decorated with lavish expanses of mosaic paving. The tomb of an arms-factory director (Chrysanthius) is one of many painted tombs of barrel-vaulted, subterranean type *(hypogaeum)* in the city cemeteries. Increasing reuse of building materials, however, suggests significant abandonment or ruin in the city as well as economic recession; one colonnaded street and its sidewalks were never paved. Sardis was refortified: the lower city in the late fourth century, with a circuit wall that enclosed a space of about 150 hectares (350 acres); the acropolis in the seventh–ninth centuries, with massive, well-designed fortifications at strategic places. Three churches, two of them substantial in size, and an unusually large synagogue about 80 m (262 ft.) long were built and flourished in the fifth and sixth centuries.

From the seventh century onward, Sardis steadily diminished in size. Over foundations of one of the larger churches a modest-size, ornately decorated church of multidome type (like the church of the Holy Apostles in Salonica) was built in the thirteenth century. The city was apparently a community of villages, one on the acropolis and several in the lower city and Artemis of Sardis sanctuary, in the fourteenth and fifteenth centuries.

Research and Excavation. Antiquarian research began in the fifteenth century with Cyriacus of Ancona, who visited Sardis in 1446, explored the site, and recorded inscriptions on stone. From the seventeenth to the early nineteenth century, many British and European travelers recorded topography and architecture, notably Thomas Smith in 1670, Edmund Chishull in 1699, Robert Wood and Charles de Peysonnel in 1750, Richard Chandler in 1765, Charles Cockerell in 1812, and Anton von Prokesch (Anton Prokesch von Osten) in 1825. Their records are valuable for references to then-existing conditions and for monuments that disappeared after their visits. Tumuli at Bin Tepe were explored and excavated (without discovery of intact burial chambers) by Ludwig Spiegelthal (who excavated the tumulus of Alyattes) in 1853, George Dennis beginning in 1868 and again in 1882, and Auguste Choisy in 1875. Excavations at the temple of Artemis in the Pactolus Valley were also conducted by Dennis in 1882 and by Gustave Mendel on behalf of the Imperial Ottoman Museum in Constantinople in 1904. Systematic long-term excavations were undertaken by the American Society for the Excavation of Sardis, founded and directed by Howard Crosby Butler, in 1910–1914 and 1922. The temple of Artemis and graves in the Pactolus Valley were the focus of Butler's excavations, but exploration and test excavation in other parts of the city site and at Bin Tepe also were undertaken. [*See the biography of Butler.*] Since 1959, excavation and other archaeological research in many parts of the city site and at Bin Tepe have been conducted by the Archaeological Exploration of Sardis, a project begun by George M. A. Hanfmann and jointly sponsored by the Harvard University Art Museums, Cornell University, the American Schools of Oriental Research, and the Corning Museum of Glass.

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CRAWFORD H. GREENEWALT, JR.

SAREPTA (modern Sarafand), a low mound on the shore of the Mediterranean Sea in south Lebanon, 50 km (31 mi.) south of Beirut (33°27′ N, 35°18′ E). The name *Sarepta* stems from a Semitic root, *saraph* or *sarapu,* meaning "to refine" or "to color red," a connection enhanced after numerous pottery kilns were recovered at Sarepta (see below).

Sarepta's long and varied history can be traced through more than fifty references in ancient sources, namely the fourteenth-century BCE Ugaritic texts, thirteenth-century BCE Egyptian papyri, and eighth-century BCE Assyrian sources. The Bible mentions the visit of the prophet Elijah to Sarepta (Zarephath) in *1 Kings* 17:8–28, in about the ninth century BCE, where he performed two of his miracles. This story was given prominence in Christian writings (*Lk.* 4:24–26) and is kept alive as a legend in Islamic tradition, where a shrine for the Wely el-Khudr still stands today beside the modern motor road between Sidon and Tyre, about 2 km southwest of the site where Elijah's story took place.

The Greek sources Pseudo-Scylax in the fourth century BCE and Lycophron, a third-century poet, mention Sarepta. The Latin poet Sidonius Apollinaris was quoted about the area's famous wines. The "holy god of Sarepta" appears in three Greek inscriptions (Pritchard, 1978). Arab geographers and historians of the twelfth and thirteenth centuries knew Sarafand: al-Idrisi and Yaqut speak of a beautiful town surrounded by gardens.

Exploration and Excavation. When the explorer and historian George Sandys visited Sarepta in 1611, he noted its mosque, the new town on the hills, and Roman period tombs. The pilgrim and traveler Chevalier Laurent d'Arvieux in 1659 and pilgrim and explorer Richard Pococke in 1738 noted the modern town, the sepulchers, and various ruins. In 1838 the American biblical geographer Edward Robinson saw the Wely el-Khudr and mentioned "Zarephath" (see above).

The first archaeologist to visit was Ernest Renan, in 1861. He wrote a scientific account of Sarepta, describing the necropolis and two rooms cut into the rock at the seashore. In 1929 Sarafand villagers found a burial cave, from which the Museum of the American University of Beirut purchased sixty-seven pots. In 1932 Harold Inghold and Ejnar Fugmann studied the collection (mostly Late Bronze Age pottery, including Mycenaean imports), which was published by Dimitri Baramki in 1959. [*See the biographies of Renan and Baramki.*] In 1968 Roger Saidah explored forty rock-cut tombs to the east of the coastal road north of Sarafand. Three were intact and date to about the sixth and fifth centuries BCE (Saidah, 1969).

Between 1969 and 1974, with a study season in 1978, James B. Pritchard, then assistant director at the University Museum of the University of Pennsylvania, directed excavations at Sarepta whose main goal was to obtain a record of the successive periods of Phoenician cultural history there. While the early and late periods had been fairly well documented, information about the Iron Age was limited, often coming from Phoenician colonies in the western Mediterranean.

In the first season of excavations, a Roman port was uncovered and designated area I. Subsequent excavations took place on top of the tell, designated area II, and two soundings were made: sounding X, in an area of 875 sq m, and sounding Y, in an area of 100 sq m.

The excavations produced the Roman-Byzantine port. A rectangular quay (14.50 × 12.60 m) had been constructed on a natural promontory in order to make the city accessible from the sea on three of its sides. A mooring ring was discovered, in addition to four rock-cut basins to hold fresh water brought from the hills by a conduit. An L-shaped natural reef, 1 m below the surface, acted as a natural mole to provide shelter from the open sea and to keep the harbor from silting up. To judge from the frequency of datable coins, the harbor was opened in the first century CE. Two major periods of expansion could be attested in the fourth and the sixth centuries: a bath and the foundation of a church were uncovered from the Byzantine period. After that, the datable coins become scarce. It seems that, by the seventh century, the harbor was almost deserted (see Pritchard, 1975).

Phoenician Settlement. The search for Phoenician remains was conducted on the tell, in area II, in soundings X and Y. Based on the stratigraphic sequence, the soundings exhibited essential differences in the uses to which each area had been put: sounding X revealed an industrial sector (Khalifeh, 1988) and sounding Y had been mainly residential and thus was less disturbed (Anderson, 1988). Table 1 correlates the different periods in both soundings with a sounding dug at the neighboring city of Tyre. [*See* Tyre.]

These correlations are based on the development of ar-

TABLE 1. *Comparison of Soundings at Sarepta and Tyre*

Sounding X Periods	Sounding Y Strata	Tyre Strata	Approximate Date
I	K	XVI	1550–1450 BCE
I–II	J–H	XVI–XV	1450–1350
III–IV	G	XV–XIV	1350–1275
V	F	XIV	1275–1150
VI	E	XIV–XIII	1150–1025
VII	D	XIII–VIII	1025–800
VIIIa–VIIIb	C–B	VII–I	800–350
VIIIb–IX?	B–A2	—	350–100?
X?	A1	—	100(?)BCE–(?)CE

chitectural plans and on the fluctuations of statistically studied frequencies for pottery-type series and related modes of surface finish and decoration. The results show that LB Sarepta was a peaceful settlement. The LB transition to the Iron Age was smooth, with no evidence of destruction. Iron Age Sarepta continued to be the center of a pottery industry, with an increase in the frequency of storage jars as an indictor of an increase in trade. The major change was the introduction of new ceramic forms—red-slipped burnished bowls and jugs—and a new building technique called pier and rubble construction.

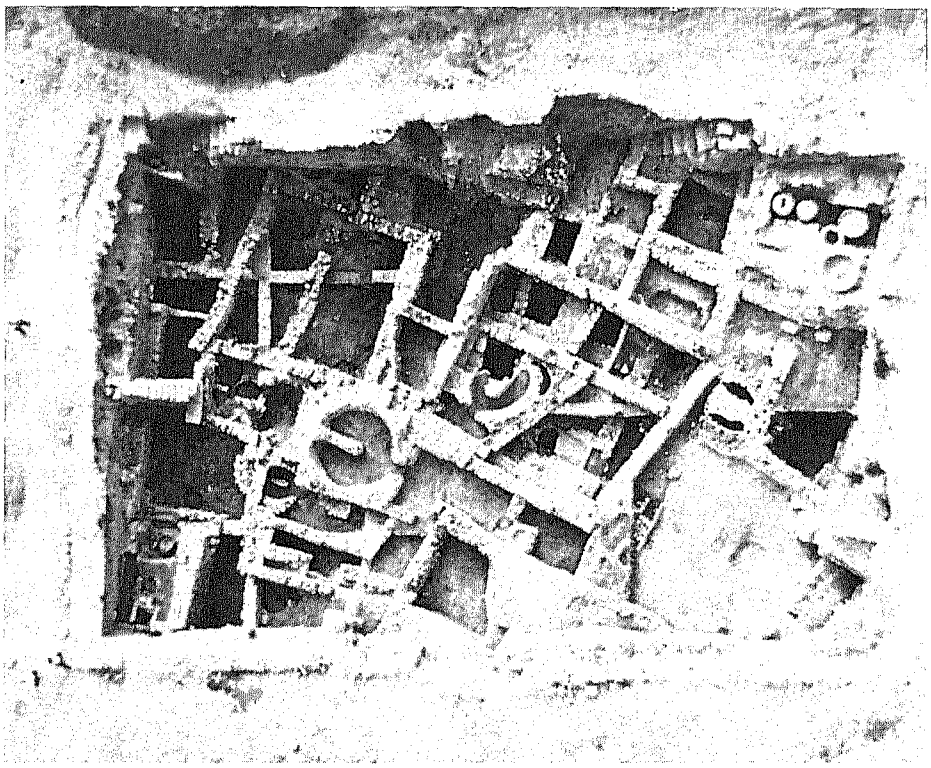
Pottery production center. Twenty-two kilns with related facilities were uncovered in sounding X. The kilns were constructed according to a plan that remained standard for centuries, with only slight changes in shape and dimension. They are oval chambers divided into two kidney-shaped lobes by a wall that projects from the side opposite the doorway (see figure 1). Kiln G, recovered in sounding X, is well preserved, with a complete firing chamber, a roof with flues, and a doorway leading to a stoking room, from which it had been fired. Next to kiln G is room 74, which served as a work area. Kiln G can be dated within the thirteenth century BCE.

Purple dye industry. In the Roman port, a square tank cut into the rock, with four openings in the walls to allow the circulation of water, is thought to have been used to grow Murex shells, the source of purple dye. Similar tanks were attested on the north coast of Crete for the same purpose (Pritchard, 1975, 1978). Additional evidence came from a deposit of crushed Murex shells near the kiln G complex.

Three sherds were unearthed whose interior was covered with a purple accumulation of the purple dye. Spectroscopic and chemical investigations proved it to be the original purple dye. This is the earliest chemical confirmation of the ancient "royal purple" dye. It was produced locally and the industry can be dated to the end of the Late Bronze Age/Early Iron Age. (The production of the purple dye, for which the Phoenicians were famous, played a major role in the dyeing industry and in promoting the textile industry in general.)

Metallurgy. Amorphous pieces of metal and bits of slag were found, along with a rim sherd from a crucible whose inside surface was coated with slag. A mold for jewelry evidenced both the method employed in casting and the forms of the pieces produced. The various objects cast included an elongated bead, a pendant or an earring, and a finger ring.

Oil press. A complete oil press was found in the southeastern corner of sounding X that had been in use during the Hellenistic and Roman period. The main elements uncovered were a crushing basin, a large circular stone with a



SAREPTA. Figure 1. *Aerial view of the industrial quarter from a tethered balloon.* Note the circular kilns. (Courtesy J. B. Pritchard)

low rim (for collecting the olive pulp produced in the crushing process), an oil vat hewn from a solid stone column drum, and a large column drum. [*See* Olives.]

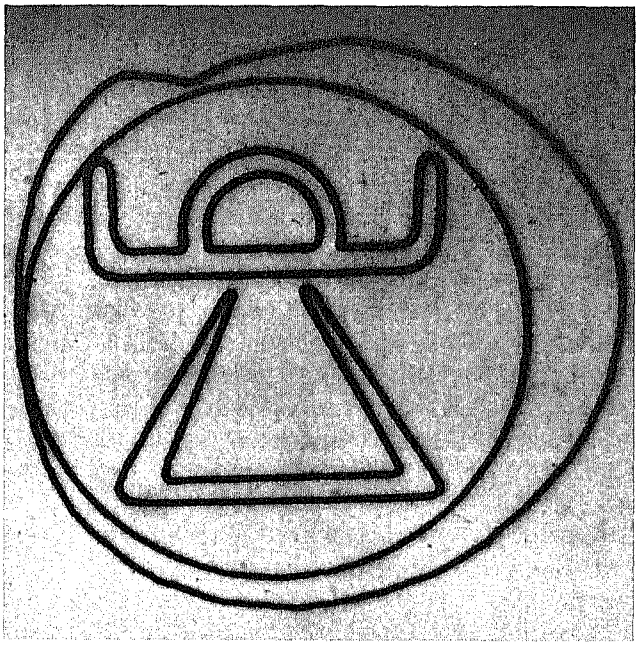
Inscriptions. Twenty-one inscriptions in Phoenician script were found in sounding X that vary in length from a single letter to a complete text of thirty-two Phoenician letters dedicated to the goddess Tannit (see below). [*See* Phoenician-Punic.] They are mostly notations incised or painted on jars and bowls. (Greek and Latin scripts appeared in the later periods, also in sounding X.) Most of the Phoenician inscriptions denote ownership by a god or a person, for example, "belonging to Eshmunyaton," or "client of Melqart."

Among the small finds is a greenish-brown stone inscribed with the name *Sarepta* that was used as a seal stamp. [*See* Seals.] An ivory plaque (3.3 × 5 cm) incised with a complete thirty-two-letter Phoenician inscription is a dedication to Tannit and Ashtart (see figure 2), both of whom were served at the same time—probably in the seventh century BCE (see below). The sign of Tannit also appears on a molded glass disk a centimeter in diameter that may have fit the bezel of a ring (see figure 3). The large ribbed handle of an amphora is incised with an inscription in Ugaritic script. [*See* Ugaritic.] Its text, dated approximately to the thirteenth century BCE, reads:

> (This) ewer, the work of my hands,
> 'Obal made for (the festival ? of) the new moon.

Shrines. In the eighth century BCE, evidenced by an ivory carving of a woman's head, a shrine was built at the edge of the mound, north of sounding X, whose walls were constructed with well-cut sandstone blocks set in the header-and-stretcher technique. The ivory plaque dedicates the shrine to Tannit-Ashtart. An adjacent room uncovered north of the shrine included votive objects of the same type as those found within the shrine. The shrine is characterized by three distinctive features: benches located along each of the room's four walls; a table built against the west wall, probably used as an alter on which worshipers placed gifts for the deity (two hundred votive objects were found nearby); and a socket for a pillar firmly set in the cement floor immediately in front of the offering table. Among the votive objects were figurines, pieces of carved ivory, amulets in human and animal form and the Egyptian "Eye of Horus," cosmetic equipment, beads, a cult mask, gaming pieces, and lamps. An Egyptian influence is obvious.

SAREPTA. Figure 2. *Incised ivory plaque.* (Courtesy J. B. Pritchard)



SAREPTA. Figure 3. *Sign of Tannit.* (Courtesy J. B. Pritchard)

A later shrine with a different plan was built over the earlier one, also dedicated to Tannit-Ashtart. Stones from the north wall of the earlier shrine were robbed to built it. Most of the figurines came from the debris that filled the later shrine. Terra-cotta figurines from the earlier shrine vary from a woman holding a stylized bird in her arms to a seated woman playing a hand drum or tambourine, while figurines of the later shrine are mostly of the type known as the seated pregnant woman figurine (see Pritchard, 1978). The presence of the figurines suggests a date for the later shrine between the fifth and the fourth centuries BCE, a span of use for the shrines of some four centuries.

[*See also* Phoenicia; Phoenicians.]

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ISSAM ALI KHALIFEH

SARRE, FRIEDRICH (1865–1945), German art historian specializing in Islamic and pre-Islamic Iranian art. After earning his doctorate in art history in 1890, Sarre made several extended trips to Asia Minor, Iran, Turkestan, and Mesopotamia (1895–1908). In 1910 he published the photographs he had taken on those trips in two large volumes: *Monuments of Persian Architecture,* in which he gave special attention to the wall decoration in Islamic buildings, and (with Ernst Herzfeld) *Iranian Rock Reliefs,* in which he focused on Sasanian rock reliefs and Achaemenid monuments. *An Archaeological Journey in the Area of the Tigris and Euphrates, 1911–1920,* also published with Herzfeld, was of value to future archaeological research. As a direct result of his travels, Sarre organized the excavations in Samarra, which Herzfeld carried out from 1911 to 1913. In 1910, in Munich, in conjunction with colleagues, Sarre also organized the most comprehensive "Exhibition of Masterpieces of Muslim Art" that had ever been displayed; the most important aspects of the exhibition were published in 1912 in a work edited by Sarre and F. R. Martin.

In conjunction with the Islamic Division of the Kaiser-Friedrich Museum in Berlin, which was founded in 1904 and which he directed from 1921 to 1931, Sarre published numerous monographs and essays on all areas of Islamic art. His examinations of miniature painting, metalworking, ceramics, and carpets were a fundamental contribution. In 1921 he presented the museum with a large part of his private collection of Islamic arts and crafts.

In the German-speaking world, Sarre is considered one of the founders of Islamic art history. His study of Islamic art followed the style-critical method, always viewing the various genres of arts and crafts in conjunction with overall developments in Islamic art. His interests in art extended beyond his subject matter, which allowed him to recognize its East Asian and Western influences.

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VOLKMAR ENDERLEIN

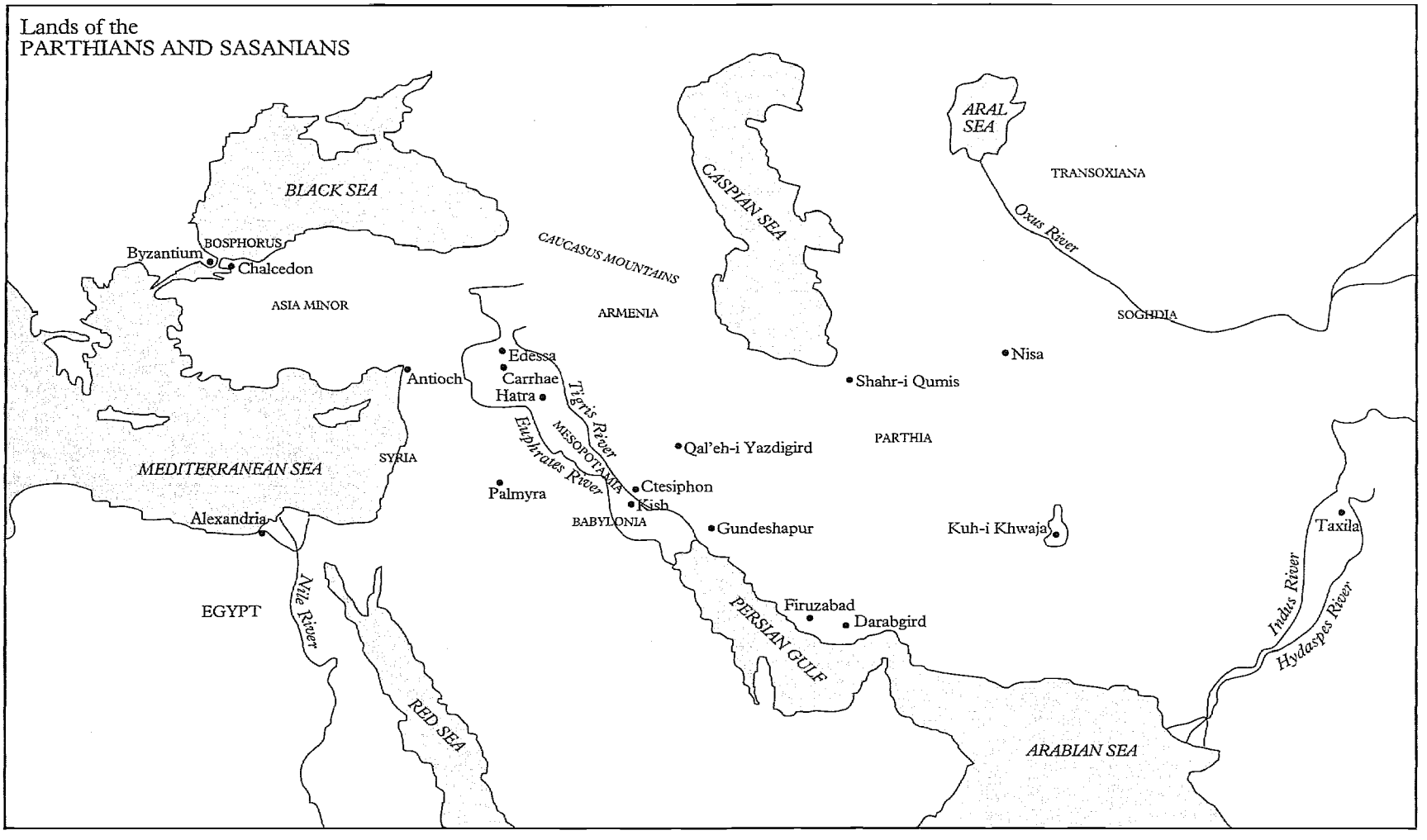
Translated from German by Susan I. Schiedel

SASANIANS. Traced to a legendary ruler named Sasan, the Sasanian regime (226–651 CE) began with a revolt against Parthia. Coins, primarily silver dirhems, portray individual kings. The main chronology comes from Western accounts; Sasanian texts were written in the hard-to-decipher Middle Persian (Pahlavi) script, and few are preserved. The archaeological record is very poor.

The Dynasty. In 228 CE, Ardashir, the first monarch, was imperially titled *shahanshah* ("king of kings"), and a new capital was founded at Ctesiphon that started a pattern that became the state's trademark whereby victories were commemorated with the foundation of new cities. The capture of Hatra extended Sasanian control into the region of the Euphrates River, where struggles with the West were to remain a constant theme. Like Ardashir, Shapur I (241–272) was aggressive along the Sasanians' frontiers. He adopted the title "King of Kings of Iran and non-Iran," referring to conquests beyond Iranian-speaking territory. In 244, Shapur's northeastern campaign tempted Philip the Arab to invade from the West. Shapur's reaction was immediate; Philip withdrew, paying a ransom of 500,000 gold dinars for safe passage, and ceded suzerainty over Armenia.

The assassination of the Armenian king in 252 became a pretext for aggression against Roman Syria. The Sasanians sacked Antioch and commemorated the event by founding a new city, Gundeshapur. The emperor Valerian's counter-invasion was a disaster, and Shapur's victory inscription at Naqsh-i Rustam celebrates the capture of seventy thousand Romans and thirty-six Roman cities plundered. [*See* Naqsh-i Rustam.] Yet, the Sasanians neglected the region, interested more in plunder than settlement.

Internal power struggles are reflected in Narseh's (293–302) anachronistic insertion of his name on his predecessor's


Lands of the
PARTHIANS AND SASANIANS
BLACK SEA
BOSPHORUS
Byzantium
Chalcedon
ASIA MINOR
CAUCASUS MOUNTAINS
ARMENIA
CASPIAN SEA
ARAL SEA
TRANSOXIANA
Oxus River
SOGHDIA
Nisa
Edessa
Carrhae
Hatra
Antioch
Tigris River
Euphrates River
MESOPOTAMIA
Shahr-i Qumis
PARTHIA
Qal'eh-i Yazdigird
SYRIA
MEDITERRANEAN SEA
Palmyra
Ctesiphon
Kish
BABYLONIA
Gundeshapur
Kuh-i Khwaja
Alexandria
Taxila
Indus River
Hydaspes River
Nile River
EGYPT
Firuzabad
Darabgird
PERSIAN GULF
RED SEA
ARABIAN SEA

victory relief. Narseh's own Paikuli victory monument lists his backers, from which the rulers of central Iran and the Parthian feudal families were notably absent. Narseh largely had fringe support.

With Rome officially Christian, as was Byzantium, Iran subjected believers to harsh taxes and often to persecution. Yet, Christian fortunes fluctuated wildly, for at the end of the fourth century, Yazdigird I earned the reputation amongst Zoroastrians of being "sinful," for his Christian tolerance. Christian issues were interwoven with the long-standing Armenian problem. Under Yazdigird II (438–457), his minister, Mihr Narseh, tried to convert Armenia to Zoroastrianism with bloody violence. Only disasters against the Huns in the East, including King Peroz (457–484) losing his life fighting them, forced Sasanian concessions for religious freedom in Armenia.

Internal disruptions followed Kavad II's sympathizing with the revolutionary movement of Mazdakism, which touted social equality and women's rights. Khusrau I (531–579) restored the power of the state. The revolutionary Mazdak and his followers were murdered treacherously while banqueting. Later, Khusrau was called Anushirvan ("of immortal soul") for fostering orthodox Zoroastrianism. His administrative reforms improved systems of taxation and created a professional army, rather than rely on levies from the nobles. Khusrau's most effective campaign started in 540, with the sack of Antioch. Prisoners and spoil were taken, as usual, to a new city near the capital. Like Shapur I, however, Khusrau failed to master the Arab, and now Christian, reaches of the upper Euphrates. Like others, he had to face the East. Arranging a truce with Emperor Justinian, and allying with the new Turkish groups in Transoxiana, Khusrau won dramatically over the Huns. The truce with Justinian was supposed to last fifty years. Sasanian aggression, however, was transferred to the Red Sea, where Byzantine rivalry for trade with India persuaded them to interfere in southern Arabia. In about 575, the Sasanians took Yemen as a province.

Military professionalism impacted upon state security, however. A jealous Hormizd IV (579–590) forced General Bahram Chubin to become a revolutionary who exiled the king, as well as Hormizd's successor, Khusrau II (591–628). Emperor Maurice received the fugitive Khusrau's overtures, and Bahram Chubin was overwhelmed by two Byzantine forces sent against him. As Khusrau II, the new king upheld his promise and ceded territorial rights in the Caucasus.

Khusrau earned his title, *parvez* ("victorious"), through subsequent victories. His spoils included the previously impregnable Edessa, taken in 609. After taking Antioch, in 611, the Sasanians went on to Palestine and Lower Egypt: in 614, the Holy Cross was taken as part of the Jerusalem loot, and in 619 Alexandria fell. A Sasanian army reached the Bosphorus and threatened Byzantium itself.

Only Heraclius, whose brilliant reforms involved rebuilding the army and realigning troop loyalties, rescued Byzantium. In 622, with a superior navy, Heraclius moved quickly into Armenia, twice defeating the Sasanians. Attempts to divide Byzantium in the Caucasus failed, and Heraclius's offensive penetrated deep into Iranian territory, moving to within reach of Ctesiphon, where only winter forced his withdrawal.

In 628 Khusrau was executed by his own generals, and his son, Kavad II, expediently evacuated the newly conquered territories. Assassinations brought a series of rulers to the throne, including a female, about whom little is known. A grandson of Khusrau II became Yazdigird III (633–651). He faced the challenge of Islam, whose armies conquered Syria in 636, Mesopotamia in 639, and Egypt and Iran in 640 and 641. For all its professionalism, the Sasanian army failed to stem this novel tide of invaders, and the people of Iran had no spirit to resist.

Religious Thought and State Religion. During his reign Ardashir established Zoroastrianism as a state religion, and idolatry was abolished. Fire worship, introduced by the priesthood in Achaemenid times, became mainstream in the new orthodoxy. Coronation fires were consecrated in the king's name, and coins bore images of fire altars. Excavations have exposed walls of simple domed pavilions recognized as fire temples, whose altars are positioned centrally on the floor beneath the dome of the sanctuary. Discreet ceremonies would have been held inside the building, where the sacred fire was held pure. Altars located on hillsides served the need for public display.

Ardashir proposed reforms to simplify the calendar. Their failure underlies the complexity of Iranian society, whose faiths were a millennium old. Zoroastrianism remained an oral tradition, its main texts archaic and obscure. People honored the new calendar but celebrated traditional festivals as well. Ironically, the now traditional March equinox new year (Naw Ruz) was introduced much later.

The nature of god was intensely debated. One school maintained that Zurvan ("time") begot the twins Ohrmazd (Ahura Mazda), who created the world, and Ahriman (Anru Mainyu) its evil. Some members of the royal family favored Zurvanism. Equalizing good with evil, the Zurvanites lessened Ohrmazd's stature, despite his responsibility for all subsequent creation. Orthodox Mazda worshipers believed in only one creator. Zurvanism was treated as a heresy in the sixth century, when Khusrau I initiated his program of state purges. Mysticism and the Eastern sects of Christianity made inroads, and the Eastern-rite Nestorians became freer in Iran after the 525 Council of Chalcedon (they were seen as separate from Byzantium). In the third century the prophet Mani, influenced by a number of faiths and aware of the teachings of Buddha, preached worldly withdrawal. Zoroastrians considered him a dangerous heretic. Mani's fame is the result of the discovery of Manichaean texts unearthed from old monasteries in Chinese Turkistan, where

Manichaeans fled from persecution after their prophet's death in 276.

Architectural Remains. There have been virtually no modern surveys or settlement studies in the region and no scientific excavations. What is known mostly comes from texts. Of these, the majority are from Islamic times. Typical of what is known is how the colorful figure of Bahram V (420–438) became part of Persian literature through his skills as a hunter. He earned the epithet Gur ("wild ass"), being frequently portrayed in Islamic art performing virtuoso acts with his bow. His real exploits, particularly campaigns in the East, are much less well known because written Sasanian sources are lacking.

In Mesopotamia, canal networks supporting large-scale irrigation have been recorded through survey. Intended to increase revenues, as much as feed people, these networks remained viable after the dynasty's fall. Systems of communication survived, but the newly founded cities were less enduring, lacking base support after the reign of the monarch.

Some sites have striking patterns visible from the air. At Gundeshapur, the rectangular city grid is seen as Roman work. However, it is uncertain whether this interpretation is sound. Darabgird, a round city, is also seen as a prototype for the first Sasanian capital, at Firuzabad. Others claim that Darabgird is post-Sasanian, underlining the primitive state of Sasanian archaeological studies. What is known comes from architectural, and mostly freestanding, remains.

Architectural innovations begun under the Parthians became entrenched. Barrel-vaulted chambers surrounded by corridors serving as buttresses continued to appear. On the Iranian plateau, round domes in solid masonry over square chambers were erected, but these are rare in Mesopotamia. Their interpretation as fire sanctuaries is based mostly on the observation that they are standing structures and by drawing analogies from the religious ceremonies in the fire temples of the Zoroastrian Parsees of nineteenth-century Iran and India.

In palaces, the use of piers allowed for the opening up of internal spaces, giving halls a Roman basilica look. Western decorative devices were popular, but indigenous building techniques continued, particularly the use of blind facades. At Kish, excavated structures, including palace courts with ornamental pools and throne halls reflect the nobility's growing pretensions. The stucco ornament at Kish, characterized by the use of heraldic figures and human busts, is similar to that at the capital, Ctesiphon.

Trade. Long-distance trade impacted on the quality of portable goods. Cosmas Indoplasticus, a sixth-century Indian navigator, reports Arab and Persian merchants trading as far as Ceylon. Controlling the maritime routes toward the Arabian and Red Seas, the Sasanians held a monopoly over eastern routes, exporting raw silk to Byzantium, Egypt, and Syria. When Justinian received live silkworms from China in the sixteenth century, the West's own sericulture broke the Persian monopoly.

In Central Asia, Soghdia's Iranian speaking rulers, whose merchants visited China, encouraged trade. Monasteries in Soghdia provided havens for merchants and served as exchange points for goods and ideas. Nestorian missionary activity brought Westerners into contact with China, where an Iranian presence is also described in texts and inscriptions such as the Xian monument dated 781. When the last Sasanian king fled before the advancing Arab armies of Islam in 641, his descendants sought refuge in the Tang court.

Remarkably, China imported from Iran fabrics made from Chinese silk, "Persian brocades" characterized by animal and bird motifs carried within pearl-bordered medallions. Although quite different from designs found in Chinese art, they are comparable to Central Asian wall paintings and silver vessels from the Sasanian period.

Sasanian silver and gold vessels are found in China, traded there from as early as the fourth century. Some may have been made by Iranians in China. Sasanian cut glass was popular. Many Sasanian artifacts were buried after the fall of the Chinese Tang dynasty, reflecting an influx of royal refugees. Thousands of coins, extending in date for more than three centuries, have also been unearthed, the earliest from the time of Shapur II. The largest group dates from Khusrau II, which is also true in Iran itself as a result of fiscal reforms. Mint marks reveal that the coins found in Tang China were struck in both central and eastern Iran. Some bear a counterstrike mark of the Huns, for whom there is otherwise little tangible evidence.

[*See also* Byzantine Empire; Ctesiphon; Kish; *and* Persia, *article on* Persia from Alexander to the Rise of Islam.]

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E. J. KEALL

SAUDI ARABIA. *See* Arabian Peninsula.

SAULCY, FÉLICIEN DE, more fully, Louis Félicien Joseph Caignart de Saulcy (1807–1880), French numismatist and archaeologist. De Saulcy studied at the École Polytechnique in Paris and chose a career in the military. Caught up in the romanticism of the 1820s in France, which involved looking at the nation's past, including its artistic heritage, de Saulcy became interested in some of the archaeology carried out in French territory of that period. He published some numismatic discoveries and was among the first participants in the newly created *Revue de numismatique.*

He might have continued this amateur work had not the death of his wife in 1850 led him to seek consolation through religion and travel by visiting the Holy Land. De Saulcy was also drawn to the Holy Land through his study of Crusader coins. His two trips—from 1849 to 1851 and later in 1863–1864—and the results of his investigations greatly influenced emerging French Orientalism. De Saulcy studied the principal monuments in Jerusalem, analyzing the masonry of the wall surrounding the Haram esh-Sharif. He excavated the Tombs of the Kings, where he discovered the sarcophagus of Sadan, a queen of Adiabene who converted to Judaism with her family and is better known by her Greek name, Helen. De Saulcy thought that these monuments dated to the time of the Israelite monarchy and therefore preceded classical Greek architecture. We now know that they belong to the first century CE.

De Saulcy was among the pioneers of Palestinian archaeology. He explored the Dead Sea area and produced excellent maps, which his military training had prepared him to draw, in what was the first scientific exploration of the region. He also was the first to use photography as a tool in archaeological research. To bolster his theories on the dating of Jerusalem's monuments, de Saulcy hired a painter, Auguste Salzmann, to photograph them. Salzmann's plates, made in 1854, were published in an album in Paris in 1856. They constitute the first collection of photographic images of Jerusalem.

[*See also* Jerusalem.]

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ANNIE CAUBET

Translated from French by Melissa Kaprelian

SAUVAGET, JEAN (1901–1950), French historian of the Islamic Near East. After completing classical studies in Arabic and history, Sauvaget went to Syria as secretary of the French Institute in Damascus (1924–1937). He then taught in Paris at the École des Hautes Études and the Collège de France. He was a brilliant teacher who influenced, by the force of his personality and of his ideas, nearly two generations of scholars.

Sauvaget never participated in field archaeology, but he developed, for the study of the medieval Near East, another type of archaeology: through it, a land or a space is illuminated by the simultaneous consideration of literary texts, inscriptions, standing monuments, surface and other surveys, and the analytic techniques of geography, ethnography, urban and rurals studies, and sociology. He was aiming toward what was later called total history, a history from which no source would be omitted. Sauvaget was often critical of the lack of rigor in the works of historians of art, and he liked to show, sometimes playfully, the absurdity of many accepted conclusions. As a result of his concern about the physical character of the land on which people build and work, he was able to demonstrate the economic bases of early Islamic settlements; to propose novel and exciting interpretations for the growth of Syrian cities (especially Aleppo, Damascus, and Latakia); and to outline, based on texts, cultural history, and logic, the history of the early mosque in a book about the mosque in Medina in Arabia. A careful and critical observer of the world around him, Sauvaget transformed his experience of the present into an appraisal of the past. While his studies on ceramics are less useful for archaeological purposes than for understanding the functions of pottery and some of his conclusions and hypotheses have not stood the test of time, his rigorous method and constant questioning of all bits of evidence remain models for all scholarly enterprise.

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For a good introduction to Sauvaget's life and work the reader may consult *Memorial Jean Sauvaget*, published by the Institut Français de Damas (Damascus, 1954), which contains a full bibliography, an excellent survey of Sauvaget's work by Louis Robert, and several notable articles. Sauvaget's contributions to the field are well illustrated in two important articles, published posthumously in the *Revue des Études Islamiques:* "Introduction à l'étude de la ceramique musulmane," *REI* 33

(1965): 1–67; and "Châteaux Umayyades de Syrie," *REI* 35 (1967): 1–49.

OLEG GRABAR

SCHAEFFER, CLAUDE F.-A. (1898–1982), primary excavator of Ras Shamra (Ugarit). Arguably the most renowned French archaeologist of his generation, Claude Frédéric-Armand Schaeffer was a man of great energy who for many years simultaneously directed two major field projects while holding a university chair and important administrative positions in the government. Also a scholar with wide-ranging interests, he was responsible for novel and often controversial interpretations of archaeological material.

A native of Alsace, which had been annexed by Germany in 1871, Schaeffer was drafted into the Kriegsmarine as a cryptographer in World War I and learned skills that would serve him well both in his archaeological career and in the French navy during World War II. In the early 1920s he studied European prehistory at the University of Strasbourg, excavated in Alsace, and was soon offered a museum position in Strasbourg. He married Odile Forrer, eldest daughter of the prominent archaeologist Robert Forrer. Odile became the able camp manager of all his expeditions.

Schaeffer's methodological approach to large assemblages of artifacts, such as those excavated in burial mounds, resulted in several much acclaimed syntheses. Schaeffer's role in exposing the fraudulant nature of inscriptions vaguely Phoenician in character that were supposedly discovered at the Neolithic site of Glozel in the Allier region caught the eye of the prominent French scholar René Dussaud, who later sent him to investigate the peninsula of Minet-el-Beida, north of Latakia in Syria, where a rich Mycenaean tomb had been discovered in 1928. This work began an exceptionally successful field career spanning four decades in Syria and Cyprus. The very first campaigns at the ancient harbor of Minet el-Beida and nearby Ras Shamra—soon to be identified as the capital of the kingdom of Ugarit—established the importance of these sites in the history of the ancient Near East.

Always a restless, questioning spirit, Schaeffer was so intrigued by the evidence for Levantine trade with the West—notably with Cyprus—that he visited the island in 1932 to search for meaningful parallels. His excavations at the rich Early–Middle Bronze Age cemetery of Bellapais *Vounous* in 1933 yielded quantities of remarkable Red Polished pottery, though few eastern parallels were recognized. His subsequent discovery of a major Late Bronze Age urban center at Enkomi *Ayios Iakovos*—a site hitherto viewed as a mere cemetery—convinced him that further investigation would supply useful comparative material for his work on the mainland.

Schaeffer spent much of the Second World War in England, serving as head of Charles de Gaulle's Free French Historical Service. Research in London and Oxford led to a major volume (Schaeffer, 1948), which heralded a new, sweeping vision of interdependent cultures stretching from the Mediterranean to the Caucasus and a fresh approach to archaeological enquiry.

In 1946 Schaeffer directed the first of four field seasons at Arslantepe on the Euphrates and also began excavating at Enkomi *Ayios Iakovos,* where he discovered many tombs as well as fine domestic and public buildings of ashlar masonry (dressed, square-cut stone), all rich in finds.

Schaeffer was appointed general secretary and then vice president of the Committee on Excavations of the Ministry of Foreign Affairs (1946–1949) and member of the French Academy 1953. In the following year a chair in Near Eastern archaeology was created for him at the Collège de France. His inaugural address closed with the enjoinder "to continue with courage, objectivity, and tenacity the pursuit of research," and so Schaeffer himself did, until the very end of his long life.

[*See also* Arslantepe; Enkomi; Ugarit; Vounos; *and the biography of Dussaud.*]

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STUART SWINY

SCHICK, CONRAD (1822–1901), missionary and architect. Schick was born in the village of Bitz, Wupperthal, Germany, and educated in Kornthal, Germany, and at the Pilgrim-Missions College of St. Chrischona, Switzerland. In 1845, at the age of twenty four, he was one of four missionaries sent to Jerusalem to teach mechanical trades to young men. When the program failed, Schick became an agent of the London Jews Society, entrusted with teaching carpentry and other trades to young Jews under the society's auspices at the School of Industry. Schick became the leading architect in Jerusalem in his day. Many of his buildings still stand, including his own home, on the Street of the Prophets. He married in 1853.

Early in his residency in Jerusalem, Schick became interested in the city's antiquities. When Charles Wilson of the British Royal Engineers arrived in Jerusalem in 1864 to carry out the Ordnance Survey of Jerusalem for the Palestine Exploration Fund, he found a willing and able assistant in Schick, who frequently accompanied him on his explorations of ancient cisterns and tunnels. When Wilson returned to Jerusalem in 1866, he made Schick responsible for observing all evidence of construction in Wilson's excavations and for drawing plans of all remains exposed as well as the level of any exposed bedrock. With this series of observations, Schick began his long association with the PEF, and subsequently with the Deutscher Palästina-Verein. During the next thirty-one years, Schick produced a constant stream of articles for the PEF. Because not all of them were published, some of his discoveries are known only from his papers in the fund's archives.

Schick assisted many of the scholars and explorers who worked in Jerusalem and in Palestine generally, including Canon Tristram, Charles Warren, and Claude R. Conder. On his fiftieth year of residence in Jerusalem, Schick received congratulations from the members of all of the ethnic and religious communities then living in the city, an expression of the universal regard and friendship in which he was held. Perhaps the greatest event of Schick's life was the visit of Kaiser Wilhelm II of Germany to Jerusalem in 1898.

Schick remained active to the end of his long life. Much of the work of his contemporaries and their successors owes a great debt to his work. His contributions are only now beginning to be properly appreciated. Although not an archaeologist, but rather an antiquary in the great tradition, he was a careful and meticulous observer known for his honesty, warm personality and his eagerness to share his knowledge of Jerusalem.

[*See also* Deutscher Palästina-Verein; Jerusalem; Palestine Exploration Fund; *and the biographies of Conder, Warren, and Wilson.*]

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RUPERT CHAPMAN

SCHLIEMANN, HEINRICH (1822–1890), German businessman and archaeologist. A disrupted education gave Johann Ludwig Heinrich Julius Schliemann a sense of unfulfilled potential, which propelled him to extraordinary achievement. A clerk's position in Amsterdam (1844) and an aptitude for languages led to an agency in St. Petersburg (1846) where he made his fortune as a commodities dealer. His wealth enabled him to travel widely. Looking for a more genteel activity, Schliemann settled on archaeology, which he pursued by moving just to Paris (1866). In 1869 he fraudulently obtained both American citizenship and an American divorce from his Russian wife, Katharina Lyschina. He rapidly remarried a Greek girl, Sophia Kastromenos, and moved to Athens. Despite Schliemann's claims, Sophia seems to have taken very little part in his subsequent archaeological career. In a derivative archaeological travel book, *Ithaka, der Peloponnes und Troja* (1869), he accepted the identification of the site of Hisarlik, in northwestern Turkey, with Homer's Troy. Excavations followed in 1870–1873, 1878–1879, 1882, and 1890 revealed an impressive little citadel, which had been destroyed by fire and is dated to around 2500 BCE. Much of the metalwork from this citadel disappeared from the Berlin Museum in 1945 and is now in Moscow and St. Petersburg. Schliemann's excavations at Mycenae (1876), Orchomenos (1880) and Tiryns (1884–1885) unearthed Mycenaean-period remains (c.1600–1100 BCE). His final season at Troy produced Mycenaean pottery from overlying strata previously missed, and allowed a correct correlation with the other sites.

Schliemann put archaeology in the public eye. Study of the Aegean in the Bronze Age has grown up around the materials he excavated. He resurrected belief in a historical kernel to the Homeric poems. It is now accepted that his Greek sites document the Heroic Age, but it is not agreed that the Troy excavations prove the historicity of the Trojan War. A rough excavator, Schliemann was nevertheless keenly observant of strata and objects; and the complexity

he discerned at Troy alerted other archaeologists to the need to attempt stratigraphic excavation. Wilhelm Dörpfeld, his assistant from 1882, introduced meticulous architectural recording and analysis into his work. His encouragement of photography and ancillary scientific studies was ahead of its time. Schliemann's business ethics were questionable and his thinking was not always disciplined. Attempts to prove fraudulence in his archaeology, however, have largely failed.

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D. F. EASTON

SCHLUMBERGER, DANIEL (1904–1972), archaeologist and educator, born at Mulhouse, Alsace. Schlumberger studied history and archaeology at Strasbourg and Paris Universities. From 1929 to 1939 he was an inspector in the Department of Antiquities of Syria and Lebanon, then under the French Mandate. His research in Syria centered on the area of Palmyra. From 1936 to 1939, he excavated Qaṣr al-Ḥayr al-Gharbi, uncovering the remains of an Umayyad palace complex (his excavation house is the stage of Agatha Christie's novel *Murder in Mesopotamia*). His preliminary reports—"Les fouilles de Qaṣr el-Heir el-Gharbi" (1939) and "Les origines antiques de l'art islamique à la lumière des fouilles de Qasr el-Heir" (1940) and his subsequent "Deux fresques omayyades" (1946–1948)—shed new light on the origins of Islamic art. He published "Le temple de Mercure à Baalbek-Héliopolis" in 1939.

After World War II, Schlumberger headed the French archaeological delegation to Afghanistan, publishing (1946–1970) a series of articles on his excavations at Lashkari Bazar (1947–1952) and Surkh Kotal (1952–1963) and on his research in Bactria, which culminated with his discovery, in 1964, of a large Hellenistic city, Ai Khanum (Schlumberger, 1965). His publications on Bactria, the Kushan dynasty, Ghandaran art, and the Hellenistic East were summed up in *L'Orient hellénisé* (1970).

A dedicated professor at Strasbourg University beginning in 1955, Schlumberger became a member of the Académie des Inscriptions et Belles-Lettres in 1958. He succeeded Henri Seyrig in 1967 as director of the French Institute of Archaeology in Beirut, where he published additional articles on Palmyra and other sites in Syro-Phoenicia. He died after a partial stroke while at the Institute for Advanced Studies in Princeton, New Jersey. His wife Agnès made possible the posthumous publication of his manuscript for *Qaṣr el-Heir el Gharbi* (1986).

[*See also* Institut Français d'Archéologie du Proche Orient; Palmyra; Qaṣr al-Ḥayr al-Gharbi; *and the biography of Seyrig.*]

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HAFEZ K. CHEHAB

SCHRÖDER, PAUL G. A. (1844–1915), diplomat and linguist whose major contribution to the study of ancient oriental civilization is his grammar of the Phoenician language (1869), which was in use until 1936. Schröder was born in Elsterwerda, Germany, and died in Jena. After studying oriental languages at the universities of Halle and Berlin, he received a Ph.D. from Halle in 1867. Schröder entered the diplomatic service and in 1869 was appointed a dragoman (translator) at the German consulate, later the

German embassy, in Constantinople. From 1888 to 1909 he served as a consul general for Germany in Beirut. Schröder's grammar, an expanded version of his Ph.D. thesis, to a great extent used the traditions about Phoenician and Punic from classical sources, including the Punic passages in Plautus's comedy *Poenulus*. He also utilized newly discovered epigraphic material from Phoenicia and North Africa. He tried to establish a reliable text although he did not have access to the original inscriptions. The grammar thus also contains an appendix of the most important Phoenician and Punic inscriptions in facsimile available at the time. During the forty years of his diplomatic service in Constantinople and Beirut, Schröder published a series of articles about newly found Semitic inscriptions written in Phoenician, Palmyrene, and Nabatean and on topics pertaining to the history and geography of the Ottoman Empire. He also supported by his political influence the geographical survey of Gottlieb Schumacher in Transjordan.

[*See also* Phoenician-Punic.]

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WOLFGANG RÖLLIG

SCHUMACHER, GOTTLIEB (1857–1925), architect, engineer, and surveyor. Born in Zanesville, Ohio, Schumacher received his early education in Buffalo, New York. His father, Jakob, had emigrated from Tübingen, Germany, to the United States, together with other members of a religious sect called the Tempelgesellschaft. The family moved to Palestine in 1869 and settled in Haifa, where Jakob Schumacher worked as an architect and engineer. He designed most of Haifa's German Colony, as well as many buildings for the Christian communities in the Galilee. Gottlieb Schumacher finished high school in Haifa and studied engineering in Stuttgart from 1876 to 1881. He then returned to Haifa, where he soon became the leading figure in house and road construction. The Ottoman government promoted him to chief engineer of the province of Akko. Among the many buildings he designed are the Scottish hostels in Safed and Tiberias, the bridge over the Kishon River, the Russian hostel in Nazareth, and the wine cellars in Rishon Lezion.

Schumacher also carried out a survey of the Golan in order to determine the line for the railway to be built from Damascus to Haifa, and he constructed the extension of the mole in the port of Haifa. His surveys of the Golan, Hauran, and Ajlun stirred his interest in archaeological remains. He subsequently not only drew the map of Transjordan, published in ten sheets, but also recorded its ancient monuments and sites. Beginning in 1886 he published numerous articles about his discoveries, mainly in the *Zeitschrift des Deutschen Palästina-Vereins*. Between 1903 and 1905 Schumacher directed excavations at Megiddo, the first investigation of this important tell, on behalf of the Deutscher Verein zur Erforschung Palästinas. Even though field methods were in their infancy, he managed to establish eight levels of occupation. He published the results in 1908; a second volume, by Carl Watzinger, followed in 1929.

An outstanding architect and scholar, Schumacher was given an honorary Ph.D. by the University of Halle in 1893 and the title Königlicher Baurat by the king of Württemberg in 1904. After World War I he did not return to Haifa until 1924, where he died in his house on the Carmel.

[*See also* Ajlun; Golan; Megiddo; *and the biography of Watzinger.*]

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VOLKMAR FRITZ

SCRIBES AND SCRIBAL TECHNIQUES.

Widespread literacy is a phenomenon strictly of the modern world. In ancient times and long after, the chore of creating, maintaining, and interpreting written records fell to a small cadre of professionally trained scribes. What is known of their training and activities is perforce limited by accidents of preservation of written materials from antiquity and so is virtually restricted to those from Mesopotamia and Egypt. (See the extensive summaries on this subject by Jeremy A. Black and W. J. Tait, Edward Wente, and Laurie E. Pearce in Sasson, 1995, pp. 2197–2209, 2211–2221, and 2265–2278, respectively). James L. Crenshaw (1985) insists that far less can be asserted about biblical education than has been believed, and Paul S. Ash argues (necessarily from silence, primarily) that tenth-century BCE Palestine "held a society which knew of writing but had little or no use for it" (Ash, 1995, p. 72).

Craft. Mesopotamian scribes wrote with light touches of the corner of a reed stylus of triangular cross section, impressing wedges into the smoothed surfaces of a shaped mass of clay, usually of a size to be comfortably held in the palm of a hand. There are on average more wedges in a cuneiform sign than there are strokes in a letter of an alphabet, but since a sign represents a whole syllable or a whole word, the speed and efficiency of writing are probably comparable in the two systems. Cuneiform is more economical in the use of materials: in mundane documents, virtually no space is left between signs or between lines of signs; scribes were good at using the right amount of clay to accommodate approximately the length of the text to be written. When monumental inscriptions were incised on walls, the stonecarvers were not necessarily themselves literate, but imitated a text prepared on a clay tablet. [*See* Cuneiform.]

Egyptian scribes wrote with a reed pen on papyrus; the hieroglyph for *scribe* represents the tool-kit, including pen, water-jar, and palette with cakes of dried ink. A scribe would usually work in a cross-legged seated position, with the papyrus sheet or the exposed portion of the papyrus roll resting on the lap. Hieroglyphic inscriptions on walls would be roughed out initially by a literate scribe, and subsequently painted with color and decorative detail.

West Semitic writing was primarily with pen and ink on receptive surfaces—papyrus, skins, or potsherds. The nature of the writing instrument and the physical process of writing can be determined by careful examination of some original documents (Daniels, 1984). Scribes writing in Akkadian and in Aramaic are depicted in Assyrian reliefs standing side by side (Driver, 1976, fig. 4 and pls. 23–24), with the latter rather awkwardly, it seems, holding a sheet of flexible papyrus or leather draped over his outstretched left hand. Kurt Galling (1971, p. 212) states that when the free end of the material hangs free, it is papyrus, and when it is rolled, it is leather. At Ugarit, one of doubtless many places where Egyptian and Mesopotamian culture mingled, the pen-written West Semitic script was successfully adapted to the clay medium by imitating the letterforms with impressed wedges, rather than trying to incise the shapes with a pointed tool (as most West Semitic monumental inscriptions were done) or by writing with pen and ink on the surface of pliable clay as a supplement to a cuneiform text (as was done later on in the so-called "Aramaic dockets" of Neo-Babylonian and Achaemenid times).

Duties. Mesopotamian scribes could work either in private enterprise (even some merchants were literate) or for the temple or palace. [*See* Palace.] Scribes in the first group drew up commercial and legal documents, saw to the payment of rents and wages, and overall kept the economy going. They could also do free-lance work (e.g., writing letters for ordinary people), and their offices were often at the city's gates. Temple scribes (distinct from the priesthood) were responsible for administering the considerable assets and operations of the temple complex. Palace scribes prepared diplomatic documents—letters and treaties—and maintained annals; it was also in connection with the palace that cuneiform scholars maintained their belletristic and scientific traditions—both the poetry echoed in biblical and modern literature and the specialities of divination, astronomy, and astrology. Colophons at the close of literary and scientific tablets attest to the care with which valued texts were preserved. (Elaborate colophons also characterize manuscripts from the Islamic world virtually to the present day.)

Owing to the fragility of papyrus, fewer ordinary documents have survived from Egypt than from Mesopotamia, where clay tablets were used. [*See* Papyrus; Tablet.] As a result, what is understood of the place of writing in everyday life in Egypt is limited to what was believed worthy of preservation in temples or in tombs, rather than the ephemera of commerce such as make up the great majority of extant cuneiform tablets. [*See* Tombs.] In Egypt, all scribes seem to have been government workers, engaged in surveying land and assessing the harvest, for the purpose of levying taxes; they also supervised construction and kept the accounts involved in maintaining workers and armies. Ordinary persons in need of a legal document would go to a government clerk to have it drawn up. Scribes also produced and maintained Egypt's literary heritage, although there seems to have been little antiquarian sense: wisdom was valued for itself, not for its lineage.

From the Levant, climate prohibits all but the scarcest survival of documents from antiquity; the clay tablets from Ugarit suggest that scribes there engaged in essentially the same activities as their Mesopotamian counterparts. [*See* Ugarit.] The neatness of script on most surviving ostraca

indicates that care was taken in the education of scribes during the first millennium BCE, but little can be said about their everyday business. [*See* Ostracon.] Most surviving inscriptions are royal assertions of dominion, probably not typical of written output.

Archives. From Mesopotamia, three main kinds of collections of tablets have survived: accidental conglomerations, private archives, and palace archives. (Temples do not seem to have been in the business of collecting documents, and tablets found there pertain to their own mundane administrative activities.) Much the most common sort of grouping is the first, and tablets recovered from chance accumulations represent the discards of the scribal trade: tablets would not usually be saved for more than a few decades. Private archives could represent the records of a business covering a couple of generations; also counting as a private archive are the libraries of individual scholar-scribes, who might own a fine collection of literary and scientific works. Palaces would need to preserve records of diplomacy and of the glorious deeds of rulers—and could bear on their walls monumental illustrated accounts of the same. Several kings, notably Ashurbanipal, are renowned for their activities in preserving the Mesopotamian literary heritage.

Egyptians distinguished "libraries" from "archives." Mundane documents had no particular value, and the papyrus on which they were written could be routinely reused. The fourteenth-century BCE Amarna tablets represent an archive that survived presumably because it was simply abandoned along with the city of Akhetaten. [*See* Amarna Tablets; Amarna, Tell el-.] Libraries, however, are mentioned as early as the Old Kingdom, and in Egypt temples did serve as repositories for valued literary works: Ptolemaic temples include rooms whose inscriptions include catalogs of the books to be kept there. Private libraries could be interred in chests in their owners' tombs. Some of the earliest texts of Egyptian literature, the Pyramid texts, continued to be copied down to the Roman period.

Biblical attestation of the storage of documents is found in the naming of works including the *Book of the Wars of the Lord* (some five such titles are found in the Hebrew Bible)—no trace of which has survived—and in the incorporation of supposed verbatim texts of letters and decrees in the historical books. Some theories of the composition of the prophetic books would seem to require that records were kept of prophets' utterances, which were subsequently arranged and transcribed. Most forms of the Documentary Hypothesis would require extensive compositions (J, P, E, etc.) to have been written down, collated, copied, and subsequently lost or destroyed. Again, no physical evidence of such texts survives. [*See* Libraries and Archives; Biblical Literature.]

Education. From earliest times, there is evidence that scribes in Sumer were trained in schools. Mesopotamian children intended for the scribal life (some of their copybooks survive) had to learn to shape tablets and to make the various wedges that comprise cuneiform characters, to write the signs, and to read Sumerian (their native language being Akkadian or Amorite). [*See* Sumerian; Akkadian.] They learned Sumerian by copying out, and thus incidentally preserving, literary compositions. The standard formulary of letters and contracts was also mastered. Besides language and literature, the students learned mathematics and music.

Education in Old Kingdom Egypt seems to have been on an individual apprenticeship basis, with officials training their successors. Schools appear in the First Intermediate period, with decentralization of the government. Children began their studies at about the age of ten. Writing lessons involved well-known literary works in hieratic script; the language remained that of the Middle Kingdom, during which the works were composed, although the spoken language eventually diverged greatly. After some years, the young scribes chose whether to enter administration, the priesthood, or the military. Only late in the educational process would a student learn hieroglyphs. [*See* Hieroglyphs.]

Textbooks. Among the very earliest documents known (from Uruk IV, c. 3200 BCE) are prototypes of the lexical lists that dominated Mesopotamian scholarship for thousands of years, serving as both textbooks and reference works. [*See* Uruk-Warka.] Philological lists include sign lists, vocabularies, syllabaries, and grammatical lists; eventually, lists were maintained of everything under the sun and served both advanced students and mature scholars.

Egyptian study materials began with the Satire on the Trades, which mocks professions other than that of the scribe; portions of other literary works found on cheap ostraca (rather than carefully prepared papyrus), replete with errors, show that these too were studied in school. There were also, as in Mesopotamia, lists of signs and of vocabulary organized by topic.

It is often suggested that the wisdom literature of the Hebrew Bible comprises instructional texts, but nothing in the nature of school materials has survived beyond a handful of sloppily written abecedaries.

Multilingualism. Mesopotamian scribes, who spoke Akkadian or Amorite and in the first millennium BCE probably Aramaic, studied Sumerian long after it had passed out of use. Scribes in outlying lands, such as Urartu or the Aramean kingdoms, presumably had to learn a form of Akkadian, since bilingual monuments exist with native and Assyrian versions of their inscriptions. In Hittite-speaking Anatolia, Hattic and primarily Hurrian served a purpose analogous to that of Sumerian in Semitic-speaking Mesopotamia. [*See* Hittite; Hurrian.] From Ugarit, along with ordinary Sumerian–Akkadian vocabularies, a few quadrilingual ones include Ugaritic and Hurrian translations. In the Mesopotamian heartland, however, there seems to have been little interest in the languages of the "barbarians" of other countries.

A select handful of New Kingdom Egyptian scribes

learned Akkadian, Canaanite, Hittite, and one or another Aegean language for use in international relations.

Scattered anecdotes in the Bible (e.g., *2 Kgs.* 18:26), as well as the presence of extended passages in Aramaic within the Hebrew context, show that, from at least the early first millennium BCE, scribes (though not the common people) could converse in the lingua franca, Aramaic. The scholars of Rabbinic Judaism (beginning in the early first millennium CE) were fully at home in both Hebrew and Aramaic, but by some point toward the middle of the first millennium, at the latest, Hebrew was no longer spoken. The scriptures were translated into Greek (the Septuagint) for the Jewish community in Alexandria, Egypt, by the second century BCE, and into Aramaic (the Targums) beginning at about the same time (Aramaic versions of several books are found among the Dead Sea Scrolls). [*See* Hebrew Language and Literature; Greek; Dead Sea Scrolls.]

[*See also* Literacy; Writing and Writing Systems; *and* Writing Materials.]

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PETER T. DANIELS

SCROLL. In antiquity the exercise of writing employed lengths of pliable material, generally papyrus or parchment, stored by rolling from end to end and known as a scroll. The advantages of the scroll for recording and storing lengthy texts in a relatively compact form made it a widely used and enduring device in the ancient Near East from earliest times until the medieval period. Although the literary contents of ancient scrolls remain the interest of all students of antiquity, archaeologists are also concerned with the technical and material aspects of this pervasive and influential bibliographic form.

Given the factors of a climate favorable to both the cultivation and the preservation of papyrus, and the particular funerary practices (i.e., entombment) of the ancient Egyptians, it is no surprise that the oldest and most numerous discoveries of ancient scrolls are from Egypt. The oldest extant writing on papyrus dates from the fifth dynasty (c. 2750–2625 BCE). Although papyrus was by far the most commonly used scroll material, Egyptian documents of equal antiquity written on parchment are also attested. Owing to its capacity to contain lengthy texts, the scroll was the primary vehicle of Egyptian literature, the most commonly preserved example being the collection of funerary texts referred to as the Book of the Dead. The Aramaic papyri from Elephantine in southern Egypt also illustrate the suitability of the scroll for transmitting literary texts. Most of the texts from the archives of the Jewish military colony at Elephantine were letters or legal documents consisting of single sheets of papyrus folded from bottom to top and then sealed. Two of the texts, however, The Sayings of Ahiqar and a copy of the Persian emperor Darius's Behistun inscription, were written in multiple columns on lengths of papyrus rolled from left to right into scrolls (Bezalel Porten, "Aramaic Papyri and Parchments: A New Look," *Biblical Archaeologist* 42 [1979]: 74–104). Numerous Greco-Roman papyri have been recovered from excavations of rubbish dumps in ancient Egyptian towns, further demonstrating the historical persistence of this writing device. [*See* Elephantine.]

The features of compactness and portability that afforded convenience and economy of use for ancient writers also made the scroll the most vulnerable to decay. The use of the scroll outside of Egypt is therefore attested primarily from literary sources rather than archaeological remains. The earliest references to the use of scrolls in Mesopotamia date to the Neo-Assyrian period (mid-eighth–mid-seventh centuries BCE). The archaeological evidence is limited primarily to depictions in Assyrian reliefs of two scribes, one writing in cuneiform script on a tablet and the other writing in Aramaic on rolled material (James B. Pritchard, ed., *The Ancient Near East in Pictures Relating to the Old Testament,* 2d ed. Princeton, 1969, nos. 235, 236). Although the earliest references to written documents in biblical literature are to tablets or stones, the historical influence of Egypt over the southern Levant suggests the use of the scroll there by at least the mid-second millennium BCE. Archaeological evidence of the use of papyrus scrolls in ancient Israel includes impressions of papyrus fibers on the reverse side of clay seals and bullae, such as the one bearing the name of Baruch, son of Neriah, the seventh-century BCE scribe described in *Jeremiah* 36:4 as writing a scroll of the prophet's utterances (Nahman Avigad, *Hebrew Bullae From the Time of Jeremiah,* Jerusalem, 1986).

The Dead Sea Scrolls provide the best example of ancient scrolls from an identifiable, though secondary, archaeological context. Beyond the wealth of information contained within the texts themselves, they reveal many technical details regarding the manufacture, use, storage, and repair of parchment scrolls in antiquity. Common scribal techniques such as ruled lines and margins and a columnar arrangement of the text are readily observable from these scrolls. Other technical aspects of manuscript preparation are observable as well, such as the fastening of parchment sheets by sewing or gluing, the mixing of the carbon-based ink, and the storage of the scrolls in linen wrappers and clay jars.

Studying the material and technical aspects of ancient scrolls yields a greater understanding of the material and economic prerequisites for writing in antiquity, such as the manufacture or acquisition of papyrus, parchment, ink, and implements; it also reveals the technical skills, daily functions, and the social, political, and religious roles of scribes in the cultural systems of the ancient Near East.

[*See also* Codex; Papyrus; Parchment; Scribes and Scribal Techniques; Writing Materials.]

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BARRY A. JONES

SCYTHIANS. The earliest mention of the Scythians is in Assyrian records dating to the reign of Sargon II (prior to 713 BCE). They were called Ashkuzi by the Assyrians; a similar name is known from the Hebrew Bible in the pedigree of Noah's descendency (*Gn.* 10:1–3): Askeneze was the son of Gomer (i.e., Cimmerians). According to Herodotus (4.11) the Scythians came from the steppes east of the Araxes River (modern Syr Darya) and were pushed westward by the drying up of the steppe and by their wilder eastern neighbors, the Massagetes (cf. also Diodorus Sicarus 2.43–37). The language of the Scythians belongs to the Iranian group. Herodotus (1.5–10) gives two legends of their origin. The first describes Skythes as the youngest son of the first man, Targitaos (son of Zeus and the daughter of the Borystenes River, now the Don). He had two elder brothers, but only Skythes was able to touch the four gold objects that had fallen from the sky: plow, yoke, axe, and bowl. In the second version, the mother of the three sons is a goddess whose upper body is human and whose lower body is in the shape of a snake; their father is Herakles. Because Skythes was the only one who could successfully handle their father's bow, he became the ancestor of the Royal Scythians. A gold vessel from the Kul'-Oba kurgan displays this myth: two men hurt themselves while trying to handle the bow, and only the third is successful. Though the first mythological story speaks in favor of an agricultural ancestry, the Scythians were true nomads, with mounted archers as their main military force.

The earliest Scythian finds from the Kelermes kurgans (discovered in 1903–1904 and dated to the mid-seventh century BCE) suggest that their earliest material culture strongly resembles that of the late Cimmerians (known from the Novocherkassk hoard), but their own artistic expression initially combined the traditional Animal Style of northern Eurasia with the arts of Media and neighboring areas in the Near East, where the Scythians carried out their military activities. [*See* Cimmerians.] According to Herodotus (4.1) Scythian military supremacy there lasted twenty-eight years, but their actual presence in the Near East extended for more than a century. Their center north of the Caucasus Mountains remained in the Kuban area (there are only a few early rich Scythian tumuli in the Ukraine); in the Near East, their kingdom had its core in the area of Lake Urmia. In the 670s BCE, the Scythians became dangerous neighbors for Urartu and also for the Assyrians. [*See* Urartu; Assyrians.] In 673 BCE Esarhaddon gave his daughter in marriage to the Scythian king Parthatua (Protothyes in Greek sources), apparently seeking an alliance against Urartu and the Medes. [*See* Medes.] Protothyes' son Madyas later helped the Assyrians when the Medes attacked Nineveh (Herodotus 1.103). [*See* Nineveh.]

Scythian power apparently grew after the middle of the century, but the peak of their military raids in the Near East falls between 630 and 625 BCE. Using the opportunity created by the Assyrian loss of power, Scythian cavalry plundered Syria and Palestine. They were only stopped at the

Egyptian frontier by Psammetichus, who had to pay the Scythians richly to spare his country. The impact of the military success of the Scythian cavalry and its savagery and cruelty made a strong impression: the Hebrew prophets (Isaiah, Jeremiah) used these campaigns in their imagery to describe their terrifying visions. At the end of the seventh century BCE, the time of the final collapse of the Assyrian Empire (609–605 BCE) and then of Urartu in the sixth century (between 590 and 585 BCE), the Scythians experienced problems with the rising power of the Medes. Herodotus (1.106) describes the killing of Scythian leaders during a feast given by the Median king Cyaxares. In the early sixth century BCE, the core of the Scythian Empire returned, slowly, from the Kuban region to the northern Pontic steppes.

Characteristic Scythian art appeared in the late seventh century BCE, during the period of their military campaigns. It joined Iranian traditions with the Eurasian Animal Style to create a new style that owes much to the artistic mastery of the Ionians. The best works of early Scythian art found in Asia Minor (at Sardis and Ephesus), in the Kuban region, the northern Pontic area, and in Hungary may well have been executed by Ionian artists, who also served the Persians (see R. Stucky, "Kleinplastiken, Anatolisches Zaumzeug aus Ost und West," *Archäologie Mittelungen aus Iran* 18 [1985]: 119–124; 20 [1987]: 161–165). [*See* Sardis; Ephesus.] One of the earliest complexes of Scythian art is found in the treasure associated with the site of Ziweye, in Iranian Kurdistan, and in several of the Kelermes kurgans (see Schiltz, 1994).

The Royal Scythians inhabited the Pontic steppes. They were nomads in the full sense of the word, moving with their herds across that vast pastureland. Their families lived in wagons, and horses served not only for riding and transport but as a food source. Herodotus (4.110–117) reports Scythian farmers, plowmen and other inhabitants of the Pontic area between the Danube and Don Rivers (east of the latter was the territory of the Sauromatae). Archaeological investigations have uncovered cultures with settled population and forts in the forest-steppe zone north of the Royal Scythians, to whom their neighbors paid some kind of tribute. The Scythians, also in the sixth century BCE, attacked their western neighbors, and their military raids reached as far west as present-day Austria and the Polish western frontier. In the latter area, a hoard was found at Witaszkowo (Vettersfelde) with Scythian parade armor: pieces of Ionian manufacture dated to about 540 BCE (see Schiltz, 1994). Scythian military supremacy reached its peak there, and the peoples affected by their raids learned their technique of horsemanship. Herodotus (4.118–143) describes the Scythian campaign of Darius in 512 BCE, from which the great king of Persia had to retreat, when his army became exhausted from chasing the Scythians across the steppe.

As with other nomadic cultures without characteristic traces of dwellings, the main archaeological source for Scythian culture is their monumental tombs under barrows of extraordinary dimensions. The one at Tolstaja mogila (see Mozolevs'kij, 1979) was 8.5 m high and consisted of 1,500 cu m of earth: the preserved lateral chamber (the central burial was partially destroyed by tomb robbers) was 7 m under the present ground level—more than 15 m under the top of the tumulus. Horses and even servants were sacrificed to the noble dead, and the body of a woman, deposited later in the undisturbed chamber, was buried with a small boy and several servants. Her body and funeral bed were lavishly equipped with precious objects: gold jewelry, toilet equipment, glass vessels, and fine Greek pottery. Hidden in a special pit, near the main chamber, was a sword in a gold sheath and a gold pectoral weighing 1,150 gr. There are more than twenty truly royal barrows; the more numerous graves of middle-class Scythians are less well equipped and lack gold objects.

The bow and arrow were the main weapons used by the Scythians. The *gorytus* was a sheath protecting them, while a short sword called an *akinakes* was protected by a sheath. In the burials of the wealthy, both were covered by sheet gold decorated in relief. Most of the known examples are Greek works depicting animal fights or scenes from Greek mythology. Horse harnesses included many decorated ornamental parts for covering the animal's forehead, nose, and chest. Scythian noblewomen wore a high tiara; the dress in which they were buried was covered with sheet gold ornaments decorated in relief. Poles topped with bells and other objects were paraphernalia used in shamanistic rituals; the Animal Style was the art of shamanistic religion.

The Scythians rejected the Greek way of life, but their aristocracy frequently used jewelry and toreutics made by the Greeks especially for them and adapted to their taste. The best works of Scythian art were made by Greek craftsmen, first by the Ionians and then, in the late fifth century BCE, by those from the Athenian confederacy (e.g., the Solokha comb). The golden age of Scythian art in the fourth century BCE was created by masters who stemmed from both Athenian and Macedonian schools.

Representations of Scythians beginning in the latter part of the fifth century BCE show them in distinctive clothing, including trousers; fourth-century iconography shows a turn from warlike scenes to amicable negotiations and myths propagating the legitimacy of the dynastic rule. The simpler objects in the Animal Style, mainly showing predators attacking herbivores, were made by local craftsmen in a style reminiscent of woodcarvings. Early Animal Style Scythian art in the represents organic forms, while the later works dissolve the bodies into individual parts.

In the fifth century BCE, the Scythians were a fairly strong military power respected by both the Greek Pontic cities (Olbia was a Scythian protectorate) and their more barbarian neighbors—the Getae and other Thracians living in the

eastern Balkans and the Sauromatae (later called Sarmatians) east of Don—though the last mentioned slowly moved westward. A second peak of Scythian power and the golden age of their art were reached toward the middle of the fourth century BCE under King Ateas. Ateas subdued Dobrodgea (since called Scythia Minor), south of the Danube River, and fought battles against the Triballoi in the central Balkans and against Philip II of Macedon. To Ateas's reign date the best-known Scythian tumuli, with royal jewelry and toreutics (as at Tolstaya mogila, Kul'-Oba, and Great Bliznitsa), and the introduction of Scythian coinage. In his last battle against Philip, in 339 BCE, Ateas (then ninety years old) was killed and his army defeated. Philip II took twenty thousand women and children as part of the booty, in addition to an equal number of horses. In 331 BCE, Olbia, with the help of the Scythians, resisted an attack of the Macedonian general Zopyrion, sent by Alexander the Great; during the third century BCE, however, the Scythians lost most of the Pontic steppe to the Sarmatians, and their kingdom became confined to the inner Crimea and to a coastal strip between Crimea and Olbia.

The Scythian kingdom in the Crimea, with its capital at Scythian Neapolis, fought, with more or less success, its Greek neighbors and the mountainous Taurae in the southern Crimea. In 110 BCE, the Scythians were severely defeated by Diofantes, a general of Mithridates VI of Pontus, but they maintained some of their positions until the third century CE, when they finally disappeared from history.

[*See also* Anatolia, *article on* Ancient Anatolia.]

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SCYTHOPOLIS. *See* Beth-Shean.

SEAFARING. By learning to build vessels that could travel over open water and by attaining the knowledge necessary to operate and guide them, sailors in antiquity transformed watery frontiers from insurmountable barriers to superhighways. Over those routes, cultures were able to communicate in the widest sense of the term, facilitating the process of human development. The earliest evidence for Mediterranean seafaring are flakes of obsidian found on the Greek mainland in Franchthi cave in Upper Paleolithic and Neolithic strata (c. eleventh–fourth millennia) that originated on the Aegean island of Melos. This material could only have reached the mainland by means of water transport, as Melos was never connected to the mainland. It is not known how Paleolithic seafarers learned of the existence of obsidian on Melos, but it seems likely that Melos was only one of many islands visited by them without their leaving any evidence of their visits.

There are no known depictions of the vessels employed by these early seafarers. Perhaps they voyaged on primitive reed rafts, similar in construction to the *papirella* built until recently on Corfu. In an archaeological experiment, a modern 6-meter-long *papirella* was paddled successfully from Lavrion on the southwest coast of Attica to Melos, indicating that such voyages were at least theoretically possible. Skin craft are another, although less likely, possibility. Later, Neolithic tools would have permitted the construction of dugouts (monoxylons).

In antiquity, hulls were built in a method quite different from that used today. After raising the keel and posts, a modern shipwright attaches the frames to the keel and then builds up the hull's shell around the framing system, known as frame-first, or frame-based, construction. The shipwright's ancient counterpart, however, after preparing the vessel's keel and posts, built the shell of the hull's planking before inserting the frames into it. This method is known as shell-first, or shell-based, construction.

The hulls of all seagoing ships built before the end of the Roman period that have been excavated in eastern Mediterranean waters were edge-joined with closely spaced mortise-and-tenon joints. The joints were locked in place with wooden pegs, usually driven from inside the hull. No caulking was required, as the wooden planks swelled upon contact with water, effectively sealing the planking seams.

Other forms of hull construction existed simultaneously. Pharaonic Egyptians went to sea in hulls that apparently were held together primarily with longitudinal lashings. Unpegged mortise-and-tenon joints served to seat the planking. This construction method was used on the (nonseagoing) Cheops ship found at Giza. [*See* Giza.] Lashed hulls were particularly useful for ships on the Red Sea run to Punt. For those ventures, ships were built on the Nile River and then dismantled to permit them to be carried overland to the Red Sea coast, where they were reassembled for the voyage.

Until fairly recently, blue-water sailors had only three options for propelling their vessels: paddling, rowing and sailing. Paddlers sit facing the vessel's bow, usually in a kneeling position. Energy is transferred through the bodies of the paddlers to the vessel because the paddles are used as levers.

SEAFARING. *Painted vase showing a ship and animals.* Egypt, Predynastic period (c. 3400-3000 BCE). Inv. EO 304. (Erich Lessing/Art Resource, NY)

The earliest-known depictions of Aegean ships (third millennium) illustrate what appears to be a type of vessel that is long and narrow with rows of lines on either side. The lines probably represent paddles rather than oars. Paddling requires significantly less inboard space than rowing, as paddlers must sit next to the sides of a vessel; therefore, narrow boats would have been paddled rather than rowed. Aegean ships were still being paddled in waterborne cultic races/processions as late as the seventeenth century BCE, even though this mode of propulsion was no longer suited to the contemporary craft used in the celebrations. Paddling thus appears to have had a long tradition in the Aegean.

In rowing, the oar is held in an oarlock or rope grommet attached to the vessel's caprails, which transfers energy directly to the vessel. Normally, the oarsman sits facing the vessel's stern and pulled the oar toward his chest while leaning backward. As rowing requires the use of lower-body muscles during the stroke, it is a far more energy-efficient manner of propulsion than paddling.

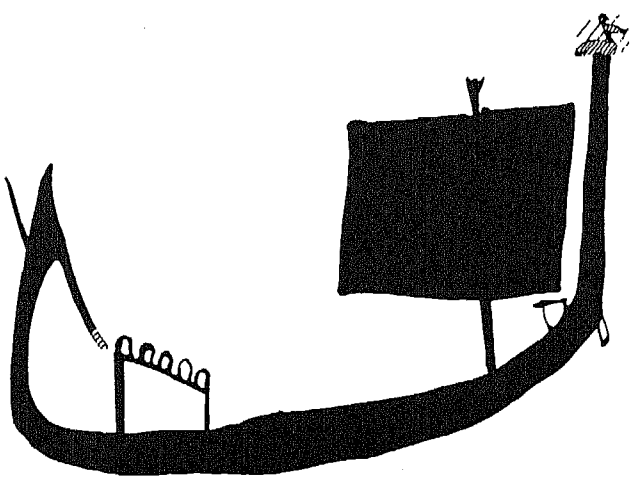
The Neolithic colonization of Crete, during the latter part of the eighth millennium or the early seventh, appears to have been a result of an organized migration. In order to establish themselves on Crete, those early colonists must have transported at least 15 tons of breeding-stock grain and personal items in a single sailing season. Moving such masses of material would have been virtually impossible if the vessels were paddled. This consideration suggests that rowing, and/or the sail, was known by the Neolithic period in the Aegean.

A ship painted on a Gerzean-period jar carries the earliest known depiction of a sail; it is roughly square in shape and spread on a mast stepped in the ship's bow. Throughout the Bronze Age, the boom-footed sail, in a variety of shapes and variations, remained the only sail in use. In this sail system, the boom was lashed to the mast and the sail was set and lowered by raising the yard to the masthead by means of halyards. Such a rig did not permit reducing the sail. To take the sail in, the crew had to lower and remove it and then replace it with another, smaller sail.

The boom prevented the use of shrouds—the lines running from the masthead to the sides of a ship that normally supply lateral support. In place of shrouds, at least on Bronze Age Egyptian, Syro-Canaanite, and Cypriot ships, seagoing ships employed lateral cables attached to the bottom of the mast, about the height of the boom.

Toward the end of the Late Bronze Age, a new and innovative form of sail came into use. This rig, termed the brailed sail, did away with the boom. Instead, a system of lines (brails) attached to the foot of the sail was carried through vertical rows of rings sewn to the sail and carried over the yard back toward the stern. The brails acted like modern Venetian blinds. The sail could be more easily controlled by hauling on—or releasing—the brails. This apparently permitted greater ability in sailing to windward. Indeed, the enhanced seafaring abilities that mark the beginning of the Iron Age are probably to be attributed primarily to the appearance of the brailed sail.

The origins of the brailed sail are unclear. Some New



SEAFARING. *Earliest known depiction of a sail, painted on a Gerzean jar.* (After Frankfort, 1924, pl. XIII)

Kingdom depictions show ships carrying a prototype sail that was raised to the yard, yet still carries a boom. It is unlikely, however, that the brailed sail was an Egyptian invention. The brailed rig seems to have come into general use in the eastern Mediterranean in about 1200 BCE. It appears prominently on both the ships of the attacking Sea Peoples as well as those of the defending Egyptians in the scene of Rameses III's naval battle at Medinet Habu (see below). All depictions of Aegean ships, down to the end of the thirteenth century BCE (Late Helladic IIIB), in which the type of rig can be identified, show them carrying boom-footed rigs; those dating to the twelfth century BCE (and later) are all depicted carrying brailed rigs.

Sails were woven primarily of linen. No remains of sails have been found on any ancient Mediterranean shipwrecks; however, part of a sail, with a wooden fairlead still attached, was found among the wrappings of a second-century BCE mummy.

The square sail was intended primarily for sailing before the wind. Crews either took to their oars or bided their time when winds were contrary. The ability of a ship mounting a square sail to sail into the wind depends on a variety of considerations, including the specific type of rig and the design of the hull and its ability to prevent drift to leeward. The *Kyrenia* II, a replica of a fourth-century BCE merchantman, employing a brailed sail, was able to sail 50–60 degrees (4–5 points) off windward. A boom-footed sail would have severely hampered these abilities.

The lack of shrouds, and the curious consideration that seagoing ships were built with their keel (or keel planks) rising upward, inside the hull, instead of protruding below it (where it would have served to prevent leeward drift), both suggest that the Bronze Age seafarers who employed the boom-footed square sail were not unduly concerned with utilizing winds from far off the stern.

From the lines used to control ships' sails to the hawsers, which allowed ships to anchor, ropes were an integral part of ships' equipment, used for a variety of purposes. In antiquity, a variety of fibers were used in rope making.

Models of Middle and New Kingdom ships that have been preserved with their rigging have a number of recognizable knots, primarily hitches and lashings. While the use on models of such knots does not necessarily prove their use at sea, it does indicate that such knots were known.

The ability to navigate to a destination after crossing an expanse of water, often out of sight of land and seemingly lacking in directional signs, is a prerequisite of seafaring. In antiquity the sailing season was relegated primarily, although not exclusively, to the summer months. During those months the predominant wind in the eastern Mediterranean is northwesterly. This had a profound influence on sea routes. With a square sail it was relatively easy to reach Africa from Europe. Returning was, however, another matter. A return trip required a counterclockwise voyage around the entire Levantine coastline. Although there is little archaeological evidence for it, ancient Mediterranean seafarers must have had access to a broad body of knowledge relating to navigational techniques and meteorology. At the same time, a lack of navigational tools need not reflect a lack of navigational knowledge. It is possible to have a remarkably developed navigational system that would leave no trace in the archaeological record, beyond evidence that voyages were indeed being made.

Ancient navigation was an art, rather than a science, and was based on an broad knowledge of position-locating factors committed entirely to memory, as studies of Polynesian navigational techniques have demonstrated. In Oceania, no position-determining instruments were ever carried on board ships, despite remarkable feats of navigational skill. Theoretically at least, a similar situation may have existed in the Mediterranean during the Bronze and Iron Ages.

There are two methods for determining the direction of land lying beyond the horizon with birds. In one, land birds that were unable to land on water—ravens, crows, doves, and swallows—were carried on board ship and released when needed. Upon gaining height, if the bird saw land it would invariably make a beeline toward it, and freedom, indicating the direction of the nearest landfall. If, however, it did not sight land, the bird had no choice but to return to the ship. This land-finding technique is of high antiquity; Noah (*Gn.* 8:6–12), as well as his Mesopotamian counterpart Utnapishtim, are reported to have used this land-finding method. Seabirds have also been utilized as a navigational aid. By acquiring an intimate knowledge of the habits of seabirds that nest on rookeries on shore yet feed far out to sea, it is possible to determine landfall by taking careful note of the direction in which flocks of seabirds fly in the morning or during the late afternoon.

As has been shown by Oceanic navigators, winds can be significant indicators of direction. Before the introduction of the magnetic compass there was the wind rose. By noting the "signature" characteristics of each wind, it was possible to determine the direction from which it blew. The Phoenicians are credited with introducing the wind rose into the Mediterranean. [*See* Phoenicians.] Homer knew of four winds. Later Greeks developed this wind rose into the eight-wind system portrayed on the first-century BCE Athenian Tower of the Winds (horologium or water clock).

Winds, however, are directional indicators of a secondary nature that must be compared with more reliable directional phenomena. When in sight of land, landmarks were valuable navigational aids. In classical times, seafarers could avail themselves of *periploi*, "handbooks" containing information on anchorages, landmarks, and other details valuable to seafarers. The sun could also be used as a navigational aid, although its points of rising and setting vary throughout the

year. However, only stellar navigation—a sidereal compass—can supply fixed points in open water. As demonstrated by Oceanic navigators, stellar navigation is based on an intimate knowledge of the rising and setting points on the horizon of numerous stars.

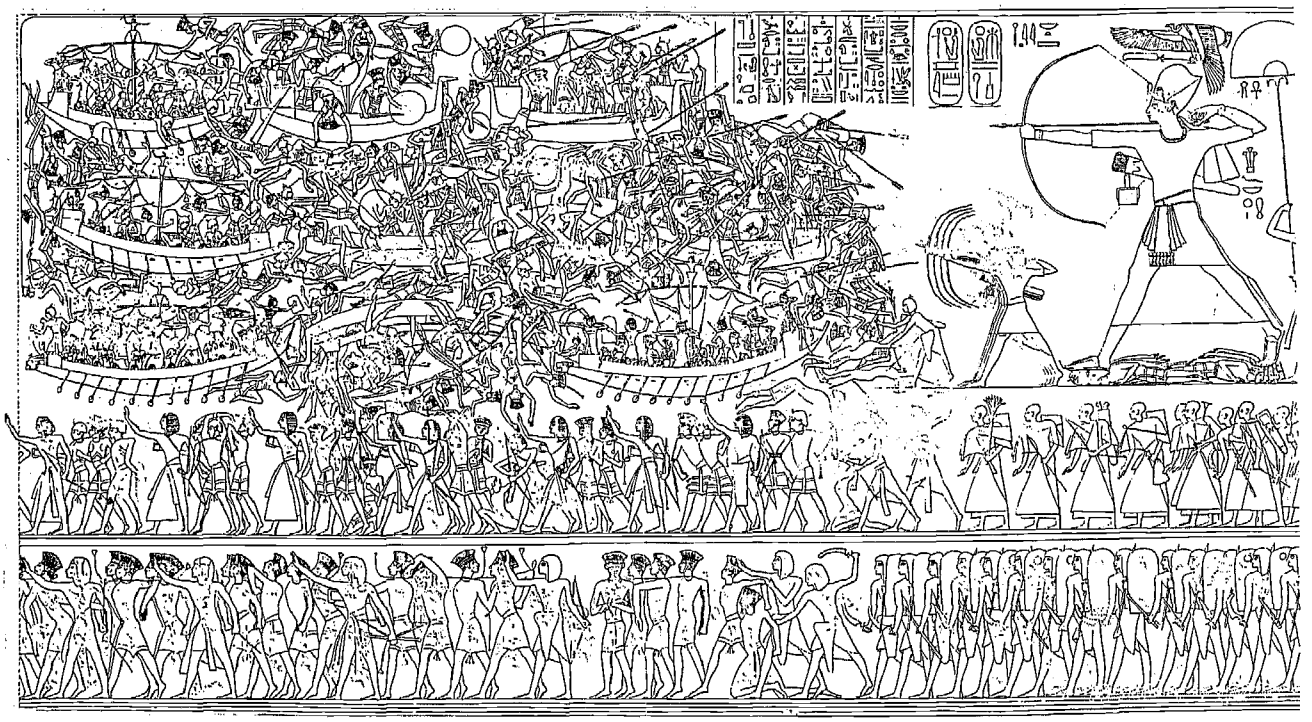
Ships are at the mercy of the weather, and therefore seafarers, no doubt from earliest times, developed an intimate knowledge of weather lore. The biblical writers considered the east wind particularly dangerous and repeatedly describe it as destroying the large seagoing merchantmen called Tarshish ships (*Ps.* 48:7; *Ez.* 27:26). Josephus describes the "black norther" that destroyed the Jewish rebel fleet at Jaffa in 67 CE, as well as the destructive tendencies of the southwest wind (*War* 1.409; 3.421–426; *Antiq.* 15.333). The best-known weather lore from antiquity appears in the New Testament (*Mt.* 16:2–3; *Lk.* 12:54).

International and local trade were carried out by ships that were able to move heavy and bulky cargoes for great distances at appreciably lower rates than land-based transport. Shipwrecks, like those uncovered at Uluburun and Cape Gelidonya in Turkey and off Kyrenia on Cyprus, have provided intimate, and often surprising, information about the types of cargoes carried. [*See* Uluburun.] Ships, as well as timber for their construction, were in themselves also an important trade item.

Ugaritic texts and the Tale of Wenamun indicate that by the end of the Late Bronze Age a code of maritime laws existed along Levantine shores. This was a prerequisite for maintaining seaborne commerce and diplomacy.

Ship-based warfare played a predominant role in seafaring. By the sixth dynasty, and probably earlier, Egyptian oared ships were employed as rapid military transports for attacks along the Syro-Canaanite coast and for transporting the resultant spoils back to Egypt. Unas (Wenis), an officer who served under Pepi I, describes in his cenotaph at Abydos how he used ships to transport forces, landing them behind a prominent landmark he calls the Antelope's Nose, perhaps an early name for the Carmel Mountains in the region of Haifa, Israel. Throughout the Bronze Age, the purpose of ships in military ventures was the rapid transport of forces to their destination. In sea battles, ships were used as floating platforms on which soldiers fought. Šuppiluliuma II, the last king of the Hittite Empire, refers to three sea battles in which he fought against "the ships of Alashiya," perhaps an allusion to contingents of ship-based Sea Peoples who used Cyprus as their base of operations. Rameses II mentions doing battle against ships of the Shardanu, one of the groups of Sea Peoples, on a stela from Tanis. [*See* Hittites.]

The earliest-known depiction of a naval battle is carved in relief on the outer wall of Rameses III's mortuary temple at Medinet Habu. The scene graphically describes a successful surprise attack by Rameses' forces against an invading fleet of Sea Peoples. The engagement apparently took



SEAFARING. *Naval battle depicted at Medinet Habu.* (After Nelson et al., 1930, pl. 37)

place in the Nile Delta region. In the first phase of the engagement, Egyptian archers, located on ships and on shore, used composite bows to pick off the invading warriors at long range. Against this, the Sea Peoples, armed only with medium-range throwing javelins and swords, were defenseless. Once the enemy was neutralized, the invading ships were capsized by tossing four-armed grapnels into their rigging. The grapnel is the only strictly nautical weapon depicted in the relief.

The naval weapon par excellence of antiquity was the waterline ram, which is believed to have evolved first in Greece during the Geometric period. A badly damaged Assyrian wall painting dating to about 700 BCE is the earliest pictorial representation of one war galley ramming another ship. The first battle known to have taken place after the introduction of the ram transpired off Alalia on the eastern coast of Corsica in 535 BCE. From then until the Battle of Actium (31 BCE), some sixty naval battles of varying size and intensity are recorded.

The ram went through four distinct evolutionary phases. Between about 900–600 BCE, it was a metal-sheathed point, apparently a development of the protruding bow structures that appear on Mycenaean galleys. In the sixth century BCE, a blunt ram in the form of a boar's snout replaced the point. The boar's head ram was popular for the next two centuries. Then, toward the end of the fifth century BCE, a three-finned ram came into widespread use. It was this device, typified by the ʿAtlit ram, that destroyed Anthony's fleet at Actium—and it may have been used earlier, in the waning years of the Peloponnesian wars. [*See* ʿAtlit Ram.] The fins apparently were intended to prevent the ram from piercing the enemy's hull, which would have endangered the attacking ship by locking her into a deadly embrace while other ships could ram her. The three-finned ram was employed to open the planking seams by breaking the mortise-and-tenon joints holding them together, thus permitting seawater to enter the hull and render it inoperable. To use the ram effectively, galleys had to be heavy: the weight contributed the momentum necessary to damage the enemy's hull. The ship itself was the weapon; the ram was only the "warhead" by means of which the attacking ship's momentum was imparted to its victim. In about 100 CE, the three-finned ram fell out of use. The last phase of the ram was during the Byzantine period.

[*See also* Anchors; Fishing; *and* Ships and Boats.]

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SEALS. Small stones (5–10 cm) whose flat or cylindrical surfaces are carved in intaglio with a design or inscription have been used as seals since the Late Neolithic period (7600–6000 BCE) in Syria (Wickede, 1990). The engraved surface was designed to be read in the impression left on receptive materials (clay, wax, soft metal). Through the impression a seal could convey a message of ownership, authorization, or responsibility (Gibson and Biggs, 1977). An inscription most commonly contains the owner's name, patronymic, and office, although prayers and religious dedications are not uncommon. As Dominique Collon demonstrates in *First Impressions* (1988), the inscription and the design offer information on onomastics, political hierarchy, myth, ritual, and activities of daily life. Not all engraved stones were used as seals: some were amulets and others were used as personal ornaments. Seal impressions themselves also may have had an apotropaic, magical, or purely decorative function. Seal stones often were pierced to be worn as rings, pendents, or bracelets. Fired clay, wood, bone, ivory, and metal are used for seals as well, but these more fragile materials have not survived in the quantities stone seals have. Flat-surfaced stamp seals appear before cylinder seals in the Near East and were the preferred form of seal in Anatolia, Egypt, and the Levant. Stamp seals are divided into typological classes according to the presence or absence of a handle and according to shape. Cylinder seals were the preferred form of seal in Mesopotamia, Iran, and Syria-Palestine, areas that used cuneiform script during the Bronze Age. Cylinder seals are characterized by place of manufacture, historical phase, and design.

The earliest recorded seals and seal impressions, from the Late Aceramic Neolithic period in Syria, are impressions made on the plaster vessels (white ware) that preceded true ceramics (Wickede, 1990). In the Pottery Neolithic and Early Chalcolithic periods, seals continued to be used on vessels in Iraq and coastal Syria and Cilicia. Pyramidal and conoid stamps were common. Their designs, simple cross-hatching, zigzags, and other linear motifs, probably had decorative or apotropaic value. During the Halaf period (5500–5000 BCE), seal impressions occur for the first time on fired ceramic vessels and on soft clay nodules (bullae) used to seal containers. More elaborate in shape and in their engraved design, the Halaf-period seals continue the tradition of primarily geometric, linear, or hatched designs, crosses, and dots but add animal motifs to the repertoire. The Ubaid period (5000–4000 BCE) sees a widening use of seals to control access to objects and rooms, as well as an expansion of motifs to include complex designs and human figures. Tepe Gawra strata XII and XI have some of the best examples of complex seal impressions; they illustrate an early use of sealings to control access to rooms and other containers, probably in an administrative context (Rothman and Blackman, 1990). [*See* Tepe Gawra.] The use of seals to control access, as well as the particular style associated with them, spread to Anatolia and can be found in examples from Degirmentepe.

Although stamp seals were used throughout the Uruk period (4000–3300 BCE) in southern Mesopotamia, cylinder seals gradually took over their function. The development of the cylinder seal accompanied the increasing sophistication of the recordkeeping and writing system that began with small tokens contained in clay balls. The earliest use of a cylinder seal was to impress the surface of the clay ball, thereby verifying or securing its contents. These have been found at Susa in Iran, but also occur at Uruk in Mesopotamia, in contemporary contexts. [*See* Susa; Uruk-Warka.]

SEALS. *Clay bulla from Habuba Kabira South.* This bulla is dated to about 3500-3000 BCE. (Courtesy ASOR Archives)

Uruk cylinder seals are large and made of soft limestone and often have a knob at one end. The incised motifs were adapted to the cylindrical surface and designed to repeat indefinitely on rolling. The number and quality of designs expanded considerably to include scenes of hunting, boating, grain storage, and fighting. Mark A. Brandes (1979) suggests that these were used in state/temple administration. A male figure is possibly the "priest-king," often depicted as taking part in rituals and in scenes with prisoners. Seals from Jemdet Nasr are contemporary with Uruk-style seals but probably were used by individuals rather than administrators. Small, harder, and more common, the Jemdet Nasr seals either show women at work spinning, weaving, and making pottery (Asher-Greve, 1985) or files of animals and geometric patterns. [*See* Jemdet Nasr.] Cylinder seals of this period are found throughout the Near East, from Susa to Egypt. Collon (1987, pp. 20–24) divides the cylinders seals from the Early Dynastic Period (3200–2600 BCE) into two broad chronological groups: Early Dynastic A and Early Dynastic B. The Early Dynastic A group was produced at the end of the fourth millennium and consists of material from the sites along the trade route between Susa, northern Mesopotamia, and Syria. The tall thin steatite seals have very elaborate, almost brocade, designs that use hatched lines, lozenges, circles, and chevrons. The Early Dynastic B group dates to the middle of the third millennium and is more closely associated with southern Mesopotamian types. Geometric designs based on herringbone patterns and arches in registers are common. More figural designs occur on the cylinder seals created in southern Mesopotamia: animals in human posture, the bull-man, and human-headed bulls may relate to the myths of Mesopotamia. The two major themes, however, are the contest scene between lion and bull or bull-man and the banquet scene at which two seated figures drink through straws from the same vessel or share a meal at the table placed between them.

Although cylinder seals and impressions are found as early as Early Bronze I (3500–3100 BCE) in Byblos on the coast of Syria, the majority of seals and impressions in Palestine date to the EB II–EB III period contemporary with the Early Dynastic B group in Mesopotamia. Unlike Mesopotamia—where seals were rolled on tablets and the unfired clay was used to close doors, bags, boxes, and other containers—in Palestine seals were rolled only on fired-clay vessels as decoration. The material of the seals used for making impressions was probably wood or bone. Designs include the herringbone pattern, concentric circles, lozenges, spirals, and ladders, as well as animals, structures, and a few very schematic human figures (Ben-Tor, 1978).

Beginning in about 2350 BCE, Sargon and his successors in the Akkadian Empire sponsored craftsmen who developed a new, more naturalistic style of seal carving and who

added new themes and motifs to the repertoire derived from the Early Dynastic period. One new scene was the presentation scene, in which a supplicant is introduced to an enthroned god or goddess by a minor deity. Deities in general are more prevalent on Akkadian seals than on Early Dynastic seals, and for the first time appear in postures or with attributes that allow their identification with members of the Mesopotamian pantheon (Frankfort, 1939). While contemporary with the Akkadian period, the impressions found at Ebla in Syria are related more to developed Early Dynastic styles, even though they also show some knowledge of Akkadian iconography (Collon, 1988, p. 39). Ur III seals continue to use and to standardize the themes from earlier periods: the banquet, contest, and presentation scenes. An innovation in the latter is the use of the deified king receiving a supplicant in place of the seated god or goddess (Winter, 1986). [*See* Akkadians; Ebla; Ebla Texts.]

Assyrian seals of the Colony period in Anatolia (1950–1750 BCE) are known from the business letters and houses of the merchants stationed at Karum Kaneš in eastern Anatolia. [*See* Kültepe Texts.] The Assyrian seals contain presentation scenes, deities, lines of animals, or figures that were present in the Ur III period but are more crudely executed in two basic styles: one with flat, linear figures and the other with more stylized, elongated, but deeply cut figures (Collon, 1988, p. 41). The local Anatolian group of seals is very finely cut and takes some inspiration from Assyrian seals. In design, however, the spaces on local seals are filled with a jumble of objects, animals, and human figures, all extremely detailed and finely hatched and rehatched. The iconography of the local seals is a good source of information on local Anatolian deities and ritual.

The Old Babylonian Period (1800–1600 BCE) was, like the Akkadian period, a high point in the development of cylinder seals. Returning to the Early Dynastic and Akkadian prototypes, Old Babylonian seal cutters produced very carefully cut hematite seals using a few standardized versions of old themes. The presentation scene, for example, was reduced to two standing figures, the king and the goddess. Old Babylonian seals appear almost mass produced, except for the inscription of the owner's name. Peripheral sites such as Mari in Syria were heavily influenced by the new style, particularly for royal seals. Syrian seals are, however, much more elaborate and naturalistic, with an iconography that includes elements of Egyptian, Hittite, and Minoan design. In Iran, Elamite seals are often indistinguishable from Old Babylonian examples, except for certain isolated elements of coiffure or gesture (ibid., p. 55). New cutting techniques were introduced shortly after Hammurabi's death in 1750 BCE. The use of the drill and the unmasked use of the cutting wheel resulted in a much more schematic treatment of the human and animal elements in the design.

The Late Bronze Age saw many regional developments

SEALS. *Hebrew seal depicting a sailing ship.* The inscription reads "Belonging to Amiyahu, son of Marab." Dated to the eighth-seventh century BCE. (Courtesy ASOR Archives)

in seal materials, use, and design. Mitanni craftsman in northern Mesopotamia developed sintered quartz (known also as faience, paste, or frit) to manufacture seals. Easy to cut or drill and fire, masses of Common Style Mitanni seals were produced all over the Near East, primarily as jewelry and amulets. Designs were often split into a major and minor scene, and abstract geometric forms were used for animals and figures (Porada, 1985, p. 99). Elaborate Style cylinder seals were made of hard stone, were more carefully cut, were inscribed, and are more often found impressed on government and legal documents. [*See* Mitanni.]

In the Levant and coastal Syria, only scarab seals rival Mitannian seals in popularity. These stamp seals, shaped like scarab beetles, appear first in Egypt at the end of the Old Kingdom and are found in the Levant throughout the Middle and Late Bronze Ages. As Egyptian political power spread to the southern Levant, so did the popularity of scarab seals. Usually found in burials, scarabs are only occasionally used to impress objects, and then only under the influence of the Egyptian administrative system (Buchanan and Moorey, 1988, p. xii). During the Late Bronze Age, the Hittite Empire expanded from the Anatolian plateau to include much of Syria. In their homeland, the Hittites stopped using cylinder seals after the Colony period and returned to the use of button-shaped stamp seals for personal and official use. Many seals are inscribed with its owner's name and title in Hittite hieroglyphic, and others have a simple heraldic design. Only in the Syrian vassal states did the Hittite officials use cylinder seals to impress official documents (Güterbock, 1980).

After the beginning of the first millennium BCE, only the Assyrians continued to use the cylinder seal because only in

Mesopotamia did cuneiform continue to be the preferred form for inscribing records. The increase in literacy and the shift to new writing materials, languages, and scripts in Syria and the Levant are reflected in the replacement of the stamp seal with the cylinder seal there. Pyramidal, conical, or scarabaoid, the stamp seal had little room for elaborate design, but it was more suited to impressing the small nodules of clay affixed to string around papyrus and leather documents. Iron Age stamp seals usually have a single figure or more often a simple inscription of the owner's name and patronymic, or title. In use, however, stamp seals parallel cylinder seals as means of validating legal documents or preventing access to documents or containers (Hestrin and Dayagi-Mendels, 1979).

[*See also* Northwest Semitic Seal Inscriptions.]

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SEA PEOPLES. *See* Philistines.

SECTION. *See* Balk.

SEFIRE ARAMAIC INSCRIPTIONS. The three Aramaic inscriptions on basalt stelae from Sefire, in Syria, constitute one of the most important sources for our knowledge of Aramaic in the first half of the first millennium BCE. The stelae were discovered at Sefire, 25 km (16 mi.) southeast of Aleppo, in the late 1920s. Stelae I and II were acquired by the Damascus Museum in 1948, and stela III by the Beirut Museum in 1956.

Stela I was first called the Sujin stela because Sébastien Ronzevalle, a French Jesuit and professor at Université St. Joseph, Beirut, had been misled about its findspot by the natives who claimed to have discovered it at Sujin. The stela is inscribed on three sides of a rectangular basalt stone. Because the stone was cut after it was engraved, not only was the text on the left side of face A lost, but also the beginnings of the upper lines on face A and the ends of the upper lines on face B. The stone had also been broken in the center, so that at least three lines are missing from the middle of the text extant on three sides. As reconstructed, stela I stands 131 cm high. Face A originally had forty-two lines; face B, forty-five lines; and face C, twenty-five lines. Stela II, reconstructed from a dozen fragments, must have resembled stela I. Its face A today has only fourteen fragmentary lines; face B, twenty-one lines; and face C, seventeen lines. Stela III was pieced together from nine fragments, forming a broad slab 102 cm wide and 72 cm high; it is inscribed only on the reverse, with twenty-nine fragmentary lines. Stela III also is of basalt and has the same kind of writing, absence of word dividers, and the same mention of "kings of Arpad." Hence, it is certainly related to stelae I and II, and all three probably form the text of one and the same treaty, although this is presently debated.

The stelae are inscribed in Aramaic script dated to the middle of the eighth century BCE. They preserve the text of a treaty/treaties made by the north-Syrian ruler, Mati'el, son of 'Attarsamak, vassal-king of Arpad, with his overlord, Bar-Ga'yah, king of KTK. The *terminus ante quem* for the stelae is 740 BCE, when Tiglath-Pileser III conquered Arpad, making it part of the Assyrian Empire. The inscriptions presuppose the political autonomy of Arpad. As king of Arpad, Mati'el had concluded a pact with Ashurnirari V in 754 BCE. He was also an ally of Sardur III of Urartu, prior to the resurgence of Neo-Assyrian might. These stelae, then, were important factors in the history of Syria in the time of Jeroboam II (786–747 BCE) of Israel and of Uzziah (783–742 BCE) of Judah.

The stelae record a suzerainty treaty, a pact concluded between a vassal and his overload. Their text identifies the

contracting parties, sets forth the stipulations of the pact, mentions the curses invoked against Mati'el if he is not faithful to them, and lists the gods, Canaanite and Babylonian, who are witnesses to the treaty. The main problem in the interpretation is the identification of the overlord Bar-Ga'yah, possibly Shamshi-Ilu, and of the country, KTK, over which he ruled, possibly the Kittakka of some Assyrian texts.

[*See also* Aramaic Language and Literature.]

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SELEUCIA ON THE TIGRIS, site located approximately 60 km (37 mi.) northwest of Babylon and 35 km (22 mi.) south of Baghdad. Seleucia was founded in the late fourth century BCE by Seleukos Nikator (Lat., Seleucus Nicator), one of the generals of Alexander the Great. According to Greek and Latin writers, the Greek colony was placed near the earlier site of Opis. Pliny (Nat. Hist. 6.30.121ff.) records that Seleucia was founded for the purpose of drawing away the population of Babylon. The Parthians captured the city in 141 BCE. Its inhabitants rebelled between 35 and 42 CE, after which the Parthians may have transferred the seat of government across the river to Ctesiphon. Seleucia's continued importance during the period of Parthian rule is shown, inter alia, by the recent find, unfortunately not in an archaeological context, of a bronze statue of Heracles. According to an inscription in Greek and Pahlavi, the statue was brought from Messene in 150/51 CE by the Parthian king Vologeses IV after a victory over his challenger, Mithridates, and erected at Seleucia in the Temple of Apollo. The Romans took the city three times: under Trajan, in 116 CE; by Avidius Cassius in 165/66; and by Septimius Severus in 198/99. Abundant traces of fire mark the Trajanic destruction, and its capture by Septimius Severus is represented on that emperor's arch in the Roman Forum. The city fell to the Sasanians in the middle of the third century CE, and they moved the capital to the neighboring site of Coche.

Excavations at Seleucia were conducted by the University of Michigan from 1927 through 1937 and by the University of Torino from 1964 through 1976 and from 1986 through 1989. The catalyst for the University of Michigan excavations was a topographical study by Leroy Waterman that attempted to locate the Babylonian city of Opis. Arguing that the area of approximately 100 sq km (62 mi.) covered by the mounds surrounding the prominent artificial mound called Tell 'Umar was too large for a Babylonian city, he identified the site as Seleucia, whose population Pliny gave as 600,000. The Michigan excavations were the first deliberately to target a Greek city in Mesopotamia.

The excavators established the general outline of the city plan by a contour survey and air photography, showing that the city was laid out on a grid plan of Hippodamean type. The blocks are the largest used in the Hellenistic world (144.70 × 72.35 m). A canal running through the center of the city seems to have divided a largely public northern sector from a primarily residential southern area. One large square in the northern sector is bounded on the west by a long, narrow mud-brick building housing official Seleucid archives and on the north by Tell 'Umar. A second square enclosed the two structures the American expedition identified as temples. The Hellenistic remains, heavily overlaid by those of the Parthian city, are extremely fragmentary. It is nonetheless striking that essentially no typically Greek structures have been identified. The locations of an agora and theater remain uncertain. It seems unlikely that Seleucia, founded as the capital of a Greek kingdom, should have lacked a theater, as one was built in nearby Babylon. The Michigan excavator Clark Hopkins's identification of remains in the southern part of the city as those of a theater have not been confirmed, and the suggestion made by the Italian excavator Antonio Invernizzi that Tell 'Umar was originally the theater of the Greek city, though probable, remains hypothetical. The early history of Tell 'Umar has been obscured by Parthian rebuilding and the Sasanian construction of a defensive tower surrounded by a wall. The two structures tentatively identified as temples are square enclosures that are formally related to temples in both Iran and Syria and may date to the Parthian period.

The American excavations were concentrated in three areas: On Tell 'Umar, in a nearby block that held a building of uncertain function, and in a residential block in the southern part of the city. The Italians have worked primarily in the Archives building, with some soundings in the southern part of the city.

The plan of only the latest phase of the building excavated by Michigan near Tell 'Umar can be established with any degree of certainty; it shows a series of rooms around an open court, with elaborate provisions for drainage in one section. The architect considered it a Parthian villa. An in-

scription of an uncertain Seleucid ruler reused in the later phase of the structure seems to show the existence of a Seleucid *heroon* (i.e., a shrine to a heroized founder of the city); Hopkins argued that the building should be identified as that *heroon*. It differs, however, from known Hellenistic *heroa*.

During the Seleucid period, the building excavated by Michigan in the southern part of the city housed private and official archives. The block contained one or more large residences with shops on the street facades and a number of small rooms arranged around larger rooms and courts. Columns are still used in level III, built during the period of Parthian rule (142 BCE–43 CE), but disappear thereafter. The next phase is characterized by the presence of *iwans* (large rooms open to one side), an architectural form probably developed in Mesopotamia in the first century BCE that figures prominently in Parthian and Sasanian architecture. Architectural decoration in stucco, such as figured capitals and coverings for walls and vaults with abstract patterns, is related to that known at Uruk and Aššur.

That the inhabitants of this block were not entirely Greek, or at least did not adhere to Greek customs, is shown by the presence of burials in walls and under the floors of the residential area, a continuation of a Babylonian practice. The method of burial varies. Some bodies were simply interred in walls and under floors, but most were placed in jars or coffins of pottery or baked brick. Vaulted family tombs occur thorough level II (approximately 43–118 CE) but disappear entirely in the latest phase. At least initially, the Greek settlers must have been buried outside the city. In any case, the number of burials found in block G6 does not seem large enough for its presumed population, suggesting that people of Greek extraction continued to be interred outside the city.

Both archives end in 154–152 BCE. The documents, presumably written on papyrus, are lost, but the clay bullae that sealed them survive, burnt in the fire that destroyed the buildings, a fire probably associated with the Parthian invasion. The bullae provide valuable evidence about Seleucid administration and the economic life of the city: they give the titles of administrators and show, for example, the importance of a tax on salt. During the Parthian period the archive building near Tell 'Umar was converted into a commercial quarter that was used largely for the production and sale of terra-cotta figurines.

Little monumental art has been found at Seleucia, but large numbers of terra-cotta figurines and the images on the bullae give some indication of its creative vitality in the Hellenistic period. It is of interest that figurines that are Greek in style and subject appear alongside Near Eastern types throughout the Parthian period. Seleucia was a major force in establishing Hellenism in Mesopotamia, and it remained a creative center in the Parthian period.

[*See also* Ctesiphon; Parthians; Ptolemies; *and* Seleucids.]

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SELEUCIDS. The Seleucid kingdom was founded by Seleucus Nicator (Gk., Seleukos Nikator), a general of Alexander the Great. Seleucus was allotted part of the territories that had been under Alexander's control and then partitioned. In 305 BCE, Seleucus I was crowned king of the Seleucid Empire. He founded a dynasty that was to become very powerful in the eastern Mediterranean, ruling over the largest kingdom in the ancient Near East for most of the Hellenistic period.

Whereas the Seleucid Empire was heterogeneous in its ethnic makeup, its Greek cities were populated mainly by their Greek colonizers, who preserved their Greek way of life. The Greek stratum coexisted with the various *ethnē* ("indigenous peoples"), who continued to worship their local gods, kept their traditional languages, and maintained other specifically ethnic traits. Local coinage, for instance, was minted under the auspices of the Seleucid kings, but it expressed a great deal of the native heritage, as may be seen in local coins from Tyre and Sidon. Between Greeks and natives, a stratum of hellenists emerged. These people were syncretistic in all aspects of life.

During most of the Hellenistic era, the Seleucids competed with the Ptolemies of Egypt, especially over Coele-Syria. The two powers fought five wars between the end of the fourth and the third centuries BCE for the domination of Palestine, the so-called Syrian Wars. Toward the end of the third century, the Seleucids, as well as other powers in the

Near East, became more and more preoccupied with Rome, which had begun to intervene in the region's affairs.

In 204/203 BCE, Antiochus III, one of the great Seleucid kings, made a pact with Philip V of Macedon to divide Egyptian possessions overseas between them. This evinced a Roman reaction that resulted in the Second Macedonian War, which ended in a Macedonian defeat in 197 BCE. Rome subsequently defeated the Seleucids. Antiochus III invaded Greece but was defeated at Magnesia in 189 BCE. The treaty of Apamea, which marked the end of that war, and that ceded most of Asia Minor west of the Taurus mountains to Rome, signified a deeper involvement by the Romans in the affairs of the East. The defeat also signified the beginning of the decline of the Seleucid Empire.

In 200 BCE, the Seleucids, under Antiochus III, managed to take Palestine from the Ptolemies in the battle at Panion. As a result, many concessions were granted to the Jews in Jerusalem, which led essentially to comprehensive religious autonomy. During the reign of Seleucus IV (c. 187–175 BCE), relations between the Seleucids and the Jews in Jerusalem worsened. This occurred primarily because the Hellenistic high priests of Jerusalem convinced the Seleucids that the Jews should be hellenized. Severe restrictions on the religious autonomy of the Jews followed, initiated by Antiochus IV Epiphanes in 167 BCE. The result was a revolt by the indigenous Jewish population against the Seleucids. By 170–169 BCE, Antiochus IV aspired to conquer Egypt, but during his second invasion he was forced by a Roman ultimatum to return to Syria. Antiochus IV died in 164 BCE, and his young son, Antiochus V, was subsequently murdered, in 162, in the midst of terrible intrigues at the Seleucid court.

In 162 BCE, Demetrius, the son of Seleucus IV, escaped from Rome, where he had been kept as a hostage, and crowned himself Demetrius I, king of the Seleucid Empire. Many struggles ensued, and he was finally killed in 150 BCE by another claimant to the Seleucid throne, Alexander Balas, who claimed to be the son of Antiochus IV. These struggles further weakened the Seleucid kingdom. Rome threw its support to Egypt and Alexander Balas in their struggle against Demetrius I's son, Demetrius II. The Jews in Palestine profited from these developments and, with the support of Rome, the Ptolemies, and Pergamon, succeeded in 143/42 BCE in declaring their independence from the Seleucids.

The last impressive figure in the Seleucid court was Antiochus VII Sidetes, son of Demetrius I. In one attempt to renew the grandeur of the Seleucid Empire, he invaded Palestine, in 134 BCE. After laying siege to Jerusalem, he left, however, in 130, to fight the more important Parthians in the East.

Like most Hellenistic monarchs and princes, the Seleucids were tolerant of the indigenous cultures in lands they conquered and usually did not interfere in native cultures and religions. When they did, the result was disastrous (e.g., the Maccabean revolt). During the Seleucid period, there is evidence for the continuity of local religions and of writing in Neo-Babylonian as well as in Aramaic and Hebrew and other Eastern languages. The Seleucids also supported their Greek population and encouraged the foundation of Greek cities throughout their realm. One such example was the founding of their new capital, Seleucia, on the Tigris River, which they erected just 37 km (60 mi.) from the old traditional capital, Babylon. For the Greek population, the Seleucids posed as Greek deities, while for the natives they were local gods. The Seleucids supported literary activities that praised and legitimized their own deeds through a reinterpretation of the past. Authors like Megasthenes and Berossus flourished in the cultural centers of the Seleucid kingdom. Berossus's *Babyloniaca,* apparently written at the beginning of the third century BCE, is a typical Seleucid interpretation of Babylonian history.

Seleucid administration was based on the old Persian division into satrapies. The chief administrator of the satrapy was a *stratēgos* (at first called a satrap). The *stratēgoi* were at times also "high priests" (cf. the Hefzibah inscription from 199/98 BCE). This gave them authority over the temples and priesthoods in their domains. There are cases of a local leader being placed at the head of the satrapy. The *stratēgos* was assisted by an *oikonomos,* who was responsible for the satrapy's financial activities and for the king's property.

The Seleucid king was the head of state and was assisted by a council of *philoi* ("friends"). The highest offical was the *epi tōn pragmatōn,* who was assisted by the *dioiketes,* a financial administrator. The latter function could be found in both the central and local governments. An *oikonomos* at the court was responsible for the king's treasury. Instead of the *oikonomos,* we later find a magistrate called *epi tōn prosodōn* (the one responsible for the income of the king). The Seleucids usually chose their *philoi* and other administrators from among the Greek (i.e., Macedonian) stratum of society. Because the Seleucid Empire was so vast, the Seleucids had, in addition to their new capital in Seleucia on the Tigris, other centers, such as Antioch on Orontes and Sardis.

The end of the Seleucid kingdom came with Rome's conquest of the East in the 60s BCE.

[*See also* Antioch on Orontes; Ptolomies; Sardis; *and* Seleucia on the Tigris.]

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DORON MENDELS

SELLIN, ERNST (1867–1946), German scholar of Old Testament studies and biblical archaeologist. Born in Altschwerin, Mecklenburg, Sellin studied Protestant theology and then worked as a high school teacher in Parchim, a city close to his birthplace, from 1892 until 1894. After qualifying as a lecturer in 1894, he taught Old Testament in Erlangen. He was appointed an associate professor of Old Testament in Vienna in 1897 and became a full professor there in 1899. Between 1908 and 1921, he held chairs in Rostock, Kiel, and finally in Berlin, his last post until he retired in 1935. He died in Epichnellen near Eisenach.

Sellin published numerous works on topics relating to the religion of ancient Israel (1896–1897), on *Job* (1919) and on "Second Isaiah" (1908). He also wrote monographs on Zerubbabel (1898), Gilgal (1917), Shechem (1922), and Moses (1922), a commentary on the minor prophets (1922), and a two-volume history of Israel (1924 and 1932). His most famous work is an introduction to Old Testament literature *(Einleitung in das Alte Testament),* which saw many editions after its first appearance in 1910. This handbook was later republished by L. Rost (1959) and G. Fohrer (1965).

The only scholar of Old Testament studies of his generation to do fieldwork in biblical archaeology, Sellin directed the German excavations at Ta'anach (1901–1904) and at Jericho (1907–1909). In 1913–1914 he worked at Shechem, to which he returned in 1926–1927 and 1934. His work there was interrupted not only by World War I but also by an intrigue against him and was eventually halted because of the political situation in Germany. While his first excavations were well published for the standards of the time, the results of the Shechem project were never properly presented: the manuscript of the final publication was burned in an allied air raid over Berlin in fall 1943. Sellin's preliminary reports on Shechem in the *Zeitschrift des Deutschen Palästina-Vereins* between 1926 and 1941 are, however, of great value. His fieldwork and his publications made Sellin the leading German scholar in the field of biblical archaeology in the first half of the twentieth century.

[*See also* Jericho; Shechem; *and* Ta'anach.]

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VOLKMAR FRITZ

SEMITIC LANGUAGES. Since at least the fourth millennium BCE, the Semitic languages, which constitute a relatively close-knit linguistic family, have occupied core areas of western Asia (Mesopotamia, Syria, Palestine, and the Arabian Peninsula). They extended their presence at some point into coastal and highland Ethiopia and, more recently, into substantial parts of northern Africa. As is becoming increasingly evident, the Semitic language family in turn is related to a much more widespread, highly differentiated Afro-Asiatic superfamily whose members, beside Semitic, are Egyptian (the Nile valley, from the Delta to the first cataract); Berber (North Africa, from Libya to Morocco, and, at least since the domestication of the camel, south into the deep Sahara); Cushitic (more than fifty languages from the Red Sea hills and the Horn of Africa, down the Rift Valley into Tanzania); Omotic (several dozen languages in southwest Ethiopia, perhaps to be counted as Western Cushitic); and Chadic (Hausa in northern Nigeria and more than two hundred other languages roughly in the Lake Chad watershed).

The close resemblance of the Semitic languages is obvious on casual inspection of cognate lexical, phonological, and grammatical data. For lexical resemblance note, for example, the word for *dog* in Akkadian *kalbum,* Hebrew *keleb,* Aramaic *kalbā,* Arabic *kalbun,* and Ge'ez (Ethiopic) *kalb*—to give just a sample. (For more detailed phonological and grammatical resemblances, see below.) It had long been speculated (since the Jewish grammarians of the Middle Ages at least) that the special resemblances such as exist among the Semitic languages could only be explained as the result of a long process of historical development, whereby an ancestral speech community gradually broke up into communities with similar, but increasingly distinct languages. Lexical evidence for the relatedness of Afro-Asiatic

is much sparser, but over the last century there has been a slow accumulation of cognates, such as the word for "die": Akkadian *mūt-*, Egyptian *m(w)t*, Berber *əmmət*, Hausa *mutu*. Even more striking have been a number of grammatical correspondences. Compare, for example, with the Akkadian pronouns given in table 6 below, the following pronominal forms of Cushitic Oromo: *ani* "I," *ati* "you" (sg.), *isa* "him," *isee* "her," *nu* "we," *isin* "you" (pl.), *isaani* "they."

Semitic languages already hold a unique position in their own right within the study of language evolution because their early development, differentiation, and often palimpsestlike diffusion pattern (one Semitic language frequently replaced an earlier member of the same family) coincided in period and area with the elaboration of the earliest writing systems. As a result, the Semitic languages offer a unique record of textual attestation of the process of language diversification. Beyond this—on the level of Afro-Asiatic—Egyptian, although it remains relatively uniform at any given period, has a history of written attestation that goes back at least as far as that of Semitic. The other Afro-Asiatic languages are attested only in modern times, but their differentiation and spread guarantee a time depth that places Semitic into a perspective of recorded and reconstructable history stretching far back into the Near Eastern and East African Neolithic.

This survey will offer first a broad overview of the temporal and geographic distribution of the historically attested Semitic languages. It will then characterize in outline form some of the major phonological and grammatical features of Semitic. Finally, one possible scenario, or model, will be sketched for the family's origin, initial differentiation, and spread.

The Evidence. A mass of material widely distributed geographically and chronologically over the ancient and modern Near East provides the evidence for the evolution and diversification of the Semitic language family. The main clusters follow.

Akkadian. Texts in Akkadian are abundantly attested in Mesopotamia and peripheral regions from the mid-third millennium onward. They are written on thousands of clay tablets in the cuneiform logographic-syllabic system the speakers of Old Akkadian adapted from the Sumerians. Even before the first real Akkadian texts, Akkadian proper names and Akkadian loanwords in early Sumerian texts show that Akkadians were present in Mesopotamia almost from the beginnings of Sumerian writing early in the third millennium. Akkadian in its Northern and Southern dialect forms, Assyrian and Babylonian, continued as a living, evolving language (through stages conventionally schematized as Old, Middle, and Neo-) down into the first millennium BCE. In the second millennium BCE, Akkadian was widely used throughout western Asia as an international language of scholarship and correspondence. In the course of the first millennium BCE, Akkadian was gradually replaced by Aramaic as a spoken language, but some texts continued to be written in Akkadian into the first century CE. [*See* Akkadian.]

Eblaite. A couple of centuries after the first Old Akkadian texts in Mesopotamia, for a period of about two centuries, another Semitic language used a related, but distinct adaptation of the cuneiform writing system in the northern Syrian city of Ebla. Although most of the many tablets recently discovered at this site are in Sumerian, a variety of text genres are written in the local language, which is Semitic and certainly not identical with any known variety of Akkadian. A better understanding of the language will be necessary to determine exactly its genetic relationship to Akkadian. [*See* Ebla Texts.]

Amorite. No texts are preserved in Amorite, a variety of Semitic. Its existence is inferred from a large, recognizably distinct corpus of proper names in texts (about six thousand) that are otherwise Akkadian or Sumerian, from the late third through the first half of the second millennium. Appearing first as foreigners, bearers of these names come to represent a widespread, stable segment of the population in Akkadian-using Mesopotamia and Syria. Indeed, several ruling dynasties in the Mesopotamian heartland in the early second millennium BCE, including that of Hammurabi, bear names of this kind. Because the bearers of these names, when they are ethnically identified, are sometimes referred to as Sumerian *mar-tu* (Akk., *amurru*, "westerners"), the language (or group of languages) represented by these names is called generically Amorite (from the related biblical term). [*See* Amorites.]

Old Canaanite. The label Old Canaanite is used here as a cover term for a heterogeneous set of materials yielding evidence for the linguistic situation in Palestine, for the most part in the second and third quarters of the second millennium BCE. Linguistically, some of this material may overlap with what is referred to above as Amorite. Most of the material is scattered through Akkadian and, to a lesser extent, Egyptian texts originating in or referring to the Syro-Palestinian area. It takes the form of personal names, place names, glosses, loanwords, morphological forms, and syntactic calques. The most important corpus of Akkadian texts, preserved at el-Amarna in Egypt, is the archive of mid-second millennium diplomatic correspondence with the Egyptian court from local rulers in Syria-Palestine. To be assigned provisionally to this group also are the earliest alphabetic inscriptions, approximately contemporary with the Akkadian and Egyptian texts just mentioned and only partially interpretable, found in Palestine and in the Sinai Desert. [*See* Amarna Tablets; Canaanites; Proto-Canaanite; *and* Proto-Sinaitic.]

Ugaritic. The North Syrian site of Ras-Shamra has yielded a corpus of more than a thousand texts, dating from just after the middle of the second millennium BCE and written in a locally developed writing system that is cuneiform

in shape but genuinely alphabetic in design and function. Given the uncertainties surrounding Eblaite, and the very sketchy nature of the Amorite and Old Canaanite material, Ugaritic gives the first clear view of a Western Semitic language. The relationship of Ugaritic to Canaanite proper has been intensively discussed but cannot be considered settled. [*See* Ugaritic; Ugarit Inscriptions.]

Hebrew. The main evidence for Hebrew here is of course the text of the Hebrew Bible, to which can be added a small corpus of epigraphic materials in Hebrew and some limited inscriptional materials in the closely related Moabite, Ammonite, and Edomite languages. Together with Phoenician, these languages are the linguistic continuation of Old Canaanite. Even after the homogenization of the text by later editors, the Hebrew Bible shows a succession of stages of development of Palestinian Semitic from the very end of the second millennium up to the last centuries of the first millennium. By the time of the latest biblical Hebrew texts, Hebrew had already been, for a century or more, in the process of being replaced as a spoken language in Palestine by Aramaic—a process that had surely gone to completion by the beginning of the second century CE. A standardized form of a final stage of Hebrew remained as a liturgical and scholastic language through Late Antiquity, the Middle Ages, and on into modern times. Finally, in a unique development in language history, Hebrew, revived for general use in the nineteenth century, has once more entered the list of spoken languages—with all the unforeseeable linguistic results that that entails. [*See* Hebrew Language and Literature.]

Phoenician. Because of the abundance and widespread distribution of its inscriptions and the influence of its writing system, special notice must be taken of a close northern relative of Hebrew. Phoenician began to be attested in what is now coastal Lebanon late in the second millennium BCE and continued there and in various Mediterranean sites until Roman times. Punic is a variety of Phoenician attested in inscriptions from the North African colony of Carthage from its founding in the fifth century BCE to its destruction by Rome in the second century BCE. Punic continued to be written in various locations in North Africa up until the fifth century CE. [*See* Phoenician-Punic.]

Old/Official Aramaic. A very large number of closely related languages is grouped under the heading of Aramaic. The group's literary and epigraphic output constitutes, after Arabic, the largest corpus of writing in Semitic. Old Aramaic inscriptions are first attested in North Syria and Mesopotamia in the ninth century BCE, and the beginning of a gradual aramaicization of Mesopotamia, Syria, and Palestine can be dated from this period. A standardized form of Aramaic became an official language of the Persian Empire and was used for written communication all over the Near East—including parts of some late additions to the Hebrew Bible *(Ezra).*

Middle Aramaic. During the Seleucid and Roman periods, Aramaic continued to be used for inscriptional purposes in a number of localities, including some where the language and ethnic affiliation of the local population was probably Northern Arabic (Nabatean, Palmyrene). A corpus of religious literature in Aramaic continued to be developed in Palestine: Bible translations (targums) and the Aramaic texts from Qumran. [*See* Nabatean Inscriptions; Palmyrene Inscriptions; Qumran.]

Late Aramaic. Apart from the evidence of the continued use of Aramaic in Mesopotamia ("magic bowls," texts of the Gnostic baptist sect of the Mandaeans [*see* Mandaic]), the period from the third to the seventh centuries CE saw a massive development of religious writing in Western and Eastern varieties of Aramaic, first in a Jewish milieu (the Palestinian and Babylonian Talmuds and related writings), and then in a Christian one (Christian Palestinian and, especially, Syriac literature). Although Aramaic remained a spoken language in some of these communities after the seventh century, a standard form of Late Aramaic continued a more general existence in its own right in Christian and Jewish contexts as a language of liturgy and religious scholarship, much as was the case for Hebrew.

Neo-Aramaic. Although Aramaic was gradually replaced by Arabic throughout much of its former territory, in those areas where the dominant Islamic groups were Kurdish speaking (in what is now northwestern Iran, northern Iraq, and southeastern Turkey), Aramaic was often retained as the primary spoken language by urban and village Jewish and Christian communities. In addition, a couple of mountain villages not far from Damascus, Syria, also retained a unique Western form of Neo-Aramaic. From the point of view of morphology and syntax, the Neo-Aramaic dialects have to be counted as the most thoroughly transformed Semitic languages ever attested—more so, for example, than any modern Ethiopian Semitic language. It can be shown, however, that many, if not most, of the deviations from the Semitic "norm" are continuations of tendencies observable in some of the earliest forms of Aramaic. [*See* Aramaic Language and Literature.]

Old Northern Arabic. Thousands of short graffiti written in a Southern variant of the general ancestral West Semitic alphabet have been found scattered over the Syrian and, especially, northern Arabian desert, generally dated between the sixth century BCE and the fourth century CE. Frequently little more than apersonal name or pronoun and a nominal or verbal predicate, they are sufficient to show that these are the earliest attestation of what was to become Classical Arabic. The most general type of the script is called Thamudic and was probably used to write a variety of dialects. Special local varieties, Dedanite and Lihyanite, arose in the Hijaz oasis of al-ʿUla. A subtype of Old Northern Arabic inscription known as Safaitic is espe-

cially abundant in the southern Syrian desert in the latter half of this period. [*See* Safaitic-Thamudic Inscriptions; Dedan.]

Classical Arabic. A few inscriptions from the fourth century BCE in a modified Nabatean Aramaic script, plus a body of oral poetry that had its origins in the same period are the precursors of Classical Arabic, which received its definitive form in the seventh century CE in the Qur'an. A written standard, purged of some of the more marked dialect forms of the Qur'an, was quickly elaborated, codified by grammarians and lexicographers, and spread as the official medium of communication of the new Arabic-Islamic administrative structures. This written standard, which has produced a voluminous literature over the centuries, remains the official language of literacy, public life, literate oral communication, and mass media in the Arabic-speaking world up to the present day.

Modern Arabic. Spoken Arabic continued developing alongside the standard languages, in a well-studied relationship called diglossia. Certain phonological, morphological, and syntactic simplifications and/or innovations are common to many varieties of Modern Arabic, but there has been enough differentiation that mutual intelligibility between spoken varieties at the geographic extremes can be quite limited. There are glimpses of these changes in process in some medieval texts (sometimes referred to as Middle Arabic), especially those coming from Christian and Jewish Arabic-speaking milieus less constrained by the norms of the Classical standard. [*See* Arabic.]

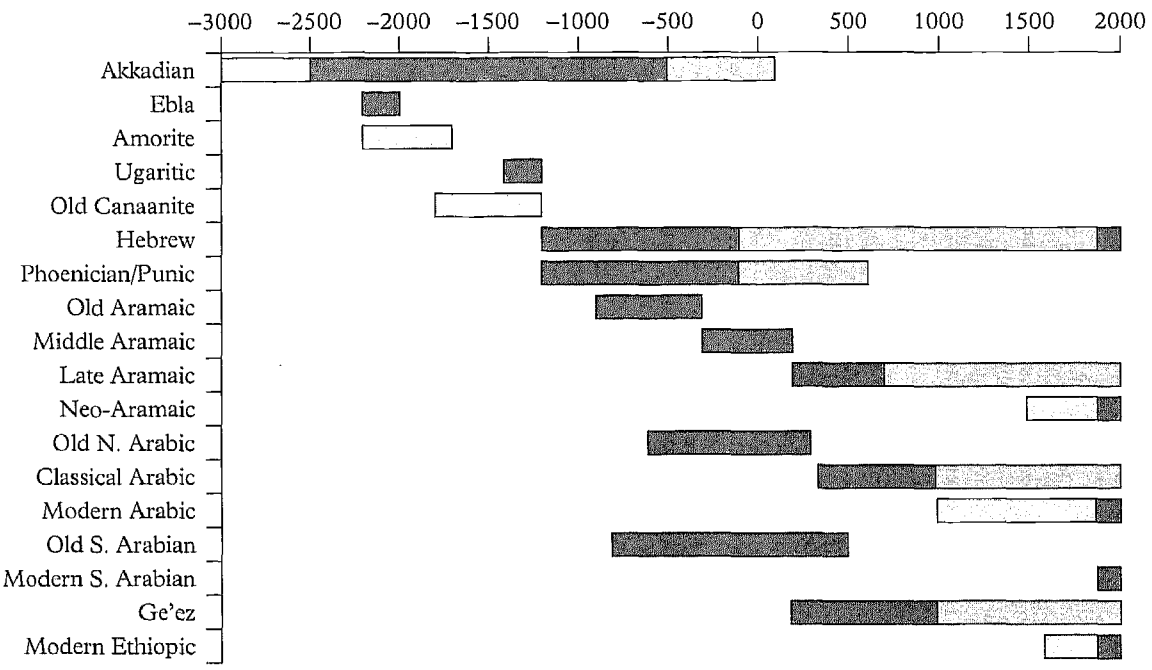
Old South Arabian. A large body of monumental texts from what is now Yemen reveals a subfamily of Semitic completely distinct from anything considered up to now. Written in an elegant monumental development of the South Semitic alphabet that also appears in Old North Arabic, the oldest inscriptions may be as early as the first third of the first millennium BCE. They testify to the political power and cultural achievements of the city-states along the spice route from south to north between the Yemeni highlands and the Arabian desert. There are marked differences between the languages (or dialects—it is difficult to tell) of the principal city-states: Ma'in, Saba', Qataban, Ḥadhramaut. The inscriptions continue into the sixth century CE, by which time Yemen had been politically unified, the center of power had moved to the highlands, and the Sabaean variety of Old South Arabian (perhaps no longer a spoken language) had replaced other varieties. [*See* South Arabian; Qataban; Ḥadhramaut.]

Modern South Arabian. After a thirteen-hundred-year hiatus barely touched upon by scattered notices in Arab geographers, historians, and lexicographers, nineteenth-century travelers and scholars discovered in the southern extremity of the Arabian Peninsula (eastern Yemen, western Oman, and some offshore islands) a half-dozen languages and dialects of the South Arabian type. The most important languages are Mehri (with the dialect Harsusi), Jibbali, and Soqotri—together they have fewer than one hundred thousand speakers. Although they are clearly closely related to Old South Arabian (as well as to Ethiopian Semitic), it is not certain that the Modern South Arabian languages are linear descendants of any member of the older group. Reliable lexical and grammatical information about these languages is only now becoming available, and much work needs to be done before the historical development behind them becomes clear.

Classical Ethiopic (Ge'ez). Old South Arabian inscriptions of the Sabaean type found in Ethiopia and dating from the fifth-century BCE trading colony show that there was a long-standing cultural and economic relationship between southern Arabia and Ethiopia. Accordingly, it is not surprising to find in the Ethiopian highlands fourth-century CE inscriptions in a new variety of Semitic—written in a South Semitic script that seems in some respects closer to that of the Thamudic graffiti than the Old South Arabian monumental inscriptions. Like Modern South Arabian, Ethiopic (native designation, *gəʕəz*, "Ge'ez") is related to, but not derivable from, any known variety of Old South Arabian. Shortly after the first unvocalized inscriptions, a unique system of vocalization was introduced, and at the same time the Ethiopian court was converted to Christianity. A standard literary language was elaborated in the next couple of centuries (e.g., with a Bible translation, liturgical texts, and patristic excerpts); this language remains the official church and court language and was the only written language well up into the nineteenth century.

Modern Ethiopic Semitic. The members of the group of Modern Semitic language—about a dozen, of them—differ at least as much from one another as do the members of the Romance family of languages. Two of these languages constitute a Northern group (Tigre and Tigrinya, one of the official languages of Eritrea); the rest form a fairly coherent Southern group (Amharic, until recently the only official language of Ethiopia, Harari, Gaffat, Argobba; and a cluster of languages and dialects referred to as Gurage). Of all these languages, only Tigrinya can be plausibly derived from Ge'ez, which thus cannot be identified with Proto-Ethiopic Semitic. [*See* Ethiopic.]

The very approximate time chart in figure 1 gives a rough summary of the distribution in time of attestation of the major languages or groups of languages of the Semitic family. Figure 1 of course does not try to fix the point in time at which different varieties of Semitic come into existence, but only the period over which actual texts attest to the existence of a language or group of languages. In addition, the chart tries to delimit for some languages two additional types, or stages, of attestation. In a preliminary type of attestation (light stipple in figure 1) even though there is not a usable



SEMITIC LANGUAGES. Figure 1. *Chronological distribution of the Semitic languages.*

corpus of texts, there may still be evidence for the existence of the speech community in the form of personal names, references to the language or the ethnic group that speaks it in texts in other languages, and even sporadic and isolated attempts to write the language.

In addition, as a kind of postexistence, it can be useful to distinguish a period when the language in question was superceded as a living, spoken language by other languages but continued to be understood in a community, and perhaps used as a (or even the only) medium of written communication to generate new texts (dark stipple in figure 1). It is of course difficult or impossible to determine at what point a community's spoken language no longer corresponds to the written language: by definition there is no written attestation of the former—thus, the location of the point of transition in figure 1 is somewhat arbitrary. Given the nature of written language, it is probable that a certain gap between written and spoken varieties of a language develops early on in most speech communities. In any case, there is clear evidence that in the absence of a relatively sudden replacement or notable transformation of the vernacular, the gap can become very wide indeed before speakers are willing or able to perceive a traditional vehicle of written communication as "not the same language as" the spoken one (cf. Latin in European Romania, Greek in Byzantium, or Arabic in the Near East).

Phonological and Grammatical Features. Comparative Semitic linguistics has been engaged for more than a century in the twin tasks of gathering data about the range of phonological, lexical, and grammatical phenomena in the attested Semitic languages and inferring from this evidence the corresponding features of Proto-Semitic, the language of the parent Semitic speech community.

Phonological features. In the realm of phonology, the relevant primary data are cognate sets—that is, sets of lexical items whose resemblance in meaning and form is of such a kind that it is highly unlikely that it could have arisen either by chance or by borrowing; the sets are much more likely to represent material inherited from an ancestral speech community. (Historical linguistics can only deal with probabilistic judgments, although this probability can sometimes be very high.) Finding such cognate sets in Semitic is a much simpler process than in many other domains of historical linguistics, given the relatively close relationships of the member languages. One such particularly obvious set is the one already alluded to: Akkadian *kalbum* "dog," Hebrew *keleb* "dog," Aramaic *kalbā* "dog," Arabic *kalbun* "dog," and Geʿez *kalb* "dog." From the pattern of occurrence of phonemes in this and interlocking cognate sets like the Arabic *kullun* = Hebrew *kōl* "all," or the Akkadian *libbum* and Geʿez *ləbb* "heart," general correspondence sets can be inferred: Akkadian /k/ = Hebrew /k/ = Aramaic /k/ = Arabic /k/ = Geʿez /k/, Akkadian /l/ = Hebrew /l/ = Aramaic /l/ = Arabic /l/ = Geʿez /l/, Akkadian /b/ = Hebrew /b/ = Aramaic /b/ = Arabic /b/ = Geʿez /b/, Akkadian /a/ = Hebrew /e/ = Aramaic /a/ = Arabic /a/ = Geʿez /a/. The cognate sets and correspondence sets together then permit a number of conclusions: that Proto-Semitic had the four phonemes /*k/, /*l/, /*b/ /*a/; that Proto-Semitic had the stems **kalb-*, "dog"; **kull-* "all," **libb-* "heart," and so forth. (The asterisk

TABLE 1. *Stop Consonants of Semitic*

	Akk.	Ugr.	Heb.	Syr.	Ar.	OSA	Jib.	Gez.	PSem.
Labial	p	p	p	p	f	f	f	f	*p
	b	b	b	b	b	b	b	b	*b
Alveolar	t	t	t	t	t	t	t	t	*t
	d	d	d	d	d	d	d	d	*d
	ṭ	ṭ	ṭ	ṭ	ṭ	ṭ	ṭ	ṭ	*ṭ
Velar	k	k	k	k	k	k	k	k	*k
	g	g	g	g	g	g	g	g	*g
	q	q	q	q	q	q	q	q	*q

means that the form is not directly attested but is reconstructed.)

Of course not all correspondence sets are identity sets like the consonantal ones just used. Without going through the cognate sets that justify them, tables 1–4 give the major correspondence sets defining the Proto-Semitic (PSem) consonant system, using the languages Akkadian (Akk.), Ugaritic (Ugr.), Hebrew (Heb.), Syriac (Syr.), Arabic (Ar.), Old South Arabian (OSA), Jibbali (Jib., Modern South Arabian), and Geʿez (Gez.).

The stop consonants are given in table 1, in the order voiceless, voiced, and emphatic. The latter feature is realized as pharyngealized in Arabic (i.e., produced with a simultaneous constriction of the throat in the velar-pharynx region), but glottalized in Modern South Arabian and Ethiopian Semitic (i.e., produced with a coarticulated glottal stop)—for the other pronunciation traditions the situation is not certain. Scholars are increasingly of the opinion that pharyngealization is a special development in Arabic, and that the general Semitic pronunciation of emphatics was with glottalization. With the exception of the voiceless labial, the correspondence sets are of the identity kind, and the reconstruction in Proto-Semitic poses no problems. It is noteworthy that a "southern tier" of languages has /f/ in place of the more northern /p/. The sonorants (see table 2) give an equally homogeneous and unproblematic picture. Here note that Ugaritic, Hebrew and other Canaanite languages, and Aramaic (and also Amorite) have /y/ in the initial position where the other languages have /w/—a feature sometimes adduced as a Northwest Semitic isogloss (a shared feature among a group of languages).

TABLE 2. *Sonorants of Semitic*

	Akk.	Ugr.	Heb.	Syr.	Arb.	OSA	Jib.	Gez.	PSem.
Nasal	m	m	m	m	m	m	m	m	*m
	n	n	n	n	n	n	n	n	*n
Liquid	l	l	l	l	l	l	l	l	*l
	r	r	r	r	r	r	r	r	*r
Glide	w	y, w	y, w	y, w	w	w	w	w	*w
	y	y	y	y	y	y	y	y	*y

On the other hand, the situation becomes much more complex with the spirants—a part of the phonology where the Semitic languages show a larger number of distinctions than is common in the world's languages. As can be seen from table 3, there is also evidence of a great deal of divergent and independent phonological change. Parenthesized symbols in quotes in table 3 indicate that a language's orthography has a distinct symbol for a segment (and, hence, presumably had a distinct phoneme at one point) whose pronunciation has since merged with that of another segment; "s^{1}", "s^{2}", and "s^{3}" are the conventional transcription symbols for the "s-like" phonemes of Old South Arabian (the superscripts correspond roughly to order of frequency); "θ" and "ð" are like "th" in the English "thin" and "then," respectively; "ɬ" is a voiceless [l]. Note that because of the interlocking correspondence sets, even without the Southern Arabian material the reconstruction of nine Proto-Semitic spirants would be obligatory, even though no one language makes more than eight distinctions (Ugaritic, Syriac, and Arabic—versus five for Geʿez and Hebrew and four for Akkadian). However, all nine distinctions are present in the most conservative branch of Semitic, Southern Arabian—graphically in Old South Arabian and pronounced in Middle South Arabian. With some reservations the pronunciation of one variety of Middle South Arabian is assigned to Proto-Semitic. It is beginning to look increasingly possible, however, that the pronunciation of the segment noted /*š/, far and away the most common of the "s" sounds, might in fact have been [s] (as in Arabic), and the series noted /*s *z *ṣ/ might be the affricates [ts dz tsʕ].

Semitic languages tend also to have an unusually large inventory of consonantal distinctions in the postvelar or laryngeal region. The most plausible reconstruction assigns to Proto-Semitic the same set of laryngeals as in Ugaritic, Arabic, Old South Arabian, and Middle South Arabian (see table 4). Noteworthy here is the almost complete disappearance of these characteristically "Semitic" consonants in Akkadian—presumably the result of language contact with laryngeal-poor Sumerian (the same phenomenon can be ob-

TABLE 3. *Spirants of Semitic*

	Akk.	Ugr.	Heb.	Syr.	Ar.	OSA	Jib.	Gez.	PSem.
Dental	š	θ	š	t	θ	θ	θ	s	*θ
	z	ð	z	d	ð	ð	ð	z	*ð
	ṣ	θ̣	ṣ	ṭ	ẓ	θ̣	θ̣	ṣ	*θ̣
Alveolar	s	s	s	s	s	s^{3}	s	s	*$s^{?}$
	z	z	z	z	z	z	z	z	*$z^{?}$
	ṣ	ṣ	ṣ	ṣ	ṣ	ṣ	ṣ	ṣ	*$ṣ^{?}$
Palatal[?]	š	š	š	š	s	s^{1}	š	s	*$š^{?}$
Lateral	š	š	s("š")	s	š	s^{2}	ɬ	s("š")	*ɬ
	ṣ	ṣ	ṣ	ʕ	ḍ	ḍ	ɬ	ṣ("ḍ")	*ɬ̣

TABLE 4. *Laryngeals of Semitic*

	Akk.	Ugr.	Heb.	Syr.	Ar.	OSA	Jib.	Gez.	PSem.
velar/	ḫ	ḫ	ḥ	ḥ	ḫ	ḫ	ḫ	ḥ("ḫ")	*ḫ
uvular	∅	γ	ʿ	ʿ	γ	γ	γ	ʿ	*γ
pharyngeal	∅	ḥ	ḥ	ḥ	ḥ	ḥ	ḥ	ḥ	*ḥ
	∅	ʿ	ʿ	ʿ	ʿ	ʿ	ʿ	ʿ	*ʿ
glottal	∅	h	h	h	h	h	h	h	*h
	∅	ʾ	ʾ	ʾ	ʾ	ʾ	ʾ	ʾ	*ʾ

served in other Semitic languages in situations of language contact, such as Amharic within Ethiopic).

Of the writing systems used to represent Semitic languages, only those used for Akkadian and Ethiopic have a built-in system of vowel representation. For the others, vowel representation is either virtually nonexistent (Old South Arabian, Phoenician), relatively limited (Ugaritic), optional (the other Western Semitic writing systems), or relatively recent (almost a thousand years lapse between the demise of Hebrew as a spoken language and the fixing of the standard Masoretic vowel notation). Although there is much that is not known about the history of the vowel systems in some individual branches, the Proto-Semitic vowel system from which the attested systems derive seems to have been the following rather simple one:

i	u	ī	ū
a		ā	

with three long and three short vowels, plus diphthongs /ay, aw/. This vowel system is preserved virtually intact in Classical Arabic, and with only slight modification in Akkadian. Where it interacts with stress and syllabic structure, as in Hebrew, Aramaic, and Modern South Arabian, the result can be a relatively complex vowel system and set of vocalic alternations.

No detailed history of the phonological development of the Semitic languages is possible without taking into account a good deal of additional evidence. However, an important general conclusion can already be pointed out on the basis of the data in tables 1–4. Although there is a large number of parallel developments (/θ/ ends up as /š/ in both Akkadian and Hebrew; /ḥ ḫ/ end up merging in Canaanite, Aramaic, and Ethiopic; and /ɬ š/ merge in Akkadian, Arabic, and Ugaritic), the more evidence there is, the more it seems likely that each of the major branches of Semitic began its existence as a separate speech community with the Proto-Semitic phoneme inventory virtually intact. It seems that they developed toward their historically attested forms as distinct (but perhaps mutually interacting) entities. On the level of phonology, thus, very little content can be given to such traditional labels such as Northwest Semitic (for Canaanite and Aramaic) and South Semitic (for Arabic, South Arabian, and Ethiopic) as designations for hypothetical intermediate unified speech communities—however useful these terms may be for zones of greater mutual influence and interaction.

Grammatical features. In principle, grammatical features should cover both morphological and syntactic features. Comparative Semitic syntax, however, is an area of study that barely exists. Indeed, basic data collections can be hard to find even for the syntax of major stages of well-attested individual languages. Apart from an occasional discussion of so-called polarity switches in agreement patterns (e.g., the tendency for numerals agreeing with masculine nouns to have typically feminine morphology, and vice versa), the one topic regularly touched on in the literature is word order. The frequently repeated observation is that "verb, subject, object" seems to be the preferred sentence-level word order in the earliest stages of Semitic. The two major exceptions seem to confirm the rule: the "subject, object, verb" order of Akkadian and Modern Ethiopic Semitic can be attributed to substratum influences—Sumerian and Cushitic, respectively. Even in Akkadian, the oldest onomastic evidence suggests an earlier "verb, subject, object" stage. The Semitic languages are, however, characterized by a rich inflectional and derivational morphology, and a framework for comparative Semitic morphology has been steadily built up over the last century.

Noun. The inflectional categories of the noun are illustrated in table 5, which gives the nominal paradigms for the two languages with the best-preserved systems, Akkadian (*šarrum/šarratum* "king/queen") and Arabic (*ʕālim(at)un* "wise man/woman"). As for the other languages, the data on nominal inflection are obscured by the writing system, partially in Ugaritic and almost totally in Old South Arabian, whereas the system has undergone considerable simplification in Canaanite, Aramaic, Middle South Arabian, and Geʿez. As can be seen from the table, Semitic has two grammatical genders, with the feminine frequently marked by a suffix *-(a)t* (in addition to a number of less common ones). The core of the case system for Proto-Semitic seems clear: nominative *-*u*; genitive *-*i*; and accusative *-*a* in the singular, and nominative *-*u*, and oblique *-*i/y* in the dual and plural. The Proto-Semitic status of some other cases marginally attested in some of the individual languages is less certain. In its fullest form Semitic distinguishes three number categories, although the dual, marked basically by *-ā*, either becomes reduced in scope (with fewer case distinctions and limited to a small number of nouns) or disappears altogether in the course of the history of each of the branches.

The basic mark of the plural in Semitic, when it is formed by suffixation, is a lengthening of the first suffix vowel (the

TABLE 5. *Akkadian and Arabic Noun Inflection*

	Akkadian			Arabic		
	Sg.	Du.	Pl.	Sg.	Du.	Pl.
Masc.						
Nom.	*šarrum*	*šarrān*	*šarrū*	*ʕālimun*	*ʕālimāni*	*ʕālimūna*
Gen.	*šarrim*	*šarrīn*	*šarrī*	*ʕalimin*	*ʕālimayni*	*ʕālimīna*
Acc.	*šarram*			*ʕāliman*		
Fem.						
Nom.	*šarratum*	*šarratān*	*šarrātum*	*ʕālimatun*	*ʕālimatāni*	*ʕālimātun*
Gen.	*šarratim*	*šarratīn*	*šarrātim*	*ʕālimatin*	*ʕālimatayni*	*ʕālimātin*
Acc.	*šarratam*			*ʕālimatan*		

case vowel *u* or *i* for masculines; the vowel of the feminine suffix *-at* for feminines). In Arabic (and probably Proto-Semitic) there is an added suffix, *-nV,* in the nonsingular, where V is high (/ni/) after a low vowel (/ā/) and low (/na/) after a high vowel (/ūī/). This suffix shows up as *-n* in the Akkadian dual, as *-n* in Aramaic and as *-m(V)* in Canaanite and Ugaritic. In addition to suffix plurals, Semitic could also form plurals by changing the vowel pattern of a noun (with or without additional affixes). This is an inflectional process abundantly attested in the Southern Semitic languages (Arabic *kilāb* and Geʿez *ʔaklәbt* "dogs"), but also marginally in Hebrew, where it cooccurs with the usual plural suffix *-īm (klābīm).*

Lastly, the singular nouns of table 5 show also one final suffix that has the shape *-m* in Akkadian (also in Old South Arabian) and *-n* in Arabic. This suffix eventually disappears in all the branches—it is no longer present in Modern Arabic, Modern Southern Arabian, or the most recent dialects of Akkadian. Its function is not certain. It is not present, however, in Classical Arabic when the noun occurs with the definite article prefix *al-*, and it is not present in any language when a noun is followed by a "possessor" noun (i.e., a noun in the genitive, if the language has preserved case): Arabic *baytu* "house," and *malikun* "king," but *baytu al-maliku* "house of the king." Note that nouns in this position are said to be in the construct state. This construction exists in all branches of Semitic and is characterized by a grammatically (e.g., fewer case distinctions) and sometimes phonologically reduced version of the "possessed," or "governed," noun, which often forms some sort of accentual unit with the "governing" noun: Akkadian *bītum* "house," *šarrum* "king," but *bīt šarrim* "house of the king"; and Hebrew *bayit* "house," *melek* "king," but *bêt melek* "(a) king's house."

Pronoun. Table 6 gives the principal pronomina paradigms for two representative Semitic languages, Akkadian and Arabic. The independent pronouns are used in emphatic subject and predicate nominal function. The suffix pronouns are interpreted as possessives when attached to nouns and as objects when attached to verbs. In every branch of Semitic only the first-person singular has a different form in these two functions (*-ī* when possessive and *-ni* when object). The one major distinction between the two languages in table 6 is in the pronominal base for the third-person forms, masculine and feminine, singular and plural: *š-* versus *h-* (which sometimes becomes *ʾ-*). This turns out to be a major isogloss in Semitic generally. All Old South Arabian languages except Sabean agree with Akkadian in having *š-*; Sabean and the rest of the Semitic languages follow Arabic—except for Middle South Arabian, which has a mixture of both (sometimes *h-* in masculine and *š-* in feminine forms). It is difficult to determine whether this alternation is fundamentally morphological or phonological: that is, whether two different pronominal bases coexisted in Proto-Semitic, of which different branches generalized one or the other, or whether a mysteriously conditioned sound change *š* > *h* occurred. The latter possibility has certainly come to be the case in the branch that leads to Middle South Arabian, in which various languages show sporadic *h* < *š* correspondences in nonpronominal general vocabulary (cf. Soqotri *hémaʕ* "hear" versus the common Semitic **šamaʕ-*). Finally, the Semitic languages tend to use the same conso-

TABLE 6. *Akkadian and Arabic Pronouns*

	Akkadian		Arabic	
	Sg.	Pl.	Sg.	Pl.
Independent				
1	*anāku*	*nīnu*	*ʔana*	*naḥnu*
2 masc.	*atta*	*attunu*	*ʔanta*	*ʔantum*
2 fem.	*atti*	*attina*	*ʔanti*	*ʔantunna*
3 masc.	*šū*	*šunu*	*huwa*	*hum*
3 fem.	*šī*	*šina*	*hiya*	*hunna*
Suffix				
1	*-ī, -nī*	*-nī*	*-ī, -nī*	*-nā*
2 masc.	*-ka*	*-kunu*	*-ka*	*-kum*
2 fem.	*-ki*	*-kina*	*-ki*	*-kunna*
3 masc.	*-šu*	*-šunu*	*-hū*	*-hum*
3 fem.	*-ši*	*-šina*	*-hā*	*-hunna*

nant both as third-person pronominal base and as prefix for the causative form of the verb: Akkadian *šu* "he" *-šalbas* "cause to dress," Arabic *huwa, ʔalbas* (cf. Old North Arabic *hlbs*). Ugaritic, with *hw* "he" *šlbš* "cause to dress," seems to show a transitional stage (but in which direction?).

Verb. Although each Semitic language has its own system of verbal inflection, there is a common core of categories and formal processes visible in the different systems. It permits a fairly accurate approximation of the essential features of the protosystem. In all Semitic languages, finite verb paradigms can be analyzed into two subparadigms: one subparadigm marks the subject affixes; the other subparadigm accounts for the stem form and marks the combination of root, derived stem, and tense mode.

The subject subparadigms divide the verb forms into two inflectional classes: those marking the verbal subject with prefixes (plus supplemental suffixes for distinctions of gender and number), and those marking the verbal subject with suffixes only. Table 7 gives these subject-marking subparadigms for three languages that among them cover most of the range of forms resconstructable for Proto-Semitic subject marking: Ugaritic, Canaanite, and Aramaic in general follow the Arabic pattern; Middle South Arabian follows the Geʿez—Old South Arabian, with its huge corpus of inscriptions formulated solely in the third person (singular, dual, and plural), cannot be classified. In Akkadian, the prefixing subparadigm is used with different stems for the past tense (*ta-lbaš* "she wore"), the present tense (*ta-labbaš* "she wears"), and the jussive (*ta-lbaš* "may she wear"). The suffixing subparadigm is used only with a form generally termed stative (*labš-at* "she is dressed"). In Arabic and Geʿez the prefixing form is also used with the present tense and the jussive (Ar. *ta-lbas-u, ta-lbas;* Gez. *tə-labbəs-i, tə-lbas-i* "she wears," "may she wear"), but the suffixing form is used with an innovated past tense, homologous with the Akkadian stative (Ar. *labis-at,* Gez. *lab(ə)s-at* "she wore").

As can be seen from table 7, the prefixing subparadigms differ very little from one another, and presumably all continue fairly directly an ancestral Proto-Semitic system. The suffixing subparadigms, however, seem to be subject to a certain amount of transformation. In the first place, the first- and second-person suffix forms, especially in the Akkadian, look very much like reduced enclitic forms of the independent pronouns given in table 6, with the *-ā-* perhaps as some linking element. The third-person forms, on the other hand, look like elements from the nominal inflection—as a matter of fact, the Akkadian stative can be formed on the basis of any noun or adjective (e.g., *damq-at* "she is good," *šarr-āku* "I am king"). The major difference in the Arabiclike languages (Canaanite, Aramaic) is that the *-k-* ~ *-t-* alternations in the paradigm have been leveled out in favor of *-t-*, whereas in Geʿez and Middle South Arabian they have been leveled out in favor of *-k-*. As was pointed out by Robert Hetzron (1976), this is important evidence in favor of the temporal priority of an Akkadianlike system over the other two. It is now widely supposed therefore that the Proto-Semitic system resembled the Akkadian one, and that the Western Semitic past tense evolved out of something like a verbal adjective with enclitic reduced pronouns.

The second set of subparadigms governs the shape of the stem to which the subject affixes are attached. The essential features of this system are shown in table 8, where Akkadian and Geʿez illustrate eastern and southern varieties of Semitic, and where Arabic illustrates the state of affairs in a central group including Canaanite and Aramaic. In table 8 it can be seen that all branches have a jussive at some point (this becomes marginal in Canaanite and disappears in Aramaic). The verbal form of the jussive is, as far as is known, homophonous with the past tense in Akkadian. Each of the branches also has a specialized past tense, however (called Past_2 in table 8), which has the form of the jussive. In Arabic the jussive with *lam,* "not," is the ordinary negative past tense: *talbas,* "may she wear"; *lam talbas,* "she did not wear." In Hebrew this is the so-called waw-consecutive

TABLE 7. *Akkadian, Arabic, and Geʿez Verb Subject*

	Akkadian		Arabic		Geʿez	
	Sg.	Pl.	Sg.	Pl.	Sg.	Pl.
Prefixing/Suffixing						
1	*a-*	*ni-*	*a-*	*na-*	*ʔə-*	*nə-*
2 masc.	*ta-*	*ta- . . . -ā*	*ta-*	*ta- . . . -ū*	*tə-*	*tə- . . . -u*
2 fem.	*ta- . . . -ī*	*ta- . . . -ā*	*ta- . . . -ī*	*ta- . . . -na*	*tə- . . . -i*	*tə- . . . -ā*
3 masc.	*i-*	*i- . . . -ū*	*ya-*	*ya- . . . -ū*	*yə-*	*yə- . . . -u*
3 fem.	*ta-*	*i- . . . -ā*	*ta-*	*ta- . . . -na*	*tə-*	*yə- . . . -ā*
Suffixing						
1	*-āku*	*-ānu*	*-tu*	*-nā*	*-ka*	*-na*
2 masc.	*-āta*	*-ātunu*	*-ta*	*-tum*	*-ka*	*-kəmmu*
2 fem.	*-āti*	*-ātina*	*-ti*	*-tunna*	*-ki*	*-kən*
3 masc.	*-∅*	*-ū*	*-a*	*-ū*	*-a*	*-u*
3 fem.	*-at*	*-ā*	*-at*	*-na*	*-at*	*-ā*

TABLE 8. *Strong Base-Form Tense Stems in Akkadian, Arabic, and Geʿez.* All forms are feminine third-person singular.

	Akkadian		Arabic		Geʿez	
	Function	Form	Function	Form	Function	Form
1	Present	*ta-labbaš*			Present	*tə-labbəs*
2	(Cf. Subjunctive *ta-lbaš-u*)		Present	*ta-lbas-u*		
3	Jussive	*(lu) ta-lbaš*	Jussive	*ta-lbas*	Jussive	*tə-lbas*
4	Past	*ta-lbaš*	Past_2	*ta-lbas*	(Past_2)	*(tə-bel-)*
5	Stative	*lab(i)š-at*	Past	*labis-at*	Past	*lab(ə)s-at*

form: *tilbaš* "may she wear," "she wears," *wattilbaš* "and she wore." In Geʿez this form exists with only one lexical item, the verb *bhl* "say," whose ordinary past tense is formed with subject prefixes: *təbe* "she said," *yəbelā* "they [fem] said," (vs *təbəl* "she says"—note the form of the jussive *təbal* "may she say"). The normal past tense in all of the Western languages, however, is a suffixing form, homologous with the Akkadian stative. Finally, the present-tense form, which in the Southern languages is the same as in Akkadian, has a new base in the central languages, which is akin to the Akkadian past/jussive, and may, with its *-u* suffix, be related to a subjunctive form in Akkadian.

Two characteristic aspects of Semitic verbal inflection are not touched upon in table 8: the derived (as opposed to the base) stem form, and the so-called weak (as opposed to the strong) verbal root. The stem system illustrated involves only the basic (nonderived) form of the stem. The essential features of the stem system hold also for each language's inventory of so-called derived stems. Some of the principal common derived stems can be illustrated in Akkadian, Hebrew, and Arabic using, for the sake of illustration, the root **lbš* (which does not actually occur in each derived stem form in each language). The derived stem form will be given in the stative for Akkadian and in the past tense for Hebrew and Arabic: causative, with the prefix *š/h/ʔ* (Akk. *šulbuš-*, Heb. *hilbīš-*, Ar. *ʔalbas-*); passive, with the prefix *n* (Akk. *nalbuš-*, Heb. *nilbaš-*, Ar. *inlabas-*); reflexive, with the prefix or infix *t* (Akk. *litbuš-*, Heb. *hitlabbeš-*, Ar. *iltabas-*); factative, with the geminated middle root consonant (Akk. *lubbuš-*, Heb. *libbeš-*, Ar. *labbas-*).

The distinction between strong versus weak root involves the fact that Semitic inflection and derivation typically involve a triconsonantal strong root, such as *lbs,* "wear," for Arabic, into which are inserted different vowel patterns (combined with different prefixes, suffixes, and infixes): *labisa,* "he wore"; *lubs,* "wearing"; *labs,* "tangle"; *libs,* "clothing"; *lubūs,* "articles of clothing"; *libsa,* "style of dressing"; *libās,* "clothes"; *albisa,* "clothes [pl]"; *labīs,* "worn"; *talbīs,* "dressing". A number of words, however, do not have three true consonants, and the place of the "missing" consonant is occupied by a glide /w/ or /y/ (sometimes also /n/ and /ʔ/), yielding weak roots of the form *wCC, yCC, CwC, CyC, CCw, CCy,* and so on. Because some of the oldest and most widespread Semitic vocabulary items (*wld* "bear," *qwm* "stand," *bky* "cry") are of this form, it has been suggested that the unique phonological organization involved in triconsonantal strong roots is a tendency (already incipient in Afro-Asiatic) that only gradually overtook large portions of Semitic morphology and lexicon. In it the weak roots are an attempt to fit older, nontriconsonantal lexical items onto the innovative triconsonantal patterns. Semitic languages differ in the extent to which weak verbs are assimilated to the strong patterns—in general Akkadian tends to be the most conservative (i.e., the least assimilating), whereas Geʿez is the most assimilating; Arabic is somewhere in the middle; and Hebrew is somewhat more conservative than Arabic. Table 9 gives an idea of how this works out for selected tense-person forms of the very archaic weak root **mwt,* "die."

Scenario for Semitic Prehistory. The picture of the "dawn of Semitic" that emerges from a consideration of the Semitic and parallel Afro-Asiatic evidence is that of a group

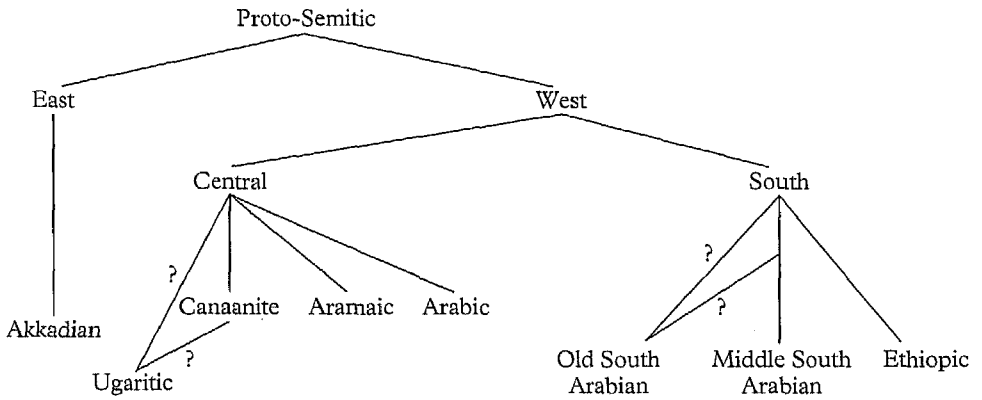
TABLE 9. *Weak Verb Forms in Akkadian, Arabic, and Geʿez*

	Akkadian		Arabic		Geʿez	
	Present	Past	Present	Past	Present	Past
3 Sg. masc.	*i-mūat*	*i-mūt*	*ya-mūt-u*	*māt-a*	*yə-mawwt*	*mot-a*
2 Sg. masc.	*ta-mūat*	*ta-mūt*	*ta-mūtu*	*mut-ta*	*tə-mawwt*	*mot-ka*
3 Pl. masc.	*i-mutt-ū*	*i-mūt-ū*	*ya-mūt-ū-na*	*māt-ū*	*yə-mawwt-u*	*mot-u*

of languages distributed over what may have been a relatively restricted range in Northeast Africa, with one subgroup occupying the African-Asian (hence, "Afro-Asiatic") bridge and gateway into western Asia that is Palestine (with adjacent parts of Syria and northern and western Arabia). It is impossible to fix a definite time of origin for this distribution, but a *terminus ante quem* is clearly provided by the fact that an Afro-Asiatic-speaking group, the Egyptians, is present at, and apparently responsible for, the construction of irrigation-based urban civilization in the Nile valley at the end of the fourth millennium. Slightly later, representatives of the Western Asian Afro-Asiatic branch arrive on the scene in the early stages (but not as originators) of the parallel development in Mesopotamia. Given the language distributions, the center of dispersion of this group would seem more likely to be Northeast Africa than Western Asia—but a lot of linguistic and archeological work will have to be done before this can be taken as certain. Apart from the group that settled in the Nile valley, a common cultural profile of important segments of the other Afro-Asiatic groups—Semitic, Cushitic, and Berber—would, in any case, seem to be that of a mobile, if not nomadic, society with a special adaptation to food production and animal raising in arid environments.

Research into the nature of the language of this group is barely at a beginning stage. However, evidence from Berber and Cushitic may indicate that the language possessed a prefixing present and past tense distinguished by a variety of vowel patterns and syllabic structures: Berber *i-krəz, t-krəz,* "he/she plowed," versus *i-kərrəz, t-kərrəz,* "he/she is plowing"; Bedja (Cushitic) *ʕa-dbil, ʕi-dbil,* "I/he collected," versus *ʕa-danbiil, danbiil,* "I/he collect(s)." On the other hand, Egyptian shows that a verbal form with encliticlike pronominal suffixes could also have been part of the inflectional repertoire. Compare the Akkadian stative suffixes in table 7 with Egyptian: *sḏm.kwi̯, sḏm.ti̯, sḏm.wyn, sḏm.tiwny,* "I/you[sg], we/you[pl] heard." In other words, in these and other respects, a picture emerges of a Proto-Afro-Asiatic as it begins to differentiate, whose essential features are not all that different from what might be conjectured of an older stage of Akkadian.

Assuming an area in and around Palestine as the region of most intense contact between the Proto-Semitic speech communities, where innovations are most likely to be spread and shared, one scenario for the differentiation of the major branches of Semitic might run as follows: an eastern part of the Proto-Semitic speech community, including, or consisting exclusively of, a forerunner of Akkadian, moving toward North Syria and the Euphrates River, might have become isolated from the other dialects at some point before a tendency spread in the rest of the speech community to replace the (homophonous?; cf. Table 8) past-tense form with a new past tense based on the perfective stative (a development with many parallels in language history—including, e.g., that of the modern Romance languages). There was evidently a simultaneous tendency to level out the shape of the suffixed pronouns, now part of the core verbal inflexional system. In the southern extremity of the contact area, dialects tended to replaced the *t* forms with a *k*. In the north, the leveling took place in the opposite direction. Subsequently, the southern dialects in turn lost contact with the rest of the community (perhaps they crossed the highland barrier that roughly corresponds to the southwestern border between Saudi Arabia and Yemen) before they were reached by a new reinterpretation of the verbal system coming out of the central dialects. The reinterpretation would have ended up replacing the bisyllabic present-tense form preserved in Akkadian and Geʿez with a monosyllabic form (and in Middle South Arabian; the nature of the written evidence does not permit including Old South Arabian with any certainty). The present state of knowledge only allows speculation on the nature of this reinterpretation. One possibility is that Proto-Semitic already possessed both forms, and that one of them tended to drop out at the periphery and take over in the center. Another possibility is that an older main-clause form was replaced by a (clefted?, more emphatic?) version,



SEMITIC LANGUAGES. Figure 2. *Relations and subgrouping of Early Semitic speech communities.*

in which "she wears" is replaced with a quasi-subordinate form ("it is that she wore," or the like).

Whether or not this scenario turns out to be tenable, it is generally admitted today that the the data summarized in tables 7–9 dictate a primary major differentiation of Semitic into an Eastern, Central, and Southern group, in which Arabic belongs to the Central, and not the Southern group. This picture still leaves open the possibility for the spread of phonological (/f/ instead of /p/) and grammatical (internal plural patterns) preferences among dialects in the southern range of Semitic. It also leaves open the question of whether or to what extent Aramaic and Canaanite may have constituted an independent regional speech community, or a communicating group of dialects—thus justifying the old term *Northwest Semitic*. In any case, the essential features of this view are captured in figure 2, where the status of Ugaritic as a Canaanite language, and the relationship between Old and Middle South Arabian are left open.

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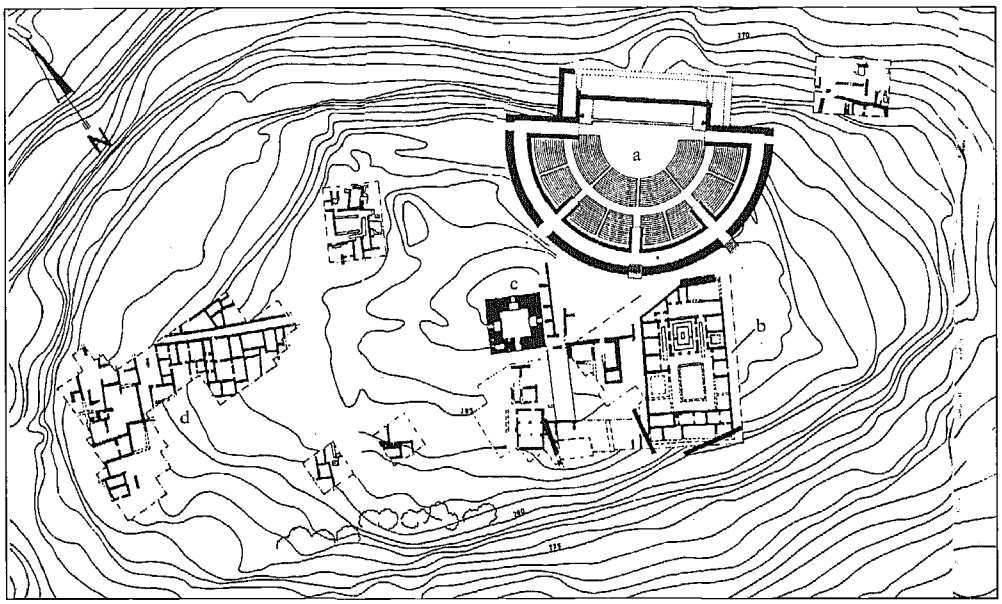
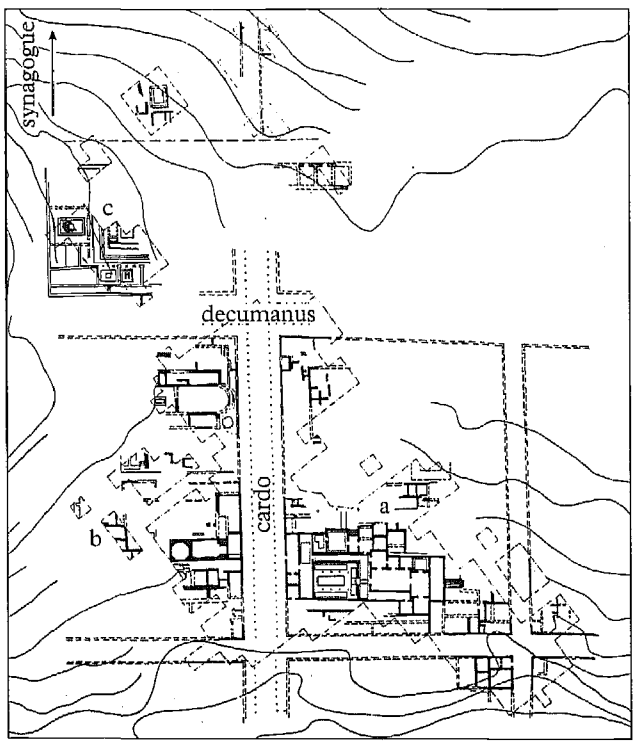
GENE B. GRAGG

SEPPHORIS (Heb., Zippori), site located in the heart of Lower Galilee in northern Israel (map reference 176 × 239), along the ancient east–west trans-Galilean roadway that linked the Mediterranean Sea, some 29 km (18 mi.) to the west, with the city of Tiberias on the Sea of Galilee, some 29 km to the east. The site is approximately 6 km (4 mi.) northwest of Nazareth and sits on a hill that rises about 300 m above the surrounding valleys: to the north lies the Beth-Neṭofa Valley and to the south, the Nazareth basin. The ancient site of Sepphoris was occupied from early modern times until 1948 by inhabitants of the Arab village of Ṣafuriyye and subsequently by Jewish settlers at Moshav Ṣippori, located just south of the ancient city. Sepphoris consisted of an upper city (summit, or acropolis) and a large lower city surrounding the summit (see figure 1a–b). The medieval citadel, which crowns the summit, was the focal point of the early modern settlement, for which it served as a school until 1948; it was renovated in the mid-eighteenth century by Ẓahir al-ʿUmar al-Zaydani, the bedouin governor of Galilee, and again in about 1889 by the Turkish sultan Abdülhamid II (1876–1909), when a second story was added.

Archaeological Excavations. The first excavations at Sepphoris were carried out in the early 1900s by Prosper Viaud in the ruins of the Church of St. Anne, a Crusader structure just north of the summit (see figure 2). Acquired



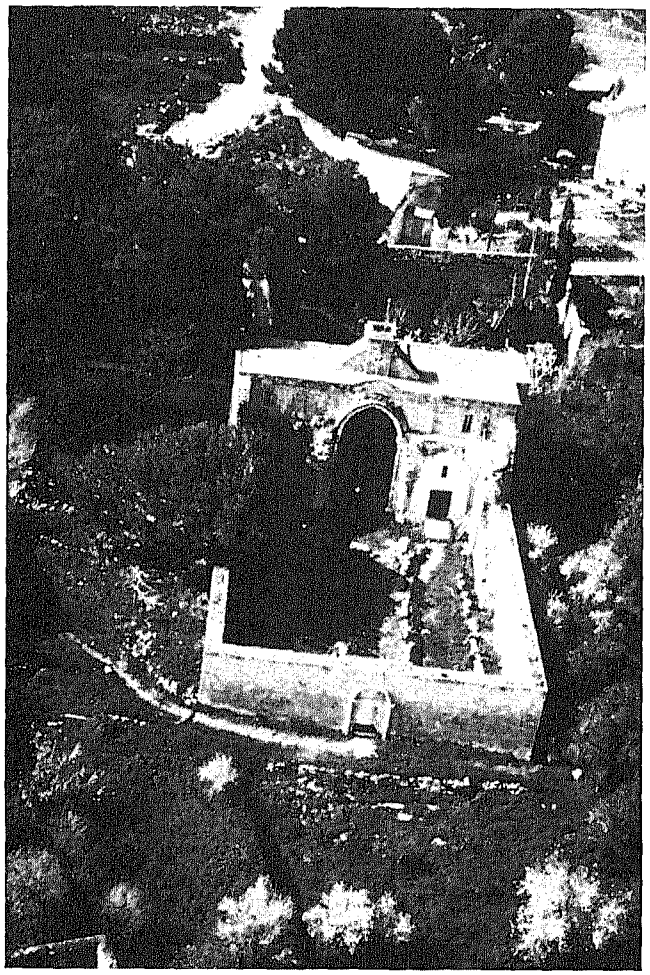
SEPPHORIS. Figure 1a. *Plan of the upper city.* (a) Theater; (b) Roman villa of Dionysus; (c) citadel; (d) western summit. (Courtesy Joint Sepphoris Project)



SEPPHORIS. Figure 1b. *Plan of the lower city.* (a) Festival building; (b) Byzantine church; (c) Roman-period public building. (Based on the excavation map of Z. Weiss and E. Netzer, Hebrew University of Jerusalem)

by the Franciscans in 1870, the church still belongs to the Custody of the Holy Land, although it is now administered through the orphanage of the Sisters of St. Anne, founded in 1924. The limited work in the church produced no evidence of a pre-Crusader building. However, mosaic fragments were found just north of the church. One large fragment, probably dating to the Late Roman period, has an Aramaic text: "Be remembered for good, Rabbi Yudan son of Tanḥum, son of . . . who gave one [dinar]. . . ." Another Late Roman or perhaps Byzantine inscription on a stone lintel uncovered in this general area by W. Ewing (1895) is in Greek and refers to several apparently well-known leaders, including the *archisynagogus* ("head of the synagogue") of Sidon and also of Tyre. This inscription ends with a chi-rho symbol, which has caused some scholars to identify it as a Jewish-Christian synagogue inscription.

The first major archaeological excavations at Sepphoris were carried out in 1931 under the direction of Leroy Waterman of the University of Michigan. This expedition discovered the theater on the northeastern summit and excavated a large building, identified as a Christian basilica, on the northwestern summit (Waterman, 1937). Michael Avi-Yonah (1978) argued that the so-called church was in fact in a large house with a peristyle courtyard. In 1976 Eric M. Meyers and James F. Strange conducted a preliminary site survey under the rubric of the Meiron Excavation Project; in 1982 and 1984, Strange (1982) conducted a systematic survey of the site—its buildings, cisterns, and burial caves—under the sponsorship of the University of South Florida. In 1983 and 1984, the South Florida team, under Strange's direction, began excavations on the western summit, along-



SEPPHORIS. Figure 2. *Aerial view of the medieval church of St. Anne.* (Courtesy Joint Sepphoris Project)

side the citadel, and on the western side of the theater; in 1986, the team reopened the areas around Waterman's "church." In later seasons the South Florida expedition focused its energies on a large public building in the eastern lower city.

In 1985 the Joint Sepphoris Project was launched, bringing together Duke University and the Hebrew University of Jerusalem for five seasons under the direction of Meyers, Ehud Netzer, and Carol L. Meyers. This project concentrated on the domestic areas on the western summit, the theater, and a large Roman villa with a Dionysus mosaic on the eastern summit. The Hebrew University team continued under Netzer and Zeev Weiss until 1995, when Weiss took over the directorship. Their work on the summit since 1990 continued work on the theater and also uncovered a storage building east of the citadel. In addition, they opened extensive areas of the eastern lower city and excavated a Byzantine synagogue in the northeast. The Duke University team reorganized in 1993, adding Kenneth G. Hoglund to the directorship and renaming its project the Sepphoris Regional Project. Work at Sepphoris in 1993 and 1994 concentrated exclusively on domestic areas of the western summit; the team also began excavation of a small tell nearby, Tel 'Ein-Zippori. [*See* 'Ein-Zippori, Tel.] Between 1975 and 1985, Tsvika Tsuk carried out systematic surveys of the water systems in the site's environs. From 1992 to 1995, under the sponsorship of the National Parks Authority and Tel Aviv University, he directed the excavation and preservation of the aqueducts, reservoir, and associated structures.

In October 1992, Zippori National Park was opened to the public; in 1993, a permanent structure to house the Roman villa and mosaic was constructed; and in 1995, the citadel was converted into a museum and information center. Restoration of selected buildings in the residential area of the western summit and in the public areas of the lower city is underway.

History. Reconstructing the history of Sepphoris from the abundance of literary sources and archaeological materials is a complicated task. The Joint Sepphoris Project and the Sepphoris Regional Project identified a large amount of pottery from the Iron Age (Iron I and especially Iron II), mostly on bedrock and in fills on the summit, but without accompanying structural or stratified remains. The Mishnah's apparent awareness of an "old" settlement going back to the time of Joshua (*'Arakh.* 9.6) should not be dismissed. After several seasons of excavations at nearby Tel 'Ein-Zippori, however, it now appears that the Late Bronze–Iron Age settlement in the area was located more to the southeast. It is still too soon to determine whether there was a gap between the eighth century BCE and the Persian period in the sixth. The presence of black Attic ware sherds and the chance discovery of a beautiful Attic animal-shaped rhyton from the fifth century BCE indicate that the site was occupied by that time. Whether it was a military garrison serving the Persian authorities or another sort of settlement cannot be established. Similarly, the presence of large amounts of late Persian and Early Hellenistic pottery on the western summit suggests that there was a settlement of some kind (its nature also remains unclear) during the early Second Temple period.

The name *Sepphoris* does not appear in the Bible. The first literary reference to it is in Josephus in connection with the Hasmonean king, Alexander Jannaeus, who successfully repelled the attack of Ptolemy Lathyrus of Egypt at the beginning of his reign (*Antiq.* 13.338). Although few stratified remains of the Hellenistic period have been found on the western summit, many coins of Jannaeus have been recovered. The settlement of this period was substantial enough to warrant an attack by Ptolemy, in which he lost many soldiers (*Antiq.* 3.337). In the Hasmonean era, Sepphoris was probably the administrative capital of Galilee because by about 57 BCE Gabinius, Pompey's legate to Syria, assigned a *synedria,* or "council," to Sepphoris (*Antiq.* 14.91; *War*

1.170), making it officially the capital of the Galilee. The city was captured by Herod the Great in a snowstorm, in about 37 BCE, which prevented it from going over to Mattathias Antigonus and the Parthians (*Antiq.* 17.271). [*See* Parthians.] The city presumably remained Herod's northern command post for the rest of his reign. Upon his death in 4 BCE, a rebellion broke out at the site—the so-called War of Varus—that sought to remove Sepphoris from Herodian rule. The rebellion was crushed, and the city was supposedly burned and many of its inhabitants taken as slaves (*War* 2.68; *Antiq.* 17.289). Archaeological evidence of only scattered burning suggests that Josephus's report of destruction may be somewhat exaggerated.

Sepphoris was inherited by Herod's son Antipas as part of the tetrarchy of Galilee and Peraea (Transjordan). Antipas no doubt did much to contribute to the site's recovery: he "fortified Sepphoris to be the ornament of all Galilee, and called it Autocratoris" (*Antiq.* 18.27). Josephus's use of the term *ornament (proschema)* is to be understood in the sense of an impregnable nature and fortification, and "Autocratoris" refers to the fact that it enjoyed autonomous rule and also honored Augustus. The precise nature of the renovations and rebuilding Antipas undertook before he moved the capital of Galilee to Tiberias is not known. The theater, parts of which have been excavated by four expeditions, seems to date to a period later than Antipas, though there is no unanimity of opinion about the date, and no known public buildings of any great size have been recovered from the period of his rule. [*See* Theaters.] However, other kinds of first-century remains, including partially preserved sections of a large villa and several ritual baths, have been recovered on the summit, giving support to the considerable literature that mentions the presence of priests at Sepphoris during this period. [*See* Ritual Baths.] The fragmentary nature of the Early Roman deposits on the site certainly is a result of extensive building and rebuilding in later periods.

The role of Sepphoris during the First Jewish Revolt against Rome was clearly pro-Roman, the residents having "displayed pacific sentiments" (*War* 2.30–31); coins minted in 66–67 CE commemorate the surrender of the city to Vespasian by naming it Eirenopolis, "City of Peace" (Meshorer, 1985, p. 36). [*See* First Jewish Revolt.] Josephus, however, is inconsistent about the city's pro-Roman stance during the war. Coins minted during the reign of Nero read: "Sepphoris Neronias, the city of peace named after the Caesar Nero."

After the fall of Jerusalem in 70 CE, many Jews fled north; some, including the priestly clan of Jedaiah, apparently settled in Sepphoris. This demographic shift influenced the city's character: it became the foremost Jewish city in Galilee. The city coins minted in Trajan's reign (98–117 CE) all bear Jewish symbols on the reverse: wreath, palm tree, caduceus, and ears of grain. A Capitoline temple, however, was apparently erected during or shortly after the reign of Hadrian (117–138 CE), who appointed a gentile administration in the city. It was at the end of his reign, or at the beginning of the reign of Antoninus Pius (138–161 CE), that the city became known as Diocaesarea, in honor of Caesar and Zeus. It was at this time, too, that Roman soldiers of the Sixth Legion were stationed at nearby Leggio (modern Lejjun), testifying to a dramatic change in the population at Sepphoris and in the region as a whole. The impact of the Second Revolt against Rome (132–135 CE) on Sepphoris and nearby areas is unclear in both the archaeological record and the literary sources. [*See* Second Jewish Revolt.]

During the reign of Caracalla (198–217 CE), for some seventeen years, Sepphoris was the seat of the Sanhedrin under the leadership of Rabbi Judah the Patriarch (ha-Nasi). The municipal government apparently reverted to Jewish control, judging from a coin of the early third century CE that commemorates an accord between the *boule* ("council") of Sepphoris and the Roman senate: "Covenant of friendship and mutual aid between the holy council and the senate of the Roman people" (Meshorer, 1985, p. 37). This coin provides a unique glimpse into the city of Rabbi Judah, well known as the redactor of the Mishnah and presumed to be a friend of the emperor Caracalla, who was well disposed toward the Jews, perhaps as part of his policy of developing the eastern empire.

Sepphoris remained a major Jewish center of learning even after the publication of the Mishnah and the removal of the Sanhedrin to Tiberias during the time of Judah's grandson, Rabbi Judah Nesiah. The so-called Gallus Revolt, against Gallus Caesar, is reported to have broken out in Sepphoris in 351 CE led by Patricius; the extent of the damage done when the revolt was quelled by the Roman commander Ursicinus is unclear. In any case the city was badly damaged by the earthquake of 363, one of the strongest of antiquity and is specifically mentioned in a letter to Cyril, bishop of Jerusalem. The archaeological evidence indicates that Sepphoris was extensively rebuilt fairly soon after the earthquake. By the sixth century there was a Christian community headed by a bishop; the bishops of Sepphoris at this time participated in synods in Jerusalem. By late Byzantine times there is some indication that Sepphoris had a connection to the Umayyad dynasty: Umayya, a great grandfather of three caliphs and a businessman in Mecca, is reported to have been given a Jewish slavegirl from Sepphoris when he lived in Palestine. During this period, Sepphoris is referred to as Ṣaffuriyya, not Diocaesarea.

Sepphoris may have been conquered by a general named Shurahbil during the caliphate of ʿUmar ibn al-Khaṭṭab (after 634) and is included on a short list of cities that also mentions Akko and Tyre—indicating that Sepphoris was a city of considerable size and power. Islamic coinage was introduced at Ṣaffuriyya in 697 for a short time. At present,

only limited archaeological remains of this period have been recovered. During the Crusades, Sepphoris was captured by the Franks, who called it Le Saphorie and (re)fortified its citadel. Benjamin of Tudela visited the city in about 1160 and noted only that it was in Crusader hands, mentioning no Jewish families. In 1187, Crusaders gathered at the site for war with Salah edh-Din (Saladin), who retook the city. Saladin himself visited the site en route to Akko on the fifteenth of Rajab, the seventh month of the Muslim year.

Upper City. The earliest occupation of the site was apparently on the highest part, or acropolis, of the Sepphoris hill. The major expeditions to Sepphoris all began their projects on this upper city.

Western residential area. Although no clear stratigraphic remains have yet been discovered, numerous Black Attic ware sherds and quantities of Late Hellenistic pottery, small finds, and coins indicate that occupation began on the summit in the Hasmonean era, if not earlier (in the Late Persian period). At the extreme west of the summit, rock-cut quarries testify to building activities during the Hellenistic and the Early Roman periods. The best-preserved Late Hellenistic remains are close to the citadel.

SEPPHORIS. Figure 3. *Small street in western residential area, looking east.* Note the citadel in the background (Courtesy Joint Sepphoris Project)

SEPPHORIS. Figure 4. *Metal figurine of Prometheus.* Found in a Roman-period house on the western summit (Courtesy Joint Sepphoris Project)

In the Roman period, a 2.20-meter-wide east–west street connected the summit with areas to the west; because of the rising slope, the street is not preserved at its eastern end (see figure 3). Two large residential buildings of this period have been identified along the southern side of the street in units II and IV; another one probably stood in unit III, though Byzantine remains dominate in this area. Unit VIII appears to be mainly agricultural, although several well-preserved *miqva'ot* (ritual baths) there suggest domestic use or, possibly, public space. Four ritual baths appear in unit II and at least four in unit IV; numerous others were also uncovered in the western residence area.

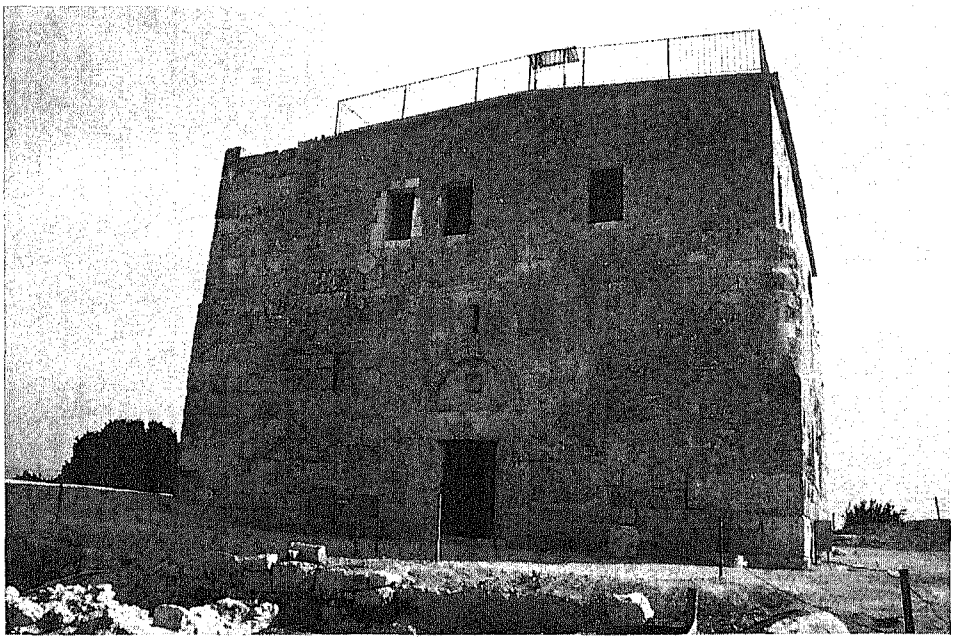
The residential area on the western summit is characterized by a large number of underground chambers cut from bedrock. Some are cisterns; many others, including ones converted from cisterns, are silos, storage rooms, and olive presses, judging from their configuration and from the number of storage vessels found in them. [*See* Cisterns; Granaries and Silos.] Some of the cavities were ultimately used as garbage pits, primarily for broken pottery vessels. An unusually large variety of vessels, including a unique assemblage of ceramic incense shovels and decorated discus lamps, have been recovered from such cavities.

The abundance of *miqva'ot* and the presence of two lamps decorated with menorahs and one with a Torah shrine suggest the presence of a Jewish population on the western summit during the Roman period. At the same time, the recovery of two exceptionally fine bronze statuettes, one of Pan and the other of Prometheus (see figure 4), from an underground cavity points to a Hellenistic or cosmopolitan aesthetic for the population.

Like the rest of the site, the western summit was almost totally destroyed by the 363 earthquake at the end of the Late Roman period. A major reconfiguration of the area, which may be the result of a demographic change, occurred in the subsequent Byzantine period. New structures, which included some workshops, notably one for glass, were built. [*See* Glass.] The late fourth- and fifth-century remains, best preserved in units III and V, are replete with pig bones, and units II and IV have pig bones in post-363 fills; such was not the case in the Roman period. [*See* Pigs.] The faunal remains, along with several ostraca with Christian names and prayers and several late red-ware stamped crosses, suggest that the Byzantine inhabitants of the western summit were Christian.

Citadel and storehouse. Crowning the upper city is a massive, fortresslike structure known as the citadel (see figure 5). As already indicated, its present form, reaching 10.5 m above ground level, is the result of eighteenth- and nineteenth-century renovations. The rounded corners below the uppermost story of this square building (14.95 m to a side) suggest that it may have been built as a watchtower in the Crusader period. Like many Crusader buildings in Palestine, the ashlar stones used to construct its walls were apparently taken from earlier structures; the cornerstones, for example, are rubble-filled Roman sarcophagi. Excavations of its foundations indicate that the citadel was first erected early in the Byzantine period, near the end of the fourth or early in the fifth century.

Just south of the citadel the remains of a large building feature a central rectangular room (9.4 × 6.2 m). Two columns and two rectangular pilasters set into each of its long walls supported the ceiling, and a white mosaic floor covers it. Because of the many large storage jars discovered in the central room, as well as in two adjacent ones, the building has been tentatively identified as a storehouse. The jars, typical Byzantine wares, were found on the floor, crushed by the building's ashy collapse in the seventh century, the result of either the Persian (614) or Arab (640) conquest. One of the jars was decorated with menorahs, providing some evi-



SEPPHORIS. Figure 5. *The citadel, looking north.* Though originally built in Byzantine times, it was rebuilt by the Crusaders and again in the eighteenth century. (Courtesy E. M. Meyers)

dence of a continued Jewish presence in the eastern part of the summit in the Byzantine period—in contrast to the apparent shift then to a Christian population on the western summit.

Theater. Set into the steep northern scarp of the summit and offering a panoramic view of the Beth Neṭofa Valley, the theater at Sepphoris occupies a prominent position in the upper city. It nearly abuts the Roman villa to its south—only a narrow path separates the two monumental structures. With a diameter of about 74 m, the theater probably could seat some forty-five hundred people. Like contemporary theaters in Roman Palestine, the plan of this building places the semicircular cavea (auditorium) opposite the stage. The natural slope of the summit together with a series of vaults provided the necessary gradient for the cavea's tiered seating. Three of these 2.2-meter-wide vaults served as exists and and entrances, or vomitoria. In addition, two side entrances *(paradoi),* 3.2 m wide, lead to the semicircular area, or orchestra, in front of the cavea and to the stage. Built of stone and probably featuring a wooden floor, the stage 31 × 6 m stretched across the northern edge of the building. No trace of the *scaenae frons,* or backdrop, survives.

Although it was first assumed that the theater was constructed early in the first century by Herod Antipas, extensive soundings under its foundations indicate a later date, perhaps as late as the early to mid-second century, when the city underwent extensive rebuilding after the First Jewish Revolt. The theater probably remained in use until the end of the Late Roman period. Whether it still functioned early in the Byzantine period is questionable. Clearly, it was abandoned by the Late Byzantine period, when its ruins were used as a limestone quarry and most of its architectural members were destroyed.

Roman villa. Just south of the theater, at the eastern end of the acropolis, is a palatial residential building (about 40 m long and 23 m wide). Some of its 6-meter-wide walls, built mainly of large, plaster-covered ashlars, are preserved to a height of 2 m. Fragments of colored floral and geometric frescoes indicate that the plastered ceilings or walls, or both, were decorated. [*See* Wall Paintings.] This two-storied structure consists of a peristyle courtyard and a series of living and service rooms, many of whose floors are covered with geometric mosaics or plain buff-colored or white tesserae. [*See* Mosaics.] In one of these rooms, a small trapezoidal chamber, the Greek word *hygei* ("health") is set in black tiles into the tesselated floor; along with the room's water channels; the inscription is compatible with the room's use as a restroom.

Built early in the third century, as attested by the latest material under its floors as well as by stylistic elements of its architecture and decoration, this building collapsed in the earthquake of 363. Its Roman period of usage, of about 120–150 years, was extended into the Byzantine period in its southern portion, where domestic remains, including two ritual baths and a stable, were found that had been built into the remnants of the Roman villa.

The villa's most noteworthy feature is its splendid triclinium, or reception and banquet hall, located just to the north of the courtyard. The room (7 × 5.5 m) is covered with a mosaic carpet. One part of the floor, consisting of white tesserae, forms a U shape around the rest, which features an elaborate T-shaped colored mosaic utilizing twenty-eight colors; the mosaic is composed of three major elements, each adorned with elaborate geometric and figural borders.

The central part of the colored portion is a large rectangle composed of fifteen panels that depict aspects of the life story of Dionysus and the rituals that celebrated him. The largest (1.35 × .78 m) of these panels, in the center, depicts the Symposium, or Drinking Contest of Dionysus and Herakles. Several of the other fourteen panels, only three of which are damaged beyond recognition, reflect similar aspects of Dionysus's role as a god of feasting, fertility, drunkenness, ecstasy, and revelry. Greek inscriptions on each of the panels, all of which have a white background, assist in interpreting them; the word ΜΕΘΗ ("drunkenness"), for example, accompanies a scene in which the bearded hero Herakles, apparently in a drunken stupor, is attended by two devotees.

Surrounding the fifteen Dionysos panels is a frame consisting of twenty-two circular acanthus-leaf medallions against a background of black tesserae. The leafy wreaths contain hunting scenes featuring various wild animals as well as naked erotes, or *putti* ("cupids"), holding weapons such as the bow and arrow. In the central medallion of the northern and southern sides of the frame are female portraits. The one on the north is damaged, but the southern portrait depicts the bust of a strikingly beautiful woman (see figure 6). So exquisite is this portrait of an unknown woman that this masterpiece of ancient art has been nicknamed "Mona Lisa of the Galilee."

The third component of the colored carpet is a set of three border panels—one across the southern end of the floor and the other two extending partway along each of the eastern and western sides, giving the decorated mosaic the T-shape typical of triclinium mosaics. The eastern and western panels depict processions of people carrying items (flowers, fruit, ducks, roosters) that were probably offerings. These panels were apparently once part of one long procession scene surrounding the southern end of the carpet; damage to the scene along the south side led to its replacement with a Nilotic scene, lively and charming in its own right, but quite different from the Dionysiac character of the other elements of the triclinium floor.

The themes from Roman art, centering on mythological figures, may indicate that a Roman official with his family and servitors lived in this villa. Yet, the cosmopolitan nature of Sepphoris and the fact that even ancient synagogues were adorned with mosaics using non-Jewish motifs allows for the

SEPPHORIS. Figure 6. *"Mona Lisa" of the Galilee from the House of Dionysos.* Third century CE. (Courtesy Joint Sepphoris Project)

possibility that the villa and its superb mosaic floor reflect the Hellenistic aesthetics of Jewish occupants. [*See* Villas.]

Lower City. Excavations at Sepphoris, especially since 1990, have uncovered extensive areas of a relatively flat area or plateau extending along the eastern and southeastern sides of the summit.

Eastern insulae. As early as the second century CE, the original settlement on the summit had spread to the east, on the adjacent plateau. Two broad streets—an east–west *decumanus* and a north–south *cardo*—and several smaller streets parallel and perpendicular to these main thoroughfares created spacious orthogonal grid with blocks, or insulae, of buildings. The *cardo* (13.7 m wide) is paved with hard white limestone blocks set in diagonal rows. The original Roman pavers, with deep wheel ruts testifying to centuries of wagon traffic, lasted well into the Byzantine period.

Both the *cardo* and *decumanus* are flanked by colonnaded sidewalks, or stoas. These roofed walkways were initially paved with mosaics. Unlike the streets, they were repaved with mosaics at least once—near the intersection of the two major streets, geometric mosaics covered earlier ones. Three inscriptions set into the later mosaics give tribute to a Bishop Eutropius, whose exact dates are not known but who apparently held office near the end of the Byzantine period. These inscriptions, one of which reads "Under our most saintly father Eutropius the episcopus, the whole city in the time of the fourteenth interdiction," are part of the evidence for a flourishing Christian community at Sepphoris in the Byzantine period. At the same time, a menorah carved into one of the paving stones of the *cardo* is one of several indications of a continued Jewish presence in the fourth–seventh centuries.

Along the streets of the lower city a series of small shops, in use for centuries, contribute to the sense that this part of Sepphoris was the commercial center of the city during the Roman and Byzantine periods. A rabbinic tradition about the "lower marketplace" of Zippori may well refer to this area. Similarly, a lead market weight discovered in the upper city depicts a colonnaded street, perhaps the market of the lower city. A large building in the insula northeast of the intersection of the *decumanus* and *cardo* was built as early as the Early or Middle Roman period and then rebuilt in Byzantine times. It was paved with colorful mosaics and a Greek inscription reading "Good Fortune" and may have been the site's central marketplace, or agora.

The public character of the eastern insulae is further supported by the presence of a Roman-style bathhouse in the western insula—the one west of the *cardo* and south of the *decumanus*. Although not yet fully excavated, its two *caladaria* (hot rooms), one of them octagonally shaped, have been revealed. With renovation, the bathhouse continued to be used in the Byzantine period. Fragmentary remains of a building with a triclinium, probably dating to the Middle Roman period, were also found in this area beneath Byzantine construction.

Byzantine church. Also in the insula west of the *cardo* are the remains of a church, probably constructed under the direction of Bishop Eutropius along with one Marianus, a physician and leading citizen of the community, also mentioned in one of the mosaic inscriptions described above. Thus far, only the width (18 m) of this long building has been established. The basilical plan—a nave and two aisles—of its main room is clear, as is its orientation to the east. [*See* Basilicas.] Additional rooms that may have served as chapels are found on its northern and southern sides; a narthex and atrium may be located at its western end.

Nile festival building. In the central insula, opposite the bathhouse, is another building with Roman foundations that was extensively expanded and renovated in the Byzantine period. An eight-line inscription in the mosaic sidewalk of the *cardo* in front of its main entrance mentions two artists, Patricius and his father-in-law Procopius, presumably the artisans responsible for the stunning mosaics discovered in

the building. The building itself (roughly 35 × 50 m) consists of eastern and western sections connected by corridors. A courtyard surrounded by variously sized rooms comprises the eastern section.

The western section consists of two large rooms and several subsidiary ones, with mosaic flooring in nearly every room. The largest of the rooms is a basilical hall (about 13.5 × 10.5 m). The existence of this hall, in addition to the building's size and central location, suggests that this structure was a public building. Its basilica is not a religious hall but, rather, a large room of the sort referred to in Byzantine texts: a place for public meetings, discussions, and even lectures. An inscription discovered at Sepphoris in the late 1950s refers to the renovation of a "basilica." At the time it was thought that the restoration of a church was at issue, but it now seems that it was work on a civic building.

Among the many mosaics in this building, the tesselated floor of the second largest room (7.6 × 6.2 m) in the western section is a nearly intact figural mosaic with scenes celebrating the Nile River—hence the name given to the entire building. Surrounded by elaborate geometric bands and featuring a row of birds across the top with a Greek inscription reading "Have Success," the floor contains various features of a Nile River festival and associated Nilotic hunting scenes.

The Nile River runs across the center of the floor. Rising above its banks a "nilometer" is depicted: a slender tower, marked with numbers (in cubits) used to measure the height of the Nile during its flood stage; the higher the water, the more fertile the surrounding land—and, thus, the higher the taxes. On either side of the nilometer are reclining figures: on the left the female personification of Egypt (labeled AIGY[PTOS]) holds a cornucopia; on the right is the god of the Nile. Below the river several hunting scenes are composed of a wide array of animals and plants, as well as a representation of the gate, flanked by two round towers, to the city of Alexandria. A flame shooting up from one of the towers probably depicts that city's famous lighthouse, known as the Pharos and said to be one of the seven wonders of the ancient world.

Other mosaic floors found in this building were once equally spectacular but survive in less complete form. The corridors of the building include figural panels within overall geometric designs. One of those panels depicts a rearing centaur; his uplifted arms hold a Greek inscription, "God is [our] Helper." Near the entrance to the basilical hall a panel features two armed Amazons on horseback; in another panel in the eastern wing, three bare-breasted Amazons are shown dancing. The several Amazon scenes, like the Nile River floor, seem to represent festivities; the water installations and special drainage channels in the building suggest that a harvest water festival, known as the Maiuma, may have been celebrated in this building in the Byzantine period. Despite the mythological figures in the mosaics, the building could have been used by either the Byzantine city's Jewish or Christian groups, or both—although no motifs or symbols associated with either group have been found.

Synagogue. Rabbinic sources indicate that a large number of synagogues—eighteen or more—functioned in Sepphoris in the Roman period, during the time of Rabbi Judah's sojourn in the city. Excavations and chance discoveries, however, had recovered only the fragments of the synagogue inscriptions mentioned above. Evidence of synagogue building finally emerged in 1993 when land was being cleared for a parking area north of the summit. A large rectangular structure, probably built in the sixth century, the synagogue is situated near a north–south street running west of an parallel to the *cardo.* Although it has several subsidiary rooms, the main hall is outstanding because of its narrowness (16 × 6.5 m) and unusual floor plan. Unlike most ancient synagogues, the hall has only one row of columns: the internal space thus consists of the nave and only a single aisle, on the north. Yet it shares with the synagogues north of Jerusalem the placement of its entry on the southern, Jerusalem-oriented wall.

The hall is also significant for its mosaic carpet: the floor is covered with a rich variety of biblical and ritual scenes and symbols, as well as geometric forms. Its repertoire of designs includes a magnificent zodiac, at whose four corners the four seasons of the year are represented by attractive females dressed in seasonally appropriate garb. Its centerpiece is the chariot of the sun god Helios, accompanied by the moon and a star; unlike similar zodiacs at Beth Alpha and Hammath Tiberias, the god himself is not depicted. [*See* Beth Alpha; Hammath Tiberias.]

The biblical scenes, not all of which have survived, apparently present several aspects of the Abraham story. Depictions of various temple furnishings, such as the table for the bread of the Presence (*Ex.* 25:23–30), and renderings of musical instruments and of sacrifices preserve aspects of temple ritual. The high priest was also pictured, although only the inscription "Aaron" remains intact. In addition to such captions, longer dedicatory inscriptions, in Greek and in Aramaic, appear in profusion: in the geometric panels that fill the single aisle, adjacent to many of the scenes of the figural mosaics, and even surrounding the central area of the zodiac. [*See* Synagogues.]

Water system. The elaborate and complex water system of Sepphoris, especially the aqueducts and reservoirs to the east of the site, has been thoroughly investigated (see above). [*See* Aqueducts; Reservoirs.] A freshwater spring, located just to the west of Tel 'Ein-Zippori in the Nazareth basin and some 2 km south of Sepphoris, still supplies water to the region and was no doubt a perennial source of water in antiquity. Because the spring is lower in elevation than the city, water had to be transported to the site by pack

animals. This water supply was probably supplemented by stored rainwater collected in cisterns in many of the domestic units.

By about 100 CE, when the city's population began to expand, the nearby spring proved inadequate. The residents of Sepphoris began to exploit the springs to the east, at Raineh and Mashad, by constructing a series of gravity-drawn aqueducts that led westward to the site. Large quantities of water were stored in an enormous underground reservoir some 1.5 km east of the city. Nearly 200 m long, the reservoir could hold more than 10,000 cu m of water. When water was needed for drinking, bathing, agriculture, or other purposes, it was released through a lead pipe fitted with a valve for regulating water flow; pressure then apparently forced the water through a series of channels and aqueducts to the site for distribution. This system of water storage and transfer has a close parallel at the site of Capitolias (Irbid) of the Decapolis in Transjordan. [*See* Irbid; Decapolis.]

Tombs. The cemetery at ancient Sepphoris was situated on the hills surrounding the site on the southwest, southeast, and east. Although only a few tombs have been explored or excavated, it seems certain that the cemetery was as extensive as the one at Beth-She'arim. [*See* Tombs; Beth-She'arim.] The first tomb excavations were conducted by the Hebrew University in 1930, when Eleazar L. Sukenik (1932) identified a large complex of rooms with loculi and several inscriptions, one referring to a Rabbi Yudan. [*See the biography of Sukenik.*] Another group of rock-cut caves, which contained several bilingual (Greek and Hebrew) inscriptions, was excavated by Adam Druks for the Israel Department of Antiquities in 1980. Both groups date to the Roman period (second–third centuries). Northwest of the site lies a tomb traditionally identified as the burial place of Rabbi Judah Nesiah, the grandson of Rabbi Judah the Patriarch. A mausoleum known as the Tomb of Jacob's Daughters was excavated by Nahman Avigad. Its interior walls are constructed of unmortared ashlars, and the ceiling is barrel vaulted. The mausoleum is a loculus tomb and may date to the Roman period. Several small Byzantine-period burial caves on the western spur of Sepphoris may be part of a Christian cemetery, for a cross was found carved on the wall of one of them.

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ABBREVIATIONS AND SYMBOLS

ACOR	American Center of Oriental Research
AD	*anno Domini*, in the year of the (our) Lord
AH	*anno Hegirae*, in the year of the Hijrah
AIA	Archaeological Institute of America
AIAR	(W. F.) Albright Institute of Archaeological Research
AJA	*American Journal of Archaeology*
Akk.	Akkadian
Am.	*Amos*
ANEP	J. B. Pritchard, ed., *Ancient Near East in Pictures*
ANET	J. B. Pritchard, ed., *Ancient Near Eastern Texts*
AOS	American Oriental Society
APES	American Palestine Exploration Society
Ar.	Arabic
'Arakh.	*'Arakhin*
Aram.	Aramaic
ASOR	American Schools of Oriental Research
Assyr.	Assyrian
A.Z.	*'Avodah Zarah*
b.	born
B.A.	Bachelor of Arts
Bab.	Babylonian
BASOR	*Bulletin of the American Schools of Oriental Research*
B.B.	*Bava' Batra'*
BC	before Christ
BCE	before the common era
Bekh.	*Bekhorot*
Ber.	*Berakhot*
Bik.	*Bikkurim*
BP	before the present
BSAE	British School of Archaeology in Egypt
BSAI	British School of Archaeology in Iraq
BSAJ	British School of Archaeology in Jerusalem
B.T.	Babylonian Talmud
c.	*circa*, about, approximately
CAARI	Cyprus American Archaeological Research Institute
CAD	computer-aided design/drafting
CAORC	Council of American Overseas Research Centers
CE	of the common era
cf.	*confer*, compare
chap., chaps.	chapter, chapters
1 Chr.	*1 Chronicles*
2 Chr.	*2 Chronicles*
CIG	*Corpus Inscriptionum Graecarum*
CIS	Corpus Inscriptionum Semiticarum
cm	centimeters
CNRS	Centre National de la Recherche Scientifique
col., cols.	column, columns
Col.	*Colossians*
1 Cor.	*1 Corinthians*
2 Cor.	*2 Corinthians*
CTA	A. Herdner, *Corpus des tablettes en cunéiformes alphabétiques*
cu	cubic
d.	died
DAI	Deutsches Archäologisches Institut
diss.	dissertation
Dn.	*Daniel*
DOG	Deutche Orient-Gesellschaft
D.Sc.	Doctor of Science
Dt.	*Deuteronomy*
EB	Early Bronze
Eccl.	*Ecclesiastes*
ed., eds.	editor, editors; edition
ED	Early Dynastic
EEF	Egyptian Exploration Fund
e.g.	*exempli gratia*, for example
Egyp.	Egyptian
Elam.	Elamite
En.	*Enoch*
Eng.	English
enl.	enlarged
esp.	especially
et al.	*et alii*, and others
etc.	*et cetera*, and so forth
Eth.	Ethiopic
et seq.	*et sequens*, and the following
Ex.	*Exodus*
exp.	expanded
Ez.	*Ezekiel*
Ezr.	*Ezra*
fasc.	fascicle
fem.	feminine
ff.	and following
fig.	figure
fl.	*floruit*, flourished
ft.	feet
frag., frags.	fragment, fragments
gal., gals.	gallon, gallons
Geog.	Ptolemy, *Geographica*
Ger.	German
GIS	Geographic Information Systems
Gk.	Greek
Gn.	*Genesis*
ha	hectares
Heb.	Hebrew
Hg.	*Haggai*
Hist.	Herodotus, *History*
Hitt.	Hittite
Hos.	*Hosea*
Hur.	Hurrian
IAA	Israel Antiquities Authority
ibid.	*ibidem*, in the same place (as the one immediately preceding)
IDA(M)	Israel Department of Antiquities (and Museums)
i.e.	*id est*, that is

IEJ	*Israel Exploration Journal*
IES	Israel Exploration Society
IFAPO	Institut Français d'Archéologie du Proche-Orient
Is.	*Isaiah*
IsMEO	Istituto Italiano per il Medio ed Estremo Oriente
Jb.	*Job*
Jer.	*Jeremiah*
Jgs.	*Judges*
Jn.	*John*
Jon.	*Jonah*
Jos.	*Joshua*
JPOS	*Journal of the Palestine Oriental Society*
JRA	*Journal of Roman Archaeology*
J.T.	Jerusalem Talmud
KAI	H. Donner and W. Röllig, *Kanaanäische und aramäische Inschriften*
Kel.	*Kelim*
Ket.	*Ketubbot*
kg	kilogram
1 Kgs.	*1 Kings*
2 Kgs.	*2 Kings*
km	kilometers
KTU	M. Dietrich and O. Lorentz, *Die keilalphabetischen Texte aus Ugarit*
l	liter
l., ll.	line, lines
Lat.	Latin
lb.	pounds
LB	Late Bronze
lit.	literally
Lk.	*Luke*
LM	Late Minoan
Lv.	*Leviticus*
m	meters
M.A.	Master of Arts
masc.	masculine
Mal.	*Malachi*
MB	Middle Bronze
Mc.	*Maccabees*
M.Div.	Master of Divinity
Meg.	*Megillah*
mi.	miles
Mk.	*Mark*
mm	millimeter
mod.	modern
Mt.	Mount
Mt.	*Matthew*
n.	note
NAA	Neutron Activation Analysis
Nat. Hist.	Pliny, *Naturalis Historia* (Natural History)
n.b.	*nota bene*, note well
n.d.	no date
Nm.	*Numbers*
no., nos.	number, numbers
n.p.	no place
n.s.	new series
O.P.	Ordo Praedicatorum, Order of Preachers (Dominicans)
p., pp.	page, pages
para.	paragraph
PEF	Palestine Exploration Fund
Pers.	Persian
Ph.D.	Philosophiae Doctor, Doctor of Philosophy
Phil.	*Philippians*
pl.	plate; plural
PN	Pottery Neolithic
ppm	parts per million
PPN	Pre-Pottery Neolithic
Prv.	*Proverbs*
Ps.	*Psalms*
pt., pts.	part, parts
1 Pt.	*1 Peter*
2 Pt.	*2 Peter*
r.	reigned, ruled
RCEA	*Répertoire chronologique d'epigraphie arabe*
Rev.	*Revelations*
rev.	revised
Ru.	*Ruth*
SBF	Studium Biblicum Franciscanum
SBL	Society of Biblical Literature
SEG	*Supplementum Epigraphicum Graecum*
ser.	series
sg.	singular
Sg.	*Song of Songs*
Shab.	*Shabbath*
S.J.	Societas Jesu, Society of Jesus (Jesuits)
1 Sm.	*1 Samuel*
2 Sm.	*2 Samuel*
sq	square
St., Sts.	Saint, Saints
Sum.	Sumerian
supp.	supplement
Syr.	Syriac
Ta'an.	*Ta'anit*
Th.D.	Theologicae Doctor, Doctor of Theology
Ti.	*Titus*
Tk.	Turkish
1 Tm.	*1 Timothy*
2 Tm.	*2 Timothy*
trans.	translated by
Ugar.	Ugaritic
v.	verse
viz.	*videlicet*, namely
vol., vols.	volume, volumes
vs.	versus
Yad.	*Yadayim*
ZDPV	*Zeitschrift des Deutschen Palästina-Vereins*
Zec.	*Zechariah*
*	hypothetical; in bibliographic citations, English language pages in Hebrew journals
?	uncertain; possibly; perhaps
°	degrees
′	minutes; feet
″	seconds; inches
+	plus
−	minus
±	plus or minus
=	equals; is equivalent to
×	by
→	yields

S

CONTINUED

SERAʿ, TEL (Ar., Tell esh-Shariʿa), site located in the western Negev desert, on the north bank of Naḥal Gerar (31°24′ N, 34°41′ E). This horseshoe-shaped mound is 4–5 acres in size and rises some 14 m above its surroundings; its occupational debris is about 10 m thick. Identification with biblical Ziklag (*1 Sm.* 27:6–7) seems to find support from historical and geographic considerations as well as by the archaeological record.

Explorations at Tel Seraʿ, conducted by Eliezer D. Oren on behalf of Ben Gurion University (1972–1979), yielded settlement strata (I–XIII) from the Chalcolithic to the Mamluk periods. Excavations in area A, above the remains of an ephemeral occupation from the Chalcolithic and EB IV periods (stratum XIII), exposed, in what seem to have been the elite zone, the uninterrupted sequence of public structures from the MB III–LB III periods. The earliest public structures (MB III–LB I, stratum XII), is extensive. It is a mud-brick structure of the "courtyard palace" type, erected on an artificial platform. During MB III, Tel Seraʿ may have been surrounded by a defense system of earthen ramparts. In successive strata (LB II–III, strata XI–IX), area A was occupied by administrative and cult structures, including a temple (?) building with plastered benches, installations for libations, and *favissae*, or "pits," in which animal bones and cult objects had been deposited; a granary; and an Egyptian-style governor's residency (see figure 1). [*See* Granaries and Silos.] The latter is represented by a large collection of Egyptian finds, including a group of bowls inscribed in Egyptian hieratic that reflect the tax system in southern Canaan. One of the texts probably refers to a regnal year of Rameses III. The last Canaanite settlement (stratum IX) ended in a great conflagration in the mid-twelfth century BCE.

Stratum VIII (Iron I) included early examples of the four-room houses associated with Philistine ceramics. [*See* Four-room House.] The well-organized town plan of stratum VII (tenth–ninth centuries BCE) in area A comprised a residential section with characteristic four-room buildings. Excavations in area D yielded an impressive complex of buildings (stratum VI), that integrated mud-brick walls with ashlar masonry, probably under the inspiration of Phoenician architectural traditions. [*See* Phoenicians.] Ceramic and stratigraphic considerations imply an eighth-century BCE date for this stratum and its destruction by fire toward the end of the century. Stratum V (seventh century BCE) in area D is represented by a citadel building enclosed by a wall 4 m thick with long, brick-floored basement halls and a spacious courtyard. The large collection of finds from under the collapsed and burned walls included Assyrian-style metal objects such as a bronze crescent-shaped standard and a spearhead, Assyrian palace ware, a faience statuette of the Egyptian goddess Sekhmet, and Hebrew and Aramaic ostraca. A section of another fortified structure enclosed by a 5-meter thick wall was also unearthed in area A. The destruction of stratum V is assigned to the late seventh century BCE and attributed to a military expedition of the Saite dynasty from Egypt to the coast of Palestine.

The remains of the Persian period (stratum III) in the fifth–fourth centuries BCE comprised a courtyard-style citadel and numerous built silos and grain pits, notably a large brick-lined granary, 5 m in diameter. In area D the expedition unearthed the remains of a villa (stratum II) from the first century CE, including a large rectangular hall and small compartments enclosed by a stone wall and a massive stone watchtower. The floors were heaped with fragments of high-quality decorated plaster resembling frescoes from the period also found in Jerusalem and on Masada. [*See* Wall Paintings; Jerusalem; Masada.] The last sizable settlement at Tel Seraʿ belonged to the Byzantine period (I) in the fifth–sixth centuries CE, when the settlement moved down the mound to the bank of Naḥal Gerar, where a spacious bathhouse was explored. [*See* Baths.] The summit of the mound was occupied by a church or monastery with a fragmentary mosaic floor and certain water-collecting installations.

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SERA', TEL. Figure 1. *Governor's residency (X–IX), looking west.* (Courtesy E. D. Oren)

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ELIEZER D. OREN

SERÇE LIMANI (Tk., "sparrow harbor"), a small, protected bay (36°34′25″ N, 28°03′08″ E) with a deep, narrow entrance on the southwest coast of Turkey, opposite the island of Rhodes and just northeast of the better-known bay of Loryma (modern Bozukkale), with its excellently preserved Hellenistic fortification Serçe Limanı was almost certainly the Portus Cressa of Pliny (*Natural History* 5.29) and the Kresa of Ptolemy (5.2); it served the town of Kasara, probably a deme center attached to Kamiros on Rhodes.

Underwater surveys show that the seeming tranquility of Serçe Limanı attracted ships to an anchorage at the northeastern end of its entrance passage from the Early Bronze Age until modern times. Its busiest period, as might be expected, was during the Hellenistic heyday of Rhodes. Ships that did not quite reach the safety of the harbor have left their remains outside it. These include a steamboat, perhaps from the nineteenth century CE, and a sixth-century BCE wreck that has not been located, although it has yielded strap-handled amphoras to sponge draggers' nets.

Ships that did find shelter in this natural harbor still faced peril, for sudden winds channeled from different directions by valleys at the bay's ends make Serçe Limanı more dangerous than it seems. Two ships sank along the eastern side of its entrance passage, and two others just beyond these where the bay widens. One of these, just inside the harbor mouth, about 30 m deep, is a Roman amphora carrier of the first century BCE or CE. Farther inside the harbor, at a depth of 35–37 m, are the remains of a Hellenistic wine carrier. Already looted of almost all the amphoras that had been visible when archaeologists from the Institute of Nautical Archaeology (INA) discovered it in 1973, it was partially excavated by the INA and Texas A&M University in 1978–1980. The excavation was interrupted when it was discovered that much of the site had been covered by tons of boulders from a rockslide that took place at an unknown date after the ship sank, making the excavation more difficult and dangerous than anticipated. Nevertheless, they uncovered about six hundred Knidian-type amphoras, in two sizes, some with Zenon Group stamps that date the wreck, with its glazed and plain wares, to the middle of the first half of the third century BCE. Other finds include the two compo-

nents of a stone hopper mill, and the lower grinding platform of a quern. The ship itself was at least partly lead sheathed, in the custom of the day, and yielded a lead pipe that may be the earliest evidence of a bilge pump.

Next inside the harbor, approximately 150 m north of the third-century BCE wreck, is the eleventh-century CE wreck described in detail below. East of it, closer to shore, appear to be the remains of another Hellenistic wreck, badly broken and scattered in shallow water.

The wreck for which Serçe Limanı is best known is that of an eleventh-century CE merchant ship with a cargo of Islamic glass excavated by the INA between 1977 and 1979. The ship was about 15 m long with a beam of about 5.2 m. Its pine hull and elm keel, now reassembled in the Bodrum Museum of Underwater Archaeology in Turkey, provides the earliest dated example of a seagoing vessel built in the modern, frame-first manner. Although only a few of its frames (ribs) were erected before the planks were installed, this framework was now the primary structure; the shipwright, however, was still essentially shaping the hull with planks. The ship's flat-bottomed, boxlike shape would have allowed it to navigate in shallow waters, including rivers. It carried two metric tons of ballast in the form of just over one hundred boulders, with an additional half ton of cobbles. Its eight iron, Y-shaped anchors, with removable wooden stocks, were forged from short iron rods; three were bowers—two to port and one to starboard—with the remaining five stowed just forward of midships. [*See* Anchors.] A surviving halyard block and the hull design suggest that the ship sported two lateen-rigged masts. There appear to have been three living areas: one at the bow (probably covered by a deck), an open space on the midships deck, and a stern cabin.

The ship probably sailed from the Black Sea or somewhere around Constantinople in about 1025 with Bulgar merchants carrying in the hold about one hundred of their own individual amphoras that had been fired in kilns around the Sea of Marmara. The voyage took the ship to the neighborhood of Caesarea, in modern Israel, where it took on its cargos of Islamic glass and glazed bowls, and perhaps jewelry and copper and bronze vessels of Islamic origin; the glazed bowls and an earring of delicate filigreed gold find their closest archaeological parallels at Caesarea, where apparently similar glass is also found. [*See* Caesarea; Glass.]

Although much that the ship carried was of Islamic origin, it seems that many or most of the crew and merchants on board were Christian. Three of four Byzantine seals recovered have Christian scenes impressed in their lead: the Virgin Mary with the Christ child, the ecstatic meeting of Peter and Paul, and a warrior saint. One of the seals protected the writing of someone named Peter; the fourth had not yet been used. The Christianity of those on board is also indicated by the pig legs found among the food remains, less likely to have been eaten by Jews or Muslims, and the crosses (and in one instance the name *Jesus*) inscribed or molded inside some of the nine hundred-odd lead fishnet sinkers used during the voyage.

In the forward part of the ship's hold there must have been a cargo like soda because it left no archaeological clue as to its nature. The wine amphoras were stowed in the center and aftermost parts of the hold. In the after third of the hold three tons of glass cullet included two tons of raw glass and one ton of broken glass. The broken glass was largely waste from an Islamic glassworks that has not been identified. Cullet is needed not only for making glass vessels in places that do not produce their own glass, but also for making new batches of glass from its basic ingredients. Mending the glass cargo from between half a million and a million shards during a ten-year period revealed more than two hundred shapes, some unique, including varieties of cups, bowls, bottles, plates, lamps, beakers, jars, jugs, and ewers. It is estimated that these are the remains of between ten thousand and twenty thousand vessels, many of which had engraved or molded designs. Altogether they form by far the largest and best-dated collection of medieval Islamic glass known. The colors are mostly various shades of green and purple, but dense greens and blues also occur. Above the cullet, the ship carried cargos of raisins and sumac, the latter believed to have been exported through Caesarea at about the time the ship sank.

Eighty intact Islamic glass vessels were also on board, perhaps once in bundles of merchants' goods; these were, without exception, in the bow and stern living quarters (see figure 1). The living quarters were identified by cooking and eating wares as well as by the bones of sheep or goat and pig; other food remains included almonds, apricots, plums, and olives, although which of these were for shipboard use and which for trade has not been determined. In the stern living area were eighteen Islamic glass weights that date the wreck to about 1025 CE, a date supported by the Fatimid gold coins and Byzantine copper coins of Basil II recovered; this has allowed the closest dating of some of the types of Islamic glazed bowls on board. Weighing instruments included sets of both Byzantine and Islamic weights, three pan-balance scales, and a small Byzantine steelyard. Also at the stern were the ship's carpenter's tools, including bow drills, hammers, axes, adzes, saw, files, and the earliest known caulking tools. Those who shared this stern area played chess, some of whose wooden pieces survive, whereas what may well be a backgammon counter found amidships suggests a less intellectual game for the common sailors on board. Lastly, those in the stern were the only ones on board who had pork and fish for food at the time the ship sank.

It seems that three fishing nets, each about 40 m long, based on the numbers, size, and distribution of more than nine hundred lead net sinkers, were being mended on deck with net needles on the final voyage; eight bone spindle

SERÇE LIMANI. Figure 1. *Collection of Islamic glass vessels.* (Courtesy G. F. Bass)

whorls of probable Syrian origin found near the net sinkers suggest that the sailors spun their own cords for this task. There was also a smaller casting net.

The ship was heavily armed, with fifty-two javelins, eleven spears, and at least one sword (with a feathered bird on its bronze hilt, inside a wooden scabbard); the weapons were issued in sets of one spear and five javelins wrapped in burlaplike cloth. Personal possessions on board included a grooming kit comprising a wooden delousing comb, a razor, and scissors; found nearby, near another comb, were piles of orpiment, a substance still used with quicklime as a depilatory. The ship's ultimate destination is not known, but it may have been returning to Byzantium with its Levantine cargo.

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GEORGE F. BASS

SERĞILLA, site located in the Jebel Zawiye (the limestone massif in northern Syria), one of a group of fifteen deserted villages, approximately 3 km (2 mi.) apart, from the Roman, Byzantine, and Islamic periods. The modern

name *Serğilla* is Aramaic in origin; the ancient name is not known, but it was probably close or identical.

The village was explored by Melchior de Vogüé and then more thoroughly by the American Howard Crosby Butler in the course of his expeditions in Syria in 1899–1909. [*See the biographies of Vogüé and Butler.*] Extensively discussed in the second volume (architecture and other arts) of the publication of the American expedition of 1899–1900, the ruins of Serğilla were also part of a systematic description of a great number of monuments in Princeton University's publication of its expeditions to Syria in 1904, 1905, and 1909. Georges Tchalenko mentioned the baths and briefly noted the evolution of the village (Tchalenko, 1953–1958). Between 1978 and 1984, Georges Tate studied but did not excavate the village for his research on social and economic history (Tate, 1992). Since 1989 the village has been the subject of an excavation, architectural abstracts, and methodical decoration by a multidisciplinary French team including Tate, A. Naccache (archaeologist) and G. Charpentier (architect).

Butler described the sloping site as a vast theater facing south in which the tiers of seats were terraces determined by the walls, expressing, on the whole, a voluntary allocation of space. The research now being done in the courtyards at the site tends to show that Serğilla was, morphologically, a village in which houses and other buildings were randomly placed and assembled in islets separated by empty spaces rather than by streets or public spaces. The houses all reflect a tripartite plan: a multistory building whose ground floor is reserved for production or storage, a living floor, and a courtyard, all surrounded by an enclosure wall.

Historically, three phases of settlement can be distinguished. The first probably begins at the end of the second century CE or the beginning of the third; it ended in about 380–390. The village then contained only peasant houses (no vestige of a sanctuary has been found). Groups of very small buildings, with one to three very small rooms on the ground floor, converge on each other. Their walls are coarsely constructed of quarry stone with two dressed faces connected by bonding stones. The houses are clustered at the bottom of the wadi at the north–south slope, which forms the central axis of the village. The discovery of a billhook (a hand tool for pruning) in one of the buildings suggests the cultivation of cereals. The inhabitants were doubtless colonists from the neighboring plain in search of land to cultivate, although the soil is rocky and would have required a substantial investment of labor. In sum, it was a population of pioneering colonists of very modest means.

The second phase lasted from 380 or 390 to the middle of the sixth century. From the end of the fourth century onward there was a complete change in building methods: the quarry-stone walls gave way to the use of rectangular perpend stones (45–55 cm high) arranged in more or less regular courses. The door- and window frames are adorned with moldings and are abundantly decorated. The houses vary in size—one to nine rooms—and follow the ground plan of the preceding period. They would have been occupied by large family groups, natural or contractual. The houses often survive to the rooftop, sometimes with a pediment that shows that the roof sloped in two directions. The houses were placed east and west of the wadi, enclosing and dominating the ancient quarter. The evidence suggests that these houses belonged to rich peasants with a surplus sufficient to pay the salaries and buy the materials necessary to construct these once-spectacular buildings. They would have acquired their wealth from producing and selling olive oil, whose importance steadily increased, especially in the sixth century: industrial-sized oil presses were excavated to the north of house VIII and, in 1992, from house XVIII; both are dated to the sixth century. It is also in that period that the great monuments at the site were built: the church, baths, and cafe (see below). All have been excavated.

The church had three successive architectural stages: as a building with a single nave, from the end of the fourth century to the beginning of the fifth century; as a three-naved building with columns topped by arches (a new apse was constructed farther north in the second third of the fifth century); and finally with an addition on the north of a room whose function is unknown. In each stage the floor was a mosaic. This church belongs, as Butler noted, to a group of buildings that included a courtyard and a second, smaller church with three naves and outbuildings set among sarcophagi and a passage giving on the northeast. [*See* Churches.]

The baths excavated by Charpentier had their entrance on the northeast. The principal room was the disrobing room in which Butler had discovered a mosaic laid in 473 (that has since disappeared), and not the frigidarium typical of a Roman bath; elsewhere, the system was traditionally Roman, with four rooms aligned southwest–northeast: the fire room, caldarium with hypocausts, tepidarium, and frigidarium. [*See* Baths.] The café, so named with irony by Butler, could not be an "andron," as Tchalenko thought, but is, rather, an inn with a stable on the ground floor and a dormitory above. The tombs are currently being studied.

The third settlement phase, from the middle of the sixth century until about the beginning of the eighth, left no monumental remains. The Islamic conquest in the seventh century did not affect the size of the village or the life of its population. This phase is widely represented, and often the only one represented, in excavation. There is a common ceramic tradition for which it is difficult to determine a terminus ante quem. The principal difficulty in interpreting the phase's material culture is that, for the stone houses, the level of the threshold has been preserved, which implies the disappearance of stratigraphy. In contrast, the last phase of occupation, under the Umayyads, is well preserved.

Two other indications of the permanence of the village

population, of its progressive arabization and islamization, are given by an Arabic inscription engraved next to a Syriac inscription on the lintel of the entrance to house IX and by the mihrab built of reused stones in the southwest wall of the small church. The date of the inscriptions and mihrab are in doubt. They may belong to the Ayyubid reoccupation, but no indication at Serğilla has yet been found to support the possibility. In the ninth and tenth centuries, the village was completely abandoned. Its inhabitants began a slow redescent to the more fertile plain below.

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GEORGES TATE

Translated from French by Melissa Kaprelian

SETTLEMENT PATTERNS. The configurations and settings of archaeological sites and their distribution across the landscape often reflect settlement patterns. The study of settlement patterns goes beyond description to learning what the patterns imply about the societies that constructed and occupied sites. Research shows that settlement distribution reveals environmental, cultural, social, historical, demographic, and political relationships. It also shows that societal patterning can be discerned in arrangements within individual settlements and structures.

To study settlement patterns the spatial unit of analysis must be identified. That unit may be an individual room or structure within a site, the site itself, or all the sites in a region. Chronological parameters must also be clarified: should the patterns represent a single archaeological period or trace changes in settlement patterns over time? Data recovery follows.

Although some projects require the collection of completely new data sets, settlement-pattern analyses often rely on the manipulation of information already available in excavation and survey reports. However, existing data, collected for other purposes, may be inappropriate. For example, data from a survey designed to identify sites endangered by highway construction could not be used to characterize the distribution of sites across a region. The data must meet the requirements and goals of settlement-pattern analysis. Methodological sophistication cannot overcome weak or inappropriate data that may produce misleading results.

A settlement-pattern study may often require that existing data be supplemented with new research. For example, an archaeological survey may have revealed the locations of numerous ancient settlements in a region without obtaining data about their environmental situation—for example, the surrounding topography, rainfall patterns, water supply. At a minimum, any study investigating their environmental relationships must look at their distribution in relation to existing information, such as that found on geological, hydrological, and meteorological maps. Plotting the location of known sites on such maps can make their relationships more apparent. It may also be necessary to visit each site to collect environmental data. In either case, current environmental conditions may not accurately reflect those in antiquity, requiring the recovery of relevant paleoenvironmental data. [*See* Paleoenvironmental Reconstruction.]

Finally, some projects may require collecting completely new data. The recovery of settlement-pattern data is often associated with systematic archaeological survey. This is true of most studies in Near Eastern archaeology. However, settlement patterns also include the spatial patterning of activities within a single room or larger structure, as well as the arrangement of structures and activities across a site. Clearly, such analyses require systematic excavation and full data recovery. Even in the case of regional settlement-pattern studies, the successful identification of key site parameters (population size, date, and function), requires more information than is normally collected during a survey.

Estimating population size and density, for example, requires the calculation of the area of the site in question. This means that ascertaining boundaries is often a difficult task. Once site size has been determined, population size and density can be estimated in at least two ways. Based on ethnographic studies of living communities in the region, the number of households can be multiplied by a coefficient representing the average number of people per household. Determining the number of households at a site requires the recovery of a representative sample of structures, however, something only a broadly excavated exposure can provide. As an alternative, based on the relationship between population and settlement size in living communities, the site area can be multiplied by a fixed coefficient representing the mean population size per unit area. Using either method, population size and density for each settlement in a region or for the region itself can be estimated. Such estimates can be compared across regions and across time within a single region. The ultimate goal is to provide regional demographic history as a basis for understanding historical, political, social, and economic processes. [*See* Ethnoarchaeology; Demography.]

Identifying site function also requires special attention. A site's location in its unique environment can provide evidence of specialized activities. Distinctive artifact types and variations in artifact distribution also provide clues, as does evidence of functionally specialized constructed features: walls and other architecture ovens, grape and olive presses. As with population size, ethnographic analogy provides an

important source of evidence for recovering and interpretating archaeological settlement patterns.

In data recovery, then, the data must truly represent the phenomenon of interest. For example, a project investigating the internal organization of residential structures within a settlement must collect data that represent the full range of such structures, including both elite and lower class residences and those occupied by newly established as opposed to mature households. It must also establish that the structures analyzed were occupied simultaneously. Regional settlement-pattern studies similarly require that the data reflect the full extent of variability (spatial, demographic, functional, temporal, environmental) among sites in the region. Unfortunately, time and expense often preclude full-coverage survey and excavation. Archaeologists must therefore make every effort to collect a representative sample. The most successful and cost-effective way to do so is through sampling based on the laws of probability—although this may be impossible when the study is based on existing data or for other reasons. In such cases, archaeologists should explore other methods for verifying and perhaps enhancing the representativeness of their data, such as reinvestigating selected sites, opening exploratory probes, and surveying inadequately covered territory.

Some archaeologists use ethnoarchaeological materials as a source of information to increase the reliability of settlement-pattern analyses. Data from existing communities allow many of the basic assumptions of archaeological settlement-pattern analysis to be tested. Does each room or structure in the community have a dominant function, and is that function reflected in its form, location, and content? Does the community's overall spatial organization reflect its social organization? Does each family occupy its own house? How are domestic configurations reflected in the organization and architectural history of the houses? Are individual and family social status reflected in the size of dwellings? Do people in one community tend to interact most often with inhabitants of the closest neighboring settlement? Are settlements located in a position that allows them to exploit efficiently the region's resources? How have historical and political circumstances impacted the form and distribution of settlements in the region? The answers to these and other questions is determine the fit between present-day settlement patterns and human behavior and, in turn, the interpretation of ancient settlement patterns.

Once data are recovered and their representativeness confirmed, the next step is pattern recognition. This may be as simple as visually examining site distributions on a map or as complex as performing sophisticated statistical analysis using such tools as geographic information systems (GIS). The goal, to identify potentially meaningful patterns in the distribution of the archaeological phenomenon of interest, can be implemented by developing methods using statistical analyses and associated graphics as heuristic tools. In that way, pattern recognition is achieved by the analyst rather than by the computer.

The final step in any settlement-pattern analysis involves interpretation: what do the identified patterns say about the past? At the risk of oversimplification, three main interpretive approaches can be identified: environmental, historical, and regional. However, each project may tend to focus on a narrow range of factors thought to influence the spatial patterns of human settlement.

Representatives of the environmental approach focus on human/environmental relationships as the primary determinants of settlement patterns. For example, Donald Henry (*From Foraging to Agriculture: The Levant at the End of the Ice Age*, Philadelphia, 1989) interprets the distribution of Epipaleolithic sites in ancient Palestine as directly influenced by resource distribution, topography, rainfall, temperature, and altitude. Another environmental approach, known as site-catchment analysis, is based on the assumption that subsistence-based societies without animal or motorized transport will most intensively exploit those resources within a day's round trip of their community. Based on ethnographic analogy, this limit is normally placed at 5 km (3 mi.). After drawing circles with a diameter of 5 km centered on each of the sites of interest, the distribution of resources within each of these "site catchments" is examined. Differences in resource distribution among the sites in a region may provide evidence to suggest a different mix of subsistence strategies for each location. Although there has been much criticism of this approach, the importance it places on examining resource distribution within a site's immediate vicinity makes it an extremely valuable tool for studying human/environmental relationships in subsistence-based societies.

Although geographers point out that environmental factors play an important role in settlement patterns even in the industrialized world, most Near Eastern archaeologists assume that the impact of human/environmental relationships declined rapidly as societies adopted agriculture and became more complex. For these scholars, human/human relationships become the primary determinants of settlement patterns. Two groups exist among those that emphasize such relationships: some emphasize historical and political factors (the historical approach), while others focus on economic and social factors (the regional-analysis approach).

Long before the term *settlement patterns* became common in archaeological discourse, Near Eastern archaeologists were interested in the historical implications of site distributions. In their pioneering explorations of the Holy Land, Edward Robinson and Eli Smith sought to identify places named in the Bible. To do so, they followed geographic clues in the Bible on the existing landscape (see discussion in Silberman, 1982). [*See the biography of Robinson.*] While not settlement-pattern archaeology in the contemporary sense, their work does display recognition of the historical

importance of settlement patterns. This recognition is even more apparent in the work of the German scholar Albrecht Alt and his students during the first half of the twentieth century. Their research focused on the historical and political implications of site distributions, especially as they relate to the territorial boundaries of historically documented political units. The historical approach to settlement patterns is today epitomized in the field of historical geography as championed by the late Israeli scholar Yohanan Aharoni and his students. [*See* Historical Geography; *and the biographies of Alt and Aharoni.*]

Interest in the historical implications of settlement patterns is also apparent in the history of research in ancient Mesopotamia. Although not much more than treasure hunters, the earliest excavators in that region were concerned with the historical implications of site locations, especially as they related to historical identification. More recently, some specialists have sought to correlate the distribution of archaeological sites with geographic evidence derived from textual sources, especially as they relate to political and economic history.

This interest in site distributions also led, during the 1960s and 1970s, to the development of what is referred to here as the regional-analysis approach. No longer satisfied with their predecessor's focus on history, several scholars (including Robert McC. Adams and Gregory T. Johnson) sought to identify the social, political, and economic processes involved in the development of urban society. For theoretical inspiration they turned to the subdiscipline of geography known as regional analysis. This was a fortuitous development in that the goals of regional analysis in geography are virtually identical to those of archaeological settlement-pattern analysis. The elements of geographic regional analysis most often applied to Near Eastern data are gravity-based interaction models, central-place theory, and the analysis of rank-size distributions.

Gravity-based interaction models explore the spatial implications of interaction among the inhabitants of the settlements within a region. They are based on the assumption that the intensity of such interaction is subject to regularities similar to those governing the intensity of the gravitational field between two objects. Specifically, it is assumed that the intensity of interaction between two places is directly proportional to the product of their populations and inversely proportional to the distance between them. In archaeology, this provides a simple method for quantifying intraregional interaction; it supplements artifact distribution and historical records. Its application to archaeology, however, depends on finding reliable means for estimating a site's population and using appropriate methods to measure the distance between settlements.

In contrast to gravity-based interaction models, which apply to all types of settlement, central-place theory focuses on the distribution of urban centers across the landscape. It predicts that, under ideal conditions, a region's urban centers will be located at the apexes of equilateral triangles, each center serving a surrounding hexagonal region. These ideal conditions include a region characterized by an even distribution of population and purchasing power; a region in which local topography does not impede travel in any direction; and a society in which economic behavior is geared to the minimization of effort. Under these conditions, settlements that provide goods and services for a surrounding region (i.e., urban centers) will tend to develop at the center of their trade area. Economies of scale, derived from the agglomeration of tertiary activities and equal accessibility from all directions, drive this phenomenon. In the case of a single central place, the most efficient shape for such a supporting region would be a circle; however, when a number of such centers are found in a region, the most efficient shape proves to be a hexagon. The size of the supporting region depends on the threshold of demand, which refers to the distance individuals are willing to travel to obtain a certain good or service. Even though this threshold will differ for each good and service, a hierarchy of centers will develop, with centers at each level offering a range of goods and services with similar thresholds. By comparing this ideal pattern to the distribution of settlements in a region, archaeologists can identify variations from the ideal that require explanation. It is these variations and their interpretation, not the ideal conditions postulated by the model, that provide archaeologists with evidence to interpret statements about the past. For example, variations from the ideal hexagonal shape may indicate the impact of uneven regional topography on intersite interactions. Exploring this impact may reveal geopolitical processes of profound importance that otherwise might escape detection.

Another approach to urban settlement patterns borrowed by Near Eastern archaeologists from geographic regional analysis is the comparative study of rank-size distributions. Geographers have noted that urban centers in modern industrialized nations, when ranked according to their populations, are distributed such that the largest city has twice the population of the second-ranked city, three times the population of the third-ranked, and so on. The rank and population of urban centers that follow this pattern, when plotted on double log paper, describe a log-normal distribution that is manifested in a straight line with a negative slope of 45 degrees. This log-normal distribution is thought to reflect a highly integrated urban system in which there is a balance between each urban center and its rural periphery.

Even more interesting in archaeological terms are the observed deviations from this ideal. When a rank-size plot is concave, meaning that lower ranking settlements are smaller than expected, a condition of urban primacy is indicated. In such situations, an extraordinary concentration of urban functions might be postulated for the highest-ranking center. Primacy might also result from a special role that the

highest-ranking center plays beyond the border of the urban system under study, however. In contrast, a convex distribution, where lower-ranking settlements are larger than expected, is usually interpreted as representing a poorly integrated urban system. Convexity may also result when centers belonging to two separate urban systems are mistakenly combined for analysis; this is an especially serious problem for archaeological analyses.

One strength of these methods is that the ideal conditions postulated in each case have specific, easy-to-recognize spatial consequences. This dependence on ideal conditions could also be viewed as a fatal weakness: it can be argued that no region can possibly satisfy the ideal conditions of central-place theory, making the theory's use questionable. If the goal of these models were to provide automatic explanations, the criticism would be valid. However, their goal is heuristic, not explanatory; it is the deviations from the ideal that are of primary interest. By calling attention to these deviations and suggesting how they may be explained, the potential of these approaches in helping to interpret archaeological settlement patterns is considerable. Archaeologists working in the Near East generally agree that settlement patterns are among the best data they have about the past.

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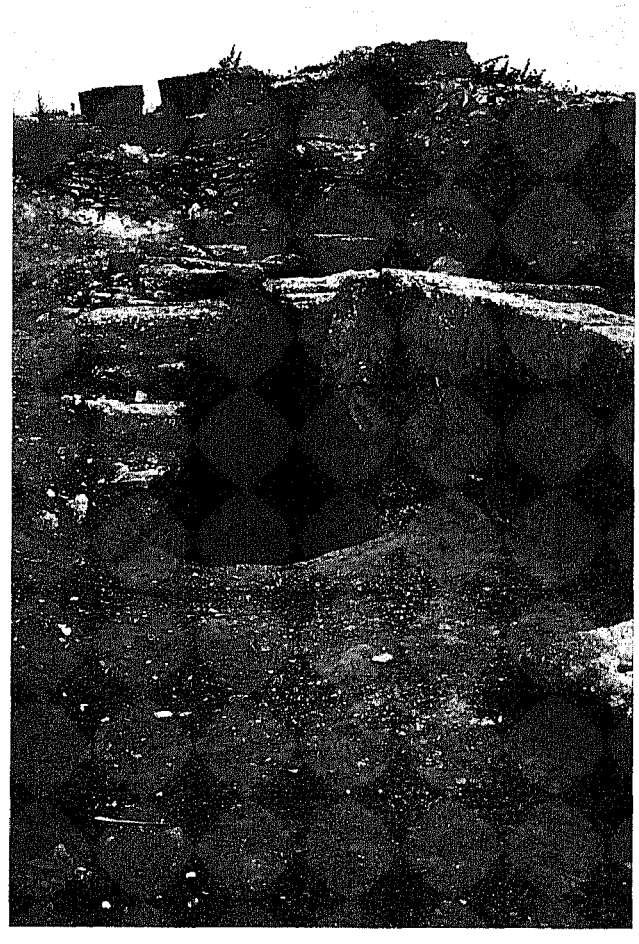
WADE R. KOTTER

SEWERS. The development of elaborate drainage systems is an important landmark in the cultural process. Although procedures for evacuating water can be found in the Near East at Byblos as early as the sixth–fifth millennia and in other settlements in the fourth millennium (Tepe Gawra in northern Assyria, Habuba Kabira in northern Mesopotamia, Uruk in southern Babylonia), the initial impetus for constructing sewers was the emergence of urbanism and the development of monumental buildings. The elaboration of an organized drainage system with a main channel, tributary conduits, and a large variety of evacuation devices implies both a complex and hierarchical social organization and centralized power. The complexity of the society is to be seen in the various levels of concern for domestic hygiene (the development of bathrooms and toilets in third-millennium Egypt and Mesopotamia) and/or in the concern for cleanliness in public life (e.g., channels under streets, sealed sinkholes). A central government was needed to create a hierarchized network in which private owners and state properties had to be connected and, probably, had to provide construction costs.

It should not be surprising, therefore, that the most spectacular drainage systems were built in palaces and temples. Examples of the latter include the temple quarters at the Assyrian capital of Aššur (covered channels on the edges of rooms running under ground and sewers tall enough to stand in, all made of brick, in the early third millennium), the Oval temple at Khafajeh in Babylonia, and the Ishtar temple at Mari in Syria (also in the early third millennium). Most sacred places in the ancient Near East show remains of evacuation devices, which are largely related to such cultic activities as ablutions, libations, the washing of the deity's statue, and animal sacrifices. Among Mesopotamian and Syrian palaces, the drainage systems at Aššur and Mari (out of brick, third millennium), Tell Ḥalaf, Til Barsip, and Arslan Tash (stone, third and second millennia) are noteworthy; some were found in Anatolia as well, at Alaca Höyük, for example. A complex and coherent system, exclusively connected to the palace, was discovered at Ugarit in Syria (second millennium BCE): an underground sewer made of stone and connected by gutters, stone pipes, and other means of evacuating waste materials from the rooms (see figure 1). The necessity of sewage probably came about as a result of a more hygienic life in the palace, from public receptions and celebrations, and also from cult performances in the royal place (Kingship, funerary, and domestic rituals).



SEWERS. Figure 1. *Ras Shamra/Ugarit.* The main collector in the palace area, from the south. (Courtesy Mission Archéologique Française de Ras Shamra-Ougarit)

In the second and first millennia BCE, these systems became widespread in most large cities (e.g., Boğazköy in Anatolia, Fara in Mesopotamia, Gibeon in Palestine, among many others), draining residential quarters as well as public buildings. During the Hellensistic and Roman periods, the construction of urban sewer systems was widespread; monumental remains can be found at Kition on Cyprus, Apamea in Syria, Jerusalem, and in many other places.

It is not always easy to determine outlets for sewers. In most cases, they emptied into deep sinkholes (such as the wells built of pottery rings at several Mesopotamian sites). Most houses in the Near East poured their waste water into sinkholes dug in the streets or in the houses themselves. At Mari, Ugarit, and some other cities, the sewer system may have emptied into a stream outside the city walls. A major function of sewer systems was not only to evacuate waste

water from temples, palaces, and houses, but also to collect runoff from rainwater into cisterns.

[*See also* Cisterns; Hydraulics; Hydrology; *and* Water Tunnels. *In addition, many of the sites mentioned are the subject of independent entries.*]

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JEAN-FRANÇOIS SALLES

SEYRIG, HENRI (1895–1973), epigrapher and numismatist. Born in France and at home in four European languages and cultures, Henri Seyrig studied classical archaeology after World War I. In 1922 he entered the École d'Athènes, whose general secretary he became in 1928. In 1929 he was appointed director of antiquities of Syria and Lebanon under the French Mandate. Together with René Dussaud he formulated the antiquities law issued by the French High Commission in 1933 that is still in force in Lebanon. Syrian and Lebanese scholars agree that Henri Seyrig had their heritage at heart. He donated his valuable coin collection to the Lebanese Department of Antiquities.

Seyrig had a comprehensive vision of cultural resource protection and management in situ, as well as of the necessity to document all types of heritage from settlements and buildings to antiquities. He was critical of the destructive nature of excavation and defended the rigorous methods developed by figures such as Mortimer Wheeler.

The need for a research center in the region made him reorganize the Institut Français de Damas, which he directed from 1938–1941. In 1946 he created the Institut Français d'Archéologie de Beyrouth. His generosity, scholarship, and all-embracing approaches to archaeology drew talented and dedicated architects, philologists, and archaeologists into his orbit. The result was the recording, restoration, and publication of much of Syria/Lebanon's architectural and cultural heritage. His own contributions on cults in the Orient, particularly at Baalbek and Palmyra, are fundamental and unsurpassed (Seyrig, 1929, 1934–1971).

In France he was instrumental in establishing the Service of Ancient Architecture of the Centre National de Recherche Scientifique, the Center of Documentary Analysis for Archaeology, and the Center for Classical Archaeology. His farsighted views on integrating technological innovations into research prefigured archaeology in the information age.

Resident in Beirut for nearly forty years, Seyrig was an expert epigrapher and numismatist, a brilliant scholar of ancient religions and societies of the Orient and Occident, and a connoisseur of modern and ethnographic art. He preserved and explained cultural resources, considering archaeology a science of the past but for the future.

[*See also* Baalbek; Institut Français d'Archéologie de Proche Orient; Palmyra; *and the biographies of Dussaud and Wheeler.*]

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HELGA SEEDEN

ŞEYTAN DERESI (Tk., "devil creek"; 36°59′45″ N, 27°41′40″ E), waterway emptying into an open cove near the village of Mazı on the northern shore of Gökova Körfezi, the large bay south of Turkey's Halikarnassos (now Bodrum) peninsula. In 1973 sponge diver Cumhur Ilık led archaeologists from the Institute of Nautical Archaeology to a place about 100 m southwest of the southernmost point on the east side of the bay, to raise two intact jars he had noticed seven years earlier at a depth of 33 m: one was a large krater (mixing bowl) and the other a two-handled pithos (large storage jar). They also raised fragments of other pots at the time, including part of a jar that vaguely resembled a Minoan amphora.

The pottery's seemingly early date led the institute to excavate in 1975, but the site remains an enigma. Although the depth of sand was deep enough to have covered and protected any wooden hull remnants from marine borers, and a large area was cleared of sand down to bare bedrock, only pottery was discovered (except for a lead fishing sinker of

perhaps later date). Furthermore, one of the six pithoi recovered (three with handles, and three without) lay about 30 m from the others, at a depth of only 27 m, so deeply buried in sand it could not have been moved there in modern times; found inside it was a sherd that joined a fragmentary pot found on the main part of the site. The excavators concluded that some kind of watercraft must have capsized, causing some of the jars in its cargo to drift apart as they sank (the pithos sherds found close to shore strengthen this conclusion). The individual sherds, however, were probably moved by the octopods that make their home in jars.

The pottery is of a uniformly coarse brown fabric, except for several clearly intrusive sherds of later date; the collection comprises the six large storage jars, parts of three belly-handled amphoras similar to examples from Beycesultan stratum IVb, two one-handled jugs like some from Troy stratum VI, and parts of three amphoras that find their closest parallels on Middle Minoan III Crete. All these point to a tentative date of about 1600 BCE, although scholarly acceptance of the Minoan parallels and this early date is not universal. Unfortunately, the pottery was raised and cleaned of mud before the institute had learned to identify the original contents of jars by carefully sieving the sediments found inside them.

After the excavation, a Turkish sponge dragger presented to the Bodrum Museum of Underwater Archaeology a two-handled pithos, similar to those excavated at Şeytan Deresi, that he had netted in Gökova Körfezi. Later, Cemal Pulak, one of the excavators at the site, noted, in a storeroom at the Bodrum museum, a sea-encrusted amphora identical in size and fabric to those from the excavation; its label indicated that it had been given to the museum by a sponge diver many years earlier, at a time when the museum was simply a depot without records. These discoveries suggest that there may be a main site still undiscovered by archaeologists, or that more than one wreck of the same unknown and probably local culture lies in Gökova Körfezi. The mixture of Anatolian and Aegean traits in the pottery may reflect the time when the Minoans, who were arriving at Miletus, not far up the western coast of Anatolia from Şeytan Deresi, had contacts with inland Beycesultan.

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GEORGE F. BASS

SHA'AR HA-GOLAN, site located at the outlet of the Yarmuk River into the Jordan Valley at about 206 m below sea level. The site was first excavated by Moshe Stekelis (1949–1952) and more recently by Yosef Garfinkel. The upper levels of the site contain the remains of houses from the Middle Bronze I. Below a sterile alluvial deposit a layer with occupational remains dated to the Pottery Neolithic was excavated. The study of the material culture from this level led to the definition of the "Yarmukian" culture.

In the Yarmukian layer, Stekelis's excavations uncovered two semisubterranean huts. One contained a fireplace covered by a small conical cairn that in turn covered a flexed human burial. The second exposed a workshop apparently used for chipping flint cores and preparing large numbers of blades. In both locations, schematically incised pebbles were found.

The lithic industry was produced from large flint pebbles and cobbles collected on the terraces and alluvial fan of the Yarmuk River. Production involved unidirectional and bidirectional core-reduction strategies. Common tool forms were axes/adzes, picks and chisels, a few arrowheads (often of either Byblos or 'Amuq types), denticulated sickle blades, end scrapers, some burins, and numerous perforators. A special find enabled the reconstruction of the sickle: five denticulated blades were uncovered still lying in a row in their original hafted positions. Ground-stone tools include querns, hand stones, mortars, and pestles.

Although plant remains were not preserved, it is assumed that agriculture was practiced. Faunal remains consist basically of domesticated species, including goat/sheep and pig, and indicate both herding and hunting.

The pottery of Sha'ar ha-Golan, made from local clay, consists of holemouth jars and jars with flaring necks. The pottery is mainly decorated with an incised herringbone pattern, generally enclosed within parallel lines, and some red paint.

The site is best known for its large collection of human figurines. Considered one of the defining characteristics of the Yarmukian culture, these figurines were either shaped of clay or engraved on basalt and limestone pebbles. The clay figurines depict females sitting with their hands under their breasts. They wear conical headgear and what apparently is a special dress. Their faces are characterized by "coffee-bean" eyes and the general absence of a mouth. Representations similar to the clay figurines appear on pebbles, although most have only schematic representations of the eyes, mouth, or genitalia. Similar figurines have been found in other Pre-Pottery Neolithic contexts at Munhata, Tel Aviv and Meggido in Israel; Byblos in Lebanon; and Jebel Abu Thawwab in Jordan. The engraved pebbles include other patterns, such as series of parallel lines and net-like arrangements.

Radiocarbon dates are not available for the site, but on the basis of the chronostratigraphy at 'Ain Ghazal, in Jordan, where Yarmukian remains have also been found, occupation at the site can be placed at about 5500–5000 BCE (uncalibrated).

Emmanuel Eisenberg exposed the remains of a large Early Bronze IV site (20 hectares, or 50 acres) at Shaʿar ha-Golan, considered to be a large village of farmer-herders who also hunted from time to time. Stone foundations indicate the presence of blocks of rectangular houses. Domestic structures containing fireplaces, storage bins, and pottery were also found. Pottery from this site was handmade, except for the rims. Common pottery types were jars with ledge rims or loop handles. Other forms include globular cooking pots and bowls of various types, some decorated with red paint. On the whole, this assemblage resembles those of the EB IV shaft tombs in the Jordan Valley. Stone tools from Shaʿar ha-Golan include numerous grinding querns and mortars, as well as Canaanean blades. Animal remains are mainly of ovicaprids.

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OFER BAR-YOSEF

SHABWA, one of the most important urban centers at the edge of the Sayhad desert, situated at the mouth of Wadi Ḥadhramaut, facing the Ramlat as-Sabʿatayn. Placing the site so far to the west and away from the well-watered wadi may, apart from its important salt mines, be explained by its strategic significance: it is located in the center of the caravan route oriented northwest (Najran) and southwest (Timnaʿ). [*See* Marib; Timnaʿ (Arabia); Najran.]

Shabwa is the third-largest ancient capital in South Arabia after Marib and Timnaʿ; it has an impressive defense system and many monuments. The site covers an area of 60 ha (148 acres), which consists of a city of about 15 ha (530 × 340 m; 37 acres) built within the walls, a fortress on the southern Hajr hill, and the central zone of al-Sabkha, which has never built upon. Like many cities on the edge of the desert, Shabwa is mainly an agricultural center. Its several thousand hectares of irrigated land were used primarily by the local population but also to provide for caravans.

The name *Shabwa* designates the city alone, and not the tribe, as is the case with other cities, such as Maiʿn. This name appears in five different South Arabic inscriptions found at the site as *ḥgr šbwt* ("the city of Shabwa"). Classical authors refer to Shabwa as *Sabota,* capital of the Ḥadhramaut. According to the French epigraphist Jacqueline Pirenne (1978), South Arabic texts of the region dating back to the fourth century BCE refer to Shabwa as the residence of the kings of Ḥadhramaut. In the early twentieth century CE, Shabwa was the capital of a large kingdom that included the main wadis of the Ḥadhramaut—ʿAmd, Dawan, and Idim. The areas of al-Mashriq, including Wadi Jirdan, ʿAmaqin, Habban, and Abbadan, were also under Ḥadhramite control until the second half of the third century CE. Farther east, some 800 km (496 mi.) from Shabwa, king ʾIlʿazz Yalut̠ founded the city of Smhrm (Khor Rori) at the end of the first century BCE, thus demarking the kingdom's eastern borders.

The Ḥadhramaut kingdom extended southwest as far as the territory of Qataban in about the mid-second century CE. However, a sudden change in the political situation occurred in about 217–228, when ʾIlʿazz Yalut̠, son of ʿAmmḏaḥar king of Ḥadhramaut, was defeated by the Sabaean army in Qataban and again in the heart of Shabwa. By the end of the third century, the kings of Saba' (Sheba) and Du-Raydan had completely conquered the Ḥadhramaut. [*See* Qataban; Sheba.]

In 1936 H. St. J. B. Phillby visited Shabwa and al-ʿUqla and described the former as small and insignificant. In 1938 Major Hamilton reached Shabwa on a mission to pacify the tribes; he too was unconvinced that it was a great capital. In 1971 Pirenne led the first archaeological expedition into Shabwa on behalf of the French. Two excavation campaigns took place under her directorship (1976–1977), under auspices of the French Ministry of Foreign Affairs. In 1980 the site was placed under the directorship of Jean-François Breton.

In 1976 Marie-Hélène Pottier and Yves Calvet began a major stratigraphic sounding later completed by Leila Badre. The sounding, dug to bedrock, reached a depth of about 12 m. Fourteen occupational levels were discovered from about the sixteenth to the thirteenth centuries BCE, corresponding to the first three levels of the city (Badre, 1991, p. 281), to the second–fourth centuries CE, the date that marks the end of the Shabwa's settlement history.

Shabwa's dual system of defense has been added to in different periods of its history. It is 4,200 m long. The city wall (1,500 m long), interrupted at regular intervals by rectangular stone towers sometimes covered with mud brick. The second line of defense is the surrounding hill, which encloses the site on the west, north, and northeast.

The city's trapezoidal shape is divided into two unequal parts by a major axis oriented northwest–southeast. This axis opens at one of its extremities onto the main gate of the city; at the other end the remains of the city's temple were located. The city has about 110 structures, of which only the stone substructures remain. The most important building is the royal castle near the city gate. It consists of two structures (A, B) built around a large paved court built on an artificial terrace 5 m above the level of the main city street. Structure A is built on the southern part of the court and originally consisted of several stories, although only the

ground floor remains. The second structure, B, was U shaped and closed off the court on the east, north, and west sides with porticoes. Large octagonal stone columns, decorated with a scroll pattern and with griffons on their capitals, belonged to the facade of the upper floor.

This palace is identified with the fortified palace "*sqr*" mentioned in the Marib and 'Uqla inscriptions that describe the siege of *sqr* by the Sabaean king Ša'r Awtar in about 225 CE. The palace was rebuilt a few years later, only to be destroyed for the last time by an earthquake in about the second half of the third century (Breton, 1991, p. 216).

[*See also* Ḥadhramaut.]

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LEILA BADRE

SHAFT TOMBS. In ancient Palestine, as elsewhere in the Middle East, shaft tombs have a long history. Because most burials are underground, rocky terrain or areas with thin topsoil require that a chamber be cut into bedrock; this, in turn, necessitates a vertical or sloping shaft for access. If in antiquity the tomb was conceived of as a "house for the dead," which seems likely, the shaft may also take on a symbolic meaning, as an entrance hall or doorway. Where family tombs were visited or reused for generations, as was often the case, the shaft certainly continued to function beyond the construction stage.

Neolithic and Chalcolithic burials were often in simple shallow pits, or in above-ground stone circles, or *tholoi*. The more elaborate "architectural" tradition that shaft tombs represent begins with the Early Bronze Age in Palestine (c. 3300–2000 BCE), but there are few examples until the end of that era. Deep, rock-cut vertical shafts leading to chamber tombs are found in the EB I (c. 3300–3100 BCE) only at Bab edh-Dhra' in Transjordan, where disarticulated secondary burials may represent the region's seminomadic, preurban population. Such shaft tombs continue sporadically into the urban EB II–III periods (c. 3100–2300 BCE) but, again, are not found elsewhere in Palestine, cave burials being the rule. Shaft tombs suddenly proliferate in the EB IV (c. 2300–2000 BCE), not only in Palestine, where pastoral nomadism prevailed and resulted in large, isolated cemeteries with secondary disarticulated burials, but also in urban Syria. Dozens of shaft-tomb cemeteries are known in Palestine, many with hundreds of burials, mostly individual. The rock-cut shaft may be round, elliptical, or square, and up to approximately 1 m (6 ft.) or more deep. A lateral dome-shaped chamber (occasionally two) is reached through a small doorway blocked by a stone. The effort made by people who were predominantly pastoral nomads in cutting these shaft tombs is astonishing. At Jericho, Kathleen M. Kenyon estimated that in one such tomb several tons of rock were removed through a doorway barely 71 sq. cm (18 sq. in.).

EB II shaft tombs were often reused in the urban Middle Bronze Age (c. 2000–1500 BCE). Burial customs then varied considerably and included the use of extramural caves, intramural stone-lined cists and shallow pits, and jar burials of both children and adults under courtyards or near houses. At a few sites, however, such as Tell el-Far'ah (South), shaft tombs predominate, mostly steplike openings into the bedrock reaching down into a lower alcove (occasionally bilobate). Similar tombs are found elsewhere in Palestine, on Cyprus, and even in the Aegean and Greece, but they are probably indigenous to Palestine.

In the Late Bronze Age (c. 1500–1200 BCE), many types of burials are found, both local and foreign, reflecting that era's cosmopolitan character. True shaft tombs are rare, however, if we eliminate from consideration the enlarged entrances to natural caves. Only a few structural tombs, such as the Mycenaean-style corbeled tomb at Tel Dan in Palestine, actually have a deliberately cut shaft leading to the entrance. A few other cist or pit tombs have a shallow dromos, or stepped shaft, leading to the chamber. Toward the very end of the period, in about 1250–1200 BCE, a few southern Palestinian sites, such as Tell el-Far'ah (South) and Tell el-'Ajjul, exhibit deeper, steeped dromos tombs with several benches surrounding the chamber walls. These burials, some with Philistine pottery, have been identified with the Aegean background of the Sea Peoples.

The Iron I–II period (c. 1200–600 BCE) witnesses the continuation of the shaft and bench-tomb tradition introduced at the end of the Late Bronze Age. By the Iron II period (c. 900–600 BCE), this becomes the standard Israelite tomb, especially in Judah. Most feature a stepped shaft (or dromos); a narrow doorway leading to a central chamber, or arcosolium; and two or three lateral chambers with waist-high benches around the walls, on which the deceased were laid out.

In the Persian period (sixth–fourth centuries BCE), several types of burials are in evidence, including tombs with both vertical shafts and stepped dromoi. Hellenistic burials (fourth–first centuries BCE) continue the Persian types, with the addition of large chamber-tombs with many loculi (rectangular, shelflike burial niches) reached by either a vertical shaft or a dromos; the dromoi in these examples may be

horizontal and of monumental proportions. Loculus tombs are also a feature in the Roman period (late first century BCE–fourth century CE), as are much more monumental above-ground tombs.

[*See also* ʿAjjul, Tell el-; Burial Techniques; Dan; *and* Farʿah, Tell el- (South).]

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WILLIAM G. DEVER

SHANIDAR CAVE, major Stone Age archaeological site in northeastern Kurdistan (Iraq), about 400 km (248 mi.) north of Baghdad, near the Greater Zab River, a tributary of the Tigris River. The cave was discovered and excavated by a team directed by Ralph S. Solecki (1963, 1971) in 1951, 1953, 1956–1957, and 1960. Friction between the resident Kurds of northern Iraq and the Iraqi government halted the investigations. Shanidar cave is a very large erosional and solution limestone cave in the Baradost Mountain of the Zagros Mountain chain at an elevation of about 746 m (2,450 ft.) above sea level (35°50′ N, 44°13′ E). The cave was a major base camp for early roving hunters and gatherers. It later served as a seasonal home for its residents just prior to the advent of the domestication of plants and animals.

In the four seasons of work, the team excavated a little over a tenth of the cave's approximately 1,200 sq m of area. A series of four major layers was found down to bedrock, nearly 14 m deep, and named from top to bottom A–D. There are cultural, stratigraphic, and chronologic breaks between each layer in the area excavated. Layer A includes remains from the modern, historic, and Neolithic periods. Layer B is a thinner soil horizon, marked by preceramic human occupations that are divisible into two layers, B1 and B2. Layer B1, the Shanidar Proto-Neolithic (Rose Solecki, 1981), was C-14 dated (uncalibrated) to about 8,650 BCE. At its base a burial area was found containing twenty-nine individuals, in a range of ages. Denise Ferembach (1970) and Anagnostis Agelarakis (1989) studied the skeletal remains. Douglas Campana (1989) studied the worked-bone tools from layer B. Layer B1 is related to the nearby village site of Zawi Chemi Shanidar, of about the same age, excavated by Rose L. Solecki (1981).

Layer B2, the Mesolithic, or Epipaleolithic, cultural horizon, is dated to about 10,000 BCE. It is culturally related to the occupation at Zarzi cave, farther to the southeast in Iraq. The artifacts from layers B1 and B2 resemble those of the Levantine Natufian and Kebaran cultures, respectively, in Israel. [*See* Carmel Caves.] The next Shanidar cave cultural horizon, layer C, which is much thicker, is called the Baradostian, after the name of the mountain in which the cave is located. This layer is bracketed by C-14 dating between about 28,000 and 35,000 BP. It contains flint implements of Upper Paleolithic type that resemble the Aurignacian period in France and the Levant.

The cave's bottommost deposit is the Middle Paleolithic horizon, layer D, which is also stratigraphically divisible into subunits. From two C-14 dates, the upper unit is estimated to be about forty thousand years old. The lower unit, as yet undated, is estimated to be about 80,000–100,000 years old. This layer appears to have a relatively uniform Mousterian-type culture that is associated with early hominids called Neanderthals (Solecki, 1963; Solecki and Solecki, 1993). Shanidar cave is so far the only site in Southwest Asia, east of Palestine, that has produced recognized Neanderthal skeletal remains (Stewart, 1977; Trinkaus, 1983). A total of nine Neanderthals was recovered. Four of them, Shanidar Neanderthals I–III and V were apparently killed under rockfalls, when the cave's ceiling collapsed. The remains of Shanidar IV and VI–VIII were apparently interred separately, in a kind of natural rock crypt (Solecki, 1971). The ninth individual, a young child, was found on the occupation floor (Şenyürek, 1957).

Several of the Neanderthal finds are notable. Shanidar I, a mature male adult (dated to about 46,000 BP), had his right arm amputated above the elbow. Because of this and other handicaps, he was presumably unable to engage fully in outdoor activities. Shanidar III, also a male adult, had been wounded in the rib cage, probably by a spear. He was recovering when he died under a rockfall. According to Arlette Leroi-Gourhan (1975), a French palynologist, Shanidar IV was interred with some eight bouquets of local field flowers. Solecki (1977) has shown that the flowers are known in Kurdistan for their medicinal properties. Jan Lietava (1992), a Czechoslovakian medical researcher, has observed that the flowers were known in antiquity as well for their curative values.

Goats were the primary animals forming the meat diet in Shanidar cave during the Paleolithic periods (Evins, 1982; Perkins, 1964). There was a change in diet with the proto-

Neolithic period (Perkins, 1964), suggesting a dramatic change in the economy from an ages-old hunting-gathering economy to one more dependent on domesticable animals (sheep). In modern times, Kurdish herders have used the cave as a winter habitat.

[*See also* Medicine; Paleobotany; *and* Sheep and Goats.]

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RALPH S. SOLECKI

SHAVEI-ZION. [*To treat the separate excavations on land and off the coast of this site, this entry comprises two articles:* Land Site *and* Underwater Site.]

Land Site

Shavei-Zion lies 7 km (4 mi.) north of Akko on Israel's Mediterranean coast, where the Beth-ha-'Emeq estuary forms a natural anchorage (32°59′ N, 35°05′ E; map reference 158 × 265). There is an artesian freshwater spring at the center of the modern fishing village, which was once probably known as Nea Come, mentioned on a stone slab commemorating the construction, in 56 CE, of a stretch of the highway between Akko (Ptolemais) and Antioch. In 1971, storage jars and hundreds of hollow, molded terra-cotta figurines of the Phoenician goddess Tannit, dated to the sixth–early fifth centuries BCE, washed ashore at Shavei-Zion, encouraging Haifa University marine archaeologists, headed by Elisha Linder, to excavate under water (see below). The terra cotta, according to the results of neutron activation analysis, is of clay available between Sidon and Achziv. An African elephant tusk and amphorae were also recovered from the ship's hold, demonstrating that in antiquity cargoes came to the immediate area from all over the Mediterranean.

Excavations on land, on behalf of the University of Rome and the Israel Department of Antiquities (IDA) in 1964, directed by Moshe W. Prausnitz, examined a third–second-century BCE cemetery on the southern bank of the Beth ha-'Emeq River. Erected on top of the inhumations were the sculpted heads, carved out of local limestone, of those interred. Because gravestones depicting human images are unknown in the archaeology of the Holy Land, these examples point to the hellenization of the population that settled north of Akko. Ancient iconoclasts had smashed the images, so that only a few small fragments were recovered.

The IDA undertook four seasons of rescue excavations (1955, 1957, 1960, 1963), as well, directed by Moshe W. Prausnitz, that revealed a triapsidal basilica (27 × 16 m). [*See* Basilicas.] The domus is divided into a central nave and two side aisles. Three building phases were distinguished, all dated to the fifth century CE. The first phase included the domus, the northeast chapel, and a large forecourt west of the western church facade. The church was built on a terrace 1.5 m above the atrium and 6.5 m above the sea. The basilica was dated to the end of the fourth century. The earliest mosaic floors could be dated to approximately 415, contemporary with the nearby 'Evron church. [*See* Mosaics.] A medallion in the center of the mosaic floor of the northern aisle consists of a wreath surrounding a cross, pomegranates, chevrons, and stylized fish arranged below the cross to form a "cross tree" or "tree of life." Excluding the cross, all the symbols had previously belonged to Jewish and Phoenician iconography. The fusion of the elements under the cross represents the sources of early ecclesiastic art.

The imperial decree in 427 CE not to step on the image of the cross and a ruling at the Council of Chalcedon in 451 CE relating to liturgical procedures necessitated spatial alterations in churches—of floor sockets for the chancel columns, mensae, and/or pulpits that were to be placed in front of the altar. At Shavei-Zion a new mosaic floor covered intact the northeast chapel's earlier mosaic floor. In the third phase, the second major building period, the western forecourt was divided into an outer narthex (enlarged to the north) and given a wide flight of monumental stairs that descended to the atrium. A bathouse also belongs to the

third phase. The donor's inscription on the outer narthex is dated 486 CE. The church was destroyed at the beginning of the seventh century.

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M. W. PRAUSNITZ

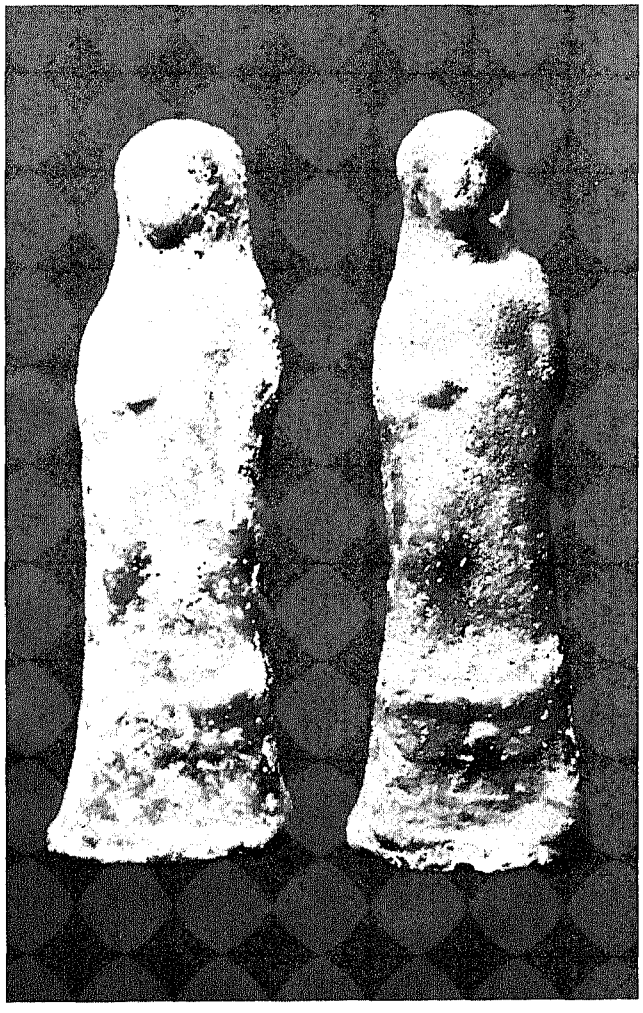
Underwater Site

In spring 1971, a fisherman hauled a group of terra-cotta female figurines from the sea off the coast at Shavei-Zion. Subsequently, members of the Undersea Exploration Society of Israel conducted a preliminary survey in the area in which the figurines had been found. The survey located more figurines along a sandstone ridge, many which were covered with a heavy layer of calcareous encrustation that hid their features. The discoveries justified organizing a full-scale expedition the following fall, under the direction of Elisha Linder of the Department of Maritime Civilizations, University of Haifa.

The artifacts were scattered over an area 1 km (0.5 mi.) long and 300 m wide. Chisels and hammers, as well as pneumatic drills, were necessary to detach the figurines from the sandstone bottom in which they were embedded. The long and tedious process culminated in the cleaning of more than four hundred terra-cotta figurines, many of them complete and with the details of their features well preserved. All the figurines are hollow and were cast from molds. They are erect female figures, set on a base, each of whose right arm is lifted in a gesture of benediction and whose left arm is bent against the breast, some holding an infant. On some of them, either a dolphin or a sign composed of a triangle topped by a horizontal bar with a disk above its center appears in relief. This latter feature, known as the sign of Tannit (or, following the Greek vocalization, Tinit), was the key to identifying them. The sign of Tannit appears in various forms all over the Phoenician (Punic) world and is named after the principal goddess of Carthage. Its geometric style, in which it resembles the Egyptian ankh, the symbol of life, appears on the figurines. In other examples, Tannit appears as a schematized female figure with outstretched arms in a gesture of prayer. First, it has been suggested that Tannit is of Libyan origin, was adopted by Phoenician settlers, and that her name derived from the Egyptian *ta-neith* ("land of Neith," goddess of the western Delta). A Semitic etymology from *tbnt* or *tnn* has also been suggested. In recent years there has been renewed interest in the origin of Tannit because of sporadic finds in the eastern Mediterranean, both of inscriptions explicitly mentioning her name and of artifacts bearing her sign. The latest and most convincing inscription comes from Sarepta in Lebanon, north of Tyre, which reads: "The statue of Šlm son of Mp'l son of 'Zy made for Tnt Aštrt."

In archaeological contexts the sign was the symbol of the goddess, evidence of her presence in local cults. Her sign has been found in Israel on a lead weight from Ashdod-Yam and on an amphora excavated at Akko and on a glass stamp from the Phoenician level at Sarepta—all sites located along the eastern Mediterranean coast. The discovery of the cargo of Tannit figurines at Shavei-Zion strengthens the position that the origins of Tannit are in the eastern Mediterranean.

The ship carrying the votive figurines sailed along the southern Phoenician coast at some time in the fifth century BCE. This date was established by several storage jars, identified as Persian, found embedded in the figurine conglomerate. The wide scattering of the figurines along the sandstone ridge suggests that they were jettisoned during a storm. The ship's immediate destination may have been



SHAVEI-ZION: Underwater Site. *Tannit figurines.* Both figurines are from the same mold. Note the sign of Tannit appears most clearly on the base of the figure to the right. (Courtesy E. Linder)

Achziv, Shavei-Zion, or Akko, all Phoenician localities with sanctuaries and burial grounds, where the figurines would have been in demand by worshipers of the goddess.

No comparative assemblages of votive terra-cotta figurines representing the goddess from land excavations—neither identical nor even similar—exist, either from the eastern or western Mediterranean. Only one other group of figurines, almost identical to this one, was discovered by Robert Marx, years ago, at a depth of 40 m, in the sea near the Phoenician city of Tyre in modern Lebanon. They too were part of a cargo from a shipwreck and were discovered accidentally, but their find spot was never systematically explored.

Questions remain about the cult of Tannit, her attributes, and the spheres of Tannit worship. The cargo of votive figurines from Shavei-Zion raises other questions as well, such as the relationship between the Phoenician homeland and its colony, Carthage, centuries after the latter was established.

[*See also* Carthage; Cult; Phoenicia; Phoenicians; Sarepta; Tyre; Underwater Archaeology; *and* Undersea Exploration Society of Israel.]

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SHEBA (Old South Arabian, Saba'), pre-Islamic kingdom in the southwestern corner of the Arabian Peninsula, bounded geographically on the north by Nejran, in the west by the Red Sea, and in the south by the Gulf of Aden. Its area roughly corresponded to that of northern Yemen. The capital of the kingdom was Marib.

Sheba is mentioned many times in the Hebrew Bible. The Table of Nations (*Gn.* 10) describes Sheba as descending from Noah through the line of Ham, Cush, Ra'amah, and as the brother of Dedan, suggesting a home in northern Arabia; descending from the line of Shem, Arpachshad, Shelah, 'Eber, Yaqtan, and as the brother of Hazermavet (Ḥadhramaut), suggesting a location in southern Arabia; and descending from Abraham and Qeṭurah as the son of Yaqshan and again as the brother of Dedan (*Gn.* 25). In the Table of Nations, Sheba also descends from Ham and Cush and is a brother of Ra'amah. Whether there were two Shebas, or one Sheba in the south whose domination extended northward is not clear, although the latter seems more probable. A single, powerful Sheba would explain its success in the caravan trade, where it moved vast quantities of incense and other products safely over 2,413 km (1,500 mi.) of desert to northern consumers. It is likely that by the tenth century BCE colonists from Sheba had already established trading colonies in Tigre, Ethiopia, where South Arabian culture flourished for centuries. Sheba may be the biblical name given to these colonists, who considered themselves Sabaeans with allegiance to the homeland in Arabia.

Other biblical references noting the participation of Sheba in international commerce include the visit of the unnamed Queen of Sheba (in Islamic tradition, her name is Bilqis and in the Ethiopian tradition, Makeda) to the court of King Solomon, which was more of an economic mission than a quest to test Solomon's wisdom (*1 Kgs.* 10:1–13; *2 Chr.* 9:1–12); caravans laden with frankincense and gold (*Is.* 60:6; *Jer.* 6:20; *Ez.* 27:22), precious stones (*Ez.* 27:22); and Sabaeans being regarded as brigands (*Jb.* 1:15); *Ez.* 38:13).

Classical authors such as Pliny the Elder (*Natural History* 6.26.104; 32.153–155, 160–162; 12.30–35, 41) and Diodorus Siculus (2.49.2; 3.46.1–3, 47.5–8) stated that trade in myrrh and frankincense made the Sabaeans the wealthiest people in the world, and Diodorus added descriptions of the richness of Sabaean homes and furnishings. The anonymous ship captain who authored the *Periplus of the Erythraean Sea* (para. 21–32), in listing exports and imports at each port, states that alabaster was exported from the Red Sea port of Muza (modern Mocha), and that only small quantities of grain and wine were imported, indicating that local agriculture provided agricultural self-sufficiency. [*See* Mocha.]

The first excavations in Sheba were undertaken at Ḥuqqa by Carl Rathjens and Hermann von Wissmann in 1928; they excavated a temple consisting of a square open court surrounded on three sides by a peristyle hall (Rathjens and Wissmann, 1932). Such Egyptian scholars as Mohammed Tawfik (1944–1945) and especially Ahmed Fakhry (1947) published notes, photographs, and sketches of several sites and many inscriptions. In 1951–1952, the American Foundation for the Study of Man, led by Wendell Phillips and Frank P. Albright, conducted a short season of excavation at Marib. [*See* Marib; *and the biography of Phillips.*]

From the Paleolithic to the Bronze Age, indigeneous peoples occupied the region, gradually increasing their technological capabilities. Between the sixteenth and thirteenth centuries BCE, immigrants, probably from the Levant, moved into the area and became known as the Sabaeans. This is suggested by their dialect, which alone among the other South Arabic dialects used the *h* to express the causative in verbal forms and for third-person pronouns, a characteristic of the Northwest Semitic dialects of the Levant.

[*See* Qataban.] These immigrants brought more advanced and complex institutions: centralized government, urban living, economies based on agriculture and commerce, a Semitic alphabetic script of twenty-nine consonants, elaborate cults with deities representing aspects of nature, a tradition of art and architecture, and an advanced metallurgy. In the course of time, this culture absorbed the Bronze Age peoples and many of their cultural traits and gained others from foreign lands through commerce, thus creating a unique political, economic, and cultural system.

By the tenth century BCE, Sheba had become a kingdom ruled by a monarch, as indicated by the Queen of Sheba account in the Hebrew Bible, and this form of government continued throughout its history. Possibly the title *mukarrib*, perhaps meaning "priest-king," was already used by the ruler, since rulers of the late eighth century BCE bore this title in inscriptions. By the fifth century BCE, *mukarrib* was replaced by "king." Sheba was the preeminent state in southern Arabia until the fourth century BCE, when it declined. Qataban and Ma'in then dominated the west, continuing this role until the second century BCE, when Qataban exercised suzerainty over Ma'in. Qataban lost a substantial part of its western kingdom with the rise of Himyar and the beginning of the Sabaean era, in about 115 BCE. Later, Sheba joined with Himyar to form the kingdom of Saba' and Dhu-Raydan. In 24 BCE, Aelius Gallus and his Roman legions invaded Sheba; Gallus abandoned the attempt because of illness among his soldiers and treachery by his Nabatean guide. Following the fall of Qataban, the kingdoms of Ḥadhramaut, Saba', and Dhu-Raydan prevailed in southern Arabia. In the third century CE, Shammar Yuhar'ish added Ḥadhramaut and Yamnat to the kingdom of Saba' and Dhu-Raydan. However, the kingdom declined rapidly in the fourth century CE, after Constantine made Christianity the religion of the Roman Empire: the Romans had practiced cremation, sprinkling frankincense on the pyres, but the pyres were abandoned because Christians believe in the resurrection of the body and bury their dead, which led to the collapse of the frankincense market and to economic decline in southern Arabia. A Christian dynasty followed by a Jewish dynasty marked the decline of the former traditional religion and values. An Ethiopian dynasty destroyed Jewish rule and was followed by a Persian dynasty; the Muslims ended the kingdom of Saba' in the seventh century CE. Thereafter the region became known as Yemen under successive dynasties.

[*See also* Ḥadhramaut; Qataban; Yemen; *and* Ẓafar.]

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GUS W. VAN BEEK

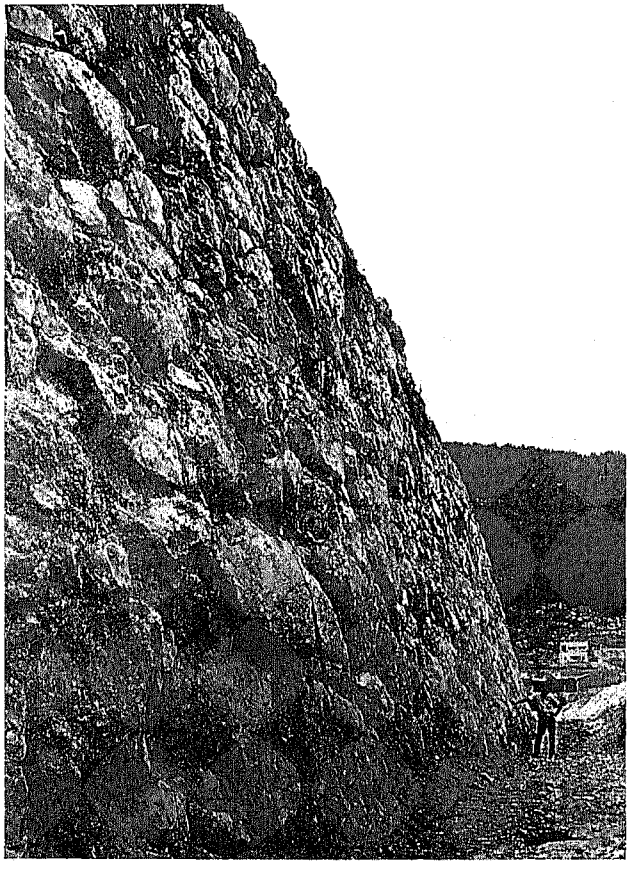
SHECHEM (Ar., Tell Balaṭah), a 6-acre mound located in the hill country of north-central Israel (32°13′ N, 35°16′ E; map reference 1755 × 1805), just 2 km (1.2 mi.) east of modern Nablus (Roman Neapolis) and 10 km (6 mi.) southeast of Samaria/Sebaste. Now partly covered by the Arab village of Balaṭah, the site is strategically located at the eastern end of a transverse pass between the high mountains of Gerizim to the south and Ebal to the north (see figure 1). To the east it overlooks the Plain of 'Askar and commands traffic in all directions through the area.

Identification. Jerome, in the fifth century CE, identified biblical Shechem with Roman Neapolis, which Vespasian founded in the Ebal-Gerizim pass in 72 CE. This opinion prevailed into modern times and was accepted by Edward Robinson in the mid-eighteenth century. Other early sources, however, including the fourth-century *Onomasticon* of Eusebius and the notes of the Bordeaux Pilgrim and the sixth-century mosaic map from Madaba, placed Shechem east of Neapolis, between Jacob's well and Sychar (a New Testament site), and near the traditional location of the tomb of Joseph. In the nineteenth century CE, the Arab village of Balaṭah was established here.

In 1903, during a tour of Palestine on horseback, Hermann Thiersch, a professor of Bible from Göttingen, and a party of German scholars camped at Balaṭah and examined the mound. Based on its proximity to 'Askar, just to the northeast, and on their having observed 37 m of a cyclopean stone wall on the northwest side of the tell (now called wall A; see figure 2), Thiersch reported in his diary that the site was ancient Shechem. Further attention was drawn to the site when F. W. Frieherr von Bissing, a professor from Munich, purchased a hoard of bronze weapons from a Balaṭah family in 1908. Subsequent excavation fully confirmed the identification of Tell Balaṭah with biblical Shechem.

Exploration. The first formal excavations at the site were conducted under Austrian auspices by the German biblical scholar Ernst Sellin in two campaigns during 1913 and 1914. Sellin traced the line of the cyclopean wall Thiersch noticed (wall A) for more than 75 m along the northwest side of the site; about midway along its length he discovered a large three-entryway gate (the Northwest Gate) as well. Searching for the continuation of the fortification lines, he also cut

SHECHEM. Figure 1. *View of the tell.* View from Mt. Ebal, looking southeast. (Photograph by J. D. Seger)



SHECHEM. Figure 2. *Outer city wall.* Wall A, dated to the Middle Bronze III period. (Courtesy ASOR Archives)

a 52-meter-long north–south probe trench on the north side of the mound. There Sellin distinguished four occupation levels: Greek, Jewish/Samaritan, Israelite, and Canaanite.

After an interruption of more than a decade caused by World War I, work was resumed for another five campaign seasons between 1926 and 1928. Additional features of the Northwest Gate were cleared, along with several adjoining, so-called, palace structures. At some distance to the south, a large temple, with hugh 5-meter-wide foundation walls, was found. Based on the presence of a large *maṣṣēbâ* ("standing stone") and of what were perceived as podia, or altar bases, in the forecourt area, Sellin assumed that this was the El-Berit temple mentioned in *Judges* 9. Other deep and more extensive clearance was done in areas lying east and south of the temple, and work was conducted on the mound's eastern perimeter. There, a different type of wall (wall B), with offsets and insets, was found, along with an associated two-entryway gate (the East Gate) (see figure 3). Two additional east–west trenches were cut to probe into adjacent intramural levels. Sellin dated wall A and the temple on the west to the earliest part of the Late Bronze Age and placed the wall-B system later within the same period.

In the spring 1926 season, Sellin was joined by Gabriel Welter, an architect with experience at classical sites; in summer 1928 the Deutsches Evangelisches Institute für Altertumswissenschaft des Heiligen Landes replaced Sellin with Welter as director. Although Welter conducted summer work in 1928 and 1929, few new results were reported. He did, however, produce excellent plans relating to previous work. Sellin was reinstated as director in 1933, but, with

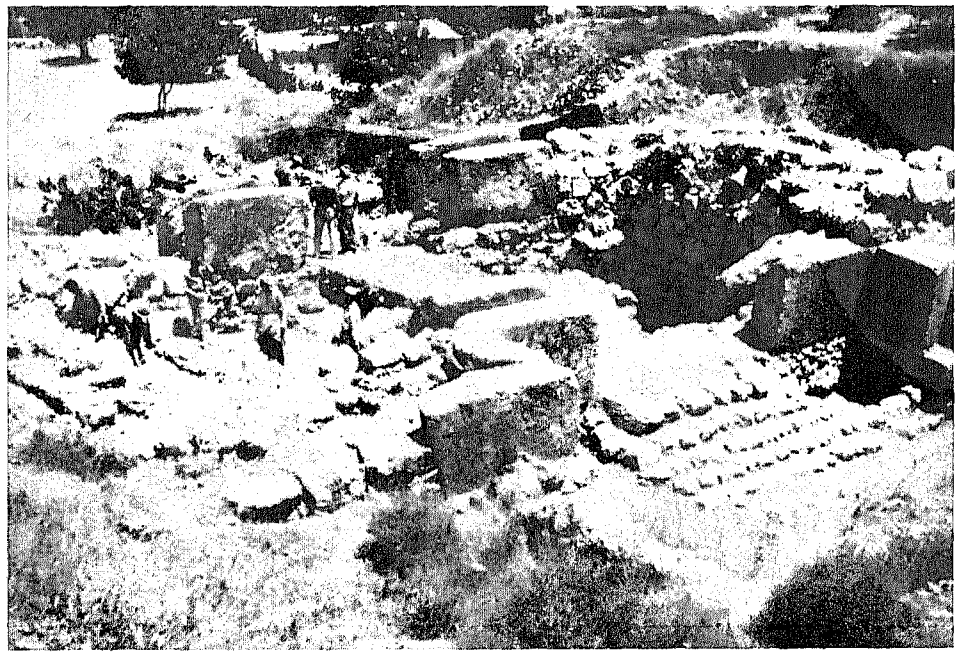
architect Hans Steckeweh, he excavated again only in summer 1934. Tragically, all of the field records and final report manuscripts of the German work were destroyed during World War II by Allied bombing. [*See* Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes; *and the biography of Sellin.*]

In 1956, sponsored by Drew University and McCormick Theological Seminary (and later also Harvard University), and in cooperation with the American Schools of Oriental Research, new American work was begun at the site under the direction of G. Ernest Wright. Employing newer methods of stratigraphic and ceramic analysis, the American excavation sought to reevaluate and to supplement the results of the German expedition. Six-week excavation seasons were conducted during the summers of 1956, 1957, 1960, 1962, 1964, 1966, and 1968. Supplementary work included a regional survey directed by Edward F. Campbell (1964–1972) and several shorter, follow-up excavations (1969, 1972, 1973). Overall, fourteen excavation fields were opened both on the mound and in the immediate environs. The most significant of these included field I, at the East Gate; field III, across the wall-B fortifications on the northeast; field V, at the "El-Berith" temple; field VI, in the area of the temple forecourt; field VII, a new area of domestic levels in the north-central part of the tell; and field IX, a new area to the southeast, at the edge of the Balaṭah village. On the tell, occupation was identified from the Chalcolithic period (fourth millennium BCE) and, subsequently, with only minor gaps, from the Middle Bronze I (c. 1900 BCE) down to Late Hellenistic times (c. 107 BCE). Survey work extended this history into the Roman, Byzantine, and later Arab periods. [*See* American Schools of Oriental Research; *and the biography of* Wright.]

Settlement History. The Drew-McCormick excavation identified twenty-four occupation strata on the main tell. The two earliest of these (strata XXIV–XXIII) represent the Chalcolithic period (c. 3500 BCE). Remains include circular mud-brick hut structures, with cobbled floors from levels just above bedrock in field IX, and beaten-earth occupation surfaces at basal levels below the temple forecourt in field VI. Following this, during the Early Bronze Age (third millennium BCE), the site was apparently not settled.

However, in the MB I (after c. 1900 BCE), occupation was resumed. Remains were found of two building phases of substantial houses in field VI (strata XII–XXI) and, adjacent to them, a large earthen platform, presumed to be a podium for a public building. No fortification walls belonging to this MB I settlement phase were found, and Shechem may have been an open site then. This occupation provides a probable *terminus ante quem* for dating the biblical traditions relating to the patriarch Abraham and his passage through Shechem (*Gn.* 12:6.) The city of this period is also named in the Execration texts of the Egyptian twelfth dynasty; a campaign against "Sekmem" (presumably Shechem) is mentioned on the stele of Khu-Sebek from the reign of Pharoah Sesostris (Senwosret) III (c. 1880–1840 BCE.)

Four architectural phases (strata XX–XVII) mark the development of the city in the succeeding MB II (c. 1750–1650 BCE). In stratum XX the city was enclosed by a 2.5-meter-wide wall (wall D), which was traced for 43 m along the



SHECHEM. Figure 3. *East gate.* Excavations in progress, 1962. (Photograph by J. D. Seger)

northwest side, through fields V, VI, and XIII. At the same time, an area of public buildings was isolated by a second perimeter wall (wall 900) running roughly parallel about 20 m to the east. A cobbled street ran along the inner, west face of this wall, beyond which lay two blocks of courtyard-type buildings. Although Wright initially proposed that these structures were a courtyard-temple complex, architectural modifications during the four phases of the MB II period provide a picture of domestic and industrial uses more appropriate to an administrative or palace unit.

During stratum XIX the city's fortifications were dramatically augmented by a massive earth and marl embankment. In field V, on the west, this consisted of a high mound, 30 m wide at its base, footed inside by wall D and on the outer perimeter by the addition of a battered stone retaining structure (wall C). The preserved outer slope rose at an approximate 40-degree angle, creating a formative defensive rampart.

Another major expansion of the city was undertaken during the MB III period (c. 1650–1550 BCE). At that time (strata XVI–XV) the northwest side of the city was enlarged with cyclopean wall A and the Northwest Gate complex, including palace 7200 and temple 7200. Wall A was built outside of wall C, some 8 m farther west. Against its inner face a massive fill, derived mainly from leveling the MB II embankment, was deposited. The platform thus created was the base upon which the field-V temple was constructed. It was 26.3 m long by 21.2 m wide and its foundation walls were more than 5 m thick. It is identified as one of the *migdal* or "fortress"-type temples mentioned in *Joshua* 19:38 and *Judges* 8:17.

Later in this period, the extension of the wall-A system on the east was again supplemented by the addition of the 3.5-meter-wide wall B and the two-entryway East Gate. Wall B formed a secondary defense line 11 m inside and above wall A. The slope between was paved with a compacted limestone marl glacis. This intense building program included the development of substantial intramural domestic and public architecture and testifies to the peak of prosperity reached at Shechem in the Late Middle Bronze Age. However, this elaboration of city fortifications also forecast its subsequent fiery demise. In the mid-sixteenth century BCE, in the wake of the eighteenth-dynasty Egyptian drives to expel and expunge the Asiatic Hyksos from their land, Shechem was assaulted, burned, and totally laid to waste.

Following this destruction, the site lay abandoned for at least a century before settlement was resumed in the Late Bronze IA (strata XIV–XII). In about 1450 BCE, LB IB engineers rebuilt the city on roughly its earlier lines, reusing wall A and setting a new wall into the debris above the wall-B system. The East Gate was reused, and new guardrooms were added. These structures were modified further in each of the strata XIII and XII phases.

On the west, the Northwest Gate was probably also reused. Successive strata of LB domestic occupation were identified just to its northeast, in field XIII. In field V, to the south, a smaller, but still substantial, temple was built directly on the stone foundations of the earlier *migdal* structure. It is this LB temple, which continues to be used into the Early Iron I period, that now appears to be the better candidate for identification with the "Baal/El-Berith" shrine traditions in *Judges* 9:4 and 9:46. A bronze figurine of the Canaanite god Baal, found in stratum XII levels in field VII, strengthens the identification.

The LB IIA city of stratum XIII was that ruled by Lab'ayu, the opportunistic king mentioned in the Amarna correspondence. A layer of destruction debris all across the site marks the demise of his family's control. A fragment of an Amarna age cuneiform tablet was recovered from post-stratum XII debris in field XIII. A time at the end of Stratum XII or within the early part of Stratum XI is the most reasonable context for the covenant-making ceremony between the arriving Israelites and the people of Shechem described in *Joshua* 24.

No major disruption marks the transition to the stratum XI occupation of the early twelfth century BCE. The main walls, East Gate, and temple structure remain in use at this time, but the quality of the rebuilding is poor and the localized destruction of buildings in fields VII and IX suggests general economic decline and political instability. The period's end (c. 1125 BCE) is well documented by heaps of destruction debris. This eclipse of the early Iron I occupation was probably the result of the vengeance taken on the city by the self-appointed King Abimelech, reported in *Judges* 9:42–49.

Stratum X represents the subsequent resettlement of the city as it revives in the tenth century BCE under the stability provided by the reigns of David and Solomon. At this time it was included in the new Solomonic district of Mt. Ephraim (*1 Kgs.* 4:8). Although remains are scant, it appears that the East Gate towers were once again rebuilt, and traces of a casemate fortification wall have been detected. During this period the slope leading down to the East Gate from the western acropolis was terraced to support domestic buildings. A destruction, probably related to the Egyptian invasion of Shishak (c. 918 BCE), or otherwise to conflicts involved in the breakup of the United Monarchy (*1 Kgs.* 12), marks the transition to stratum IX. According to *1 Kings* 12:25, Jeroboam I rebuilt Shechem and for a time made it his capital. In the late ninth century BCE the stratum IX city was also destroyed.

In stratum VIII, during the Iron IIB period, domestic buildings on the eastern terrace in field VII show several phases of rebuilding and repair. At this time, with the moving of the northern capital first to Tirzah and then to Samaria, Shechem's political role was somewhat reduced. However, the construction of a large (18 × 16 m) storage building above the temple ruins in field V, and the mention

of Shechem on one of the ostraca from Samaria, suggest that it remained a center for tax collections in the Mt. Ephraim district.

The destruction of stratum VIII doubtless illustrates the local and international uncertainties that afflicted the northern kingdom under Assyrian pressures through the mid-eighth century BCE. Rebuilding in Stratum VII is best documented in the remains of a fine courtyard house, with well-preserved evidence of domestic and industrial installations, on the middle terrace in field VII. The subsequent destruction of this house, and the end of the stratum VII city, date to the final Assyrian invasions of 724–722 BCE, which concluded with the capture of nearby Samaria.

Reoccupation during the seventh and sixth centuries BCE is documented in the strata VI and V remains in fields I, VII, and IX; however, all evidence indicates that the town throughout this time existed in an impoverished state. A delegation from the city of the early sixth century BCE is mentioned in *Jeremiah* 4:4–10 as being among those from the north visiting Jerusalem to mourn the destruction of the Temple. From about 475 BCE until sometime after 331 BCE, the site was abandoned.

Shechem regained prominence in the Hellenistic period, following Alexander the Great's punitive expulsion of citizens from Samaria during his campaign in 331 BCE. The Samaritan refugees resettled in Shechem, at the foot of Mt. Gerizim. They built their temple on top of the mountain, at Tell er-Ras, thus entering into a rivalry with the Jewish orthodoxy in Jerusalem. [*See* Ras, Tell er-.] The Samaritan occupation survived through four building phases (strata IV–I). The stratum IV city represents ambitious construction. The passage through the East Gate was cleared for reuse down to its original MB levels, and a new wall with an outlying chalk glacis was built to form the defenses. The quality of intramural house construction is good, with dressed-stone foundations, and the city is well planned, with blocks of houses separated by broad streets.

Soon, however, in the third century BCE, the city was caught up in the conflicts between the Ptolemies of Egypt and the Seleucids of Syria. [*See* Ptolemies; Seleucids.] Intermittent disruptions marked by phases of destruction characterize its troubled history. Under Seleucid rule, in the second century BCE, its decline continued. The reestablishment of Jewish authority in Jerusalem by the Maccabees signaled its end: in 126 BCE John Hyrcanus destroyed the temple on Tell er-Ras, and in 107 BCE he made a final assault on the city, burying its defenses and destroying it beyond recovery. Roman Neapolis, built by Vespasian a few miles to the west in the Shechem pass, replaced it.

[*See also* Samaria; *and* Samaritans.]

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JOE D. SEGER

SHEEP AND GOATS. More than ten thousand years ago, in the rolling uplands that flank the Fertile Crescent, humans began a long-term partnership with two animal species, the red sheep *(Ovis orientalis)* and the Bezoar goat *(Capra aegargus),* that continues to shape both the natural and cultural landscape of southwest Asia to the present day. With the final retreat of the great northern ice sheets at the end of the Pleistocene era, this region experienced a shift to a milder climate that brought with it the replacement of tree-

less steppe with deciduous oak forests. An accompanying expansion of grasslands, comprised largely of wild varieties of wheat and barley, encouraged, in turn, the proliferation of smaller hoofed species of animals, such as wild sheep and goats, as well as gazelle and deer. Found throughout the entire arc of the Fertile Crescent, wild goat were especially well represented in its eastern half, particularly in the Zagros Mountains. Although wild sheep were also quite common in lower elevations of the Zagros, they seem to have been more abundant at the apex of the Fertile Crescent, in northern Mesopotamia and southeastern Anatolia. They may have been absent altogether, or at least very rare, in the Levant. It is in these central and eastern portions of the region that the shift can be traced from an initial heavy dependence on wild sheep and goats as primary prey species (as evidenced at such late Paleolithic sites as Yafteh cave, Palegawra, and Shanidar in Iran) to the management of these animals as primary domestic resources (at such Epipaleolithic and early Neolithic sites as Ganj Dareh in Iran, Ali Kosh, Cafer Höyük, Çayönü, and Tell Abu Hureyra). Goats were probably first domesticated in the Zagros Mountains in about 7,500–7,000 BCE and sheep, apparently sometime later, in the more lowland areas to the north and west.

Human control over breeding effectively eliminated pressures that in the wild selected for larger, horned, aggressive males. It also restricted the size and diversity of the breeding population, which, along with changes in nutrition, resulted in marked change in the bodies and behavior of these animals. Reduction in size and changes in horn shape (and in sheep a remarkable replacement of the stiff hairy outercoat by the wooly undercoat) distinguish domestic forms of sheep *(Ovis aries)* and goat *(Capra hircus)* from their wild progenitors. As a result, these new species expanded in number and range beyond what was possible in the wild, vastly increasing their genetic fitness over that of their ancestors, who were progressively forced into more remote, marginal territories.

When coupled with the cultivation of cereal grasses (which probably had its origin in the Levant), the herding of domestic sheep and goats afforded these new food-producing economies a high level of security and predictability. [*See* Cereals.] By the mid-seventh millennium BCE, sedentary village communities throughout the Fertile Crescent were growing wheat and barley and herding flocks of sheep and goat. This new economic focus was likely accompanied by a significant restructuring of social organization, gender relations, notions of property, as well as belief systems needed to mediate relationships between members of larger permanent communities reliant on fixed territories for the supply of essential subsistence resources.

The clearing of natural vegetation to create new cropland, the overgrazing of areas that once supported wild herds, and the use of irreplaceable forest resources for fuel had a profound impact on local landscapes. In the area around the Neolithic site of 'Ain Ghazal in Jordan, in the southern Levant, the sudden collapse of an initially highly successful agricultural system offers an early object lesson on the consequences of farming and herding in fragile arid environments. On the other hand, new evidence from the middle Khabur in present-day northeastern Syria suggests that the decimation of indigenous herds of wild gazelle, equids, and cattle did not begin until some time after the expansion of urban-based agricultural economies, more than three thousand years after the introduction of domesticates into the region.

Sheep and goat continued to play a central role in the highly specialized economies of the urban societies that dominated southwest Asia from the mid-fourth millennium onward. Control over the distribution of sheep and goat products, especially to city dwellers far removed from rural food production, has been shown, in textual sources and in archaeological faunal assemblages, to have been of major concern to urban administrators. Textile production and the management of special breeds of wool-bearing sheep were primarily pillars of state-level economies in otherwise resource-poor lowland Mesopotamia. The growth of specialized economies encouraged the development of specialist pastoralists who supplied meat, wool, and dairy products in exchange for agricultural products and craft goods. Although they were an essential component of these expanding regional economies, specialist pastoralists needed to maintain a high degree of mobility to assure optimal pasturage for flocks, often venturing great distances from the seats of urban authority. This mobility afforded pastoralists a greater degree of independence from urban control than experienced by other sedentary, more centrally located farmers and craft specialists. By at least the mid-second millennium, as evidenced by the Mari archives, pastoral nomads had become an important and frequently disruptive force in the political stability of urban society in southwest Asia. Indeed, much of the subsequent history of this region is marked by cycles of centralization and collapse in which pastoralists and their flocks play an ongoing and enduring role.

[*See also* Animal Husbandry; Paleozoology.]

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MELINDA A. ZEDER

SHEIKH ḤAMAD, TELL (Dur Katlimmu), site located in northeast Syria, 70 km (43 mi.) north-northeast of Deir ez-Zor, on the east bank of the Khabur, the largest tributary of the Euphrates River (35°37′ N, 40°45′ E). The site was first investigated by Hormuzd Rassam in 1879, who discovered the fragmentary stela of Adad-Nirari III now in the British Museum. Surveyed by Hartmut Kühne and Wolfgang Röllig in 1975 and 1977, systematic excavations began, under Kühne's direction in 1978 under the auspices of the Free University of Berlin.

The most ancient settlement dates to the late fourth millennium, but the site was apparently continuously occupied throughout the Early Bronze and Middle Bronze Ages (3000–1500 BCE). Originally a small village, the first expansion noted took place in the Middle Bronze Age (2000–1500 BCE), during the Old Babylonian period, with the construction of a citadel and a lower town, covering about 15 ha (37 acres). During the Late Bronze Age (1500–1000 BCE), the town was first under the control of the Mitanni Empire and then under the Middle-Assyrian Empire. [*See* Mitanni; Assyrians.] In the thirteenth century BCE, probably under the rule of the Assyrian king Shalmaneser I, the site became the seat of a governor. An archive of about five hundred cuneiform tablets found on the western slope of the citadel, in a wing of the governor's palace, ascertains that the site is to be identified with the Assyrian city of Dur Katlimmu, known from other Assyrian cuneiform sources of the second and first millennia BCE, but not anticipated in the region of Tell Sheikh Ḥamad. [*See* Cuneiform; Palace.]

In the Iron Age (1000–330 BCE), Dur Katlimmu returned to Assyrian rule (ninth century BCE). It may have been controlled by the Arameans in the eleventh and tenth centuries BCE. [*See* Arameans.] At the end of the eighth century BCE, the settlement was considerably enlarged when almost 40 ha (99 acres) were added to the lower town. A new town wall 4 km long enclosed the settlement, whose intramural occupation then covered 55 ha (156 acres). With the suburban areas in the north and in the east, the settlement had doubled. The excavated buildings consist of a palace and several residences of high officials. Broad streets and large open spaces dominated the new part of the lower town. At least two gates gave access from the north and the east, and a small harbor may have existed along the riverbank in the west. The city then served as an administrative and economic center, as the central place of a four-tiered settlement pattern. The population grew to about seven thousand. Considering its present geoclimatic situation, south of the dry-farming belt, such a large population could only have been supported by special means; these consisted mainly of a regional irrigation system, traces of which were discovered 2.5 km (1.5 mi.) east of Dur Katlimmu and along the east and west banks of the Khabur River. [*See* Irrigation.]

After the downfall of the Assyrian Empire (612/10 BCE), the Babylonians, under their king Nabopolassar and Nebuchadrezzer II, stepped in and founded the short-lived Neo-Babylonian Empire (610–535 BCE). Recent excavation results demonstrate that Dur Katlimmu was captured, looted, and partly burned. The provincial center of Dur Katlimmu—then perhaps under another name—carried on. A palacelike building was erected, possibly the seat of the Babylonian governor. Other former Assyrian buildings were

reused. Four unique cuneiform tablets, written in Assyrian with Aramaic postscripts, but dated according to the regnal years of the Babylonian king, ascertain that the population remained Assyrian and Aramaic, and that Assyrian law was still followed, twelve years after the breakdown of the Assyrian Empire. [*See* Aramaic Language and Literature.]

During the period of the Persian Empire (535–333 BCE), the extended lower town was only sporadically occupied. Gradually, the settlement was reduced to its former size of about 15 ha (37 acres). In the Hellenistic and Roman periods (333 BCE–300 CE), the lower town was used as a burial ground. The old citadel and the original lower town were densely settled, the lower town being turned eventually into a castrum. During the Parthian-Roman wars in the second century CE, the settlement seems to have achieved some military significance as a fortress. In the Late Roman and Byzantine periods (300–700 CE), the settlement continuously lost significance; by the dawn of the Islamic period it had dwindled to a small village again. It has been reoccupied only in the most recent past.

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HARTMUT KÜHNE

SHELL. *See* Bone, Ivory, and Shell.

SHEMAʿ, KHIRBET, also known as Galilean Tekoa, site located in the Upper Galilee on a high ridge of the Meiron massif, at 760 m above sea level (approx. 25° N, 34° E; map reference 1914 × 2647). It is approximately 10 km (6 mi.) west of Safed. Barely accessible from the south and west, and on its eastern and northern sides only after a long, steep climb, "the ruin of Shammai" has been a Jewish pilgrim site since the Middle Ages (it is not mentioned in the sources before the eleventh century). A large mausoleum with an underground tomb chamber marks the traditional spot of the grave of Shammai, the noted sage from the time of King Herod. The *ʿayin* in the name *Shemaʿ*), however, may refer to another megalithic monument, on the western ascent, that local Arabs call candle *(Shemaʿ)* and Jews call the seat of Elijah.

The site was excavated between 1970 and 1972 as a field project through the American Schools of Oriental Research, funded by the Smithsonian Institution and a consortium of universities, and directed by Eric M. Meyers. A final report of the expedition was published in 1976. The joint expedition was among the first excavations in the 1970s to engage scientific collaborators in geology, paleozoology, and environmental studies and to undertake conservation work from the outset.

Excavations were conducted in parts of the cemetery, in an industrial/agricultural area, and in the synagogue complex. While there was considerable debris dating to medieval times or to the Early Arab period, the bulk of the stratified material recovered dated to the Roman and Early Byzantine periods. In addition, limited finds from the Late Hellenistic period, mainly coins, suggest that the site was first occupied in the first century BCE.

Soundings in the cemetery produced evidence for the practice of secondary burials (*ossilegium*) in *kokhim* and other repositories, as well as of primary inhumation. The tombs under the large mausoleum identified with Shammai were all disturbed. Indeed, most of the tombs had been robbed in antiquity. The closest parallels are to be found at Beth-Sheʿarim in western Galilee, which date roughly to the same periods. Numerous olive presses and several ritual baths *(miqvaʿot)* were excavated in other areas, all dating to Roman times. [*See* Burial Sites; Tombs; Burial Techniques; Beth-Sheʿarim; Ritual Baths.]

Much of the scholarly attention devoted to the site has focused on the unusual broadhouse synagogue(s) excavation revealed and on their location not on the actual height

SHEMAʿ, KHIRBET. *Mausoleum, looking west.* (Courtesy E. M. Meyers)

but somewhat down the incline of the slope. Building upon older elements on the site—including a *miqveh* and possibly a tomb or simple underground chamber—the earliest synagogue, despite its basilical form (when viewed from east–west) and two rows of columns of four each and a central aisle, was orientated on its long, southern wall. It can thus be described as a broadhouse building. There, in the center of the southern, Jerusalem-oriented wall, was a Torah shrine. Thus, in the synagogue's earliest phase (284–306 CE), worshippers faced the long wall that was oriented south, toward Jerusalem. The first building apparently was toppled during the earthquake of 306. Many of its architectural elements were used for the rubble fill laid down to repair the stylobate and the eastern declivity over bedrock that had to be completely shored up after the collapse.

Numismatic evidence indicates that the building was repaired almost at once. The second building (306–419) was less elaborate than the first: the external walls used mostly fieldstones, whereas the earlier walls incorporated many ashlars; capitals were repaired and reused, as were columns and pedestals—and with not always pleasing results. It is noteworthy that only the capitals on the south side of the central aisle were decorated, emphasizing once again that worship was focused on the long, southern wall, where there clearly had been a bema *(bāmâ)*, or raised platform. A large menorah with seven branches crowns the main entrance from the north, obviously the work of a local artisan, given its rather crude execution. The second entrance, from the west, opens to a stairway descending into the synagogue, a feature quite rare, though clearly the result of the topography; the entrance also has a small eagle incised on its northern doorjamb. Of special interest is a small frescoed room on the west, probably intended for storing scrolls, above which there was a small gallery for additional seating and not designated for women only. The benches in the synagogue are only partially preserved.

An adjoining room to the north, reached via a common alley, may have been a *beit midrash*, or "house of study." Its proximity to and connection with the synagogue, as well as its interior benches and space, strongly suggest some use appropriate to the synagogue context. It may also have housed the family of a community leader.

Publication of the joint expedition's ceramic data and finds enabled additional refinements in the typology of Roman and Byzantine pottery. Its stratigraphic methods, modified after the Wheeler-Kenyan-Wright system, were further modified in subsequent digs of the Meiron Excavation Project. As a result, the expedition was able successfully to propose a chronology that challenged hitherto dominant views of the development of the synagogue that were based either on architectural typology and/or an assessment of the ancient literature, or both. Discovering a broadhouse synagogue with internal columniation and indisputable evidence for its orientation along the long, southern wall resulted in the readjustment of many popular theories about the development of the ancient synagogue and how diverse it was architecturally. Its unusual internal arrangement also demonstrates the fluidity of sacred architecture in relation to the emergence and use of the bema and Torah shrine.

The joint expedition was the first to note the commonality in ceramics and architecture in the Golan and Upper Galilee. The proximity of Khirbet Shema' to Meiron, just 3 km to the north, suggests that the two sites were interdependent in many ways beyond sharing the spring located in the wadi between them. [*See* Meiron.]

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ERIC M. MEYERS

SHEPHELAH. *See* Judah.

SHFIFONIM. Early Bronze Age anchorlike stone objects, termed *shfifonim*, are found in Israel in the region of the southern half of the Sea of Galilee. *Shfifonim* normally have a single large (about 18 cm [7 in.] in diameter) biconical hole at their apex. The term *shfifon* (Heb., "pit viper") derives its name from a Yiddish anecdote; the name was given by pioneering Israeli archaeologist Pessah Bar-Adon when he found the first example at Beth Yerah. The term has since been expanded in Israeli archaeological parlance to include any undefinable artifact.

More than thirty-five *shfifonim* are known to date. Most of them were found, either in groups or singly, in definable archaeological contexts during agricultural work in the fields south of the Sea of Galilee. Only four were found in archaeological excavations. Many specimens now grace the gardens and museums of local kibbutzim.

There are several categories of *shfifonim*. The best-made ones have a well-cut upper area and an unworked lower portion. In some cases, the original form of the monolith is preserved, although the base is differentiated from the top. In a second group, there is no noticeable difference between the top and bottom. Three specimens have "blind" hawser holes in which the piercing was never completed. In one example, a second hole was drilled after the stone's original hole was ruined.

The similarity of *shfifonim* in shape to stone anchors found in and around the Mediterranean and Red Seas and the consideration that they are found only in the immediate vicinity of the Sea of Galilee support the conclusion that *shfifonim* "represent" stone anchors but were not intended for use as anchors. [*See* Anchors.]

Several factors suggest that *shfifonim* may have had a cultic significance. The unworked bases of some suggest that they were meant to be placed in the ground. Stone anchors are commonly found in Syro-Canaanite and Cypriot Bronze Age temples. Additionally, the huge size and weight of these monoliths preclude their use on the fishing boats that existed on the Sea of Galilee. In classical times, the largest boats on the lake were about 7–9 m long. [*See* Galilee Boat.] It is unlikely that Early Bronze Age boats on the lake were larger. Only the smallest *shfifonim* could have conceivably been used on those vessels.

No actual anchors with the large biconical hawser hole diagnostic of *shfifonim* have been found in the Sea of Galilee. Thus, the local prototype for the *shfifonim* is still missing. Stone anchors recovered from the lake are relatively small and have narrow hawser holes.

The roof and walls of a Middle Bronze Age I tomb at Kibbutz Degania A near Tel Beth-Yerah are constructed from two *shfifonim* and four unpierced monoliths. A cultic basin was used for the tomb's floor. All seven pieces may originally have belonged to a single cultic installation that was dismantled and reused as building material. The group may have originated at adjacent Tel Beth-Yerah, where two other *shfifonim* were found in situ.

Shfifonim were made and used no later that the Early Bronze Age II. To judge by the cavalier manner in which they were employed in the Middle Bronze Age I, they no longer had a cultic significance. A large *shfifon,* which served as a reliquary, was found beneath the offering table of the monastery/church on Mt. Bernice. This building was constructed in the Byzantine period and continued in use into the Crusader period. Thus, both the earliest and the latest evidence for the cultic use of stone anchors/dummy anchors in the Levant is along the shores of the Sea of Galilee.

[*See also* Ships and Boats.]

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SHELLEY WACHSMANN

SHILOH (Ar., Khirbet Seilun), site of an Early Israelite religious center, situated 2.5 km (1.5 mi.) east of the Jerusalem-Nablus road, at the northern end of a fertile valley (map reference 1775 × 1626). The mound, about 7.5 acres in area, was naturally protected on the east and west but was vulnerable on the south and, to a certain extent, on the north. Rock-hewn cisterns were scattered over the mound, but the site's permanent water source was 'Ain Seilun, a fairly large spring located about 900 m to the northeast. These three factors—a wide fertile valley to the south, a perennial water supply, and an easily defensible topographic position—no doubt influenced the choice of the site.

The key ancient sources for the location of Shiloh are *Judges* 21:19, the early church historian Eusebius's *Onomasticon,* and the Madaba mosaic map. [*See* Madaba.] Shiloh's location was still known in the fourteenth century CE, when the Jewish traveler Eshtori ha-Parchi found it in ruins. Its ancient name was preserved in the name of the small medieval village mentioned in Ottoman tax records from the beginning of the sixteenth century CE and in the name of the adjacent spring. The modern identification of Khirbet Seilun as ancient Shiloh was made without difficulty on linguistic grounds by the American philologist Edward Robinson during his trip to Palestine in 1838. [*See the biography of Robinson.*]

A. Schmidt undertook the first archaeological investigation of the site in 1922. This was followed from 1926 to 1932 by a Danish expedition led by H. Kjaer, with William Foxwell Albright serving as adviser, and a short season of excavation in 1963 by Svend Holm-Nielsen. [*See the biography of Albright.*] Four seasons of excavations were conducted from 1981 to 1984 by the Land of Israel Studies of Bar-Ilan University under the direction of Israel Finkelstein, with Shlomo Bunimovitz and Zvi Lederman acting as assistant directors. Remains from every historical period from the Middle Bronze Age to the Byzantine era and beyond were uncovered. Excavation efforts were concentrated on the edges of the mound, particularly its northern sector, where there were fewer later remains, as it had not been damaged by erosion or later construction.

Pottery finds date the earliest settlement to MB II, when the site apparently was small and unwalled. By MB III, however, Shiloh had become a large, fortified center. The site, then a little more than 4 acres in area, was surrounded by a continuous periphery wall and an earthen glacis. The wall, from 3 to 5.5 m thick and preserved up to 8 m, was built of large fieldstones that were used for secondary construction in all periods. Rooms built against the wall's inner face were found in one area. A solid, rectangular tower protruded 0.6

m from both sides of the wall on the north; in another area, where the wall was built in a "sawtooth" technique, a large offset projected toward the slope of the mound.

Like the periphery wall, the earthen glacis was not uniform in thickness or shape. Along the steep eastern slope—where construction was concentrated and the glacis was most complex—an internal wall helped to anchor it to the slope. Near this part of the wall the glacis was about 6.3 m thick and extended for about 25 m from the wall to its end on the slope. There the glacis consisted of four main layers of both hard and friable soils and rocks, the variety serving to stabilize the glacis and prevent erosion. The MB II pottery used to date the earliest settlement was uncovered in the bottom layer; few sherds were found in the upper three levels.

Leaning along a section of the periphery wall for about 115 m was a row of rooms, fourteen of which appear to have served primarily as cellars. Fills about one meter thick had been laid between the floors of these rooms and the bedrock. Like the bottom layer of the glacis, they contained a large quantity of MB II pottery. That these rooms were used for storage is suggested by the dozens of large storage jars found in them, though some silver jewelry and a few bronze weapons were found as well. Also uncovered were two cultic stands, votive bowls, and a large bull-shaped zoomorphic vessel; given the absence of any residential structures, they suggest that the MB site served a cultic function before it was destroyed, in a conflagration, at the end of the sixteenth century BCE.

Late Bronze Age remains were uncovered in only one area at the site, the steep eastern slope. In an area of about 200 sq m, near the MB periphery wall, a large quantity of bones and LB I pottery—including flat bowls, lamps, juglets, chalices, and fragments of Cypriot ware—was dug out of a thick layer (1.5 m) of stones and light-colored ash. This material, probably the buried remains of votive offerings, suggests cultic activity. Because the LB stratum was limited to one area of the site, and considering that no masonry were uncovered, Shiloh apparently was not actually settled in the Late Bronze but was an isolated cultic place. It is possible that settlers from the surrounding area took votive offerings to the top of this hill because tradition held that it had been the site of a temple.

Significant Iron Age remains were uncovered over virtually the entire area of excavation, though it is difficult to establish their temporal relationship. The area of the Iron I site has been estimated at between 2.5 and 3 acres. Among the material remains were bones and Iron I pottery, including fragments of vessels decorated with animals in relief, parts of a cultic stand with applied animal decoration, and the rim of a collar-rim jar bearing three rosette-shaped impressions. Other finds included a black stone seal bearing two crossed figures of galloping horned animals; installations; and numerous silos, each about 1.5 m in diameter, built into debris from both the Middle and Late Bronze Ages. [*See* Seals.] Among the many Iron I structural remains were two houses on the western side of the site. The MB periphery wall served as a rear wall for these two structures, which were built into a portion of the MB glacis.

The slope on the west was so steep that construction had to proceed on two levels. Considering that empty space was available on the northern part of the mound, the concentration of building in this area in spite of its logistical problems is especially noteworthy. Two buildings were uncovered on the upper level and a hall on the lower level. The southern building on the upper level was divided into four aisles by three rows of columns. The hall on the lower level, which was connected to the upper level by steps or a ladder leading to the corridor between the two upper buildings, probably served as a basement for the southern building. The upper, northern building had two side rooms (each paved with stone slabs) and a courtyard; between the side rooms and the courtyard were two rows of columns (up to 1 m and higher) with low partitions between them.

The orientation of the walls of these buildings indicates that they were part of a large complex on the summit, but the internal remains indicate that they were not residences. Many pottery types were found here, including more than forty vessels and numerous large fragments. The most common pottery types were collar-rim jars, which were situated in rows along the walls of the upper northern building as well as in the lower hall—an indication that these buildings were used, at least in part, for storage. The charred remains of the conflagration in which these buildings were destroyed—perhaps by the Philistines in the eleventh century BCE—were visible everywhere. [*See* Philistines, *article on* Early Philistines.] Activity at the site was soon renewed, in Iron II, but remains from this period, found in various areas of the mound, were poor. Hellenistic, Roman, Byzantine, and medieval remains were unearthed at different parts of the site, but especially at the summit of the mound and on its southern slope.

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LESLIE WATKINS

Based on material submitted by Israel Finkelstein

SHILOH, YIGAL (1937–1987), Israeli archaeologist under whose direction the City of David excavations in Jerusalem (1978–1985) attracted worldwide attention. Shiloh

studied at the Hebrew University of Jerusalem, earning both his B.A. and M.A. degrees summa cum laude. His Ph.D. dissertation was on the foreign influences on masonry in Palestine in the Iron Age. He subsequently concentrated his research on town planning, urbanization, and architecture.

As a student Shiloh participated on many of Israel's most important excavations: in the expedition to the caves in the Judean Desert and at Ramat Raḥel, Arad, Tel Nagila, the Citadel in Jerusalem, Masada, Megiddo, and Hazor. At Hazor he was responsible for area L, the site's underground water system. The experience was particularly useful in the City of David excavations, when he made a priority the clearing of Warren's Shaft, one of the components of the site's water system that in antiquity accessed the water of the Gihon Spring. His understanding of the scope of a city's functional needs—its water system and fortifications—and of the topological influences on its architecture was the outgrowth of his early research.

Shiloh's experience at large sites was critical to undertaking the multidisciplinary Jerusalem project, where complicated stratigraphy, created by building directly on bedrock and the reuse of earlier walls, had daunted archaeologists since the nineteenth century. Excavation and Shiloh's reassessment of the work of previous expeditions resulted in a clearer picture of the 586 BCE destruction by Nebuchadrezzar and of early postexilic Jerusalem than ever before available.

In addition to his duties as professor of biblical archaeology at the Hebrew University, Shiloh served as director of the university's Institute of Archaeology (1983–1986) and was a visiting professor abroad. He published more than sixty articles and books on various subjects relating to the Bronze and Iron Ages in the ancient Near East and the land of Israel. In 1984 he published an interim assessment of the results from the City of David excavations. Staff members followed his example by completing publication of almost all of the fieldwork and small finds within a decade of leaving the field. An almost complete bibliography of Shiloh's writings was published in volume 3 of the City of David publication (*Qedem* 33, Jerusalem, 1992).

Yigal Shiloh received the prestigious Jerusalem Prize in 1987, just one week before his death. He had distinguished himself in the City of David, as an excavator, administrator, and negotiator at a scientifically and politically sensitive site.

[*See also* Jerusalem.]

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TAMAR SHILOH

SHIPS AND BOATS. In the ancient Near East, ships and boats were major conveyors of people and goods along inland rivers and over the seas that connected land masses. The earliest riverine craft in Egypt and Mesopotamia were presumably propelled solely by paddles and/or punting poles or were towed by humans or beasts from the riverbanks. These craft included boat-shaped floats made of bundles of lashed reeds. In Mesopotamia, round baskets of wicker covered with hides, the modern Arab *quffa* (Akk., *quppu*), served as coracles; and rafts supported by from four to a thousand inflated skins, the modern *kelek* (Akk., *kalakku*), were floated downriver and, after their cargoes were unloaded, dismantled and then carried back upstream on donkeys. *Keleks* probably evolved from single skins used to buoy individual swimmers across rivers.

Models of Mesopotamian canoes are so like modern marsh canoes in the region it is assumed that they also were built of wood; however, exactly when plank-built boats were introduced is unknown. The earliest Sumerian documents describing boat construction can be interpreted to show that the planks were fastened edge to edge by mortise-and-tenon joints rather than fastened to a previously constructed interior framework, as are most modern boats.

There is some contemporary evidence in Egypt of predynastic boats with planks fastened with ropes rather than mortise-and-tenon joints. It is certain that such boats existed in the Early Dynastic period, for the 43.6-meter vessel buried next to the pyramid of Cheops at Giza was built of massive cedar planks joined not only with pegs, but also with ropes lashed through V-shaped mortises. The Cheops boat lacked a keel and a mast and had only a dozen paddles, suggesting that it was towed. Additionally, in pharaonic planked-ship construction, as on the Cheops boat and the disassembled planks dating to the Middle Kingdom found at Lisht, the strakes were often "joggled," to prevent longitudinal movement between the planks.

The use of wind power for propulsion in predynastic

Egypt is known from depictions of sails on Gerzean pottery. From more detailed depictions from the Old Kingdom, it is known that by then masts were usually bipods, with tall, narrow sails stretched between a yard at the top and a boom at the foot. The masts were held in place by stays running forward and aft during upstream trips; the stays were lowered for downstream trips, when paddlers (facing forward) or rowers (facing aft) moved the vessels against the prevailing north wind.

For seagoing vessels, known especially from reliefs from the time of Sahure and unas (Wenis), rope hogging trusses running from stem to stern kept the ends of the ship from sagging dangerously when the center of the hull was raised by waves passing below; this was a necessity before development of the keel. Each of the depicted vessels was steered by multiple paddles on either side of its stern. The sizes of these ships can only be guessed, but a cedar ship of the fourth dynasty is described as being 100 cubits, or 52 m, long (Bass, 1972).

Little is known about Egyptian seagoing ships in the Middle Kingdom, but the fictional Tale of the Shipwrecked Sailor describes his Red Sea vessel as being 55 m long, about the size of the fourth-dynasty ship mentioned above. What may be a rare fragment of a contemporary ship, a cedar plank cut with mortises, was found at Mersa Gawasis on the Red Sea coast.

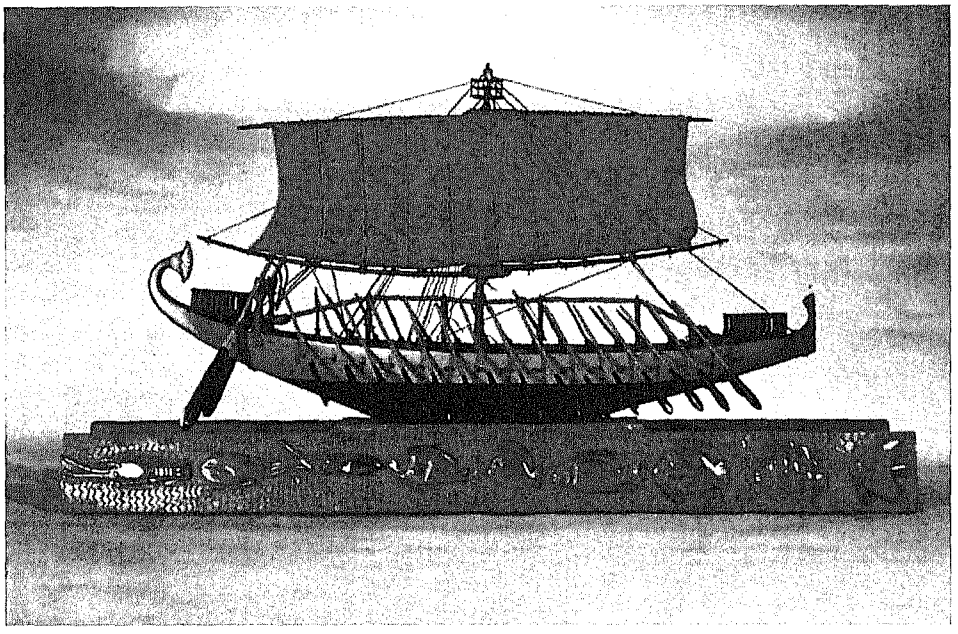
Middle Kingdom riverboats, on the other hand, are well known. Models in the tomb of Meketre at Thebes show that by then a single steering oar or paddle sometimes passed directly over the stern, with the added mechanical advantage of a tiller. Sails were no longer much taller than they were wide. Cabins of cloth- or hide-covered wicker provided vaultlike protection for passengers.

Half a dozen funerary boats from the Middle Kingdom, intentionally buried at Dahshur near the pyramid of Sesostris (Senwosret) III, had planks held together with unpegged mortise-and-tenon joints; dovetailed joints may well be unrecorded additions of the restorers who worked on the hulls after their discovery in 1894. The boats were about 10 m long, with a beam of 2.5 m, and still lacked keels.

Farther east, contemporary sailing ships are known in the Persian Gulf from depictions on seals found on the island of Failaka. [*See* Failaka.] However, models and seal engravings from the Old Babylonian period are too crude to provide many details. By the time of the New Kingdom in Egypt, sails were often broader than they were tall and were carried on single masts. Seagoing hulls, as depicted in the Deir el-Bahari reliefs of Queen Hatshepsut's expedition to Punt, were still strengthened by great hogging trusses and still steered by large steering oars, or quarter rudders, at the stern. The Deir el-Bahari reliefs also depict the queen's barge, built for transporting two enormous obelisks that weighed about 350 tons apiece; everything about the barge is gigantic, from the eight hogging trusses, to the eight steering oars estimated to have weighed 4 or 5 tons each, to the 810 oarsmen towing the barge with 27 boats.

Syro-Canaanite ships are also depicted in New Kingdom art. Those in the tombs of Nebamun and Kenamun at Thebes (fifteenth and fourteenth centuries, respectively) are tubby merchantmen whose broad sails have yards and booms supported by single masts; the latter provides the earliest evidence of a crow's nest. Both vessels have wicker

SHIPS AND BOATS. *Egyptian funerary boat model.* Dated to 2000 BCE. (Courtesy Pictorial Archive)



SHIPS AND BOATS. *Model of an Egyptian cargo boat.* Fifteenth century BCE. (Courtesy Pictorial Archive)

fencing running along the sides, presumably to keep spray from the deck. By the reign of Rameses II, the Egyptians had adopted this type of Syro-Canaanite vessel for their own use and termed it a *mnš* ship. This adoption of foreign shipbuilding traditions may have been influenced by the absorption of Levantine shipwrights into Egypt; a document dating to the reign of Thutmosis III mentions Syro-Canaanite shipwrights responsible for the building or repair of ships in the Egyptian dockyard of *Prw-nfr*—apparently located at or near Memphis.

Actual evidence of a possible Syro-Canaanite ship of this period comes from the excavation of a fourteenth-century BCE merchant vessel at Uluburun, near Kaş, Turkey. [*See* Uluburun.] The preserved portions of the ship's fir hull reveal planks fastened edge to edge with mortise-and-tenon joints, with oak pegs running through the top and bottom of each joint to prevent its coming apart. The ship lacks a true keel, having a keel plank instead; no traces of frames (ribs) were found. Carrying at least 15 tons of cargo, much of it on dunnage of thorny burnet, the ship is estimated to have been about 15 m long.

From the end of the Bronze Age (c. 1200 BCE) the wreckage of another ship, almost certainly Syro-Canaanite or Cypriot, was excavated off Cape Gelidonya, Turkey. Unfortunately, little of its wood is preserved. The 1994 discovery of one of the ship's large stone anchors (Syro-Canaanite or Cypriot in type) suggests that an original estimate of 10 m for the length of the ship, based on the distribution of a ton of preserved cargo on the seabed, may have been low. [*See* Cape Gelidonya.]

Shortly after the ship sank at Cape Gelidonya, Rameses III recorded the Egyptian naval defeat of the Sea Peoples in reliefs at Medinet Habu (c. 1176 BCE). The ships depicted are all double-ended, or symmetrical. The Egyptian ships have lion heads for the prows, whereas those of the Sea Peoples have bird heads. For the first time, sails are shown without booms at their feet, and they seem to be furled by lines known as brails. Splashboards rather than wicker fencing protected the decks, and crow's nests were common.

During the Iron Age, the Phoenicians—heirs to the rich tradition of Syro-Canaanite seagoing merchants—became the most renowned traders in the ancient world. [*See* Phoenicians.] Phoenician sites have supplied scant evidence for their ships, however. The main iconographic source of information is Assyrian art, for upon subjugating the Phoenician coast in the ninth century BCE, the Assyrians employed Phoenician ships in their military strategy and to transport tribute and plunder. [*See* Assyrians.]

Shalmaneser III's bronze gate covers from Balawat depict the receipt of tribute from the Phoenician cities of Sidon and Tyre. [*See* Balawat.] The vessels transporting the tribute have devices shaped like a horse's head on top of the stem and sternposts facing outboard. This same device appears commonly on later depictions of Phoenician ships, at the bow facing outward. One type of Phoenician ship was termed a *hippos* ("horse"), perhaps after those decorative devices. Another type, *gauloi* ("tubs"), denotes a broad merchantman.

By the eighth-century BCE warships were no longer simple troop transports, but were true weapons in themselves. What may be the first depiction of a waterline ram attached to the bow of a warship used in the course of a battle was

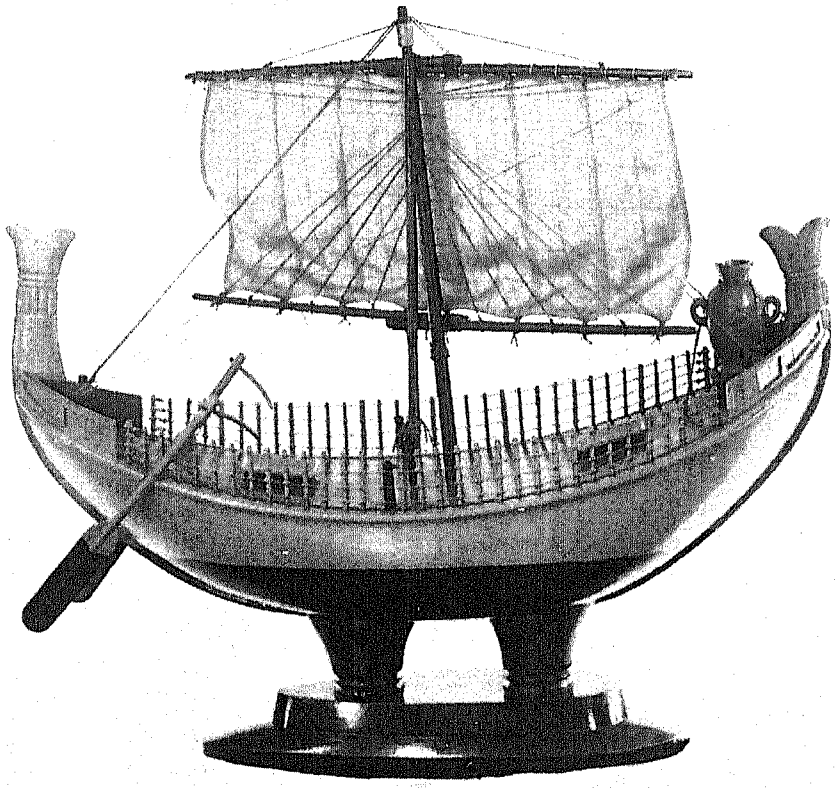
depicted in a now badly destroyed wall painting dating to the reign of Tiglath-Pileser III (745–727 BCE), uncovered at Til Barsip. [*See* Til Barsip.] The ram is painted yellow, apparently to indicate that it was covered with a bronze sheath. The rowers were protected inside the hull, working their oars through small ports.

In a relief from the southwest palace at Kuyunjik/Nineveh, Lulli, the king of Sidon, and his entourage are depicted escaping to Cyprus in a fleet of oared ships before Sennacherib's advance. [*See* Nineveh.] Some of Lulli's ships are war galleys, complete with waterline rams and recurving sterns but lacking bow decorations. The second type of ship depicted in the relief has a distinctly tubby appearance in profile and must represent either a transport or merchant ship. The stem and sternpost of the transports lengthen at their tops, although the two-dimensional manner of representation makes it unclear if these extensions are circular or linear. Both types of ship are biremes—that is, the rowers sat on two levels on either side of the vessel in order to increase the power behind each ship's propulsion. The upper row of oars is worked from the caprails, while the lower row of oarsmen was positioned inside the hull. The ships in this relief also portray another feature characteristic of Phoenician ships: a row of shields on either side of the hull.

Timber was an important element of the Phoenician tribute to their Assyrian overlords. In Sargon's palace at Khorsabad, ships are shown carrying cargoes of logs whose length approximates that of the ships. [*See* Khorsabad.] Additional logs are towed behind the ships. This is reminiscent of the rafts (Heb., *dovrot, rapsodot*) by means of which Hiram I, King of Tyre, delivered cypress and cedar logs via the port of Jaffa to King Solomon for his building activities (*1 Kgs.* 5:9; *2 Chr.* 2:16). [*See* Jaffa.] The oarsmen in these ships face the bows, as if they were paddling rather than rowing. This is almost certainly the artists' error, as it would have been virtually impossible to paddle such heavily laden vessels. Moreover, the men grip the oars' looms in the manner of rowers rather than of paddlers. The masts of these ships are retractable.

A Phoenician galley depicted on an orthostat from Karatepe bears a bird's-head device facing inboard on its sternpost, an element of Aegean origin. In the fifth and fourth centuries BCE, war galleys appear prominently on the Phoenician city coins of Sidon, Arwad, and Byblos. [*See* Sidon; Arwad; Byblos.] Given their diminutive size, some of these depictions are remarkably detailed.

From the story of Noah's ark to Jonah's attempted escape from the Lord, the Hebrew Bible contains numerous ref-



SHIPS AND BOATS. *Phoenician-Canaanite merchant ship.* Reconstruction based on an Egyptian painting. Thirteenth century BCE. (Courtesy ASOR Archives)

erences to ships and the purposes for which they were employed. The most detailed account of shipping is Ezekiel's dirge for the fall of Tyre, in which he compares that city to a large seagoing merchantman (*Ez.* 27). This includes a detailed description of the ship's cargo and trading partners. Psalm 107 vividly describes the sea and the sailor's contact with its deep psychological mysteries. A unique Judean seal dating to the eighth or seventh century BCE depicts a fully rigged ship under sail with a horse-head bow ornament and a row of shields along the length of the hull.

Rivers, lakes, and swamps also required watercraft. In addition to inflated skins, pontoon bridges are depicted in Assyrian reliefs. King David's escape with his household across the Jordan River from the revolt led by Absalom was slowed by the need to transport them by a ferry (*2 Sm.* 19:18). Such a ferry consisted of a floating platform or boat that could be pulled across a river by a rope attached to either bank. Two such ferries are depicted on the Jordan River in the sixth-century CE Madaba Map. [*See* Madaba.] It is likely that the "Jordan boat" mentioned in the Talmud refers to this type of vessel (*B.T., Shab.* 83b).

Solomon built a fleet of ships at Ezion Geber on the Red Sea coast and carried out joint maritime endeavors with Hiram of Tyre. Together with knowledgeable Phoenician seamen sent by Hiram, the ships sailed to the land of Ophir, returning with large quantities of gold (*1 Kgs.* 9:26–28; *2 Chr.* 8:17). While the location of the land of Ophir remains unknown, its existence is proven by an inscription found on a sherd from Tell Qasile in Israel that mentions the "gold of Ophir." [*See* Qasile, Tell.]

Solomon and Hiram also carried out a flourishing maritime trade in other commodities: "gold, silver, ivory, apes, and peacocks," in a joint fleet that would return every three years (*1 Kgs.* 10:22; *2 Chr.* 9:21).

The Bible mentions seagoing "Tarshish ships" (*Is.* 60:9). There are two possible reasons for the inclusion of a geographic term in the name of type of ship. When a ship was borrowed from a specific location or people, as was the case of the Roman Liburnian, the term refers to the vessel's place of origin. Alternately, it can indicate that this was the type of vessel normally employed in trading with a specific locale—as was the case, for example, with the Boston packets or the East Indiamen of the recent past. In the Bible, "Tarshish ships" and "ships going to Tarshish" are used interchangeably (see particularly *2 Chr.* 9:21). Thus, this type of vessel was apparently a large seagoing merchantman commonly used on the run to Tarshish (presumably Tartessos in Spain).

[*See also* Anchors; Fishing; *and* Seafaring.]

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GEORGE F. BASS and SHELLEY WACHSMANN

SHIQMIM, a Chalcolithic village and cemetery complex located in the northern Negev desert, along the northern bank of Naḥal Beersheba (map reference 1147 × 0675). Situated about 16 km (10 mi.) west of modern Beersheba, Shiqmim is one of several Chalcolithic village sites in the Beersheba valley, among them Bir Abu-Maṭar, Bir es-Safadi, and Ḥorvat Beṭer. At about 9.5 ha (24 acres), of which more than 4,500 sq m were excavated, Shiqmim is the largest of these sites. It is distinguished also by the formal cemetery complex, of which about 2,000 sq m were excavated, associated with but physically separate from the village. Excavation of the site's deep Chalcolithic strata confirmed metalworking activities as well as planned settlement. Those findings and Shiqmim's geographic position between the arid inland foothills and the semiarid Negev coastal plain offer important clues in retracing social development in the region.

Shiqmim was discovered by David Alon in the early 1950s, during the course of his surveys of the northern Negev. The findings of an extended survey of Naḥal Beersheba

and lower Naḥal Beṣor conducted from 1977 to 1980 by Thomas E. Levy and Alon led to two phases of excavation work at Shiqmim. This fieldwork, codirected by Levy and Alon, was affiliated with the American Schools of Oriental Research (ASOR). Phase I was conducted in 1979 and from 1982 through 1984 by the Israel Antiquities Authority and the Negev Museum; phase II was conducted from 1987 to 1989 and in 1993 by the Nelson Glueck School of Biblical Archaeology of the Hebrew Union College in Jerusalem and the University of California, San Diego. [*See* American Schools of Oriental Research; Nelson Glueck School of Biblical Archaeology.]

Occupational Phases. Excavators have distinguished four primary phases of occupation at Shiqmim that begin in about the mid-fifth millennium, extend into the early fourth millennium, and coincide and/or overlap with several predynastic Egyptian cultures in the Faiyum. [*See* Faiyum.] Temporal correlations between these cultures and Chalcolithic Shiqmim are valuable in understanding the evolution of Beersheba culture.

The earliest phase, stratum IV (c. 4659–4360 BCE), was dated by averaging two radiocarbon dates that are contemporary with the Early Neolithic in the Faiyum. Exposure at this level was very limited, however, making anything but a broad discussion of occupation impossible.

Radiocarbon measurements taken from remains representing the site's earliest settlement phases were averaged in order to date the more widespread early occupation, in stratum III (c. 4520–4400 BCE). These locales included a floor from one of the many subterranean rooms, an occupation surface in the village, an altar, the earliest stratigraphically documented rectilinear building established on a paleogravel deposit, and the deepest ash-filled pit excavated at the site.

Various architectural features were used in radiocarbon dating the next level, stratum II (c. 4240–3990 BCE), in which planned settlement was most extensive. The final Chalcolithic phase, stratum I (c. 3940–3700 BCE), is less firmly established, as only two radiocarbon measures—one from a village burial, the other from the floor remains of a building—were used to determine its beginning and end points.

Settlement Remains. The climate of the Beersheba valley was comparatively damp during stratum III, as indicated by the concentration of human settlement on hilltops along the borders of the valley rather than alongside Naḥal Beersheba. Subterranean living spaces hewn into the hard sediment of these hills were connected by separate systems of underground tunnels and rooms. One of these underground systems has been thoroughly excavated. Its oval-shaped rooms were 2.5–4.5 m in diameter and had ceilings more than 2 m high. These rooms were built inside a terrace (more than 3 m high and 40 m long) that was created by attempts to carve out additional living space in the hills. Two open-air altars and various cult objects were uncovered on the outside edge of this terrace. These remains reflect the earliest communal living practices and cultic activities at Shiqmim.

Occupants of stratum II did not live in the subterranean housing complex but in an outside village made up of rectilinear structures, twenty-nine of which have been excavated. The few subterranean structures at this level were used as storage rooms. Foundation walls for what seems to have been a planned settlement were constructed out of boulders taken from Naḥal Beersheba. The architectural remains that characterize this phase include broadroom structures with enclosed courtyards, apparently for domestic use; larger broadroom structures in which few domestic objects were found; storage bins; and open, plaza-type areas. Less than 30 percent of the architecture survived the destruction of this occupational phase, after which the site was abandoned.

Resettlement in stratum I seems to have been a scaled-down version of the stratum II occupation, with far fewer rectilinear structures scattered across the site. Little use was made of subterranean structures. Architectural remains indicate that this phase also was destroyed. Shiqmim and other Chalcolithic settlements in the Beersheba valley were not resettled for several millennia, until the Iron Age and the Byzantine periods.

Cemetery Complex. Shiqmim's unique cemetery complex spreads out for more than one kilometer over eight hilltops rising above Naḥal Beersheba. From one to two dozen burial structures were found grouped on top of each hill. Among the numerous finds were grave circles (0.90–3.5 m in diameter) containing secondary burials and associated pottery and jewelry. Twelve cist graves also were found. These structures did not hold human remains, but V-shaped bowls were found inside them. Significant also were the numerous burial cairns. The wide variety of offerings uncovered in the cemetery complex indicates social stratification at Chalcolithic Shiqmim. [*See* Burial Sites; Burial Techniques; Grave Goods.]

Metalworking. Evidence of significant metalworking activity was uncovered in the two latest occupational strata. Analyses of copper ore found on site indicate that it came from Wadi Punon, in Transjordan, opposite the ʿArabah valley, and was transported to Shiqmim—and other Beersheba valley sites—where it was used to make tools. Numerous and varied copper tools were recovered, as were examples of more elaborate metalwork using the lost-wax technique: copper standards, mace heads, and band fragments—pieces resembling those found at Naḥal Mishmar near the Dead Sea. Because initially there was no evidence that these cult pieces were cast on site, it was thought that they had been brought to Shiqmim from Anatolia or Armenia. It has since been determined, however, that the stone from inside one of the mace heads originated in the ʿArabah valley, confirming that the more sophisticated pieces were produced locally.

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THOMAS E. LEVY

SHIQMONA (Ar., Tell es-Samak), a 2-acre mound on the Mediterranean coast of Israel, about 1.3 km (1 mi.) south of the promontory of Mt. Carmel, within the boundaries of the modern city of Haifa (map reference 2478 × 1462). Shiqmona is the closest settlement to the sacred precincts on Mt. Carmel. In *Antiquities* (13.12) Josephus mentions Sukaminon in relation to the siege of Akko by the Hasmonean Alexander Jannaeus in 102 BCE. [*See* Akko.] The site's biblical name is unknown. A jar from the fourth century BCE found in situ bears a tax inscription that mentions Gath Carmel, a place also named in the Amarna tablets. [*See* Amarna Tablets.] The Pilgrim of Bordeaux states that Sycaminum is a stopover near Mt. Carmel. It appears in Talmudic literature as Shiqmona.

The site was excavated from 1963 to 1979 by Joseph Elgavish on behalf of the Haifa Museum. Settlement there began in the Late Bronze Age I and continued almost without interruption until the Arab conquest in 638 CE. Some seventeen strata were observed. A solitary tomb of a Middle Bronze Age warrior was discovered in the cemetery on the rocky slopes of the mountain to the east of the mound. Among the finds in the tomb were a scarab seal bearing the name of Ya'aqub-har, which corresponds to the name of the biblical Jacob. A building from the thirteenth century BCE, no doubt with a public function, was partly excavated. It contained an Egyptian faience goblet and an ivory plaque, a Mycenaean vessel in the shape of a hedgehog, and scarab and cylinder seals. A small blade made of iron is one of the earliest of its kind in Israel.

A town whose plan can be reconstructed along general lines was fortified by a casemate wall in the tenth century BCE. There was one city gate. The casemate rooms contained large groups of vessels, among them cooking pots with curious incised marking on the rims and a jar with the Hebrew inscription *lmlk'l* ("belonging to Malkiel" or "intended for Malkiel") on it. That town extended over an area of no more than an acre and included twenty or more houses of different sizes. A large residential structure from the second half of the ninth century BCE was entirely cleared. It consisted of a long courtyard separated by two rows of columns from side rooms, with four storage rooms at the far end. An olive press was located in the courtyard.

In the first half of the eighth century BCE, the entire area excavated had been occupied by three large olive-pressing installations. Typical of this stratum were clay female figurines holding musical instruments (tambourines) and horse-and-rider figurines. [*See* Olives; Musical Instruments.] The settlement in the period of the Assyrian satrapy (seventh century BCE) was smaller than earlier ones. Basket-handle storage jars designed for sea transportation, make their first appearance. Greek pottery and Hebrew inscriptions were found in all strata belonging to the Iron Age II.

A small weaving workshop from the middle of the sixth century BCE was cleared. At the beginning of the fifth century a well-planned town had probably been constructed by the Phoenicians of Tyre. [*See* Phoenicians; Tyre.] Two intersecting stone-paved streets were uncovered, along with three houses situated along them. The houses consisted of a court and three rooms, with the room nearest the court serving as a kitchen. An impressive Persian sword is a unique find from this period. The town was destroyed in the first third of the fifth century BCE, possibly by an earthquake; subsequent towns were built not on the mound but on the flat fields surrounding it. The tell itself was later occupied by three fortresses: a late Persian period fortress from which three Phoenician tax inscriptions and part of an abecedary were recovered; a Hellenistic period fortress destroyed in 132 BCE; and a Roman fortress abandoned in the third century CE.

Some sources, Jewish as well as Early Christian (Antoninus of Piacenza, c. 570), mention Byzantine Shiqmona as a Jewish town. It expanded over an area of about 27 acres, occupying all of the surrounding plain. A number of sections, covering an area of about an acre, were completely cleared. The town's commercial area was on the beach to the north of the mound; workshops and warehouses were located mainly to the east. Upper stories in these two quarters were used for residences. On the south and along the beach were lavishly built houses, some of which had elaborate nymphaea. Most of the houses are from the sixth century CE. More than forty colored mosaic floors were uncovered. Prominent among the buildings was a large industrial plant (13 × 24 m) that contained a series of plastered pools. The use of this plant is still unclear. A very large Byzantine monastery was discovered on the southern outskirts of the town that must have existed after the town was destroyed. The foundation period of it is still unknown.

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SHIVTAH. *See* Subeita.

SHRINES. *See* Temples, *article on* Syro-Palestinian Temples.

SHU'EIB, WADI (Wadi Nimrin), valley located in western Jordan. A brief survey of Wadi Shu'eib was carried out in 1988 in order to assess the archaeological potential of the entire wadi for future systematic survey and excavation (Wright et al., 1989). Most previous archaeological studies of the wadi had focused on the Salt region (de Vaux, 1938; Hadidi, 1979) and the area close to the Jordan Valley, where Wadi Shu'eib is known as Wadi Nimrin (Glueck, 1951; Mellaart, 1956, 1962; Ibrahim et al., 1988). In the central portion of the valley, a survey by Robert Raikes (1965) recorded one Epipaleolithic and two Pre-Pottery Neolithic (PPN) sites; recent test excavations at one of the latter revealed a large PPNB site (Simmons, et al. 1989), comparable in size to 'Ain Ghazal (Rollefson and Simmons, 1988).

The survey area consisted of 150 sq km (93 sq. mi.) between the towns of es-Salt and Tell esh-Shuna (South). To complement previous explorations near Salt and Shuna, the survey emphasized coverage of the central valley, where the wadi crosscuts Mediterranean woodlands in the east, and steppe areas where the foothills descend toward the Jordan Rift Valley. Transects 3 km (2 mi.) long within each of these two zones were chosen randomly for initial exploration. Sections from road and wadi cuts were examined for sites hidden by overburden, and the surface survey was extended to about 50 m from the wadi on each side. For each site, details of size, surface materials, local environment, and modern land use were documented. Surface collections were mostly very small nonrandom samples of diagnostic artifacts. In several cases, systematic collections were made within small areas.

The survey documented twenty-one sites that included flint scatters possibly of Paleolithic or Neolithic date (sites 13 and 20); large tells of Late Bronze Age and later occupation (site 1, Tell Bleibil); Roman tombs and underground chambers (sites 8 and 9); Ottoman water mills (sites 7 and 10); and abandoned herders' camps of interest to ethnoarchaeologists (site 18). Two large Roman/Byzantine sites (16 and 19) with surface traces of architecture and dense artifact scatters are of special significance.

Of the two large Roman/Byzantine sites, one (site 16) was known from earlier research (Hadidi, 1979). It consists of rock-cut tombs, an olive press, and a dressed-masonry structure apparently dismantled so that its stones could be reused in terrace walls. One tomb is exceptionally elaborate, with carved limestone sarcophagi and a sculpture set in a niche in one of its walls. Less elaborate rock-cut chambers and tombs were found elsewhere on the site. The dressed stones reused in the terrace walls are associated with a stone column fragment found lying adjacent to the road. Surface ceramics (one plain ledge handle [cf. Amiran, 1970, pl. 8:6] and one LB/Iron loop handle that is ovoid in section) suggest Early and Late Bronze Age occupations. Four Early and Late Roman diagnostic sherds include one loop handle from a jar and one possible Early Roman jar stand (?). Six Byzantine diagnostic sherds include four Early Byzantine strap handles from jars and one cream-slipped, ridged handle from a large pithos.

A second Roman/Byzantine site (site 19, Umm Rushayda) lies on a hill south of the wadi. Surface ceramics suggest Roman/Byzantine occupations. Large numbers of chipped-stone artifacts imply occupation in much earlier periods.

Two masonry structures were visible on the surface. Surface ceramics include possible LB or Iron Age sherds, along with more numerous sherds indicating Roman and Byzantine occupations (one LB/Iron IA jar rim in a pale beige ware with a cream slip; one Early Roman terra sigillata sherd; three pinched, grooved handles [cf. Sauer, 1973, fig. 2:82]; three notched bowl rims [cf. Sauer, 1973, fig. 2:65]; three rim sherds from Late Roman juglets; and two Early Byzantine jug handles).

In conclusion, it appears that the central Wadi Shu'eib has been a focus of substantial settlement since Epipaleolithic and Neolithic times. It is of special interest in investigating PPN transitions to the Pottery Neolithic and Chalcolithic periods, in light of the Wadi Shu'eib PPNB site in the central valley and the location of three other relevant sites near the confluence of the wadi with the Jordan Valley: Jericho (Kenyon, 1957), Ghrubba (Mellaart, 1956), and Teleilat el-Ghassul (Hennessy, 1977). The presence of large sites of later periods also suggests that the wadi has a long history of occupation by substantial settled populations, but the history of settlement in the valley is as yet largely unexplored.

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KATHERINE I. WRIGHT

SIDON (Ar., Saida), site located 43 km (27 mi.) south of Beirut, Lebanon (33°33′ N, 35°22′ E). Its historical name is probably derived from *sayd,* Semitic for "fishing." Because each successive occupation of this ancient city was rebuilt over the same site, systematic excavation has not been possible. However, Sidon's history, including the glorious Phoenician period, Assyrian and Persian domination, and Greek and Roman rule, is fairly well known from written sources, local finds, and archaeological work in Sidon and neighboring areas.

In AH 375/985 CE the geographer al-Muqaddasi described Sidon as a fortified city. In AH 439/1047 CE the traveler Nasr-i-Khusraw reported that Sidon had a well-built stone wall and four gates and that there was a fine Friday mosque. In AH 560/1165 CE the geographer al-Idrisi visited Sidon and witnessed its stone fortifications.

It was not until the seventeenth century CE that the first Western visitors appeared at Sidon, among them the explorer and historian George Sandys. Half a century later, the pilgrims and travelers Chevalier Laurent d'Arvieux and then Henry Moundrell arrived (Jidejian, 1971). When Bishop Richard Pococke visited in the early part of the eighteenth century, he noticed several sepulchral rock-cut grottoes in the foothills. Toward the end of the eighteenth century Constantin Volney noted that the city was unfortified on its sea side, but leeward was protected by a wall. Early in the nineteenth century, the American philologist Edward Robinson, while traveling through the Holy Land, recorded his observations of Sidon and other locales in a diary. [*See the biography of Robinson.*]

In 1855, the sarcophagus of Eshmunazar, king of Sidon, son of Tabnit, was accidentally discovered at Magharat Ablun, southeast of Sidon. Acquired by the French consulate general, it remains in the Louvre Museum. [*See* Eshmunazar Inscription.]

Ernest Renan was the first archaeologist to work in the area. He was commissioned by Napoleon III to conduct a survey of Phoenicia. In 1861 he initiated excavations at Tyre, Sidon, Byblos, and Aradus. [*See* Tyre; Byblos; *and the biography of Renan.*]

In the grotto of Magharat Ablun, Renan uncovered a necropolis that yielded a series of sarcophagi of various types, including an anthropoid sarcophagus, some with three-edged lid type (Gk., *thecae*) and some of lead or clay. The tombs are dated from the fourth century BCE to the Late Roman and Early Christian periods. [*See* Sarcophagus; Tombs.]

In 1877, at Aya'a, on the eastern outskirts of Sidon, a series of sculptured sarcophagi were uncovered, and the curator of the Imperial Ottoman Museum at that time was commissioned to carry out a salvage operation there. Although some sarcophagi had been stolen at an unknown date, the grandest of those remaining were the Sarcophagus of Alexander, the Sarcophagus of the Weepers, and an anthropoid sarcophagus of King Tabnit of Sidon. They were safely excavated and extracted and are now on display in the Topkapı Sarayı Archaeological Museum in Istanbul.

In 1901 another necropolis was unearthed at 'Ain el-Helwi, southeast of Sidon, when the American School in Jerusalem explored the area. White marble anthropoid sarcophagi were found in a series of shaft tombs. The collection was donated to the Beirut National Museum. [*See* American Schools of Oriental Research.]

In 1913 Georges Contenau, director of the Department of Oriental Antiquities of the Louvre Museum, uncovered a series of Roman sarcophagi at Magharat Ablun, of which the Sarcophage au Navire is the most important. On it a sculptured relief of a Roman ship is depicted. In the eastern foothills of Sidon, near Kafar Jarra, Contenau discovered a series of rock-cut tombs that held piriform jugs with button bases and scarabs dating to the sixteenth century BCE. Contenau excavated more tombs near the village of Helalieh, northeast of Sidon, recovering several Greek and Roman sarcophagi. Contenau then shifted the focus of his excavations to the Temple of Eshmun (see figure 1), 4 km (2.5 mi.) north of Sidon, on the left bank of the el-Awali River, whose waters had been venerated. The temple was first excavated by Maqridi Bey in 1901–1902 in his capacity as head of the Ottoman archaeological mission, and then by Contenau between 1914 and 1920. Contenau uncovered a funerary grotto, a stone sarcophagus, a mosaic stela with a Greek inscription, large foundation stones, and three Phoenician inscriptions. The inscriptions say that Bodashtart, king of Sidon, built the temple for the god Eshmun.

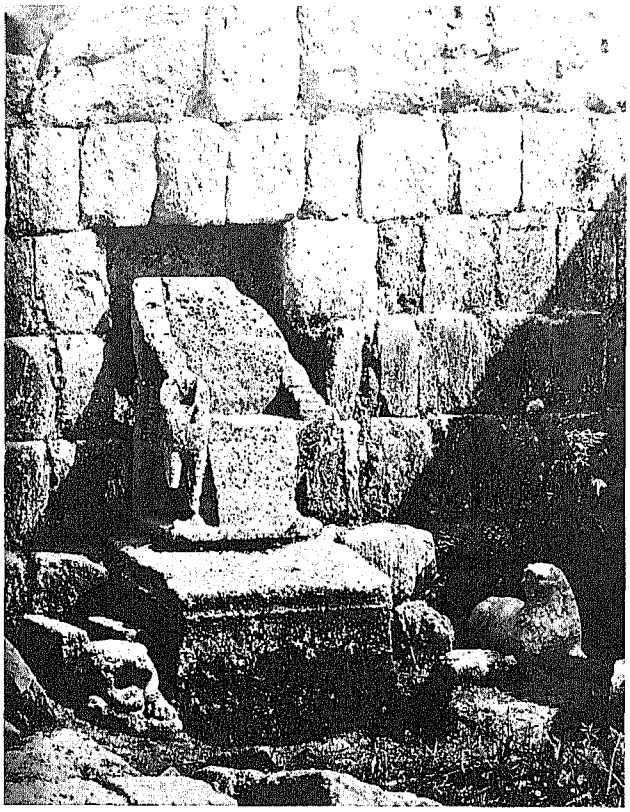
At Sidon, Contenau excavated, near the western slope of the Crusader castle of St. Louis, an artificial mound of crushed Murex shells and potsherds of local ware and imported red-figured and black-figured Attic ware. The hill is probably the place where the ancient "royal purple" dye manufacturers disposed of their crushed Murex shells. Mosaic tiling at the top of the mound suggests that Roman buildings were erected there when the area was no longer being used as a dumping ground (Contenau, 1920, 1923, 1924).

In 1924 Maurice Dunand, under the auspices of the Antiquities and Fine Arts Service of the Beirut High Commission, located the Sidonian temple of Mithra, to which belong a series of marble statues now on display at the Louvre. He then excavated a trench at the foot of the wall that had protected the medieval city. In addition to the surface material, Roman and Hellenistic deposits were unearthed and sherds of red and black ware collected. He dug an extensive trial trench on the southern slope of the tell, uncovering stratification from the Arab, Byzantine, Roman, Hellenistic, and Persian periods. Dunand concluded that the trench represented Sidon's expansion in the Achaemenid period.

Dunand also excavated the Temple of Eshmun. Early on he unearthed a Roman geometric mosaic floor and white marble statuettes of children. [*See* Mosaics.] These appeared to be ex-votos to the god of healing, Eshmun, later identified with the Greek god Asclepius. The remains indicated a temple area of 37 × 57 m. A series of terraces and a dense succession of structures were exposed, representing the Persian, Hellenistic and Roman periods. A Phoenician inscription to Bodashtart and a fragment of a bull protome capital of Achaemenid type found in the temple indicate a date in about the fifth century BCE.

Between 1963 and 1965, Dunand, commissioned by the Institut Français d'Archéologie de Beyrouth, extended his excavations around the sanctuary. Among the finds were eleven statues of crouching infants, all broken and thrown into a canal. Also unearthed was a marble pedestal found at the foot of a cult podium. It is adorned with four winged lions back to back and is dated to about the second century BCE. Dunand uncovered a chapel (10.5 × 11.5 m) constructed of large blocks in regular rows. The only piece of furniture in this chapel was a large stone throne flanked with winged lions (see figure 2). By 1968, when Dunand left Sidon, only one-fourth of the site had been excavated. No

SIDON. Figure 1. *The Temple of Eshmun.* (Courtesy I. A. Khalifeh)



SIDON. Figure 2. *The Throne of Astarte in the Temple of Eshmun.* (Courtesy I. A. Khalifeh)

further excavation has taken place. Dunand believed, based on his findings, that further work would uncover a complex that existed from the sixth century BCE to the fifth century CE (Dunand, 1969). [*See the biography of Dunand.*]

In 1937 P. E. Guigues excavated a series of tombs at Leba'a, Kafar Jarra, and Qrayeh. Leba'a and Kfar Jarra are located in the foothills north of Sidon. He opened a series of tombs in which painted red ware and scarabs dating to the middle of the second millennium BCE were found. In the tombs at Qrayeh, in the foothills southeast of Sidon, pottery decorated with red ocher on a light background and scarabs were found. The tombs are dated according to the pottery and scarabs to between the end of the Middle Bronze and beginning of the Late Bronze Ages (Guigues, 1938, 1939).

In 1940 Maurice Chéhab, director general of the Lebanese Antiquities Service, excavated a series of tombs at Majdaluna, southeast of Sidon, that contained carinated bowls, goblets, pottery decorated with red ocher on a light background, and scarabs of the eighteenth dynasty. The material is dated to the period between the eighteenth and fourteenth centuries BCE.

Between 1946 and 1950, Antoine Poidebard, under auspices of the Institut Français d'Archéologie de Beyrouth, worked in the port area of Sidon. He discovered that it was not a double port (a northern and a southern port linked by a channel, as at other Phoenician ports such as Tyre and Arwad). The ingenuity of the architects of Sidon prevented sand from filling the port. It was maintained by placing two openings at the extremities of the western breakwaters: waves entered this double water gate, which closed the northern flow, and were dispersed. Poidebard had no material evidence for dating, but comparisons of building techniques and dimensions led him to attribute construction of the port to the Roman period. However, the pentagonal tower alongside the pass of the interior port, which is a closed natural basin, is Hellenistic (Poidebard and Lauffray, 1951). [*See the biography of Poidebard.*]

From 1966 to 1969, Roger Saidah, from the Lebanese Department of Antiquities, excavated a cemetery south of Sidon along the Sidon-Tyre road. The burials ranged in date from the fourteenth century BCE to the Early Roman period. Late Mycenaean and Cypriot pottery were found in them, together with local wares and Egyptian objects. The necropolis was built on top of a Late Chalcolithic settlement that consisted of oval huts with walls up to one meter high. It is the oldest necropolis in Sidon and second only to Byblos in importance. [*See* Necropolis.]

The Temple of Eshmun continued to be revered as a place of healing until the Early Christian period, evidenced by the finds of a chapel, Byzantine mosaics, and coins, which permitted Dunand to ascertain that the use of the complex continued to the fifth century CE. In 570 Sidon was described as partly in ruins as the result of the 551 earthquake. An Arabic inscription found in Sidon mentions the building of a tower during the Fatimid period in AH 491/1097 CE. The current Great Mosque in Sidon was originally a church built by the Knights Templar. It may be the site where Nasr-i-Khusrau observed the Friday mosque (see above). In addition, the Maronite Christian church may have been the site of a Roman temple, following the practice in the Near East of the continuity of sacred places.

[*See also* Phoenicia; Phoenicians.]

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ISSAM ALI KHALIFEH

SILOAM TUNNEL INSCRIPTION. In 1880 a Hebrew inscription was discovered that describes the cutting of a water tunnel through the eastern hill of Jerusalem. The inscription was carved in the wall of the tunnel itself, some 6 ms from its southern end (cf. Sayce, 1881, pp. 141–142; Conder, 1882). A decade after its discovery, the entire inscription was removed from the wall and eventually taken to Istanbul, where it remains (cf. S. H. Horn, *Biblical Archaeology Review* 10.5 [1984]: 74).

The first two signs of the text have disappeared, and even more serious damage has occurred at the end of that line and near the ends of lines 2 and 3. Hand copies and photographs of squeezes done before the removal of the inscription from the tunnel show that most of these lacunae had already occurred when these reproductions were made (cf. Puech, 1974: 197). With plausible, if uncertain, restorations of these lacunae, the text may be translated as follows: "[This] is the tunnel and this is how the tunnel was cut. While [the workmen were carving] their way toward each other and yet 3 cubits remained to be cu[t], the voices of the workmen could be heard from either side, for there was a *zdh* in the rock, [from lef]t to right. On the day when the cutting was completed, the workmen met, pick to pick, and the water flowed from the spring to the pool, a distance of 1,200 cubits. The hill stood a hundred cubits above the workmen's heads (at the highest spot)."

Exploration has shown that the tunnel was indeed cut by two crews who worked from opposite ends and met in the middle. Some still unexplained detours resulted in an overall S-shaped path and a total length of more than 500 m. The term *zdh* in the inscription, meant to explain how it was that the workmen could hear each other through a meter and a half of rock, is still, despite many attempts, not fully understood.

The tunnel ran from the Gihon Spring, on the eastern side of the ancient City of David, to a pool constructed at the southern end of the hill and within the city walls. It was only the latest of a series of projects making the water from the abundant spring more available for usage and enabling the inhabitants to have access to the waters of the spring when under attack. The text itself mentions no historical circumstances, but these are commonly identified with the allusions in *2 Kings* 20:20 and *2 Chronicles* 32:30 to such a project in Hezekiah's time (generally placed at the time of Sennacherib's invasion in 701 BCE).

[*See also* Jerusalem; Water Tunnels.]

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DENNIS PARDEE

SILOS. *See* Granaries and Silos.

SILVER. *See* Coins; Jewelry; Metals.

SINAI. The Mediterranean coast of North Sinai, between the Suez Canal and Gaza, served as a land bridge connecting Egypt and Asia. Its early history is documented in some Egyptian and Assyrian sources, but particularly in Greco-Roman, Byzantine, and Islamic records. Between 1910 and 1924 Jean Clédat investigated a few sites in northern Sinai, almost all of them dating to the Roman–Byzantine periods (Clédat, 1910, 1912, 1913, 1915, 1916, 1923). From 1972 to 1982 the North Sinai Expedition of Ben Gurion University, under the direction of Eliezer D. Oren, conducted a systematic survey and excavations in an area of approximately 2,000 sq km (1,240 sq. mi.). The expedition recorded some thirteen hundred settlement sites, ranging in date from the Paleolithic to the Ottoman periods. As a result it, is possible to reconstruct in detail the history of settlement in northern Sinai and its role as the principal corridor between Egypt and Asia (Oren, 1993).

Prehistoric assemblages along the coastal strip between el-Arish and Gaza indicate human activity (mainly seasonal campsites) in Sinai as early as the Paleolithic and Epipaleolithic periods. The expedition recorded about 190 settlements from the Pottery Neolithic (PN) and Chalcolithic periods in northeastern Sinai and as far afield as the region of the Suez Canal. Its excavations at site Y-3, of terminal PN date, unearthed various installations and a child burial in a jar. Faunal evidence, including many pig bones (32 percent), implies that this was a settlement of agro-pastoralists. [*See* Pigs; Agriculture; Pastoral Nomadism]. Some Chalcolithic sites (R-48, Y-2) yielded stratified occupational remains, including mud-brick structures and diagnostic violin-shaped figurines, that exhibit close affinities with the material culture of the western Negev desert. A few examples of imported Naqada I ceramics indicate the earliest trade contacts with late predynastic Egypt (Oren and Gilead, 1981).

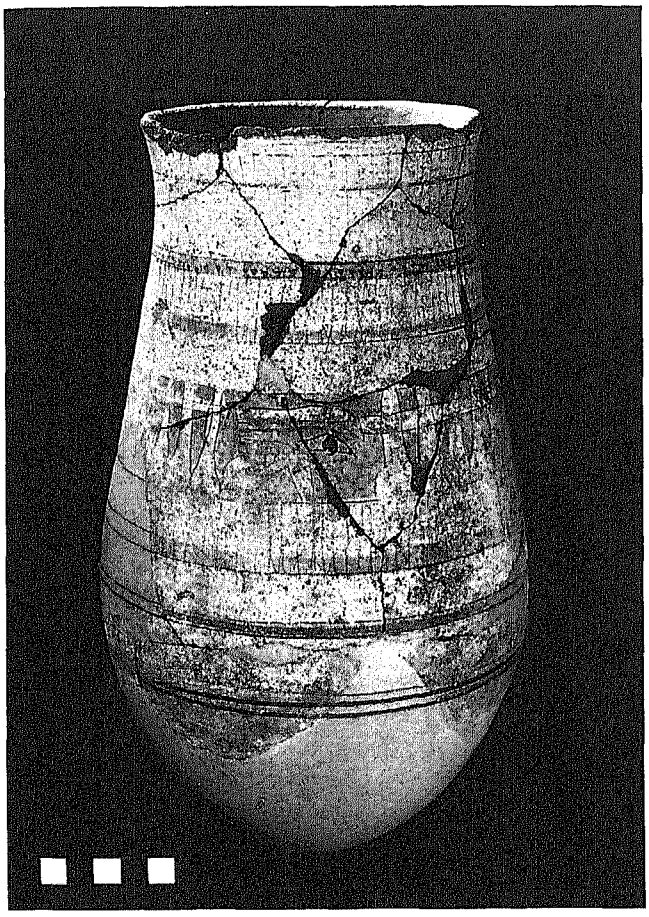
The North Sinai expedition investigated more than 250 settlement sites between Qantara and Raphia with material remains from the Canaanite Early Bronze I and Egyptian Naqada II–III periods. [*See* Canaanites.] The site clusters were organized in a two- or three-tiered settlement hierarchy of seasonal encampments alongside core sites and way stations. The rich and diverse ceramic assemblages included both EB IA–C and Naqada II–III/dynasty 0 wares. The latter comprised nearly 80 percent of the entire ensemble and represents the full spectrum of domestic classes, including "wavy-handled" transport jars incised with a *serekh* (a rectangular frame containing the Pharaoh's name surmounted by a hawk representing the god Horus). The results of the North Sinai survey provide the key to understanding the early history and mechanism of the political and economic interaction between Egypt and Canaan (Oren, 1973, 1986). The sites in northern Sinai represent the eastward extension of the Egyptian state-organized sphere of interest into Sinai and Canaan. Of the terminal EB IV period, nearly three hundred sites, both base settlements and seasonal encampments, were recorded in the surveyed area. Significantly, alongside the bulk of characteristic Canaanite EB IV ceramics, the assemblages are also represented by late "Meidum ware," a diagnostic feature of the late Old Kingdom—early First Intermediate horizon. The clusters of EB IV sites belonged to pastoralist groups that maintained limited exchanges with the farming villages in the Egyptian Delta. [*See* Delta.]

The Middle Bronze Age in northern Sinai is represented by some three hundred localities, mostly small seasonal encampments, with material remains evidencing a mixed pastoral-agricultural subsistence system alongside limited trading activity. In contrast, in the vicinity of the Suez Canal area, the expedition recorded the remains of extensive built settlements from the Middle Kingdom and Second Intermediate period.

The collection of ceramics from the campsites exhibits a rich variety of Egyptian Middle Kingdom–Second Intermediate Period (35 percent) and Canaanite MB I–III (32 percent) wares. The rural aspect of the ceramic inventory is best manifested (32 percent) in the crude, handmade cooking vessels. The Sinai assemblages clearly reflect close socioeconomic interaction, albeit on a low level, with both terminal regions—southern Canaan and the eastern Delta.

The effectiveness of Egypt's administration along the Ways of Horus—the principal artery of communication with Asia—is demonstrated by the rich archaeological record of 231 or so New Kingdom settlement sites in northern Sinai (Oren, 1973, 1987, 1989). The distribution pattern is characterized by site clusters, 15–20 km (9–12 mi.) apart, of base sites, usually forts or way stations, surrounded by campsites and seasonal encampments. The results of the explorations by the Ben Gurion University expedition are summarized in two type-sites that represent Egypt's manifold activities (military, administrative, economic) in the Ways-of-Horus network. Additional Late Bronze/New Kingdom base sites were excavated between Raphia and Gaza: Tell Abu-Salima by William Flinders Petrie, Tel Ridan by Fanny Vitto, and Deir el-Balaḥ by Trude Dothan. [*See* Deir el-Balaḥ.]

The 4–5 sq km (2–3 sq. mi.) cluster at Haruba in northeastern Sinai is represented by twenty or so sites, including one fort (A-289) and an administrative center (A-345). Fortress A-289 is about 2,500 sq m in area and comprises a 4-meter-wide enclosure wall, a massive (13 × 20 m) gatehouse, and a complex of rooms for storage and various domestic activities. A number of child and adult burials were found under the floors and brick debris. [*See* Burial Sites; Burial Techniques.] One chamber in phase III contained two huge Egyptian pithoi bearing cartouches of Seti II. Floor and refuse deposits include Canaanite LB II, Egyptian dynastic (nineteenth and twentieth), and considerable Mycenaean and Cypriot wares, seals and scarabs, terra-cotta uraeus heads, and stone vessels. [*See* Seals.] Stratigraphic and artifactual considerations advocate an early nineteenth-dynasty date for the building of the fort (phase III), likely as part of the reorganization of the Ways of Horus by Seti I. Fragmentary remains of walls from under the floors of the fort (phase IV) belong to earlier, perhaps unfortified, structures of the eighteenth dynasty. Phase II marks the extensive repair of the original structure, probably after it no longer served as a fortress. Following the destruction by fire of phase II sometime in the late twelfth century BCE, parts of the fort were reoccupied (phase I) as a campsite in Late Iron Age I (c. 1050–1000 BCE). North of the fort the expedition investigated a section (2,000 sq m) of an extensive administrative complex from the eighteenth dynasty (A-345). The center of the site had been occupied by a spacious magazine unit with long, brick-floored halls that opened onto a central courtyard and were enclosed by a wall. To the east of the magazine the expedition excavated a large industrial quar-



SINAI. *Egyptian jar with cartouche of Seti I, from Haruba.* (Courtesy E. D. Oren)

ter, including a potter's workshop that manufactured a specific line of Egyptian-type vessels. The site was abandoned peacefully, and sand accumulated on the floors before the decayed walls collapsed.

The central site (BEA-10) in the cluster at Bir el-'Abd, is represented by the badly eroded remains of a fortress with a section of a 4-meter-wide enclosure wall and a variety of rooms and domestic installations. South of it the expedition recorded a magazine with parallel long halls fronted by an enclosed courtyard. Near the magazine a very well-preserved granary was excavated consisting of four cylindrical silos, each about 4 m in diameter, that could have held up to 40 tons of grain or legumes. Following the collapse of the granary's domed roof, the granary became the refuse installation for the adjacent fortress; it was found to contain a large quantity of eighteenth-dynasty pottery, alabaster, faience, and animal and fish bones. About 200 m northwest of the fortress, the expedition surveyed the remains of an artificial rectangular depression (about 10 × 15 m) bordered by a kind of clay-plastered embankment. The thick layer of silt that lined the sides and bottom of the depression suggests that it served as a reservoir, designed to collect and store water for the nearby fortress. [*See* Reservoirs.]

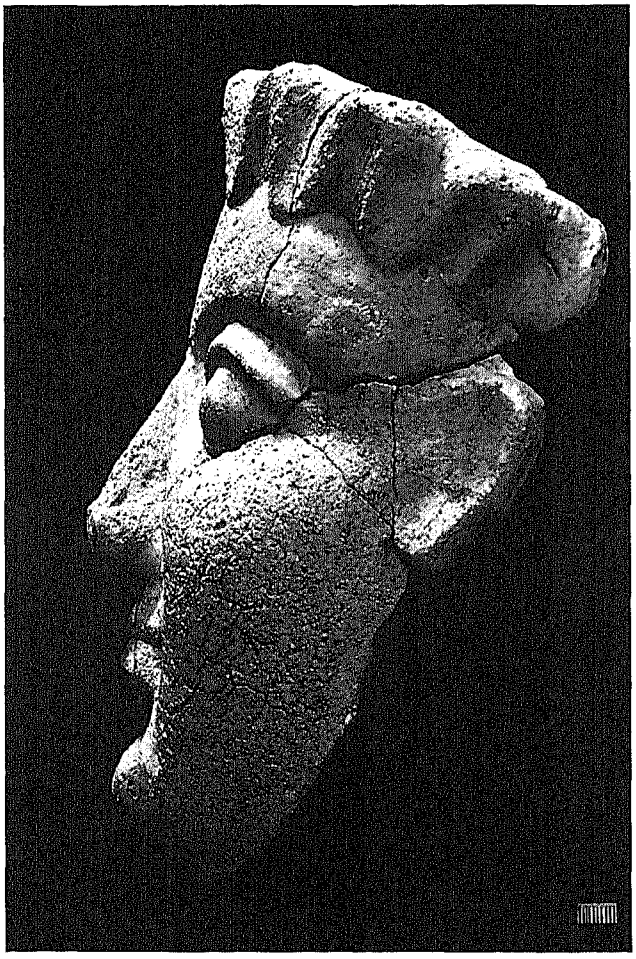
By Iron Age II, northern Sinai resumed its role as a vital link between Egypt and Canaan. The survey map is represented by 233 Iron II–III settlement sites from the late eleventh to the late sixth centuries BCE. A cluster of some thirty Iron Age sites between Wadi el-Arish and Wadi Gaza provided evidence of Assyrian control in this region during the eighth–seventh centuries BCE [*See* Assyrians.] The largest site, Tell Ruqeish, near Khan Yunis, yielded evidence of a well-organized town enclosed by a massive defense wall. Earlier excavations outside the walled area had revealed a cemetery with Phoenician-type cremation burials. [*See* Phoenicians.] Tell Ruqeish, probably the "sealed Karu(m) of Egypt" of the annals of Sargon II, served as a major Assyrian commercial headquarters, figured prominently in maritime traffic, and coordinated international trade with Egypt. Petrie recovered additional evidence of Assyrian-style architecture at Sheikh Zuweid, extending Assyrian-administered territory in the eighth–seventh centuries BCE as far as the "Brook of Egypt" (Wadi el-Arish).

Of the numerous sites from the Saite period (sixth century BCE), the larger cluster was explored in the canal zone—a region occupied, according to written sources, by border garrisons and inhabited by foreign merchants and mercenaries. A sizable garrison site (T-21), probably Migdol of the ancient sources, was investigated. It was enclosed by a wall 15–20 m long, and its center was occupied by a massive fortified compound measuring 200 × 200 m (Oren, 1984). Small cellular compartments were constructed at fixed intervals inside the wall, and the central area was densely covered by structures and installations. Its large ceramic corpus is represented by Egyptian, Phoenician, Greek, and Cypriot classes, as well as by many metal objects and copper ores and slags. The fortress was subsequently destroyed by fire in the late sixth century BCE, apparently as a direct result of the invasion of Egypt by Cambyses in 525 BCE.

The conquest of Egypt by the Persian Empire heralded the establishment of a well-organized road system along the coast of northern Sinai, which included the building of forts, way stations, and landing facilities. [*See* Roads.] These became nuclei for the network of towns and stations that subsequently characterized the Sinai coast in the Roman–Byzantine periods. The North Sinai Expedition recorded 235 settlement sites from the Persian period (c. fifth–fourth centuries BCE). The expedition's distribution map indicates large concentrations in northwestern Sinai, on the shores of the Bardawil lagoon and along the coast between el-Arish and Gaza. Of special consequence is the considerable volume of Greek pottery recorded at almost every site, testifying to the major role that Greek trade played in the economy of North Sinai.

Impressive remains from the Persian period were explored at the coastal site of Tell Ruqeish, perhaps one of

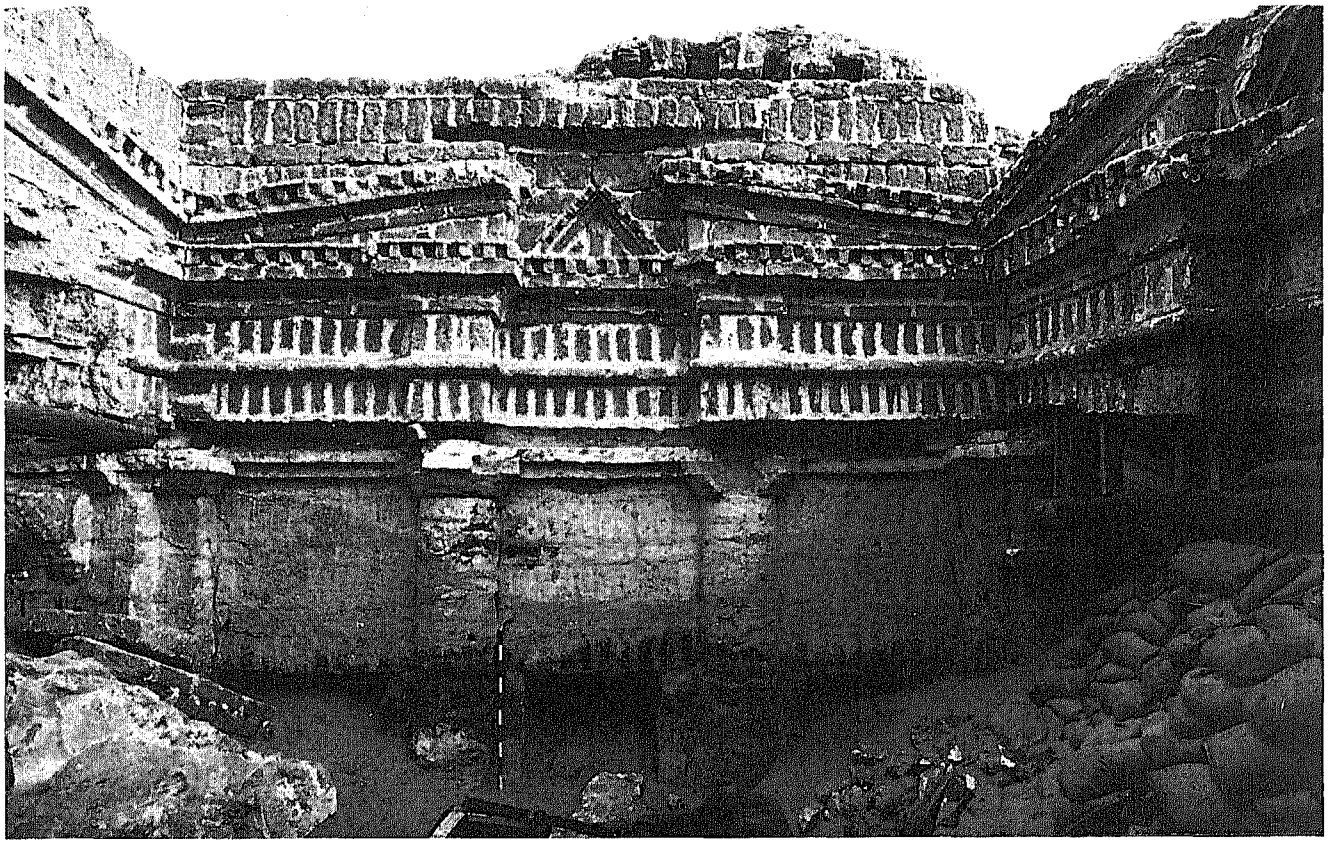
Herodotus's coastal emporia south of Gaza. Nearby, at Tell Qatif, a massive mud-brick fort enclosed by a 5-meter-wide wall and a tower overlooking the sea was investigated, as well as a well-preserved cylindrical brick silo, 2 m in diameter. The fort belonged to a network of military installations constructed by the Persian administration along the coastal highway between Gaza and Pelusium. Remains of such forts were encountered near Sheikh Zuweid, Mt. Casius, Rumani, and Tell el-Her. Petrie uncovered stratified remains of a large settlement at Sheikh Zuweid; excavations nearby in 1976 uncovered a large fortified structure of the "courtyard fort" type. Settlement strata from the Persian period were found at Tell Raphia, while some 1,000 m west of the tell the expedition uncovered the badly damaged remains of a small cult site with a two-room structure and courtyards. The larger of the courtyards had a plastered basin and *favissae* full of ash, animal bones, and many fragments of terracotta and faience figurines in Greek, Phoenician, Cypriot, and Egyptian styles. At Katib el-Gals, in the center of the Bardawil sandbar, identified as the site of Kasion, twenty-two of the forty-three surveyed sites included material remains from the Persian period. Limited soundings at Ras Qasrun (M-36), traditionally equated with Mons Kasius and the location of the Phoenician Baʿal Zaphon, yielded scanty domestic remains from the Persian period at the earliest. The settlement at Kasion and the cult site of Zeus Kasion/Baʿal Zaphon are probably buried somewhere under the el-Gals sand-duned ridge.



SINAI. *Persian-period gypsum mask from North Sinai.* (Courtesy E. D. Oren)

The principal concentration of Persian-period settlements was identified in northwestern Sinai, on the edge of the eastern Delta and at the Mediterranean terminus of the Pelusian branch of the Nile River. Exploration at the large site of Tell el-Her revealed, beneath the rich settlement strata of the Roman and Hellenistic periods, extensive occupational debris from the Persian period: a section of a fortified structure erected on an artificial clay platform and large amounts of imported Greek ceramics. Recent excavations by Dominique Valbelle uncovered a buttressed fortress with a small shrine inside it. The North Sinai Expedition explored extensive cemeteries from the Persian and Hellenistic-Roman periods in the vicinity of Tell el-Her. Many badly preserved burials complete with plaster funerary masks were recorded, perhaps belonging to the population of Greeks and Cypriots in the eastern Delta. Finally, the coastal strip between Pelusium—Egypt's chief port of entry from Asia—and Tell Mahmadiya, is represented by a dense cluster of more than thirty sites dating to the fifth–fourth centuries BCE that yielded unusually large deposits of imported Greek amphorae and black-glazed fine wares, as well as Phoenician-type transport jars. These sites may represent trading depots for consigments of wine and oil for redistribution and consumption by the foreign population in the eastern Nile Delta.

In the Hellenistic-Byzantine periods northern Sinai became a highly administered artery of communication from Egypt to Palestine and Syria. The history of the region is documented in detail in the writings of historians and geographers (e.g., Strabo, Pliny, Josephus Flavius) and church fathers and church councils, as well as on maps (e.g., Notitia Dignitatun, Tabula Peutingeriana, Madaba map). [*See* Madaba.] Major towns, way stations, and ports were established along the coast between Gaza and the eastern Delta—Rhinocolura (el-Arish), Ostrakine (el-Felusiyat), Kasion (el-Gals), Gerrha (Tell Mahmadiya), Pelusium (Tell Farama), Magdolum (Tell el-Her), and Sile (Tell Abu Seifeh). The North Sinai Expedition documented more than five hundred settlement sites from the Hellenistic, Roman, and Byzantine periods, as well as large-scale excavations at al-Arish, Ostrakine, and Qasrawet and more limited investigations at some twenty-five other sites, including Tell Farama and Tell el-Her. Some of these settlements were previously explored by Clédat from 1909 to 1914. Excavations were resumed in 1986 at Tell Farama by the Egypt Antiq-



SINAI. *Nabatean Central temple at Qasrawet.* (Courtesy E. D. Oren)

uities Service and at Tell el-Her by a Franco-Egyptian expedition.

Architectural remains scattered over the surface of Pelusium indicate the economic status of this 300-hectare (741 acre) metropolis, with its strategic location at the Mediterranean outlet of the Pelusian River. Monumental remains included quays, a citadel, colonnaded streets, bathhouses, a theater, a large church, and extensive cemeteries. [*See* Baths; Theaters; Churches.] At nearby Tell el-Her, the Hellenistic-Roman city occupied an area of 80 ha (198 acres), which included citadels, a stadium, a bathhouse, and cemeteries with cist graves, family tombs, and many barrel-shape clay coffins. A systematic survey and some excavations at el-Arish explored an area of about 5 ha (12 acres), which consitutes at least 50 percent of the original settlement. Rhinicolura was a well-planned town surrounded by a 3.5-meter wide wall and organized by insulae. Remains of its harbor were identified on the coast and under the mosque of en-Nebi Yasser. [*See* Mosque.]

The North Sinai Expedition revealed the extent and nature of Nabatean activity along the coastal highway from Wadi Gaza to the Suez Canal and as far afield as the Egyptian markets in the eastern Nile Delta. [*See* Nabateans.] Delicate Nabatean pottery was collected at dozens of sites in northern Sinai. However, the main network of Nabatean sites was recorded between Wadi Gaza and Wadi el-Arish and included caravanserais, warehouses, and probably also the remains of a temple. The main phase of occupation dates to the first–second centuries CE, though earlier remains from the second–first centuries BCE may represent an earlier phase of Nabatean activity in northern Sinai.

The most impressive remains were explored at Qasrawet, apparently the Nabateans' principal administrative and religious center in North Sinai. The 30-hectare (74 acre) settlement at Qasrawet was first explored by Cledat in 1911. Systematic excavations in 1975–1976 by the Ben Gurion University expedition uncovered two monumental temples and auxiliary storehouses, cemeteries with cist tombs and elaborate family tombs from the Nabatean settlement during the Late Hellenistic and Roman periods (c. second century BCE–third century CE; see Oren, 1982). In the Late Roman period (fourth century CE) an extensive, uniquely well-preserved and well-organized fortified settlement was built over the remains of the Nabatean town. The expedition traced a defense wall 2.5 m thick, with watchtowers at fixed intervals, for 120 m, suggesting that the settlement extended over an area of 3 ha (74 acres). The plastered and whitewashed mud-brick wall, occasionally with painted designs, was

standing to its full height. A rich store was recorded of intact objects from the floors, niches, and kitchen installations, evidence of a sudden abandonment of the settlement at the end of the fourth century CE.

In the fourth century, Christian centers with monasteries and churches were established at major towns in northern Sinai, marking the period of the region's most intensive settlement. [*See* Monasteries.] In 1913 Clédat investigated church buildings at Tell Makhzan–Pelusium's eastern extension, and in 1914 at Ostrakine. Excavations in the 1980s at Tell Farama and Tell el-Her uncovered the remains of massive citadel structures (Maksoud, 1986), and the Ben Gurion University expedition explored Byzantine-period public and domestic architectural remains at many North Sinai settlement sites.

The important way station of Ostrakine at the eastern edge of the Bardawil lagoon is strategically located on the coastal highway and is mentioned in written sources from the Roman—Byzantine periods. Ostrakine became one of the largest cities in the Provincia Augustamnica and the seat of bishops. In 1914 Clédat uncovered the remains there of two large basilical churches and sections of a pentagonal building, perhaps a monastery. [*See* Basilicas.] Explorations by the North Sinai Expedition in 1976–1967 indicated that Ostrakine extended over an area of about 2 sq km. The excavations exposed rich remains of a Late Roman industrial complex for the manufacture of metal and glass objects, as well as a section of a commercial center with a paved street flanked by small chambers or shops. [*See* Glass.] Near the large basilica Clédat recorded, the expedition excavated an impressive and excellently preserved church, including marble altars and carved screens, columns and capitals, and a stone reliquary. [*See* Altars.] The building was destroyed by fire in the 680s, leaving a rich collection of ceramics and metal and glass objects under charred beams and roof tiles.

The period between the Arab conquest (638) and the beginning of the Ottoman period (1516) is represented by more than 250 sites, mostly seasonal encampments. The large cluster of sites in northwest Sinai included fine examples of forts like Tell Farama, Qal'at Umm Mefarih, Tell el-Fadda, and Tell el-Luli. Excavations at Qal'at et-Tina, near Tell Farama, revealed sections of an exceptionally well-preserved octagonal fortress, 55 m in diameter. Extensive remains of a walled settlement, apparently the largest town along the principal caravan route to Egypt, occupied an area of about 2 sq km in the Qatya oasis.

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SINAI. *Church at Ostrakine, looking east.* (Courtesy E. D. Oren)

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ELIEZER D. OREN

SIPPAR (modern Abu Habbah, "father of seeds"), site nearly 100 ha (247 acres) in area situated along the banks of the ancient Euphrates River (33°4′ N, 44°15′ E). One of the most important centers in northern Babylonia, the city held a key position on the alluvial floodplain of Mesopotamia. City of the god Shamash, Sippar became legendary very early in its existence. The Sumerian king list characterizes it, along with Eridu, Bad tibira, Larak, and Shuruppak/Fara as one of the cities divinely chosen to rule over all of southern Mesopotamia before the Flood. Its Shamash Temple, the Ebabbar ("White Temple"), like its counterpart in the southern Mesopotamian city of Larsa, was a traditional and prestigious religious center. [*See* Eridu; Fara; Larsa.]

The equation of Abu Habbah with ancient Sippar was first established in 1885 by Theophilus G. Pinches. In cuneiform sources, however, the name *Sippar* is sometimes followed by specifications that originally led to confusion as to the number of sites involved. Dominique Charpin (1988, 1992) has established that Abu Habbah is designated in the sources as Sippar or Sippar-Yaḫrurum, whereas some texts refer to the same site as Sippar-ša-Šamaš, Sippar-ṣêrim and Sippar-u_4.ul.lí.a. In addition, not only Sippar but also its "twin city," Sippar-Amnānum (Tell ed-Der), a few kilometers to the northeast, is sometimes referred to in short as Sippar.

According to surface finds collected by Robert McC. Adams (1972, p. 192), the earliest occupation dates to the Uruk period, but excavations have never reached those deep layers. Recent investigations, however, show clearly that Sippar became important during the third millennium and was a flourishing center in northern Babylonia during the second and first millennia BCE. The most recent traces, of the later Parthian period (first–second century CE), have only been found in a small area near the northeast side of the levee surrounding the site. On the other hand, cuneiform documents attest the name of Sippar *(ud.kib.nun^{ki})* as early as the Early Dynastic and Akkadian periods. It is worth noting that, from the same time onward, the name of the Euphrates River is written ^{id}*ud.kib.nun^{ki}*, "the Sippar River."

The ruins consist of two contiguous tells protected by a prominent rectangular levee, three sides of which are still visible. The southwestern mound contains the religious quarter with its ziggurat and temples, while the northeastern mound comprises the city proper. Unfortunately, Sippar suffered at the hands of nineteenth-century excavators, whose digging techniques were little better than those of the clandestine diggers who shared in the plunder of the site. Their combined booty, which includes tens of thousands of cuneiform tablets, is now entrusted in the care of the British Museum, where specialists are still studying this invaluable resource.

As far as is known, the first plan and a short description of the site were prepared by W. B. Selby and J. B. Bewsher in about 1860. Some twenty years later, Hormuzd Rassam, for the British Museum, concentrated his research on the temple area, around and mainly to the east of the ziggurat, where no fewer than one hundred and fifty rooms and several large courtyards were uncovered (De Meyer, ed., 1980, map 3). To the northeast of the ziggurat, Rassam excavated part of the Shamash Temple and part of an adjacent building later considered by Walter Andrae and Julius Jordan to be the temple of Shamash's spouse, Aya.

Among the travelers who visited the site were W. H. Ward (1885), the first to dissociate Sippar from Sippar-of-Annun-

itum, which he wrongly thought to be ancient Agade; and E. A. W. Budge, in search of new tablets dug up by clandestine diggers. In the same period, the Ottoman antiquities service excavated at Sippar, but the results of their work remain unknown. Between January and April 1894, Vincent Scheil started digging, in cooperation with Bedry Bey of the Museum of Constantinople, and "attacked all the points of the city," as the excavator himself expressed it (Scheil, 1902, p. 6). To the north of the ziggurat, Scheil excavated several houses, in one of which he found a text mentioning a priestess *(nadītum)* of Shamash named Narubta, daughter of Abuwaqar (see below). It is in this area that Iraqi archaeologists, almost a century later, exposed a building with a distinctive architectural organization that, in all probability, is to be identified as the cloister (al-Jadir, 1986, p. 54; about the cloister and their *nadītums*, see also Harris, 1975, p. 188). Scheil, judging the results of his excavations in the temple area to be meager, moved his activities outside of the religious quarter to the city proper, where he mainly found houses from the Old Babylonian period. Some thirty years later Andrae and Jordan visited the site and completed Rassam's plan of the sacred area around the ziggurat.

In 1972–1973, the Belgian Archaeological Expedition in Iraq made a sounding at the northeastern side of the surrounding levee. Previously, excavations in the nearby city of Tell ed-Der had revealed that its levee consisted of an old mud-brick wall later covered by large earth constructions. The trench at Sippar revealed a very similar earth construction. Because of the water table, the mud-brick wall underneath could not be reached. However, Scheil, who could go deeper than is possible today, describes how underneath this earth construction he found a mud-brick wall (Scheil, 1902, p. 13).

The earliest components of this structure—if not the very earliest—can probably be ascribed to Hammurabi who, in the forty-second year of his reign, raised the wall of Sippar with an earth construction: "as for Sippar, the eternal city of Shamash, he constructed its wall with huge earth masses (year date of Hammurabi 43)." The same fact is referred to in a clay nail inscription: "I, Hammurabi (. . .) truly raised the summit of the foundations of the wall of Sippar with earth like a great mountain."

It must therefore be taken into account that, at Sippar as well as at Tell ed-Der, the remnants of an older city wall have been covered by a large dike built to protect the city against increasing floodings by the Euphrates. Observations made at Tell ed-Der indicate that flooding occurred chiefly during the second half of the eighteenth century BCE (Gasche, 1989, pp. 140–143). Both the stratigraphic position of the different elements of the dike and the objects found in it confirm this date.

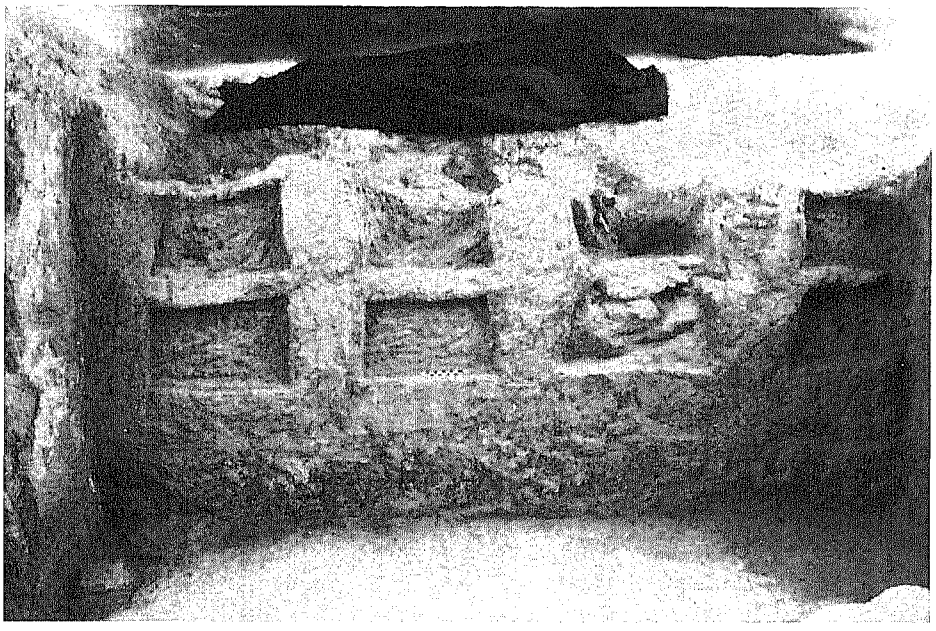
Since 1978 a team from the University of Baghdad under the direction of Walid al-Jadir has been regularly excavating the site. At the outset, its research focused on excavating an area on the northeastern part of the mound. Using the pottery and some texts, the excavated houses in the four upper layers can be dated to between the nineteenth and seventeenth centuries BCE. A deep stratigraphic excavation in the same area uncovered remains from the Akkadian and Early Dynastic periods. Because of the high water table, the natural soil level of the plain could not be reached.

In 1985 activities shifted to the religious quarter, to a monument previously uncovered by Rassam (see above). This building, which Andrae and Jordan believed to be the Temple of Aya, was gradually excavated. It is in this building that al-Jadir discovered a library in which hundreds of tablets were still arranged in the pigeonholes in which they had been filed twenty-five centuries ago (see figure 1). The library consisted mainly of Neo-Babylonian tablets, mostly literary texts such as a Standard Babylonian version of Atraḫasis, but also, for example, some prayers, a historical inscription of Manishtushu (king of Akkad, 2269–2255 BCE), a copy of the prologue of the Hammurabi law code, and another Hammurabi text relating to the walls of Sippar (see above). Some of these tablets explicitly state that they were copies of originals from centers such as Babylon, Nippur, Agade (Akkade), and Sippar itself. The oldest date on the texts, from the year seven of Adad-apla-iddina (1061 BCE), is found on a list of temple property from the Nippur region. The most recent tablet in the collection dates from the first year of the reign of the Persian king Cambyses (529 BCE). Not long after this date, at about the beginning of the fifth century BCE, all activities in the Sippar temples seem to have ceased (Joannès, 1992).

In the Old Babylonian period, Sippar was famous for its *gagûm* ("cloister") where *nadītums* (chaste women dedicated to the god Shamash) were housed. The Hammurabi code mentions *nadītums* living both inside the cloister compound and outside. After the twenty-ninth year of the reign of Samsuiluna, the documentary texts stop mentioning sales of houses in the cloister, though *nadītums* are still attested later. Some of the best-attested *nadītums* belonged to wealthy families. Several genealogies reflect a tendency of wealthy families to dedicate one of their daughters to the god Shamash. Kings of the Old Babylonian dynasty are known to have had encloistered daughters (Harris, 1962), which clearly accounts for the prestige of the Sippar cloister.

Northwest of the ziggurat, near where Scheil found the text of the *nadītum* Narubta (see above), the Iraqi excavators have uncovered a very distinctive arrangement of narrow, parallel streets that may have been covered. The streets provided access to rows of small, juxtaposed houses, usually consisting of only two rooms each. This spatial organization of the ground plan suggests that they should be identified with the cloister of the *nadītums*.

[*See also* Babylon; Babylonians; Der, Tell ed-; Cuneiform; Mesopotamia, *article on* Ancient Mesopotamia; Nippur; Temples, *article on* Mesopotamian Temples; *and* Ziggurat.]



SIPPAR. Figure 1. *Library.* View of the southeastern pigeonholes containing the tablets. (Courtesy H. Gasche)

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SITE SURVEY. Theoretical, methodological, and technological innovations have altered archaeological field methodology during the last two centuries. How the discipline has mapped, surveyed, and visually portrayed individual sites reflects those innovations. While the tools and techniques necessary for site survey remain essentially the same, their increasing precision has been achieved largely through more comprehensive implementation. The repercussions of the technological revolution of the 1970s and 1980s have not yet been fully understood in the field.

Site Location. One goal of the first historical geographers who visited the Levant was to locate ancient sites and to place them on maps with their modern and ancient identifications. (Arabic names were the conduit connecting biblical names to us.) In 1838 Edward Robinson did this in Palestine using a transit, two pocket compasses, and a telescope to triangulate site location based on the known posi-

tions of coastal cities. In the 1870s the British Royal Engineers established a true measured baseline and a triangulation grid in Palestine using surveyor's theodolites to locate all sites with increased precision. Subsequent mapping based on aerial photography and then satellite images, along with traditional surveys, provided precise contour lines, allowing site positions and their true extent to be located with far greater accuracy. In the late 1980s and 1990s, portable GPS (Global Positioning System) units, which calculate location based on satellite signals and that can quickly locate a site's position with an accuracy of up to five meters, came into use.

Site Topography. In the 1830 and 1840s, Robinson described structures on the sites he visited using elementary tools and words; David Roberts and William Henry Bartlett, the best among many; drew exquisite sketches of these same structures. In the 1870s, the Royal Engineers accurately mapped structures and provided basic data on topographical relief at selected major sites using transits and measuring tapes. By the 1880s people like William Matthew Flinders Petrie were drawing contoured site plans showing both structures and excavation areas.

By the early twentieth century, topographic site plans were being mapped with transits and measuring tapes and were tied both to permanent datum points on a site and into the geodetic control network (a national system of surveyors' benchmarks). Precise site shapes and contours were recorded in the field with increasing care and later drawn in a studio setting. A variation of this methodology was to use a plane table and an alidade on a known baseline with which the surveyor could create final drawings directly in the field. Aerial photographs were first used photogrammetrically in the early 1920s by William Frederic Badè to assist in both mapping and excavation strategy.

Throughout the 1960s topographic mapping continued to be carried out using transits, tapes, plane tables, and occasionally aerial photographs. By the 1970s the EDM (Electronic Distance Measuring device) was measuring greater distances far more rapidly than by tape, but the data were still manually transmitted. The late 1980s saw the introduction of the Total Station, a greatly enhanced theodolite that could measure distances and angles (X, Y, and Z coordinates) very precisely. The recorded data, kept in an electronic format by the machine, could then be loaded directly into computers and be manipulated by CAD (Computer Aided Drafting) software. Highly complex site landforms could then be portrayed using computer graphics in many formats and at multiple scales. The full impact of the Total Station and CAD graphics on archaeology has yet to be realized.

Grid Systems and Excavation. Following World War I, arbitrary grid systems imposed on top of site contours gained favor as standard nomenclature to describe location for everything from artifact findspots to excavation units; thus, the grid system became a recording tool. Quadrants were established (e.g., northwest), allowing an infinite set of standardized subdivisions to be defined radiating outward from each quadrant, for example, 21N 17W or AB23. (In one system letters went east–west and numbers north–south; thus AB23 would be the twenty-eighth square east–west and the twenty-third square north–south. By putting letters one way and numbers the other an attempt was made to remove confusion.) This quadrant system standardized the locational description of the excavated unit. As excavation recovered things—walls, floors, installations, artifacts, and soil layers—they could be mapped at the required scale and precision and added to the site's cartographic record by unit. Extrapolation and correlation of pieces of walls, floors, or layers yield possible conclusions that can be tested or simply presented in graphic form. The layers of data created, which formerly had been hand drawn and colored on maps, can now be best handled by a variety of computer databases.

Geographic Information Systems. Individual sites, as imagined by Robinson and his successors, can no longer be viewed as discrete static entities, polygons, on an otherwise blank map. Occupation sites are dynamic; they are the product of their environs without a hard and fast border (not even a city wall) separating them. A site's immediate environment, its neighboring sites, and its distant trade partners are all integral to site definition. Viewed this way, very little of a site is excavated; the goal of a site survey becomes the ability to collect many types of spatial data from various sources. Whether multispectral satellite imagery is collected and used to identify road systems connecting sites, ground-penetrating radar is used to search for underground cavities and walls, or a small habitation site is mapped for contours before excavation, the goal of the site survey is still to describe and locate a site, but now within each of its many environments.

Moving farther into the world of the computer has made it clear that handling wide-ranging data types is best done in computer format. Geographic Information Systems (GIS) are computer databases that can process geographically linked information in both graphic and tabular form to describe inter- and intrasite correlations and their relationship to their environs. Proper use of such systems requires clearly defined research questions, so that appropriate and relevant data can be collected. Thus, what once was a site survey designed to produce static maps and plans, using transits, measuring tapes, and notebooks, is now just a part of a larger dynamic, interactive, and descriptive program utilizing satellites, computer chips, and electronic notebooks. Where this new technology may lead site survey, even within a few years, can hardly be imagined.

[*See also* Computer Mapping; Excavation Strategy; Grid Plan; Historical Geography; Quadrant Plan; *and the biographies of Badè, Petrie, and Robinson.*]

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SKELETAL ANALYSIS. Constituting a major area of research in physical anthropology, skeletal analysis aims at reconstructing the life history and biological affinities of individuals and populations from an examination of their bones and teeth. Occasionally, this information is used for forensic identification of victims of recent crimes and even of historic persons. Most frequently, however, skeletal analyses are carried out on human remains recovered from archaeological contexts. The immediate objective is then to determine the origins, affinities, nutrition, and health status (paleopathology) characterizing peoples of different periods and cultures. [*See* Paleopathology.] When analyzed in relation to burial practices (mortuary studies), skeletal analyses can also yield information about the extent to which social status is linked to age, gender, and lineage. [*See* Burial Techniques.] In a wider context, skeletal analyses of past populations provide the basic data for examining the nature and effect of selective pressures on human evolution.

Examination of human remains begins with the identification of burial type, position, age, and sex and continues through analyses of pathology, diet, and genetic affinities. Age and sex distribution are used to estimate life expectancy (paleodemography), which, together with disease experience (paleopathology), provides an estimate of the quality of life associated with different adaptations. Variations between subgroups in these attributes indicate differences in social status or occupation. Evaluation of genetic affinities is usually based on the phenotype expressed in size, shape, and discrete traits of the bones and teeth. Recent developments in molecular genetics also make it possible to compare these ancient populations directly at the level of the genome. These data are used to trace kinship within populations and the origin and affinities of different populations and cultures.

Techniques used in analyzing skeletal remains range from very simple methods to extremely expensive, time-consuming, and sophisticated approaches. They draw on methods developed in medicine, epidemiology, and anthropological studies of living populations. Age, sex, gross pathology, and phenotype can be assessed visually, supplemented by measurements made with calipers and tapes. However, the level of accuracy achieved, especially for determining age and pathology, may be greatly increased by more sophisticated studies using radiographs, C-T scans, and optical and scanning electron microscopy. [*See* Microscopy.] Dietary information can be obtained by biochemical analyses of trace elements (e.g., calcium/strontium ratios) and isotopes such as $^{13}C/^{12}C$ and $^{15}N/^{14}N$. The recent application of DNA and mitochondrial DNA studies to the analysis of bones, teeth, and mummified tissues opens up a completely new field in skeletal analysis—one that enables the anthropologist to compare directly the genotypes of past and present populations.

Regardless of the technique employed, the reliability of the information derived depends ultimately on the number of specimens available for analysis and their state of preservation. Analysis begins in the field as soon as bones are uncovered, with the determination of their burial type, position, and condition. If the bones are poorly preserved, it may be necessary to carry out preliminary observations and measurements in situ. If preservatives are used to harden the bones, samples for biochemical analyses must be collected before the preservatives are applied, as they may contaminate the samples.

Burial Type. There are three main burial types: primary, secondary, and cremations. Either type may comprise one or more individuals—that is, may occur as individual or multiple burials. Primary burial is recognized by the presence of bones in anatomical articulation. This indicates burial soon after death, with the bones still held in position by the soft tissues. However, bones may be displaced after burial by human or other agencies. In the case of human agencies this may be intentional, to make room for new burials when tombs are reused. Alternately, the skull or other bones may be removed for ritual purposes. Inadvertent disturbance of burials occurs in all periods, through later building or grave construction. Nonhuman agencies such as earth tremors and soil subsidence and the scavenging of carni-

vores and burrowing of rodents also contribute to the removal or displacement of individual bones. For all these reasons, it is necessary to examine bones in situ carefully, in order to distinguish between disturbed primary burials and secondary burials.

Secondary burials are best defined as those in which bones have been collected from primary contexts and placed in a secondary context. In such cases the bones are not in anatomical articulation. Secondary burial may take place after natural decomposition of the soft tissues connecting the bones or after active disarticulation and defleshing. Natural versus intentional skeletonization can be distinguished by examining the bone surface: defleshed bones usually show signs of scraping or cutting. Secondary burial may entail the collection and burial of selected bones or the entire skeleton. It may involve the removal of the bones to a completely new location and their intentional rearrangement within a tomb—by stacking them in piles or placing them in special containers such as urns or ossuaries. In all these instances the number of individuals placed in such locations varies. [*See* Ossuary.]

Cremation is the intentional burning of the body of the deceased. It results in the reduction of the body to fragments of charred and burnt bone that are then collected and placed in special containers or simply buried. Cremated bones show distortion, shrinkage, and spiral fractures as well as color change, in contrast to the charring of dry bones.

The burial position may be supine (on the back), prone (face down), on the right or left side, extended, flexed, or semiflexed. In semiflexed burials the knees are bent and are at right angles to the trunk. In flexed burials the arms and legs are drawn up against the chest, so that the body assumes a fetal position. Often these skeletons are so tightly flexed as to suggest that the deceased were tied or wrapped in position before burial. Prone burial is usually interpreted as a sign of disrespect to the deceased.

Population Biology. The three methods used to analyze for genetic affinities in skeletal remains include morphometry, discrete trait analysis, and DNA and mDNA studies (Saunders and Katzenberg, 1992). Morphometric analysis is the most common and involves obtaining estimates of the size and shape of bones and teeth from measurements. Body size and shape are genetically determined but are influenced to some degree by environmental stress during growth. Stature is the most extreme example of this, with variation of as much as 7 cm in height between two generations, observed in studies of secular trends. Skull form, however, is much less affected by environmental factors during growth, and tooth size is affected even less. Consequently, measurements of the skull and teeth have long been used to define and compare the phenotype of different populations. The skull, mandible, and teeth are usually classified in terms of length/height/breadth measurements and ratios, although three-dimensional analyses are gradually being introduced.

Microevolutionary trends within *Homo sapiens* show a very characteristic pattern of change that includes head shortening and rounding, reduction of the jaws and teeth, and general gracilization of the entire skeleton. These changes reflect new adaptations, in terms of both general function and diet. They are especially rapid during the transition to agriculture, reflecting the multifactorial impact of occupation, diet, disease, climate, and altitude on the gene pool as small groups of hunter-foragers are replaced by large sedentary communities. Against this background of unidirectional diachronic microevolutionary trends, large-scale gene flow can be detected by the presence of dissonances because each population has its own particular characteristics. There characteristics are expressed, for example, in height, breadth, and depth proportions of the skull relative to the jaws and teeth.

Paleodemography. Paleodemography deals with estimates of past population size. While the skeletal record is usually far too incomplete for population estimates, the age, sex, and life history of individuals (in terms of function, disease, trauma, and nutrition) are used to provide estimates of life expectancy and fecundity, as well as for mortuary studies. For age and sex determination, bones and teeth are gently cleaned and, if necessary, restored and strengthened. Measurements and radiographs are taken and compared against standards derived from populations of known age and sex.

Age determination. Age determination in children and adolescents is most accurately estimated by dental-development status as determined by radiographs of the teeth. Visual examination of the teeth in the jaws to assess the state of dental eruption is slightly less accurate but also less expensive and faster to carry out. For isolated teeth, dental development can be directly assessed visually. If the jaws and teeth are missing, long bone length and degree of epiphyseal fusion are used to estimate age in subadults. Age assessment in adults is more problematic because of individual differences in the aging process. Changes in joint surfaces, especially of the pubic symphysis, cranial suture fusion, and dental attrition are the main criteria used. Additional methods are microscopic and radiographic studies of the extent of bone remodeling and resorption. In the teeth, attrition rates are highly correlated with age but are modified by diet and methods of processing food, such as the use of milling stones. Methods for assessing attrition rates within populations have been developed by extrapolating age estimates from regressions derived from the attrition scores of juveniles of known age. The relationship between attrition rates and diet has also been used to assess foods utilized by a particular group. The accuracy of age determination in skeletal remains is of the same order as that in the living. It is several weeks in infants, several months in children, and one to two years in juveniles. In adults, once tooth formation is completed and epiphyses have closed, the accuracy of age

assessment is even lower. It is accurate to within five years for young adults and ten years in old adults. This is the result of individual variation in physiological age, as opposed to chronological age, and is determined in part by genetic factors and in part by environmental factors.

Inconsistencies between different measures of aging in and between individuals in the same society reflect different life histories. These may be related to socioeconomic and occupational differences within the society or to random differences in disease load. Their association with other signs of rank exemplified by architecture, burial offerings, and tomb type and location are helpful in discriminating between the two. [*See* Grave Goods.] The morphometric and genetic data can then be used to determines if status differences are family or group related.

Sex determination. The most accurate determinations of sex are based on the examination of the entire skeleton, but this is not usually possible in Near Eastern contexts. This is partly the result of the differential preservation of different bones and partly of burial customs. Thus, when dealing with multiple secondary burials, the anthropologist is usually comparing bones rather than individuals. The pelvis is the most dimorphic bone, followed by the skull, sacrum, and femur. However, in addition to shape differences, most adult male bones are thicker than those of females. Even when similar in length, male bones are more robust, with relatively larger joint areas and thicker cortical bone. Because most of the distinctive sex differences of the skeleton are created by differential growth at puberty, morphometric estimates of sex in infants and children have only a low degree of reliability. Sex determination in old adults may also prove difficult because of changes in hormonal balance and or activity patterns that affect bone remodeling. A new possibility for accurate sexing in all age groups is the use of DNA analysis to look for X- and Y-linked genes.

Cause of death. In most cases the cause of death is unknown. In rare cases, sword cuts or other traumatic lesions are present and can be identified. Individual skeletons are occasionally found beneath rubble, posing the question of intentional interment or accidental death following the collapse or destruction of a structure. The position of the bones of the body—orderly or sprawled—is an important diagnostic consideration.

Burial Types and Practices in the Southern Levant. Burial practices increase in complexity over time. The earliest burials in the Near East are individual, primary burials from the Mousterian sites of Qafzeh and Skhul cave in Israel, dated to earlier than 90,000 BP. [*See* Carmel Caves.] These burials are usually semiflexed and lying on their side or back and are at living sites. There does not appear to be an age or sex preference in burial treatment, and grave goods are rare. At Qafzeh, an eleven-year-old child was buried with deer antlers next to the body and at ʿAmud, also in Israel and dated to about 60,000 BP, a Neanderthal infant was buried with a deer mandible, suggesting ritual activities. At the Mousterian site of Shanidar in Iraq, the large amount of flower pollen associated with a Neanderthal burial dated to about 60,000 BP has been interpreted as evidence of funeral rites in which the body was covered with wildflowers. [*See* Shanidar Cave.] (It has also been suggested that wind blew the pollen onto the grave.)

Individual primary burials at living sites remain the norm until the Natufian period, 12,500–10,300 BP (Belfer-Cohen and Hovers, 1992; Perrot and Ladiray, 1988). In the Middle and Late Natufian, primary and secondary burials, in both individual and mass graves, are found. Grave goods such as stone tools and animal bones and antlers are occasionally present. At two Natufian sites (ʿEinan and Hayonim) individual, semiflexed burials were found together with dog skeletons. [*See* ʿEinan; Hayonim.] At most Natufian sites some of the adults and children were buried with ornaments: headdresses, bracelets, and belts made of shells, animal teeth, and bone. In the Late Natufian, graves at Naḥal Oren and on the terrace at Hayonim, hollowed-out stone "pipes," resembling pierced stone mortars, were used as grave markers, while several primary burials were found in which the skull was missing. Removal of skulls was common in the Prepottery Neolithic period. [*See* Naḥal Oren.]

In the Pre-Pottery Neolithic (PPN), extramural burials are found in southeast Anatolia, at Hacılar and at Çatal Höyük. At the latter, secondary burials of more than four hundred individuals were found beneath a platform in a large building; the skulls had been collected in one area. [*See* Hacılar; Çatal Höyük.] In the southern Levant, PPN burials occur singly or in small groups and are still located within the settlement area, either in houses or in courtyards, often beneath house floors. Removal of the skulls of adults and children and their reburial in caches was common. Some of the skulls were plastered, facial features delineated, and shells inserted for eyes. Examples are known from Jericho, Beisamoun, Kefar Hahoresh, ʿAin Ghazal, and Tel Ramad. Most were adult males, but some, from Tel Ramad and Beisamoun, were female. [*See* Jericho; ʿAin Ghazal.] In addition, one eight-year-old child's skull from ʿAin Ghazal appears to have been decorated with black paint. A different type of decoration was found at Nahal Hemar, where the top and back of male skulls were decorated with bitumen in criss-cross patterns.

Toward the end of the PPN, secondary burial became more common in the southern Levant. In the Pottery Neolithic (PN) period, burials took place in cemeteries located outside of the settlements, sometimes in large, constructed tombs such as dolmens and tumuli. One example is Eilat in Israel, where twenty tumuli were found with secondary burials attributed to the end of the PN and Early Chalcolithic periods. The PN period marks the advent of differential treatment of infant burials. Infants are commonly buried intramurally, rather than in the main cemetery, and are in-

terred in ceramic vessels or covered by potsherds. This practice continued in subsequent periods and has been recorded as late as the Ottoman period. [*See* Dolmen; Tumulus.]

In the Chalcolithic period in Israel burial practices were extremely varied, both within and between sites, and burial offerings, in the form of ceramic vessels and ornaments, are common. There are many large cemeteries with monumental tumuli tombs (Shiqmim) as well as rock-hewn burial caves (Azor, Ben-Shemen). At Kissufim, in the Negev desert, a mud-brick charnel house was found containing secondary burials, some in stone ossuaries. At many sites the position of the bones suggests reuse of the burial caves and tumuli, with earlier burials displaced to make room for later ones. However, secondary burial, of piles of bones or bones in ossuaries, also occurs and some of the bones from secondary burials show cut marks attributed to defleshing (Ben-Shemen). Pottery as well as stone ossuaries were used, the former often shaped in the form of a house, the latter usually box shaped. However, primary burial also occurred. At Byblos in Lebanon, a large cemetery was found with primary burials in large jars or pithoi, sometimes containing the remains of an adult and a child. At sites such as Tel Teo and Gilat in Israel, primary flexed burials were found intramurally, while in the semisubterranean villages around Beersheba (Shiqmim, Abu Maṭar, Bir Safadi), both primary and secondary burials were found, usually in storage pits. The intramural burials contained a high proportion of infants, often in ceramic vessels or covered by sherds, whereas burial in the cemeteries seems to have been reserved for adults and children over the age of three. [*See* Shiqmim; Negev; Byblos; Gilat; Beersheba.]

In the Bronze and Iron Ages, the tradition of monumental tombs as well as the use of burial caves continued, together with shaft tombs, cist tombs, and simple inhumations, the latter often intramural. From the end of the Early Bronze Age onward, animal offerings were common, in addition to personal ornaments and ceramic vessels as grave goods. Intersite and intrasite variation in burial type and associated grave goods are maintained and reflect the cultural diversity of this region in each period.

Cremation may have occurred from the PN onward, but it appears on a regular basis only in the Late Bronze Age. Burnt human bones were found at the Epipaleolithic site of Kebara in Israel, but they have occurred in several Neolithic sites as well, such as Bouqras in eastern Syria and Çayönü in Anatolia, and in Chalcolithic and Early Bronze Age sites from the southern Levant. [*See* Bouqras; Çayönü.] The latter include Gezer and Jericho, the charnel houses at Bab edh-Dhraʿ, and the urn burials at Azor. [*See* Gezer; Bab edh-Dhraʿ.] Few of these early examples show the warping and shrinking associated with the burning of fresh bone that characterizes cremations in later periods. Because of this it has been suggested that these early examples were the result of accidental fires. However, in the Early Bronze Age tombs at Gezer and Jericho, several levels of burnt bones have been found, in addition to piles of bones. Either fires broke out frequently at these sites—possibly because of overturned lamps—or the tombs were periodically "cleaned out" by fires. Cremations were common in the Late Bronze Age in Iron Age Phoenician cemeteries and in Roman cemeteries, as, for example, the Roman cremations from Ketef Hinnom. [*See* Ketef Hinnom.] Only the bones from Phoenician and Roman cremations have been analyzed in detail. They are invariably the remains of adults or juveniles. No tophets with cremated infant bones have yet been found at any Phoenician site in the southern Levant, with the possible exception of Megiddo (Gottlieb Schumacher, *Tell el-Mutesellim*, Leipzig, 1908; Elizabeth Bloch Smith, 1992, p. 171). Thus, despite biblical references to infant sacrifice through fire (*Lv.* 18:21; *2 Kgs.* 23:10; *Jer.* 19:5; 32:35), there is no evidence of infant cremations in the Phoenican homeland. All the examples so far known come from tophets in North Africa and Italy. [*See* Carthage.]

In the early periods, primary burials are extended or semiflexed, either on their back or side. In the Natufian, tightly flexed burials also appear and continue in the Chalcolithic. In later periods, individual burials are usually extended and on their back. Of the hundreds of burials recorded for the Natufian and Neolithic periods in the southern Levant, only two instances of prone burials have been recorded. One is from the Natufian site of ʿEinan/Mallaḥa (Perrot and Ladiray, 1988) and one from the PPNB site of Basta. [*See* ʿEinan; Basta.] In both cases, the individual was an adult and was buried face down in a kneeling position. In addition, one skeleton at the Natufian site of Hayonim was found buried in a squatting position. Examples from later periods in the southern Levant include the mass grave from the Chalcolithic site of Gilat, where two of seven individuals found in a pit were prone, and the Phoenican sites of Khaldeh and Achziv. At Khaldeh, 28 of 178 burials were prone, whereas at nearby Achziv, only one of more than 100 burials was prone. [*See* Khaldeh; Achziv.]

Population Biology in the Southern Levant. Skeletal remains from Near Eastern sites fall into two main periods: an early period represented by Middle Paleolithic hominids, including archaic hominids, Neanderthals, and Early *Homo sapiens sapiens*, that predates 58,000 BP, and a later period from about 20,000 BP to the present. For the southern Levant, the earliest well-dated human remains, which may be from about 350,000 BP, are those from the Zuttiyeh cave in Wadi ʿAmud. The presence of earlier fossils has been claimed from ʿUbeidiya and Hazorea but they appear to be of disputed provenience. [*See* ʿUbeidiya.] The earliest examples known of *Homo sapiens sapiens* in this region are the specimens found at the Skhul and Qafzeh caves dated to around 90,000 BP. Neanderthals have been found at Tabun, Kebara, ʿAmud, and Hayonim, and also at Shanidar in Iraq.

The Tabun specimens may be 150,000 years old, the other Neanderthals are grouped at about 60,000 BP. [*See* Tabun.]

For the last twenty thousand years, there has been an almost continuous diachronic series of skeletal remains recovered from good archaeological contexts. These provide evidence of the changes in physical makeup and pathology of the different cultural and ethnic populations identified in the archaeological record. Those for the southern Levant (primarily from Israel and Jordan) are especially well known. They include samples from the Kebaran, Natufian, PPN, and PN periods; the Chalcolithic, Bronze, and Iron Ages (the latter with distinctive Phoenician, Israelite, and Philistine populations); and the Persian, Hellenistic, Roman, Byzantine, Ottomon, and recent periods. The transition from generalized hunting and gathering to specialized foraging, specifically for cereals, occurred between the Kebaran and Natufian periods. The introduction of plant and animal domestication and the establishment of large sedentary communities developed during the Neolithic period; and was accompanied by the introduction of pottery toward the end of the Neolithic. The impact of the drastic change in food staples and methods of food preparation that ensued was magnified in the Chalcolithic period when herding became a major economic factor. By the end of the Chalcolithic the traditional Near Eastern diet, which has a high cereal component and low meat intake, appears to have been established.

The skeletal record reflects these changing adaptations very precisely, both in terms of microevolutionary change and in terms of changes in disease patterns. Stature was at its maximum in early *Homo sapiens sapiens* from Skhul and Qafzeh, averaging 180 cm in males; from the Kebaran to recent periods, it has averaged 168 cm in males, with only slight fluctuations. In females, stature was some 10–14 cm shorter than in males. However, in Israel, as in most Western countries, a marked secular trend occurred in the twentieth century, in both the indigenous population and in the offspring of immigrants. This suggests that most of the observed variation in stature in the past was environmentally mediated. There is some support for this hypothesis in the changing frequency of stress-related conditions observed in the skeletal remains.

While there are some similarities between early *Homo sapiens sapiens* and Kebaran and Natufian samples in tooth morphology, the virtual absence of skeletal remains in the eighty thousand years separating them precludes any detailed discussion of a possible ancestral role for these early humans.

There is some reduction in overall robusticity of the skeleton between the Kebaran and Natufian, and this trend continues in later periods. It is associated with a slight reduction in both circumference and cortical bone thickness of the long bones, and with reduction in head length and volume. In the face, this is seen first in the reduced amount of bone thickness around the orbit and malar processes and later in the lengthening and narrowing of the face and reduction of the jaws and teeth.

The most common head form in the Kebaran and Natufian periods is long, relative to breadth (dolichocephalic). This remains the dominant pattern until the Middle Bronze Age, when population characteristics show a sudden change. From the Middle Bronze II to recent periods, there is a considerable fluctuation in skeletal parameters. Between the Natufian and the MB II it is possible to trace unidirectional microevolutionary trends in the skull, mandible, and teeth. From the MB II onward, there are numerous fluctuations in all measurements, suggesting greater heterogeneity and masking—to a greater or lesser extent evidence of microevolutionary trends in the skull and mandible—although tooth size continues to reduce.

The Middle Bronze populations are characterized by a short and broad calvarium with a high, rounded skull and shorter, broader face and nose than any of the earlier or most of the later populations inhabiting the region. Discriminant function analysis distinguishes males at these sites with 100 percent accuracy on calvarial, facial, and mandibular characteristics. These changes are inconsistent with microevolutionary trends or environmental factors affecting growth and development. The MB II samples then provide the first definite evidence for population change in the Holocene of the southern Levant; however, samples from later periods suggest a return, at least in some regions, to the indigenous long-headed, long-faced type.

Sample sizes from the Late Bronze Age are small but appear to resemble the MB II populations. There are no well-preserved remains of Philistines from Israel available for examination, but Iron Age Phoenicians, First Temple Israelites from Jerusalem and the large Iron Age sample from Lachish that have been studied show some differences. The Phoenicians from Achziv are very heterogeneous, with head length ranging from 200 to 178 mm in males and broad, short faces. They resemble the Late Bronze and MB II peoples in these characteristics. The Iron Age sample from Lachish more closely resembles the "core" population represented both by the pre-MB II populations and by the more recent Arab population. The First Temple period population of Jerusalem appears to lie between the two, but the sample is too small for rigorous statistical analysis.

In later periods cultural and genetic boundaries are more blurred. The Hellenistic, Roman, and Byzantine populations of the Holy Land included Jews, Romans, and Samaritans. The combined Jewish Hellenistic-Byzantine group is, like the MB II sample, an outlier group, characterized by relatively short, broad skulls and faces. In contrast, the Samaritans have remarkably small, narrow heads and most closely resemble the local Arab population, which has relatively narrow heads and long faces. All these types are represented in the present population of Israel. Their ancestry,

and the selective pressures that have produced them, are the focus of current research.

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PATRICIA SMITH

SMITH, GEORGE ADAM (1856–1942), prominent Hebrew Bible scholar and theologian, born in Calcutta, India. Smith studied arts and theology at Edinburgh University and pursued further studies at the universities of Tübingen and Leipzig. In 1878 he traveled to Cairo, where he learned Arabic; he made his first trip, on foot, through Palestine and Syria in 1880.

Smith's earliest publication was a commentary on the *Book of Isaiah* (Expositor's Bible Series, 2 vols., 1888–1890). In 1891, during his second trip to Palestine, he expanded his knowledge of the region's geography (of Palestine, Syria, and Transjordan), gathering much of the information for his great work, *The Historical Geography of the Holy Land* (1894; 25th ed., 1931), and earning for himself the title "father of biblical historical geography." Smith gathered climatological readings and recorded information about the geology, topography, and possible location of biblical sites. With his knowledge of Arabic, he was able to glean useful information from local inhabitants. He revised and updated his magnum opus in 1931, based on return trips he had made to Palestine in 1901 and 1904. He saw his work as a collection of evidence above the ground that prepared the way for archaeological excavations, as noted in his preface to the work: "We have run most of the questions to earth: it remains only to dig them up." Smith's work is still useful because he recorded what existed prior to modern construction. He had an ability not only to capture details, but also to describe them vividly.

In 1899, while professor of Old Testament at the Free

Church College, Glasgow (1892–1909), Scotland, he delivered his Lyman Beecher Lectures at Yale University and published them as *Modern Criticism and the Preaching of the Old Testament* (New York, 1901). He was threatened with a trial for heresy in Scotland for this application of new criticism to biblical studies. He then published *The Twelve Prophets* (Expositor's Bible Series, 2 vols., 1896–1897) and later another work on historical geography, *Jerusalem* (2 vols., 1907). During his tenure as principal of Aberdeen University (1909–1935), he published *The Early Poetry of Israel in Its Physical and Social Origins,* his Schweich lectures (London, 1912) and commentaries on *Deuteronomy* (Cambridge Bible, 1918) and *Jeremiah* (1923).

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JOHN D. WINELAND

SOCIETY OF BIBLICAL LITERATURE. The Society of Biblical Literature and Exegesis was founded in 1880. In 1962, it became the Society of Biblical Literature (SBL). It is the world's largest professional society devoted to the academic study of the Bible and its cultural environment. The SBL grew in its first century from an initial membership of thirty-five to a total of nearly five thousand in 1980, with continual substantial additions. Most of its members are teachers and researchers based in colleges and universities in North America and, increasingly, elsewhere throughout the world. Its annual plenary meeting, widely attended by members, is supplemented with numerous other meetings at regional and international levels. The *Journal of Biblical Literature (JBL)* has been the society's flagship publication since it was launched in 1881. In addition, a major publication program has flourished since the society, together with the American Academy of Religion, founded Scholars Press in 1974. The society also supports numerous collaborative research projects, with members convening at the annual meetings to advance their work.

Interest in the material culture of the Near East expressed itself early in the history of the society, and articles dealing with archaeological matters appeared in *JBL* from the start. The impetus to start an American school of Oriental studies in Palestine came in 1895 from Joseph Henry Thayer, president of the society, after the Archaeological Institute of America established the American School of Classical Studies in Athens (1882) and the School of Classical Studies in Rome (1895). The SBL, joined by the AIA and the American Oriental Society, instituted the procedures that eventuated in the founding of the American School for Oriental Study and Research in Palestine in 1900 (incorporated in 1921 as the American Schools of Oriental Research [ASOR]). According to ASOR's charter, these three societies continue to hold one seat each on the ASOR board of trustees. There has always been considerable overlap in the membership and interests of the SBL and ASOR, although in terms of historical scope the SBL is focused on biblical antiquity and ASOR encompasses the range from prehistoric to modern times. The two societies hold a joint annual meeting, thus affording members easy access to the latest research in the respective fields.

[*See also* American Schools of Oriental Research; Archaeological Institute of America; *and the biography of Thayer.*]

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DOUGLAS A. KNIGHT

SOHAR (Ṣuḥār), coastal town located on the Gulf of Oman, today located in the Sultanate of Oman. The seaport is renowned for its Early Islamic heyday, reputed to have been the home of "Sinbad" the sailor. The town occupies a strategic position on the Arab Batinah coast leading to the Straits of Hormuz and connects through minor wadis to the Wadi al-Jizzi and the Omani interior.

Archaeological work approximately 4.5 km (3 mi.) south of Sohar revealed an Early Iron Age town, Ghayl Shabul (which has the site designation SH 11) (Humphries, 1974, fig. 1; Kervran and Hiebert, 1991, p. 337; Yule and Kervran, 1993, pp. 84–89, 94–95; Potts, 1990, pp. 374–375; for other Iron Age sites in the Sohar region, see Costa and Wilkinson, 1987, figs. 87–91; Potts, 1990, p. 272, n. 28). The ceramics, soft-stone vessels, and metal suggest a first-millennium BCE date. The town of Sohar is an occupation tell some 2 km long and 500 m wide. It was investigated in 1958 (Cleveland, 1959), 1975 (Peter F. Farries in Kervran, 1984), and 1984–1986 (Kervran, 1984; Kervran and Hiebert, 1991). Soundings in various locations along the tell, inside the fort, and along the moat walls outside the fort yielded artifactual re-

mains belonging to pre-Islamic periods. The most comprehensive sections were excavated just outside the moat area (Kervran and Hiebert, 1991, fig. 3) and yielded evidence of four phases of pre-Islamic occupation ranging from Early Parthian to Late Sasanian (c. 100–600 CE). [*See* Parthians; Sasanians.] Scattered remains of temporary buildings were first found at the lowest levels, succeeded by Parthian structures of fired and baked brick. Ceramics included red-polished wares known from western India (modern Dhofar) (Kervran and Hiebert, 1991, p. 341); for similar material found earlier by Ray L. Cleveland, see Yule and Kervran, 1993, p. 90, fig. 10; Potts, 1990, pp. 292–293). Sasanian ceramics include a similar repertoire found at Siraf, as well as stoneware imported from China and datable to the fifth century CE.

The Persian and Early Islamic Arab historical traditions (al-Hamdani, Maʿsudi) that tie the Persian presence to the Batinah coast—Mzw(n) and Mazun) (Wilkinson, 1979, pp. 888–889; Potts, 1990, pp. 328–340)—and specifically to Sohar, are now confirmed. These include the establishment of Christianity in the town and along the coast (Kervran and Hiebert, 1991, p. 343; Potts, 1990, pp. 330–340; for more recent discoveries of the Christian presence in the region, see Zarins et al., 1984, pp. 42–43, pl. 37.8; Langfeldt, 1994; Potts, 1990, vol. 2, p. 296, n. 103; 1994). The question of whether Sohar is Omana in the classical sources, while debated, is strengthened by the Parthian levels recently found there (Potts, 1990, pp. 306–307; Groom, 1994, pp. 202–203). The survey work conducted in the Sohar hinterland defining the extensive fields and irrigation channels called *qanat/falaj* (T. J. Wilkinson, 1975, 1976, 1977) can now be confidently seen as having originated in the Parthian-Sasanian periods or earlier and be regarded as a Persian invention (Wilkinson, 1977, 1979, p. 890; Potts, 1990, pp. 390–392).

Excavations at Sohar also clearly show that there was no break in occupation with the Early Islamic periods succeeding the Sasanian period (Umayyad/ʿAbbasid) until the thirteenth century, when the present fort was built (Kervran and Hiebert, 1991, p. 339). The fluorescence of the Early Islamic town is well documented by both historical sources (Grohmann, 1934; J. C. Wilkinson, 1979) and archaeology (Cleveland, 1959; Williamson, 1973; Costa and Wilkinson, 1987; Costa 1984, pp. 285–289). By the eighth century, with the strong expansion of Islam, Sohar grew as a town to cover a area of more than 74 ha (180 acres). Agricultural fields extended for more than 6000 ha, or 14,800 acres (T. J. Wilkinson, 1979, fig. 1), and numerous commercial activities took place, including copper smithing (J. C. Wilkinson, 1979, p. 892), brick making, and glass production. [*See* Glass.] Sea trade with China and India is well attested (Williamson, 1974) and the site has yielded numerous celadon and stoneware vessels (Cleveland, 1959, p. 15; Whitehouse, 1979, pp. 874–875). By 1225 the focus of Islamic political power had shifted to Egypt and the Red Sea, and Sohar declined in importance. The top levels at the tell yielded remains of medieval Islamic date (thirteenth century) to the present (Kervran and Hiebert, 1991, p. 339). The fortress visible in the town today has its origins in the thirteenth century.

[*See also* Oman.]

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JURIS ZARINS

SOLOI, site of ancient copper mines on Cyprus. Built on the flank and in front of a hill overlooking the sea in the northwestern part of Cyprus, ancient Soloi lies on the western side of the Bay of Morphou, 8 km (5 mi.) east of the city of Vouni (35°08′10″ N, 32°47′45″ E). The copper mines to which it owed its wealth are located to the south, in the mountains. The earliest archaeological finds consist of eleventh-century BCE (Iron Age) pottery.

According to Plutarch, the foundation of Soloi went back to mythological times and was attributed to Theseus's son Demophon. Plutarch writes that the town, replacing a first city called Aipeia, found its present location under king Philokypros, when his visitor and friend, the Athenian Solon, advised him to move it closer to the sea. It was then given its new name in honor of Solon. According to Herodotus, Soloi, a well-fortified city, was able to resist a five-month siege by the Persians at the very beginning of the fifth century BCE, before being conquered and perhaps ransacked. Because of its copper mines, it most probably regained some prosperity in the fifth and fourth centuries, although this period of its history is not known. Not until the coming of Alexander the Great did Soloi shake off the Persian yoke. After its liberation, Soloi became part of the Ptolemaic kingdom. Its last king was Eunostos, who married Eirene, daughter of Ptolemy I Soter and Thaïs, the renowned courtesan. The city reached its acme in Roman times, under the Antonines and the Severi. We read in Galen that its mines were in full operation during the second part of the second century CE; they were probably still very active in the third century.

Soloi was christianized early by St. Auxibius, a Roman converted by St. Mark, companion of the Apostle Barnabas. Auxibius, who landed in Cyprus soon after the middle of the first century CE, was the first bishop of Soloi: he died in 102/103. The history of Byzantine Soloi is poorly known. The exploitation of its mines seems to have diminished during the fourth century when the city's harbor was left to silt down. Christian Soloi, however, must have preserved some financial resources because it was able to build one of the most impressive basilicas on the island. Its prolonged prosperity seems to have been put to a definitive halt by the Arab raids of the seventh century from which it never recovered. In medieval times it was reduced to a miserable hamlet called Casal Solia.

When the British traveler Richard Pococke visited the site in 1745, he was impressed by the extent of its ruins. In 1870, the diplomat and collector Luigi di Cesnola identified a wall as that of the Roman theater and "excavated" some Roman tombs. In 1917, under the direction of the archaeologist Einar Gjerstad, members of a Swedish expedition excavated the theater (later extensively restored) and, after some exploration mainly at the top of the hill, chose to concentrate their work outside the city itself, on the neighboring hills of Cholades where they excavated an important complex of Hellenistic and Roman temples.

Excavations on the site of Soloi resumed in 1964 with a team from Laval University (Quebec) under the direction of Jean des Gagniers. Laval archaeologists dug for ten seasons until their work was disrupted by the turkish occupation of the site in 1974. In the lower part of the town, René Ginouvès excavated an industrial and residential area including a *fullonica* or dye shop. Below the Byzantine and Roman levels, he found the corner of a carefully built Cypro-Classical monument, below which he observed the foundations of archaic houses (perhaps destroyed after the Persian siege). In the same area, Ginouvès cleared a wide paved street crossing the town east–west and leading to the stone paved Roman agora, on the southern side of which he excavated an elegant marble Roman nymphaeum built in the second quarter of the third century.

On the top of the hill, Lilly Kahil found the walls of an important building of the fourth century BCE; these walls may belong to the royal palace. Kahil also excavated several tombs in the necropolis behind the hill. Besides gold, bronze, iron, and glass objects, some of these tombs contained ninth-century pottery, already indicating that the city did exist long before Solon's visit to Cyprus.

Not far from the city's eastern gate, Tran Tam Tinh excavated a large Christian basilica, which underwent two main phases. Erected on a Constantinian Plan, the first basilica had one apse and two naves. Its remarkably well-preserved mosaic floor (with figures and inscriptions) was not destroyed when, in the second phase, a new and larger basilica was built over it. Prior to 550 CE, this basilica had three naves separated by two rows of twelve columns. It was 53.76 m (176 ft.) long (excluding the atrium) and 31.40 m (103 ft.) wide. It seems to have been destroyed by fire, perhaps by the arab invaders of 653–654. After these raids, the wretched city could erect only a small and very humble church over the ruins of the basilica.

[*See also the biographies of di Cesnola and Gjerstad.*]

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JEAN DES GAGNIERS

SOUNDINGS. Two basic excavation strategies, vertical and horizontal, are regularly used on archaeological sites. It is usually, not possible to excavate an entire site; even if this were possible it would not be desirable because something

must be left for future excavators with the benefit of even more advanced tools and techniques. The goals of the excavation and the physical configuration of the site determine which strategy will be followed. Traditionally in the Near East, the use of a vertical strategy is referred to as a sounding (Fr., *sondage*). Recently the term *sounding* has become synonymous with test pit, trench, or deep probe.

A sounding is cut into the site from the top and extends vertically through the archaeological strata. Soundings are frequently used across a large site in order to probe different areas or to cut through enough of it to produce a full stratigraphic view.

In the Near East sites with an accumulated depth of deposit are characterized as tells, or mounds. Initially, Near Eastern sites were excavated primarily to understand issues of chronology and relative cultural sequences. The earliest identified tell sites in Mesopotamia, Syria-Palestine, and Anatolia were usually very large. Their size and the tremendous depth of their cultural deposits made excavating even a modest percentage of their area impossible. Soundings were carried out instead, to establish stratigraphy and chronological parameters.

Soundings address a variety of diachronic issues. A sounding can help to establish a site's occupational history, determine broad absolute dates, examine the depth and nature of occupational debris, assess site formation and the degree of preservation, test the potential of future excavation areas, and sample subsurface artifacts and ecofacts. A site's depth and the complexity of its stratigraphy enable a director to plan properly an excavation's pace and scope. If an understanding of particular periods is sought, it is additionally necessary to pinpoint their stratigraphic location. To do this, a sounding offers speed in the search for answers to basic questions. Because it is, however, an exploratory strategy, its limitations must be taken into account.

One of the main drawbacks of a sounding is the limited horizontal scope of the exposure. A sounding provides almost no context for the artifacts uncovered during the excavation and will provide only a partial and potentially misleading picture of the site. In order to complete a sounding, architectural elements may have to be dismantled before they can be fully understood. However, by removing archaeological components in small pieces, the contextual integrity of the deposits can be greatly compromised. A second drawback is the sounding's narrow focus: a sounding may miss entirely important cultural deposits or stratigraphic relationships. Additionally, a sounding will not usually produce an adequately large sample of artifacts for analysis beyond the purpose of chronology.

Much of the information garnered from a sounding is found in the balk or section. The vertical section, which holds the more important stratigraphic information, is unavailable in horizontal excavation strategies. The combination of soundings and a more open, or horizontal, excavation strategy can provide a balanced approach to excavation. A sounding, first used to check stratigraphy and occupational history, can be used to preview different or distant areas of sites to assess which may be the most promising for excavation. Once these types of data are retrieved, horizontal exposure can provide fuller archaeological context and sequence.

[*See also* Balk; Excavation Strategy; Excavation Tools; *and* Tell.]

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J. P. DESSEL

SOUTH ARABIAN. The South Arabian languages and dialects are divided into two groups: Old South Arabian (sometimes termed Epigraphic South Arabian) and Modern South Arabian, widely separated in time and attested in distinct but adjoining geographic areas on the south and southwestern edges of the Arabian Peninsula. These two, together with Ethiopic Semitic, can be viewed as constituting a southern group within the Semitic language family. Northern Arabic, usually referred to simply as Arabic, is a completely distinct linguistic entity. The exact historical relationship between Old South Arabian and Middle South Arabian, and between these two and Ethiopic Semitic, is not entirely clear. In any case, there is at this point no sure indication that any of the attested groups within South Semitic stand in direct linear descent to any of the others.

Old South Arabian is attested from the first half of the first millennium BCE, on thousands of monumental inscriptions, mostly dedicatory; some, however, are annalistic, ritual, or legal in content. The oldest inscriptions come principally from a series of city-states stretching southward, roughly from the modern Saudi-Yemen border, along the region where the eastern side of the Red Sea coastal mountain chain reaches the desert. This route is, presumably, thus, along the southern part of the first-millennium Spice

Route from the Indian Ocean to the northern Red Sea and the Mediterranean. The principal sites along this route, from north to south, are the city-states of *mʿn* (Maʿin), *sb'* (Saba'), *qtbn* (Qataban), and, to the southeast, *ḥḍrmwt* (Ḥadhramaut). From the striking linguistic differences among the texts from each of these centers it is clear that we are dealing with at least four quite distinct dialects, if not languages. Toward the end of the first millennium, the center of political power moves to the Yemeni highland (the predominance of the Ḥimyars), and the Sabaic dialect gradually replaces the others. From the last century BCE onwards, monumental inscriptions, which continue to be written in great number up through the sixth century CE, are only in the Sabaic dialect.

The Middle South Arabian languages are spoken by relatively inaccessible, small population groups (probably of fewer than a total of thirty thousand native speakers for all languages), mainly in western Oman and on the island of Socotra. There are at present three main languages, Mehri (with a dialect, Harsūsi), Jibbāli, and Socotri. These unwritten languages are extremely important for what they can reveal to us about the history and development of South Semitic, they have been studied sporadically since the end of the nineteenth century but have only recently been systematically described.

The Old South Arabian writing system represents a special southern development of the West Semitic alphabet. It has signs for consonants that had disappeared in the Northwest Semitic languages by the time they became involved in the invention or adoption of the alphabet. Particularly noteworthy is the existence of three "s-" signs: s^1 (value /š/, corresponds to the Hebrew letter *shin*); s^2 (value /ṯ/, perhaps a lateralized sibilant, corresponds to the Hebrew letter *sin*); and s^3 (value /s/, corresponds to the Hebrew letter *samech*). South Arabian, Old and Modern, is the only part of Semitic that preserves all three of these consonants, commonly reconstructed for Proto-Semitic.

The study of Old South Arabian grammar suffers from two special handicaps. The first difficulty is that its orthography is the most relentlessly devoid of vowels of the Semitic writing systems. No vocalization system was ever developed for it, and the consonantal writing system gives few or no hints about vocalization (e.g., by the more-or-less systematic use of *w*, *y*, *h*, and *aleph*, as in Hebrew, Aramaic, and Arabic). Consequently, there are many aspects of the phonology, morphology, and lexicon of Old South Arabian—some of them crucial for an exact historical classification—that are completely opaque to us. For example, the third-person singular masculine imperfective, written *yqtl*, could have been pronounced */yaqtulu/* (as in Arabic), or */yaqtul/*, or */yiqattil/* (as in Ethiopic; cf. the Middle South Arabian Socotri *yəkotəb* and also the Akkadian *ipaqqid*), or */yaqattilu/*, or any of a number of other possibilities—each of which would have important implications for the history of South Semitic and the development and differentiation of the Semitic language family generally. The second difficulty arises from a unique stylistic peculiarity of Old South Arabian: although there are many thousands of texts, they are all confined to discourse in the third person, making virtually no use of any first- or second-person forms, pronominal or verbal. Consequently, although we know that the third-person singular forms, masculine and feminine, of the perfective tense are *qtl* and *qtlt* (cf. Arabic and Ethiopic *qatala* and *qatalat*), we do not know whether the first and second person would have been with a *t*, as in Arabic (*qataltu* and *qatalta*; Hebrew and Aramaic are similar), or with a *k*, as in Ethiopic (*qatalku* and *qatalka*; cf. Socotri *kətəbk*, *kətəbk*).

In spite of these uncertainties the independent, and archaic, nature of Old (and Modern) South Arabian is amply indicated in its pronominal system (and in the causative prefix for the verb). Many South Arabian languages use an element *š* (also attested in Akkadian), as opposed to the *h*/' found in Hebrew, Aramaic, and Arabic (also Ethiopic and Sabaic; Ugaritic uses a mixed system). Compare the element *his* in the following centers and languages: Maʿin, Qataban, and Ḥadhramaut s^1 (*ww*); Jibbāli *š*; Socotri *š*/*h*; Mehri *h*; Sabaic *hw*; Ethiopic *hu*; and Akkadian *šu*.

[*See also* Ethiopic; Ḥadhramaut; Semitic Languages.]

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GENE GRAGG

SOUTHEAST DEAD SEA PLAIN. In the Hebrew Scriptures the plain to the southeast of the Dead Sea is often described as devastated and unlivable, the probable location of the destroyed Cities of the Plain (*Gn.* 19:25, 29; *Dt.* 29:22). From Hellenistic times through the medieval Islamic period, the remnant site of Zoar (*Gn.* 19:22; Byzantine Zoara; Lat. Segor; Ar., Zughar) was located there. Recent archaeological surveys and excavations have traced a long occupational history for the region, beginning with the Paleolithic and Neolithic periods, with extensive and flourishing cultures during the Early Bronze, Nabatean-Roman, Byzantine, and Mamluk periods.

The northern limit of the habitable region is opposite the tip of the Lisan peninsula, slightly to the north of Wadi Jarra, where a steep ridge of hills descends only 250 m from the shoreline. A semicircle of high limestone cliffs 50 km (31 mi.) to the south, at the entrance to the ʿArabah defines the lower boundary. Between these limits, beginning at about −300 m mean sea level (m.s.l.), a series of *ghors* (valley floors), many with alluvial cones, are fed by perennial streams in wadis descending from the 1,200-meter-high mountains of the Jordanian plateau. Settlement has concentrated on the bordering hills or broad plains in and above the *ghors*. From north to south the major wadis are Ibn-Ḥamid, Kerak (including the Wadi edh-Dhraʿ in its lower reaches), ʿIsal, Numeira, Hasa, Feifa, and Khanazir.

Unusual physical features have contributed to the lore and legend associated with this region. Salt-encrusted mud flats; rock-strewn plains; a desolate peninsula of sterile marl, clay, and thin layers of sulphur; constant mind-dulling, searing heat for most of the year, and an annual rainfall averaging 70 mm have led commentators to describe the region as a veritable hell, condemned by nature, and even by God (cf. the Hebrew prophets). Yet, during the winter months, with moderate temperatures and the wadis fed by the winter rains in the mountains above, it turns into a paradise—certainly a location pleasant enough to have allowed for major cultural occupation over lengthy periods.

Knowledge of the area's occupational history has emerged only gradually. Nineteenth- and early twentieth-century explorers and geographers often described ruins such as Sheikh Issa, Qaṣr at-Tuba, and Tawahin es-Sukkar in the Safi area, but they lacked chronological clues. A 1924 survey by William Foxwell Albright, Alexis Mallon, and M. G. Kyle was the first to date some of the sites, including the major site of Bab edh-Dhraʿ, with reliable ceramic evidence. [*See* Bab edh-Dhraʿ; *and the biographies of Albright and Mallon.*] Subsequent visits to the area by F. M. Abel (1929), F. Frank (1932), and Nelson Glueck (1934) drew attention to additional sites on the Lisan, at Wadi es-Safi, and near Feifa. [*See the biographies of Abel and Glueck.*] Since 1973, more intensive and extensive surveys have built up an impressive list of sites. Walter Rast and R. Thomas Schaub (1973) have highlighted the Early Bronze Age and G. R. D. King (1982) the Byzantine and later periods. Others have focused on subregions, such as David McCreery (1977), Vincent Clark (1977), and Mark McConaughy (1977) on the Sahl edh-Dhraʿ region; Siegfried Mittmann (1979) and Linda Jacobs (1981) on Wadi Isal; Frank Koucky (1983) on the Ghor en-Numeira; Udo Worschech (1983–1986) on the Ard el-Kerak (mostly on the slopes to the east, but sites to the north and east of edh-Dhraʿ in the Ghor were included); and Burton MacDonald (1985–1986) on the Southern Ghors, south of Safi.

Excavated sites include Bab edh-Dhraʿ (Lapp, 1965–1967); Bab edh-Dhraʿ and Numeira (Expedition to the Southeast Dead Sea Plain [EDSP], 1975–1983); Feifa and Khanazir (EDSP, 1989–1990); Waidha, near Dhraʿ (Koerber, 1992); the Chalcolithic cemetery at Bab edh-Dhraʿ (Clark, 1977); Neolithic Dhraʿ (Bennett, 1979) and ʿAin Abata (Politis, 1989–1992). [*See* Dhraʿ.]

Paul W. Lapp's excavations (see above) and those of the EDSP have made the Early Bronze Age the best-known period in the Ghor. Two towns, Bab edh-Dhraʿ and Numeira, were excavated over four seasons. Bab edh-Dhraʿ grew from an open village at the end of the fourth millennium to a 12-acre town with massive fortifications, an impressive sanctuary, and well-defined industrial and domestic areas. After a destruction in EB III it was again settled as a sprawling village in EB IV. The walled town of Numeira, which has many features in common with Bab edh-Dhraʿ, also flourished in EB III. In the large cemetery at Bab edh-Dhraʿ changing burial practices (multichambered shaft tombs, large burial houses, and single stone-lined shaft tombs) correspond to the major phases of the Early Bronze Age. Other cemeteries are at Feifa and Safi, where Late Chalcolithic/EB I cist tombs are the basic type; the Khanazir cemetery has stone-lined EB IV shaft tombs marked on the surface by rectangular structures. [*See* Burial Techniques.]

Other periods explored by soundings and excavations are the Neolithic, Chalcolithic, Iron II, and Byzantine. Dhraʿ is a pit-dwelling and flint factory site in the Sahl edh-Dhraʿ belonging to Pottery Neolithic (PN) A. The EDSP also exposed similar PNA levels during its 1989 excavations in the plateau area east of Tell Feifa. In the Sahl edh-Dhraʿ, seventeen tombs, constructed of concentric stone circles with monolithic stones in the center, were excavated and assigned to the Early Chalcolithic period. Soundings at Feifa by the EDSP in 1989–1990 revealed a walled town built in Iron II over EB I tombs. Five seasons of work at the Byzantine site of Deir ʿAin Abata, north of Safi, revealed an impressive reservoir with a water catchment and distribution system and a three-apse basilica built next to a cave. Three mosaic pavements were uncovered that include Greek inscriptions, one of which mentions Lot (Politis, 1993).

Although surveys have listed more than two hundred sites, the majority of sites are small flint or sherd scatters. If the list is restricted to sites with excavated occupational levels

or visible architectural remains, it is possible to define basic elements in the settlement patterns. Large to medium Mamluk occupational sites are most numerous (ten), followed by Early Bronze (five), Byzantine (five), Chalcolithic (four), Nabatean (four), Roman (two), Iron II (two), and PNA (two). The sites are consistently associated with the major wadis. During the Chalcolithic and Early Bronze Ages, settlement appears to have been confined to the north (Wadis Kerak and Numeira), although there are also large cemeteries in the south at Safi (Wadi el-Hasa), Feifa, and Khanazir. In the Iron Age, settlements are found only in the south (Khanazir, Feifa, and possibly Safi). Nabatean-Roman and Byzantine sites are found associated with the Wadis Kerak, Hasa, Numeira, and Feifa. Mamluk sites are found in all of those wadis, as well as in Wadi Ibn-Ḥamid and ʿIsal in the north.

One of the largest later sites is the Late Roman site of Umm et-Tawabin. It is a walled site (2.5 km [1.5 mi.] in circumference) built on a high ledge on the south bank of Wadi el-Hasa. A large tower at the southeast corner and many structures, large and small, are visible within the enclosure wall. Later periods represented include Byzantine to Mamluk.

The need to locate near perennial streams in order to have access to water for irrigating fields and running mills is obvious. Evidence from EB cultures shows that irrigation was extensively practiced then, as it has been in all of the periods in which the Ghor flourished. Other water-management practices include aqueducts (either Byzantine or Islamic), remnants of which are found in Wadis Khanazir and Kerak, and large reservoirs (Byzantine) in the Safi area and Wadi Isal (Byzantine) and even on the Lisan peninsula (Islamic). [*See* Aqueducts; Reservoirs.]

Another reason for locating towns and villages near wadis was to guard the access routes to the highlands. Ottoman Turkish police posts and modern military emplacements follow the same reasoning. Attempts to record ancient trade routes have been most successful in the north: Linda Jacobs has traced a road down Wadi Isal and across the Lisan whose period of use is either Roman or Byzantine; Mittmann argues that the same track was used in the Iron Age; and Worschech has traced remnants of road systems in Wadi Kerak. The walled ruins of er-Rishi (one is Early Bronze and a second is Nabatean), located where Wadi Kerak enters the Sahl edh-Dhraʿ, suggest the use of this route during those periods.

One striking feature of the settlements, first noted by Albright, is the lack of true tells. EB, Iron II, and Nabatean sites are usually surface ruins with no later occupations. Later settlements appear to have been built on earlier sites only since Byzantine times. Recent geological studies offer one explanation of these changing settlement patterns: analysis of measurements taken over the last 150 years shows a dependence of the Dead Sea levels on rainfall patterns in the mountains to the east and west. Further studies drawing on geological and archaeological evidence, together with ancient literature and maps, provide convincing arguments for major past fluctuations of the Dead Sea. The current low level of −400 m m.s.l., which has produced a dry south basin and a ford across the Lisan from west to east, has occurred many times in the past. There have also been several high points within the last three thousand years, during which the level of the sea rose 25–30 m, with one estimate of a rise of 70 m to a level of −330 m during the first century BCE. The most recent appraisal is for a Dead Sea level of −295 m m.s.l. from the mid-fourth to mid-third millennia. These proposed fluctuating levels of the Dead Sea correlate well with the known elevations of archeological sites during historical times. The primary early sites (Neolithic, Chalcolithic, and Early Bronze) are all above −300 m m.s.l. The latest Mamluk sites range in elevation from −290 to −366 m, with most in the −320 to −360 m range.

Attempts to identify archaeological sites with place names mentioned in literary sources have met with varying degrees of success. The biblical Cities of the Plain (*Gn.* 13:12, 19:29), Sodom, Gomorrah, Admah, Seboiim, and Zoar (*Gn.* 14:2, 8) have been located in the south by most commentators, although some have argued for a location north of the Dead Sea. Others have tried to place the ruins of these cities below the southern basin of the Dead Sea (generally rejected today). Recently, several efforts have linked the cities with the EB ruins at Bab edh-Dhraʿ and Numeira. Others continue to stress the mythical, ahistorical quality of the ancient traditions. In oracles about Moab, Zoar is mentioned in connection with the ascent of Luhith, the road to Horonaim and the waters of Nimrin (*Is.* 15–16; *Jer.* 48). [*See* Moab.] The first two have been placed at the head of Wadi ʿIsal by Mittmann, and Nimrin has been identified by some with Wadi Numeira.

Zoar is the most frequently mentioned site in the literature. Josephus lists it among the cities of Moab (*Antiq.* 13.15.4; 14.1.4) and Ptolemy as a town in Arabia Petrea. Under Diocletian it is part of the southern region (Palaestina Tertia). Zoora is mentioned frequently in the *Onomasticon* of Eusebius and on the Madaba map it is shown as a three-towered fort under the name of Balak (Septuagint) and Zoora. [*See* Madaba.] A Hebrew document from the Cairo geniza mentions Zoar. To the Crusaders the place was known as Segor (Vulgate) and the Place of Palms (Palmaria). During the Middle Ages, Arab geographers describe the prosperity of Sugar or (Zughar). As a major commercial center it exported dates, indigo, sugar, and balm.

Although some have identified the Byzantine Zoara with the mound of Sheikh Issa, recent surveys have interpreted this site as dominantly Mamluk. It seems likely that Zoar was located in different areas of the Safi region throughout its history, with placement probably influenced by the changing shoreline of the Dead Sea and erosional patterns

in Wadi el-Hasa. Umm et-Tawabin is the most likely identification for Zoar of the Nabatean-Roman period, and Qasr et-Tuba may offer a remnant of the Byzantine Zoar. The monastic complex at ʿAin Abata with the Lot inscription may be identified with the building on the Madaba map with the notation "Agios L(ot)." Tawahin es-Sukkar, and perhaps the mound of Sheikh Issa, represents the flourishing Zughar of the Mamluk period. Other sites mentioned in the literature include Naarsafari, a Roman fort, probably Buleida near Wadi Kerak, and Beth Nimrin, a road station, probably the Rujm en-Numeira.

[*See also* Hasa, Wadi el-; Southern Ghors and Northeast ʿArabah.]

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R. THOMAS SCHAUB

SOUTHERN GHORS AND NORTHEAST ʿARABAH. Jordan's southern Ghors and northeast ʿArabah are part of the Great African Rift Valley that extends from Turkey in the north to Mozambique in the south. The southern Ghors includes the area along the east side of the Dead Sea, from Wadi Ibn Ḥammad, at the northern edge of the Lisan Peninsula, to Ghor Khuneizir, where there is a major east–west escarpment. (Ghors refers to the land areas or alluvial fans at the mouths of wadis entering the Rift Valley from the east.) Wadi ʿArabah extends from this point to ʿAqaba on the Red Sea. Elevations in the southern Ghors range from about 390 to about 300 m below sea level in a north–south direction. The escarpment is characterized by a very sharp rise in elevation, from 300 to 200 m below sea level, over a very short distance. The terrain at the southern end of the escarpment is heavily eroded and dissected. In the ʿArabah, elevations rise toward the south to above sea level and then drop down to the Red Sea. The terrain to the east and west of the southern Ghors and northeast ʿArabah rises to more than 1,000 m above sea level.

Burton MacDonald carried out extensive archaeological work, namely, the Southern Ghors and Northeast ʿArabah Archaeological Survey (SGNAS), in a portion of the above-described territory in 1985–1986. He published a final report in 1992 (see below). SGNAS surveyed 240 sites, from just north of es-Ṣafi southward to Wadi Fidan. The distance sur-

veyed from north–south is about 40 km (25 mi.); the width is considerably less because of the international border to the west and an increasingly rugged terrain to the east. The Early Bronze Age sites of Bab edh-Dhra' and Numeira, as well as the Pottery Neolithic–EB site of Dhra' are located in the Southern Ghors. However, they are located to the north of the SGNAS survey territory. [*See* Bab edh-Dhra'; Dhra'.]

The work of SGNAS indicates that the earliest occupational evidence (recovered at only one site) is to be attributed to the Lower/Middle Paleolithic period. Middle Paleolithic sites are also few in number and limited in site. Sites from both periods are restricted to the southern segment of the territory, which is understandable, given the high levels of Lake Lisan during the Paleolithic periods. SGNAS found neither Upper Paleolithic nor Epipaleolithic sites in the survey territory. Both Pre-Pottery and Pottery Neolithic sites are present. The Chalcolithic period is represented by both lithics and ceramics. Occupation appears to intensify during the Chalcolithic/EB period. Not only is there evidence of occupation throughout the territory, but the number of sites increases as well. It is possible that copper mining and smelting began in the area at this time. The Early Bronze is also represented by both lithics and ceramics throughout the area. These artifacts are mostly found in association with human skeletal remains, however. There are EB I cemeteries at both eṣ-Ṣafi and Feifa and EB IV cemeteries in the central segment of the area in particular. SGNAS did not identify either Middle Bronze or Late Bronze occupational evidence. An Iron I presence is associated especially with mining and smelting sites in the southern extremity. The number of sherds and sites indicates increased occupation and activity in the region during Iron II. Natural resources, such as copper-manganese ores, were probably extensively exploited at this time. Although SGNAS found Hellenistic sherds only in the central segment, there are major Late Hellenistic-Early Roman and/or Nabatean sites in the area. There is evidence of copper mining and smelting during the first–fourth centuries CE in the region, immediately south of the survey territory. Byzantine period sites are the most numerous of any period sites. The entire area of the southern Ghors appears to have been fertile for growing and processing sugar cane and indigo during the Early Islamic period. There is ceramic evidence for occupation during the Late Islamic/Ottoman period. Moreover, there are eye-witness accounts of a village in the neighborhood of eṣ-Ṣafi during the nineteenth century.

Prior to the work done by SGNAS, William Foxwell Albright (1924) made soundings at Khirbet Sheikh 'Isa, southwest of modern eṣ-Ṣafi. In addition, Fritz Frank (1934), Nelson Glueck (1934), Walter E. Rast and R. Thomas Schaub (1974), Thomas D. Raikes (1980, 1985), and G. R. D. King (1987, 1989) surveyed parts of the SGNAS territory. Since 1986 archaeologists, primarily under the auspices of the American Schools of Oriental Research and the British Institute at Amman for Archaeology and History, have excavated a number of the SGNAS sites. Their results have tended to support the findings of SGNAS.

Between 1988 and 1992, Konstantinos D. Politis (1989, 1990) excavated Deir 'Ain 'Abata, a Byzantine monastery/church complex located halfway up a high mountain north of the Wadi el-Hasa gorge. [*See* Hasa, Wadi el-.] Excavations uncovered a seven-arched reservoir, a church with mosaics and inscriptions, and an associated cave. The site could be the Sanctuary of St. Lot depicted on the Madaba map (see *Gn.* 19:30). The excavator dates the main occupation of the site from the fourth to the beginning of the seventh century CE.

Rast and Schaub excavated at Feifa and Khirbet Khuneizir in 1989–1990. Excavated materials at Feifa include Pottery Neolithic occupation levels; EB IA (or slightly earlier) and EB IB tombs; and a fortress consisting of a tower surrounded (perhaps a fortress) by a wall dating to the eighth century BCE. The latter structure is built over EB I tombs. The structures excavated at Khirbet Khuneizir are EB IV tombs.

Russell B. Adams (1991) mapped the visible architectural remains and excavated four sites in Wadi Fidan between 1989 and 1992. His work uncovered Pre-pottery Neolithic B, Late Chalcolithic, and EB I remains. The Late Chalcolithic and EB I remains appear to be associated with metallurgy.

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[*See also* Southeast Dead Sea Plain.]

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BURTON MACDONALD

SOUTHERN SAMARIA, SURVEY OF. The area referred to in the Bible as the land of Ephraim is today designated the southern Samarian hills. Situated at the center of the central hill country of western Palestine, between Ramallah in the south and Shechem in the north, and between the outermost permanent settlements of the desert fringe in the east to Israel's pre-1967 border in the west, the region is characterized by a rugged topography and generally harsh settlement conditions.

About 1,050 sq km (651 sq. mi.) of the southern Samarian hills were surveyed between 1980 and 1987 by a team directed by Israel Finkelstein on behalf of the Department of the Land of Israel Studies at Bar-Ilan University, with the assistance of the Archaeological Survey of Israel and the archaeology staff officer for Judea and Samaria. Some sites in the region had already been surveyed as part of the emergency survey conducted in 1967–1968 and by a team from the American Shechem Expedition, but it was not until the 1980–1987 survey that the region's settlement history and the environmental conditions that influenced it were investigated.

About 85 percent of the area under investigation was fully tracked on foot. Up to 98 percent of previously mapped ruins and 92 percent of the 113 Arab villages in the area were surveyed. Some 550 settlements were recorded and examined, about 350 of them for the first time. Only a few sites were larger than 4–5 acres. The region was divided into six topographical units based on the geographic features and economic resources of each.

1. *Eastern desert fringe.* Within the long, narrow strip of desert fringe in the east are tracts of land suitable for grain cultivation as well as pastoralism, especially sheep raising. [*See* Sheep and Goats.]

2. *Northern central range.* Small interior valleys characterize the northern central range, which had the best settlement conditions in the region. Its economy was based on grain cultivation, especially in the valleys, and, in the eastern part, on grazing. [*See* Cereals.]

3. *Southern central range.* The area known as the southern central range consists of the Bethel plateau. Subsistence was based on an equal division between dry farming and horticulture.

4. *Northern slopes.* The northern slopes of the western hill country are characterized by moderate ridges and broad wadis but no permanent water sources. Land use there was balanced between grain cultivation and horticulture.

5. *Southern slopes.* Also part of the western hill country, the southern slopes consist of long spurs and deep wadis. Their harsh topography and rugged lithology are not naturally suited to human habitation, but terracing the land made it suitable for horticulture.

6. *Foothills.* Parts of the foothills are rocky, but the area generally has a relatively moderate terrain. Its economy was based on grain crops and grazing in the rocky areas.

The most distinctive element of the settlement history of southern Samaria is oscillation: periods of prosperity and settlement expansion alternating with intervals of settlement decline. Periods of prosperity were characterized by expansion into the western slopes, intensive production of oil and wine, and the emergence of settlement and political complexity. Periods of decline were characterized by settlement withdrawal to the eastern, more fertile part of the region and a shift, by at least part of the population, to the pastoral side of the sedentary-pastoral continuum. These cylical processes are especially evident in sites dating to the third and second millennia BCE.

Chalcolithic and Bronze Ages. Only a few Chalcolithic sites were found. One of them, the Bidya cave, is located in the northwestern part of the region. The first wave of settlement took place in the Early Bronze Age: forty sites from this period, constituting an estimated 60 acres of development, were examined. Again, these settlements were rather small; only one, Ai, was a large fortified city. [*See* Ai.] The environment greatly influenced the settlement pattern of this period. Because most of the land of Ephraim was covered with forests, settlers were directed away from the interior valleys of the central range and from the western slopes and toward outlying areas of the central range, the desert fringe, and the foothills.

Only six EB IV settlements, covering about 25 built-up acres, were surveyed. The only important finds from this period were cemeteries, most located along the desert fringe and on the central range. The discovery of main burial

grounds around 'Ain es-Samiyeh and the central site of Dhahr Mirzbaneh indicates that much of the population subsisted on a seasonal pastoralism that took them to the eastern desert fringe in winter and the central range in summer. [*See* 'Ain es-Samiyeh; Burial Sites; Pastoral Nomadism.]

The number of settlements decreased substantially in Middle Bronze I, and the inhabitants continued to use the shaft tombs of the previous period. This was followed, however, by an impressive wave of settlement in MB II–III: eighty-six sites were recorded in a built-up area of more than 60 acres. Settlements were concentrated in every area except the southern slopes and the foothills. The concentration of sites on the northern slopes indicates that settlement was not adversely affected by the lack of a permanent water source or the necessity of clearing forests. Small, unfortified sites seem to have been established throughout southern Samaria in MB II; many were subsequently abandoned in MB III, but some—Bethel, Khirbet el-Marjameh, Shiloh, Sheikh Abu Zarad (biblical Tappuah), and Khirbet el-'Urma (biblical 'Arumah)—became large, fortified settlements. EB II–III seasonal sites provide evidence of a continuing pastoral component in the economy. [*See* Shiloh; Bethel.]

The fortified EB III centers constituted virtually the entire settlement pattern in southern Samaria during the Late Bronze Age, when the region experienced a dramatic population decrease. That this was a period of settlement crisis is further demonstrated by the results of excavations at Shiloh, which show that most of the large EB III sites shrank in size during the Late Bronze. The entire area of development in this period was 20 acres, and the population subsisted primarily on pastoralism.

Iron and Persian Periods. In sharp contrast to the Late Bronze Age, southern Samaria experienced a new wave of settlement at the beginning of the Iron Age (c. 1200 BCE). Of the 115 Iron I sites recorded, 26 were classified as large villages (one or more acres), 32 as small villages (slightly less than an acre), and the remaining 57 as isolated structures or seasonal sites. The entire area of development was about 95 acres. At the beginning of Iron I, settlement was concentrated along the desert fringe, around the small valleys of the northern central range, on the Bethel plateau, and in the northern part of the western slopes, an indication that the economy was based on grain cultivation and animal grazing; in the later phase of Iron I, however, settlement moved into the horticultural niches of the western slopes. This westward expansion, coupled with a rise in horticultural specialization, is believed to have contributed to the development of a more complex society in Iron II.

The region's greatest increase in settlement to that time took place during Iron II: 190 sites—most of them occupied in the eighth century BCE—were recorded. Fifteen were medium-sized (2.5 or more acres), and the rest were small villages. More than 300 acres were built up, and the entire region was reclaimed for cultivation. For the first time in the region's history, settlement tilted toward its western part. Several sites with large concentrations of Iron II olive presses were discovered on the western slopes and in the foothills, evidence perhaps that the Israelite government sponsored an oil and wine industry from produce grown in the region's orchards. [*See* Olives.] Only on the Bethel plateau did settlement decrease, primarily because of political upheavals that took place near there, on the border separating the kingdoms of Judah and Israel.

A sharp decrease in the number of settlements was evident in the Persian period, when occupants of the region were dispersed as a result of both the destruction of the kingdom of Israel in 722 BCE and the conquest of Judah in 586 BCE. Ninety settlements from this period were recorded in a built-up area of about 65 acres. The bulk of settlement activity shifted west, probably as a result of the development on the coastal plain.

Hellenistic through Ottoman Periods. Settlement in the Hellenistic period was characterized by renewed prosperity, a trend that would continue for several centuries. More than two hundred Hellenistic and Roman sites were recorded within an area of about 260 acres. Of the Roman sites, which were scattered across the entire region, forty-five were classified as large (2.5 acres or more). Settlement activity in the southern parts of the region increased dramatically in the Hellenistic-Roman periods, probably because of their proximity to Jerusalem.

As in northern Samaria, settlement in the land of Ephraim peaked during the Byzantine period, when more than 65 percent of the population lived in its western area. About 260 sites were recorded within a built-up area of more than 300 ha (750 acres). Settlement around Shechem declined, however, probably as a result of the political suppression of the Samaritans. A prominent settlement feature in the southwestern part of the region was a concentration of monasteries, where oil and wine probably were produced. [*See* Monasteries.]

Settlement oscillations continued in the Islamic periods: 174 sites were occupied in the Byzantine/Early Umayyad period, whereas only fifty-five were inhabited in the Umayyad/'Abbasid period. Prosperity was renewed in the Crusader/Ayyubid and in the Mamluk periods (163 and 174 sites, respectively). Survey findings indicate that more sites were occupied in the Early Ottoman period than in recent generations.

[*See also* Northern Samaria, Survey of; Samaria; *and* Samaritans.]

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LESLIE WATKINS

Based on material submitted by Israel Finkelstein

SPECTROSCOPY. Light quanta produced by the excitation of ions and atoms can be measured by chemical (elemental) analysis, or spectroscopy. This polychromatic radiation consists of wavelengths specific to the emitting element. The emitted light is dispersed and the intensities of emission at the relevant wavelengths are measured. The intensity of emission is directly proportional to the concentration of the element concerned. The measurements are presented as a printout of elemental abundances in the sample. The goal of the analysis is to ascertain the elemental composition of the sample, which, depending on the technique employed and the material sampled, may establish its provenance.

The most common technique employed in the 1960s and 1970s for analyzing archaeological materials was optical emission spectroscopy (OES). In OES, the atoms are excited by means of an electric discharge between two carbon electrodes. The success of the analysis depended on the type of material sampled. An analysis of Near Eastern obsidian tools, for example, clearly distinguished sources within the central and eastern Mediterranean basin (from Sardinia to Lake Van). OES successfully analyzed metal artifacts to determine alloying techniques (e.g., arsenical copper vs. tin copper vs. pure copper). Ceramic provenance studies employing OES produced more positive, but less successful, results than those using the techniques described below.

In the early 1980s, most laboratories replaced OES as an analytical tool with atomic absorption spectrometry (AAS), X-ray fluorescence (XRF), and neutron activation analysis (NAA), all of which deliver a higher level of accuracy and precision than OES. In the late 1980s, inductively coupled plasma optical emission spectrometry (abbreviated variously as ICPOES, ICPAES, ICPES, and ICPS) was introduced for elemental analysis of archaeological materials, including pottery, metals, and glass. In ICPOES, the atoms in the sample are excited in a plasma at a temperature of 6000–9000 degrees K. The multielement capability, absence of matrix effects, enhanced limits of detections and precision, ease of operation, and large sample throughput make it an attractive alternative to NAA. Results can be enhanced by directing the ions formed in the plasma into a quadrupole mass spectrometer (inductively-coupled plasma mass spectrometry, abbreviated ICP–MS). Samples need to be introduced in solution form, which may be tedious and costly in comparison to NAA. This problem can be alleviated by using a Nd–YAG laser coupled to the ICP–MS, whereby direct solids analysis can be performed on discrete parts of the sample (less than 20 μm). A problem that remains to be addressed is the compatibility of results derived by ICPOES and ICP–MS with the huge NAA databank that already exists. Initial analyses suggest that the results obtained by ICPOES are compatible with those by NAA, but only a relatively small number of elements can be accurately determined by each method.

[*See also* Analytical Techniques; Neutron Activation Analysis; *and* X-Ray Diffraction Analysis.]

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SAMUEL R. WOLFF

SPEISER, EPHRAIM AVIGDOR (1902–1965), archaeologist, Assyriologist, and biblical scholar. Speiser was born in Skalat, Poland (now the Ukraine), and was a graduate of the College of Lemberg (now Lvov). He emigrated to the United States in 1920 and received his M.A.

degree from the University of Pennsylvania in 1923 and his Ph.D. from Dropsie College of Hebrew and Cognate Learning in 1924. In 1926 he was awarded a Guggenheim fellowship, which enabled him to spend two years in the Near East. The following year, he was appointed Annual Professor at the American School of Oriental Research in Baghdad. Upon his return to the United States, Speiser taught at the University of Pennsylvania, where he became a full professor in 1931, and University Professor in 1963. From 1947 until his death, he chaired Penn's Department of Oriental Studies. He also served as the editor of the *Journal of the American Oriental Society* and of the *Annual of the American Schools of Oriental Research.*

Speiser's early research was in the field of Semitic philology and biblical text criticism. His prolific scholarly output, however, which includes seven books and more than 150 articles, attests to his broad interest in all aspects of the ancient civilizations of Western Asia: language, literature, history, religion, law, and archaeology. The leitmotif running through his work is the quest to recover Hurrian civilization. In collaboration with Edward Chiera, Speiser studied the Nuzi tablets and discovered the Hurrians as an ethnic factor in the history of the ancient Near East. His efforts to understand Hurrian texts culminated in his pioneering work, *Introduction to Hurrian* (1941).

Speiser's early archaeological activities focused on sites he hoped would reveal the ethnic composition and cultural development of prehistoric northern Mesopotamia and in that way provide information about the Hurrians. During two years of survey work in the Kurdish and Turkoman areas of modern Iraq, Speiser conducted preliminary excavations at Tepe Gawra (1927); in 1930 he began excavating Tell Billah, a few miles east of it. In 1931 he continued excavations at Tepe Gawra, under the joint auspices of the University of Pennsylvania, the American Schools of Oriental Research, and Dropsie College. The work continued for five seasons, through 1938. Speiser also participated in the excavations at Khafajeh, in central Iraq, from 1936 to 1938. [*See* Khafajeh.]

During World War II, as a member of the Office of Strategic Services, Speiser utilized his intimate knowledge of Iraq to produce numerous reports for the government pertaining to the modern Near East. After the war, he published *The United States and the Near East,* which describes the region's historical background and illuminates the major ethnic and cultural factors impacting on the area.

In the last decades of his life, Speiser again turned to biblical scholarship. He served on the committee preparing a new Torah translation for the Jewish Publication Society. He also wrote the *Genesis* volume (1964) for the Anchor Bible Series, in which he attempted to demonstrate a Hurrian impact on the sociolegal customs of the biblical patriarchs. He also served as editor of the first volume of the prestigious series *World History of the Jewish People,* entitled *At the Dawn of Civilization.*

[*See also* American School of Oriental Research in Baghdad; Hurrians; *and* Nuzi.]

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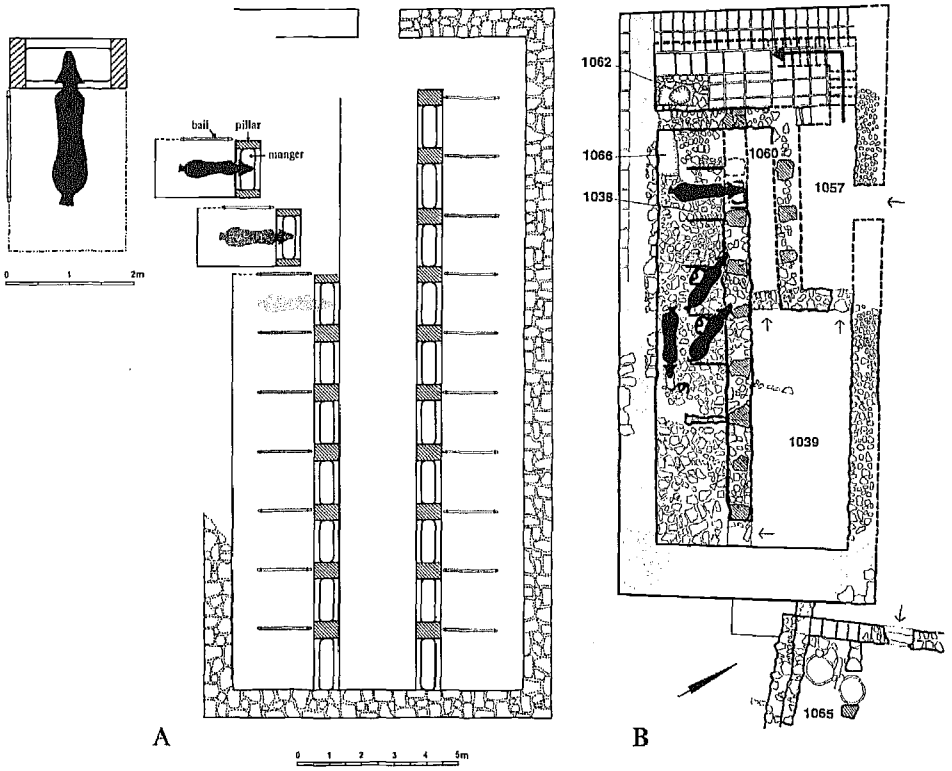
BARRY L. EICHLER

STABLES. A building or building unit in which animals, especially horses, are housed and fed, a stable should, archaeologically, be characterized by the presence of elevated mangers, suitable floor surfaces, appropriate proportions (especially stall depths and widths, entrance widths and heights), strength of construction, and an open design facilitating cleaning and maximizing ventilation while avoiding drafts and direct sun. Appropriate storage space for barley, fodder, and bedding straw, together with facilities for cooking gruel and mash, should be nearby.

Essentials of Design. The constant and distinctive features of stables grow out of requirements for housing and maintaining large animals—in particular, bringing expensive and highly strung stallions into the highest possible levels of training and conditioning (Wilson, 1969, p. 244; Kammenhuber, 1961). Such horses could no more be maintained in corrals (*contra* Pritchard, 1970, p. 274) than could the modern highly conditioned thoroughbred racer or Standardbred trotter (Wrensch, 1948, pp. 58–77), the nearest modern equivalent to the ancient chariot horse. [*See* Chariots.]

From an architect's perspective, horses are "square pegs," with the design of any stable being dictated by horses' sizes and needs. Thus, the plan of a twenty-horse stable is little more than ten horse-sized modules (stalls) arranged along each side of a service corridor. The skeleton of such a plan, with stalls 1.81 × 3.27 m in size arrayed along a corridor 2.36 m wide, is given in figure 1a, in which the dimensions are averaged from eight modern authorities from about 1850 to 1973 CE (Holladay, 1986, fig. 2). A comparison of this mandatory stall plan with the plans of a representative modern stable and with ancient Israelite, Judean, Syrian, and Urartian tripartite pillared buildings (cf. figure 1a with fig-

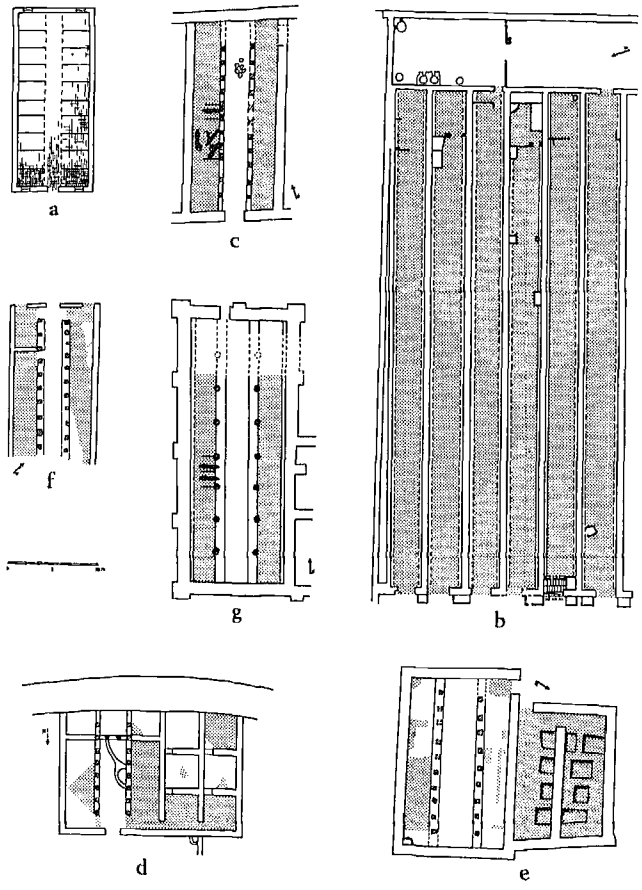


STABLES. Figure 1. *Ground plan and function.* (a) Skeletal plan of a stable conforming to modern dimensional specifications (Holladay, 1986, figs. 2, 5); (b) towered stable 1039 from stratum II at Tel Masos. Standings are reconstructed with bails. One method for removing an inner horse is illustrated. The standings nearest the doorway are too small for horses and must have served for donkeys (after Fritz and Kempinski, 1983). (Courtesy J. S. Holladay)

ures 2a, c–g) leaves little room for debating the function of these ancient buildings (see also table 1).

Other than properly organized space (see table 1), elements of good stable design (Holladay, 1986; 1992b) include a preference for "head-in" arrangements, with horses facing their handlers; some rear walkway space; proper mangers; wide and high doorways and high ceilings; some means of keeping horses on their ground; hardened standings (see below) with proper drainage; strong construction; nearby storage space; and cooking facilities (see above). Within the limitations of archaeological recovery and the extent of excavation, most of the preceding can be demonstrated for most of the stables listed below. In military stables, bails, suspended poles, or boards (see figures 3; 1a–b), were the standard method of keeping horses on their ground, saving space, and affording easier cleaning—and inspection—than permanent stall dividers, which "exist as a rule only where stalls and loose boxes join" (War Office, 1908, p. 55). Only a few instances of permanent stall dividers are known to date—for example, at Beersheba stable 270 (see figure 2f) and at Tel Masos stable 1039 (see figure 1b). [*See* Beersheba; Masos, Tel.]

Standings were surfaced with hard, durable materials. In the ancient world, cobbles were preferred (Xenophon, *On Equitation,* vv. 3–5), and such surfaces are characteristic of Syro-Palestinian stables throughout history, including most domestic (donkey and cow) stables. Drainage of liquid waste (urine) was achieved by bedding the cobbles in an easily renewed substrate of ashy soil (Holladay, 1986, pp. 135–140; Aharoni, 1973, p. 14; Itzhaki and Shinar, 1973, pp. 19–22; cf. Taylor, 1973, pp. 461–466) or sandy soil. Over the years this drainage should have produced elevated phosphorus (and potassium) levels directly under the standings, but not under the center aisle (Holladay, 1986, pp. 154–155). Precisely such a pattern was observed at Bastam (see below), with phosphorus and potassium levels five to six times that of unaltered local soils found beneath the side aisles, together with insignificant elevations beneath the central aisle (Kroll 1988, pp. 82–83; cf. Kroll, 1979, p. 111). Strongly pillared construction provided secure means of tethering and allowed for a clerestory design to provide abundant indirect lighting and ventilation. Typically, the straw bedding would have been recycled, with the day-to-day replenishment only of soiled material. A low allowance for troop stables is eight pounds of new straw per horse per day (Fitzwygram, 1901, p. 94)—29.2 tons per year for a



STABLES. Figure 2. *Plans.* (a) Fitzwygram's "Plan E . . . until recent years the ordinary barrack construction," extended to a twenty-stall size (1901); (b) military and police stable unit at Tell el-Amarna (Pendlebury, 1951); (c) Megiddo northern stable 351 (Lamon and Shipton, 1939); (d) Tel Hadar stable with attached granary (Kochavi et al., 1992); (e) Hazor stable 71a, with attached granary 129b (Yadin, 1960); (f) Beersheba stable 270 (Aharoni, 1973); (g) Bastam *Hallenbau*, with doubled stalls (Kleiss, 1979, 1988). (Courtesy J. S. Holladay)

twenty-horse stable. Covered facilities would have been needed for drying bedding in rainy weather (one function for the central aisle).

Government Stables and Private House Plans. Alone among ancient Near Eastern house structures witnessed to date, including Middle Bronze and Late Bronze Palestinian houses (Daviau, 1993), the four-and three-roomed houses and their Syrian prototypes featured stables as a constant, essential, and integral part of the core plan (Holladay, 1992a; 1995). [*See* Four-room House; House, *article on* Syro-Palestinian Houses.] Except for smaller stall depths and widths, the homologies between military stables and the domestic stables of typical Israelite Iron Age four- and three-room houses are virtually complete. As with its military stables (see below), Israel's characteristic house form most probably originated in an area where chariotry was more common than in the highlands of Canaan.

Formal Stables. The horse first appears in the archaeological record of the ancient Levant in about 1675–1660 BCE (Bietak, 1991, p. 41; Weinstein, 1995), but the first identifiable stables seem to be from Tell el-Amarna (see below). [*See* Amarna, Tell el-.] Many more large-scale stables are known for Iron Age Palestine than for any other region or time period in the ancient near East. This does not indicate a specialized type of "Israelite" public building (cf. Herzog, 1973, p. 30, and 1992, pp. 223–228 for them as uniquely Israelite "storehouses") but follows from the fact that extensive excavations have been carried out in Iron Age Palestine, while the archaeology of LB Egypt, Palestine, and Syria, together with Iron Age Egypt and Syria, is barely known. Recent excavations in what was southern Syria have, however, already recovered four stables: two at Tel Hadar (Kochavi et al., 1992; Kochavi, 1993a) and a double unit at 'Ein-Gev (Kochavi, 1993b, fig. 3). [*See* Hadar, Tel; 'Ein-Gev.] The published Tel Hadar exemplar (see figure 2d) is said to be Late Iron I, earlier than any presently known from Palestine, although its conjoined granary-plus-stable plan suggests closer contemporaneity with the similarly conjoined stable from Hazor stratum VIII, (see figure 2e), dated to the second quarter of the ninth century BCE. [*See* Granaries and Silos; Hazor.] The terminal date of the 'Ein-Gev double building is given by its excavator as "probably 733/32" BCE (Kochavi, 1993b). The three published Syrian examples have significantly lower intercolumnar spacings (stall widths) than any of the other examples shown in table 1.

Ancient Near Eastern buildings meeting the specifications listed above include, for the Late Bronze Age, the military and police stables at Tell el-Amarna (see figure 2b, mid-fourteenth century BCE), and possibly the small stable(?) at Qantir (Pusch, 1993, pp. 123–129, 131). Claude Schaeffer's "royal stables" at Ugarit (1962, pp. 3–20) seem to be a mistaken interpretation (Yon, 1992, p. 702). [*See* Ugarit.] For the Late Iron I and Iron II periods in Israel and southern Syria there are single units at Tell Qasile (Mazar, 1967) and Tell Abu Hawam (Hamilton, 1935), both from the third quarter of the tenth century BCE—the former possibly being Israelite (Holladay, 1995, p. 397, n. 48); the Megiddo stratum IVA stables dating to the reigns of Omri and Ahab, (see figure 2c), preceded by at least one unit exhibiting a closely similar structure that is presumably Solomonic (Davies, 1988); and a single unit at Tel Kinneret (Fritz, 1990). [*See* Qasile, Tell; Abu Hawam, Tell; Megiddo.] The four Syrian stables are discussed above. In Judah there is a small towered stable from the Solomonic period at Tel Masos (Fritz and Kempinski, 1983: building 1039, stratum II; see figure 1b); at least four, and maybe six, stable units associated with phase A (late tenth–early ninth centuries BCE) of the palace-fort at Lachish (Ussishkin, 1983, p. 152); a single unit, pos-

TABLE 1. *Key Dimensions of Stable Design (modified after Holladay, 1986, p. 148).* The wide southern entrance at Tell el-Amarna appears to be an outlier, or from a completely different tradition, and was not included in the door-width statistics.

SOURCE	STALLS WIDTH (meters)	STALLS DEPTH (meters)	DOORWAY WIDTH (meters)	MANGER HEIGHT (meters)
Fitzwygram, 1901	1.68	3.35	1.37	0.60
Fitzwygram, 1901: Plan E	1.83	2.90	1.07	—
Great Britain, War Office, 1908	1.68	3.35	1.22	1.07
Gunn, 1935	1.83	2.74	1.22	1.07
National Research Council, 1970	1.53	3.05	—	—
Tell el-Amarna (Pendlebury, 1951)	1.5	N = 3.3 S = 3.6	N = 1.9 S = 3.6	?
Megiddo S., 1621 (Lamon and Shipton, 1939)	1.52	3.45	1.82?	0.98 (median)
Megiddo S., 351 (Lamon and Shipton, 1939)	1.65 1.54	3.22	1.9	0.85 (median)
Hazor (Yadin et al., 1960)	1.75	3.50 3.10	1.45	>0.38
Beersheba 270 (Herzog, 1973)	1.55	3.05	1.45	0.70?
Bastam *Hallenbau* (double stalls) (Kleiss, 1979, 1988)	3.58 (2 * 1.79)	3.22	1.04	>0.80? (1988, Abb. 9)
Bastam *Ostbau* (Kleiss, 1988)	—	2.92	—	—
Bastam *Südtor* (*ibid.*)	—	2.75	0.99	—
Bastam Bldg. NNE of *Südtor* (*ibid.*)	2 * 1.48	3.05	1.12	—
Syrian Tel Hadar (Kochavi et al., 1992)	1.37 (est.)	3.6 (est.)	—	—
Syrian 'Ein-Gev (Kochavi, 1993b)	±1.34	±2.60	—	—
Mean of modern authors above:	1.75 n = 5	3.08 n = 5	1.22 n = 3	0.91 n = 3
Standard Deviation mod. auth.:	±0.13	±0.27	±0.12	±0.27
Mean of Holladay, 1986, fig. 2:	1.81 n = 10	3.27 n = 9	1.20 n = 6	—
Std. Dev. Holladay, 1986, fig. 2:	±0.26	±0.35	±0.12	—
Mean of ancient means/medians above	1.55 n = 10	3.18 n = 13	1.46 n = 8	0.84 n = 3
Std. Dev. of anc. means/medians	±0.15	±0.31	±0.38	±0.14

STABLES. Figure 3. *Keeping horses on their ground using bails, the accepted norm for military stables.* (Holladay, 1986, fig. 3)

sibly early ninth century BCE at Beth-Shemesh (Grant and Wright, 1939); three units of indeterminate date in Tell el-Ḥesi city V (Bliss, 1894, p. 91)—which must, however, be dated to the Iron II period and not to the LB II or Iron I date assigned Bliss's city V (Fargo, 1992, p. 186). [*See* Judah; Lachish; Beth-Shemesh.] From the late eighth century BCE—assuming a date of 701 BCE for the Lachish stratum III destruction—there is a triple unit at Beersheba (Aharoni, 1973; see figure 2f) and two successive structures at Tel Malḥata (Kochavi, 1977). A closely similar form, with, however, double-width stalls, also appears in four buildings at Bastam in eighth–seventh century BCE Urartu (Kleis, 1979; 1988; see figure 2g). [*See* Urartu.] A second-century BCE cave stable with about one hundred hewn rock mangers appears at 'Iraq el-Amir in Transjordan (Conder, 1889, pp.

65–87); and there are two Late Nabatean stables at Kurnub (Negev, 1977). [*See* 'Iraq el-Amir; Nabateans; Kurnub.] Roman-period stables existed as well in the Hauran and Syria (Negev, 1988, pp. 104–107). The Hellenistic and Roman exemplars probably housed riding horses, while all the earlier units probably were for chariotry (contra Ussishkin, 1992, with respect to Megiddo's northern stable complex).

Location, Numbers, and Functionality. It is significant that all the LB and Iron Age stables cited above are located in regions suitable for chariot maneuvers. It seems equally clear that those in Syria-Palestine are located advantageously with respect to major trade/caravan routes and/or militarily important highways. To date, unlike at Tel Hadar and 'Ein-Gev, no Israelite and Judean stables are yet demonstrated in border settings, unless the Negev is taken as such. [*See* Negev.] It may be inferred that those presently known served both the annual requirements of government for policing the trade corridors and the periodic requirements of military action. It can hardly be accidental that their greatest known concentration, about 450 stalls, is at Megiddo: precisely where the Asiatic princes gathered to resist Thutmosis III (Wilson, 1969, p. 244), and where the east–west trade corridors linking Tyre to the Jordan Valley, Transjordan, and South Arabia cross the north–south coastal route. [*See* Tyre; Jordan Valley.] Given the relatively limited excavation of potential locations, it is clear that many more stables remain to be found. If the "chariot cities" (*'ārê hārekeb: 1 Kgs.* 9:19, 10:26 = *2 Chr.* 1:14, 8:6, 9:25; *'ārê hāpārāšîm, 1 Kgs.* 9:19 = *2 Chr.* 8:6) more closely resembled the small, specialized site of Tel Hadar than either Hazor or Megiddo, it seems reasonable that Israel and Judah together—possibly with the assistance of clients—could have mustered the four thousand to six thousand stalls required to field two thousand chariots at the battle of Qarqar in 853 BCE, and that Israelite and Judean chariot sites may yet be found in border regions. All told, some 780 stalls are already counted—not including successive buildings at sites like Megiddo and Tel Malḥata—adding up to 19.5 percent of four thousand horses (at two horses per team), or 13 percent of six thousand horses (at three horses per team). These statistics are available before anything like 10 percent of the nucleated Iron II occupation of Israel and Judah has even been excavated (cf. Lapp, 1963).

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STADIUMS. The stadium (Gk., stadion), a thoroughly Greek institution, was a unit of measure, 600 ancient feet in length (between 177 and 192 meters depending on the length of the local foot at each site), that gave its name to a footrace of that length. According to ancient tradition, the first footrace was held at Olympia, where the winner of the *stadion* race gave his name to the full four years, or Olympiad, of his victory. The track itself, originally called the *dromos*, gradually acquired seats for spectators, forming what was originally called the *theatron*, and the name *stadion* (Roman *stadium*) then came to be applied to the whole complex.

Although the Olympic games began in 776 BCE, and the Panhellenic cycle of games (see below) was established by 573 BCE, the earliest extant stadium dates from the middle of the fifth century BCE. Located at Isthmia, it featured an intricate starting mechanism with gates at each lane and no permanent seats. This starting mechanism was short-lived and appears not to have been successful. By about 300 BCE the standard form of the stadium had evolved. It had stone starting lines (Gk., *balbis;* pl., *balbides*) across both ends of the tracks (all races ended at the same line in a stadium, but some began at the end line and returned there, whereas others began at the opposite line). These stone lines were embedded in the earthern track. Their upper surfaces contained double grooves for the runners' feet and posts that marked individual lanes. The hysplex, the mechanism that started the race, has been understood recently as a development from the technology of the ancient catapult; a vertical post like the arm of the catapult that carried with it the barriers that held the runners back and then, by its fall, released them, was hurled to the ground by a torsion spring. The long sides of the track were delineated by stone channels that brought fresh water into the stadium. By this time, stadiums were typically equipped with vaulted entrances for use by the judges and athletes; the far end of such tunnels connected with a dressing room for the athletes. The *theatron* evolved from simple grassy slopes (c. 350 BCE) to a combination of such slopes with some stone seats (c. 300 BCE) to a track completely surrounded by stone seats for spectators (in the Roman period).

The stadium was used for athletic competition, the *gymnikos agon*, that included footraces of various lengths, boxing, wrestling, the pankration, and the pentathlon. It is to be distinguished from other facilities that hosted their own competitions: the theater for the *mousikos agon* and the hippodrome (Roman circus) for the *hippikos agon*. The former's semicircular shape and the latter's much greater size and the central barrier in the track are the simplest means of differentiating them from the stadium.

The stadium came to the Near East with Alexander the Great, whose generals carried athletic gear with them wherever they went. Indeed, it was Alexander's custom to stage athletic competitions at resting points on his march. We are told specifically by Arrian *(Anabasis)* of games at, for example, Soli (2.5.8), Tyre (2.24.6 and 3.6.1), Memphis (3.1.4 and 3.5.2), Susa (3.16.9 and, apparently, 8.42.6–8), Zadracarta (3.24.1), Alexandria Ultima (4.4.1), Taxila (5.3.6 and 5.8.3), and on the banks of both the Hydaspes (5.20.1) and the Hyphasis Rivers (5.29.2). In every competition mentioned by Arrian, Alexander staged a *gymnikos agon*, sometimes accompanied by a *mousikos agon*, and sometimes by a

hippikos agon, but never by both. Although each competition implies the existence of a stadium—however temporary—it is only at Ecbatana that one is expressly mentioned (7.14.1). These competitions also imply the presence in Alexander's train of professional athletes, musicians, and charioteers; the funeral games for Hephaistion included three thousand such competitors.

The spread of Hellenism and of Greek athletics in the Near East continued after Alexander, and many new competitions were established in the Hellenistic and Roman periods, some modeled expressly on the old Panhellenic festivals at Olympia, Delphi, Nemea, and Isthmia. The terms *isolympic, isopythian,* and *isonemean* are frequently used to describe the age categories and victory prizes for these new games. It is then natural to find that stadiums are extant throughout the Near East, at sites like Adana, Cibyra, and Marathos, and at Salamis on Cyprus. It is also natural that these stadiums are concentrated in areas where there was a relatively strong Hellenic influence. For some sites, such as Alexandria in Egypt and Tiberias in ancient Palestine, although the existence of a stadium is stated in the literary sources, one has not been identified on the ground.

Archaeological investigation has been sufficient at some sites to suggest that no stadium ever existed. Thus, for example, the Sebasteia games established by King Herod at Caesarea in 10/9 BCE demand the existence of a stadium, but no traces of it have ever been identified. This and similar examples have led to the assumption that at such sites the hippodrome, or circus, might have hosted both the *hippikos* and the *gymnikos agon.* This theory has led to confusion: today the word *stadium* is sometimes casually applied to hippodromes, as if the two words were interchangeable, as at Gerasa and Samaria. The confusion is not ancient.

Alternatively it has been suggested that the *gymnikos agon* of the Augustan/Claudian Olympic games at Antioch on the Orontes might actually have been hosted in a stadium at nearby Daphne because no trace of a stadium has been discovered at Antioch itself. This may also have been the case elsewhere: Josephus consistently and uniquely refers to a stadium at Tiberias (*War* 2.618; *Life* 92.2 and 331.2), but equally consistently to a hippodrome at Tarichaeae (*War* 2.599; *Life* 132 and 138) some 5 km (3 mi.) to the north. These two structures could easily have served as parts of a single competition complex.

Once established, a stadium might be used for popular assemblies, frequently of a disruptive type. For example, Josephus was attacked by the crowd in the stadium at Tiberias (loc. cit.), and the stadium at Alexandria was the site of violent anti-Agathoclean demonstrations (Polybius 15.30–33). Such use of the stadium apparently was unusual, however.

According to ancient sources, the stadium was never used for physical exercise. Such a function belonged in the palaestra-gymnasium, where education in general—physical and intellectual—and the ephebic training that led to citizenship in the Greek polis took place. It is that training for Greek citizenship to which Maccabees (1.1.14; 2.4.9–14) refers, and not to any connection with the stadium. Maccabees is clear on this point (as is Josephus, *Antiq.* 12.241), even though modern translations have sometimes confused the gymnasium with the stadium.

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STANHOPE, HESTER LUCY (1776–1839), English adventurer and antiquarian. Though often maligned as an eccentric, Lady Hester Stanhope was, arguably, the first modern archaeological excavator in Palestine. Her brief sounding at Ashkelon in 1815 may have revealed only one significant structure, but her implicit understanding of architectural stratigraphy represented a significant advance over the previous attempts of European travelers and pilgrims to uncover isolated artifacts and monuments.

Born in Chevening, Kent, the granddaughter of the Earl of Chatham, William Pitt the Elder, Stanhope was educated at home and spent three years (1803–1806) as the official hostess and confidante of her uncle, Prime Minister William Pitt the Younger. With Pitt's death, she set off for a life of travel and adventure in the Mediterranean region. In the era of the Grand Tour, Lady Hester's entourage was among the grandest. Accompanied by her personal physician Charles Meryon and a coterie of friends and protégés, she and her companions survived a shipwreck off the island of Rhodes to reach Jerusalem and eventually travel to the isolated ruins of Palmyra, where she was received with great ceremony by the sheikhs of the local bedouin tribes. In 1814, she established residence in the Lebanese village of Junieh, where she lived for the rest of her life.

Stanhope's archaeological career began mysteriously with her acquisition of a medieval document that reportedly described the location of a great treasure in the ruins of an

ancient mosque at Ashkelon. Believing the document's description to be authentic, Stanhope contacted the Ottoman authorities and, together with Meryon and an Ottoman official dispatched from Istanbul, proceeded southward at the head of an expedition to retrieve the treasure. The site of ancient Ashkelon, Tell el-Khadra, had been severely disturbed since medieval times by stone robbing, yet Stanhope and Meryon identified a ruined building on the summit as a mosque—basing their identification on the apsidal *miḥrab,* or prayer niche, on its southern end.

In their subsequent excavations of this structure, Stanhope and Meryon distinguished several stratigraphic levels. While European excavators in other parts of the Mediterranean were, in this period, principally concerned with the quantity and artistic quality of the statuary and architectural elements they uncovered, Stanhope and Meryon noted the apparent transformation of the structure from pagan, to Christian, to Muslim use.

In the course of her excavations, Stanhope's workers uncovered a larger-than-life-sized Roman imperial statue. Yet, she insisted that they destroy it, lest they be accused by the accompanying Ottoman official of merely seeking the treasure or works of art for themselves. It was this apparent act of archaeological destruction that has traditionally (and negatively) colored the scholarly estimation of Stanhope's activities at Ashkelon.

With no sign of the reported treasure, Stanhope returned with her expedition northward along the Mediterranean coast. Stopping briefly at the Yarkon River (where Meryon noted the antiquarian importance of the site of Tell Qasile), Stanhope returned to Junieh. In later years, she was frequently visited by European explorers, but it would be decades before the precocious stratigraphic insights of the 1815 expedition to Ashkelon would be applied at other sites.

[*See also* Ashkelon.]

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NEIL ASHER SILBERMAN

STARCKY, JEAN (1909–1988), French priest and epigrapher. Following his studies at the École Pratique des Hautes Études in Paris, the Institut Catholique de Paris, the Pontificium Institutum Biblicum in Rome, and the École Biblique et Archéologique Française in Jerusalem, Starcky taught at the Université Saint Joseph in Beirut. From 1941 to 1945, he served as chaplain in the Free French Forces under Charles de Gaulle. After the war he took up residence as fellow at the Institut Français d'Archéologie de Beyrouth (1946–1949). In 1949 he became associated with the Centre National de la Recherche Scientifique; he ended his career there as director of research in 1978. Urged by Henri Seyrig, then director of the institute, to study Palmyrene epigraphy, Starcky contributed the article "Palmyre" to the *Supplément du Dictionnaire de la Bible* (Paris, 1964, cols. 1066–1103). In addition to his work in archaeology, he maintained an interest in biblical studies: he participated in the translation and commentary of *1* and *2 Maccabees* (Paris, 1948) and on a more extensive separate publication with Félix-Marie Abel (Paris, 1961), and was a member of the publication team for the Dead Sea Scrolls. Much of his time in Jerusalem was devoted to studying Nabatean epigraphy. He became the leading specialist in this field, and the publication of "Petra et la Nabatène" (Paris, 1964, cols. 886–1017) contributed to his authority in the field. He collaborated with André Dupont-Sommer in studying Aramaic inscriptions (Paris, 1958). His participation in the establishment of the Musée Biblique de l'Institut Catholique, of *Bible et Terre Sainte* (later *Le Monde de la Bible*), and of numerous public conferences allowed him to reconcile his scholarly pursuits with his desire for conversation with the wider world. He viewed the latter as an essential facet of his pastoral vocation.

[*See also* École Biblique et Archéologique Française; Nabatean Inscriptions; Palmyrene Inscriptions; *and the biographies of Abel and Seyrig.*]

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PIERRE BORDREUIL

Translated from French by Melissa Kaprelian

STARKEY, JAMES L. (1895–1938), archaeologist born in London, whose interest in archaeology was initially aroused by his working, at the age of fifteen for an antiquities dealer. During World War I Starkey served in the Royal Naval Air Service; during a lengthy posting in a lighthouse

off the English coast, he studied archaeological textbooks. After the war he attended Margaret Murray's evening classes in Egyptology at University College in London, where he met Sir Flinders Petrie. Soon after, he went to Egypt to work with Petrie and Guy Brunton on their excavations in the Qau-Badari district. He later became field director of the University of Michigan (Ann Arbor) excavations at Kom Washim in the Faiyum area. In 1926, Starkey followed Petrie to southern Palestine and worked with him for a number of years excavating at Tell Jemmeh, Tell el-Farʿah (North), and Tell el- ʿAjjul. [*See* Jemmeh, Tell; Farʿah, Tell el- (North); ʿAjjul, Tell el-; *and the biography of Petrie.*]

In 1932, following personal rifts with Petrie's wife, who had an active role in administering her husband's expeditions, Starkey decided to initiate his own excavation. Together with other members of Petrie's staff, primarily Olga Tufnell and G. Lankester Harding, he left the Tell el-ʿAjjul dig and began excavating at Tel Lachish (Tell ed-Duweir). [*See* Lachish; *and the biographies of Tufnell and Harding.*] Generous support from two British donors, Charles Marston and Henry Wellcome, who were interested in the biblical context of Lachish, enabled Starkey to develop one of the most ambitious and best-organized archaeological expeditions of the period in Palestine. The excavations at Lachish continued annually for six years. They abruptly terminated when Starkey was murdered by Arab bandits on 10 January 1938, as he travelled to Jerusalem for the opening ceremonies of the Palestine Archaeological Museum (today the Rockefeller Museum).

Starkey had been Petrie's student, after all, and at Lachish he followed his methods and concepts: the digging was done on a large scale but with insufficient attention paid to details and their recording. Starkey followed the "horizontal" or "architectural" method of excavation in order to uncover complete architectural units or horizontal layers but paid little attention to the site's vertical dimension. He was, however, a skilled administrator, and the expedition, with its small staff and large work force of hired Arab laborers, remained in the field for about half of each year.

Important remains of the ancient city and nearby cemeteries were uncovered. Starkey's best-known discovery is the corpus of Hebrew ostraca known as the Lachish letters. [*See* Lachish Inscriptions.] Testimony to the sound work carried out by Starkey and his team at Lachish is the fact that few of their stratigraphic conclusions and observations have been altered as a result of subsequent excavations at the site.

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DAVID USSISHKIN

STATISTICAL APPLICATIONS. Statistics is a discipline concerned with inferential processes, with the drawing of conclusions from a set of observations or from something otherwise known or assumed. These processes arise both when going from empirical data to formulate propositions and theories, and when examining the validity of theories and propositions. Inference arises, explicitly or implicitly, when dealing with the analysis of observations and the recognition of underlying patterns, the efficient summarization of sets of data, the nature of observational error and sources of variability, the planning of experiments and observations, the testing of hypotheses, and so forth. All of these are situations for which statistics is relevant and for which the discipline has developed a body of procedures, formulas, tables, and the like also called statistics.

Statistics, as a discipline or as a body of statistical methods, uses a formal language, mostly mathematics-based, to deal with inference. Because most statistical considerations involve randomness, populations (i.e., groups of entities), a single event embodied in a large group of events, and other factors, statistics frequently employs probability, as a mathematical language, to allow the inference to be expressed and its reliability evaluated. Inference is a part of general scientific reasoning and activity, and as a result, statistics has many applications in most scientific disciplines. The application of statistics requires not only knowledge of statistics, but also a substantial knowledge of the specific field to which it is to be applied.

The ability of computers to handle formal languages with ease, as well as to analyze large sets of data, and the development and proliferation of computers have had a significant impact on the application of statistics, both positive and negative. On the one hand, statistics is being applied to more and more fields, enriching them and statistics. On the other hand, the arbitrary use of statistical procedures—of analysis and inference—can be misguided, producing erroneous results and creating mistrust of statistical analyses.

Archaeology and Statistics. In archaeology, inference is a constant challenge, as archaeologists use material evidence to construct theories about past populations and cultures and then test those theories by looking back at the archaeological record. The range of that record, of the evidence, is very broad: objects, monuments, documents, soils, biological remains, and so forth as well as the relationships in which artifacts and ecofacts are found. In addition, studies of archaeological remains produce a variety of data (numerical, visual, etc.) that also have to be evaluated and incorporated into theories or interpretations.

As modern archaeology has become more and more oriented toward a systematic accumulation of data, their generation in increasing amounts and the necessity to store and evaluate them have together created a need for methods (tools and techniques) of analysis. The combination of statistical methods and computer technology has met that chal-

lenge, making analysis of large and complex sets of archaeological data possible.

In general, applying a statistical method to an archaeological problem involves several steps. First, data are usually coded into a standardized language (often numerical) to produce an initial data set. The set is tested for its validity and quality and then screened to determine if there is any underlying structure (e.g., distribution properties). On the basis of this information, and considering the type of problem that is of archaeological interest and being addressed, a particular statistical method (procedure) is chosen to yield a general model against which the data are examined.

The data set is examined in an iterative, or repetitious, manner. It allows for a refinement of the description of the behavior of the data and the extraction of additional, as well as new, information from the data (including a rejection of the proposed behavior). The success of a statistical analysis in explaining archaeological phenomena depends on how well the design of the archaeological study, the accumulation of data, and the method chosen to analyze the assembled data fit the archaeological reality. It is necessary, therefore, that statistical methods be defined and incorporated at the design stage of a study and that substantial knowledge of statistics and archaeology exists that can be applied simultaneously.

The application of statistical methods to archaeology is criticized as being ill-suited to the nature of archaeology, principally because statistics often relies on numerical information; because it imposes a relatively rigid, mathematical structure on the analysis; and because it is general. In response to some of these reservations, recent work has shown that as long as non-numerical descriptors can be unambiguously defined, their coding and subsequent use do not represent problems in applying statistical procedures. Nevertheless, the inability of statistical methods to handle certain types of information, such as the description of structures, remains. As well, more and more methods use nonparametric approaches, which do not require assumptions about the distribution properties of the data set under investigation. The fact that statistical methods are general, rather than domain specific, can also represent an advantage when the task is to examine methods or compare studies.

Applying Statistics to Archaeological Studies. A variety of statistical methods have been used in archaeological studies. The choice of appropriate statistical techniques depends on the nature of the archaeological question and on the data available; it cannot be made in advance. Listed below are certain types of archaeological problems to which statistical techniques have been successfully applied. It should be noted that statistical methods constantly evolve and are being developed. The listed bibliography gives only general references and examples of archaeological applications.

1. *Sampling.* Statistical sampling theory and design of experiments methods have been applied to organizing the sampling and collecting processes for archaeological evidence, whether on a regional, site, or assemblage scale. More specifically, randomized block and various factorial designs have had their applications to these problems in archaeology (i.e., sampling and collection problems).

2. *Distribution patterns.* Studies of various distribution patterns have relied, to a large extent, on various statistical methods for their detection. The distribution of artifact assemblages has been investigated, for instance, using regression, or trend surface, analysis to interpret patterns of an export trade from a particular center of production. Distribution patterns on a single site have been examined using nearest-neighbor analysis or local density analysis to produce a functional interpretation of the found artifacts. The distribution of settlement patterns has been studied, using nearest-neighbor analysis, to reveal tendencies toward regularity or aggregation.

3. *Stratigraphy.* Site stratigraphy and its implications for dating have been investigated using various seriation techniques, multidimensional scaling, and correspondence analysis.

4. *Material culture.* The study of material culture, in particular the classification and development of typologies, has considerable statistical application. Various clustering, principal component, discriminant, multidimensional scaling, and correspondence analyses have been applied to the study of artifact assemblages. This field also includes the mathematical description of the shapes and forms of objects, which is then used to develop classification and typology.

5. *Analysis of artifacts.* The technical analysis of artifacts, such as the granulometric or chemical analyses of soils, trace-element analyses of ceramics, lead-isotope analyses of metals, and Carbon-14 dating of organic materials, may all involve the use of statistics that are specific to the technical analysis employed in the analysis of artifacts.

6. *Statistical modeling.* The statistical modeling of various processes that took place in the past, such as demographic or economic activities, has been conducted using regression analysis.

7. *Testing hypotheses.* Hypotheses are tested in archaeology utilizing statistical techniques, such as the chi-square test or the sign test, to assess the validity of proposed interpretations.

Statistical methods represent powerful tools for archaeologists, particularly in identifying and interpreting patterns or investigating complex systemic relationships. These methods represent often unique tools for the solution of archaeological problems. Their continuing application to archaeological investigations will not only result in new archaeological knowledge, but will also enrich statistics itself.

[*See also* Computer Mapping; *and* Computer Recording, Analysis, and Interpretation.]

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VANDA VITALI

STEKELIS, MOSHE (1898–1967), prehistorian and archaeologist. Stekelis was born in Kamenetz-Podolsk in Ukraine. Upon completing his studies in archaeology and history at the University of Odessa, he served as director of its library and archaeological museum. In 1924 he was arrested for Zionist activities and exiled to Siberia. There, despite his required daily labor, he was able to carry out an extensive study of nomadic tribes, which he left behind when he was allowed to emigrate to Palestine in 1928.

While working in Palestine in the marshes near Kebara, at the foot of the Carmel range, Stekelis discovered a cave subsequently excavated by Francis Turville-Petre in 1931. During his early years in Jerusalem, Stekelis surveyed megaliths in Transjordan. Under the auspices of the Institut de Paleôntologie Humaine (Paris), he excavated with René Neuville at ʿErq el-Aḥmar, Baqʿah-Rephaim, and Qafzeh cave (1933–1935). Concurrently, he surveyed Mt. Carmel and Epipaleolithic sites on the coastal plain. From 1934 to 1936 he participated in the excavations at La Quina (France) and completed his thesis on the dolmens he had dug near Adeimah in Transjordan. In 1937 he uncovered several Acheulean assemblages at Gesher Benot Yaʿaqob (Ar., Jisr Banat Yacub), the oldest of which was almost entirely of lava.

In 1936 Stekelis joined the faculty of the Hebrew University of Jerusalem. In 1940 he completed the excavations of the Lower Pleistocene site at Bethlehem and spent 1941 surveying caves on Mt. Carmel and in the Judean hills. He returned to Transjordan in 1942–1943 to excavate dolmens at ʿAla Safat. Stekelis discovered the site of Shaʿar ha-Golan in Israel, in the central Jordan Valley, which he excavated from 1949 to 1952. It became the type-site for the Yarmukian culture.

From 1951 to 1965 he dug in the Kebara cave on Mt. Carmel, exposing Upper and Middle Paleolithic layers and uncovering a burial of a Neanderthal baby. Between 1954 and 1960, he worked with Tamar Noy at Naḥal Oren, uncovering Pre-pottery Neolithic B and A hamlets, a Natufian settlement with a large cemetery, and thick Kebaran deposits.

From 1960 until his death, Stekelis concentrated on the excavations, under the auspices of the Israel Academy of Sciences and Humanities and the Institute of Archaeology of the Hebrew University of Jerusalem, at ʿUbeidiya, a Lower Paleolithic site in the Jordan Valley that dates to 1.0–1.4 million years ago and is the oldest in the Levant.

[*See also* Jordan Valley; Naḥal Oren; Shaʿar ha-Golan; *and the biography of Turville-Petre.*]

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OFER BAR-YOSEF

STELAE. The term *stela* is a Greek word, used in its archaeological sense, to mean "upright or standing stone." It is related to *stylos,* "column." The single upright stone constituted an autonomous monument with symbolic meaning (religious, magical, funerary, commemorative); its nearly universal use goes back to the most distant prehistory. The terms *megalith, menhir, obelisk, maṣṣēbâ, baetyl, sikkanou* (Akk.), *skn* (Ugar.) represent equivalents in various cultural contexts. In the ancient Near East, the intrinsic significance of the upright stone is made clear by descriptive or symbolic imagery (relief, painting, engraving) and/or by a text inscribed on it.

Certain areas of the Near East made wide use of the stela, notably the civilizations of the Levant (second–first millennium BCE), where both Mesopotamian and Egyptian characteristics are known. Reciprocal influences persisted over time among the neighboring cultural areas. In the middle of the first millennium BCE, classical Greece made the stela one

of the mainstays of its civic and political life, while the use of the stela as a funerary monument was developing. [*See* Funerary Monuments, *article on* Monuments of the Hellenistic and Roman Periods.] The spectacular diffusion of the stela in the Mediterranean world made it a commonplace object in the Roman and Punic eras.

Mesopotamia (Third–First Millennia BCE). Very early (in the Uruk period), rulers began using stelae as a means of communicating, first through imagery alone and then, after the development of writing, by the addition of text. They used hard and relatively rare stones, imported from the farthest points of their own region (hard limestone, basalt) and even from beyond their borders (e.g., diorite from Oman or the Indus River Valley), as stone was almost totally lacking in Mesopotamia.

In the third millennium, stelae were generally elongated blocks, with one face or sometimes two smoothed to receive a text and representation (e.g., the Vulture stela from Tello, c. 2400 BCE or the Stela of Naram-Sin, c. 2250; see figure 1). These monuments, which are often more than 2 m high, were set up to celebrate royal victories. They represented the king facing the god and the texts praised the magnificence of the victorious king (e.g., the stela of Naram-Sin, 2250 BCE, Babylon).

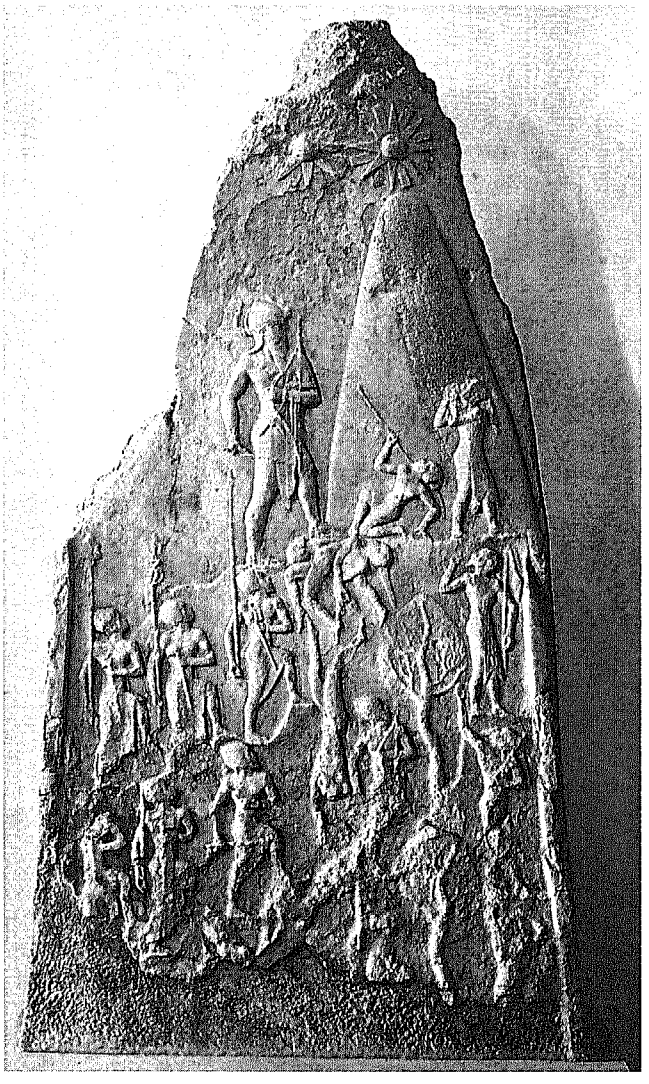
A royal monument such as the code of Hammurabi (eighteenth century BCE, found at Susa, but originally erected in Babylon), evolved from the category of the stela. In the Kassite period (sixteenth–twelfth centuries BCE), the series of the *kudurru,* preserved in temples, constituted a specific variety: they served as a form of boundary marker made of stones 50–80 cm high, bearing the documentation of a land grant. [*See* Kassites.]

Little by little a consistent shape evolved: a flat slab, with a rounded upper part. This shape prevailed in the Neo-Assyrian period, for which there are numerous examples.

Egypt (Third–Second Millennia). The Egyptians, masters of the art of stone carving from the third millennium onward, developed, in the second millennium BCE, a type of monument whose central theme was royal triumph and that generally included a representation of the deity.

Pharaohs of the eighteenth–twentieth dynasties erected stelae in their name in the territories they controlled in the Levant. These were often large-scale monuments (e.g., the stela of Rameses II at Beth-Shean, more than 2 m high). More modest stelae were produced for individuals of middle rank, such as royal functionaries (e.g., the Egyptian stela of Mami at Ugarit). The mortuary stela was a constitutive element of tomb furnishings, both round-topped stelae and, in the first millennium BCE, stelae representing the facade of a temple.

Levant. No text or representation appears on the upright stones in the Temple of Obelisks at Byblos, but niches for statuettes do sometimes occur. [*See* Byblos.] These stelae provide a characteristic illustration of the symbolism of this type of monument at the beginning of the second millennium BCE. In the Late Bronze Age (second half of the second millennium BCE), the stelae of the Levantine coast found in temples show features derived from both Egypt and Mesopotamia. The ordinary type was the flat slab with the curved top, of variable dimensions (e.g., the series from Ugarit ranges in height from approximately 0.20 to 1.50 m). Their representations are of an essentially religious nature: votive stelae representing a deity (e.g., the Baal with the Lightning Bolt at Ugarit); or a symbolic motif (e.g., the astral motif at Hazor); or bearing an inscription tied to the cult of a god (e.g., the stelae of Dagan at Ugarit). When the representation concerned human activity, it conveyed a religious value to the act by introducing it into a religious context (e.g., the Stela of the Oath at Ugarit). [*See* Hazor; Ugarit.]



STELAE. Figure 1. *Stela of Naram-Sin.* (Courtesy Musée du Louvre)

In the 1st millennium BCE, stelae of the same type proliferated in a zone including North Syria, Cilicia, and the Levant. Examples such as the stela found in the mountains above Tartus (at Qadmus) demonstrate continuity from the Bronze Age in the Levant, but the type evolves locally, notably during the Persian period (e.g., the Stela of Yehawmilk, king of Byblos, fifth century BCE, or the Stela of 'Amrit from the same period; see figure 2). This type continued in the Phoenician world in the West, where the presence of stelae is considered an indication of the existence of Punic colonies or occupation in Sicily, North Africa, Spain, and Sardinia (e.g., the Stela of Nora, ninth century BCE). [*See* Phoenicians.]

STELAE. Figure 2. *Stela of 'Amrit.* (Courtesy Musée du Louvre)

The Neo-Hittite kingdoms popularized this means of artistic expression with a great number of stelae in a range of dimensions (from 0.35 to more that 1.20 m high), bearing the representations of deities, especially the storm god with his attributes (e.g., Tell Ahmar/Til Barsip), or funerary motifs. [*See* Til Barsip.] These monuments remained fundamentally religious and were often erected in temples. [*See* Temples, *article on* Mesopotamia Temples.]

Elsewhere, the stela retained its autonomy and sometimes itself became a motif for representation: for example, the reliefs carved in the shape of stelae in the cliff of the Nahr el-Kalb on the Lebanese coast by various conquerors (Egyptians of the twelfth dynasty, Assyrians, and others up to the present day).

Greece (First Millennium). The Mycenaean world made use of stelae as funerary monuments (grave circles A and B, Mycenae, sixteenth century BCE). Greece, however, made the use of the stela common in the first millennium BCE, and classical Greek urban civilization experienced a considerable development in this type of monument. The stela retained its religious significance, but religious reality was perceived in a new way and entailed a diversification in the types of the stelae produced.

Civic religion (which replaced the principal Oriental theme of royal victories) made the inscribed stela the medium for the official acts of public life: decrees of the city, inventories of the holdings of the sanctuaries or cities, juridical contracts, political treaties). Religious concern for the dead maintained its place: the commemoration of the dead residing in the underworld inspired the development of the funerary stela, on which the message is conveyed both by a figural representation (sculpted or painted) and an inscribed text.

Hellenized Levant (Second Half of the First Millennium BCE). Greek cultural influence in the Levant, already visible in the fifth century BCE and of major importance from the Seleucid period onward, led to the mass production of stelae, stereotyped for various purposes, as they were throughout the Greek world: religious monuments, bearers of political documents, funerary monuments. Greek models proliferated, notably in Phoenicia (e.g., Sidon) and on Cyprus (e.g., Kition): flat stelae with a sculpted pediment, depicting the facade of a temple with small columns and decorated with palmettes and rosettes. At the same time, the pillar stela in pyramidal form continued, often made of marble imported from Greece. [*See* Phoenicia; Cyprus.]

Western Inheritance (End of the First Millennium). The use of funerary stelae was adopted in the Punic world, notably at Carthage, where specific types developed (such as stelae with the Tanit sign). On the other hand, with the Roman world as intermediary, the varied architectural mo-

tifs, stylistic characteristics, and functions of stelae have endured into the modern period.

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MARGUERITE YON

Translated from French by Nancy Leinwand

STEWART, JAMES RIVERS BARRINGTON

(1913–1962), Australian archaeologist born in Sydney and educated at the King's School, Parramatta; Leys School, Cambridge; and Trinity Hall, University of Cambridge, where he studied archaeology and anthropology, graduating in 1934. He was awarded the Wilkin Studentship to Asia Minor in 1935–1936. Stewart excavated with William Flinders Petrie at Tell el-'Ajjul in Palestine in 1933; at Baba Koy, Turkey, with Kurt Bittel in 1935; with Winifred Lamb at Kusura, Turkey, in 1936; and he directed excavations at Vounous, Cyprus in 1937–1938. He enlisted in the Cyprus Regiment in 1940, was taken prisoner on Crete in 1941, and spent the following years at Oflag VIIB in Germany, where he was able to continue his archaeological research and conduct classes in Near Eastern archaeology for his fellow inmates. In 1946 he accepted a teaching fellowship in ancient history at the University of Sydney and in 1948 joined the newly formed Department of Archaeology as senior lecturer. In 1960 he was appointed the first Edwin Cuthbert Hall Professor of Middle Eastern Archaeology at the University.

Stewart was a recognized world authority on the archaeology of Cyprus, and his interest ranged over the entire period of its history. He produced the definitive statement on the island's Early Bronze Age (Stewart, 1962, pp. 205–391) and a complete corpus of its Early Bronze Age ceramics. At the time of his last, fatal illness he was working on a definitive study of the Lusignan coinage of Cyprus. Stewart had an encyclopedic knowledge of the archaeology of the entire Near East, and his chapters on Cyprus, Palestine, Syria, and Anatolia in the *Handbook to the Nicholson Museum* (1948) are still among the best surveys of the archaeology of the area. His detailed analysis of Petrie's excavations at Tell el-'Ajjul is a worthwhile account and a brilliant analysis of the material from this very important site (Stewart, 1974).

Stewart was an excellent lecturer and much beloved by the student body at the University of Sydney. He was a man of considerable means, with a superb private library he made available to his students. After his appointment to the University, Stewart conducted excavations on Cyprus at the cemeteries of Ayia Paraskevi and Vasilia (1955) and at Lapatsa and Palealona on the north coast of the island (1960–1961). Stewart's major contributions to the archaeology of the Near East are in his publications and in the enhancing he did of the exhibitions and archaeology teaching collections at the Nicholson Museum at the University of Sydney. Perhaps his greatest contribution, however, was the enthusiasm and loyalty he inspired in his students.

[*See also* Cyprus; *and* Vounous.]

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J. BASIL HENNESSY

STONE. *See* Lithics.

STRATIGRAPHY.

That branch of archaeology which treats of the formation, composition, sequence, and correlation of stratified materials as parts of the archaeological record is known as stratigraphy (after American Geological Institute, 1962, modified). Stray finds aside, virtually every archaeological context is stratified. Even a one-period site may have foundation trenches sealed under, and therefore earlier than, multilaminated floor and street deposits; those deposits may, in turn, lie under wall and roof collapse, with water- and/or windborne deposits accumulating in low-lying parts of the site, other parts being deflated, eroded, pitted, or bulldozed out. Casual rubbish accumulation, also stratified over the centuries, is a certainty, and the bioturbation (disturbance by plants and/or animals) of shallow deposits is virtually assured. Each of these and other processes has made an important contribution to the archaeological record the excavator encounters. To the degree that one or all are ignored, the resulting archaeological interpretation is compromised. From a technical perspective, the magisterial

treatment of the subject of stratigraphy is that of Edward C. Harris (1979).

Broadly speaking, apart from the physical and chemical aspects of the objects of study, there are two basic requirements in archaeology: to locate objects in space and to locate them in time (Albert Spaulding as quoted in Binford, 1972). Time cannot be observed directly but is inferred from physiochemical and spatial attributes. At a stratified site, the relative location of objects in time is inferred by reference to their place in the stratigraphic sequence. If particular key points in the stratigraphic sequence can be dated more or less absolutely, whether through assessing historical probabilities, carbon-14 or other physio-chemical determinations, or cross dating with better dated materials, approximate dates can be assigned to intervening strata (see below).

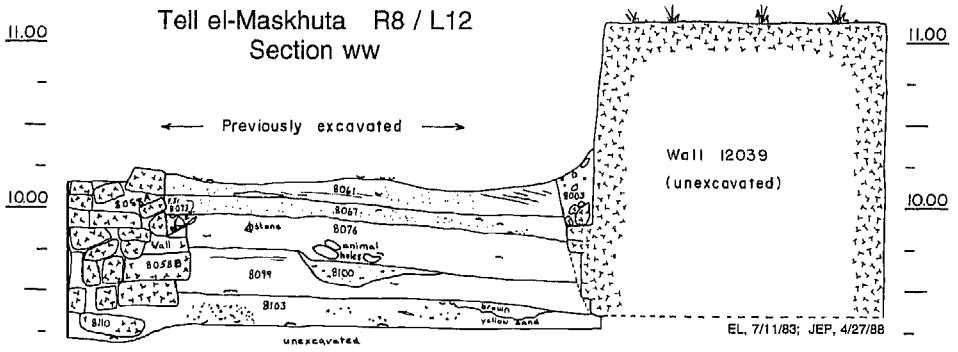
Site Formation and Composition. Apart from technical inferences based upon detailed analyses of particular artifacts, past human activity is most often inferred from the study of spatial relationships between artifacts (broadly defined, e.g., a foundation trench or intentional fill is as much an artifact as a projectile point). A potter's workshop may be inferred from a particular constellation of related artifacts found in a particular location (Wood, 1990, pp. 33–38). The ability accurately to observe contextual location in space, particularly of associated material correlates of patterned activity (e.g., pottery making, metallurgy, weaving, food preparation) is vitally dependent upon the accurate recognition, separation, and interpretation of discrete stratigraphic components. Consider, for example, the stratigraphic context created by the collapse of bricks (containing older material culture items, particularly potsherds) upon in situ ground-floor materials (reflective of various patterned activities) accompanied by a shower of domestic items (e.g., loom weights and a cosmetic palette) from a second-story collapse. It would be incorrect to infer ground-floor weaving or grooming activities or the curating of old sherds, on the basis of this evidence. Crude "filtering" techniques such as focusing solely upon restorable pottery forms—by way of eliminating "fossil" sherds—can only be an admission of professional failure to comprehend and disentangle what is, after all, a fairly common archaeological phenomenon—and one bearing upon yet unresolved problems (the nature and range of variability of second-story material culture assemblages).

Ideally, the formation and composition of various stratigraphic components (see below) should be worked out by the archaeologist in consultation with a knowledgable surficial geologist (Bullard, 1970, 1985; Holladay, 1978). The sequencing and local correlation of these materials involves a complex series of analyses (now computerized as a Harris Matrix program in the Bonn Archaeological Statistics package) proceeding from direct stratigraphic analysis, or, in postexcavation analysis, from drawn profiles of the stratigraphy (see below, figures 1, 3–4), together with the "over," "under," "contiguous with," and/or "contemporary with" descriptions of all individual loci (strata, features, etc., see below). Ideally, this analysis should be done on a daily basis in the field, so that conflicting evidence can be reassessed, a task considerably lightened by the Bonn package and its successors. The typical product of this exercise is a graph, the Harris Matrix. Resembling a complex organization chart, this matrix represents, in two dimensions, the stratigraphy of the excavation area under study (see figure 1a–b; Harris, 1979; Paice, 1991).

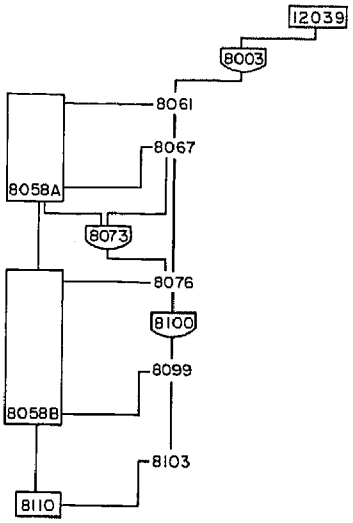
Correlating stratigraphic sequences between various excavation areas and from site to site largely hinges upon cross-dating techniques, with similar sets of small finds suggesting similar dates. For periods or contexts lacking coins, pottery is the usual focus because of its abundance and ever-changing characteristics. As with other comparisons, these should be made in some statistical sense rather than by the de facto standard of simply citing a few general similarities (differently: Orten et al., 1993, pp. 182–196; Holladay, 1990, 1993).

The stratigraphic record is demonstrated, examined, and recorded by excavating sections (vertical profiles, generally, but far from invariably [Barker, 1983], of standing balks) and by producing section drawings, supplemented by photographs. These are as vital to stratigraphic exposure, analysis, and reporting as horizontal exposure, plans, and photographs are to spatial exposure, analysis, and reporting.

Syro-Palestinian Stratigraphy. Ancient Syro-Palestinian cities were large, complex social entities, often involving complex fortifications and generally having a combination of religious, governmental, military, and elite quarters, together with more generalized housing quarters, spread over an area of anywhere between 5–200 acres, 15–20 being close to the norm. The relationship of these elements to one another—for example, fortifications to occupational horizons—is one of the primary goals of stratigraphic analysis. Over the course of time, many occupation sites had as many as twenty or more discrete occupational horizons, or "capital S" *Strata,* with literally tens of thousands of "small s" *strata* (discrete stratigraphic increments (cf. figure 2 with figures 1, 3–4). Some investigators, conveniently termed architecture-to-stratum archaeologists, tend to analyze their data only, or primarily, in terms of architecturally defined "Strata." Almost invariably, they center on just the terminal destruction/desertion/leveled-for-rebuilding phases of their sites and ignore (or lump in) material from intervening stratigraphic accumulations. Others, often termed stratigraphic archaeologists, prefer to work with the entire range of data, dealing with each stratum or feature (a locus, in the Gezer method; see Dever and Lance, 1978, p. 76)—as an entity demanding its own place in the puzzle. It is usually possible to categorize archaeologists by seeing how they introduce their materials: do they feature a set of phased plans or some sort of reasonably complex stratigraphic chart or



STRATIGRAPHY. Figure 1a. *A section between two walls at Tell el-Maskhuta.* (Courtesy Wadi Tumilat Project)

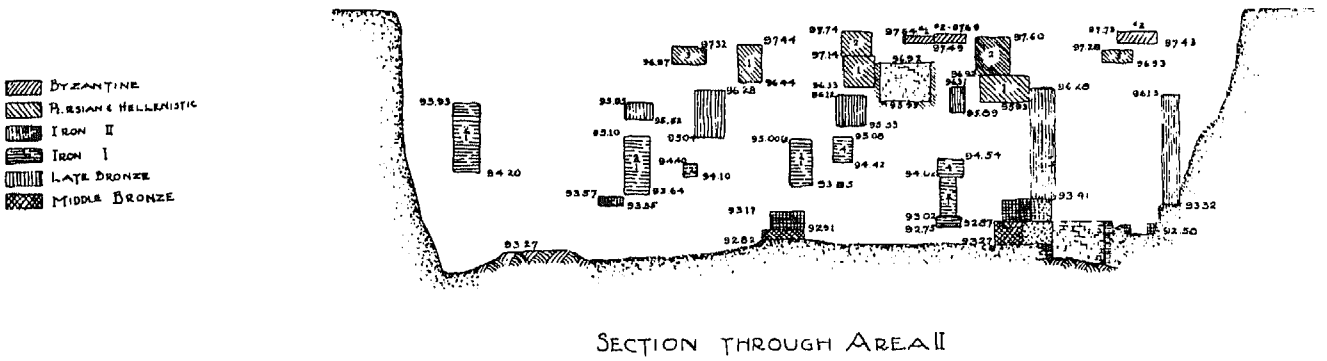


STRATIGRAPHY. Figure 1b. *A Harris Matrix of the above section.* Note the modifications used to signify pits/trenches and walls, which may function through several phases. (After Paice, 1991)

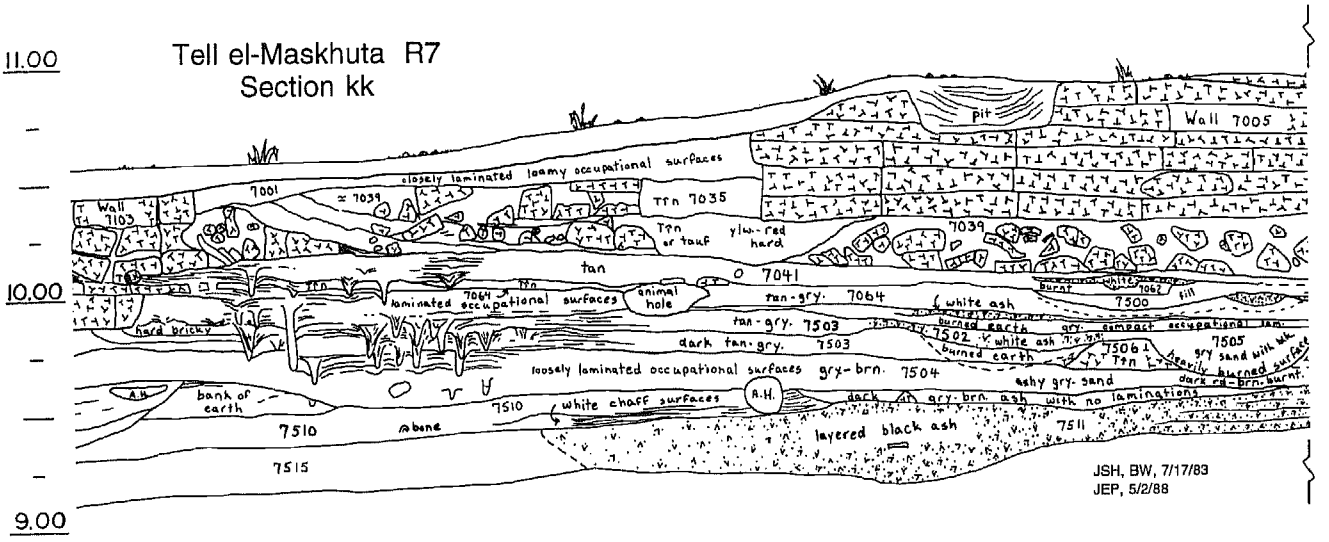
section drawing? These "small s" strata and various features (such as pits, trenches, ovens, ash heaps, imported fills) each relate in some demonstrable way to the various architectural features (also loci) in their immediate vicinity. Each encapsulates small objects such as bones, shells, and seeds, and, almost invariably pottery. All of these artifacts and ecofacts were current in one fashion or another (often complexly) at the time of deposition. Each stratigraphic element is thus a sort of sealed time capsule or "envelope" of materials, variously relating to each other, dating up to the time of deposition. As already noted, the time of deposition can be related to some activity area or areas of some subphase of the larger architectural phase to which it relates. Taken together with other "small s" strata in a particular activity area, these define the material culture database for that particular subphase of that particular activity area.

The gradual rise in level, averaging perhaps 0.5–1 m per century, of typical tell formations is primarily a function of the disposable/reusable building materials employed (mud and stone), assisted in most cases by the fact that building walls and massive encircling city walls mitigated the effects of downslope erosion through sheetwash and gullying. Because most bioturbation (by ants, beetles, burrowing animals, worms, roots) occurs in the top 0.5–1 m of the soil profile, and because dense human occupation has an inhibiting effect upon animal and plant activity, active growth rates of this magnitude generally allow for little or no degradation of the stratigraphic profile (see figure 3). Most ancient Syro-Palestinian settlements were constructed of mud brick, with packed earth and clay roofs, often multilaminated, and, where available, stone foundations to discourage rising damp. Mud-mortared stone was more extensively used in parts of the hill country and Transjordan. East of the Jordan River, in particular, and during periods when wall lines were only one stone thick (e.g., Iron Age I and Early Iron II), it is possible to hypothesize, on archaeoethnographic grounds, that half-timber construction may have been utilized for second and third (?) story construction over full-stone ground floors (which were only about 2 m high), although fully stone-built buildings are a possibility. Careful quantitative analysis of the proportions—and physical characteristics—of soil (presumably mostly derivative of mud-brick or half-timbered construction) to building stone in areas of building collapse should provide the data for arbitrating between alternate hypotheses. Later in Iron II, two-row stone foundations only one or two courses high—possibly dry laid to serve better as a barrier against rising damp—became the norm (cf. Tell el-Farʿah [North] VIIa–b with VIId; Chambon, 1984). [*See* Farʿah, Tell el- (North).]

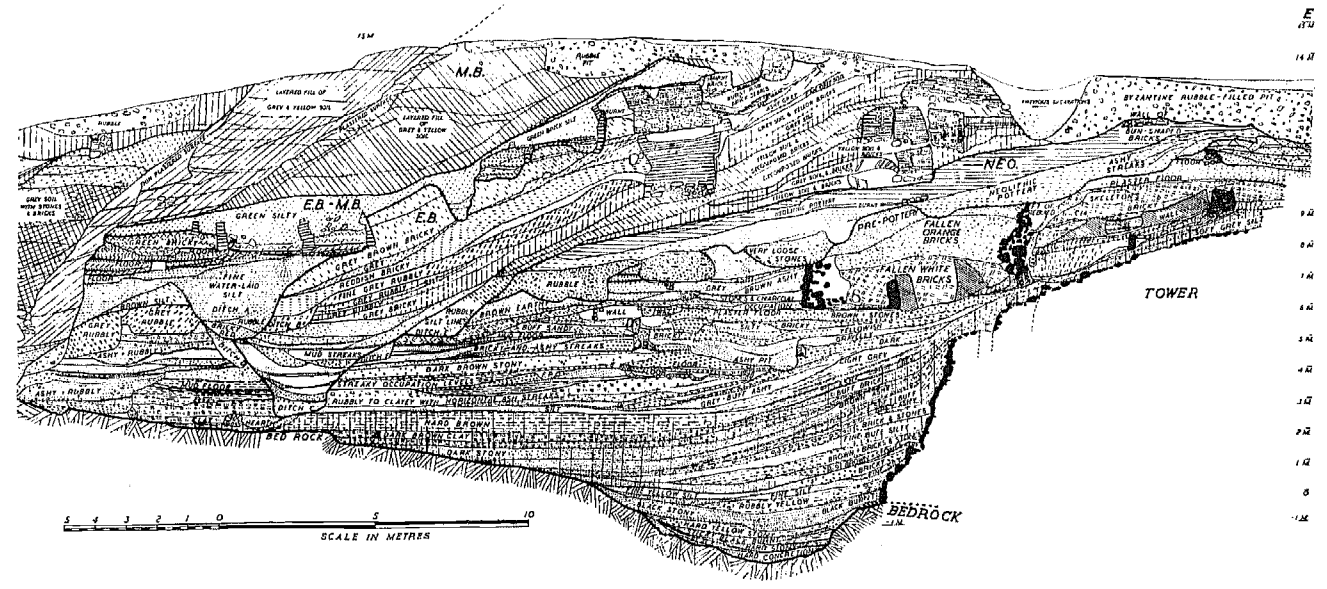
Ethnographic studies of modern populations that employ the same building technology suggest that yearly applications of chopped straw (chaff) and mud plaster were required to seal the surface of the brickwork and the mud mortar of the stonework against erosion by summer winds and winter rains. This material also was used—often over small stones and sherds—to construct small installations such as mangers, bread ovens, curbs around grinding loci,



STRATIGRAPHY. Figure 2. *An early section drawing from Albright's 1934 excavations at Bethel.* Illustrates relative levels of walls isolated from their associated stratigraphy. (After Kelso, 1968, pl. 10b)



STRATIGRAPHY. Figure 3. *A partial section of the E balk at Tell el-Maskhuta, area R.7.* Note the multilaminated character of many surfaces. (Courtesy Wadi Tumilat Project)



STRATIGRAPHY. Figure 4. *Part of Kenyon's section through the MB and EB fortifications at Jericho.* (After Kenyon, 1956, fig. 2)

and pens for baby animals. Yearly decay of the mud plaster, periodically augmented in a major fashion by building collapse (however it was accomplished), probably contributed most to the gradual rise of the tell. Narrow, irregular streets and building walls broke the force of winds, creating a more human environment. They also, however, precipitated a steady accumulation of loess, which could become a significant stratigraphic component in low-lying areas in late spring and early summer sandstorms.

Areas of differing uses had distinctive compositions and surface characteristics. Street levels, which were hardened against winter rains with rocks and potsherds, received regular increments of eroding mud plaster, sheep and goat dung, and rubbish, and thus rose more quickly than interior house floors. Unless hardened, exterior surfaces quickly became irregular and littered with rubbish and displayed damp patches. Interior earthen surfaces (including the misnamed "courts" of Iron Age houses, and probably Middle and Late Bronze Age houses as well) were characteristically composed of well-tended, fine-grained laminae with occasional flat-lying sherds and bone fragments. In some cases floors were eroded by sweeping or the trampling during overnight quartering of the household's small sheep and goat herds into shallow, bowl-shaped contours. A layer of imported fill, either field soil or earth mined elsewhere in the townsite, may have been used to level them before they were refloored with packed earth or mud plaster. In rare cases, these floors might be covered with a thin layer of chalky marl or packed chalky limestone. In house 1727 at Shechem, the second-story floor, probably laid on mats (not observed) supported by split floor joists (observed), was composed of calcite crystals in a clayey mud matrix topping a gritty mud base layer. The finished floor was ground with an upper millstone to resemble terrazzo. [*See* Shechem.] Iron Age stable surfaces—both domestic and military—characteristically were cobbled and often laid over ashy fill. Food preparation areas might be partially flagged. Ethnographically documented living rooms often have whitewashed walls and floors, and storerooms generally have mud-plaster floors. Kitchen floors, and those of baking areas, are characteristically covered with a layer of ashes, while nonhardened stable floors are a treacherous mixture of wet droppings, fodder, and mud (Kramer, 1982, p. 106).

Mud-brick buildings have a finite use-life, depending upon local materials and conditions. Fifty years was considered old for a house in the village at Tell el-Maskhuta in the Egyptian Nile Delta, which saw relatively little rainfall but had considerable rising damp. [*See* Maskhuta, Tell el-.] Over the course of a major stratigraphic phase, various buildings would have been torn down and rebuilt (either partially or wholly), each in its own season, creating local conditions archaeologists often term spiral stratigraphy. Given available resources, such operations might have involved major quantities of new materials and a consequent rise in elevation. Those changes in architecture and/or elevation might have little to do with the building next door or across the lane, however.

Massive destructions ranged from operations capable of burning huge boulders to quicklime and mud bricks to a point where they flowed like lava to little more than a haphazard razing of houses and defense walls. In either case, upon reoccupation, the remains were leveled, places where known valuables might have been buried were probed and mined, and stone monoliths and visible foundation lines were often robbed for reuse, wreaking havoc on the archaeologist's ability to reconstruct building plans. Suitable deposits of mud-brick material were mined to make new bricks (most, but not all, bricks were made of tell materials; fired materials were unusable), creating spoil pits of varying sizes, and a new townsite was constructed on the ruins of the old one. All this probably took place over a number of years and may have involved the construction of temporary huts and hovels pending the careful rebuilding of significant homes, public buildings, and the city wall (*Hg.* 1.2–14; *Neh.* passim). Some towns, like stratum III at Beersheba, seem to have been planned and built as a unit, with major government assistance indicated not only by the scale of work involved in the fortification, but also by the use of Cedar from Lebanon, presumably upon a largely deserted tell. [*See* Beersheba.]

Over the course of centuries of occupation and desertion, all these activities built a complexly stratified mound. In turn, the mound was sculpted by the forces of nature, principally wind and rain (Rosen, 1986), to create the entity known in Arabic as a *tell,* in Turkish as *tepe,* and in Hebrew as *tel.* Informed excavation—allowing intelligible publication—of such a large and complex layer cake is not easy, particularly if the walls of the uppermost or sociopolitically most important Stratum must be preserved as a public park or monument. [*See* Conservation Archaeology; Restoration and Conservation.] Any excavation that ignores analyzing and planning the vertical component (section drawings) as meticulously as the plan view, however, is headed for trouble. Alternatively, deep trenches, such as those at Jericho (Kenyon 1956, 1957b), have the virtue of demonstrating the stratigraphic succession, and the composition, of complex earthworks (see figure 4), but lack the expanse to allow for significant architectural, social, or socioeconomic analysis. They are like a transverse dorsal-ventral section of a biological specimen: the anatomy from spine to navel is understood, but little of the organization of the skeleton, musculature, blood supply, or inner organs. Rapid, broad-scale excavations, such as those at Beersheba (Aharoni, 1973), often lack adequate technical control and/or proper recording procedures except in restricted areas. Such excavators quickly run into trouble trying to work in progressively smaller-sized excavation areas as they probe below courtyards and in rooms, again leaving lower walls in place while

probing deeper. This is like studying the anatomy of an elephant by cutting a few small inward-stepping pits in its hide. If the holes are to be large enough to be useful, a great many of the walls will have to be taken out. Even then, none of the earlier strata can be studied with the same comprehensiveness as the uppermost strata.

The deficiencies of the Megiddo and Alalakh publications, both of which combined broad-scale excavations with deep penetration, were created by the difficulties of maintaining control, recording adequately, and conducting a serious publication effort involving such a large excavation area. [*See* Megiddo; Alalakh.] One way out of this dilemma may be to concentrate more attention on small one-period (single component) sites, or sites where the final decently preserved strata are the ones wanting investigation. At the same time, materials can be ordered and a time-series developed with reference to carefully controlled stratigraphic trenches at large, more continuously occupied multicomponent sites.

Implications for Excavation Techniques. Given that actual stratigraphy is made up of a complex series of horizontally disposed layers frequently interrupted by pits and spoil pits of varying sizes, it is vastly more expedient to excavate on the basis of a known stratigraphic profile than either to "dig blind" (the usual practice in architecture-to-stratum excavations) or to perforate future excavation areas with small probes—which are largely useless because they are small and limited in depth. This profile can most easily be maintained first by digging two 1.5-×-10-meter trenches, end on end, down to a depth of about 2 m or so. Relatively little time and wasted earth is involved. (The trench is, of course, excavated stratigraphically, but roughly.) The eight balks provide as much or more stratigraphic detail than that obtained at season's end from studying the corresponding remnant balks of two adjacent 10-×-10-meter excavation areas. The latter is little more than an autopsy. The significant difference is that, once the stratigraphy is known and securely analyzed, known layers, pits, and robber trenches can be confidently peeled back in proper stratigraphic order. In effect, the balks can be dug first, then the squares excavated.

Stratigraphic and Site-Formation Processes. Despite their centrality to questions of archaeological interpretation, the twin processes of stratigraphy and site formation have received less attention from Syro-Palestinian archaeologists than might be expected (but cf. Kenyon, 1957a, b; Wright, 1962, 1969; Bullard, 1970; Holladay, 1978). That gap, with respect to stratigraphic and sedimentary processes, is largely filled by the British archaeologist Edward Pyddoke (1961) and by William C. Krumbein and Laurence L. Sloss (1951), among others. The Americanist Michael Schiffer (1987) has focused, more recently, on formation processes. The importance of these processes lies in the fact that they create the archaeological record in extremely variable ways: lengthy site decay processes following desertion; looting and sudden violent destruction by enemy action; sudden violent destruction by earthquake with subsequent attempts to recover lost goods and/or bodies for reburial; deliberate leveling of areas preparatory to urban renewal; sudden or lengthy colluviation or alluviation—each creating a uniquely biased archaeological record and progressively modifying it in equally variable ways (e.g., bioturbation, cryoturbation, long-term wasting processes, compaction, slumping, wholesale site relocation through downslope slippage, relocation and destruction of the associative contexts of archaeological materials through brick making or the use of fills [Wright, 1962], digging of graves or silos, creation of spoil pits for the making of mud bricks or other activities, subsequent varieties and combinations of mass wasting and backfilling, pothunting and other treasure-seeking activities, modern building activity).

Given that it is the archaeologist's job to study and to seek to explain the archaeological record in terms of the material culture complex (including associated ecofacts) and its role in systemic activities of past societies, "sound procedures of inference must explicitly recognize and take into account the entire range of relevant processes that form the archaeological and historical records" (Schiffer, 1987, p. 5). Such "inferences," generally based on statistical analyses, are more common in Syro-Palestinian prehistorical investigations than they presently are for the archaeology of the second and first millennia BCE or for the first centuries CE. As Syro-Palestinian archaeology moves away from simple description into areas already actively being pursued in the Americas, Great Britain, and Europe, these matters will quickly become of much more significance than they are at present. In the interim, inadequate attention to detailed stratigraphy, inadequate recognition of the workings of formation processes, and inadequate recording and publication procedures will inevitably limit the usefulness of many present excavations for future research.

[*See also* Excavation Strategy; Excavation Tools; Locus; *and* Recording Techniques.]

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STRATUM. In geology, a stratum is "a single sedimentary bed or layer" or a section of "a formation that consists throughout of approximately the same kind of rock material" (American Geological Institute, 1976, p. 410). In Syro-Palestinian archaeology, the term *Stratum,* with a capital *S* (or Level, Phase, City, Period), is generally used to represent a major architectural phase. Often, only the terminal portion of an architectural phase—ended by a clearly defined destruction, desertion, or wholesale architectural replacement—gets published. Thus it can be said that Lachish has only three publishable (in terms of material cultural effects) Iron II Strata: Levels V, III, and II from the late tenth, late eighth, and early sixth centuries BCE, respectively—with Level IV "mark[ing] the construction of a large fortified city . . . [that] cannot be dated on the basis of archaeological data" (Ussishkin, 1992, p. 120b). [*See* Lachish.] The destruction of the Level IV city is anomalously dealt with as Level III, in obvious recognition that a late tenth-century building phase cannot adequately be characterized by late eighth-century destruction materials. For the most part, however, materials intermediate to clear or massive interfaces are either ignored in post-excavation analysis and publication, or lumped in with the terminal materials. Thus, despite being continuously occupied, with the possible exception of the early part of the sixth century, Iron II Lachish is taken as yielding significant stratified data for only three widely spaced dates: one of material from a destruction about 925 BCE (Level V), another in 701 BCE (Level III), and another in 587 BCE (Level II). This perspective characterizes not only "architecture-to-stratum" archaeologists, following the lead of Frederick J. Bliss (1894), who used the term "Cities," Clarence S. Fisher, and others, but also the published work of many contemporary "stratigraphic" archaeologists.

The Gezer publications use the term *General Strata* (Dever et al., 1986, vol. 1, pp. 8–9, fig. 2). [*See* Gezer.] In this case, however, the exact stratigraphy of the "small s" *stratum,* or locus, can be determined from the locus indices and, in many cases, in the section drawings. Most publications lack such precision, however, and the simplistic model of publishable "capital S" Strata impedes further refinement in Syro-Palestinian archaeology.

In her work at Jericho and Jerusalem, Kathleen M. Kenyon focused on individual stratigraphic elements. [*See* Jericho; Jerusalem.] Paul W. Lapp (1961) also argued for the more restricted sense (the "small s" strata), but to little effect—except that the Ta'anach publications employ the term Period instead of *Stratum* (Rast, 1978). [*See* Ta'anach.] William G. Dever and H. Darrell Lance define a layer or locus as "the smallest coherent unit of stratigraphy. In practice . . . any [three-dimensional] stratigraphic unit which can be meaningfully isolated from those adjacent to it—e.g., a layer of earth with a uniform character, a surface, the destruction debris or fill resting on the surface, the makeup under the surface, . . . each phase of a multiphase wall, the stone lining of a pit, the contents of a pit [discrete layers in the contents of a pit], etc." (Dever and Lance, 1978, p. 76, brackets added).

Yohanan Aharoni employed a broader definition: "*Locus*—Any defined area of the excavation from which finds

are recorded; i.e., usually rooms. Installations or pits inside a locus may or may not receive special loci numbers, depending on the considerations of the area supervisor regarding finds, importance, etc. The locus number must be changed with the removal of any floor, especially if it had contained vessels for restoration. . . . Start immediately with a locus number in any fresh square. With the appearance of walls, this number may be kept for one of the rooms" (Aharoni, 1973; pp. 119–120). In this instance, loci clearly relate to the "capital S" Strata.

To reduce the loss of information caused by focusing on the termination of each major architectural phase, Holladay (1976) proposes using the terms *horizon* and *period* to distinguish between material deriving from synchronic widespread destructions (e.g., the 587 BCE campaign of Nebuchadrezzar) and diachronic materials deriving from multiple-occupancy tombs, midden heaps, stratified fills, and layers of accumulation. Though the proposal provides the language to use in distinguishing among differing sorts of evidence, it did not bear directly on standards of excavation, workup, or publication. To bridge the gap between traditional publishing by Strata and the radically different locus-by-locus mode exemplified in the Jericho materials (Kenyon et al., 1960–1983)—which still uses only an arbitrarily selected subset of the excavated data—Holladay more recently proposed analyzing, on a "small s" basis, the sherdage and other materials from selected columns (e.g., one or more 5-meter squares per excavation area) of close stratigraphic units, coupled with a more traditional approach elsewhere in the excavation. This method would help to move evaluation and reporting from the excessive periodicity of inherited practice toward the reconstruction of the small finds and ceramic corpora of individual short periods in intra-Stratum stratigraphy. (For a test case from Gezer, see Holladay, 1993).

New methods, not limited by reference to massive destruction layers, will enable a fuller comparison of typologies of diagnostic sherds. Typological analysis of the formal characteristics of sherds is the most useful form of intersite comparison—particularly to determine subcultures within a given culture/region (e.g., Dan to Beersheba, in biblical terms). Such analysis can be complemented by the publication of most of the recorded diagnostic sherds. If the volume of materials is too overwhelming, it would still be possible to employ a statistically valid sampling procedure as a means of selecting materials for workup. An alternative approach offers hope for nonstatistical comparative seriation through the use of "presence" data. Still under development, this approach is based on concepts derived from graph theory as applied to geological stratification, and works directly with closely defined "types," either of rim form or of whole vessel forms.

[*See also* Locus; Recording Techniques; Stratigraphy; *and the biographies of Aharoni, Bliss, Fisher, Kenyon, and Lapp.*]

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STUDIUM BIBLICUM FRANCISCANUM. *See* Franciscan Custody of the Holy Land.

SUBEITA (mod. Ar., A-Sbaita/Isbeita), northern Negev site located 43 km (27 mi.) southwest of Beersheba, in region 1 of the Beersheba basin, on the north slope of Wadi Zeitan, which drains Subeita's water into the Lavan valley (Gutwein, 1981, pp. 75 (best map), 89). Subeita has been identified with Sobata in the Nessana papyri (nos. 75, 79) and Suka (corrected to "Soubeita" by a medieval Jewish codex) in the fifth-century CE Nilus narrative, a combination martyr document and desert adventure story (Mayerson, 1994). Its present name derives from a modern Arabic designation, but the site is referred to by widely varying names in the modern literature: Shivta (Heb.), Sbeijta, S'baita, Esbeita, Sbaita, Sbeita (Segal, 1983, p. 25, n. 4). Avraham Negev proposes a tentative derivation of the site's name from the Nabatean *Shibitu* (Negev, 1993, p. 1134).

Beginning in 1870 and continuing throughout the twentieth century, at least five plans of the city have been drawn, the last of which, by Baruch Brimmer, is the basis for recent studies of the city by both Arthur Segal (1983) and Joseph Shereshevski (1986). Portions of the site were excavated, cleared, and restored by the Colt Expedition in 1934–1936 and again by Israel's National Parks Authority in 1958–1960; however, no stratigraphic results have ever been published.

The earlier reported occupational history of the site as Nabatean, during the reign of Aretas IV (9 BCE–40 CE), and Byzantine (founded in the late fifth century, with a floruit in the sixth and seventh centuries) is based entirely on inscriptions found on site, on coin finds, and on unstratified pottery published by G. M. Crowfoot. Crowfoot's report was based on pottery and forty-four coins given to her by H. D. Colt from the 1935 Colt Expedition excavations in two trenches laid in a dump on the slope of the hill. Early estimates placing the size of the ancient town at 29 acres have been reduced to 20 acres in recent scholarship, residents' housing being now confined entirely to the unwalled site itself.

The town itself sits in the midst of an agricultural hinterland with visible surface remains of enclosures, farm walls, and agricultural structures (see Gutwein, 1981, p. 241, table 9). Located neither on a major trade route nor road, with cisterns being the only source of water, the city appears to have functioned as a service center and place of residence for the populace of the self-contained hinterland. It was also a market town for the region's pastoral nomads (see the Nilus narrative). Shereshevski (1986) has demonstrated that the dense insulae that constituted the city's housing primarily constituted one-story buildings.

The partially planned, partially unplanned Byzantine city divides structurally into three areas, each of which contains its own Byzantine Christian church integrated into its design. The architecture of the three Byzantine churches follows the Negev's regional and liturgical preferences, uninfluenced by trends and reforms in either Constantinople or Jerusalem as George Kalantzis (1994) has shown.

Early scholarly contentions that the southern part of the city is the oldest, based on the reuse of a Nabatean inscription in the south church, have been challenged by Shereshevski. The south church, a triapsidal structure equipped with a baptistery and side buildings, was decorated with wall paintings and is dated by inscriptions to the beginning of the fifth century to some time after 649. [*See* Baptisteries; Wall Paintings.] Little is known about the central church, except its plan and the fact that it was built over an earlier building. The north church, or Church of St. George, demonstrates a complicated history from its founding in the early sixth century to its last inscriptional date (648). St. George's lavish size and decoration have been reconstructed by Avraham Negev (1989, pp. 129–142).

[*See also* Churches; Nabateans; *and* Nessana.]

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DENNIS E. GROH

SUKAS, TELL, site located on the coast of Syria, about 26 km (16 mi.) from Latakia and 6 km (4 mi.) south of Gabla (35°20′ N, 35°55′ E). It lies on a fertile plain bordered by coastal mountains on the north, east, and south. Tell Sukas has a northern and a southern harbor, indicating that the site was an important port in antiquity. The ancient name of Sukas is known: it is Su-uk-su (Suksa), a town at the southern frontier of Ugarit and is mentioned in Egyptian, Ugaritic, and Hittite documents. No inscription with the name was found on the tell. In 1934 Emil O. Forrer, on behalf of the Bryn Mawr College Expedition to Cilicia, made two soundings at Tell Sukas that demonstrated the site's long history. The Danish archaeologist P. J. Riis excavated at Tell Sukas under the auspices of the Carlsberg Foundation in five campaigns (1958–1963).

The excavators' period A belongs to the late Middle Ages up to the present, B to the Crusader period, C to the Byzantine period, and D to the Roman period. In the publication of the excavations at Sukas (Riis et al., 1970–1986), periods A–D are not discussed in any detail. It is briefly stated that two phases of a medieval fortification existed, one, perhaps from the twelfth century CE, represented by a larger tower than the other. The structures from period E, the Hellenistic period, suffered greatly from later intrusive building activities. The evidence suggests that this was not a period of decline, however. Two phases were identified: E1 (Late Hellenistic II, c. 117–68 BCE), which was destroyed by the earthquake of 68 BCE, and E2 (Late Hellenistic I, c.

140–117 BCE), also destroyed by an earthquake, probably the one that occurred in 117. Period F (Neo-Phoenician) lasted from about 380 to 140 BCE.

Period G (mostly Persian) was divided in three phases: G1 (c. 552–498 BCE), G2 (c. 588–552 BCE), G3 (c. 675–588 BCE). For almost one hundred years after its destruction at the end of the period G1, Tell Sukas was nearly desolate. When the tell was reoccupied, the new town was characterized by a completely different plan and building types and techniques. The settlers, who were Phoenicians rather than Greeks, did not follow the Hippodamian plan. Stone objects (statues of house gods) were recovered from many houses. Pottery, coins, and tombs belonging to the period were also excavated.

Following the site's destruction in 677 or 671 BCE by the Assyrians under King Esarhaddon, Greeks settled there, forming the majority of the population. The newcomers erected new buildings and in some cases rebuilt ruins. Private houses, temples (phase G2), and pottery (east Greek and Cypriot) were unearthed. The settlers were primarily peasants, but also fisherman. An iron sickle and basalt grinding stones illustrate the importance of agriculture; oxen, sheep, goat, and in one case deer (or gazelle) bones are further evidence for the population's diet. A fish hook, fish bones, a fragment of a tortoise shell, and mollusk remains were also recorded. Pig bones were represented only in phases G3 and G2. The excavators did not note any break in the phases of settlement by the Greek newcomers and Cypriot settlers. The Greek population may have lived on the central part of the mound and the Cypriots near the sea. To this period belong Greco-Phoenician graves to the south of the southern harbor.

Period H (Iron Age, c. 1170–675 BCE) is divided into two phases: Phoenician II (c. 850–675 BCE) and Phoenician I (c. 1170–850 BCE). The architectural remains of this period are poor and it was difficult to determine the house types. In complex V, the excavators were able to describe parts of a room, but no cult buildings were unearthed. A storage area had contained agriculture products and olives, oil, grain, oxen, sheep, goats, fish, and mollusks were identified as the settlement's most important foodstuffs. In this period the relationship between Sukas and Cyprus and the Aegean was good, as indicated by the imported Greek and Cypriot pottery. Sukas was partially destroyed in the Assyrian invasion of the Syrian coast in about 850 BCE. This destruction marked the transition between periods H1 and H2. About two hundred years later, Esarhaddon destroyed the town.

Periods K and J belong to the Middle (c. 2000–1600 BCE) and Late Bronze (c. 1600–1170 BCE) Ages, respectively. Later building activity, especially the construction of a new town in period F, seriously disturbed many phases of the Bronze Age layers. Its remains were found in G12, F8 (north, northwest) and F11 (northwest). Architectural remains are represented by the foundations of private houses. The most remarkable find from the period was the collective pit grave in GII (southwest) placed inside the settlement. At the end of its period of use—for a number of years by the same people—the pit was filled with earth and covered with stones. The excavators distinguished three levels of burials and unearthed typical MB metal, bone, and stone objects (pins, dagger, arrowheads), in addition to pottery. [*See* Grave Goods.] The presence of querns and the bones of oxen and sheep among the finds in the houses hints at the sustenance of the MB and LB inhabitants of Sukas. Evidently, Sukas was partially destroyed by fire at the end of the Late Bronze Age. However, the devastation there was not as widespread as at Ugarit. [*See* Ugarit.]

Period L (Early Bronze Age) and period M (Chalcolithic) are not represented in the publications of Tell Sukas volumes 1–8. Period N, the Neolithic (c. 6550–4800 BCE), is separated from the Chalcolithic level by a hiatus and is divided into three phases: Early, Middle, and Late local Neolithic. From the beginning of the Early local Neolithic to the end of the Late Neolithic, there seems to have been a continuous and gradual development. The Neolithic finds are comparable with those from Ras Shamra VA–BIV; Byblos Early Neolithic (Lower, Middle and Upper); and Tell Ard Tbaili (Lower and Upper). Some pottery sherds are comparable with sherds from ʿAmuq phase B (dark-faced burnished ware). [*See* Ugarit; ʿAmuq.]

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ALI ABOU ASSAF

SUKENIK, ELEAZAR LIPA (1889–1953), early Israeli archaeologist, epigrapher, and educator, best remembered as the first scholar to recognize the importance of the Dead Sea Scrolls. Born in Bialystok, Lithuania, Sukenik immigrated to Palestine in 1913 and became a high school instructor in mathematics and geography. After World War I, with financial support from the Jewish Palestine Exploration Society, he studied archaeology at the University of Berlin (1922–1923). He later devoted himself to research on Hebrew epigraphy and the archaeology of ancient synagogues. In 1926, Sukenik received a Ph.D. from Dropsie College in Philadelphia and was appointed staff archaeologist for the Hebrew University of Jerusalem in the following year.

Among the most important of Sukenik's early projects was the excavation of the so-called Third Wall of Jerusalem, in cooperation with L. A. Mayer (1925–1927); the finds there became the focus of debate on the urban topography of the city in the first century CE. With the assistance of Nahman Avigad, Sukenik excavated the ancient synagogue of Beth Alpha (1929). Its elaborate mosaic pavement became a

source of scholarly interest as well as an evocative political symbol for Palestine's Jewish community.

Sukenik served as associated director of the excavations of Samaria/Sebaste under J. W. Crowfoot (1931–1935), but his greatest contributions to his discipline came in his work at the Hebrew University: appointed lecturer in Palestinian Archaeology in 1935, he helped establish the basic course of study and in 1936 established a National Museum of Jewish Antiquities there. Sukenik supervised numerous excavations (most of them conducted by Avigad) at sites including Ḥammath-Gader (1932), Tell Jerishe (1927–1950), Afula (1926–1937), and Ḥadera (1934). At Ḥadera, Sukenik made the first identification of the characteristic ceramic ossuaries of the Chalcolithic period.

Sukenik's familiarity with Hebrew scripts of the Hellenistic and Roman periods enabled him to recognize the early date and immense historical significance of the Dead Sea Scrolls, three of which he purchased for the Hebrew University in November–December 1947. His translation of and commentaries on the Thanksgiving Hymns, the Isaiah B Scroll, and the War Scroll were completed after his death by his son Yigael Yadin and Avigad.

[*See also* Beth Alpha; Dead Sea Scrolls; Samaria; *and the biographies of Avigad, Crowfoot, and Yadin.*]

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NEIL ASHER SILBERMAN

SUMERIAN. A linguistically isolated, extinct language, Sumerian is preserved only on clay tablets, in a considerable corpus of texts, written in cuneiform. The tablets, dating from about 2,800 to 100 BCE, have been found in excavations in Iraq and, to a lesser degree, in other areas of the Near East, most notably northern Syria, but also as far as Susa in Elam, Boğazköy in Anatolia, Palestine, and el-Amarna in Egypt.

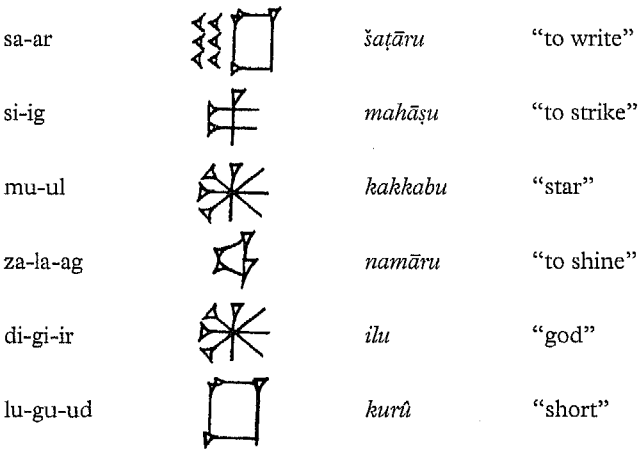
Linguistic and Historical Background. The native name of Sumerian is *eme-gir* (Akk., *lišan šumeri,* "language of the Sumerians"). A dialect used by women is called *eme-sal* (Akk., *lurŭ,* "woman's language"). All attempts to connect Sumerian to known linguistic families have so far failed. Typologically, it belongs to the languages with a subject-object-verb order, postpositions instead of prepositions, and adjectives following the noun. The roots tend to be monosyllabic, but the language can be considered to have an agglutinative morphology—one in which a word may consist of more than one morpheme, but with clear-cut morpheme boundaries.

From the beginning of historical times, Sumerian was in contact with languages of the Semitic family. It appears, in fact, that the early texts, largely logographic, could be read either as Sumerian or as Semitic. After 2,000 BCE, Akkadian, a Semitic language, became dominant and Sumerian was relegated to the status of a literary language. [*See* Akkadian.]

Phonology. The phonology of Sumerian can be reconstructed up to a point with the help of native syllabary tablets. The tablets provide a phonological definition of a word in terms of a set of basic syllabograms, as shown in the examples provided in figure 1. The basic syllabograms in the left subcolumn are the same ones used to write Akkadian, a Semitic language whose phonetic structure is better known. This allows an approximate reconstruction of the Sumerian words, although some phonological details are undoubtedly lost in the process. The resulting phonological inventory of Sumerian consonants is provided in table 1. There are some uncertain points, such as the exact nature of /*h*/ (glottal?), and /*š*/ (interdental?). This Akkadian interpretation of the Sumerian phonological system quite possibly involves some degree of underdifferentiation. In its earlier stages, the writing system did not distinguish between voiceless and voiced stops. It is not known whether this type of simplification extended to other phonological features. There is also a tendency to simplify consonantic clusters in writing. The existence of glides or semivowels (**w, *y*) is suggested by indirect orthographic evidence.

Structural conditions limit the coexistence of some consonants in the same root. For instance, in a root of the form C(onsonant)$_1$-V(owel)-C(onsonant)$_2$, the two consonants cannot be labial; if C_1 is /*h*/, C_2 cannot be a velar; if C_2 is /*h*/, C_1 cannot be nasal or velar. The consonant /*r*/ is almost never found as word initial.

The writing shows four vowels—a, e, i, and u—but there



SUMERIAN. Figure 1. *Sumerian syllabograms.*

TABLE 1. *Sumerian Consonants*

	Labial	Dental	Palatal	Alveopalatal	Velar
Voiceless stops	*p*	*t*			*k*
Voiced stops	*b*	*d*			*g*
Voiceless fricatives		*s*		*š*	*h*
Voiced fricatives		*z*			
Nasals	*m*	*n*			*ᵑg*
Liquids		*l, r*			
Glides	**w*		**y*		

are indications that the system was more complex. Bound morphemes and compound words exhibit vowel harmony. There is no indication in the writing of dynamic stress or tone; given the structure (mostly monosyllabic) of the roots, the presence of a tonal system is a reasonable, but unprovable, hypothesis.

Syntax. The discussion of Sumerian syntax may be divided into nominal phrases, verbal phrases, and clause syntax.

Nominal phrases. A simple nominal phrase consists of a stem optionally followed by a possessive suffix, and/or a plural suffix, and obligatorily by a postposition. The distinction between verbal and nominal stems is functional, with no phonological or morphological marks. There is no gender distinction either in the form of the stem or by affixation. If the gender needs to be stressed, this is done by adding the appropriate adjective (*nita,* "male"; or *munus,* "female"). The nominal stems are animate (humans, deities, personified beings) or inanimate; this feature governs the choice of certain affixes. There is no general system to express number. In nouns of the animate class, the plural can be expressed optionally by the suffix *-e-ne.* Nouns, regardless of class, and adjectives can be reduplicated, often with a nuance of totality (with nouns), or intensity (with adjectives). Nouns, with no plural marker, can function as collectives, taking plural markers in the verb. The personal pronouns and possessive suffixes are shown in table 2.

The postpositions are

-zero	subject of intransitive verbs, direct object of transitive ones
-e	subject (agentive) of transitive verbs, second object with verbs that take two objects
-r(a)	dative
-a	locative
-da	comitative ("with")
-ta	ablative ("from"), instrumental
-š(e)	terminative ("to")
-gin₇	equative ("like")

The genitive is marked by the suffix *-ak* (written simply *-a,* unless followed by a vowel). A genitival relationship can also be expressed by moving the head of the genitive construction to second position and adding a possessive: *giš-hur é-a(k),* "the plans of the house," can be expressed also by *é-a(k) giš-hur-bi,* "of the house its plans."

Verbal phrases. A stem in a verbal function is preceded and followed by several classes of affixes, as shown in table 3. Not shown in the table are a postradical infix, *-d-,* indicating obligation, and pronominal infixes *(-e-, -n-, -b-)* that can be inserted before the comitative, the directive, and the stem. There are two tenses: a past/complete action and a present-future/incomplete. They are marked by affixation of *-e,* reduplication, or, in the case of some common verbs, different stems (suppletive paradigm). Some verbs have different stems for the singular and plural. The imperative is formed by moving the verbal stem to initial position: *mu-na-ab-sum* ("he gave to him"), *sum-mu-na-ab* ("give to him!").

Clause syntax. The verbal agreement is of the ergative type. Subordinate clauses (completive or adverbial) have, as a rule, a nominalizing suffix, *-a,* followed by a postposition, and are thus treated as any nominal phrase. Subordinate clauses precede the main clause. Relative clauses may have an explicit head (*lú,* "the one, the man"; or *níg,* "the thing") or an unmarked head noun and also have the suffix *-a.*

Literature. A very large number of the preserved Sumerian texts, probably about 90 percent, are practical texts: administrative accounts, letters, and contracts and other legal documents, public or private. The rest are "scientific" texts (mostly in the form of lexical word lists and other inventories of knowledge) and literary texts.

TABLE 2. *Sumerian Personal Pronouns and Possessive Suffixes*

	INDEPENDENT		SUFFIX	
	Sg.	Pl.	Sg.	Pl.
1st person	*ᵑgá-e*	*me-en-dè-en*	*-ᵑgu*	*-me*
2d person	*za-e*	*me-en-zé-en*	*-zu*	*-zu-ne-ne*
3d person animate	*e-ne*	*e-ne-ne*	*-a-ni*	*-e-ne-ne*
3d person inanimate		*-bi*	*-bi*	

TABLE 3. *Sumerian Verb Forms*

Modal	Conjunctive	Conjugation	Dative	Comitative	Directive	Locative	STEM	Pronominal
zero	inga	V (i-, e-, a-)	-a-	-da-	-ši-	-ni-	|	zero
ha-		mu-	-ra-		-ta-	*I	|	-e
ga-		ba-	-na-				|	-en
na-		imma-	-me-				|	-en-dè-en
nu-			-?				|	-en-zé-en
ša-		al-	-ne-				|	-e-ne
ù-							|	-eš

Lexical lists. Among the oldest texts, Uruk III–IV (c. 2900 BCE), a large number of word lists is already found, and these are still found among the latest tablets, almost at the beginning of the Christian era. Besides their didactic value in training scribes, and their linguistic contents, these texts are remarkable for their preoccupation with classifying and making an inventory of human knowledge. Lexical texts assume standard, traditional forms that are kept unchanged for centuries over large geographic areas. They thus played an important role in the shaping and transmission of Mesopotamian culture.

The oldest lists are unilingual, but there indications that they could be read either in Sumerian or in Semitic. Later lists tend to be bilingual—Sumerian and Akkadian. Some of them include a subcolumn with the pronunciation, as in the example above. There are even a few lists in several languages: Sumerian-Akkadian-Hittite, or Sumerian-Akkadian-Ugaritic-Hurrian. [*See* Hittite; Ugaritic; Hurrian.] The lexical lists can be classified into two major types: lists ordered by signs and thematic lists. As an example of the first, the collection *á = Á = nâqu* gives, in forty-two tablets, the pronunciation and Akkadian translation of about fourteen thousand entries. The most remarkable of the thematic lists is the collection *HAR-ra = hubullu.* Twenty-four tablets list the terms designating, for instance, trees and wooden implements, stones, metal objects, fish, and birds. The complete collection has about 9,700 entries.

Literary texts. Tablets with texts of an undeniably literary character already appear in the Fara period (c. 2500 BCE). They are written in an extremely abbreviated form and can be only partly understood—except in a few cases in which later recensions are preserved. Some better-understood literary compositions date to the Sargonic period, and the lengthy commemorative inscriptions of Gudea, ruler of Lagash, shortly after the Sargonic period, show a full-fledged literary language and style. The Ur III Empire seems to have been a period of intense literary creativity, but few tablets from this period are preserved. Its literary works are known principally from tablets from two or three centuries later, possibly in an updated and revised form. The majority of literary works are known from tablets dating to the eighteenth century BCE, mostly from Ur, Nippur, and Babylon. No major works were created after this time. Copies of older texts, sometimes with a corrupt text, recompilations of liturgical chants, and a few royal inscriptions are all that were produced in later periods.

The average Sumerian literary composition is between one hundred and three hundred lines long. There are exceptions: short texts and exceptionally long stories like The Deeds of God Ninurta, with 728 lines. Some compositions are preserved in a single copy and may be only partially recovered; others are attested in eighty or more duplicates and their text may be complete. The main reason for the high number of duplicates is the use of literary texts for school practice; a well-educated scribe was apparently expected to memorize the main works of literature. Some catalogs give the titles (i.e., the opening lines) of the compositions in the order in which they were studied. The written, preserved works seem to be only a part of a more extensive oral literature, now lost. [*See* Scribes and Scribal Techniques; Writing and Writing Systems.]

The literary style often reflects this oral origin. Some texts are known in different recensions, which write down divergent oral forms of what is essentially the same composition. The main features of style are parallelism of various sorts and simple, direct similes of the type "like a cloud drifting in the sky." Many are taken from a traditional stock and appear again and again in different works. Verbatim repetitions of speeches and event descriptions are common in narrative texts. Some texts show an evident strophic structure and even indications of some sort of meter. The imperfect knowledge of Sumerian phonology makes almost impossible any prosodic reconstruction.

Major literary genres

Myths. About two dozen narrative texts describe events with divine protagonists that take place in a supernatural world. They revolve around the gods Enki, Enlil, Inanna (and Dumuzi), Ninurta, and other deities.

Epics. Two cycles of narrative texts with superhuman protagonists have been preserved: one deals with Gilgamesh

(five compositions) and the other with Lugalbanda and Enmerkar (four compositions). Both cycles originated in Uruk.

Historical texts. There is a very large number of commemorative royal inscriptions, from all places and dynasties. Some of them can be quite extensive, such as Gudea's cylinders commemorating the building of Ningirsu's temple. In addition, there is a dynastic list and more literary texts centered around historical events, such as an explanation of why the city of Agade was destroyed, and laments about the destruction of other cities. Under this rubric is a huge number of more or less poetic texts in praise (sometimes self-praise) of the rulers and prayers of, or for, the rulers to various deities.

Letters. Besides business letters—which are almost always very terse, factual messages—about seventy-five more-extensive letters, used as school exercises, are preserved. They include royal letters and letters of prayers to the gods.

Divine hymns. About 125 texts praise various deities or make petitions to them. A collection of forty-two brief songs celebrates the most famous shrines at Sumer, and an archaic composition commemorates the holy city of Kesh.

Didactic texts. The Instructions of Shuruppak, perhaps dating as far back as 2400 BCE, is a collection of aphorisms giving ethical advice. Man and His God is a series of reflections on how God allows evil and misfortune to befall a faithful man. On a mundane level, the Instructions of a Farmer explains the proper way to cultivate barley. Also included in the category of didactic texts are collections of medical prescriptions and hemerologies (lists of unfavorable events on given days).

Debates. Half a dozen texts are literary contests between personifications of natural entities (Summer and Winter, Bird and Fish, Tree and Reed, Grain and Sheep, Silver and Copper) or crafted implements (Hoe and Plow). They conclude with a verdict, given by a deity, explaining the reasons for the superiority of one above the other.

School literature. Although practically all literary texts are preserved in copies used for didactic purposes, one group deals specifically with school activities. Half a dozen texts describe life in school directly or indirectly, give advice to students, and describe the conflict between a father and his son, an unsatisfactory pupil.

Dialogues. The preceding school texts make frequent use of dialogue, but five compositions consist of nothing but dialogue: two between students, one between apprentice musicians, and two between women.

Tales, fables, and proverbs. Popular tales, such as The Three Men from Adab, are very rare, and there are a few fables (The Crane and the Raven, The Heron and the Turtle), but many hundreds of proverbs were used as relatively elementary exercises in school. About thirty riddles are preserved.

Varia. Many texts are not easily adscribed to the preceding genres: two elegies of a scribe lamenting the death of his parents, a message of an exiled scribe to his mother, a song in praise of the hoe, and the songs used by the king in the ritual opening of the agricultural season.

Liturgical texts. Compositions sung on ritual occasions are the most common form of literary text between the sixteenth and second centuries BCE. They are mainly laments over the destruction of ancient shrines and prayers for their reconstruction.

[*See also* Amarna Tablets; Babylonians; Boğazköy; Cuneiform; Girsu and Lagash; Mesopotamia, *article on* Ancient Mesopotamia; Nippur; Sumerians; Susa; Tablet; Ur; Uruk-Warka.]

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MIGUEL CIVIL

SUMERIANS. The term *Sumerians* is a conventional designation for the people who lived in southern Mesopotamia (Sumer) during the third and early second millennia BCE. The English word is derived from the Akkadian term for southern Mesopotamia, *Shumer,* which is of unknown origin. The native Sumerian for their land was written with three cuneiform signs, *ki-en-gi,* which had the phonetic value *ki-ngir,* "land-native" or simply "homeland" in Sumerian. Although scholars often write and speak of a Sumerian "people" or "culture," it appears that this reference is an anachronism because the native terminology recognized only a Sumerian area and a Sumerian language. Here the discussion of the history and inhabitants of the land of Sumer will refrain from imposing modern notions of race and ethnicity upon these peoples. The areas of concern will be the Tigris-Euphrates Valley, which falls within the borders of modern southern Iraq.

Rediscovery. European awareness of ancient Mesopotamian civilizations began in the north, in Assyria. The most important early find for the recovery of the written record occurred when the nineteenth-century British expedition of Sir Austen Henry Layard unearthed the remains of the massive libraries in Nineveh belonging to the last great king of Assyria, Ashurbanipal (668–627). [*See the biography of Layard.*] Among the tens of thousands of clay tablets written in the Semitic Akkadian (Babylonian and Assyrian) language, there were some texts that were clearly bilingual, in which the Akkadian lines were translations of some other unknown language. This language turned out to be Sumerian, and although one scholar spent a lifetime denying its existence, claiming that it was but a secret code of the Babylonian priests, others began work on the decipherment of the more ancient tongue. Work on the language continues to this day, and the first real dictionary of Sumerian began publication only in 1984 (Sjøberg et al., 1984–).

Throughout the second half of the nineteenth century, British, French, and German as well as American archaeologists and adventurers conducted massive excavations at the Assyrian and Babylonian cities that until then were just names—such as Nineveh, Babylon, and Aššur—in the Hebrew Bible and in Greek historical writings. [*See* Nineveh; Aššur; Babylon.] The discovery of the Sumerian language brought new interest in the earlier cities that were buried in the mounds of southern Mesopotamia. Although excavations had been conducted at Ur in the middle of the nineteenth century, the first real digs in the south of Mesopotamia were conducted by the French consul in Basra, Ernest de Sarzec, at the mound of Telloh, which hid the ancient city of Girsu, capital of the city-state of Lagash. The local inhabitants were not idle and tens of thousands of tablets from Girsu appeared on the antiquities market and made their way into European museums. In 1889 the first American expedition to Mesopotamia began its work at the site of ancient Nippur, staging four campaigns until the end of the century. A few years later the Oriental Institute of the University of Chicago excavated early Sumerian materials at Bismaya (ancient Adab) and the Germans worked at Shuruppak, which, according to later Mesopotamian tradition, was the place in which buried tablets preserved knowledge from before the "great flood." After the turn of the century, the Germans began a long series of yearly campaigns at Uruk. [*See* Girsu and Lagash; Nippur; Adab; *and* Uruk-Warka.]

Until the middle of the century, archaeologists were interested primarily in the central parts of large urban areas, although there had been excavations of prehistoric sites in the north. After World War II, American scholars, who had broader interdisciplinary perspectives, brought with them techniques developed in other archaeological traditions. They were interested more in cultural patterns than in collecting objects. As a result, they initiated the study of smaller settlements and introduced regional surveys into the archaeology of Mesopotamia. The mapping of ancient settlements allowed archaeologists and historians to reconstruct shifting patterns of settlements and to follow population shifts that accompanied the growth of large cities in the south of Mesopotamia. This activity, together with the results of actual excavations of cities as well as smaller habitations, has provided much historical information that could stand side by side with the limited written sources from early times, and could be used to analyze the history of areas and periods that have not yielded written records.

Origins. The origins of the "Sumerians" have been widely debated, and there is little consensus on the issue. Much depends on how one phrases the question. Although evidence for human presence exists in western Asia far back into paleolithic times, the first such evidence in southern Iraq is relatively late for there are no archaeological remains preceding the sixth millennium. There are several reasons. Permanent settlement was dependent on the domestication of agriculture that occurred in the north and transferred to the south. Small alluviated or deflated sites are difficult to recover, although some scholars claim that the Tigris-Euphrates Valley was uninhabitable prior to this time.

The earliest-known settlement in Sumer has been excavated at the small site Tell el-'Oueili. The lowest levels of this hamlet are earlier than the hitherto attested phases of the Ubaid culture, which is attested in northern Mesopotamia, in Sumer, and on the shores of the Persian Gulf. The earliest excavated level was termed *Ubaid 0* because it antedated the earliest previously known period of this culture, conventionally called *Ubaid 1*. The excavator of 'Oueili has called attention to similarities between the architecture of this level and at points farther north, but those resemblances do not mean that these people migrated from other areas. Although the earliest level at 'Oueili is unique, the later archaeological levels can be linked to developments at other southern sites such as Eridu and Ur and from this time on there is an unbroken series of related archaeological cultures in southern Mesopotamia. Archaeological cultures are modern constructs and cannot be easily linked with ethnic, linguistic, or political units; nonetheless, for almost a century scholars have attempted to find a break in this development attributable to a possible invasion of a new people—the Sumerians. This search has largely been abandoned in recent times. [*See* 'Oueili, Tell el-.]

Although in the past many have sought to identify the Sumerians as an ethnic group with specific racial features and to search for their putative homeland, they were most probably of disparate origins, and their ancestors had very likely lived in the Near East for a long time. It is therefore unlikely that a great historical migration brought them en masse from some other land. Attempts to identify physical characteristics of the occupants of Sumer have not been successful because few skeletal remains of the early inhabitants

have been found and subjected to modern morphological analysis. Even if such remains were found, we would learn little about the identity of these people as the very notion of race in the physical sense is an imaginary category.

Language. The earliest real writing system in the world appeared in Sumer around 3200. The inventor or inventors of the system used two common elements from their environment, clay for the writing surface and reeds for the stylus, as the medium to register administrative transactions. The language of the first written documents—the protocuneiform clay tablets from Uruk—is a controversial matter. Some experts claim that it is impossible to identify, while many think there is enough evidence to suggest that it was indeed Sumerian. This script was to have a long and complicated life. More than half a century later the cuneiform writing system was adapted to Semitic languages, including Akkadian, and eventually it was used for a wide variety of tongues including Elamite, Hurrian, and Urartian, as well as Hittite. The last-known dated cuneiform tablet is from 76 CE, and there are reasons to believe that cuneiform was read at least into the second or even third century. The early history of cuneiform is still poorly documented, but by the time of the Early Dynastic cuneiform texts from Ur, the written language and the personal names of most people was surely Sumerian. This does not mean that Sumer was a linguistically homogeneous area, only that the evidence we have is for the dominance of Sumerian in official discourse. Because many old place names in Sumer cannot be linked to any known language, some scholars have posited that they are the linguistic remnants of previous, otherwise unidentified populations. These phantom "substrate" peoples have sometimes been designated as "Proto-Tigridians" or "Proto-Euphrateans." Certain loan words, toponyms, and personal names indicate contact with speakers of Semitic languages prior to or at the time of the Early Dynastic period. In fact, among the earliest literary texts there is one written in a Semitic language; all the others are written in Sumerian.

The Sumerian language has not been successfully connected with any other known tongue. Typologically, it was an agglutinative language. Roots and morphological elements, primarily monosyllabic, were strung together into chains in an established order. Because there are no known cognate languages, it is difficult to establish how much of Sumerian has been modified under the influence of other languages in the area. It is also difficult to determine the percentage of the population that spoke Sumerian, what dialect distinctions existed in Mesopotamian society, and the date of the demise of the Sumerian language. The written language did not directly reflect the language of the streets but was a literary tongue, probably based on upper-class dialects. Although Sumerian was used as a scribal language down to the first century CE, if not later, there are reasons to believe that by the beginning of the second millennium BCE, if not much earlier, it was no longer an everyday language. [*See* Sumerian.]

Environment and Economy. The economy of Sumer was based on agriculture. The land had few natural resources apart from earth, water, reeds, brush, limestone, bitumen, and a few types of trees, among them willow, date palm, apple, Euphrates poplar, ash, and tamarisk. Everything else had to be obtained through trade, gift exchange, or military conquest. Through the middle of the fourth millennium the water table was high, and there were many natural lakes. As the climate changed, water had to be brought to fields by irrigation canals that were connected to the Tigris and Euphrates Rivers and to natural and engineered channels from those main water courses. Some have seen this need for water as the impetus for centralization of political power, claiming that water management requires high-level organization, but this view is no longer widely held.

Agriculture and animal husbandry formed the basis of the economy. The primary domestic animals were sheep and goat; the products of these animals were fully exploited. Up to the fifth millennium these animals were raised primarily for their meat and skins. From that time on the use of meat declined; sheep and goat were raised for their hides, wool, cheese, and dung (used as fuel). Fishing was an important part of the economy, particularly in the south. Smoking and drying preserved the catch, which could then be eaten year round or traded for other goods.

The main agricultural products were barley, wheat, fruit (apples, dates, figs, capers), onions, garlic, sesame, reeds, and scrub brushes. The exploitation of natural resources was a complex affair and the organization of agricultural production in early Mesopotamia is still a matter of much debate. There is little doubt that major portions of exploitable land were in the hands of the larger organizations, traditionally defined as "temple" and "palace." Families and individuals worked for these organizations in exchange for rations, protection, and community status. The status of private land is more difficult to define. Some have claimed that the earliest evidence points to the communal ownership of private land and that individual ownership developed gradually. Others would argue that there is little distinction to be made between the two categories and that the earliest documented transactions of real estate indicate that some proportion of exploitable land was in the hands of individuals or nuclear families.

Political History. The main organizational form of early Sumer was the city-state, that is, a polity centered on a single major urban center. The early cities, such as Uruk, were relatively large for antiquity and were surrounded by massive walls for protection and to symbolize their autonomy. Archaeologists have recovered large building complexes within cities that controlled large resources; these have often been termed "palaces," and it is assumed that they were the

seat of secular power. Thus, from early times there were various large economic entities that had extensive land holdings, controlled various manufacturing centers, and held economic and spiritual authority. What little we know of early Mesopotamian political history comes from royal votive and building inscriptions, from economic documents, and from later historical fictions. Archaeological surveys of settlement patterns indicate that during the Early Dynastic I period people moved into the cities from the countryside; many smaller settlements are abandoned and the population is clearly centered in the urban areas. The spheres of control of the cities overlapped in the limited area of the Tigris-Euphrates Valley, and warfare often erupted over territorial disputes. We have vivid accounts of one such long conflict or at least one side's view of the issues involved. For at least three generations the city-states of Lagash and Umma clashed over the definition of their common border. The Lagash rulers commissioned public inscriptions detailing their version of events. If we are to believe them, Lagash was victorious in numerous border clashes, and at one point the dispute was mediated by an outsider, the king of the central Mesopotamian city-state of Kish. This has led some scholars to speculate that the city of Kish had a form of hegemony over the southern cities. [*See* Kish.] Umma eventually got the upper hand and its armies sacked the Lagashite capital. Ironically, our reconstructions of these events are based solely on the information provided by the loser because Umma has never been officially excavated and thus has not provided information on its side of the story.

The use of a common set of symbolic devices, Sumerian writing, area-wide artistic conventions, and similarities in architecture and material culture push the modern observer to view Sumer as a cultural entity. There can be no doubt, however, that there was as much diversity between the various city-states as there was surface similarity. They were the breeding ground for similar new regional elites and local hierarchies of power, differing symbolic representations of these relationships, and new categories of people—primarily scribes and priests—who owed their own status to the control over such symbols. Such groups and individuals had a strong interest in the status quo and the resulting separatist forces of Sumerian cities resisted attempts at unification into a territorial state. From laconic royal titles we know that certain kings claimed rule over more than one city; but, as far as we know, the first ruler to succeed in bringing all of Sumer under one banner was Lugalzagesi of Uruk. He began as king of Umma and within a short period of time he managed to gain control over the northern borders of Sumer, finally conquering the powerful state of Lagash, and then overtaking the southern cities of Uruk, Ur, and Eridu. [*See* Eridu.] His victory was short-lived; he was defeated and stripped of his lands by a newcomer from the north named Sargon or "True King" in Akkadian. We know nothing about his rise to power, and the standard descriptions of his ascent are based on suspect sources. According to later Mesopotamian legends, Sargon served the king of Kish and eventually took his throne. He then moved the capital of his state to a new city named Agade (Akkad/Akkade) and from there succeeded in conquering all of northern and southern Babylonia. Sargon and his successor ruled the first Mesopotamian territorial state for almost two centuries (conventionally 2334–2154). Their rule was characterized by almost constant warfare; the Sumerian cities revolted at every opportunity and the Akkad rulers apparently campaigned in all of the surrounding lands, searching for booty and for control of foreign resources and trade routes. Their armies ventured to the mountains of Iran, to the shores of the Persian Gulf, and into Syria, as far as the Mediterranean, and even into Anatolia. They established military and commercial outposts in the border regions, although it is difficult to determine just how far their true control reached. They celebrated their deeds in public inscriptions and in pictorial depictions of their might, carved on stone monuments and on open rock faces in foreign lands. With the new notion of empire came a new form of charismatic kingship. The propaganda efforts of the new bureaucracy reached new highs when Sargon's grandson, Naram-Sin, was proclaimed a god. The language of the inscriptions leaves no doubt that in their attempts to counter the old city-centered notions of polity, the Akkad kings used a variety of propaganda techniques. The writing system was reformed and central schooling was instituted to influence the opinions of future officials. Akkadian was introduced as a written language in the south, where it was now used in addition to Sumerian. Local officials were left in charge next to supervisors from Akkad, and their fates were linked with the destiny of the central state. [*See* Akkad.]

These developments lasted for three or four generations and then simply collapsed. The last years of the dynasty are devoid of documentation, and one can only speculate about the internal weaknesses that led to the end of the first Mesopotamian territorial state. Native tradition blamed it on excessive hubris of the rulers and on outsiders, primarily a people from the eastern mountains named the Gutians. Modern scholars see the collapse as a function of the inefficiency of over-extended centralized power, and on excessive reliance on warfare as a political tool. The Sumerian cities resumed their local rule, although some of them clearly acknowledged some form of Gutian hegemony. The text known as the Sumerian King List provides us with a litany of almost a hundred names of Gutian rulers in as many years, but it is now acknowledged that this period lasted for no more than two generations. The Gutians, whoever they may have been, were quickly mythologized and came to represent conventional barbarian outsiders.

Akkad never rose again. Indeed, it was abandoned and has not been found, although later inhabitants of Mesopotamia knew its location. A ruler of the city of Uruk named

Utuhegal left behind a description of his battles with the Gutians and claimed to have restored kingship to Sumer, but he did not enjoy it for long and disappeared from the stage after a short reign. Ur-Namma (also cited as Ur-Nammu), who was his military governor at Ur, possibly his brother, took over the kingship and in a few years united most of Sumer. This consolidation began the hundred-year reign of the third dynasty of Ur, often mistakenly termed the "(Neo-)Sumerian Renaissance" or the "Neo-Sumerian period" (2112–2004). It was neither particularly "Sumerian," nor was it a renaissance; indeed, the new dynasty took many of its cues from its Sargonic predecessors. The Akkad kings had used both Sumerian and Akkadian as official languages, but the new dynasty imposed Sumerian as the primary language of bureaucracy and literature, at least in the southern part of the country, from which most of our documentation originates. This action was not a patriotic move, but part of an efficient reorganization of all forms of public life. The new kingdom was even more centralized than the Akkad state, and the Ur rulers reorganized everything: the official language and the writing system, weights and measures, taxation, as well as the military and religious sectors of society. The second king of the dynasty, Shulgi (2094–2047), borrowed a concept from his Akkad predecessors and proclaimed himself a god, thus allowing the crown to exploit the religious aspects of charisma and to subordinate the temple estates to the central government. The kings of Ur married many women, both daughters of foreign princes and of local dignitaries; they sired many children, and these in turn were married off in similar fashion or were appointed to important offices. As a result, the extended royal family and their allies controlled the kingdom.

The core of the state, which was located in the Tigris–Euphrates basin, was buffered to the east and northeast by a zone of military settlements. The lands bordering on these defensive areas were the targets of a vigorous diplomacy and many of these states were allied to the Ur III royal family through dynastic unions. The rulers of Ur learned something from their Akkad predecessors and limited their power to a more manageable area comprising Sumer, Akkad, and the bordering regions to the east and northeast. They did not venture into Syria and, as far as we know, never attempted to reach the Levant or Anatolia, although we have evidence of diplomatic or possibly trade contacts with these areas. Nevertheless, the Ur III period was a time of constant warfare as the central government defended the trade routes to Iran and rebellions in neighboring vassal states. History repeated itself, and the Ur kingdom fell after barely a century of hegemony. The immediate and long-term causes of this collapse are barely documented and are primarily a matter of speculation: It does appear, however, that an overextended bureaucracy and a weakening of central control caused the whole state edifice to collapse in a relatively short time. This collapse, which was finished by an invasion from Iran, demonstrates the weak hold that such highly centralized states had on local populations. As soon as the center weakened, the economic dependencies, symbolic ties, and reflected status of families and individuals no longer held. Local traditions were powerful enough to take their place and life continued without the kings at Akkad or Ur. [*See* Ur.]

This survey ends with the fall of Ur. The termination is somewhat arbitrary, but just as it is difficult to define what we mean by *Sumerians,* it is equally difficult to establish the temporal borders of Sumerian culture. The immediate history of Sumer after the end of the dynasty founded by Ur-Namma is somewhat different. Power was once again centered around regional city-states and the new masters seem to come from Semitic Amorite tribes. Some of the new rulers made conscious efforts to present themselves as rightful successors of the Ur III kings. Indeed, one such Amorite, a certain Ishbi-Erra, who began his career as an officer of the last king of Ur and who managed to contribute to his defeat by establishing a new kingdom at nearby Isin, used all the royal symbolic attributes of his old employer. He even commissioned royal hymns, written in Sumerian, which presented his version of the fall of Ur. Not surprisingly, his scribes blamed barbarians from the east.

Literature. Sumerian literature can be defined only as literature in the Sumerian language. It would be more proper to refer to "early Mesopotamian literature" because the earliest texts from the Near East include at least one composition in a Semitic language. Soon thereafter evidence exists for Akkadian, "Eblaite," and other Semitic-language texts. The first written documents are economic records and lists of words that were used in the teaching of writing. Literature was first written around 2300 during the Early Dynastic period. The earliest such texts are extremely difficult to understand because they were written in abbreviated fashion without many grammatical elements, and the written symbols were randomly inscribed, often not in the order in which they were read. Scribes knew the texts by heart and the tablets functioned only as mnemonic devices. Later texts, which were written out in full in the proper order, are better understood. The largest group of Sumerian literary compositions dates from the latter half of the second millennium, when the language was no longer a living tongue but was used as for didactic and cultic purposes. The Old Babylonian school curriculum was based on older compositions; a small portion of it originated far back in Early Dynastic times, but much of it came from the court, temples, and propaganda of the Ur III kings and their immediate successors. Although by this time most contemporary texts were written in Akkadian, schooling required that a student study the word lists, royal and divine hymns, myths, proverbs, literary letters, royal inscriptions, cultic texts, lamentations, and various other poetic compositions of earlier days. There is only sporadic evidence of instruction in Ak-

kadian for it seems that practical scribal knowledge was learned on the job. [*See* Akkadian.]

Religion. The central location and architectural dominance of the ceremonial complexes in early cities testify to the social importance of the temple as an ideological and economic institution in Sumerian society. Although writing was undoubtedly invented for administrative purposes, the first literary texts, from the cities of Fara (ancient Shuruppak), Abu Salabikh, Adab, and Nippur, are almost exclusively religious. [*See* Fara; Abu Salabikh; Nippur.] Despite our incomplete understanding of these texts, we can state with confidence that the early cities of Sumer shared elements of a common religious tradition. Each city had a major deity and these deities were organized in family groupings that were, in turn, hierarchically ordered along kinship lines. By means of a spatial metaphor the top deity in this hierarchy was An, the sky god; in practical terms it was Enlil (Illil), god of the city of Nippur. Enlil, whose name is probably Semitic in origin, is but one example of the strong syncretistic tendencies that are in evidence already in the earliest textual evidence. For example, Semitic deities such as Su'en and Shamash, the moon and sun respectively, became identified with Sumerian Nanna and Utu. The Sumerian gods were both male, but in Semitic religions the sun and moon were sister and brother. In some Akkadian personal names the original feminine sun goddess can still be traced.

Religious spectacles were conducted in large open spaces connected with the temple complexes and in various public spaces within and outside the city walls. It does not seem that individuals had much access to the interiors of the temples, which were reserved for priests and state dignitaries. Because religion was part of state ideology, public ritual was also political celebration and served to build and reinforce communal bonds. Private worship was practiced at home. The more elaborate households included chapels; in certain periods people were buried under the floors of houses. Therefore, dwellings were also the locations for ancestor worship. Some ceremonies that required the participation of specialists, such as healing and other rite of passage rituals, were performed either in private houses or in liminal sites such as riverbanks or in the steppe.

Kingship and Political Power. The public expression of political power was centered around the person of the king. Although notions of kingship, as well as the scope of royal power, differed by place and time, the institution was surely central to Mesopotamian government throughout the historical periods. We know very little about the early kingship, and most of what is written on the subject is pure speculation. Much confusion has been caused by a lack of understanding of native terminology. The main Sumerian word for "king" was *lugal,* a term of unknown origin that was sometimes falsely etymologized in antiquity as well as in modern times as "grand man" (*gal* + *lu*). Another word, which was used in certain places, primarily at Uruk, was *en.* Some scholars have seen a difference between the institutions designated by these words, which are probably only local terms for the same general concept. During the Uruk period, one finds representations of an important person, often wearing a characteristic skullcap, in scenes of sacrifice and worship. This person is usually described as a "priest-king" with the implication that we have a phase in the transition from sacred to secular rule. There are two primary reasons for this assertion. Large religious ceremonial clusters dominated the center of the cities, and artistic representations of a priest or king in the act of making offerings are characteristic of the art of the early urban period. The priest-king, however, is a figment of our imagination. All we have is a series of images of a "ruler" performing a sacred act, and it is impossible to specify how such an individual would be different from earlier or later rulers.

Archaeological remains of large building complexes, which seem to be different from the ceremonial sacred buildings that dominated the centers of most cities, indicate that there were a variety of economic and political forces at work in early Mesopotamia. The nature of these forces can only be defined from later written sources. The first royal inscriptions, from the latter part of the Early Dynastic period, indicate the centrality of the notion of kingship in Sumer. The person of the king embodied political power in each city-state, and while there were earlier attempts at larger hegemony, it was only with the rise of territorial states such as Akkad and then Ur that concepts of supreme kingship were fully developed.

Kings were the focal point of public representations of power, and therefore much evidence on the representation of this institution has survived. We know little, however, about the actual distribution of power and decision making in early Mesopotamian states. Scholars have used later literary texts to reconstruct notions of primitive democracy and the functioning of assemblies, but there is little support for these reconstructions. Later evidence from letters and other more modest documents, as well as ethnographic analogy, suggest that local elites as well as organized extended families were important in local affairs and that the central authorities had to work with, and manipulate, these centers of authority.

Historiography. Sumerian views of history are known to us primarily from texts written in various periods that have survived in copies made during the middle of the second millennium. It is often impossible to recover their original context and therefore difficult to discern differences in time. For many scholars, the primary historiographical document is the Sumerian King List, although opinions differ as to its date of composition. The list begins "when kingship descended from heaven" or, in some copies, "after the (great) flood swept over the land," and proceeds to present a list of

rulers, who are ordered as if Sumer had always been under the rule of one city. Hence, it served as a legitimation document for whatever group of rulers claimed such hegemony, be it the kings of Ur or their Isin successors. Fate seems to have ruled here, and kingship moves from city to city without explanation. In other texts that share this ideology, particularly in poetic laments that describe the fall of the Akkad and Ur III states, the mechanism of history is equally random and is credited to the caprice of the gods. It was not the mechanism of dynastic change, but the reality of contemporary power that was of concern to the writers. It is not surprising, then, that the main thrust of what we may consider historical writing was a consideration of the present and the legitimation of the status quo.

It is impossible to make a strict delimitation of Sumerian culture; the living language may have died as early as the latter part of the third millennium, but the written legacy lived on, and eventually spread throughout the Near East. Every scribe who learned to write cuneiform had to start with this classical language. Sumerian literature continued to be taught alongside Babylonian until the first centuries of the common era.

[*See also* Mesopotamia, *article on* Ancient Mesopotamia; Euphrates; *and* Tigris.]

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SURVEY, ARCHAEOLOGICAL. The search for ancient sites in their natural setting, or archaeological surveying, is a critical component in problem-oriented archaeological research. A regional perspective is necessary for examining changes in settlement patterns and subsistence methods used by societies. The most efficient and cost-effective way to achieve this is by carrying out archaeological reconnaissance on the ground, to search out the remains of ancient sites in a selected geographic region. Surface concentrations of flint tools and debitage; pottery sherds; fragments of architectural remains, such as foundation stones and mud bricks; inscriptions; and ash and other human-deposited sediments identify an ancient site. This method has been used by prehistorians and archaeologists working in the southern Levant since the nineteenth century. While the basic techniques have remained constant since the early 1800s, research questions and technological advances have changed immensely the way sites are discovered, recorded, and analyzed.

Early Exploration. Ground reconnaissance was first conducted in the southern Levant in 1802, when Ulrich J. Seetzen, a German scholar, discovered the ancient cities of Gerasa (Jerash) and Philadelphia (Amman) in Transjordan. In 1809, the Swiss researcher Johann L. Burckhardt "rediscovered" the Nabatean desert city of Petra, which had not been visited by Europeans for more than five hundred years. It was, however, the American team of Edward Robinson and Eli Smith that, in 1838, pioneered systematic archaeological field surveying, a combined study of the physiography and historical geography of Palestine. [*See* Historical Geography.] Robinson's command of philology and linguistics and Smith's knowledge of Arabic enabled them to identify hundreds of ancient archaeological mound sites (Ar., *tell;* Heb., *tel*). Many of these sites had Arab villages on or near them whose names retained the ancient place names mentioned in the Hebrew Bible. Robinson and Smith ventured off the beaten pilgrimage trails and opened up the full geography of Palestine to the growing disciplines of archaeology and biblical studies. Their work was published in Robinson's *Biblical Researchers in Palestine* (Boston, 1865) some three years after their first field trip.

British colonial interests in Palestine in the latter part of the nineteenth century led to the systematic topographic mapping of the Holy Land by the Palestine Exploration Fund. [*See* Palestine Exploration Fund.] From 1872 until 1878, Claude R. Conder and Horatio H. Kitchener and others mapped more than 9,600 km (6,000 sq. mi.) of the region and recorded more than ten thousand sites. These maps

provided the first accurate topographic system of reference to examine ancient sites in their geographic setting and became the foundation for all subsequent mapping projects by the British and subsequent Israeli and Jordanian governments.

Source-Driven Surveys. The Hebrew Bible has been the central most important documentary source for archaeologists working in the southern Levant. It is a rich source of data for identifying the many ancient towns and villages that span the Bronze and Iron Ages. Extrabiblical documentary evidence has also been instrumental in identifying important ancient centers. Chief among the written sources are the Amarna letters, found in Egypt in 1887, which date to the Late Bronze Age. [*See* Amarna Tablets.] Written in cuneiform Akkadian, they include correspondence between the Egyptian court and many kings in Syria-Palestine.

Archaeological surveying, aimed at elucidating the historical geography of the Holy Land, was especially advanced by the American archaeologist Nelson Glueck. Glueck carried out a series of surveys in Transjordan from 1932 through 1947 and in the Negev desert from 1952 to 1964. A student of the great Orientalist William Foxwell Albright, Glueck was one of the first archaeological surveyors to master the complex nature of ceramic chronology and apply it to sites he discovered. Glueck was able to date thousands of sites on both sides of the Jordan River by using Albright's revolutionary ceramic sequence, which linked static archaeological remains to the dynamic biblical record. More exact methods of dating and advanced recording techniques have pointed to some errors in Glueck's work, but the broad settlement trends he defined in *Rivers in the Desert* (New York, 1968), for example, have stood the test of time.

Problem-Oriented Surveys. During the 1940s and 1950s, multidisciplinary approaches became the mainstay of Near Eastern archaeological research, particularly through the efforts of Robert J. Braidwood in Iraqi Kurdistan, where his team was interested in identifying the origins of agriculture. [*See* Agriculture.] The importance of taking a broad regional view of settlement patterns based on intensive field surveys, especially those associated with the rise of agriculturally based Mesopotamian civilization, was developed by Robert McC. Adams (1981) on the alluvial plains to the south. Field surveys in Palestine at that time were still deeply linked to historical geography. However, pioneering survey work by Yohanan Aharoni in the Upper Galilee moved beyond site identification to issues of historical process. Aharoni's field surveys in the Galilee showed numerous unwalled settlements dating to the earliest phases of the Iron Age and a lack of inhabited sites from the very end of the Late Bronze Age. These observations, combined with the lack of evidence for LB destructions at excavated sites, led Aharoni to support Albrecht Alt's theory of a peaceful infiltration of the Early Israelites into Canaan. The survey results had argued against the literal interpretation of an Israelite conquest of Canaan as portrayed in the *Book of Joshua.*

Politics and Surveys. Following the Six-Day War in 1967, the incorporation of new territories under Israeli administration led to a burst of survey activity on the West Bank and in Gaza and the Sinai Peninsula. The changing political status in these areas from initial capture to the relinquishing of Israeli control affected the pace of survey and excavation there and in Israel proper. A large number of preliminary surveys were carried out on the West Bank immediately following the war. A series of long-term regional surveys followed in the regions of Manasseh, the Galilee, Benjamin, and other areas by Israel Finkelstein (1988), Adam Zertal, Zvi Gal, and others. The results of these surveys dramatically increased the archaeological database for investigating such historical issues as the emergence of Israel in the hill country of Canaan, as well as more anthropological issues, such as long-term human adaptation to different environmental zones. [*See* Northern Samaria, Survey of; Southern Samaria, Survey of; Survey of Israel.]

In 1978, following the signing of the Israel-Egypt peace agreement, the Israel Department of Antiquities (now the Israel Antiquities Authority, or IAA) established the Negev Emergency Survey. [*See* Israel Antiquities Authority.] The evacuation of the Sinai Peninsula by the Israel Defense Forces, and their redeployment in the Negev desert, posed a tremendous threat to the Negev's archaeological record. Working with all the educational institutions in Israel, the Negev Archaeological Survey, under the direction of Rudolph Cohen, spearheaded a meter-by-meter survey of all those areas potentially impacted by the redeployment. The Israeli government allocated considerable funds for this work, which included a systematic and comprehensive surveys of sites spanning all archaeological periods; a monitoring system to prevent damage to sites during the redeployment period; and salvage excavations at sites that would be destroyed. The Negev was divided into thirty-eight maps based on a scale of 1:20,000, in which each map included an area of 100 sq km. (62 sq. mi.). Each map region was investigated by a team. The results are published in monograph form with selected site plans, photographs, and artifact drawings. Like the surveys carried out on the West Bank, the Negev Emergency Survey and the resulting publications provide a greatly expanded database for examining culture change in the southern Levant.

New Technologies. While no computer-based technology will ever replace on-the-ground surveying, some new technologies have already helped in mapping the sites found in surveys. The relatively new Global Positioning System (GPS), first used by pilots to locate their aircraft in flight, allows archaeologists to mark and map sites within ten minutes, with a degree of error of less than 1 meter. GPS is a network of satellites that orbit the earth twice a day and

transmit precise time and position (latitude, longitude, altitude) information. GPS measures the time interval between the transmission and reception of satellite signals and then calculates the distance between the user at the archaeological site and each satellite. The distance measurements are then used in an algorithm and the GPS receiver gives an accurate position location. With a GPS receiver, there is no need to use traditional survey instruments to triangulate a site's position in the landscape. Thus, archaeologists working in the heavily forested areas of the Galilee or in the vast expanse of the Negev desert now have a tool that enables them quickly and accurately to locate their sites with a degree of accuracy undreamed of just a few years ago. The GPS is hand held, and efforts are now being made to increase its accuracy so that site architecture can be mapped with the "click of a button."

For mapping sites, new survey tools such as EDM (electronic distance measurer) combine traditional survey instruments with electronics, enabling measurements to be recorded quickly and later used in computer-generated maps. IAA surveyors were among the first in the Near East to use EDM technologies. This basic measurement data can later be used to create three-dimensional reconstructions of buildings and other ancient structures. For example, Harrison Eitelgeorg II and Andrew Cohen of Bryn Mawr College in Pennsylvania have used the architectural computer program called AutoCAD (CAD = computer assisted drawing), to reconstruct in three dimensions a portion of the Chalcolithic sanctuary at Gilat in Israel. AutoCAD enables the researcher to rotate the model in 360°, at any angle, and at any height. It is an invaluable tool for helping to understand the use of space in antiquity.

Geophysics and Survey Archaeology. Time and money are perhaps the main limiting factors for archaeological research. To obtain relatively quick and inexpensive answers to specific research questions, archaeologists have increasingly employed remote-sensing methods to learn more about sites prior to excavation. Geophysical remote-sensing devices involve either passing energy of various kinds through the soil in order to "read" what lies below the surface from the anomalies encountered by the energy, or measuring the intensity of the earth's magnetic field. The two basic methods employ seismic devices and acoustics or radio waves and electrical impulses. The choice of these methods depends on the local soil environment. Methods based on radio waves and electrical impulses include ground-penetrating radar and electrical resistivity. Magnetic survey methods include magnetometers, gradiometers, and metal detectors. [*See* Resistivity.]

Geophysical diffraction tomography (GDT) is one of the most recent geophysical techniques to be applied in archaeology. Its first archaeological application was made at the Chalcolithic subterranean village complex at Shiqmim, a large (about 24 acres) site in the northern Negev. GDT was developed by Alan Witten of the School of Geology and Geophysics at the University of Oklahoma. GDT works similarly to CT scanners, but instead of X-rays, uses sound waves to identify subsurface anomalies. Using mathematical algorithms based on holographic imaging, Witten has been able to produce complete images of subsurface features on the computer. [*See* Shiqmim.]

At Shiqmim, GDT was used to make tomographic cross sections of vertical slices through the site. This technology successfully identified tens of unsuspected subterranean room and tunnel complexes dating to the late fifth–fourth millennia. Using a Silicon Graphics Inc. (SGI) work station, it is possible to produce three-dimensional color images of GDT-discovered subterranean features. When the geophysical field survey was completed, GDT produced a full three-dimensional image of a honeycomb of subterranean Chalcolithic architecture on a remote hilltop at Shiqmim. Following the GDT application, a "ground truth" test was made that revealed a surface-access tunnel leading to a room, as predicted by the GDT imaging (Witten et al., 1995).

Geographical Information Systems. To identify the environmental variables most important to ancient settlement systems, archaeologists have employed a number of methods, including site catchment analysis of the soils and other resources around ancient village sites. In the 1970s, to estimate the percentage of the various soils around a site meant photocopying the soil map, cutting out the soil distribution with scissors, coloring it black, and feeding it through a leaf-area-size analyzer then used by botanists to estimate the area of those resources. In the early 1990s a technology known as Geographic Information Systems (GIS) was introduced that removes the cut-and-paste work of the past and enables researchers to analyze a wealth of archaeological and environmental variables at once.

GIS are basically spatially referenced databases that allow archaeologists and other researchers to control for the distribution of form (the shape of environmental distributions such as soil) through time. Gary Christopherson of the University of Arizona has pioneered the use of GIS in the Madaba Plains Project in Jordan. GIS—which are digital databases—store, manipulate, capture, analyze, create, and display spatially referenced data. They are especially useful for analyzing settlement-pattern data. Most archaeological and environmental data are recorded in three-dimensions, all of them spatially referenced and stored on maps. GIS stores information in a series of digital layers. Each map theme (e.g., soil type, artifact type, settlement type) is stored in its own layer. GIS can then provide electronic overlays according to the questions asked by the archaeologist. By placing sites such as Tell Jalul in Jordan in the context of a wide range of environmental variables, it is possible to dis-

cover what Christopherson refers to as the environmental signature of a site. In this way, archaeologists can determine what the environmental factors were in the selection of a site location in antiquity. [*See* Computer Mapping.] Coupled with traditional on-the-ground reconnaissance, these emerging technologies are providing archaeologists with new and more powerful tools for interpreting ancient settlement patterns.

[*See also the biographies of Aharoni, Albright, Alt, Conder, Glueck, Kitchener, and Robinson.*]

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THOMAS E. LEVY

SURVEY OF ISRAEL. The Israel Department of Antiquities (now the Israel Antiquities Authority, IAA) created the Association for the Archaeological Survey of Israel (AASI) in 1964 on the recommendation of the department's Archaeological Council. Its main task was to oversee and promote the work of the Archaeological Survey of Israel. Benjamin Mazar, Avraham Biran, Yohanan Aharoni, Moshe Dothan, Ruth Amiran, and Zeev Yeivin were the association's founders and its first executive committee. Biran (1964–1973), Yeivin (1974–1984), and Rudolph Cohen (1985–1991) were its first three chairmen.

The country's map is divided into areas on a scale of 1:20,000 (i.e., a distance of 20 cm on any given map equals 1 km in the field) and archaeological fieldwork is carried out within those divisions. Each new site surveyed is described (with a detailed map reference) and photographed, and a plan is prepared of sites at which architectural remains have been noted on the surface and for which pottery samples have been collected, described, and dated.

Field operations were begun in 1964 with two survey units: one in the north, in the area of the city of Haifa, headed by an archaeologist, Avraham Ronen, and an engineer, Yaacov Olami; the second unit was in the Negev desert, in the area of Kibbutz Sede Boqer, headed by Cohen; and a third unit, based in Jerusalem and headed by Yeivin, was engaged in publication of the scientific data. In 1991, the ASI was incorporated into the IAA, which assumed responsibility for continuing fieldwork along ASI guidelines and for publishing the material recovered.

Northern District. Surveying began in the north in 1964, in the Haifa area. Two survey teams operated—one in the bay (Ronen) and the other in the hills (Olami). The survey of the map of Haifa (East, map 23) was completed in 1965. Remains included architectural elements, tombs, quarries, and agricultural and industrial installations (e.g., wine presses and lime kilns) and provided evidence for an efflorescence in the Byzantine period in that part of the country. Included on this map are Tell Abu Hawam, an ancient port city with Late Bronze Age–Byzantine period remains; the prehistoric Geula cave, with Middle Paleolithic–Mousterian period remains; and Khirbet Rushmiya, the site of a Crusader-Ottoman citadel (Ronen and Olami, 1983).

Surveying for the Nahalal map (map 28) began in 1973 under the direction of Avner Raban (1982). This part of northern Israel saw significant settlement expansion during the Iron Age and again in the Roman and Byzantine periods. Important sites include Tel Qashish, with Chalcolithic through Arab period remains; Tel Yoqneʿam, a fortified city with an acropolis and remains dating from the Early Bronze Age to the Ottoman period; and Shaʿar ha-ʿAmaqim, the site of a Persian period farm.

The ʿAtlit map (map 26) was surveyed by Ronen and Olami in 1964–1965. They surveyed a total of 145 sites, both on land and underwater, including the prehistoric Mt. Carmel caves. Settlement in this region began in the Lower Paleolithic Age. Included on this map are the Mousterian workshop at Ṭirat ha-Carmel; ʿAtlit, the site of a Crusader harbor, fortress, and cemetery; and the large site of Megadim, with remains from the Early Bronze Age and Persian and Roman periods (Ronen and Olami, 1978).

The Daliya map (map 31) was also surveyed by Olami in 1964–1965. The area showed the greatest development in the Roman and Byzantine periods. The large Crusader site of Ḥorvat Ḥermesh and the Byzantine site of Meʿarat Elyaqim, where twenty-six burial caves were exposed, appear on it (Olami, 1981).

The Gazit map (map 46) was surveyed by Zvi Gal in 1975–1976. Periods of significant settlement growth appear on it for the Middle Bronze Age IIb and for the Hellenistic, Roman, Byzantine, and Ottoman periods. Included on this map are Tel Rekhesh, the regional center, identified with biblical Anaharath, with Neolithic–Byzantine period remains; and Kokhav ha-Yarden (Belvoir), site of a large Crusader fortress (Gal, 1986). A recent local survey in the north includes the ʿAmiʿad Junction and the area east of the Yisʿor Junction.

Central District. Surveys in the central district include those published on the maps of Maʿanit and Lachish. Surveying for the Map of Maʿanit (map 54) was begun in 1974 by the north Sharon survey team, under the direction of Yehuda Ne'eman. Remains from sixty-nine sites represented cairns, burial sites, installations, olive and wine presses, cisterns, and wells. A period of dense settlement began in this area in the Iron Age I, with a later settlement efflorescence apparent in the Roman and Byzantine periods. This map includes the sites of Tel Esur, settled from the Chalcolithic through the Ottoman periods; Tel Ze'evim with its Iron I fortress; and Tel Gat (Gat Carmel, Jatt), with Chalcolithic through Ottoman period remains (Ne'eman, 1990).

The map of Lachish (map 98) was surveyed from 1979 to 1983 by Yehudah Dagan. More than three hundred sites, including settlements, farmsteads, cemeteries, roads, orchards, agricultural plots and installations, lime kilns, cisterns, and caves were surveyed. Settlement flourished there in the Hellenistic and Byzantine periods, as it did in all of the Judean Shephelah. A segment of the main artery of the Damascus-Jerusalem-Gaza-Egypt road is included on this map, as is Tell ed-Duweir, identified with biblical Lachish, the principal city in the region, which has been extensively excavated. Lachish was inhabited from the Chalcolithic through the Persian periods (Dagan, 1992). Local regional surveys have been conducted recently in the areas of Modiʿin and Ḥarish-Qaṣir.

Jerusalem District. The survey of the Jerusalem district was conducted from 1981 to 1986 by Gaby Mazor. Recent local surveys in the area have been carried out at Rekhes Shuafat (Samuel Wolff), Pisgat Ze'ev (Rina Avner, Jon Seligmann, Yonatan Nadelman, and Eli Shukron), and the area of Beth-Shemesh (Dagan).

Judea (Judah) and Samaria. The first major survey of Judea and Samaria by AASI teams was carried out in 1967–1968 by Moshe Kochavi (Judea), Pessah Bar-Adon (Judean Desert and Jericho basin), and Zecharia Kallai, Ram Gophna and Yosef Porath (Samaria). (See Kochavi, 1972.)

Kochavi (1972) surveyed 250 sites. Settlement density was apparent in the Iron Age, as well as in the Hellenistic, Roman, and Byzantine periods. The map includes biblical Beṭar and surrounding defensive settlements and fortresses; Beit Ṣur, where the western wall of one structure was preserved for more than thirty courses of irregularly shaped stones; Tell Rumeida, biblical Hebron; and Khirbet Susiya, a site where later excavations uncovered beautiful mosaic floors and decorated architectural elements.

The 209 sites surveyed by Bar-Adon (see Kochavi, 1972, pp. 92–149) provided evidence of a system of Iron Age fortresses and forts, each within sight of its neighbor and each responsible for guarding shepherds, their flocks and grazing areas, agricultural plots, pools and cisterns, and the commercial caravans that traversed this area on their way inland from the ʿArabah and the other side of the Dead Sea. This network was chiefly responsible for guarding the region's freshwater springs. The Roman and Byzantine periods were a time of floruit in the area, in which the locations of fortresses and roads followed those of the Iron Age. This area is also characterized by the hundreds of caves in the cliffs that dominate the region. Sites of note include Naḥal Mishmar, where a very large coin hoard from the Chalcolithic period was uncovered, and the Chalcolithic temple at ʿEin-Gedi.

Nearly four hundred sites were surveyed by two teams headed by Kallai, Gophna, and Porath (see Kochavi, 1972, pp. 153–241). Remains include massive structures (fortresses, Khans, towers, and mausoleums), water-collection installations, oil presses, churches and other public buildings, and roads. Byzantine period remains are often the uppermost level at these sites and usually reflect the most intense building activity. Sites in the area of Samaria include the cult site of Mt. Ebal; Khirbet el-Marjameh, where the altar and support walls of a Byzantine church were uncovered along with a colorful mosaic floor; Khirbet Samilyeh, where architectural fragments include columns and column bases; Khirbet Sakariya, a well-planned village of both large and small structures, straight roads, and a large casemate fortress; and the Byzantine settlement at Khirbet Umm er-Riḥan.

A large-scale archaeological survey was conducted between 1981 and 1986, covering more than five hundred sites (some had been represented in earlier surveys) in the hill country of Benjamin, directed by Yitzhak Magen, staff officer for archaeology in Judea and Samaria. Many important sites were surveyed for the first time; some had been previously excavated, such as Khirbet el-Ḥadatha, where a Byzantine church with mosaic floors was found along with a tomb, cave, wine press, and cisterns; and el-ʿAleiliyat, with a monastery, church, cisterns, drainage channels, and caves. Inscriptions found at the two sites date to the Second Temple and Byzantine periods (see Finkelstein and Magen, 1993).

Southern District. Numerous surveys have been conducted in the southern district. Headed by Cohen, the southern unit worked for several years, through 1971, completing the surveying for two maps of Sede Boqer (maps 168, 167). The unit surveyed thirty-six sites for the two maps, most of them previously unknown. Excavation followed these surveys, at several important Middle Bronze I sites (e.g., at 'Atar Naḥal Boqer); at Iron Age sites (including the fortresses at 'Atar ha-Roʿa, Ḥorvat Ḥaluqim, and Ḥorvat Mesora); and at the Hellenistic-Roman site at Ḥorvat Maʿagora. Because of local limitations imposed by the army, the survey of adjoining maps 171, 172, 174, and 173 was only partially completed (Cohen, 1981, 1985).

The Negev Emergency Survey Project was initiated in 1978 following the signing of the Camp David peace accords. The redeployment of the Israeli army from the Sinai

Desert to the Negev desert threatened the Negev's ancient ruins and necessitated an accelerated and far-reaching rescue operation. Avraham Eitan, director of the Israel Department of Antiquities at the time, Mazar, and the Archaeological Council created the emergency project, which Cohen directed. Most of Israel's archaeological institutions participated in the program. The survey's three main goals were to conduct a systematic and comprehensive archaeological survey of the Negev; to carry out salvage excavations as needed; and to maintain constant field surveillance. To achieve these aims, field survey teams and a central coordinating staff were set up operating out of Jerusalem. In ten years of operation (1978–1988), the project surveyed 4,300 sq km (2,666 sq. mi.), discovered nearly eleven thousand sites, and completed the surveying for twenty-eight maps of the Negev, of which eight have been published, and began work on twenty-five more.

[*See also* Israel Antiquities Authority; Site Survey; *and* Survey, Archaeological. *In addition, many of the sites and regions mentioned are the subject of independent entries.*]

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RUDOLPH COHEN

SUSA, site located on the northwestern edge of the alluvial plain of Khuzistan in southeastern Iran (32°0′ N, 48°50′ E). The site is a large mound situated on the left bank of the Shaur River, a stream that runs parallel to the larger and more torrential Kharkheh River. The site, now called Shush, is southwest of the modern city of Dizful. Susa was occupied virtually continuously from about 4200 BCE until the Mongol conquest in the thirteenth century CE, after which it was permanently abandoned. Geologically, Khuzistan is the eastern extension of the Mesopotamian plain. The climate of Khuzistan is dry and hot, regularly reaching more than 40°C in the summer. The rich alluvial soil is extremely productive when irrigated. The plain is drained by three major rivers: the Karun, flowing out of the Bakhtiari Mountains to the east, and the Diz and the Kharkheh Rivers, both of which flow south from the Zagros Mountains. All three flow into the Shatt al-Arab before debouching into the Persian Gulf.

The lozenge-shaped site is more than 550 ha and rises more than 35 m above the modern level of the plain. The entire mound (1,500 m north–south) was apparently never completely surrounded by a fortification wall, although the Achaemenid Persian king Darius fortified the northern sector. There are five large areas of occupation, named by the nineteenth-century French excavators of the site (see below). The Acropole, flanked by the Tomb of Daniel, lies to the west; to the north is the apadana, dominated by Darius I's official quarter; the center of the mound is the Place d'Armes; to the east is the Ville Royale, occupied from the beginning of the third millennium onward—its southern tip is dubbed the donjon. Also to the east are smaller mounds, including the so-called Achaemenid village and the Ville des Artisans (Morgan, 1900–1912).

Archaeological Exploration. The identity of Shush as the ancient site of Susa was established with certainty in the nineteenth century: in 1850 a British border mission observed its impressive size; in the following year a member of that team, William Loftus, who was a geologist and an archaeologist, began to investigate the mound. He made soundings on the apadana near the inscribed columns and bases of the Persian palace. By the 1880s, France had secured, through treaties, the exclusive rights to investigate Susa. Beginning in 1884 the French excavated there with

SUSA. *Plan of the site.* VR = Ville Royale. (After Harper et al., 1992; courtesy Metropolitan Museum of Art, New York)

little interruption until the Iranian revolution in 1979. From 1884 to 1886, a French architectural historian, Marcel Dieulafoy, and his wife Jane, explored the Achaemenid city wall and the apadana. The French Archaeological Mission under Jacques de Morgan began work on the site in 1897, focusing primarily on the Acropole, where he laid down several enormous trenches. De Morgan cleared vast areas by tunneling, in 5-meter-wide swaths, through the center of the Acropole. He uncovered vast numbers of artifacts without even the most general stratigraphic context. Roland de Mecquenem followed Morgan in 1908. He continued the work on the Acropole, excavated the courtyards of the palace of Darius I on the apadana, opened chantier I and II on the Ville Royale, and explored the donjon. In the Ville Royale he uncovered numerous Elamite graves, but with the crude methods of excavations used then, he was unable to detect any mud-

brick architecture. From 1946 to 1967, Roman Ghirshman directed the French mission. Under his leadership, with improved excavation methods, mud-brick architecture and archaeological deposition were observed and recorded. Ghirshman focused his efforts on the extensive second-millennium BCE occupation in the Ville Royale.

Most of the objects retrieved from eighty years of French excavation went into the collection of the Louvre Museum in Paris. These include not only great works of Elamite and Persian art, but also art from Mesopotamia that the Elamites had carried off as spoils of war at the height of their power in the twelfth century BCE. Among the most important of these appropriated monuments are the stela of the Old Akkadian ruler Naram-Sin and the law code of Hammurabi. In 1957 a French scholar, Louis Le Breton, published a seriation analysis of the early periods at Susa, from the Chalcolithic painted-pottery culture of the fifth millennium through the late third millennium. His important work established periodization at the site for the early periods that was used until closely stratified material was retrieved in the 1970s.

The last French expedition to Susa was led by Jean Perrot in 1968. His team worked there until the Islamic Revolution of 1979 ended all foreign archaeological activity in Iran. Perrot's primary goal was to establish a precise stratigraphic sequence for the site and the surrounding region of Susiana. He focused the operation on Acropole I and II and Ville Royale I and II. Through systematically retrieved sequences, the team defined and refined a ceramic, artifactual, and architectural sequence beginning with the founding of the site in the late fifth millennium. The second-millennium BCE sequence was based largely on Ghirshman's work in Ville Royale A and B; the first-millennium BCE sequence was never completed. The sequence defined by Perrot's team is used here.

Prehistoric Occupation: Susa I (4200–3500 BCE). The region of Susiana has been occupied continuously since the eight millennium. During the sixth and fifth millennia (Susiana I, II), the plain was dominated by the site of Chogha Mish on the Karun River, about 27 km (17 mi.) east of Susa, in about 4200 BCE Susa apparently was first occupied at the end of some major regional upheaval that left Chogha Mish abandoned. Susa I (Le Breton's Susa A) remains were identified in two soundings: Acropole I, levels 27–23, and Acropole II, levels 11–7. Susa I ceramics are dark-painted buff wares and red and buff plain wares. Stamp seals and their impressions on clay jar and door sealings were found with both geometric and figural scenes. Both the ceramics and glyptic art show clear similarities to the material culture of the Iranian highlands to the southeast and north. During the Susa I period, the Acropole was dominated by a mud-brick massif against which an estimated two thousand adults were buried with pottery vessels and other grave goods. [*See* Burial Sites; Grave Goods.] Next to the massif was an enormous stepped platform, more than 12 m high and 80 m along its southern face. These architectural finds make it clear that, during its first phase of occupation, Susa was the regional center of the valley.

Protoliterate Susa: Susa II and III (3500–2700 BCE). The transition between Susa I and Susa II (Le Breton's Susa B) in the Acropole I sounding is unclear. The buff and red-burnished wares diminished in quantity and were replaced by pottery having close parallels to the Uruk types of southern Mesopotamia. Administrative materials, including tokens, bullae, and cylinder seals, are identical to those found at Uruk. [*See* Uruk-Warka.] At Susa they were retrieved from domestic contexts. Susa II is equated to Acropole I, levels 22–17, and Acropole II, levels 6–1. The large platform begun in Susa I shows several phases of destruction, abandonment, and rebuilding. Late in Susa II the platform was abandoned. During period II, Susa ceased to be the only major town in Susiana. Chogha Mish and Abu Fanduweh became rival local centers of administration and exchange. The population of each has been estimated to be under 3,000 individuals.

During Susa III (Le Breton's Susa C, 3100–2700 BCE) the occupation of Susa appears to have been reduced. In addition, the strong affiliation to the Mesopotamian lowland reflected in the material culture was replaced by a strong connection, seen in the ceramics and glyptic art, to the eastern highlands. Following a brief hiatus in the sequence in level 17, Acropole I was reoccupied. Susa III comprised Acropole I, levels 16–13. The sequence is continued in Ville Royale, levels 18–13. The ceramics of Susa III include coarse-ware goblets, trays, and pinched-rim bowls. Grit-tempered wares covered with a red slip and bands of white paint on red-slipped wares appear for the first time. Elaborate polychrome wares are found exclusively in burials. For the first time, tablets inscribed with Proto-Elamite A are found on the Acropole, level 16. Cylinder seals carved with distinctive scenes depicting animals acting as humans are found impressed on the tablets. Also appearing for the first time are glazed steatite seals. Susa is the only major settlement on the alluvial plain: the highland-lowland union characteristic of the historical Elamite period were first established there.

Susa IV (c. 2700–2000 BCE). The Susa III period ended in about 2700 BCE, at the same time that the Proto-Elamite sites in the southeastern highlands disappeared. During the following Susa IV period (Le Breton's Susa D, c. 2700–2000 BCE), the site was occupied continuously. The period is documented stratigraphically in both the Ville Royale I and on the Acropole. Early in the period new ceramic traits, including painted geometric and figurative patterns, suggest a close connection to the mountain valleys of Luristan. These traits may reflect earlier alliances strengthened in response to the imperialistic threat posed by the Mesopotamian city-states. Susa lost her independence to the Old Akkadian kings. [*See* Akkadians.] The material culture, including seals,

wall plaques carved with low relief imagery, and sculptures—as well as writing and administrative systems—adopted Old Akkadian forms. Mesopotamian historical records report that King Rimush controlled the city of Susa as well as places farther east.

Early Second Millennium (c. 2100–1600 BCE). After the collapse of the Akkadian Empire, a contemporary of Ur-Nammu (2112–2095 BCE), Puzur Inshushinak, a powerful king of Awan in Luristan, reconquered Susa. During his reign, the linear Proto-Elamite B script was used to inscribe religious monuments. The Awanites held Susa until it was retaken by Shulgi, the powerful Ur III king. [*See* Ur.] After the fall of the Ur III Empire, the Shimashkian kings, arguably located in Luristan, established hegemony over Susa and held it for several generations. They were replaced by the dynasty of the Sukkalmahs, whose home territory was at Anshan in Fars, some 515 km (320 mi.) to the southeast, in the Zagros Mountains. The Sukkalmah had a scheme of shared kingship, designed to unite formally the highlands and the lowlands. The economic strength of the Sukkalmah was based on control of the highlands and successful agriculture on the plain and in the Kur River basin. Susa expanded to become an independent regional center and an international city with a population of more than 20,000 individuals.

The sequence at Susa for the second millennium BCE is based on Ghirshman's excavations in Ville Royale A and B. Intramural burials were common. Frequently, the body was enclosed in a ceramic bathtub sarcophagus. [*See* Burial Techniques; Sarcophagus.] Other distinctive objects appearing at this time are vessels sculpted in bitumen or bituminous limestone. During the Sukkalmah phase, burials were placed in a vaulted tomb used for multiple interments. [*See* Tombs.] On the acropolis and in the apadana, administrative and religious structures were erected of which few remains have been identified.

Transitional and Middle Elamite Phases (1600–1000 BCE). In about 1500 BCE both the written and material-culture documentation from Susa virtually ceased. Occupation on the plain diminished and apparently became seminomadic. Archaeological remains have been found in Ville Royale A and Ville Royale II. The site of ancient Kabnak (modern Haft Tepe), 32 km (19 mi.) to the southeast, replaced Susa. [*See* Haft Tepe.] A new capital was constructed by Untash-Napirisha (c. 1340–1300 BCE), called Al Untash-Napirisha (modern Chogha Zanbil), 40 km (25 mi.) southeast of Susa. [*See* Chogha Zanbil.] In about 1200 BCE, Susa regained prominence under the rule of the Shutrukid kings. King Shutruk Nahhunte I (1190–1155 BCE) and his two sons, Kutir Nahhunte and Shilhak-Inshushinak, defeated the Kassites, who ruled Mesopotamia. [*See* Kassites.] Under the Shutrukid dynasty, the kings of Susa and Anshan reached the peak of their political supremacy. They built and rebuilt administrative and religious structures on the Acropole, replacing mud with baked and glazed bricks. They adorned the sanctuary of Inshushinak with Mesopotamian trophies of war, including the Naram-Sin stela, the code of Hammurabi, and Kassite *kudurru* (boundary stones). The Temple of Ninursag on the Acropole, first dedicated by Shulgi in the late third millennium, remained important throughout the Middle Elamite period. In it was found a massive cast-bronze statue of Napir Asu, wife of Untash-Naprisha, and the Sit Shamski, a bronze sculpture showing a ritual scene inscribed by Shilhak-Inshushinak. On the western edge of the Acropole the temple dedicated to Inshushinak, chief god at Susa, was also founded in the time of Shulgi. By the Middle Elamite period it was elevated above other structures on the Acropole. The majority of the inscribed bricks in the renovated walls and floors date to the reigns of Untash-Naprisha and Shilhak-Inshushinak.

Neo-Elamite Period (900–600 BCE). At the end of the second millennium BCE, Susa fell from prominence and into a decline until about 700 BCE. There was a long period of political unrest and economic disaster. Archaeological and historical records document Susa's return to prominence late in the eighth century BCE, as part of the resurgence of Elamite power. Susa, together with the Babylonians and Elamites, fought the Assyrians repeatedly. [*See* Babylonians; Assyrians.] On the Acropole mound a small temple to Inshushinak, decorated with panels of glazed brick and glazed architectural ornamentation, dates to this period, as do large burial vaults containing gold jewelry. Thus, Susa seems to have been a ceremonial and cultural rather than a political or an economic center.

Achaemenid Period (559–330 BCE). In 646 BCE, Susa fell to the Assyrians. By 550 BCE the Elamites had come under the rule of the Persians, whose powerful Achaemenid dynasty had conquered a vast territory. Darius I (522–486 BCE) fortified Susa and made it his lowland capital. Susa became a vital cosmopolitan city and a locus of interchange. In January 330 BCE, with the approach of Alexander the Great, Susa surrendered to the Greeks. The Achaemenid remains at Susa are primarily from the reigns of Darius I and his great-great-grandson Artaxerxes II (404–359 BCE). Darius I's remains are on the apadana mound. On a gravel platform some 20 m high and 13 ha (32 acres) in area, he built an architectural complex with a residential palace in the south and apadana, or official complex, in the north. Both were oriented north–south. A monumental gate to the east of the palace led into the compound. In the eastern Ville Royale he built a propylaeum and gate.

Susa in the Later Periods. Alexander's destruction of the Persian Empire marked the end of Susa as a capital city. At the close of the fourth century BCE, under the Macedonian rulers, Susa lost its identity and was renamed Selucius of the Eulaeos. Although never colonized, the Susian elite adopted Greek culture. Achaemenid relief sculpture on the donjon was reused on a Greek administrative building.

Dieulafoy identified a settlement from this period near the apadana; Ghirshman found Hellenistic architectural decoration on the apadana. Susa's prosperity during this period is reflected in its expansion to the north and east into the Ville des Artisans. While the people of Susiana were under Macedonian rule, a political entity called Elymaidei coalesced in the valleys of the Bakhtiari Mountains. These mountain people became so wealthy through their control of the trade routes that they financed Antiochus III in his disastrous attempt to ward off the Romans in 187 BCE. Following their Elamite predecessors, the Elymeens rebuilt Susa as an anchor in a short-lived highland-lowland union. It was under the Parthian ruler Mithridates I that a true Iranian empire was reconstituted. [*See* Parthians.] During the forty years of Parthian rule, Susa retook her ancient name. The city flourished and the Parthians, with their immense building projects, obliterated many of the earlier remains on the Ville Royale. During the Sasanian domination from the third to seventh century CE, Susa again lost its status as a regional center. [*See* Sasanians.] The Christian community became suspect following the conversion of Constantine. Ghirshman found traces in the Ville Royale of the violent destruction of the city by Shapur II. On the apadana there is evidence of both a Christian and Jewish presence at the end of the Sasanian period.

The Arab conquest took place in the seventh century without a major destruction of the city. Zoroastrian, Christian, and Jewish communities have been identified in the Ville Royale, while the Muslims were established at the Ville des Artisans. From the eighth to the tenth centuries, imports from Samarkand, China, and the Byzantine world suggest that Susa may have been a pilgrimage center marked by the Tomb of Daniel. By the eleventh century, the site was completely Islamic. In the thirteenth century, the city was abandoned.

[*See also* Elamites; Persians; *and the biographies of Ghirshman and Perrot.*]

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HOLLY PITTMAN

SUSIYA (Ar., Khirbet Susiya), a Jewish village in the Hebron area of southern Judea (Judah), 14 km (9 mi.) south of Hebron, in an area called *daroma* (Heb., "the south") in rabbinic sources and in Eusebius's *Onomasticon* (map reference 1598 × 0905). Its Arabic name is of more recent derivation. The name of the site in antiquity is unknown and it is not mentioned in ancient literature. Susiya was founded in the second or third century CE and prospered into the Early Arab periods.

The ruins at Susiya attracted the attention of numerous nineteenth- and twentieth-century researchers, including

Victor Guérin in 1869; the Survey of Western Palestine in 1874; A. E. Mader in 1918; and Leo A. Meyer and Adolf Reifenberg in 1937. The synagogue was excavated by Shmaryahu Gutman, Ehud Netzer, and Zeev Yeivin from 1969 to 1972. In 1978 Yizhar Hirschfeld excavated a building on the western hill. In 1984 and 1985 Avraham Negev excavated dwelling caves and buildings on the eastern side of the town, and from 1985 to 1987, Yeivin excavated in the same area.

The synagogue is of the broadhouse type, built on an east–west axis. It is one of a regional type that includes the synagogues at Eshtemoa and Ḥorvat Rimmon 1. [*See* Synagogues.] The meeting-room building is approached via a courtyard that was paved with rectangular flagstones and surrounded on the east, north, and south by a portico. The hall was approached through an exedra. A second room adjoins the meeting room on the south, which has three entrances on its short eastern wall. The southern and western walls, and the western end of the northern wall, were each lined with three tiers of benches. Two bemas stood on the synagogue's long northern (Jerusalem-aligned) wall. A large bema slightly west of center was surrounded by a decorated chancel screen. It was approached via three steps that led to a niche that apparently served as the Torah shrine. This niche was flanked by two smaller niches, which Zeev Yeivin believes held menorahs (Yeivin, "Khirbet Susiya, the *Bema* and Synagogue Ornamentation," in *Ancient Synagogues in Israel,* edited by Rachel Hachlili, pp. 93–100, London, 1989). Fragments of a stone menorah were discovered inside the synagogue. The three niches were enclosed with a decorative frame bearing Hebrew dedicatory inscriptions. To the east of this bema was a smaller bema. A single bench, perhaps seating for community leaders, was situated on the northern wall between the bemas.

A carpet mosaic in this synagogue underwent considerable alterations throughout its life. In its first stage the mosaic was executed in white tesserae; in the second it was replaced with a polychrome mosaic. [*See* Mosaics.] The western end of the mosaic was divided into three sections, two of which contained a scene of a hunt and perhaps Daniel in the lion's den. In the center was a zodiac wheel of the sort known from Hammath Tiberias, Sepphoris, Yafia, and Beth Alpha. [*See* Hammath Tiberias; Sepphoris; Beth Alpha.] Only a small section of the zodiac is preserved, as it was subsequently covered with a geometric pattern, which itself is preserved on its eastern end. Before the small bema is the mosaic image of a Torah shrine flanked by two menorahs enclosed by a peristyle. The peristyle was flanked by animals. A similar image appears in the Church of St. John on Mt. Nebo. [*See* Nebo, Mount.]

In the second–third centuries a defensive system was constructed along the town's eastern and southern fringes. A fortified tower (6 × 11 m) was built at the northern end of the site's eastern arm, and a defensive encircling building was constructed. Housing units, tombs, facilities for the production of olive oil, and a wine cellar have also been recovered.

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STEVEN FINE

SUWEIDA (Soada, Dionysias), site located on the western, rainy slopes of the volcanic Jebel al-ʿArab (Jebel ad-Druz, Jebel Hauran) in Syria, the Asalmanos Mountains of Ptolemy (5.15.26), in well-watered countryside where green orchards and age-old terraced vineyards are in contrast to the rugged basalt rock (32°42′ N, 36°35′ E).

Information about the four millennia prior to the Hellenistic period is scarce for lack of archaeological excavations. Surveys have made possible the dating of sedentary settlements from the second half of the fourth millennium onward. Lithic and ceramic production, although with strong local characteristics, shares in the traditions common to the northern Jordan Valley and the Damascus plain. [*See* Jordan Valley.] Tell Debbeh, some 20 km (12 mi.) north of Suweida, is an important Middle Bronze fortified site on a major east–west caravan road. Tell Zheir, to the south, reveals the earliest known urban development, with large rectangular houses (15–20 × 3.50–5 m) linked chainlike in rectilinear or right-angled alignments. The area's dams are dated to the Chalcolithic period (mid-fourth millennium), and water catchment systems and subterranean channeling to the Early Bronze Age.

In the Iron Age, the Suweida region, with its many surrounding villages near areas of rich soil, was part of the Aramaic kingdom of Bashan, with its capital at Damascus. After Tiglath-Pileser III's conquest in 732 BCE, it was part of the Assyrian province of Haurina.

The Nabatean-Arab presence at Suweida dates from before the Nabatean kingdom that lasted from the late fourth century BCE to 106 CE, the year of the creation of the Roman Provincia Arabia. This part of the Nabatean kingdom was probably governed by indigenous, autonomous sovereigns. After the Roman conquest in 64 BCE, Herod the Great was

entrusted with governing this zone (in 23 BCE). In 92/93 CE, it was annexed to the Roman province of Syria.

Nabatean and Safaitic are the main languages of the local ancient epigraphy, together with Greek, which became the official language in the first century BCE. With only one inscription (the bilingual on the *nefesh* stela at Ḥamrat) Suweida (with Qanawat/Canatha and Seia, with a dozen inscriptions, including the dedication to Baʿal Shamên from its main temple) is at the northernmost fringes of the extent of Nabatean Aramaic inscriptions. Safaitic petrographs can be found outside urban settlements, on funerary and commemorative tumuli, scattered in fields, or concentrated in cairns. [*See* Safaitic-Thamudic Inscriptions.] Extensive genealogies and references to historic personalities and events, dating at the earliest to about 500 BCE to the second half of the first century CE, characterize these open-air archives, which display an extraordinary ability to write among the population. The area is, as well, among the Near East's richest in Greek and Latin inscriptions.

The local deities were the great Baʿal Shamên, Allat/Athena, the morning and evening stars Azizos and Monimos, the protecting "Gad," and Dushara/Dionysos, in whose honor Suweida/Soada was renamed Dionysias. Until this change (under the reign of Emperor Commodus, c. 180–185 CE), Soada, like a series of other wealthy villages (Gk., *kōmai,* and a few "mother villages," or *mētrokōmiai*), each functioning as an autonomous community with its own peculiar local institutions (an assembly of *bouleutes,* "local magistrates" elected from the different tribes or "communal houses"), was subordinated to the Decapolis city of Canatha. [*See* Decapolis.] This neighbor had been a Greek polis since 55 BCE. They remained the only cities of the district, until Philip the Arab founded the colony of Philippopolis/Shahba, probably his native village, in about 244 CE, followed by Maximianopolis/Shaqqa in the last years of the third century. The romanization of the region was secure enough in the second century for an imperial road to be built across the plateau from Damascus to Dionysias and Bostra/Bosra. [*See* Bosra.]

Basalt stone, in black, gray, or rarer red hues, is the mark of the landscape and of all its buildings. This stone is difficult to work, so that, once carved, the blocks, roof slabs (their maximum span is nearly 4 m), corbels, and arch stones were continually reused. The main features of the school of the Hauran, characterized by its temple architecture and its richly carved decoration, appear during the pre-Provincial period.

The best example of the local temple type is the Seeia pilgrimage complex dedicated to Baʿal Shamên: the almost square plan has a corridor around all or three sides of the cella. The flat facade has heavily molded frames, even along the threshold, underlining the large central door and two flanking niches; all three are set back, inside a central columned porch; the column bases carry an unusual crown of falling leaves; the capitals are of the heterodox Corinthian type, with one flat, squat row of acanthus leaves under a central bust or vegetal motif that projects between two large corner scrolls; strongly protruding entablatures carry ornate bands of stylized reinterpretations of Oriental and Greek motifs or undulating vine and fruit branches. The bases and tops of walls flare, and the acroteria are eagles. Two vast walled courtyards, both with secondary temples, and the so-called *theatron* (Enno Littmann in Butler, 1921, no. 100), a peristyle court skirted with steps on three sides, precede the temple, which is dated from 280 to 311 of the Seleucid era, or 33/32 to 2/1 BCE. The very similar peripteral temple at Suweida had an interior colonnade replacing the corridor. The ʿAtil temple (151 CE, built under Antoninus Pius) and the Qanawat Helios temple (a peripteros with a large vaulted crypt under the podium) and destroyed Zeus temple followed the same richly ornate tradition.

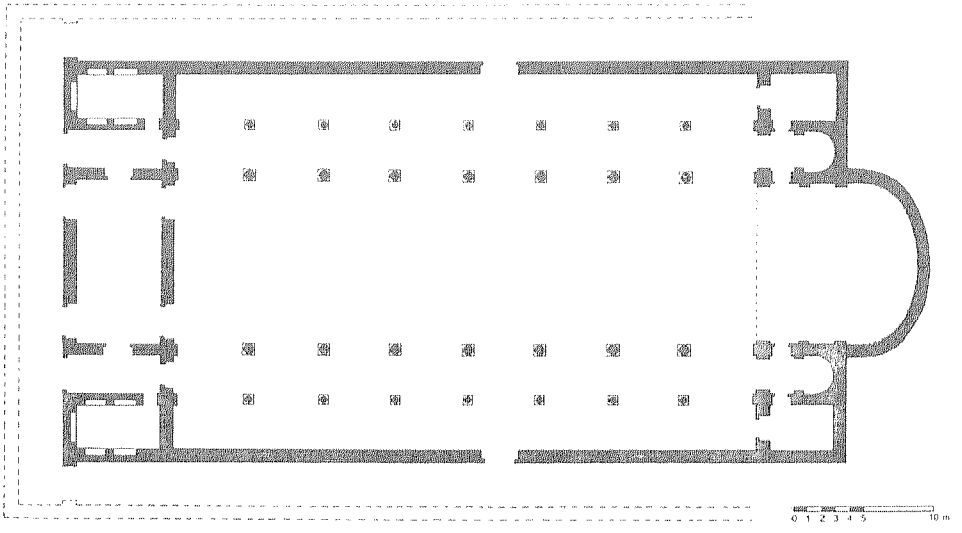
A local type of building is the "sacred *Kalybē*" (inscription at Umm ez-Zeitan, also in Shaqqa, al-Hayat, and Shahba), essentially a large, vaulted exedra with two side wings, standing on a high podium, and dominating an open area.

Domestic architecture in this grape- and cereal-producing caravan country uses ground floors for storage and stables, with rows of well-dressed stone troughs for a variety of animals; stone stairs against the courtyard walls led to mostly residential upper floors.

The funerary architecture starts with huge, sometimes towerlike, cairns with either an inner megalith-type chamber with a central column supporting a stone-slab roof or just a slightly sunken tomb under a pile of stones. Numerous ornate and inscribed lintels indicate more built tombs than stelae. The Nabatean mausoleum of Ḥamrat, now destroyed (see Brünnow and Domaszewski, 1909, pp. 97–99), was a solid stone cube, adorned with an applied Doric order alternating with trophies. Hypogeum tombs are reached by short ramps or steps, and their central aisle is lined with one or two tiers of large loculi. Some have chimneylike air-circulation systems and an *ossuarium.* They are crowned with stepped pyramids or pavilionlike structures. Dovecotes, epigraphically identified, are built over a series of square tombs from the fourth century CE onward (Celeistinos's tomb at Rimet el-Lof, at ʿAtil, Sleim, Shaqqa), while square, multistoried tower tombs are mostly Byzantine (Qanawat, Majadil). [*See* Tombs; Ossuary.]

In sculpture, the hard, dark-gray basalt generated figures whose anatomy is geometrically stylized, with strongly graphic surface details. The repertoire prior to the Provincia Arabia is of griffins, snake-footed monsters, and winged sphinxes, together with eagles, lions, and horses. Figures wear remarkable costumes: loincloths, short tunics and scarves, plumed headpieces, leafy crowns with a central gemstone, and high, closed footwear. The introduction of

SUWEIDA. Figure 1. *Mosaic pavement.* From a house in Shahba-Philippopolis. Late third–early fourth century CE. (Courtesy P. Donceel-Voûte)



SUWEIDA. Figure 2. *Plan of the Great Basilica.* Late fifth–early sixth century CE. (Courtesy P. Donceel-Voûte)

Roman formulas after 106 CE accounts for more complex sculptural contours, though the earlier symmetrical frontality and stocky proportions remain. The new types that appeared were busts together with Athena/Allat, Herakles, and innumerable Nike/Victory figures.

The luxuriously polychrome mosaic floors with grand mythological scenes and personifications were produced for peristyle houses in Philippopolis/Shahba from the mid-third century CE (see figure 1). Christian pavements innovate with complex and delicate overall designs of interlace and regularly set rosebuds in scale patterns, as in Suweida's Great Basilica.

Christian Dionysias, which has been noted for its bishops since 325, has the largest standing church in the area (see figure 2): a fifth-century, five-aisled pilgrimage basilica with galleries, high exterior porticoes, two four-storied front towers, four lofty front doors that open onto an esplanade that reaches the city wall, and with a series of annex chapels, courtyards, and halls. [*See* Churches; Basilicas.]

[*See also* Nabateans; Syria, *article on* Syria in the Persian through Roman Periods; *and* Temples, *article on* Syro-Palestinian Temples.]

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PAULINE DONCEEL-VOÛTE

SYNAGOGUE INSCRIPTIONS.

Greek, Aramaic, Hebrew, Latin, and Middle Iranian inscriptions have been recovered from the ruins of synagogues that served Jewish communities throughout the Roman world. These inscriptions date between the third century BCE and the eighth century CE. Inscriptions provide important sources for both the history of the synagogue and the Jewish community in the Greco-Roman period.

Inscriptions from Palestinian Synagogues. A large number of inscriptions have been recovered from Palestinian synagogues. Hebrew and Aramaic inscriptions from synagogues in the land of Israel have been assembled and edited by Joseph Naveh (1978, 1989); the Greek inscriptions have been edited by Baruch Lifshitz (1967) and Lea Roth-Gerson (1987). Of the approximately 151 synagogue inscriptions from Israel collected by these authors, approximately 97 are in Aramaic, 16 are in Hebrew, and 38 are in Greek. The vast majority are dedicatory inscriptions, and the remaining fifteen either feature literary sources or function as short labels for visual images (fifteen of the total). Only one inscription dates to the Late Second Temple period, the remainder deriving from synagogues dating to between the fourth and the eighth centuries.

The earliest synagogue inscription from Israel is in Greek and dates to the first century BCE or the first century CE. It was discovered by Raymond Weill just south of the Temple Mount in Jerusalem:

> Theodotos, son of Vettenos the priest and synagogue leader [*archisynagogos*], son of a synagogue leader and grandson of a synagogue leader, built the synagogue for the reading of the Torah and studying of the commandments, and as a hostel and the chambers and the water installations for the accommodation of those who, coming from abroad, have need of it, of which synagogue the foundations were laid by his fathers and by the elders and by Simonides.

This inscription parallels contemporaneous literary sources in its presentation of this Jerusalem synagogue.

Dedicatory inscriptions within Palestinian synagogues are attested in tannaitic (early rabbinic) sources, which date to the second and third centuries CE. (Tosefta *Meg.* 2:14, 16) and in amoraic sources, which date to the third and fourth centuries (*J.T., Meg.* 3:2, 74a). Extant inscriptions generally include mention of the donor(s), the gift, and some sort of blessing or laudatory formula. Jewish use of public dedicatory inscriptions was part of a general cultural trend in the Greco-Roman period—polytheists, Christians, and Jews all marked their communal benefaction in this manner. As in Christian contexts, dedicatory inscriptions appear on architectural members such as columns and lintels and were painted on walls, set within mosaic pavements, and inscribed on ritual objects. [*See* Wall Paintings; Mosaics.] Epigraphic remains parallel rabbinic sources in suggesting that, like churches, elements of synagogue buildings were donated by community members on a subscription basis, and that no individual donated an entire synagogue building. [*See* Churches; Church Inscriptions.]

Synagogue dedicatory inscriptions can be divided into two distinct linguistic groups. The first includes those composed in Aramaic, Hebrew, or in Greek with many Semitic features that often utilize similar literary formulae. The second group was composed in a non-Semiticized Koine Greek

and are most closely related to Christian inscriptions. The use of Aramaic, Greek with Semitic elements, or standard Koine Greek seems to have been determined by the spoken language of the synagogue community. It is not clear whether this was the case with Hebrew, which often appears because of its liturgical use in the synagogue. Aramaic, Greek with Semitic elements, and Hebrew appear most frequently in regions with a heavy Jewish population: the Galilee, the Golan, the Jordan Rift Valley, and the southern Judean hills, while purely Greek formulae appear mainly in areas with a non-Jewish or mixed population, on the coastal plain and in the Decapolis cities of Scythopolis (Beth-Shean) and Gerasa (Jerash).

Aramaic, Hebrew, and semiticized Greek dedicatory inscriptions are characterized by their close relationship with extant liturgical texts and amulets. Such biblical phrases as "amen sela" and "peace unto Israel" appear at numerous sites. A parade example of the close relationship between synagogue inscriptions and liturgy is the dedicatory inscription of the Jericho synagogue.

> Remembered for good, may their memory be for good, all of the holy community, the elders and the youths, whom the King of the Universe helped and who donated and made the mosaic.
> He who knows their names and the names of their sons and the people of their households will write them in the book of life [with all] the righteous [ones].
> All of Israel is interconnected *(ḥăbērim)*. Peace [Amen] (Naveh, 1978, 1989, no. 69).

This text parallels the Kaddish prayer preserved in two liturgies that were related to the Palestinian rite in the Byzantine period. The Kaddish of the Jewish community of Kaffa (Feodosiya) in Crimea reads

> Remembered for good and may their memory be for good . . .
> All of this holy community, the elders and the youths.
> He who knows their names will write them in the book of life with the righteous [ones]. . . .

Similarly, toward the close of the Kaddish from Cochin, India, another parallel to the Jericho inscription is found: "All of the house of Israel is interconnected *(ḥăbērîm)*, amen. . . ." Aramaic, Hebrew, and semiticized Greek inscriptions are generally composed in the second person, which parallels liturgical forms.

Nonsemiticized Greek inscriptions closely parallel Christian inscriptions, as well as dedicatory inscriptions from diaspora synagogues. Like these inscriptions, Palestinian synagogue exempla are often composed in the first person and commonly list a motive for the act of benefaction.

A number of synagogue inscriptions are literary in character, drawing from texts known from biblical and rabbinic sources. All are in Hebrew, the language of Scripture and of much of the liturgy, and date to the sixth century or later. The most important of these is a twenty-nine-line inscription in a mosaic discovered in the narthex of the synagogue at Reḥov (sixth century). This text directly parallels sources in the Jerusalem Talmud (*Dem.*, ch. 2; *Shev.*, ch. 6), and includes some materials that appear in no other version. It is the earliest extant text of rabbinic literature, predating extant manuscripts by centuries. Fragments of lists of the twenty-four priestly courses (*1 Chr.* 24) appear at a number of sites, including Caesarea Maritima, Ashkelon, Reḥov and apparently Nazareth. The priestly courses figure prominently in contemporary liturgical poetry *(piyyut)*. *Deuteronomy* 28:6, "Blessed are you in your coming and blessed are you in your going" appears on a lintel at the Merot synagogue in Upper Galilee. This use of *Deuteronomy* 28:6 parallels *Midrash Tanḥuma', ki-tavo,* "blessed are you when you come"—on the condition that you come to synagogues and study houses—"and blessed are you when you depart"—from synagogues and study houses. This Hebrew inscription also parallels Christian usage of this verse. In general, Christian and Samaritan inscriptions make greater use of biblical texts than do their Jewish counterparts.

An inscription that is unique in its complexity was uncovered in the narthex of the sixth-century synagogue at 'Ein-Gedi. This inscription opens with a list in Hebrew of the generations from Adam through Jafet that appears in *1 Chronicles* 1:1–4. It is followed (ll. 7–8) by a list of the signs of the zodiac; the Hebrew months; and a passage that reads "Abraham, Isaac, and Jacob peace; Ḥananyah, Misha'el, and Azriah (the companions of Daniel), peace upon Israel" (*Ps.* 128:6). This inscription is followed by a dedicatory inscription in Aramaic and a curse against anyone who informs to the gentiles on his comrade or "reveals the secret of the town to the gentiles." The inscription concludes with a second dedicatory inscription in Aramaic. Numerous scholars have attempted to identify the "secret of the town" in this inscription. Saul Lieberman suggests that the "secret of the town" involves trade secrets of the local balsam industry; the inscription concludes with a second dedicatory text ("A Preliminary Remark to the Inscription of Ein Gedi," *Tarbiz* 40 [1971]: 24–26 [in Hebrew]).

Short labels to identify images in the carpet mosaics of a number of synagogues. These generally reflect a literary source. Hebrew texts from *Genesis* 22, for example, appear as labels for the image of the Binding of Isaac at Beth Alpha, and other verses label biblical scenes at Merot and Sepphoris. Zodiac wheels are also labeled to identify the seasons and the signs of the zodiac. In the recently discovered mosaic from Sepphoris both the names of the zodiac signs and the names of the Hebrew months appear. The use of Hebrew in these inscriptions is noteworthy, particularly in synagogues like Beth Alpha, where the dedicatory inscriptions appear in Aramaic and Greek. This follows the preference for the Hebrew language for biblical reading and the synagogue liturgy, as opposed to the spoken Aramaic and Greek of the congregants. In the so-called House of Leontis in

SYNAGOGUE INSCRIPTIONS. *"Betula"—Virgo from the zodiac panel of the Na'aran synagogue mosaic.* Dated to the sixth century CE. Iconoclasts disfigured the mosaic at a later date. (From E. L. Sukenik, *The Ancient Synagogue of Beth Alpha*, Jerusalem, 1932)

Beth-Shean, the city of Alexandria is so labeled in Greek in a Nilotic scene.

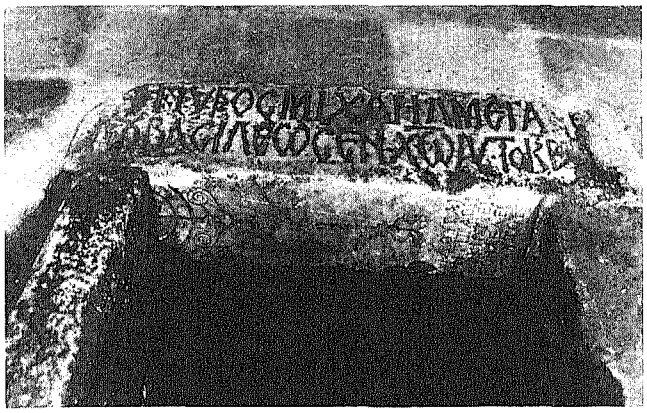
Diaspora Inscriptions. Inscriptions have survived from synagogues throughout the Greco-Roman diaspora, though none have come to light from Babylonia (modern Iraq). In many cases, epigraphic evidence is the only source of information for the existence of synagogues and Jewish communities. This evidence has not been assembled systematically in its entirety, but significant corpora exist (Frey, 1936; Lifshitz, 1967; Horbury and Noy, 1992; Noy, 1993).

The earliest sources for the history of the synagogue are inscriptions from Ptolemaic Egypt that date from the third century BCE onward. The *proseuchē* (lit., "prayer place") appears in these Greek inscriptions. Virtually nothing is known about this institution in its early stages other than that it shows great similarity to contemporaneous pagan temples and associations in Egypt. Like non-Jewish religious institutions, at least one Jewish "prayer place" in Ptolemaic Egypt was built on "holy land" *(hiera gē)* and another was built within a "holy compound." A dedicatory inscription from a *proseuchē* in Xenephyris (Kom el-Akhdar) commemorates the benefaction of "the pylon *(ton pulona)* of the *proseuchē*." This "pylon" seems to represent a particularly Egyptian element, drawn from the architecture of native temples. Like contemporaneous temples, the Egyptian prayer place was often dedicated to the Ptolemaic ruler. Like Egyptian sanctuaries, for example, at least one prayer place in Ptolemaic Egypt was a place of asylum. In addition, synagogue officials sometimes bore titles that were very similar to those held by their pagan counterparts. A structure on Delos of the late second century BCE to mid-first century CE has been identified as a synagogue based primarily on its dedicatory inscriptions, although the evidence is not conclusive.

The largest concentrations of diaspora synagogue inscriptions from Late Antiquity in the Near East were uncovered in the synagogues of Dura-Europos in Syria and Sardis in Asia Minor. The refurbishing and enlargement of the synagogue at Dura-Europos on the Euphrates River in 244/45 is commemorated in Aramaic and Greek inscriptions. Together with these texts, labels in Aramaic and Greek accompany selected scenes in the wall paintings, and graffiti in Greek, Aramaic, and Middle Iranian are scratched into the paintings. The language of the Aramaic texts is closely related to Palestinian Jewish Aramaic texts. Two papyri, one of which seems to be Hebrew liturgical texts were discovered in proximity to the synagogue at Dura. The practice of inscribing graffiti on the walls of religious shrines was common in non-Jewish contexts, though this is the only evidence for graffiti within a Late Antique synagogue. These inscriptions provide important information regarding the life of the synagogue between its rededication in 244/45 and its destruction eleven or twelve years later.

Considerable inscriptional evidence has been uncovered from the monumental fourth–seventh-century synagogue at Sardis in Lydia in Asia Minor. Most inscriptions from this synagogue are in Greek. A number of inscriptions are characterized by their religious content. An inscription found within the hall refers to the *nomophylakion*, "the place that protects the Law [or, Torah]." A second inscription demands pious religious behavior toward the Scriptures: "Find, open, read, observe." It has been suggested that this inscription, on marble, might have been attached to the base of the Torah shrine. All the Hebrew inscriptions were discovered next to the southern shrine. In an inscription discovered near the bema of the synagogue near the center of the hall "a priest [*heuron*] and *sophodidaskalos*" ("teacher of wisdom," or "wise teacher") is mentioned. A fragment of a large marble menorah, whose branches once spanned more than a meter and that was inscribed with a dedicatory inscription and an inscription recording the donation of a *heptamyxion*, a "seven branched lamp," have been discovered.

An inscription from Side in Pamphylia that probably dates



SYNAGOGUE INSCRIPTIONS. *"Who gives bread to all flesh, for His mercy endures forever" (Ps. 135(6):25).* Dated from the fourth to seventh century CE, from Iznik (ancient Nicaea). The inscription was reused in a Byzantine tower by King Michael in 857–858 (inscription to the right) and later in a baptismal pool. (Photograph by Taylan Sevil; courtesy S. Fine)

to the fourth century is of particular interest when read against the backdrop of the details of the Sardis synagogue:

> [I, Is]aac, administrator of the most holy first synagogue, made successful construction. I both filled in the marble [floor] from the raised stage to the *simma* and polished the seven branched lamps and the two chief capitals (or columns). The fifteenth year of the indiction, the fourth month.

This "most holy" synagogue was constructed with a raised stage, a *simma* (perhaps an apse), and was paved with an expensive marble floor. While it is unclear what is meant by the "two chief columns," the synagogue apparently had metal menorahs in need of polishing. While no physical evidence of this synagogue has been preserved, many of its attributes appear in the contemporaneous synagogue at Sardis.

Bernadette J. Brooten (1982) has argued that in the Greco-Roman diaspora women served as synagogue leaders. This is based upon funerary inscriptions that refer to women as "mother of the synagogue" and as "elder." Tessa Rajak and Leonard V. Rutgers have recently independently disputed this reading of epigraphic sources.

A number of inscriptions reflect a particularly close relationship between diaspora communities and Palestine. This includes the uses of the term *holy place* to denote synagogues as far afield as Stobi in Macedonia *(hagios topos);* Naro (Hamman Lif) in Tunisia *(sancta synagoga);* and Hammath Tiberias *(atra qedisha, hagios topos).* Particularly striking is the requirement of the benefactor of the Stobi inscription, an inscription dated to 280–281:

> (The year) 311. (I Claudios) Tiberios Polycharmos, also called Achrios, father of the community of Stobi, having lived all [my] life in accord with Judaism [have] because of a vow [added] to the holy place the buildings as well as the triclinium with the tetrastoon out of my own funds without touching in any way the sacred [funds]. But [I declare that] I Claudios Tiberios Polycharmos and my heirs keep for our lifetime all power and ownership over the upper chambers. Whosoever wishes to make changes beyond these decisions of mine will give the patriarch 250,000 denarii.

This "patriarch" here is generally understood to be the patriarch in Palestine, considered to have been the Jewish ethnarch throughout the Roman Empire. An inscription listing the twenty-four priestly courses was discovered in Beit al-Hasr in Yemen, which parallels those uncovered in Israel. Synagogue functionaries are often mentioned in synagogue and funerary inscriptions. One particularly widespread title for the synagogue leader is *archisynagogos.* This term, known in Palestine as well, seems to be a translation of the Hebrew *rosh ha-kĕnesset,* "head of the assembly" (as, for example, in Tosefta *Meg.* 3:21).

Synagogue inscriptions from Palestine and the Greco-Roman diaspora provide important evidence for the religious and social history of Judaism in Late Antiquity. Often, they represent the only literary evidence for long-forgotten Jewish communities, as well as keys for interpreting architectural and artistic evidence. These inscriptions form a continuum with Late Antique Jewish literature from the land of Israel and with pagan and Christian dedicatory inscriptions. Epigraphic sources are important evidence for both the Judaism shared by Jews in the land of Israel and the Greco-Roman diaspora and for the Judaism unique to each.

[*See also* Aramaic Language and Literature; Greek; Hebrew Language and Literature; Inscriptions, *article on* Inscriptions of the Hellenistic and Roman Periods; Latin; *and* Synagogues. *In addition, most of the sites mentioned are the subject of independent entries.*]

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STEVEN FINE

SYNAGOGUES. The word synagogue, from the Greek *sunagoge,* a place of "coming together" is equivalent to the Rabbinic Hebrew *beit kĕnesset* and the Palestinian Jewish Aramaic *kĕnishta* or *beit kĕnishtâ,* "house of assembly." Synagogues are known to have served Jewish communities throughout the Mediterranean basin and the Near East during the Greco-Roman period. Much archaeological evidence for this institution has been uncovered, the largest concentration having been discovered in the land of Israel. Read together with extant literary sources, archaeological sources provide important evidence for the development of the synagogue during its formative centuries.

Palestinian Synagogues. By the first century CE synagogues existed throughout the land of Israel. They are mentioned in the writings of Josephus and of Philo of Alexandria and in New Testament and rabbinic literature. Philo presents the Essene community as having come together on the Sabbath in "sacred spots (Gk., *hierous topous*) which they call synagogues" (*Every Good Man is Free,* ll. 81–82). Rabbinic and New Testament sources mention synagogues in various locales. In Jerusalem they are said to have served specific expatriate diaspora communities (*Acts* 6:9; Tosefta *Meg.* 2:12). Literary sources are virtually unanimous in presenting first-century synagogues as places where Jews gathered to read and study scripture (for example, Josephus, *Against Apion* 2.175; *Lk.* 4:16–22; *Acts* 13:13–16). Communal prayer is not presented as a function of synagogues before 70 CE. A Greek inscription discovered by Raymond Weill just south of the Temple Mount in Jerusalem, called the Theodotos Inscription after its donor, confirms this situation. According to this inscription, this synagogue was to be used for "reciting the Torah *(nomos)* and studying the commandments, and as a hostel with chambers and water installations to provide for the needs of itinerants from abroad" (Lea Roth-Gerson, *The Greek Inscriptions from the Synagogues in Eretz-Israel,* Jerusalem, 1987, pp. 76–86).

Buildings at Masada, Gamla, and Herodium have been identified as synagogues. All are characterized by rows of benches lining their walls. The building at Gamla is a large freestanding structure. A ritual bath, or *miqveh,* is located adjacent to it. [*See* Ritual Baths.] The Masada meeting room is located in the casemate wall on the northwest side of the hill; it was completely renovated by the rebels during their occupation of Masada during the first Jewish Revolt against Rome (66–74 CE). [*See* First Jewish Revolt.] Its entrance on the southeast, opposite a small room in the northwest corner that was apparently used to store biblical scrolls. Fragments of biblical texts were discovered buried beneath this small room. The location of the small room on the northeast wall suggests an internal alignment within the synagogue and perhaps an alignment toward Jerusalem. A room at Herodium was also fitted with benches during the First Jewish Revolt. On the basis of the similarities between these benches and those at Masada, some scholars identify this room as a synagogue.

Archaeological remains that pertain to synagogues from the late first or second centuries CE are rare. The excavators report the discovery of a second-century synagogue in the first phase of the synagogue at Nabratein in the Upper Galilee (see figure 1). The building has four columns, a possible reader's lectern, suggested by an imprint in the plaster floor, and is aligned toward the south, in the direction of Jerusalem (Meyers et al., 1981).

Tannaitic literature provides ample information about synagogues within communities influenced by the rabbinic sages. Torah reading and study are portrayed in this literature as the primary functions of the synagogue. Tannaitic sources also present new functions that took place within synagogues, the most significant of these being the development of communal liturgy. Some synagogue buildings in late first- and second-century Palestine were apparently private buildings converted into public synagogues (Mishnah *Ned.* 9:2). Tosefta *Megillah* 3:21–23 presents instructions for the construction of an ideal synagogue based upon biblical exegesis. Like the Tabernacle/Temple, this text suggests that synagogues were to be built "at the high point of the

town," their doors open to the east. The Tosefta presents a plan for the internal arrangement of the synagogue:

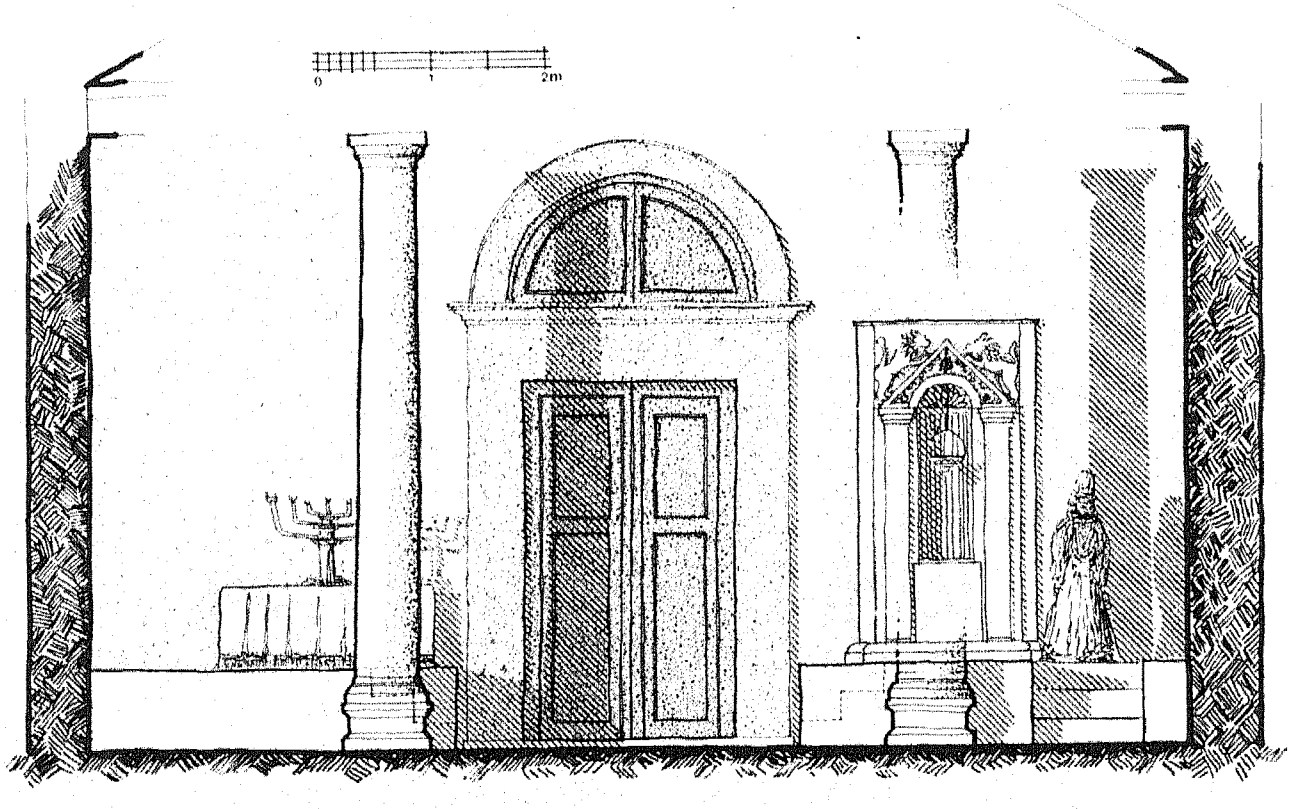
> How do the elders sit? Facing the people, their backs to the *qōdesh* [Jerusalem].
> When they set down the [scroll] chest—its front is toward the people, its back to the *qōdesh.*
> The *ḥazan ha-kĕnesset* (community leader) faces the *qōdesh.*
> All the people face the *qōdesh.*

Some synagogues seem to have been illuminated with seven-branched lampstands (menorot) during this period.

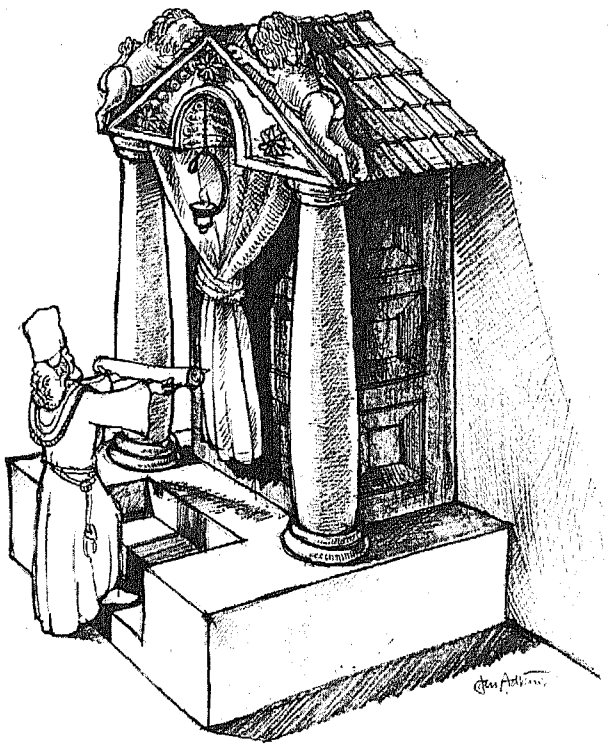
Amoraic literature dating to the fourth and fifth centuries and postamoraic literature, dating from the fifth century through the close of antiquity, present synagogue buildings as having been a common feature on the Palestinian landscape by the third and fourth centuries. This phenomenon is also noted by Jerome (Commentary to *Is.* 57:12). Synagogues also served as primary schools (*J.T., Meg.* 3:3, 74a; Pesiqta' de-Rav Kahana', pp. 255, 381, 422). Synagogue liturgy developed greatly during Late Antiquity, as is reflected in the rich liturgical poetry *(piyyut)* that has survived. Temple imagery was increasingly transformed by synagogues during this period, the Torah shrine being conceptualized in terms of the biblical Ark of the Covenant. This relationship is made clear in the Jerusalem Talmud (*Ta'an.* 21, 65a), a tradition attributed to Rabbi Huna the Great of Sepphoris. This sage is said to have lamented on the occasion of a public fast that "Our fathers covered it [the Ark of the Covenant] with gold, and we cover it [the Torah ark] with ashes." The Torah shrine was the focal point of the synagogue (see figure 2), the "sanctity of the ark" being greater than the "sanctity of the synagogue" building as a whole (*J.T., Meg.* 3:1, 73d).

Remains of more than one hundred synagogues dating from the late third through the eighth centuries have been identified in Palestine. This large corpus provides a well-developed image of the synagogue during the period, reflecting a rich religious culture through a limited repertoire of architectural, artistic, and epigraphic forms.

Synagogues conforming to three main architectural types were constructed by Jews in Late Antiquity in Palestine: the broadhouse, the "Galilean-type," and the longhouse basilica. [*See* Basilicas.] From the fifth century onward, longhouse basilicas were often apsidal. While a regional and



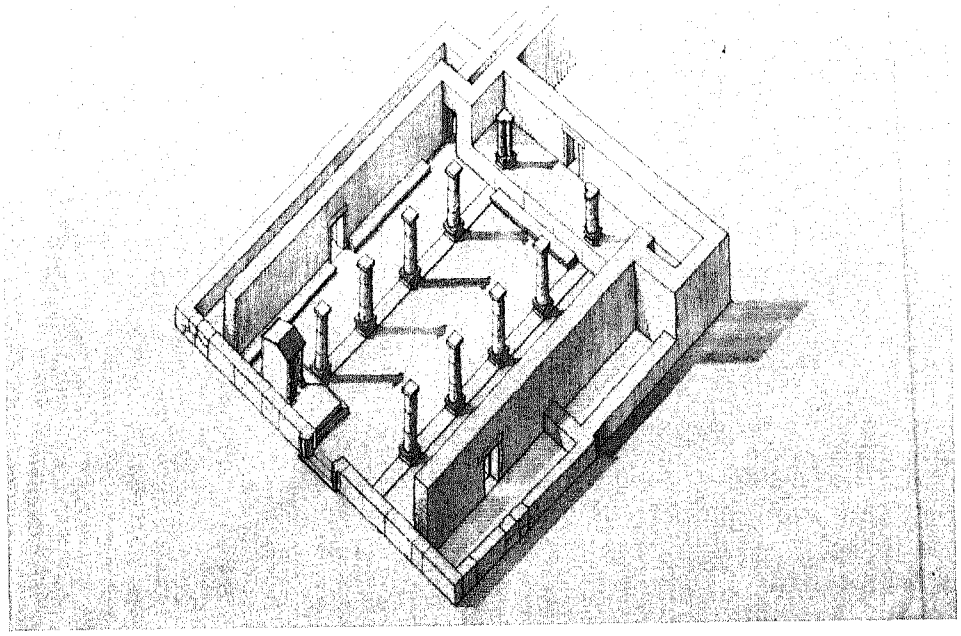
SYNAGOGUES. Figure 1. *Reconstructed interior south wall, synagogue at Nabratein.* Late Roman period. Bemas and Ark are depicted. (Courtesy Meiron Excavation Project)



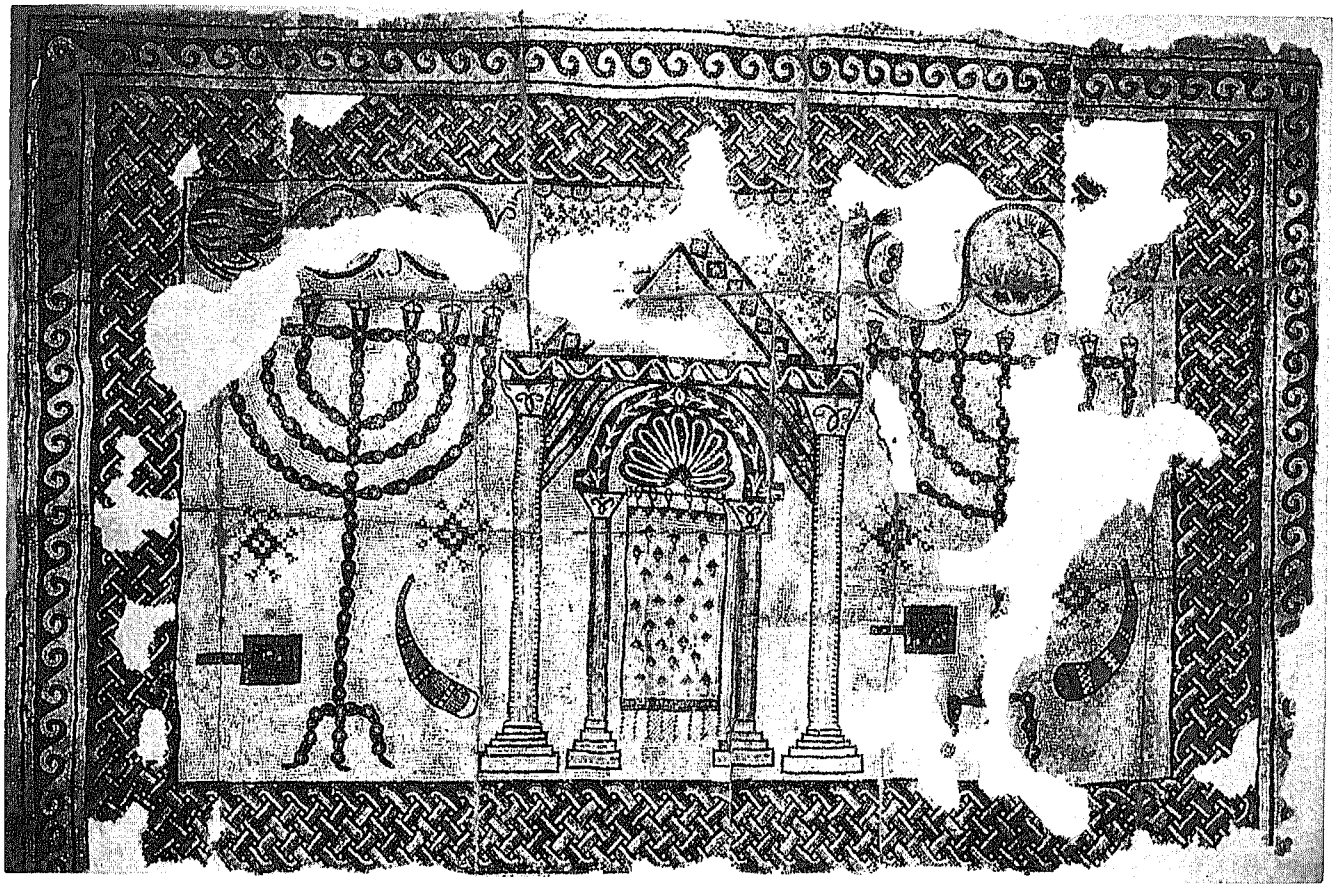
SYNAGOGUES. Figure 2. *General representation of the ark.* Features of an ark include the bema (raised platform), two columns, the two lions of Judah, and the *ner tamid* (eternal light). (Courtesy Meiron Excavation Project)

chronological distribution of synagogue types is apparent, these "types" in no way reflect a strict geographic or chronologic typology. Often, synagogues of different types existed in close proximity to one another, as is the case of the broadhouse synagogue at Khirbet Shemaʿ and the nearby Galilean-type basilica at Meiron. The basilica form was adapted by both Jews and Christians during the fourth century, although Tosefta *Sukkah* 4:6 and the third-century synagogue at Gush Ḥalav suggest that Jews had built basilica-type synagogues earlier (see figure 3). Variety in architectural patterning and ornamentation is accompanied by the rather common placement of the Torah shrine on the wall facing Jerusalem.

The principle of sacred orientation can be seen in each of the architectural types. In the Galilean basilica (Capernaum, Chorazin, Meiron, Nabratein and Barʿam, Umm el-Qanaṭir and Arbel), the side aisles on the western, northern, and eastern sides, though not on the southern wall within the synagogue stresses the importance of this Jerusalem-aligned wall. Typical of this group is the structure uncovered at Meiron, where the triple facade faces south toward Jerusalem. It is likely that the Torah shrine was placed between the portals of this structure, as at Merot in Upper Galilee and as has been conjectured at Capernaum and Chorazin. Some scholars have posited the existence of portable Torah chests that were brought into the synagogue for communal Scripture reading, arguing that the image of a wheeled carriage at Capernaum represents one. There is no corroborating literary evidence for this suggestion. Both the orientation of the basilica and the suggested location of the ark necessitated



SYNAGOGUES. Figure 3. *Isometric reconstruction, synagogue at Gush Ḥalav.* (Courtesy Meiron Excavation Project)



SYNAGOGUES. Figure 4. *Mosaic, Beth-Shean synagogue.* The Ark of Law is depicted in the center. (Courtesy ASOR Archives)

that the worshiper enter the synagogue through one of its three main portals and turn to face the Torah shrine and Jerusalem to the south.

In the broadhouse synagogue, the wall of orientation is one of the longer, or broader, walls. The Torah shrine is located in the long wall aligned with Jerusalem. Broadhouses have been discovered at Nabratein, phase 1, and at Shemaʿ in Upper Galilee, and at Susiya and Eshtemoa in the Mt. Hebron region of Judea (Judah).

In longhouse and apsidal basilica synagogues the visitor generally crossed the expanse of an atrium, sometimes a narthex, and the nave to reach the Jerusalem-aligned wall. At the center of this wall, the building's focal point, the Torah shrine, often stood on a raised platform and seems to have been flanked by seven-branched menorahs. This imagery is reflected, for example, in the synagogue mosaic at Hammath Tiberias B, level 2a. Synagogues of the sixth century and later, including those at Naʿaran and Beth Alpha, often included an apse in the Jerusalem wall that housed the Torah shrine, a feature borrowed from contemporary churches. [*See* Churches.] The apse and bema were sometimes separated from the nave by a chancel screen. Also borrowed from Christian architecture, the screen served to emphasize and distance the area of the Torah shrine from the assembled community. An ornate chancel screen also appears in a broadhouse synagogue at Susiya. The chancel screen is in Hebrew called a *geder la-bāmâ,* "partition for the podium," in a recently identified source from the Cairo Genizah.

The naves of longhouse and apsidal basilicas were often paved with highly intricate mosaics that, in a number of cases, included images of the zodiac wheel, the Torah shrine area, and numerous dedicatory inscriptions in Aramaic, Greek, and Hebrew (see figure 4). The zodiac wheel clearly represents the course of the Jewish calendar, which is principally lunar, as is made clear by a newly discovered fifth–sixth-century mosaic from Sepphoris. Biblical scenes also appear, including the Binding of Isaac at Beth Alpha, Noah's Ark at Jerash, Daniel in the Lion's Den at Naʿaran, and David playing his Harp in Gaza. Each of these biblical images parallels common themes in Jewish liturgical poetry from Late Antiquity. Particularly significant is a mosaic pavement from the narthex of the sixth-century synagogue at Rehov. This twenty-nine-line inscription directly parallels texts that appear in rabbinic literature. [*See* Mosaics.]

Objects of ceremonial use within the synagogue discovered at a number of sites have shed important light on the

religious lives of synagogue communities. These include elements of seven-branched menorahs from Ma'on (Judea) and Hammath Tiberias A; an incense burner from Beth-Shean A; a chalice from 'Ein-Gedi; a polycandelon from Kefar Ḥananyah; and perhaps plates from Na'anah and Beth-She'arim. Also of interest are amulets discovered at Merot, Ḥorvat Kanaf, and Ma'on (Nirim). All of these objects parallel discussions of synagogue appurtenances that appear in rabbinic and Karaite sources.

Diaspora Synagogues. Most scholars posit that synagogues first appeared in the diaspora. The existence of Jewish "prayer places" (Gk., sg., *proseuchē*) is recorded as early as the third century BCE in Egypt. Little is known about these places of meeting, except that Jews came together in them to "pray." In function as well as form, the *proseuchē* had much in common with contemporaneous Egyptian temples. During the first century, Philo emphasizes the importance of scriptural study within the *proseuchē* (*Embassy to Gaius* 156; *On Dreams* 2.156; *The Life of Moses* 2.216). Synagogues (both *sunagōgē* and *proseuchē*) are recorded as having existed throughout the Near East during the Late Second Temple period. A synagogue in the Seleucid capitol of Antioch on Orontes is of particular note because bronze treasures taken from the Jerusalem Temple by Antiochus IV were deposited there by his successors (Josephus, *War* 7.44–45).

Sources for the history of the Greco-Roman diaspora synagogue after 70 CE are limited to the writings of pagan and Christian authors and archaeological remains. By contrast, synagogues in the Sasanian Empire are known almost exclusively from traditions preserved in the Babylonian Talmud. As in Palestine, the Torah shrine became the focal point of diaspora synagogues that were generally aligned toward Jerusalem. The liturgical reading and exposition of Scripture and communal prayer seem to have been the main religious functions of these synagogues. Temple imagery was particularly important within Greco-Roman diaspora synagogues. Seven-branched menorahs were used both as symbols of Jewish identity and to illuminate some synagogue interiors. The Torah shrine was often called an ark (Heb. *'ărôn*, or Gk., *kiebōtos*), reminiscent of the biblical Ark of the Covenant. Two synagogues in Babylonia, Shaf ve-Yateb in Nehardea and the synagogue of Hutsal, were invested with additional significance and served as national religious centers for Babylonian Jewry (*Meg.* 29a).

Archaeological evidence for synagogues in the Near East includes five extant buildings: Dura-Europos and Apamea in Syria; Priene and Sardis in Asia Minor; and perhaps Delos in the Aegean. In addition, numerous inscriptions have survived that shed light on synagogue life during Late Antiquity.

The Jewish community of Dura-Europos (a caravan city on the Euphrates River) procured a private dwelling and transformed it into a synagogue some time before 244–245 CE, when the building was enlarged and renovated. It was destroyed in 256, during the Sasanian invasion. The earlier synagogue was made up of a series of rooms grouped around a central courtyard. Its assembly hall, which is generally rectangular in shape, in the range of 10.65–10.85 by 4.60–5.30 m. Benches were constructed on all four walls, and an aedicule was placed in the western (Jerusalem-aligned) wall. Seating capacity was for approximately forty people. During the second phase, the forecourt was enlarged and covered with a peristyle leading to the main assembly room (14 × 8.7 m.). This room was surrounded by benches, with a seating capacity of 120. All four walls were decorated with biblical scenes portraying elements of Jewish sacred history. The paintings reflect a high degree of familiarity with stories that also appear in rabbinic literature and a clear stylistic continuity with the pagan and Christian wall paintings at Dura (Kraeling, 1956). [*See* Wall Paintings.] Beneath extensions of the hinge sockets of each of the two doors leading to the synagogue remains of human finger bones were discovered. Similar foundation deposits have been found in Pagan temples at Dura.

The remains of a synagogue were discovered beneath those of a church at Apamea on the Orontes River in Syria. The plan of the building has never been published, but its mosaic pavement and numerous dedicatory inscriptions have been discussed. The synagogue is dated to the late fourth century on the basis of dedicatory inscriptions. A building from Misis (ancient Mopsuestia) in Cilicia in Asia Minor has been identified as a synagogue on the basis of numerous illustrations from the Hebrew Scriptures that appear in its mosaics. The evidence is, however, inconclusive, and this fourth–fifth-century basilical building may well have been a church.

The synagogue at Priene was constructed within a transformed private dwelling. It has been dated by its excavators to the fourth or fifth century. Benches were constructed along the walls of the assembly room (19 × 14 m.) On the eastern (Jerusalem) wall of the assembly room was a Torah niche that served as a focal point. To the right of the shrine a laver was discovered for ablutions. Three reliefs bearing seven-branched menorahs decorated the room. On one, the menorah is flanked by two birds; on another it is flanked by a lulav, an etrog, and a shofar, with volutes identified as Torah scrolls to either side of the menorah's stalk. Similar volutes were discovered on a relief from Sardis and on images of menorahs that have recently been identified in Iznik (ancient Nicaea) and in an American private collection. These volutes seem to represent a regional type distinctive to Asia Minor.

The first-century BCE building identified as a synagogue on Delos is situated in the residential area. Its main hall is rectangular (16.9 × 14.4 m.) but was divided at a later stage with an east-west wall. Marble benches along the west wall are interrupted by a white marble throne that some have identified with the "seat of Moses" mentioned in *Matthew* 23:2. A series of small rooms was discovered south of this room, and a roofed portico runs north-south on the east.

Four ex-voto inscriptions containing the term *theos hypsistos* ("highest god") were discovered in the hall, which are the basis of the building's identification as a synagogue. Epigraphic remains attesting to the presence of Samaritans have been found elsewhere on Delos.

The largest synagogue to survive from antiquity is located in Sardis in Lydia. The building was constructed as part of a gymnasium-bath complex, and was apparently refurbished by the Jewish community during the fourth century. The synagogue's peristyle forecourt, at whose center was a fountain, was entered from the east. Three entrances lead to the assembly hall (54 × 18 m). A stepped apse was at the western end of the hall, and two aedicules, at least one of which was a Torah shrine, were constructed between the doors on the hall's eastern wall. This parallels the placement of the fourth-century Torah shrine in the Ostia synagogue outside Rome and in some Galilean-type synagogues. A raised bema was apparently constructed in the middle of the hall, and a large table flanked by lions stood close to the apse. The floor was paved with a geometric and floral mosaic, and the lower portions of the walls were inlayed with small pieces of colored marble within an architectural frame. According to a dedicatory inscription, the upper portion of the walls or the ceiling was decorated with paintings. Numerous inscriptions were found, mainly dedicatory, in Greek. Of particular interest is a fragmentary marble seven-branched menorah inscribed with a Greek dedicatory inscription. Further alterations and modifications were made periodically, until the synagogue was destroyed with the rest of the city in 616.

Following the lead of Erwin R. Goodenough (see Goodenough, 1953–1968), scholars during the latter half of the twentieth century frequently interpreted synagogue remains as reflecting a broad chasm separating the rabbinic sages and other Jewish communities in Palestine and the Greco-Roman diaspora. Owing to the large quantity of literary and archaeological sources now available, nuanced differences rather than divisions can be seen to characterize those Late Antique synagogue communities. Theirs was a shared religion expressed in the centrality of scripture in the synagogue, in the alignment of the synagogue or Torah shrine toward Jerusalem, and in the use of Temple forms and motifs (such as the menorah) in synagogues. Within this religious continuum, which stretched from the western Mediterranean to the Tigris River, divergent approaches to Jewish belief and practice coexisted.

[*See also* Synagogue Inscriptions. *In addition, most of the sites mentioned are the subject of independent entries.*]

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STEVEN FINE and ERIC M. MEYERS

SYRIA. [*This entry provides a broad survey of the history of Syria as known primarily from archaeological discoveries. It is chronologically divided into six articles:*

Prehistoric Syria
Syria in the Bronze Age
Syria in the Iron Age
Syria in the Persian through Roman Periods
Syria in the Byzantine Period
Syria in the Islamic Period

In addition to the related articles on specific subregions and sites referred to in this entry, see also History of the Field, *article on* Archaeology in Syria.]

Prehistoric Syria

Syria lies at the heart of Southwest Asia. It is bordered on the west by the Mediterranean Sea and on the north by the high Anatolian plateau, while it opens eastward to the plains of Mesopotamia and southward to Arabia. Syria bestrides the land route that connects Africa with Europe and Asia and so has experienced every major episode of human dispersal from Africa in prehistory. Syria has been an important center for economic and cultural innovations, of which the most significant was the development of agriculture and village society. It participated fully in the development of towns and cities and was a major source for the diffusion of those new modes of life to the adjacent continents.

A range of mountains, the Jebel Ansariye, separates the narrow coastal plain from the interior plateau. The great expanse of open country that is inner Syria slopes gradually down to the east. The Euphrates River, which rises in eastern Anatolia, flows across the Syrian plateau, and on through Mesopotamia to the Persian Gulf. Those physical features have strongly influenced climate, vegetation, and patterns of human settlement.

The coastal plain of Syria enjoys a Mediterranean climate. In contrast, the interior beyond the coastal mountains is semiarid with typical continental extremes of temperature. The natural vegetation of the coast and western slopes of the mountains is a Mediterranean forest of evergreen and deciduous oak, pine, and plane trees that extends in a band across northern Syria to the Tigris River. Eastward and southward of the forest is a wide zone of open parkland that, in its natural state, would have consisted of abundant grasslands with scattered terebinth and oak trees. Today, this zone contains the richest farmland in Syria and is heavily cultivated. The rest of the interior consists of steppe that becomes desert in the southeast as rainfall diminishes. Those lands are the home of pastoralists, the several tribes of bedouin that range over the Syrian interior. There are wide variations in rainfall from year to year and over longer periods that can cause catastrophic crop failure in the short term and bring about major shifts in settlement when dry spells persist for decades or more.

During the Pleistocene there were repeated major cycles of cool and warm climate for a duration of one hundred thousand years. The cool episodes were the Ice Ages. Their effects were less drastic in Southwest Asia than in higher latitudes, but they did have a substantial impact on the landscape and, thus, on human settlement. In each major cycle there were numerous briefer episodes of fluctuating climate. Therefore, the prehistoric inhabitants of Syria, like their contemporaries elsewhere in the region, had continually to adapt to a changing environment, a process that has continued to the present.

Initial Human Settlement. Populations of *Homo erectus* first moved out of Africa to settle Asia and Europe more than one million years ago. The earlier evidence for human settlement in Syria comes from a surface site, Sitt Markho, in the northwest, situated on an old river terrace high above the Nahr al-Kabir. Among the very worn flints found at the site were a number of handaxes. These general-purpose cutting and digging tools are characteristic of the Acheulean, the most widespread culture of the Lower Paleolithic.

A number of Acheulean sites have been found throughout Syria, indicating that early populations of humans occupied much of the country. The details of the way of life of most of those early hunter-gatherers are lost because so little has survived from that remote period. An exception is the site of Latamne in the Orontes Valley (Clark, 1967), occupied by Middle Acheulean hunter-gatherers about 250,000 year ago. [*See* Latamne.] This campsite was composed of stone blocks that had once anchored a brushwood shelter. It contained handaxes, other flint tools, and bones of some of the animals hunted or scavenged by the inhabitants.

During the Middle Paleolithic (c. 100,000–35,000 years ago), Syria was inhabited by Neanderthal peoples. Their characteristic flint points, made with a distinctive technology, have been found at sites and in geomorphological deposits across the country. Evidently, human occupation of Syria was more comprehensive and persistent than during the Acheulean. The long sequences of occupation found at rock-shelters like Yabrud and Douara testify to repeated seasonal use of favored sites by Neanderthal groups of hunter-gatherers. The animal bones found at Douara indicate that these people preferred to hunt wild sheep, goats, horses, and other medium-sized animals. [*See* Douara.]

Modern humans, *Homo sapiens sapiens,* occupied Syria about thirty-five thousand years ago. Upper Paleolithic sites are few, indicating that population density declined, perhaps because of the cooler conditions that prevailed for much of this period. The climate began to improve about fifteen thousand years ago, as the temperature rose. Sites of this final hunter-gatherer stage of human prehistory, the Epipaleolithic, have been found quite widely across Syria, suggesting that the population increased in response to the amelioration in climate and the consequent expansion of the forest and grassland that were the most favorable zones for human settlement.

A number of Epipaleolithic sites are known in the Anti-Lebanon Mountains northwest of Damascus, in the hills north of Palmyra, in the Jezireh, and on the Euphrates. The most intriguing is Abu Hureyra 1, found at the base of the great prehistoric settlement mound of that name in the Euphrates Valley. This site was inhabited by more than a score of families of hunter-gatherers who lived first in multiroomed pit dwellings and then in huts built aboveground. The site was located on a gazelle migration route across the steppe, so the inhabitants obtained most of their meat by killing large numbers of these animals as the herds passed by each spring (Legge and Rowley-Conwy, 1987). In con-

trast to this specialized hunting, the people of Abu Hureyra 1 gathered a great number of plants for food and other purposes, more than one hundred and fifty species in all. The environment was so rich that it enabled the inhabitants to stay in their village year round, and so to form the first permanently inhabited village anywhere in Southwest Asia. Indeed, their way of life was so well adapted to their environs that they occupied the village for fifteen hundred years, from 11,500 to 10,000 BP (Moore, 1992). The one serious problem they encountered was the onset of a cold episode, the Younger Dryas, that interrupted the warming climatic trend. This caused the forest zone to retreat westward, depriving the inhabitants of some of the species of plants on which they had depended, notably wild cereal grains and pulses, and obliging them to modify their gathering. The ecological disruption caused by the Younger Dryas was one of the reasons the people of the region developed farming.

Inception of Agriculture. The domestication of plants and animals made it possible to produce increasing amounts of food from a small area of land and so to feed more people. Thus, the development of farming supported a marked increase in the population and the spread of the village way of life. That led to the formation of towns and cities and provided the essential economic base for civilization itself. The advent of agriculture was truly a revolution in human affairs, and Southwest Asia was one of the major centers of agricultural genesis worldwide (Moore, 1985). [*See* Agriculture; Cities, *overview article.*]

Syria was an important area of agricultural development within Southwest Asia, where the wild ancestors of several of the first plants and animals to be domesticated flourished, notably einkorn and emmer wheat, barley, rye, lentils, sheep, goats, cattle, and pigs. [*See* Cereals; Sheep and Goats; Cattle and Oxen; Pigs.] It is thus likely that some of these species were first domesticated there. Furthermore, Syria was linked geographically with the other regions of Southwest Asia, where farming and herding developed early, and was thus a focus for the diffusion of the new way of life.

The earliest evidence for domesticated plants comes from Tell Aswad (Contenson, 1983), an early Neolithic village near Lake Ateibe in the Damascus basin. The inhabitants grew domesticated emmer wheat, lentils, and peas as early as 9700 BP, to which they added einkorn, bread wheat, barley, and linseed a few centuries later.

The next step in the development of an agricultural way of life is best illuminated at Abu Hureyra. There, after an episode of intermittent occupation, a second village, Abu Hureyra 2 (c. 9400–7000 BP), was established. It was to become the largest Neolithic village in Syria, with an estimated inhabited area of 16 ha (40 acres). Abu Hureyra 2 was composed of individual rectilinear, mud-brick houses, each of which contained several small rooms with plaster floors and painted walls. The houses were built close together with small courts and narrow lanes between them. Crafts flourished at Abu Hureyra and, although largely self-sufficient, the inhabitants were in touch with other regions of Southwest Asia through the exchange of scarce materials such as obsidian, marine shells, and turquoise.

The villagers of Abu Hureyra 2 cultivated einkorn, bread wheat, barley, and rye as well as vetches, chick-peas, and horse beans. They kept a few domesticated sheep and goats but still obtained most of their meat from the migrating herds of gazelle, killing the animals with flint-tipped arrows. The people of early Abu Hureyra 2 were farmer-hunters until about 8200 BP, when the herds of gazelle sharply diminished through overhunting. The inhabitants rapidly replaced this source of meat by increasing their existing small flocks of domesticated sheep and goats and began herding cattle and pigs. They became full-time farmers and herders during the eighth millennium BP.

The inhabitants of Abu Hureyra, like many of their contemporaries in the Levant and Anatolia, buried some of their dead under the floors of their houses. After death, a corpse was deposited in a charnel house for the flesh to decay. Later, the bones were collected and given final burial. Often, the skulls were removed and given special treatment. This elaborate set of burial rituals attests to a belief in the afterlife and a reverence for ancestors. This mode of delayed burial began in the late Epipaleolithic and continued until the later Neolithic when burial outside the village became more common. [*See* Tombs; Burial Sites; Burial Techniques.]

The large quantity of human skeletal remains recovered from Abu Hureyra has provided rich evidence concerning the activities of the inhabitants. All the women in the village spent many hours of the day on their knees grinding grain, an activity that caused considerable pain and damaged their spines, knees, and toes. Some of the men suffered in the same way. Everyone engaged in heavy labor connected with agriculture and construction that enlarged their muscles. Some carried heavy loads on their heads, while others damaged their teeth chewing rushes to make mats. Although agriculture and herding provided them with a well-balanced diet, they paid a heavy physical price for adopting farming (Molleson, 1994).

During the eighth millennium BP the climate became warmer and more arid, placing the dry-farming economy of the villages of the interior under considerable strain. The problem was exacerbated by the farmers themselves, who were damaging the soil and vegetation around their sites through tillage, overgrazing, and the cutting of trees and shrubs for fuel. Eventually, the inhabitants of sites like Abu Hureyra and Bouqras, another early village in the Euphrates Valley, left. [*See* Bouqras.] New settlements, such as Hama and Ras Shamra (Ugarit), were founded in the better-watered lands to the west and north that were to endure into much later times, and farming became more intensive. [*See* Hama; Ugarit.]

This shift in population coincided with the development of the new craft of potting. The new technology provided containers for carrying water, storing foodstuffs, and cooking. It brought about a revolution in cuisine because it enabled people to cook a much wider range of dishes than before. Pastoralism developed as a distinct way of life during these final centuries of the Neolithic. Henceforth, people could raise flocks of sheep and goats on the drier steppe lands that were otherwise unsuitable for more intensive farming. [*See* Pastoral Nomadism.]

Emergence of Town Life. The transition to the Chalcolithic (c. 7000 BP) was followed by an expansion of settlement into the steppe to the limits of dry farming, a process encouraged by a slight amelioration in climate. Most people continued to live in villages and to practice mixed farming, but a hierarchy of sites began to emerge. Some settlements, such as Tell Ḥalaf, Tell Brak, Hama, and Ras Shamra grew much larger and became production centers for the manufacture and distribution of pottery, as well as foci for long-distance trade. Several of these sites can be counted among the first towns. [*See* Ḥalaf, Tell; Brak, Tell.]

The two main cultures of this era were the Halaf (c. 7000–6500/6000 BP) and the Ubaid (c. 6500–5500 BP). [*See* Ubaid.] Recent research has demonstrated that the Halaf had its roots in the later Neolithic of the Jezireh (Akkermans, 1990). Halaf sites stretched across northern Syria and Mesopotamia from the Mediterranean Sea to the Zagros Mountains. In Halaf times pottery was produced on a larger scale and on a more systematic basis than in the Neolithic. The vessels were made in a greater variety of shapes, and the fine wares were painted in delicate designs that combined naturalistic and geometric motifs. The more delicate vessels were among the finest prehistoric pottery produced anywhere and were widely traded.

The Ubaid culture originated in southern Mesopotamia but expanded northward and westward until it extended throughout the old Halaf area. For the only time in late prehistory, the lands from the Mediterranean to the Persian Gulf were united in one cultural province. The hallmark of the culture was its pottery: the wares became much more standardized, with less variation in decoration, as production techniques improved. [*See* Ceramics, *article on* Mesopotamian Ceramics of the Neolithic through Neo-Babylonian Periods.] During Ubaid times, life in the Syrian countryside continued little changed from the Neolithic, despite the quickening of long-distance contacts. Growing populations, technological advances, and the beginnings of urbanism, however, presaged the new world of the Bronze Age.

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A. M. T. MOORE

Syria in the Bronze Age

There are only three known foci of literate civilization in the Bronze Age, all three of which are in the Fertile Crescent: the southeast (Sumer, Akkad, Elam); the north (Syria); and the southwest (Egypt). Nowhere else is there such sizable and consistent evidence of the use of writing as the basic pillar of social intercourse and of urban growth as early as the third millennium. The study of Bronze Age Syria introduces some marked peculiarities into this moment of history: while southern (Mesopotamian) models dominate in the early periods, new patterns soon emerge. The configurations of Syrian topography, specifically of the stepped region, favored the development of both a new type of territorial organism, the macroregional state, and an altogether different type of political construct that is not even territorial in nature, the tribe. In the Late Bronze Age, Syria presented

a systematic application of the formula of vassal states that served as the backbone for the provincial consolidation of the later Assyrian Empire; out of this, there developed what appears to be the first steppe kingdom. It is significant in that it begins the process of urbanization for the heart of the steppe, reclaiming for urban life one of the last frontiers still available.

There are important correlations between these developments and the nature of material culture, on the one hand, and the social and ethnic base of the people involved, on the other. At the dawn of the Bronze Age, the Sumerian presence is evidenced by a break in the local sequence of material culture: southern assemblages are present in northeastern Syria practically without adaptations. Soon, within the Early Bronze Age, however, two distinctive traditions begin to be identifiable. They have correlations with both artifactual and linguistic evidence: a Semitic urban area in the basins of the Euphrates and Orontes Rivers, and a Hurrian area on the Khabur plain. [*See* Sumerians.]

A major shift occurs between the Middle and the Late Bronze Ages that, in terms of political development, appears to be of even greater significance than the shift to the Iron Age, some five hundred years later. Prior to about 1500 BCE, there is, among the various urban areas of Syria and the south, a substantial cultural integration, in spite of the differences in material culture and ethnic affiliation. This is a very coherent international order within the outer boundaries of what is properly called Syro-Mesopotamia, of which only the Syrian component will be discussed here. This world comes to an end in the Late Bronze Age. What emerges is the first sharp break between east and west, more or less along the line of the Middle Euphrates; correlative to it is the first sharp break between northern and southern Mesopotamia (Mitanni first and then Assyria in the north and Babylonia in the south). While the epicenter of Mitanni is still in Syria, in the Khabur basin, the east–west split becomes stronger with the advent of Assyria and the shift of the epicenter to the area of the Tigris River. [*See* Mitanni; Assyrians.]

Core Territorial States. The end of the prehistoric age witnessed a hiatus in the unfolding of an indigenous Syrian tradition of material culture. Following the earlier Halaf period, which is strongly marked as North Syrian, especially in its distribution of ceramic types, there was a vacuum, possibly the result of volcanic eruptions of some magnitude of that seems to have left traces in both the geological and the archaeological record (Chaghar Bazar, Ziyada). [*See* Ḥalaf, Tell.] The Sumerians entered this vacuum and, toward the beginning of the Bronze Age, settled in large urban enclaves. Their ethnic identification rests almost exclusively on elements of material culture that associate, with extremely close correlations, the Syrian sites with Uruk and other cities of the Mesopotamian south. [*See* Uruk-Warka.] The motivation for this expansion, and the administrative mechanisms that characterized it, are still under discussion (Algaze, 1993); however, what appears certain is that the first cities, such as Tell Brak and Habuba Kabira, owed their initial momentum to a southern impulse. [*See* Brak, Tell; Habuba Kabira.]

Sumerian influence waned rapidly, and a vigorous indigenous tradition was resumed, as evidenced by EB material culture. The type of ceramic known as metallic ware is the most obvious indicator of such stylistic autonomy, but a variety of other elements confirm the conclusion—whether it be the absence of plano-convex bricks or the development of an independent figurative style. This autonomy is associated with two distinct ethnic groups. The first is Semitic and is closely linked to the Akkadian cities of the south. It is referred to in the literature as the Kish civilization (Gelb, 1981) because its earliest documents come from that city; however, its most distinguished (i.e., archaeologically productive) representatives are Ebla and Mari. [*See* Kish; Ebla; Mari.] The second urban tradition is characterized by a Hurrian ethnic component—although this is still at the level of a working hypothesis. It is predicated on a number of considerations: the importance of the landscape of the Khabur plain in Hurrian mythology (known from later Hittite archives but reflecting an EB context), especially the urban center of Urkeš, now identified with Tell Mozan; the presence, however limited for now, of Hurrian texts and onomastics from the latter part of the third millennium; and the distinctiveness of material culture traits in the great urban centers of the Khabur plain. [*See* Hurrians; Mozan, Tell.] Other major cities on the northern plains illustrate an exceptional urban growth toward the middle of the third millennium (Tell Chuera, Tell Brak, Tell Leilan), which may be followed by a temporary period of decline at the end of the same millennium. [*See* Chuera, Tell; Leilan, Tell.]

What is known of the political configuration of the EB Syrian states is still very limited. The term *core territorial state,* suggests that these were city-states on their way to a limited territorial expansion. The critical issue is to know the extent to which cities that had been politically independent at an earlier stage of their development did, or did not, come under the political control of other dominant city-states. That any city-state would have included a hinterland seems obvious; however, in terms of political structure, the question is whether this hinterland was in turn urban or purely rural. There are no answers yet to this question for the Early Bronze Age.

There is another important dimension to the question of the hinterland. Besides the hinterland directly adjacent to the urban center, there were remote hinterlands that retained a great degree of autonomy but were nevertheless within the purview of certain specific urban areas. Of particular significance are the range of the Ṭur ʿAbdin and, farther north,

the Anatolian plateau (the "Outer Fertile Crescent"). They did not develop urban centers proper in the Early Bronze Age but were in close commercial contact with the great urban centers in the presumed Hurrian area, for which they served as purveyors of raw materials, especially copper and perhaps tin. The second remote hinterland was the steppe, on either side of the Middle Euphrates. All indications are that it remained very sparsely populated throughout the Bronze Age, although it came to be exploited more and more effectively as a vast range land by the rural classes at home in the narrow river oasis.

Alternative Political Structures. The nature of the steppe hinterland was such that the peasants of the Middle Euphrates developed a considerable degree of autonomy from the city (i.e., from Mari). Their pastureland in the steppe was too broadly scattered and generally too unimportant (except, precisely, as pasture land) to be closely controlled by the urban power structures. Thus, they developed a degree of political leverage not enjoyed by their counterparts in the rest of the Near East. In this perspective, it is easier to understand two phenomena that mark a profound structural innovation in the general political development of the ancient Near East and that are specifically Syrian in origin.

The first is the tribe viewed as a political organism, evidence of which is connected with the Amorites. [*See* Amorites.] In political terms, the tribe is the equivalent of the city in that it provides a mechanism for sociopolitical integration; however, it differs from it because in the tribe there is no presumption of territorial contiguity but, rather, a fictitious kinship system that replaces it. The result is analogous: large human groups develop a strong sense of solidarity and, in spite of the greater simplicity of the details of its institutional manifestations, there is an analogous articulation of power throughout the entire group. This also developed to a higher degree the phenomenon of ethnic self-identity, which became increasingly apparent in the texts.

The second major innovation in terms of political constructs is what may be called the macroregional state. Most of the EB and MB territorial states are generally lumped together into two vague categories, city-states and empires, depending on a generic perception of relative size. Territorial accretion does not, however, in and of itself, say much about the internal structure of the political entity. Some clues emerge if the differential nature of the territories and of the populations is considered. In this sense, a macroregional state subsumes geographically heterogeneous territories, so that regional identity has to be achieved through administrative means. The first clear instance of such a state is the one that includes the river oasis of the Middle Euphrates, the steppe on either bank of the river, and the plains of the Khabur triangle. The political center of this macroregion was traditionally in the Middle Euphrates, at Mari; a reduced version continued after the fall of Mari, possibly centered at Terqa. [*See* Terqa.] The titulary of the king includes the term *khana,* which refers precisely to the broader geographical horizon.

Of particular significance is the kingdom established in the same macroregion by Shamshi-Adad I, who was of Amorite origin and had come as an outsider to Aššur, where he succeeded in ousting the local dynasty. [*See* Aššur.] In his effort to reopen the western frontier, he eventually moved the capital of the state from Aššur to Shubat-Enlil, one of the splendid recent discoveries of Syrian archaeology (modern Tell Leilan), and conquered Mari, where he installed his son Yasmakh-Addu as governor. He thus achieved control, to an even larger degree, of the macroregion that had been Mari's special purview. In the east, he left his other son, Ishme-Dagan, as governor, residing in Ekallatum, just south of Aššur. There, the capital followed the state, rather than the other way around, as had been the case with the earlier city-states. The administrative triangle implemented by Shamshi-Adad I is revealing of the new administrative and political pattern identifiable as macroregional: the state is conceived as an entity in itself, not as an outgrowth of a city-state, which retains priority even when it is no longer in the center of action. The case of Ur, some two centuries earlier, may have served as a lesson: located in the extreme southern region of a unified Mesopotamian territory, but maintained as capital in spite of its locational disadvantage, Ur lost out to Ishbi-Erra when he took over the area of Nippur—at the same time the geographic, economic, and religious center of the state. [*See* Ur.] The triangle established by Shamshi-Adad broke forcibly with tradition: the original city-state, Aššur, was replaced by three centers placed strategically at the extreme north–center (Shubat-Enlil), the extreme southeast (Ekallatum), and the extreme southwest (Mari). It is a formula that reveals a high degree of political and administrative awareness, particularly because the first two of these cities were essentially new foundations—a formula that would have illustrious parallels in later times, all the way to the tetrarchy of the Roman Empire. In spite of all this, the state founded by Shamshi-Adad did not survive much beyond his death, and the centrality of the Khabur plains (Jezireh) was not to be found again until some three centuries later by the kingdom of Mitanni.

There is another mechanism of political expansion that is not specifically Syrian but finds its major implementation in Syria: the development of a relationship between suzerain and vassal states. In the political terminology of the times, vassal kings "follow" their respective suzerains—where following presumably implied payment of tribute, preferential trade agreements, and dependence in foreign policy; autonomy was probably guaranteed in most internal matters, as well as in the transmission of power from father to son. Aleppo was the most important suzerain state in the whole

of Syro-Mesopotamia, which makes it especially regrettable that excavations in the levels dating to this period are wellnigh impossible. [*See* Aleppo.]

Cosmopolitan Age. Toward the middle of the second millennium BCE, some radical transformations took place in the Near East that marked a sharp break between two eras. The cultural fracture witnessed in about 1500 BCE appears to have been of greater consequence than the one that took place some five hundred years later. The latter is normally considered the most significant because, with the introduction of iron, the "Bronze Age" came to an end; however, the impact on terminology was perhaps greater than on history.

In about 1500 BCE, politically, the world of the Syro-Mesopotamian territorial states came to an end. In its stead, large macroregional states extended beyond the borders of Syro-Mesopotamia and developed further the premises laid by the earlier formula implemented at Mari and Shubat-Enlil. In Mesopotamia there was, for the first time, the clear regional breakup into Babylonia (in the south) and Assyria (in the north). For the first time Egypt become directly involved in a policy of territorial expansion and military (if not quite administrative) control in Southwest Asia. The Hittites brought Anatolia into close contact with Syria, where yet another kingdom completed the new configuration of these new major world powers: it was the kingdom of Mitanni, which controlled the entire region from the Tigris to the Mediterranean. [*See* Hittites.]

Unlike the Amorite states of Syro-Mesopotamia, these new macroregional states were all quite different from each other, beginning with their ethnic and linguistic backgrounds. Mitanni is centered at the Upper Khabur and is heavily imbued with Hurrian and Indo-European elements. The question as to the location of its capital has been renewed: it would seem to have been either Waššukanni, presumably to be found on the mound of Tell Fakhariyah or Taidu (presumably Tell Hamidiya). Recent excavations suggest that the entire citadel at Hamidiya may correspond to the royal palace, which would then be of extraordinary proportions for that place and time. The kings of Mitanni were on a par with the great powers: their letters have been found in the archives of the Egyptian pharaohs, with whom they intermarried. Like the other documents exchanged among the new regional kingdoms, these letters were written for the most part in Akkadian which, except for Assyria and Babylonia, was not the language of the parties involved. These kingdoms were so foreign to each other they needed a common lingua franca of diplomacy—the first such case in history. [*See* Akkadian.]

Mitanni was the last world power of the Bronze Age to be centered in Syria. Following its demise in the fifteenth century BCE, Syria was broken up into a number of vassal states. Those states recognized their allegiance to the Hittites, following the pattern of suzerain/vassal relationships first defined in the Middle Bronze Age. The internal, institutional history of these kingdoms is of great interest and well documented—particularly Alalakh and Ugarit. [*See* Alalakh; Ugarit.] They were essentially city-states and expanded territorial states, of the type already known from earlier periods throughout Syro-Mesopotamia. The best documentation of a type of imperial control, known also from other areas and periods, but not otherwise well documented, regards the foreign relations these states had with the great external powers, Egypt and Ḫatti. Both Egyptians and Hittites ruled as suzerains vis-à-vis vassals. Because political stability was in the interest of the overlords, as long as the vassals remained loyal, the local kings came in fact to rely on their suzerains as guarantors of their own position. Two details distinguish the Egyptian from the Hittite system. The pharaohs maintained garrison cities manned by Egyptians (e.g., Beth-Shean in Canaan): the high officials in these towns were not really regional governors, but rather contact points in a communication network linking the Syrian kings with the pharaoh. The Hittites, on the other hand, placed a Hittite prince as ruler of a Syrian city (especially Carchemish) almost in the function of a viceroy over Syria. [*See* Beth-Shean; Carchemish.]

One of the LB kingdoms in Syria deserves special mention: Amurru. It is known primarily from complaints lodged against its kings by the rulers of neighboring states and from texts from Ugarit that vividly describe events affecting both kingdoms. There are reasons to suggest, however, that the kingdom of Amurru developed structural particularities that set it apart from the other Syrian vassal states. Its political epicenter was in the inland parts of the steppe, and the cities it occupied, which became the hub of new political activity (such as Sumura, most probably Tell al-Kazel), do not appear properly as capitals: in this respect, Amurru may be regarded as the first state formation properly based in the steppe, possibly without a fully established urban center, unless Palmyra was already beginning to develop then. [*See* Kazel, Tell al-; Palmyra.] Because it reached from the steppe across the coastal ranges all the way to the Mediterranean, it appears as a macroregional state in its own right. It presumably served as a buffer state for the Hittite suzerain kingdom at the border against Egypt, in much the same way that Carchemish functioned against Assyria to the East.

The political system of the "cosmopolitan age" was a total system, in the sense that it did not allow any individual or groups to operate apart from the system. Within the state, everyone had to pay allegiance to the political system, as a subject of the ruler. Refusal to do so could only result in armed conflict or escape. Both patterns are attested. Armed conflict is normally at the level of the ruling class, especially when one dynasty is replaced by another: however, in such cases there is simply a violent transmission of power within

the same type of political system, not an institutional revolution aimed against the regime. Escape of single individuals, or small groups, from one state to another is instead attested more frequently throughout the second millennium BCE. The common term used to refer to them is *ḫapiru:* fugitives, stateless individuals, and social outcasts uprooted from their original homeland and unable to find full legal status in the country to which they have fled. As such they are first attested in MB Syro-Mesopotamia, and then especially in LB Syria, where they became a constant object of international legislation in the numerous treaties of the period. They disappeared in the first millennium BCE, when the empire precluded any effective possibility of escaping from one state to another, as in the earlier periods. Their appearance in the second millennium BCE, then, underscores a specific political dimension of the state organization as it was becoming consolidated: the political will to impose the same political status on all members of the state allowed no exceptions. The self-identity of the state was so well defined and exclusive that escape into exile became a pattern of the evolving world of urban civilization.

Technology for a New Age. In about 1500 BCE, a whole series of new technological advances took place specifically identified with Syria that have not yet been properly assessed for what they mean when taken together. The best known is the domestication of the horse: what is remarkable is that this process entailed not just the taming of the animal (as it had been with earlier species), but its specific training to respond to specific commands and to perform specific tasks in close collaboration with its human rider or driver, as in the case of the chariot. The use of such technology was reserved for the military. [*See* Chariots.] What is even more remarkable is that the whole process was written down in a "how-to" manual, one of the first such manuals. Although its extant version comes from Hittite archives outside of Syria, both its cultural and linguistic origins were in the kingdom of Mitanni in northeast Syria.

The second great technological innovation, the manufacture of a new chemical substance—glass—reflects greater human control over the forces of nature. [*See* Glass.] It appeared at about the same time as the domestication of the horse, in about the same area. A technical instructional manual describes the process of manufacturing; here, too, the actual manual is found in later versions from outside the area (southern Mesopotamia in this case).

The innovations from the western littoral are well documented from direct Syrian evidence. The first is a system of musical notation, a musical score. The earliest-known example comes from Ugarit. It was originally thought to be a mathematical text, but the numbers turned out to be references to the strings of a musical instrument—hence, "notes"—written in conjunction with a lyric, presumably religious in content. The people of Ugarit may have written this down because the song originated in a linguistic context (Hurrian) no longer well understood. [*See* Hurrian.] They may have wanted to retain the text and music in their pure form, for which the oral tradition was deemed insufficient. Modern decoding of the score is still tentative, but several interpretations (and corresponding musical renderings) of the text have been produced by scholars (see, for example, Marcelle Duchesne-Guillemin, *A Hurrian Musical Score from Ugarit,* Malibu, 1985).

The last innovation is the best known. What the microchip did for the computer industry, the alphabet did for writing—and its introduction and first general use is attested from the ancient Syrian city of Ugarit. So much so, in fact, that the first full-fledged alphabetic script ever is called Ugaritic. [*See* Ugaritic.] As with the preceding "inventions" of this period, a technical document is extant: a tablet that records, with the utter majesty of simplicity, nothing but the alphabet itself.

Infrastructure of Empire: The Arameans. The political structures that followed the great cosmopolitan age of the Late Bronze period were on a much larger scale than anything known. They were truly "empires," in the sense of a universal state that imposed uniform administrative structures over people of different backgrounds and cultures. In its early form, the empire was dominated by the Assyrians, at home in northeastern Mesopotamia and thus outside Syria. What Syria contributed to the empire was its ethnic infrastructure, and this began to take shape in the Late Bronze with the origins of the Arameans. They were at home in the Syrian steppe, which had already served as the pastureland of the Amorites in the early periods: there and in the adjacent river valleys they gave rise to a series of territorial states with their own characteristic art. As their states came to be subsumed more and more under the ever-encroaching political arm of Assyria, the Arameans spread as a people beyond their original enclave. Their language came to be used beyond the limits of Syria. They eventually achieved what the Amorites had not succeeded in doing in the earlier periods: Aramaic came to be the common language of the empire, a lingua franca that was no longer that of the ruling chancery at the top, but that of an originally rural people at the base. [*See* Aramaic Language and Literature; Arameans.]

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GIORGIO BUCCELLATI

Syria in the Iron Age

The beginning of the Iron Age in Syria is marked by a wide movement of peoples, sometimes barbarians, coming from the sea and inland, as well as by the establishment of numerous kingdoms. The invaders from the sea swarmed into Asia Minor.

Sea Peoples. Invaders from the sea, known as the Sea Peoples, attacked Egypt by land and sea and were thrown back by Pharaoh Rameses III. He did, however, allow them to settle on the Palestinian and Syrian coast. Contemporary with the advance of the Sea Peoples in Egypt, a number of noted Syrian Cities, such as Carchemish, Alalakh, Ugarit, and Summurru, were overrun and destroyed. [*See* Carchemish; Alalakh; Ugarit.]

Egyptian records make it clear that the Sea Peoples were a composite group drawn from a number of tribes. Rameses III mentions six tribes, the Peleset (Philistines), Sherden, Dannu, Shekelsh, Tjeker, and Weshesh, while other Egyptian lists add some eight more names. [*See* Philistines, *article on* Early Philistines.] The Philistines occupied the land named after them, while the Danunians occupied the land around Adana in Cilicia. [*See* Cilicia.] In Syria there is little in the archaeological record to attest to the Sea Peoples. There is, however, one example of the material culture that may reasonably be associated with the newcomers. This is a type of pottery decorated with elaborate patterns, characteristic of which are metopes enclosing stylized birds.

The invasion of the Sea Peoples into Asia Minor induced its populations to go in search of new lands. They migrated to North Syria, where they established the so-called Neo-Hittite kingdoms. Other groups established themselves with the Arameans in Hadatu (Arslan Tash), Til Barsip (Tell Ahmar), Aleppo, and Hama. [*See* Arameans; Til Barsip; Aleppo; Hama.] In all these places archaeologists have discovered a number of inscriptions written in Luwian/hieroglyph Hittite. [*See* Hittite.] It is assumed that the Aramean kings used this language with those of their subjects for whom it was a native tongue. It seems that the immigrants from Asia Minor were integrated with the Arameans and even with the area's older population.

Arameans. The original homeland of the Arameans and their first appearance in Mesopotamian documents are matters of dispute. Some scholars have suggested that the Syrian desert was their homeland. The first Arameans whose existence is documented lived on the fringes of the desert in the area of the Upper and Middle Euphrates River and in the area between Jebel Bishri and the oasis of Palmyra. [*See* Palmyra.]

The name *Aram* or the adjective *Aramean* occurred in the late third and in the first half of the second millennia BCE. However, it is uncertain whether the name *Aram* is connected to the later tribes by that name. The earliest possible reference to the Arameans is found in the topographic lists of Amenophis III (1413–1377 BCE). Among the places listed on statue D, which was found in this pharaoh's funerary temple, is the name *pirnw,* meaning "the people Aram," or the Arameans. The first incontestable mention of the Arameans comes from the reign of the Assyrian king Tiglath-Pileser I (1117–1078 BCE). In the first Assyrian annal they are called Aḫlamu-Aram. A little later the name *Aḫlamu* disappeared. It must be noted that the name *Aram* in the Hebrew Bible was once written with the word *paddan,* as Paddan Aram. It is possible that they used the double name to distinguish one group from the other.

It seems that the Aramean tribes were the enemy, and a dangerous one, of Assyria from the time of Tiglath-Pileser I. This king said "Twenty-eight times I have crossed the Euphrates after the Aramean Ahlamu, twice in one year." They were spread into the settled areas of Syria and northern Mesopotamia during the eleventh century BCE and established many kingdoms; the Syrian coast, however, remained free of Aramean migrations. There existed a number of small Canaanite states: Siyanu/Ushnato, Arwad, Sumur, Gubla/Byblos, Sidon, and Tyros ('Iraq el-Amir). [*See* Arwad; Byblos; Sidon; 'Iraq el-Amir.] To the east there were numerous Aramean states, in the Euphrates and Khabur valleys and to the north of the sources of the Balikh and Khabur Rivers: Aram Zobah (later Aram Damascus), Hamath, Bit-Agusi, Bit-Adini, Sam'al, Bit-Baḫiani, Nisibis, Gidara, Hozirani, Bit-Zamani, Laqe, Hindanu, Bit-Ḫalupe, and Suhi. For two hundred years the Assyrian kings fought the Aramean states, defeated them, deported their kings and leaders to Assyria, and captured their capital cities and transformed them into Assyrian provinces. [*See* Assyrians.] The annals of the Assyrian kings report the Assyrian military campaigns in Syria. These Assyrian documents are the principal sources for writing Aramean history because Aramaic inscriptions are poorly represented. This discussion of the history of the main and best-known Aramean kingdoms is guided by the Assyrian annals.

Bit-Baḫiani. Located in the Khabur triangle, Bit-Baḫiani, with its capital at Guzana, modern Tell Ḥalaf, is first mentioned by Adad-Nirari (912–891). [*See* Ḥalaf, Tell.] In 894 BCE he had received tribute from Prince Abisalamu. During the reign of the Ashurnasirpal II and his son Shalmaneser III (858–824), Guzana was, to all appearances, a vassal-state of Assyria. After the revolution against Shalmaneser in Assyria in 827, and until 808, Guzana was an independent state. In 808 Adad-Nirari occupied the city and placed Mannu-ki-Ashur as a governor of Guzana. During the reign of Ashur-Dan III (772–754), in 759, a second rebellion was organized against Assyrian domination in Guzana that he crushed in 758. After the decline of the Assyrian Empire, Guzana became a part of the Neo-Babylonian Empire.

Abisalamu is the only name mentioned in the Assyrian documents. From the Guzana inscriptions the following names are known: Kapara son of Hidiani, Zident, and Shamash-Nuri and his son Hdysʿy. The kingdom of Guzana was called Bit-Baḫiani after the sheikhs of the Baḫiani tribe. The sequence of these kings is not clear, but it is assumed to be Baḫiani, Hidiani, Kapara, Abisalamu, Shamashnuri, Hdysʿy, and Zidnet.

Another kingdom existed to the east of Bit-Baḫiani, south of the Ṭur ʿAbdin, in the vicinity of Nasibina (Nisibis). Hadad-Nirari II ordered a series of campaigns against rulers in this region, called Temanites, and mentioned that Gidara, one of its cities, had been held by the Arameans since the reign of Tiglath-Pileser II (699–935). Bit-Ḫalupe is situated on the lower Khabur, with Suru, modern Suwar, as a principle center. It is first mentioned by Adad-Nirari II. Ashurnasirpal II suppressed its rebellious ruler Ahi-Yababa and placed an Aramean governor loyal to the Assyrians on its throne. Laqe was located on the Middle Euphrates and Hindanu was downstream from it. According to Ashurnasirpal II, Aramean military power was operative at Bit-Zamani, in the Ṭur ʿAbdin region, by at least the late eleventh century BCE. During the reign of Tukulti-Ninurta II (890–884 BCE), Amme-Baʿala was king of Bit-Zamani.

Bit-Adini. Originally under the control of rulers with Neo-Hittite names, Bit-Adini was taken over by Aramean rulers. In fact, it was the most powerful kingdom in western Upper Mesopotamia and in northern Syria. With its center, Til Barsip, it controlled most of the Euphrates in Syria between Carchemish and Deir ez-Zor. From it, the state watched over the roads from Mesopotamia, Anatolia, and the Mediterranean Sea across North Syria. Bit-Adini and Assyria had been in conflict with each other as early as the reign of Ashurnasirpal II (884–858 BCE). His son Shalmaneser III (858–824) destroyed the city, captured its king, Ahuni, and called it Kar-Shulmanu-Asherd. Afterward, the city played an important role in the provincial administration of the Assyrian Empire. From a strategic point of view, Bit-Adini was the key to northern Syria; therefore, Shalmaneser III occupied its territory early in his reign (856 BCE) from the Assyrian sources and a local hieroglyphic inscription, two kings of Bit-Adini, Adini and Ahuri, are known.

Bit-Agusi. Scholars have suggested that the land of Bit-Agusi was known as the land of Yaḫan, which was under the control of Neo-Hittite rulers until the ninth century BCE. At that time the Aramean Agusi established a new kingdom, whose capital was Arpad instead of Arne. Arpad is located at Tell Rifaʿat, about 35 km (22 mi.) northwest of Aleppo. [*See* Rifaʿat, Tell.] It is first mentioned by Ashurnasirpal II (884–858), who received tribute from its king in 870 BCE. This kingdom was not involved in the conflict between Shalmaneser III and the coalition of central and southern Syria states under the leadership of Hadad-idri (Hadadezer), king of Damascus. [*See* Damascus.] The battle between the two forces took place at Qarqar, which indicates that Bit-Agusi was under Assyrian control. After the murder of Shalmaneser III in 824 BCE, rebellions similar to those at Bit-Baḫiani began to occur in this state but were suppressed by Adad-Nirari III (811–781). The king of Bit-Agusi was Attar-Samak (Atar-sumki). According to the Sefire inscription, Mati-ilu, son of Attar-Samak, had a treaty with an unknown King Bar-Gaʿyah of an unknown land, *Ktk.* [*See* Sefire Aramaic Inscriptions.]

The son of Attar-Samak, on the other hand, had a treaty with the Assyrian king Ashurnirari V (754–745). Mati-Ilu broke this treaty and organized many North Syrian states against Assyria, which angered Tiglath-Pileser III (745–727), who in 743 marched to Arpad and besieged that well-fortified city for three years. Finally, in 740, the city fell and Tiglath-Pileser placed his own officials in the town. From Assyrian sources and the Sefire inscription, the names of four kings are known: Gusi, Aram, Attar-Samak, and Mati-Ilu. They reigned from about 870 to 740 BCE.

Sam'al. Another supposed Neo-Hittite state that aramized sometime between the tenth and eighth centuries BCE, the city of Sam'al, was the capital of the kingdom of the same name. Sam'al, or Yaʿudi (modern Zincirli) whose name means "north," is situated on the east slope of the Amanus Mountains. It was a small but significant state in northern Bilad esh-Sham. Many Aramaic inscriptions were found there that comprise about one-half of all known Old Aramaic inscriptions. In comparison with other Aramean states, this kingdom is the least mentioned in Assyrian documents. Gabbar founded this kingdom at the beginning of the ninth century BCE. The following kings left inscriptions after Gabbar: Bmh, Hayanu, Shal, Kilamuwa, Qrl, Panammuwa I, Brsr, Panammuwa II, and Bar-Rakib. After the death of Bar-Rakib, Shalmaneser V (727–722) transformed Samʿal into an Assyrian province.

Hama. The powerful kingdom of Hama in Middle Syria had good relations with the Aramean tribe of Bit-Ḫalupe. A king of Hama reigned in this land. In contrast to Bit-Ḫalupe, Hama was involved in a conflict with Aram Zobah. How-

ever, following the reign of Jehoram/Hadoram and Parates, Irḫuleni stood by Hadad-idri (Hadad Erer) of Damascus against the Assyrian king Shalmaneser III in 853 BCE, in the battle of Qarqar, the royal city of Irḫuleni. Following the battle of Qarqar, Shalmaneser attacked most of Hama's land, destroying a number of important towns.

The ruler over Hamath, after Uratamis, was Zakkur the king of Hama and L'ash, who may have been a usurper. He created a large, new power in Syria important enough to threaten the surrounding major states, especially Damascus and Bit-Agusi. According to the Zakkur stela, Zakkur was attacked by the king of Damascus, Bar-Hadad, the king of Bit Agusi, Que, Unqi, Gurgum, Sam'al, and Milid. [*See* Zakkur Inscription.] All these kings besieged Zakkur in the city of Hzrak, but without success. The Assyrian annals speak of military campaigns against Ḫatarikka in 772, 765, and 755 BCE. During the time of Tiglath-Pileser III (745–727), in 738, Eni-ilu the king of Hama paid tribute to this king. Hama was definitively transformed into an Assyrian province in 720 by Sargon II, who crushed a rebellion led by Youbi'di, the usurper of the throne of Hama. The name of its kings are Aramaic, not Semitic—Neo-Hittite kings may have ruled the kingdom.

Aramean states in southern Syria. The Hebrew Bible and the Assyrian annals are the sources for Aramean history in southern Syria, in a number of small states south and southwest of Damascus:

Maacah/Bit Maacah, south of Mt. Hermon and the east of the Jordan River

Geshur, between the Yarmuk River in the south and Maacah, northeast of Lake Tiberias (Sea of Galilee)

Zobah, the most significant state in southern Syria, placed in the northern Biqa' with its domain extending east of the Anti-Lebanon Mountains to the north of Damascus, into the plain of Homs and eastward into the desert

Damascus, which had become an Aramean state by the eleventh century BCE and had close relations with Zobah

Beth Reḥob, whose location is a point of controversy: some scholars place it in the southern Biqa' north of Dan. Others believe that Reḥob was located between the Yarmuk River in the north and Zarqa in the south and that its center was near the modern town Irbid or Deir 'Alla

Tob, located east of Bit-Reḥob

Political Situation. Aram Zobah was undoubtedly the most powerful state in southern Syria at the end of the second millennium BCE and during the first century of the first millennium BCE. Its king, Hadadezer, had transformed Zobah into a substantial power in the Near East, with numerous vassal states as far north as the Euphrates. According to the Hebrew Bible (*2 Sm.* 10), Hadadezer fought with Ammon against David's army. In fact there were many battles between David and Hadadezer (*2 Sm.* 10). However, during Solomon's reign there was a period of peace. According to *1 Kings* 11:23–24, Rezon, the son of Elyada, and a servant of Hadadezer, seized Damascus.

Under the powerful Hadadezer (c. 865–842 BCE), Damascus became the leading state in a broad coalition of western and southern Syrian states that opposed Assyrian military expansion (853–845 BCE). Shalmaneser met the military forces of the coalition at Qarqar, with no indication who was the winner. According to *2 Kings* 8:7–15, Hazael, an official in the court of Ben-Hadad (Hadadezer), murdered the king and seized the throne. Hazael had to fight Assyria, Jehoram, Jehu, and Joahaz of Israel. When he died, he left Damascus to his son Bar-Hadad III; it was the capital of a state encompassing a sizable area, including most of southern Syria.

The biblical information about Bar-Hadad III is that he had to fight against Israel many times during the reign of Joash. According to the Zakkur stela, Bar Hadad brought a coalition of sixteen or seventeen kings against Zakkur, king of Hama and L'ash. In the eighth century BCE, Hadianu and Radyan reigned in Damascus. During the latter's reign, in 732 BCE, Tiglath-Pileser brought Damascus to its knees and incorporated it into the Assyrian provincial system, thus concluding the Aramean problem. Aram Damascus, which had symbolized the anti-Assyrian movement, disappeared from the field. Israel and Judah, formerly in constant conflict with Aram, proposed an alliance against Assyria with the Arab tribes to the south of Damascus. Israel and Judah faced the Assyrian army but were conquered by Tiglath-Pileser III and Sargon II, bringing the land under direct Assyrian domination. Tiglath-Pileser III divided Syria and Palestine into numerous administrative districts ruled by Assyrian governors, each protected by a garrison. The Assyrian kings from Sargon II (722–705 BCE) to Ashurbanipal II (669–629 BCE) retained this administrative system. Many groups of peoples were deported to Assyria.

Material Culture. The Arameans appear on the scene as nomadic tribes pressing into Syria. They established numerous states, founding their capitals outside the well-known centers of the older kingdoms. Most of them, such as Gozan, Til-Barsip, Arpad, Sam'al/Zincirli and Hama have been excavated.

Monumental Architecture. The distinguishing architectural feature of the period is the *bit-ḫilani,* which consisted of a portico with one–three columns approached by a flight of steps. The portico is flanked by towers (with a guardroom on one side and staircase on the other); behind it is a wide but shallow hall. Sometimes the throne room has rooms on one or two of its sides. Buildings of this type appear at Tell Ḥalaf, Sam'al, and Tell Ta'yinat.

Temples have been excavated only rarely for this period. The best preserved is the temple at 'Ain Dara', which is similar to a *bit-ḫilani,* except for its corridor. [*See* 'Ain Dara'.]

The most complete example of an Aramean town is

Sam'al/Zincirli. It is roughly circular and surrounded by a double wall with towers. It was entered through three gates, of which the southern, the most strongly fortified, led to the citadel. All of the Aramean towns excavated were surrounded by a wall. Most consisted of a citadel and a lower city (Tell Ḥalaf, ʿAin Daraʿ).

Sculpture. A large number of sculptures enhanced the architecture in the Iron Age. Orthostats were used as a dado to adorn the lower part of a wall face, while lions and sphinxes were used to guard the gates and entrances to temples and palaces (Tell Ḥalaf, ʿAin Daraʿ, Sam'al/Zincirli). Sculptures in the round were not so numerous as bas-reliefs. Most of the repertoire of the sculptures is derived from Mesopotamia or Syrian originals.

Cult and Social Organization. The Arameans worshipped the god Hadad. At Sam'al they worshiped Baʿal Shamin and at Hama Iluwer. A number of statues (Tell Ḥalaf) and reliefs with a banquet scene (Sam'al) found in tombs were associated with the cult of the dead.

Only the Kilamuwa inscription reveals anything about social classes and conditions in the kingdom of Sam'al. In it there are *muskabim* and *bariṛim,* meaning "opprobrium" and "oppressor," respectively. There was friction between these two classes in Sam'al, created by their economic differences.

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ALI ABOU ASSAF

Syria in the Persian through Roman Periods

Syria's fall to the Persians ended two thousand years of Semitic dynasties that are relatively well documented. The history of Syria during the Persian Achaemenid Empire is, however, relatively poorly documented. The lack of epigraphic documentation is the result, probably, of the fact that Persian and local administrations wrote, in Aramaic, mostly on perishable materials. In addition, the refounding of Syrian urban centers in the Greco-Roman periods caused additional destruction. It is only recently that archaeological research has been able to contribute to a better understanding of Syria under the Persians.

Persian Period (538–331 BCE). In 538 BCE, Cyrus II became master of Babylon and Syria. The annexation of Syria-Palestine was peaceful, except for Gaza, which submitted only through force (Polybius 16.40). Cyrus allowed the return of the Jews to Jerusalem, where, as sympathizers of Persian rule, their presence in Palestine was likely intended to balance power in a district that was mostly pro-Egyptian. The Babylonian texts of Nerab suggest that deported Syrians also were sent back to the Aleppo region then, or soon after, for a similar purpose. [*See* Nerab Inscriptions.]

Cyrus II's son, Cambyses II (529–522 BCE), occupied Egypt with the help of Eshmunazar, king of Sidon. [*See* Eshmunazar Inscription.] Cambyses probably died in Damascus (Josephus, *Antiq.* 11.2), then the most important city in Syria (Strabo 16.2.20) and the center of the Persian forces. Darius III stored his treasures and furniture there before his battle with Alexander (Arrianus 2.6.3). [*See* Damascus.]

Darius I (521–486 BCE) divided the extensive Persian Empire into satrapies (the Greek form of the Persian *khshathrapan*—"king" in ancient Persian). At his death there were twenty satrapies. Syria constituted one satrapy with Babylonia. Later, Syria alone became the fifth satrapy under the name *Ebirnari* in Babylonian, or *ʿAbr Nahra* in Aramaic, which means "beyond the river [Euphrates]." The province extended from the Amanus to Sinai and included Cyprus. The administrative divisions of the Syrian province were likely the same as during Neo-Babylonian rule (e.g., Damascus, Hama, Hauran) and the capital was probably Damascus or Sidon. Arwad served as a royal residence as well. [*See* Hama; Sidon; Arwad.]

Syria's geographic location, its forests, and its navy were of great importance for the Persians' Mediterranean projects, even though its annual tribute was only 350 talents, a relatively moderate sum compared with Egypt's tribute of 700 talents.

Under Persian rule, local Syrian dynasties continued to govern in different coastal cities (mainly Arwad, Byblos, Sidon, Tyre), treated as allies, not vassals. [*See* Byblos; Tyre.] These cities continued to practice their own religions, carrying out their own commercial activities, and establish colonies along the Mediterranean coast. These small Canaanite kingdoms (universally known as Phoenician) refused to help Cambyses, who, while in Egypt, planned to attack Carthage, their ancient colony. [*See* Phoenicians.] However, they sided with the Persians against the Greeks in the Median wars (490–449 BCE), which were, from the Syrian point of view, a precious occasion for getting rid of the Greek presence in the Mediterranean. Phoenician possessions had extended to the Palestinan coast since the beginning of the fifth century BCE. In the fourth century BCE, Arwad, Byblos, Sidon, and Tyre constituted a federation, with Tripolis as the center of the federation.

When Xerxes I (486–465 BCE) planned to attack Greece, the Phoenicians built a bridge for him on the Bosporos that enabled the Persian armies to reach the interior. Arwad, then a maritime power, put its fleet at his disposal. He was thus the victor at Thermopilae, but he lost his fleet at Salamis (480 BCE) and withdrew. Artaxerxes I (465–424 BCE) also

failed in Greece and Egypt, but permitted the return of a second wave of Jews to Jerusalem for the same reason Cyrus had (see above). In the time of Xerxes II (404–359 BCE), his brother, Cyrus the Younger, satrap of Asia Minor, attempted a revolt. Cyrus mobilized an army and ten thousand Greek mercenaries to attack his brother. The mercenaries crossed northern Syria and the Euphrates River, but after Cyrus's death in battle returned to Greece under the command of Xenophon, whose travelogue *Anabasis* documents the history and the historical topography of northern Syria during this period. During the reign of Xerxes II, the Egyptian pharaoh Tachos occupied Syria (361–360 BCE), aided by the Spartan king Aegesilaus; however, he evacuated the country when a revolution began in Egypt.

Artaxerxes III (358–338 BCE) repressed the revolutions in Sidon, the most powerful Phoenician maritime city in the Persian period. From the beginning of the fourth century BCE, the iconography of Sidon's coinage showed its redoubtable towering rampart and its navy. Sidon allied with Egypt and with eleven Phoenician cities and, encouraged by the agitation in the empire, moved against the Persian king but was defeated. Diodorus of Sicily reports that Sidon was destroyed and burned with its inhabitants. Egypt also was restored to Persian rule. Artaxerxes III and his son were poisoned, and one of their relatives, Darius III Codomannus, took the throne from 338 to 331 BCE. He would have been able to restore Persian rule if he had not been defeated by Alexander at Issus, on Syrian territory, in 333 BCE.

The satrap of Syria resided at Damascus, Sidon, or Tripolis in the fourth century BCE. Gubaru, a companion of Cyrus II, was the first Persian satrap of Syria and Babylonia, before their separation. The last satrap was Mazdai, satrap of Cilicia, to which Syria was added after the revolution of 345 BCE. [*See* Cilicia.] In Arwad. Tripolis, and Akko the fortifications were defended by Persian officers. [*See* Akko.] Persian tolerance was a necessity because their numerical presence in the province of Syria was very weak. Tolerance was a matter of strategic and commercial interest, as well: the Persian rulers built imperial roads connecting the empire across the Euphrates with the Syrian coastal cities and fortified the coastline. The Persians also created a unique and rapid postal system and an emergency force of about three hundred Phoenician military boats.

In the Persian period, Syrians spoke mostly Aramaic, but Canaanite was used in the coastal cities. Aramaic was also dominant in southern Syria. Hebrew, a Canaanite dialect, was limited to religious use after the fourth century BCE. The northern Arabic dialect was the language of desertic Syria but was not yet written. The Persian administration used Aramaic as an official language in the western provinces and Aramaic script was used to transcribe Persian. [*See* Aramaic Language and Literature.]

Under Persian rule Syria's ancient local cultures were allowed to develop; the administration oriented its efforts mostly toward the duration and the integrity of the regime—that is, the Achaemenid state was a power of conquest, administration, and military organization, not very concerned with culture. Zoroastrian and Persian cults in general found few sympathizers among the Syrians, while Judaism and Christianity adopted some fundamental elements of Persian religious doctrine. Persian paganism was represented in the Syrian pantheon by only two deities, Anahita and Mithra. Persian onomastica and toponyms are rare. Religious banquets (Gk., *thiases*) may be of Persian origin.

Persian rule encouraged agriculture in Syria. Official and private projects existed in different places: a renowned orchard was located near Sidon and cedar was exploited near Tripolis. A vast agricultural domain was created in the northern Biqaʿ and one belonging to the wife of Darius II existed between the Qweiq River in Aleppo and the Euphrates. A species of grape was introduced to Damascus and the pistachio but to Aleppo by the Persians.

During the two centuries of Persian rule, Persian influence on material culture was slight. The predominant architecture and arts were Syro-Babylonian in inner Syria. A Greco-Egyptian impact was, however, clear on the coast and in the south. Along the eastern Mediterranean coast, at nearly every site or level of the Persian period, Attic ceramics dominate, with Canaannite jars and some East Greek and Cypriot pottery. The Cypriot style was also often adopted for sculpture.

In modern Lebanon, vestiges of apadanas have been found at Sidon and at Umm el-ʿAmad, but none have yet been excavated at sites in Syria—nor have fire towers or any glazed bricks. Almost the only examples of characteristic Persian architecture are a Persian column base at Tell Denit and at Tell al-Kazel, a merlon at Ras Ibn Hani, and a Persian capital found in ancient Damascus. [*See* Ras Ibn Hani.] At Tell Mardikh/Ebla (level VIA 1–3) a building in a settlement from the Persian period, which served a military and commercial function, may resemble contemporary buildings in Palestine, but all lack a typical Persian architectural plan and decoration. The rocky temple at ʿAmrit, south of Tortosa, is also dated to this period, but both as a whole and in detail it has a Canaanite (Phoenician), egyptianized style with little Persian influence. In the domain of art, the Achaemenid influence is limited mostly to terra-cotta figurines representing horsemen. Metal weapons and bowls have been found in cemeteries at Nerab, Sarepta, and Kamid el-Loz. Some scholars find a probable relationships between the tower tombs at Palmyra, Zenobia, and ʿAmrit and the monumental altar with stairs in Syrian temples (e.g., Palmyra, Baalbek) and the fire towers of Persia, however. [*See* Sarepta; Kamid el-Loz; ʿAmrit; Baalbek.]

Hellenistic Period (331–64/63 BCE). During the Greek (Hellenistic) period, the ex-province of ʿAbr Nahra was called Syria (probably from the Persian Athura = Aššur). Geographically, it kept the same territories as before, but

with many variations in the south. Some Syrian regions took such names as *High Syria* and *Coele Syria,* in addition to the ancient names, such as *Phoenicia* and *Palestine.* The victory at Issus opened Syria to Alexander the Macedonian, but Tyre's seven-month-long resistance and Gaza's two months were a sign of the attachment of the Phoenician cities to their autonomy. Some populations, like the Nabateans, were able to keep their independence under the new rule and extended their presence to Damascus itself in the first century BCE. [*See* Nabateans.] The Macedonian occupation was a true break in the history of Syria because, after it, for many centuries, Syria remained under western control.

Alexander's ideal, to combine Orient and Occident, failed in the years following his death in 323 BCE. His *diadochs,* or generals, not only divided his great empire into three kingdoms (Seleucid, Lagid, and Macedonian), but also generated forty years of bloody wars. During that struggle, for about twenty years, Syria was ruled by Antigonus Monophthalmus (the one-eyed), one of Alexander's generals. Seleucus Nicator ("the victorious") took the land between the Euphrates and the Indus Rivers, along with Anatolia, and declared his Seleucid kingdom on 1 October 312 BCE. This date became the principal era used in Syria until the end of the Byzantine period. Seleucid rule in Syria began only after the battle of Ipsus in 301 BCE and after a short occupation by Ptolemy Soter, another of Alexander's generals. This was the cause of many subsequent clashes between Seleucids and Ptolemies.

Seleucus I, from among all of Alexander's generals, was the most convinced of the idea of a universal state, but political realities and administrative needs soon found him organizing a new, immense empire of his own. He appointed his son to rule the eastern territories from Seleucia on the Tigris while he concentrated on Syria, to control the Lagids, and on political developments in Ionia and Greece. [*See* Seleucia on the Tigris; Seleucids.] Seleucus was killed in 280 BCE, while trying to take Macedonia, and his son abandoned the project. The wars of Alexander's generals ceased one year later, when Lysimachos, followed by Ptolemy, died. During the next two centuries, eighteen kings ruled Syria. The period was marked by five wars with the Lagids, who never abandoned their original intention to occupy Syria—and more particularly to dominate its strategic harbors, which allowed domination of the eastern Mediterranean. During these wars, southern Syria was often under Lagid occupation.

Political difficulties began in Syria under Seleucus's successor, Antiochus I (280–261 BCE). This cultivated and city-founding monarch was fighting in Anatolia, while Ptolemy II occupied southern Syria and entered Damascus in 276 BCE. A victorious Seleucid counteroffensive obliged him to evacuate the city, however. Antiochus II planned to liberate southern Syria, which was the motive for the Second Syrian War. The war ended in 253 BCE with a peace treaty and a dynastic alliance: Antiochus II's marriage to Berenice, a daughter of Ptolemy II. Laodice, his first wife, was repudiated, and her sons were deprived of their right to the throne. She organized a plot in which Antiochus was poisoned, along with Berenice and her son. Ptolemy III (Evergetes), Antiochus's brother, conquered Syria under the pretext of taking vengeance, thus starting the Third Syrian War. During these events he founded the city on the Syrian coast north of Latakia excavated at Ras Ibn Hani. Mercenaries from all over the eastern Mediterranean were stationed there, at the ready for further expansion.

Upon the accession of the Parthian dynasty (250 BCE), the Seleucids lost Persia and the remote eastern provinces. Local Arab principalities confirmed their independence: the Abgars of Edessa, the Samsigerams of Homs/Emesa and Rastan/Aretusa, the sheikhs of Palmyra, and the Itureans in the Biqaʿ. [*See* Homs; Palmyra.]

Antiochus III (223–187 BCE), benefiting from the advice of the Carthaginian Hannibal and using elephants, achieved a brilliant victory against Ptolemy. However, he failed against the Romans in Greece at Thermopylae and at Magnesia and was obliged to abandon all of his possessions north of the Taurus Mountains. [*See* Taurus Mountains.] This constituted a very bad blow to Syrian trade along the land routes to the west. At the same time, the sea route was being threatened as a result of the Punic wars and by pirates. Antiochus IV (175–164 BCE) attacked Egypt and laid siege to Alexandria, but the Romans intervened and forced the conqueror to withdraw and to kill his elephants.

A revolution took place in the capital, Antioch, under Antiochus IX (112–96 BCE), who resided in Damascus for some time. Soon after, in about 85 BCE, Damascus submitted to the Nabateans. Two years later, it was taken by Tigran, king of Armenia, who also occupied Syria. The situation worsened with the struggle for the throne and the serious Roman threat.

Roman Period (64/63 BCE–3 CE). Pompey, after exterminating the pirates in the Mediterranean, occupied Syria (64–63 BCE). Tigran allied with him against the Parthians, their common enemy, and Syria was declared a Roman province. [*See* Parthians.] In the south, the wars between the Nabateans and the Jews continued. In 63 BCE Pompey entered Damascus, occupied Jerusalem, and ended the Jewish monarchy, but abandoned his plans to conquer the Nabatean kingdom. He also tolerated the independence of the Itureans. Arqa, Tripolis, Sidon, and Ashkelon became free cities directed by their own boules. [*See* Ashkelon.] The Decapolis also was founded at this time. [*See* Decapolis.]

The names of more than one hundred Roman governors of Syria are now known. In order, the first three were Aemilius Scaurus; A. Gabinus (57 BCE), who had broad administrative and military power; and Crassus, the very rich triumvir who was defeated by the Parthians at Carrhes (35 BCE).

Pompey, some years earlier, had reorganized the fortifications on the Euphrates to protect the eastern frontiers; he turned over the defense of the north to his Armenian ally. In war and peace Pompey showed remarkable qualities, but he lost the battle at Phrasal, his last foray against Julius Caesar and died tragically on the Egyptian coast. Meanwhile, Caesar, while trying to settle the succession disputes between Cleopatra and her brother, risked serious danger. He received reinforcements from an army of Arabs from Syria, commanded by Iamlichos, prince of Emesa/Homs. Soemos, ethnarch of the Itureans; Nabatean officers; and Antipater the Idumean also participated. During his stay at Antioch in 47 BCE, Caesar rewarded his Syrian allies with titles and gifts. On this occasion he nominated Antipater governor of Jerusalem and confirmed John Hyrcanus as high priest.

The Parthian victory at Carrhes created instability in Syria. Parthia tried to incite Syrian princes and the ethnarch against the Romans. Marcus Antonius probably raided Palmyra in 41 BCE, to discourage Parthian conspiracies in Syria. Between Pompey's creation of the Syrian province and the rule of the Flavian dynasty in 49 CE, Rome eliminated civil wars and *coups d'état* by creating an imperial regime headed by a *princips imperator* of divine character *(divus)*. Vespasian, proclaimed emperor by the Roman legions stationed in Syria, was able to put an end to the political anarchy of 68 CE. His son Titus ended a Jewish revolt, took Jerusalem, and burned the Jerusalem Temple. [*See* First Jewish Revolt; Jerusalem.]

For Syria, a period of peace and romanization followed, with three or four legions stationed on its eastern frontier. In that period Trajan's father was governor of Syria (73–79 CE) and Trajan himself had a military function in the province. When he became emperor in 106, he annexed the Nabatean kingdom and created the Provincia Arabia in its place, with Bosra (Trajana Bostra Metropolis) as its capital. [*See* Bosra.] His friend, the Syrian architect Apollodorus of Damascus, built a forum, a column, a market, and baths for him in Rome—and perhaps a pantheon as well.

Syria knew great prosperity during the rule of Trajan's successor, Hadrian (117–138), who visited the country and gave advantages to Damascus, Palmyra, and other cities. Following the Bar Kokhba Revolt and the destruction of the Temple in Jerusalem, that city was called Aelia Capitolina. [*See* Bar Kokhba Revolt.] Under Marcus Aurelius, the province of Syrian was extended to the Jezireh.

The Severan dynasty (193–235), founded by Septimius Severus, inaugurated a period of exceptional prosperity for Syria. Archaeology has demonstrated the urban renovation of most of the Syrian cities during this period. Caracalla (211–217) gave the Syrians, like the other subjects of the empire, Roman citizenship. A victorious campaign against the Parthians moved the frontier of the Syrian province to Mesopotamia itself. After the assassination of Caracalla, two Syrian emperors occupied the imperial throne: Elagabalus (218–222) and his cousin Alexander Severus (222–235). During the Severan period, the role of the Syrian empresses was preponderant.

In 244 Philip the Arab, a citizen of Chahba (Philippopolis) became emperor and organized the celebration of Rome's millenary. In 227–228 the Sasanians entered the Syrian political scene, stationing themselves on the Euphrates and the Gulf and blocking Syrian, and especially Palmyrene, trade with the east. Several Sasanian raids followed. In 239 Dura-Europos was attacked. [*See* Dura-Europos.] Twenty years later Antioch was plundered and the Roman emperor Valerian was defeated, taken captive, and, with most of his army, deported to the east. Odainat, prince of Palmyra and governor of the province of Syria, drove the Sasanians out of Syria and twice chased them to their capital at Ctesiphon (262 and 267 CE). [*See* Ctesiphon.]

After Odainat was assassinated in 267 or 268, his widow, Zenobia, and her son Wahballat took the imperial titles. The Palmyrene armies soon occupied Egypt and Anatolia. In 272 Aurelian redressed the situation and took Zenobia as his prisoner. The tetrarch Diocletian concluded peace with the Sasanians at the treaty of Nisibis (297), which moved the border of the Roman Empire to the Khabur River. It was Diocletian who fortified the limes and rebuilt Syria's strategic roads.

Christianity had flourished in Syria since the end of the second century, and a massive conversion took place in the third century, along with the development of sectarianism. Emperor Constantine, with Licinius, permitted religious freedom. In 325 he presided over the Council of Nicaea, held to ensure the unity of Christian doctrine. By the time of Emperor Theodosius, at the end of the fourth century, Christianity had become the official religion of the Roman Empire.

Greco-Roman Civilization. Greek language and culture found a favorable reception in Syria as early as the eighth century BCE and the first Greek settlement there. Greek mythology preserves traces of that ancient exchange between Syria and Greece (e.g., Europa, Cadmus). The ex-voto offered by Hazael, the Aramean king of Damascus to the temple on Samos is an example of these ancient politicoreligious contacts. Hellenization in Syria was strongly colored by multimillenary Oriental tradition. Together they created a Hellenistic culture that lasted until the Early Islamic period and penetrated deeply into Islamic art and architecture.

Under Roman rule, Syrian Hellenistic culture prevailed. Greek was the official language, widely used in the newly founded or refounded cities, but it could not supplant Aramaic. Aramaic was spoken by a wide spectrum of the population, especially in the ancient cities and the countryside; Roman-period toponymy and onomastica provide eloquent evidence for its widespread use. Arabic was spoken in southern and eastern Syria, but the Arabs of those regions wrote

in Aramaic (e.g., Palmyra, Nabatean kingdom). Many Arab tribes wrote in a South Arabian script (e.g., Thamudis, Safaites). [*See* Safaitic-Thamudic Inscriptions.] Latin was limited to the redaction of military and other official texts, for the Roman administration used Greek for all other purposes.

During the Greco-Roman period official art principally followed Hellenistic canons; local art held to such Oriental traditions as frontality and stylization on funerary and religious stelae and in mosaics and frescoes (e.g., at Palmyra, Manbij, Hauran). [*See* Mosaics.]

During this period, religious syncretism took place between local and classical deities: Zeus with Baal, Hadad with Baʿal Shamin, Apollo with Nabu, Athena with Allat, and Heracles with Melqart. The traditional temples were systematically renewed, particularly in Late Seleucid and Roman times. They mostly kept their Syrian characteristics, however (propylon, large courtyards, monumental alters, and colossal sanctuaries with a thalamos/adytun). The most renown examples are the temples at Baalbek, Damascus, Palmyra, and Betocece.

The founding and refounding of cities was the most important accomplishment in both Hellenistic and Roman times and constituted an urban revolution. Appian mentions about sixty of them (2.9.213–215). The cities of the Tetrapolis (Antioch, Seleucia/Sweidiya, Laodicea/Latakia, and Apamea) are the best known. The motives for creating these poleis were commercial, military, and administrative. They are all fortified cities, some with doubled ramparts (a main wall and *proteikesma*). They have a regular plan of insulae with parallel cross streets and, invariably an agora, theater, gymnasium, baths, and temples. Many of the older cities, like Palmyra, were merely adapted more or less to this urbanism. Antioch, the capital of Seleucid and Roman Syria, became one of the three largest and richest cities in the ancient world, and Apamea was its principal military center, with a stable of forty thousand horses and four hundred elephants. [*See* Antioch on Orontes; Apamea.] The Seleucid foundation that replaced the Lagid city at Ras Ibn Hani, north of Latakia, is 1,000 m long and 600 m wide; the city possessed two harbors, a large necropolis, a developed hydraulic system, and a strong rampart with *proteikesma.*

Hellenistic and Roman civilization developed in these cities and in them the cult rendered to the Seleucid monarch was born that later developed into the Roman imperial cult. These were also dynamic urban centers of commercial exchange, most of which struck their own coinage. The Syrian economy, however, was integrated into that of the Roman Empire. For this reason, the country received new roads, bridges, irrigation systems, and a cadastre and was exploited agriculturally. The limestone plateau in northwestern Syria, with its hundreds of agglomerations (i.e., small towns and villages), gives some idea of the extraordinary development of the countryside in that period.

Cultural advances accompanied economic prosperity in the Hellenistic-Roman periods. Syrian philosophers, scholars, and poets were universally appreciated: Zenon, the founder of the stoicism was born in Sidon; Antiochus of Ashkelon created academies in Syria, Egypt, and Greece; and among the pioneer Neoplatonists were Numenios of Apamea, Plotin of Tyre, Porphyros of Gaza, and Yambliches of Chalcis. Syrian historians and geographers were also renowned: Posidonios of Apamea in the first century BCE, Ammianus Marcellinus (born in Antioch); the rhetor Longinus of Emesa/Homs; the counselor to Queen Zenobia; Libanus of Sidon; and Meleager of Gadara/Umm Qeis. Syrian jurists played an important role in Roman administration, and the law school in Beirut had an international reputation.

In the Roman period, Syrian men and women took the imperial throne and occupied important central posts, controlling dynamic colonies in different Roman provinces and in Rome itself. The Roman poet Juvenal remarked, with some bitterness, that the Syrian Orontes had been pouring its language and manners into the Tiber for some time (*Satires,* 3.62–63). Finally, the poet Meleager of Gadara once answered a question by saying, "The island of Tyre educated me, but the land in which I was born is Gadara, the new Attica of the Syrians. If I am Syrian what is the wonder? . . . only one chaos produced all the mortals. . . ."

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ADNAN BOUNNI

Syria in the Byzantine Period

From Roman to Byzantine times, constant developments were taking place in Syria, certain of them the result of Syria's proximity to Constantinople, the new capital of the Byzantine Empire, founded in 330. Constantinople became the sole capital of the empire in 476, when the last emperor of the West, Romulus Augustus, was deposed. The first change was the closer integration of Syria with the empire, which developed in the following two ways.

The imperial power strengthened its authority by increasing the number of officials, by tightening the network of administrative districts, and then by subdividing the districts to increase their number. The imperial authority also raised its fiscal demands and, from the time of Diocletian, was better able to collect taxes through a general census of people, animals, and property. In Syria, that vast and seemingly brutal operation was carried out between 293 and 305 under the direction of the censor Julius Sabinus. An abstract fiscal unit called *caput* or *jugum* corresponded to a man, animals, or an area of land (which varied, depending on the quality of the soil and the nature and yield of the crop). To cover its increasing expenses, the imperial authority could adjust the amount of the tax by the fiscal unit, regardless of the realities of production and rural revenues. The collection of the tax, like the conducting of other public services, devolved upon the members of the municipal councils (boule or curia) of the large cities, which were responsible for the tax on their own properties. Other taxes, the *chrysargyre* in particular, affected the cities' businessmen and artisans.

The closer integration of Syria with the empire also opened brilliant administrative careers to the Syrian elite. In the Roman era, the wealthiest citizens populated the curia, forming the "order of the curials" or the *bouleutes*. They rivaled each other in undertaking public services, such as organizing public performances. In the Byzantine era, many wealthy citizens advanced into the direct service of the governmental authority and formed the influential group of the *honorati*. At the same time, they dispensed public services that had become oppressive responsibilities for the curials, who sought to escape them. These new influential individuals were less cultivated than the municipal bougeoisie. They abandoned classical culture and rhetoric in favor of the law, to the great indignation of Libanios, Antioch's great professor of rhetoric, who deplored the desertion of the curias.

The Byzantine epoch was a prosperous one for Syria. Its cities were numerous, and the capital, Antioch, was the largest city in the eastern part of the empire, after Constantinople and Alexandria. [*See* Antioch on Orontes; Constantinople; Alexandria.] In the fourth century, Antioch expanded beyond its walls. The city was laid out on either side of a great axial road, which was oriented north–south and lined with porticoes. The porticoes are represented in the mosaic at Yakto; the activities conducted within them were celebrated by Libanios. [*See* Mosaics.] The people of Antioch were argumentative, pleasure loving, and careless; they reproached Julian for laying the blame on wealthy citizens when he prosecuted speculators in food products and for not sharing the people's taste for spectacles. They did not forgive him for his paganism, either—the ostentatious sacrifices of animals. Libanios claimed that the city was illuminated every night and that its inhabitants ordinarily nourished themselves with meat, but that the richest ate fish from the Orontes River or nearby lake. Numerous other cities also prospered: Apamea, whose population exceeded one hundred thousand; Seleucia, at the mouth of the Orontes, which is the port of Antioch; Laodicea, Berytus/Beirut, and especially Tyre on the Mediterranean coast; and in the interior, Chalcis of Belus, Aleppo, Epiphania, Emesa/Homs, and Damascus. All of these cities preserved a monumental plan inherited from the Roman period; its central element was a broad street *(cardo)* with porticoes that crossed the city from north–south. [*See* Apamea; Beirut; Tyre; Aleppo; Homs; Damascus.]

Contrary to some early scholarly opinion, the prosperity of the cities was not based on the exploitation and suffering of the rural population. The textual sources that derive from city dwellers, for whom the country constituted a dreaded and generally barbarian world, are, however, of less value for understanding rural conditions than the archaeological data, which provide material evidence. In two regions, the

limestone plateau in North Syria (in the territories of Antioch and Apamea) and in the south (Hauran and Jebel al-'Arab), abundant traces remain of a rural civilization that attained its peak in the fourth and fifth centuries.

The limestone plateau of North Syria is a marginal zone without extensive or deep soils. Nevertheless, it experienced an expansion beginning in the years 330–350 that resulted in doubling or even tripling the region's population in fewer than two centuries. The expansion on the limestone plateau was associated with improved cultivation of the difficult soils by people whom the population pressures on the plains had displaced.

From the fifth century onward, expansion was also tied to the increased cultivation of the vine and olive and fruit trees. The peasants could sell oil and wine in the city, realizing substantial profits. The farmers on the marginal lands had a liberty and ease that those on the plains, where the great landowners of the cities had their estates, did not always have. Libanios explains in his discourse against patronage, that the landowning peasants, presumably including the population on the limestone plateau, were capable of defying the tax collectors and sending them off with blows—even the curials.

The relationship between the city and the countryside, although conflictual when it came to taxes, were complementary in other circumstances. Libanios traces the catalog of prosperous villages bustling with activity that maintained regular exchanges with one or several cities: the villagers came to sell their produce in the city and returned in the evening with silver or manufactured goods. They brought back societal models as well: in the village of Serğilla, a wealthy peasant had baths constructed for his *kome*, exercising a sort of rustic munificence, to benefit his fellow citizens with a thoroughly urban luxury.

In the context of the growth of population and wealth, Syria also experienced a profound cultural change as a result of the progress of Christianity. Even before it was officially recognized, Christianity held a strong position in Syria, but only in the large cities, particularly Antioch. During the fourth century, Christianity strengthened in other cities and especially in rural areas. The increased number of churches in the villages of the limestone plateau of northern Syria, in the second third of the fourth century, offers striking architectural evidence. Peaceful preaching was used to spread Christianity, but often also violence. At Apamea, St. Marcel roused the population against the sanctuary of Zeus, which was destroyed to the point that no stone remains. In the countryside, fanatical monks incited the villagers against the pagan sanctuaries known as "dens of demons"; the villagers purified the sanctuaries by constructing Christian ones in their places. The triumph of Christianity in the fifth century did not entail a complete rejection of classical culture. Christianity was generally assumed by the population, but without conviction, and the educational system never underwent radical change. St. John Chrysostom counseled only that the Christian education of children be entrusted to their families.

In contrast, the monks, whose number increased at the beginning of the fourth century, advanced a different ideal. Without systematically refusing intellectual or manual work, they offered a model of the ascetic life, individual or collective, that was distinct from the ideals of classical culture. [*See* Monasteries.] They accorded no particular value to either Greek culture or language. Some monks, who knew only Syriac, experienced extraordinary notoriety as a result of their ascetic exploits. Along with the rise of Christianity and especially of monasticism, the Syriac language and culture rose again next to the Greek, and henceforth played no less of a role. Hellenism thus lost its cultural dominance. Without conflict, but inexorably, the Semitic cultures experienced a renaissance, particularly in the cities of the east—Edesa/Homs, Hierapolis, and Nisibe—where Greek had never completely taken over.

Conflict, and even competition, between Greek and Christian culture was not the source of the dogmatic divisions that eventually rended the church, however. The opposition between the doctrine of Nicaea and Arianism did not continue beyond the fourth century. In contrast, the Christological quarrels that opposed the Nestorians, Chalcedonians, and Monophysites, persisted. They not only divided the theologians and ecclesiastical hierarchy, but gave rise to popular disturbances, principally in the cities. These conflicts were the result of the influence of Greek philosophy on theological thought and to the diversity and independence of the churches; they were aggravated by differences of language and culture. Until the first third of the sixth century, these were the causes of divisions in Syria but not ruptures.

From 527 onward, the situation in Syria changed. First, war succeeded peace. Certainly Byzantium had fought Persia in the fourth and fifth centuries, but those wars were brief and took place on foreign territory. From 527 until the Arab conquest in 634, Syria was exposed to repeated attack. Invasion, destruction, siege, the imposition of tribute, and the capture of towns occurred—with pillage, massacre, and even deportation being common. In 573, the sack of Apamea resulted in the deportation of 292,000 people. In 602, Syria passed under Persian rule and remained that way until 627.

Disaster extended to the natural world. Beginning in 530, earthquakes, famine, and epidemics, particularly the plague, followed a ten-year cycle. On the limestone plateau, people stopped building or enlarging houses for the decade from 540 to 550. In the sixth century, Syria attained its peak of prosperity, and building activity did not stop in the big cities. Building was attested at Apamea, and also farther east in towns that developed later, such as Sergiopolis/Rusafa, Zenobia, and Androna. [*See* Rusafa.] Even in villages, people

still constructed large, sumptuous churches, but these represent small bursts of prosperity in a deteriorated economic context. The population remained dense, but when production could increase no more and as disasters proliferated in the land, the size of the population fluctuated, as did the wealth of the cities and the rural areas.

The accumulation of these troubles and the incompetent administration of imperial authority from the reign of Justinian onward, brought the conflicts in dogma to the breaking point. Concerned about the West, which he planned to recover, Justinian supported the Chalcedonian doctrine and persecuted Monophysite bishops and priests. A Syriac-speaking Monophysite priest, who was originally from Mesopotamia, Jacob Baradaeus, "the ragged," founded a dissident Monophysite church. He ordained thirty bishops and thousands of priests and deacons. In 557–558, he even consecrated a new patriarch of Antioch. The Ghassanian Arabs allied with the empire, settled at the edge of the steppe, converted to Christianity, and adopted the Monophysite faith. Syria was thus divided into two churches, one of which utilized the Syriac language. The same split cut through politics, religion, and culture. Under Persian rule, the Syriac hierarchy was favored. When the Byzantines returned, between 527 and 534, the Monophysite church became strong enough to refuse the compromises proposed by the emperor Heraclius.

By the time Arabs the arrived in 634, the Syrians had "betrayed" the cause of Byzantium. The Chalcedonians compromised, while the Monophysites resisted. In fact, after all the wars and political changes, a great weariness prevailed. In any case, the Arabs were not complete strangers. The historian al-Baladhuri reports that the inhabitants of Maarrat an-Naiman advanced to meet the conquerors, dancing to the sound of the fife and tambourine.

[*See also* Byzantine Empire.]

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GEORGES TATE

Translated from French by Nancy Leinwand

Syria in the Islamic Period

The Muslim conquest of Syria in the seventh century CE was momentous in the history of the region. The Eastern Roman or Byzantine Empire, ancient and proud as it was, faced a challenge not only in the field of battle but also in the realm of faith and self-identity. The present-day image of Islam's political, social, cultural, and ideological history was formed by Western Orientalists who drew many misconceptions from what they observed. In fact, Muhammad and the first Muslims were not inhabitants of the desert but citizens of Mecca, Medina, and other cities. The Muslim conquerors did not only bring with them the Arabic language and a new religion, but a material culture as well. They did not, as Westerners reported, merely adopt and adapt the material culture of conquered territories. The traditional view among historians and archaeologists, that the Islamic conquest disrupted the urban forms that had passed from Rome to Syria and other parts of the Near East, is being challenged by modern scholars such as Harvey Weiss, who are encouraging a new perspective, based on archaeological and epigraphic evidence (Weiss, 1985, p. 42).

Present-day Syria, with a surface area of 184,000 sq km and a population of twelve million, comprises an important part of cultural Greater Syria, or Bilad ash-Sham, which includes northern Upper Mesopotamia (the Jezireh) and the Syrian steppe (Badiat ash-Sham). [*See* Badiat ash-Sham.] The first contact between Islam and Syria took place when the young Muhammad accompanied his uncle to Bosra in Syria. There they met the monk Bahira, who recognized in Muhammad the prophet to come. Before the revelation of God, Muhammad, as a young man, frequented Syria (e.g., Bosra), working as a merchant on behalf of Khadija, his wife to be. The second contact was by correspondence, when Muhammad had a revelation and sent a letter to the Byzantine emperor Heraclius urging him to submit immediately to Islam. The third and decisive contact was the Muslim conquest of Syria between 634 and 637.

In the decade following the death of the prophet Muhammad in 632, Muslim armies continued the policies he had established by bringing more and more territory under Mus-

lim political and military control. The caliphs, successors to Muhammad for the leadership of the community, directed these first military activities from western Arabia, in particular, from the city of Medina. The armies, primarily composed of Arab cavalry, demonstrated brilliant military qualities as they defeated much larger forces. During the reign of the second caliph, ʿUmar ibn al-Khattab, Greater Syria fell definitively to Muslim forces on 20 July 636 in the battle of Yarmuk, when Heraclius is reported to have said, "Farewell, O Syria . . ." (see Foster, in Weiss, ed., 1985, pp. 457–460).

In 639, the third caliph, ʿUthman, appointed Muʿawiyah ibn Abi Sufyan ibn Umayya governor of Greater Syria, with a residence in Damascus. By 656, Muʿawiyah was engaged in a power struggle with ʿAli, the fourth caliph, who was also the Prophet's first cousin and son-in-law. To symbolize Muʿawiyah's victory in 661, following the death of ʿAli, Damascus was established as the political and military capital of the Islamic world. Thus, Damascus became the center of an empire that was to stretch from southern France and the Iberian peninsula to the Indus River in India and the region of Transoxiana. The dynasty was called Umayyad, named after Muʿawiyah's grandfather, Umayya; it lasted until 750. For nearly a century, Greater Syria, with its capital at Damascus, enjoyed the status of an empire for the first time in its history. [*See* Umayyad Caliphate.]

Islamic Syria has witnessed the following major political developments in its history: the Umayyad period (660–750); the Early ʿAbbasid period (eighth–ninth centuries), during which the capital of the Islamic Empire (the caliphate) shifted to Baghdad and the whole of Syria became a province of no particular importance; the disintegration of the ʿAbbasid Empire (tenth–twelfth centuries); the Zangid/Ayyubid period (twelfth–thirteenth centuries); the Mamluk period (thirteenth–sixteenth centuries); and the Ottoman period (sixteenth–nineteenth centuries). [*See* ʿAbbasid Caliphate; Ayyubid-Mamluk Dynasties.]

The Muslim conquerors ethnically belonged to the same family as the majority of the peoples in Syria. Byzantine Syria was linguistically bilingual: Greek was the language of the official administration and the official Chalcedonian church, and Late Aramaic, or Syriac, was the language of the masses. Arabic, the language of the Qur'an and the Muslim conquerors who came to Syria belonged to the same family as Syriac. As a result, it was easy for Syrians to switch from Syriac to Arabic in both private and official life.

The first step toward a self-identified Muslim administration had been attained during the conquest of Syria and Iraq, when the second caliph, ʿUmar ibn al-Khattab, ordered the creation of an Islamic *dīwān*, a "civil register," in 641. The first Islamic Empire under the dynasty of the Umayyads depended upon Greek-speaking native Syrian experts to run administrative affairs for more than a generation. It was a necessary period of transition in which to develop a new islamicized and arabized generation of administrators and a new monetary system. It might have been disastrous for both conquerors and conquered to overturn a centuries-old administration and introduce a new currency without a transition process. A self-identity in administration and currency was completed under the fifth Umayyad caliph, ʿAbd al-Malik ibn Marwan (685–705).

Islamic tolerance for human rights, in modern terminology, is rooted first of all in the Qur'an, chapter (sura) 49, verse 13: "O mankind. We created you from a single (pair) of a female and male, and made you into nations and tribes that you may know each other (and not that you may despise one another). Verily the most honored of you in the sight of Allah is (he who is) the most righteous of you. . . ." Second, there is a saying of the prophet Muhammad: "Only righteousness may distinguish an Arab and a non Arab."

The Muslim conquerors did not only not force the populace to convert, it is even doubtful that they encouraged it (Jere Bacharach, in Weiss, ed., 1985). In 680, the Gallic bishop Arculph passing through Syria on a pilgrimage to Jerusalem, observed that the Christians were still the majority by far in those lands and that relations with the Muslims were harmonious. Archaeological and epigraphic investigation in Syria, Jordan, and Israel refer to continuous restoration and maintenance work on churches in Syria during the Umayyad period.

On the economic level, the Muslim conquerors imposed a land tax *(kharāj)* on the community and a poll tax *(jizyah)* on its individual members; these were roughly the same obligations that former subjects of the Byzantine emperor and those of the Sasanian shah had toward their sovereigns. The Muslims followed the principle of economic liberalism. Islamic law did not forsee any intervention by the state in the domain of production and commercial exchanges (Bianquis, in Canivet and Rey-Coquais, 1992, p. 286).

Syria was the main area for the completion of Islam's world message, which had been launched by the prophet Muhammad's letters to the emperors and sovereigns of his time. The Umayyads continued the conquest, which reached its peak under the caliph al-Walid ibn ʿAbd al-Malik (r. 705–715).

Regarding the urbanization process, Muslims brought their "cities" with them during the conquest itself and shortly afterward. They founded habitational nuclei that were later to become major urban centers, such as Bosra and Kufah in Iraq and Fustat in Egypt. They were built near former urban centers to demonstrate their new Muslim identification. [*See* Bosra.] The impact of this process in Syria took different directions, which were more challenging. The Umayyads urbanized Syria's unurbanizable areas, bringing the city to the desert (Oleg Grabar, in Weiss, 1985). Between 685 and 750, the Umayyads founded more than fifty properties in the steppes of Greater Syria. Because most of them resemble palaces, they are known as the desert pal-

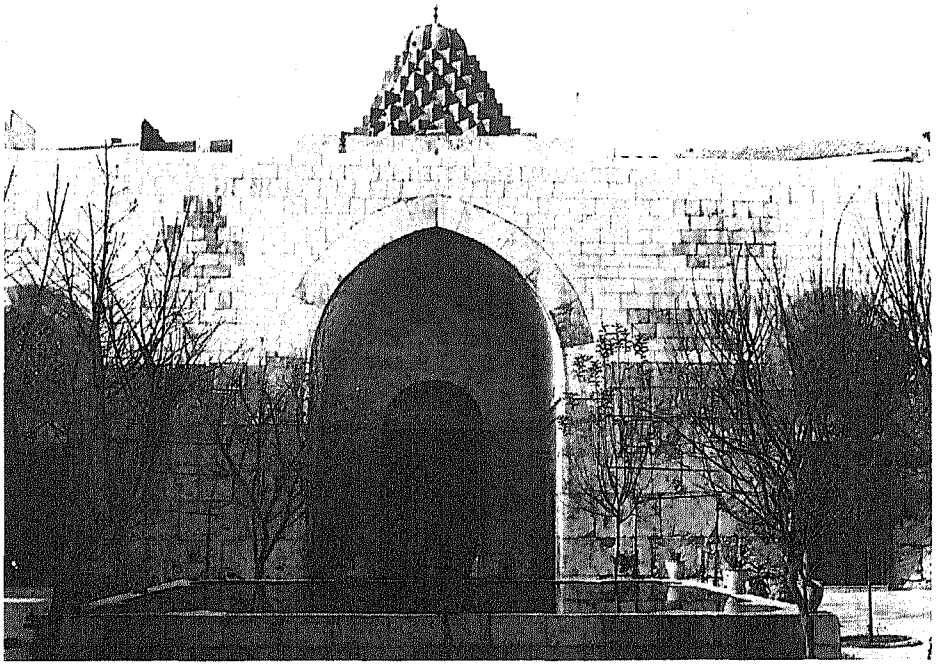
aces. Their excavation has revealed that they were not just private residences but connected with such public facilities as a mosque, bath, caravanserai, and small agricultural settlements. Water was supplied by means of constructed canals that brought water from distant natural sources or dams. These were not oasis cities like Palmyra but were artificial, built oases. The palace settlements demonstrated the caliph's power and his hospitality in an inhospitable area. They also served passing caravans, which promoted trade between city and steppe, and assured subsistence (agricultural products) to settlers and travelers. Among these artificial nuclei of cities are Qaṣr al-Ḥayr ash-Sharqi, Jabal Usays, and Qaṣr al-Ḥayr al-Gharbi. [*See* Palmyra; Qaṣr al-Ḥayr ash-Sharqi; Qaṣr al-Ḥayr al-Gharbi.]

In the field of art and architecture, the Muslims soon established a visual vocabulary for their religious and public buildings that stressed geometric design, floral and vine patterns, and calligraphy. This tradition rejected the use of human, animal, and realistic representation. The main characteristics of Muslim art, which distinguish it from all previous arts, are the endless rapport in geometric and floral designs, a horror of leaving foreground or background space unfilled, the bidimensionality of features and patterns, and the introduction of Arabic calligraphy as an essential element of any artistic composition, a previously unused technique in the art of any culture.

The Muslims of Arabia brought their own architectural concepts to the countries they conquered, in which Roman, Byzantine, and Sasanian architecture challenged them everywhere. The mosque, for example, challenged the church and the temple with its horizontality, its multifunctionality, and its harmonious combination of different volumes of space (the open space is the courtyard, the closed space is the prayer hall, the half-open space is represented by the porticoes surrounding the courtyard). These features had not been combined in this way prior to Islam. Syria played an important role in this formative process of Islamic art and architecture. Representative but significant examples are the so-called desert palaces (see above) and the Umayyad mosque in Damascus. [*See* Damascus; Mosque.]

By 656, Muʿawiyah, the founder of the Umayyad dynasty, was engaged in a power struggle with ʿAli, the fourth caliph, who was also the Prophet's first cousin and son-in-law. The results of this first civil war were momentous, creating a permanent split in the Muslim community. One group, the minority who believed that ʿAli and his family should have been the immediate successors of Muhammad, were to be known as the Shiʿis. The majority, the Sunnis (orthodoxy), accepted the historical development as it took place. The struggle ended with the victory of the Umayyads and orthodoxy.

The victory of the ʿAbbasids in 750 led to a shift in the administrative center of the Islamic world to Iraq, and in particular to Baghdad. They were not of course Alids (Shiʿis, the partisans of ʿAli), except by self-designation. Abbas was an uncle of the prophet Muhammad and of ʿAli as well. The ʿAbbasids used the support of the Shiʿis, whom they discarded as soon as they succeeded in overthrowing



SYRIA: Islamic Period. *Hospital of Nur ed-Din.* Twelfth century CE. (Courtesy K. Toueir)

the last Umayyads. Whatever hopes the descendants of ʿAli may have harbored that an ʿAbbasid victory against the Umayyads would lead to an Alid (Shiʿi) caliphate must have yielded to despair.

The ʿAbbasids never intended to rule from Damascus, as their Umayyad predecessors had done. The first ʿAbbasid calpih, ʿAbu al-ʿAbbas as-Saffah, was proclaimed caliph in Kufah (Iraq). His successor, al-Mansur (754–775), put down the foundations for his new capital, *madīnat al-salām,* the "city of peace." The site is more generally known from the village that it replaced, Baghdad, which was located on the west bank of the Tigris River, in the network of canals that connected that river with the Euphrates River. Intellectually, commercially, and circumstancially, Baghdad inherited the role played by Alexandria in the old Hellenic *oikoumene.* It became the unrivaled center of arts and letters and the seat of religious and secular power in Islam. [*See* Baghdad.]

Syria had lost its central position and was reduced to the status of a province. Yet, it retained some importance primarily because of its geographic location, which placed it a juncture between Iraq and the other western provinces of the Islamic caliphate. Its long borders also made it a confrontational field with the Byzantine Empire. Greater Syria comprised seven administrative divisions under the ʿAbbasids: Palestine, Jordan, Damascus, Homs, Qinnishrin, Jezireh, and Mosul. [*See* Homs; Qinnishrin.]

The Syrian Jezireh (Upper Mesopotamia) gained special importance under the ʿAbbasids. The second ʿAbbasid caliph, al-Mansur, had chosen ar-Raqqa as the second place for new city foundations after the capital of Baghdad. The fifth ʿAbbasid caliph, Harun al-Rashid, made ar-Raqqa his residence for twelve years. He built a victory monument named Heraqla near ar-Raqqa to document his decisive victory against Byzantium. [*See* Raqqa, ar-.]

Aside from the Jezireh, the ʿAbbasids did not leave remarkable monuments in Greater Syria. An important achievement accomplished during ʿAbbasid times was made by a group of astronomers who conducted a series of observations in Damascus during the time of the caliph al-Ma'mun (813–833), the successor of Harun al-Rashid. Several instruments were constructed for solar and lunar observations made from Mt. Qasiyun, overlooking Damascus. This observatory was demolished in the ninth century and never rebuilt.

After almost a century of stability (from the mid-eighth to the mid-ninth centuries), both the Islamic state and the faith faced crucial challenges. Under the reign of the ʿAbbasid caliph, al-Muʿtamid (870–892), a certain ʿAli ibn Muhammad enflamed the Zanj (pagan black slaves from East Africa) into open revolt in the name of an egalitarian Islam. The Zanj had been forced to work in labor gangs for years in the salt mines of Bosra. Their complaints were social and economic rather than theological. The repression of the revolt took many years of hard fighting. It was not until 883 that the capital of the "slave republic" in southern Iraq fell. The caliph al-Muktafi (902–908) inherited, on one hand, a strengthened caliphate and, on the other, the shattering problem of the Qarmatians. These latter were revolutionary anarchists who had a foothold in Bahrain. [*See* Bahrain.]

SYRIA: Islamic Period. *Umayyad mosque.* (Courtesy K. Toueir)

Despite efforts at rooting them out, they had grown to such a pit of strength that in 900–901, they were threatening Bosra and attacking cities along the whole length and breadth of Syria. A caliphal army that set out in 903 was successful and the Qarmatians never quite regained their strength in Syria.

In 877, the caliph al-Muwaffaq demanded increased payment from his dependent, the governor of Egypt, Ibn Tulun. However, the latter had evicted the caliph's finance officer from the province, and so, with the exception of a small sum forwarded to Baghdad, Egyptian tax revenues were remaining within the borders of Egypt. In 878, a legate was sent to Egypt at the head of a caliphal army with orders to remove the fractions amir (governor). He failed, and Ibn Tulun responded by sending his own army into the caliph's domains in Palestine and Syria. It met little resistance, and the new territories were added to the growing Egyptian estates. In 935, the Tulunids were followed by the Ikshids, and Egypt once again exercised control over Palestine and much of Syria. In 941, ʿAli, surnamed Sayf ad-Dawla, who was the brother of the Hamdanid amir of Mosul in northern Iraq, drove the Ikshids from Aleppo and Hims (Homs) and established a new principality that ruled northern Syria for the next half century.

The political dismemberment of the ʿAbbasid caliphate was accompanied by a challenge to the Islamic faith. Both Sunni and Shiʿah faced a massive infiltration of Greek philosophy. This led to the rise of Islamic theologians known as Muʿtaziliyah. Despite the support they enjoyed from four ʿAbbasid caliphs, the Muʿtaziliyah ended by being regarded as heretics. The Sunnis detested them and the theologians who came to represent orthodoxy disavowed them. Their works disappeared and their opinions were memorialized chiefly in the unflattering remarks of the heresiographers. The influence of Greek philosophy on the Shiʿah was, however, effective. It resulted in the appearance of the Ismailiyah, known as the Assassins. One of the founders of this extreme doctrine situated within the Shiʿah was Maymun al-Qaddah (died c. 796) and his son ʿAbd Allāh (d. 825). Between 850 and 875, Ismaili missionaries ("summoners") spread all over the ʿAbbasid Empire. They were particularly strong in Iraq, Yemen, Syria, and Iran. One of their main centers of propaganda was located in Salamiyya, a town east of Hama in Syria. In 892, one of their summoners, Abu ʿAbd Allah, began his missionary endeavors by accompanying a group of North African Berber pilgrims on their way home to North Africa, preaching the Ismaili message tirelessly. Between 906 and 909, city after city fell to the Ismailis. A certain ʿUbayd Allah in Salamiyya, who claimed to be a descendant of ʿAli and Fatimah, daughter of the Prophet, joined his summoner, Abu ʿAbd Allah, in North Africa. Fatimah became the name of the Fatimid dynasty, which the Ismailis succeeded in setting up in North Africa and whose culmination was the conquest of Egypt in 969. The Fatimids established the city of Cairo, which became a real rival of Baghdad for more than two centuries (969–1171). [*See* Fatimid Dynasty.]

A new Shiʿi power had arisen in the northwest corner of Iran, the Buyids of Daylam. In 945, the Daylami infantry, along with Turkish Buyid horsemen, entered Baghdad. The Buyids remained Shiʿis while the caliph remained Sunni, continuing to enjoy the immense prestige of that office. Under these circumstances, during which the state was being dismembered, local dynasties fought one another, and there was a strong rivalry between Cairo and Baghdad. During this period, Syria experienced instability and became an arena for the parties' conflicts. Neither the Fatimids of Cairo nor the shiʿatized local dynasties (the Hamdanids, Uqaylids, or Merdasids) in north and northeastern Syria have left any significant material culture of their own.

Syria, and Damascus in particular, remained intellectually a stronghold of Islamic orthodoxy (Sunni) and was productive in the scientific field. In the tenth century, a Damascene mathematician, Abu al-Hasan al-Uqlidisi, wrote the first account of decimal fractions in arithmetic. Muhammad ibn Jabir al-Battani from ar-Raqqa was one of the most famous Muslim astronomers. In the middle of the eleventh century, the Turkish Seljuks arrived in Baghdad, along with their successors. They began a new chapter in Islamic history by bringing about the collapse of the Fatimid state and the local dynasties in northeastern Syria, reestablishing orthodoxy, persecuting the Assassins, and confronting two major invasions: the European Crusaders and the Central Asian Mongols. Syria regained its importance then, becoming central to events.

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KASSEM TOUEIR

SYRIAC. Three post-Achaemenid Aramaic dialects achieved the status of major literary languages: Syriac, Jewish Aramaic, and Mandaic. [*See* Aramaic Language and Literature; Mandaic.] After the collapse of the Achaemenid Empire, the widely used "Imperial" Aramaic failed to act as

a unifying political force and local areas developed their own dialectal forms and scripts. [*See* Imperial Aramaic.] Syriac was originally the dialect of the Edessa area (Urfa in modern Turkey, and in antiquity known as Osrhoene), but its importance increased with the spread of Christianity in the region after about 200 CE. By the thirteenth century it had declined in literary importance, giving way to Arabic.

Although Syriac may be fairly characterized as a Christian language, the earliest inscriptions from the Edessa region which show distinctively Syriac characteristics in language and script are pagan. The earliest is dated to 6 CE (from Birecik), and they extend to the middle of the second century CE (especially inscriptions from Sumatar Harabesi near Harran).

Several features distinguish Syriac from earlier forms of Aramaic. The Proto-Semitic /ś/, which in earlier Aramaic was represented by the letter *śin*, came to be written with the Syriac sign for /s/ *(semkat)*. The early inscriptions give evidence of this transition. The construct ceased to be a productive form, even though it was retained in numerous fixed expressions. Instead, the particle *dᵉ* is used in an analytical possessive construction: *sūsyā dᵉmalkā*, "the horse of the king." It is also characteristic of Syriac to add an anticipatory pronoun to the first noun in such expressions: *sūsyeh dᵉmalkā*, literally "his horse of the king." The Aramaic substantival ending *-ā* (originally marking definiteness) ceased to have any significance in contrast with the nonsuffixed form. The imperfect of the third-person masculine singular and plural has a *n(e)-* prefix, in contrast with the earlier *y-* (*l-* in some Aramaic dialects). The causative stem is formed with *'a-* (except in a few archaic fossilized cases). The definite direct object of the verb is regularly marked with the particle *l-*.

The earliest inscriptions use a recognizable form of what became the *estrangelā* (from Gk., *strongúlē*, "rounded, compact, carved") script derived from the earlier Aramaic tradition. As with the other early West Semitic writing systems, this script was essentially consonantal. The earliest examples of the script on soft materials are found on legal parchments from the area of the Middle Euphrates River, dated to 240–243 CE. Literary manuscripts were already in existence by that date, although the earliest dated literary manuscript (British Library Add. MS. 12150) comes from 411 CE. This manuscript already displays a mature and elegant calligraphy.

Syriac-speaking Christians became divided during the centuries of christological debate, and as a result the script forms developed separately. *Estrangelā* remained the traditional and most formal script, but alongside it there developed Western (sometimes called Jacobite, or *serṭō*, "character") and Eastern (Nestorian) scripts. The confessional titles are traditional but not really appropriate. Unlike previous scripts, the Eastern and Western scripts each developed methods of indicating vowels for the first time. The Eastern system consists of dots; the Western adapted Greek vowel letters for the purpose. As in Hebrew and Arabic, the new marks were placed above and below the consonants.

Dialectal differences also developed which were at first slight, consisting of little more than variations in vowel pronunciation. Thus, the original *ā* of Aramaic came to be articulated as *o*/*ō* in Western Syriac, while its original value was retained in the East. Western Syriac also effectively merged *o* with *u*.

Syriac survives as a spoken language in the area where modern Turkey, Syria, and Iraq meet. Its religious heartland is the Ṭur 'Abdin in Turkey, and the modern language is marked by considerable phonological innovation and heavy interference from Turkish and Arabic.

Syriac literature is too vast to be outlined here. The main collections are in the *Patrologia Orientalis* (Paris, 1907–) and *Corpus Scriptorum Christianorum Orientalium* (Paris, 1903–) series and in Baumstark (1968) is found the most comprehensive survey. Note should be taken, however, of the outstanding early writer, Ephrem the Syrian (d. 373 CE). Ephrem was a great poet, although he has not always been fully appreciated because of the complexity of his poetry. Syriac literature gradually came more and more under Greek influence, and it may be fairly said that few of its later theologians could be described as original thinkers. However, another branch of Syriac literature became more important and remains invaluable to modern scholarship: chronicles. At first these seem to have been little more than city archives recounting series of events, but historiography developed and culminated in the major works of writers such as Michael the Syrian (d. 1199 CE) and Bar Hebraeus (d. 1286 CE).

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JOHN F. HEALEY

SYRIA-PALESTINE. Often used in archaeological and historical studies, the term *Syria-Palestine* designates ancient Canaan, although the correspondence is inexact because its geographic and political boundaries varied from period to period. In practical usage, the term is usually employed archaeologically to designate central and southern Canaan (*not* "Greater Canaan") or to incorporate the modern boundaries of coastal and south-central Syria (south of the bend of the Orontes River), Lebanon, Israel, Jordan, and part of Egypt's Sinai Desert.

The adjective *Syro-Palestinian* to describe the archaeology of the above region seems to have been first popularized by William Foxwell Albright in the 1920s–1930s, often as an alternative to *biblical archaeology.* It has recently been revived as the preferred, if not exclusive, term for this branch of Levantine archaeology in the West by William G. Dever and others. Israeli archaeologists refer to the discipline in Hebrew as the archaeology of Eretz Israel ("the Land of Israel"), or in English as biblical archaeology (although not in the American theological sense). Jordanian archaeologists, often refer to their region in terms of the archaeology of *bilad ash-Sham* ("southern Syria"). Finally, beyond the question of modern Middle Eastern and Western sensibilities, there is the question of historical and cultural suitability. South-central Syria and Palestine did indeed constitute a relatively homogeneous cultural entity in certain periods, such as the Middle and Late Bronze Ages—the zenith of the Canaanite era—and the classical (Greco-Roman and Byzantine) period, but not during the *floruit* of the petty states that divided up the area in the Iron Age. Even in periods of cultural unity, Palestine was largely a province of Syria and less sophisticated culturally. Nevertheless, the term *Syria-Palestine* does commend itself, not only for being the most neutral with regard to contemporary ideology and politics, but also for comparative purposes and for placing discussions in broader perspective. No alternative constructions—"Levantine archaeology" or "the archaeology of the southern Levant"—have any currency at present. Certainly "biblical archaeology," as a *pars pro toto* designation, is passé; "Syro-Palestinian archaeology" has better credentials by far.

The name *Syria* is sometimes derived from the Semitic *Sirion,* used in parallel in the Hebrew Bible for Mt. Hermon in southern Syria. The term—more properly, however—is Greek *(Suria).* It probably first occurs in 472 BCE, in Aeschylus's *Persae,* and again in Herodotus's *Histories* (c. 440 BCE). In the Hellenistic period, *Coele Syria* comes to refer to the area between the Mediterranean and the Euphrates River. This region later becomes the Roman province of Syria—"Syria" in New Testament usage. The name *Syria* does not occur in the Hebrew Bible, except in the Septuagint, which naturally uses the Greek *Suria.* The English rendering "Syria" in various translations is in fact a mistranslation of the Hebrew *'ărām* (Akk., *Aramu*). This was the only portion of Syria known to the biblical writers—the contemporary Iron Age Aramean kingdoms in the Damascus area and southern Syria around the fringes of the desert. Even in the Bronze Age, Syria was not unified, and therefore its borders cannot be precisely fixed. The term *Canaan* seems to be first attested in the fifteenth–fourteenth centuries BCE, in both cuneiform and Egyptian sources. The Egyptians, however, more often referred to the general area in Late Bronze Age/New Kingdom times as *kharu,* "the Land of the Hurrians," or Upper Retenu, including northern Palestine and Syria. In the Middle Bronze Age, the common Egyptian term for southern Syria and Palestine was "the Land of the Šasu ("sand dwellers"); in Mesopotamian texts it is "the Land of the Amurru [Amorites]."

It is an instance of historical irony that the term *Palestine* derives transparently from the Philistines (Heb., *pilištîm;* Egyp., *plst*), latecomers who inhabited the coast of Canaan only after about 1200 BCE and never displaced the Israelites inland. The term enters the literature when Greek sailors and geographers encountered the descendants of the Philistines (recently identified archaeologically as Neo-Philistines) along the southern Phoenician coast. The first known such reference is in Herodotus (fifth century BCE), who speaks of the inhabitants from the Carmel coast to Gaza as "Syrians, called *Palestinoi.*" The Romans adopted the term for southern Syria, formerly called Judea, after the revolt of 132–135 CE. In the fourth century they divided the area into *Palaestina prima, secunda,* and *tertia.* The name *Palestine* was perpetuated by Byzantine Christians, as an alternative to Terra Sancta or the Holy Land; after the Muslim conquest the name was arabized to *Filastin* (eastern Palestine becoming known as *Urdunn*). Throughout the Turkish period and the subsequent British Mandate, the name *Palestine* persisted for the region, until the partition of the area in 1948 as the modern states of Israel and Jordan.

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T

TA'ANACH, site located on the southwest flank of the Jezreel plain about 8 km (5 mi.) southeast of Megiddo. Although springs are common along the fault line, none flowed near the site; in about 1700 BCE, cisterns were commonly used at the site. Ta'anach was first excavated by Ernst Sellin for the University of Vienna (1902–1904), who worked largely on the northern half of the tell. The later expedition, a joint venture of the American Schools of Oriental Research (ASOR) and Concordia Seminary, St. Louis, led by Paul W. Lapp (1963–1968), focused on its southwest quadrant. Lapp's work contributed to what is known about the site's fortification history and about the site in the Early Bronze period, both of which had eluded the earlier excavation. Of the seven biblical references to Ta'anach, the best known is *Judges* 5:19, in which Deborah and Barak are said to have fought the Canaanites "at Ta'anach, by the waters of Megiddo." Though Ta'anach was assigned to Manasseh (*Jos.* 17:12), that tribe was unable to conquer it (*Jg.* 1:27). In the tenth century the town was said to be in the fifth administrative district of Solomon (1 *Kgs.* 4:12). Additional biblical references are found in *Joshua* 12:21, 17:2, 21:25; *Judges* 1:28; and 1 *Chronicles* 7:29.

The archaeology of the site shows that it has been in existence since about 2700 BCE, although with significant gaps in its history. The heavily fortified EB town, which existed until about 2300 BCE, experienced a major rebuilding of its defenses on the southern slope. Modestly reoccupied in the eighteenth century BCE, Ta'anach developed into an important service center. This is reflected in archaeological evidence for a metallurgical industry, which is also alluded to in an Akkadian cuneiform tablet found on the site (Glock, 1971, letter 2:8, 19). Ta'anach may have suffered at the hands of Thutmosis III in 1468 BCE, but it seems to have survived into the fourteenth century. An eighteenth-dynasty Egyptian document refers to Ta'anach as a source of *maryanu* (warriors) provided for the Egyptian court. The name lists of several tablets indicate that at that time the Ta'anach community was polyethnic. The possible reference to Ta'anach in Amarna tablet 248 remains a debated restoration. A small alphabetic cuneiform tablet, interpreted by Delbert L. Hillers (1964) as a receipt for grain, suggests that the site was reoccupied in the twelfth century. On the basis of the 8 percent of the site Lapp excavated, its Iron Age occupation was sparse but continued into the fifth century BCE. A substantial cult stand recovered from a tenth-century context reflects older Canaanite religious traditions. Ta'anach is listed among the towns conquered by Shishak, founder of the twenty-second Egyptian dynasty, in 918 BCE. The interpretation of a structure as cultic that produced a cache of artifacts in situ, including a figurine mold, has been challenged but seems sound. Little of the Roman-Byzantine town has been excavated, but the site then is described as a "very large village" in the fourth-century CE *Onomasticon* of Eusebius. It appears that the mosque in the modern village rests on Byzantine foundations. Archaeological evidence documents limited occupation during the tenth and twelfth–thirteenth centuries CE. In the latter period, "Tannoch" was indentured to the Monastery of St. Mary in Jerusalem. Sellin excavated a twenty-five-room compound dating to this period on the tell. Ottoman tax records of the late sixteenth century reveal a small settlement that was recently (1985–1987) partially excavated by Albert E. Glock on the tell's northeast slope. The site was abandoned in the early eighteenth-century; the modern village was established in the mid-nineteenth century.

[*See also the biographies of Lapp and Sellin.*]

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ALBERT E. GLOCK

TABGHA (Ar., et-Ṭabgha, a version of the Greek name *Heptapegon,* "seven springs"), site located on the northwest shore of the Sea of Galilee, 3 km (2 mi.) west of Capernaum (32°52′ N, 30°32′ E; map reference 2017 × 2532). The ancient remains and an impressive modern reconstruction of the church that commemorates the miracle of the loaves and fishes (*Mt.* 14:14 and parallels) and two other small chapels are found at Tabgha. The one to the north, probably dedicated to the Sermon on the Mount (*Mt.* 5), was excavated by Bellarmino Bagatti and includes a chapel with several rooms around it, dated to the Byzantine period. To the south, on the rocky lake shore, are the remains of a very small chapel excavated by Bagatti and Stanislao Loffreda (1981), dated to the Byzantine and Crusader periods. The chapel probably memorializes the postresurrection appearance of Jesus to Simon Peter (*Jn.* 21).

The most important building at Tabgha was the Church of the Loaves and Fishes. The site was excavated in 1911 by Karge and then in 1932 by Mader and A. M. Schneider (1934). In 1936 Schneider uncovered the earlier chapel and in 1979–1980 Renate Rosenthal and Malka Hershkovitz, for the Hebrew University of Jerusalem, carried out some probes in the eastern part of the church (Rosenthal and Hershkovitz, 1980). The first chapel was built in the mid-fourth century and is one of the earliest churches in the Galilee. It is a single-apsed, one-room structure (15.5 × 9.5 m) with three pilasters on each side. It is possible that this is the site mentioned by the fourth-century Christian pilgrim Egeria as the place of the miracle of the "loaves and fishes." She describes only an altar without mentioning a large church, however.

At the end of the fifth century a large basilical church was erected, surrounded by rows of rooms on the south, north, and west. The entire complex is 56 m long and 33 m wide. The church itself (25 × 19 m) has a transept hall. The chancel screen not only separated the bema from the rest of the church, but also the entrances to the pastophoria on both sides of the apse. In the center of the bema, in front of the altar, a mosaic depicts a basket of bread, stamped with a cross, symbolizing the "loaves." A large stone, once part of the earlier phase of the apse, was considered a relic, probably believed to be the *mensa Christi* ("altar used by Christ"). Two Greek inscriptions were found, one on the bema and the other at the door to the prothesis, that give the name of the mosaic maker and probably the name of Martyrius, the patriarch of Jerusalem from 478 to 486. In one of the rooms to the north, parts of olive presses were found. The southern wing of the complex was badly ruined, but it is possible that it contained more rooms. This wing and the existence of an oil press might identify this part of the complex as a monastery, rather than just a pilgrims' church.

[*See also* Basilica; Churches; Monasteries; Mosaics; *and the biography of Bagatti.*]

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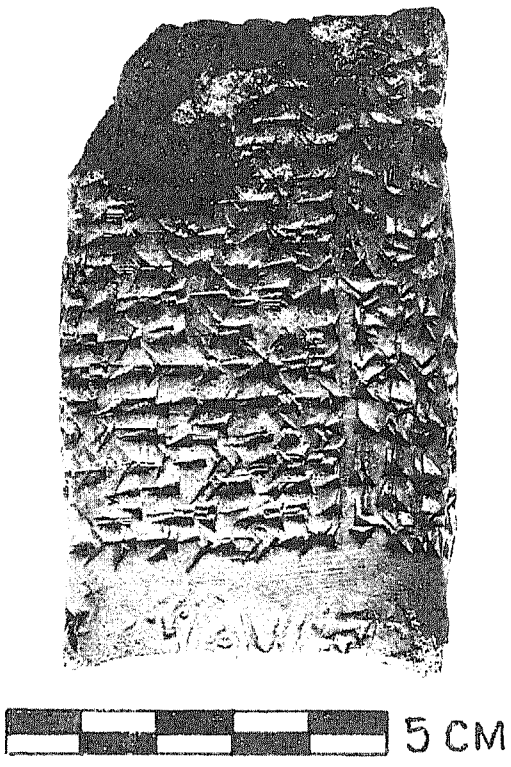
MORDECHAI AVIAM

TABLET. The clay tablet was in use for three millennia (although in different chronological distributions), the carrier par excellence for cuneiform writing in Mesopotamia, Elam and southeastern Iran, Syria, Asia Minor, and Armenia. More tablets by far have been recovered than other incised or stamped clay objects such as cones, cylinders, prisms, terra cottas, sealings on vessels, or bricks; or inscribed objects in other materials, such as stone or metal. *Tablet* is a catch-all term used to refer to quite divergent forms: in longitudinal section, the tablet may be dislike, plano-convex, or lenticular. Viewed from above, it may be rectangular or square, with more or less rounded corners or, more rarely, oval or circular. Formats vary diachronically, but sometimes complement the type of text. School "exercise" tablets from the first half of the second millennium BCE frequently are round, as is a special kind of field survey tablet dating to the third dynasty at Ur (twenty-first century BCE). Tablets stored on shelves, like modern books, as is attested in the Ebla archives in northern Syria (twenty-fourth century BCE), of course required flat edges.

From earliest times, both sides of a tablet could be inscribed. When switching from the obverse to the reverse, the tablet was turned longitudinally—not like the pages of a book. From the Akkad period (twenty-fourth–twenty-third centuries BCE) onward, scribes, after filling the obverse, sometimes, to save space, used its lower edge and then continued onto its back. After filling the reverse, they sometimes inscribed the upper edge and, finally, the space still available on the tablet's left edge. The right edge received the ends of lines (either of the obverse or of the reverse) the scribe had been unable to include for lack of space. Indenting a line was common practice, but the enjambment (hyphenation) of part of a word or of a phrase was quite unusual.

Clay tablets come in a great variety of sizes. Tiny "memoranda" measure only 1.6 × 1.6 cm; the largest administrative tablet found at Ebla measures 36 × 33 cm. The height



TABLET. *Cuneiform tablet, Tell Hadidi.* A Late Bronze Age record of the sale of a house. (Courtesy Rudolph Dornemann)

of the individual signs, too, varied. The average height for Old Babylonian letters is 4–5 mm, but there are specimens of microscopic tablets: the "library on a postcard" from Old Babylonian Isin is a postcard-sized tablet containing five columns on its obverse and six on its reverse and about 770 lines of literary text; the average height of a sign is only 1.7 mm. [*See* Ebla; Isin.]

In the earliest examples, the surface of a clay tablet was divided into rectangular "cases" (rectangles marked off in the clay with a stylus). From the end of the third millennium onward, the use of cases was gradually abandoned and texts became linear, often set off by ruled lines. Normally, a case or line contained a text sense unit (a phrase or a whole sentence). Larger tablets were divided into as many columns as were necessary to adapt the text to the format of the tablet. The "classical" version of the Gilgamesh epic, for example, consists of tablets with three columns each on the obverse and reverse.

Apart from the usual clay tablet, wood or ivory boards covered with a layer of wax are attested from the second half of the second millennium BCE onward. Original wax tablets have been recovered at Nimrud (ancient Calah), dating to the Neo-Assyrian period. Wax, as a receiver of incised cuneiform script, being similar to wet clay, may have been used far more frequently than can be proven. Because wax is so perishable, few traces can be expected to have survived, whereas clay tablets, even unbaked tablets, are nearly indestructable as long as they are not exposed to humidity leading to salinity.

Toward the end of the third millennium BCE tablets—usually of legal content, but also of letters—were provided with a "case," or an "envelope," also of clay, on which the text of the "inner" tablet was repeated or resumed. This device prevented falsification of the wording and, especially, of number signs involving amounts of silver or other commodities relative to a transaction. A document could then only be opened by breaking the case in the presence of judges and/or witnesses.

Apart from receiving cuneiform writing, clay tablets were also a suitable surface on which to apply stamp seals or to roll cylinder seals in developing testimony in a legal or an administrative transaction. Many specimens of Mesopotamian glyptic art are in fact known not from the original sealing instruments, but from their "first impressions" on clay.

The long use of cuneiform tablets was certainly the result of the interdependence of the type of writing and the material, in addition to the fact that clay was both inexpensive and ubiquitous. There are rare and very late examples of clay tablets used for Greek script (the so-called Greco-Babyloniaca) during the first century BCE and/or CE. When in Mesopotamia the Akkadian language was gradually replaced by Aramaic, which was normally written on ostraca and papyrus, the practice of writing on clay tablets fell into disuse. The last dated cuneiform tablet is from the year 78 CE.

In the context of the Near East, writing on tablets is best known for the primary Mesopotamian languages and those of neighboring areas: Sumerian, Akkadian, Elamite, Hurrian, and Hittite. However, the medium was also used for other languages of Asia Minor and for Urartian as well as, in different script, for languages farther removed (e.g., Ugaritic, Linear A and B)—some still essentially undeciphered (e.g., Linear A, Cypro-Minoan). Whereas Ugaritic and Old Persian each created a cuneiform script imitating Sumero-Akkadian syllabograms, the Aegean scripts were linear, as was Aramaic, which occasionally appears as glosses to Akkadian (Neo-Assyrian) cuneiform.

[*See also* Cuneiform; Scribes and Scribal Techniques; Writing and Writing Systems; *and* Writing Materials. *In addition, the languages discussed above are the subject of independent entries* (*e.g.*, Akkadian, Sumerian).]

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DIETZ O. EDZARD

TABOR, MOUNT, peak rising 588 m above sea level in the midst of the Jezreel Valley in northern Israel (map reference 186 × 232). It is the scene of some of the most dramatic events in the Bible, such as the clash on the border of three Israelite tribes (*Jos.* 19), the battle between Deborah and Siserah (*Jgs.* 4), and the Transfiguration of Jesus (*Mt.* 17:1–13 and parallels).

At the crest of the mountain, above early remains, a monumental church was erected in the early twentieth century, on the same plan as a former Crusader church, whose excavation was never properly published. The earliest remains are the walls surrounding the summit, which enclose an area of about 75 acres. A survey and a small probe carried out by Mordechai Aviam in 1984 for the Society for the Protection of Nature in Israel revealed Hellenistic sherds at the foundations of the walls. The walls may be the remains of the Hellenistic fortifications mentioned as Ataburion by Polybius (*Hist.* 5.70.6.12) during the Syrian Wars, in the reign of Antiochus II, in 218 BCE. It is unclear whether there was a town on the summit then or only a large fortress. There is no doubt, however, that the same wall was referred to by Josephus Flavius when he wrote about "fortifying" the mountain in forty days (*War* 4.1.8). The fort was conquered by Roman troops after a brief battle at the end of the war in Galilee in 67 CE. [*See* First Jewish Revolt.]

At the beginning of the Byzantine period the mountain became a holy place associated with the tradition of the Transfiguration of Jesus. Literary sources attest to three churches built on the summit to commemorate the three tabernacles mentioned in the New Testament (for Moses, Elijah, and Jesus). Remains of Byzantine construction have been found under the Crusader buildings. Evidence of monastic life was found by Bagatti in underground chambers, including a cross and Greek letters in red paint on white plaster. According to a ninth-century monk, Epiphanius, 4,340 steps cut into the rock led to the top of the mountain; some of these were unearthed during construction of the modern church (Wilkinson, 1977, p. 121).

In 1101 a church and a Benedictine monastery were built on top of Mt. Tabor by the order of Tancred, the prince of Galilee, beside the Greek church that had probably been there since the Byzantine period. The monastery built in 1888 and the church built in 1919 covered the remains of the Crusader and Byzantine structures.

Under the Ayyubids a large fortress was built, in opposition to the Crusader capital in the coastal city of Akko. [*See* Akko.] The work started in 1209 and ended about five years later. In 1217 the Crusaders failed to take the fortress; it was ruined by the Arabs themselves in the same year. The remains of this fortress are the most substantial on the mountain today.

[*See also* Churches; Crusader Period; *and* Monasteries.]

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MORDECHAI AVIAM

TABUN, cave formed in the limestone of the western face of the Mt. Carmel promontory, approximately 18 km (11 mi.) south of Haifa, Israel, about 53 m above modern sea level (32°40′ N, 34°59′ E). The cave overlooks a narrow coastal plain and the mouth of Wadi el-Mughara (Naḥal Me'arot). The Mediterranean shore lies some 4 km (2.5 mi.) to the west. Mediterranean woodlands, largely composed of pine and scrub oaks, dominate the surrounding uplands; grasses and marsh plants formed the pristine vegetation of the coastal plain prior to modern agricultural activities. Excavations at Mugharat et-Tabun (Ar., "cave of the oven") have revealed one of the most extensive Lower and Middle Paleolithic industrial successions in the Near East. Because of its scope and detail, the Tabun stratigraphic column has come to serve as the principal reference for comparing early Upper Pleistocene artifactual, paleoclimatic, and chronometric sequences in the region. The recovery of Neanderthal remains from the cave's Mousterian horizon, coupled with the presence of anatomically modern human remains in Mousterian layers at nearby sites, further contributes to Tabun's importance as a key to understanding human biocultural evolution during the Upper Pleistocene.

The initial excavations were carried out between 1929 and 1934 by a joint expedition of the British School of Archaeology in Jerusalem and the American School of Prehistoric Research under the direction of Dorothy A. E. Garrod. Excavations were resumed at the cave in 1967 and continued through 1973 by the University of Arizona under the direction of Arthur J. Jelinek. Since 1973, work at Tabun has continued through the University of Haifa under the supervision of Avraham Ronen.

The plan of the cave consists of a large, exposed outer chamber and a smaller, enclosed inner chamber. The roofs of both chambers collapsed in antiquity. A high arch in the

cliff face is a remnant of the outer chamber; a roof fall in the inner chamber left a large chimney that opens in the hill above the cave.

Within a deposit some 25 m thick, Garrod's excavations exposed six Paleolithic layers: basal Tayacian, layer G; Late Acheulean, layer F; Acheulo-Yabrudian, layer E; Lower Levalloiso-Mousterian, layers D and C; and Upper Levalloiso-Mousterian, layer B (Garrod and Bate, 1937). Jelinek's investigation, confined to a 10-meter-section corresponding to Garrod's strata B–E and F, defined more than eighty-five geological beds in fourteen stratigraphic units. In following the natural stratigraphy of the deposit rather than arbitrary horizontal levels, Jelinek and his colleagues were able to trace episodes of accumulation, nondeposition, and collapse of sediments into underlying solution cavities (Jelinek et al., 1973).

In recovering more than forty-four thousand artifacts from the approximately 90 cu m of excavated sediment, Jelinek was able to trace in detail the artifact succession within the Tabun deposit. Within units XIV (Garrod's layer G) and XIII–XI (Garrod's layer E), he defined the Mugharan tradition, composed of three facies: Yabrudian, Acheulean, and Amudian. These are distinguished artifactually by relatively high frequencies of scrapers (Yabrudian), bifaces (Acheulean), and Upper Paleolithic elements, especially prismatic blades (Amudian). The Mugharan tradition shows a smooth transition into the overlying Levantine Mousterian horizon, as defined from upper unit XI–unit I. Following Garrod's initial cultural-stratigraphic partitions, the Levantine Mousterian succession consists of a D-type industry characterized by elongated Levallois points and blades; a C-type industry largely based on broad-oval Levallois flakes; and a B-type industry containing broad-based, *"chapeau de gendarme,"* points.

Since Garrod's initial research, evidence from the thick deposit at Tabun has been used for paleoclimatic reconstructions. Although the climatic implications of the classic Dama-Gazella curve developed by Garrod's colleague, Dorothea M. A. Bate, has been largely discredited, it undoubtedly inspired subsequent work. Based primarily on the geostratigraphy and sediment analysis of the cave's deposit in conjunction with palynological results, Jelinek's team traced a sequence of events thought to correspond to the global temperature oscillations and attendant fluctuations in sea level that stretched from oxygen isotope stages 5e–3. Such a sequence suggests that the basal unit XIV was deposited within the last interglacial, some 120–130 years ago. [*See* Paleoenvironmental Reconstruction.]

Considerable controversy surrounds the absolute dating of Tabun, however. If accurate, the recent electron spin resonance (ESR) dates on teeth would push much of the sequence (layers D–G) back beyond interglacial times. Aside from substantial internal variability in the dates, they fail to fit the traditionally held chronology for Mediterranean marine transgressions, or that developed for microvertebrates. Clearly, more dates are needed to resolve the problem.

In the initial excavation, Garrod recovered a partial skeleton of a female Neanderthal from either layer C or B, along with a damaged mandible of indeterminate taxonomic affinity from layer C. The presence of anatomically modern *Homo sapiens* remains from the nearby sites of Skhul and Qafzeh, in association with Mousterian industries similar to those at Tabun, suggests that the two hominid taxa may have been partially coeval within the Levant. The recent chronometry of the deposits even suggests that anatomically modern populations were indigenous to the region prior to a Neanderthal immigration from southeastern Europe some sixty thousand–ninety thousand years ago.

[*See also* Carmel Caves; *and the biography of Garrod.*]

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DONALD O. HENRY

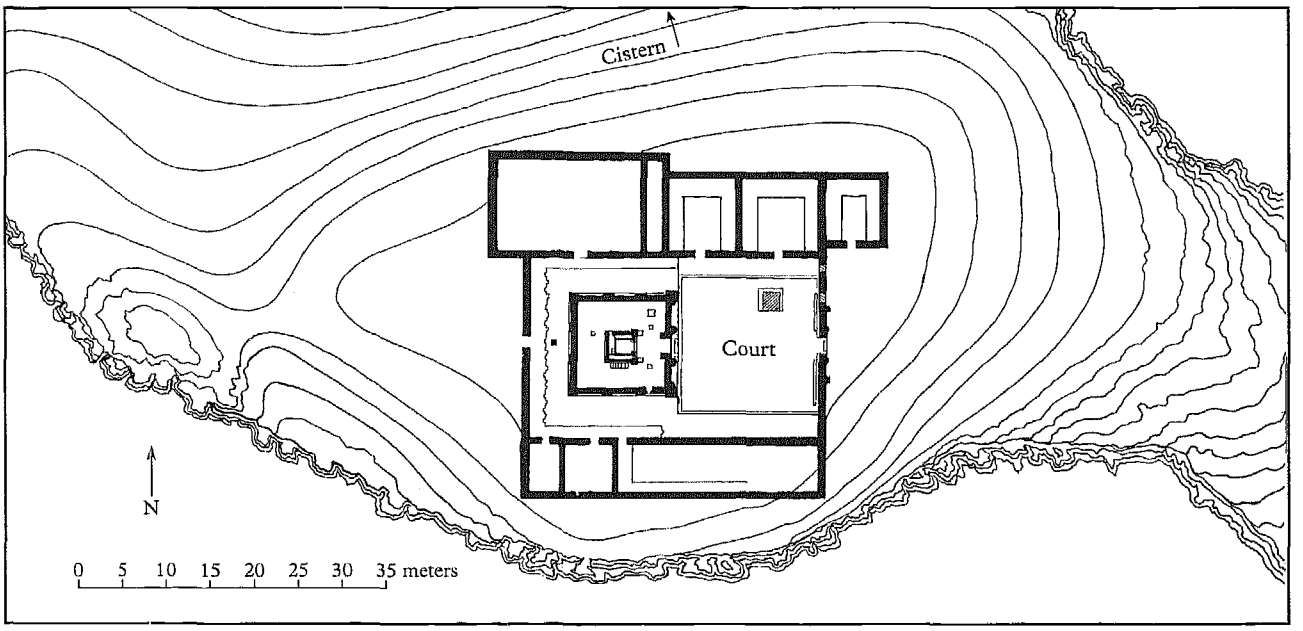
TANNUR, KHIRBET ET-, Nabatean temple located in southern Transjordan on a desolated summit, 704 m above sea level (map reference 2175 × 0421). The site overlooks Wadi el-Hasa, about 400 m below, southeast of the Dead Sea; it is close to the King's Highway and is 7 km (4 mi.) north of another temple, Khirbet edh-Dharih, in

Wadi La'ban. Shortly after he carried out a preliminary survey there, Nelson Glueck directed an excavation in 1937 for the American Schools of Oriental Research and the Department of Antiquities of Transjordan. The architect Clarence S. Fisher drew its plan and reconstruction (see figure 1). Most of the sculpture from the temple is exhibited in the Jordan Archaeological Museum and at the Cincinnati Art Museum. Since its excavation the site has been vandalized.

The temple (40 × 48 m) occupies all of the flat summit, accessed on the east by a steep path. Its eastern facade was decorated with four engaged columns with Nabatean capitals. The eastern, or outer, court is almost square (15.68 × 15.47 m). The temple's paved floor slopes to the southeast, where shallow channels open to the outside. An altar stood in the northeast corner, and porticoes on the north and south sides, built on a two-step-high podium, opened onto one long triclinium on the south and to two square ones on the north, with an additional one on the northern exterior—all used for banquets by pilgrims. There are unspecified rooms on both sides on the western half of the paved court. There, a temenos, entered on the east via a monumental gate, is enclosed by walls decorated with four pilasters; a small door opened on the south. On the top of the walls Glueck reconstructed a series of busts of Greco-Roman divinities and of Nikes (Victories), and above the gate a semicircular relief of a vegetation goddess among leaves and fruit, topped by an eagle (Glueck, 1965). Inside the temenos a square, monumental altar in the form of a small shrine (3.5 × 3.5 m in its last stage) was erected; its three phases give the temple's relative chronological sequence (see below). Two small offering boxes containing burnt remains of sacrifices were hidden under the pavement in front of the altar.

There are no remains of the supposed earlier Edomite high place. Phase I consisted of a square construction (1.5 × 1.5 m and 1.75 m high) with Nabatean tooling on the outside; it was found filled with layers of ash and plaster. A low wall surrounded the sacred space. Not long before phase II, a pavement was laid over a stepped surface that produced sherds of find Nabatean ware. The phase II altar was erected around the original one, but a false door decorated with friezes of rosettes and thunderbolts now adorned the east face; the two cult statues were placed inside this narrow space, according to the excavator's reconstruction. A stairway springing from the north side led to the top of the monumental altar. During phase III, a new enclosing altar was built around the one from phase II; its pilasters were decorated on each side with six busts of veiled goddesses emerging from a conchlike rosette; among them were a grain goddess and a fish goddess; vine and acanthus leaves decorated the doorjambs. A new staircase was added on the west side. The Russian doll structure of this monumental altar was probably the result of reconstructions after earthquake damage.

Glueck attributed the sanctuary to Hadad and his consort Atargatis on grounds of the iconography (symbols of power and fertility). Jean Starcky (1968), however, pointed out that the only divine name found in the inscriptions was Qos, the Edomite god, and suggested a cultic relationship with the volcanic summit across Wadi el-Hasa. It may be that in the Nabatean period the old Edomite divinities were depicted



TANNUR, KHIRBET ET-. Figure 1. *Plan of the site.* (Courtesy ASOR/Nelson Glueck Archive—Semitic Museum, Harvard University)

in the form of the popular divine couple of Hierapolis, Hadad and Atargatis. The sanctuary was an important pilgrimage center, as evidenced by several offering altars and incense burners, sherds of Nabatean cups, offering debris, as well as by the triclinia. [*See* Incense.]

According to Glueck, phase I lasted from about 100 BCE to approximately 25 or 10 BCE. He dated phase II by a Nabatean inscription to shortly before 7 BCE and attributed to this period most of the temple building, as well as a hypothetical temenos facade with Nabatean pilasters. He dated phase III to the first quarter of the second century CE, and attributed to it all of the decor on the temenos facade (Glueck, 1965). These dates have been contested. Michael Avi-Yonah assigned the sculptures from Tannur to the reign of Aretas IV (Avi-Yonah, 1981). Starcky, reexamining the dating of the temple and some of its reconstruction, attributed the entire building to phase II, at the turn of the century—except for the central altar shrine; he suggested the possibility of a cella rather than a central altar. Judith McKenzie attributed phase II to the end of the first century CE and distinguished a phase IIA. Fawzi Zayadine distinguished a Greco-Syrian and a Hellenistic-Parthian style that differs from McKenzie's classification. The fine Nabatean sherds under the pavement of the temenos do suggest a period II date of the end of the first century, and thus a later chronology: phase I could be contemporary with the dated inscription (7 BCE). Successive building programs probably lasted for decades, with some overlapping, and involved different workshops; consequently, stylistic variations should be used cautiously for dating. Sculptures of similar styles to that of Tannur are found at Khirbet edh-Dharih and at Petra. An earthquake destroyed the temple, probably in 363, and the site was abandoned. It was reoccupied by Byzantine squatters, probably looking for reusable materials.

[*See also* American Schools of Oriental Research; Hasa, Wadi el-; Nabateans; Temples, *article on* Syro-Palestinian Temples; *and the biography of Fisher.*]

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MARIE-JEANNE ROCHE

TAURUS MOUNTAINS. A major mountain range running east–west along the southern coast of Turkey, the Taurus mountains integrate with and continue as the Anti-Taurus in the eastern part of Turkey. The mountains were the arena for some of the most important transformations in history, including plant and animal domestication. Wild forms of wheat and domesticable fauna are plentiful in the foothills even today. The Taurus Mountains are also an area in which innovative technology in metals took place. Long assumed to be the "silver mountains" of Hittite and Akkadian legends, the range abounds with extensive cedar forests and polymetallic ore deposits. This area is particularly ore rich because it is a tectonic zone of plate contact between the Arabian and Asian blocks. Silver, lead, copper, gold, iron, and tin are among some of the mineralizations within these mountains and are ascertained to have been mined as far back as the Chalcolithic period. Native copper and malachite beads found at Aceramic Neolithic sites such as Çayönü and Aşıklı also indicate that these minerals were recognized and exploited as far back as the eighth millennium BCE.

The mountains also provided the natural barrier through which major trade routes (and at times armies) passed from the lowland agriculturally rich settlements. The Taurus highlands have abundant raw materials, some of which are lacking in the neighboring Levant and Mesopotamia. The earliest procurement of vital raw materials, such as flint, and decorative items, such as shells, pigments, and colored stones, began in the Paleolithic period. Upper Paleolithic sites such as the Karain cave near Antalya in the Taurus range have yielded stone tools from materials transported over great distances. A later (Neolithic and Chalcolithic periods, c. 7000–3000 BCE), but similar, situation is evident with reciprocal exchange (i.e., barter), which dispersed obsidian, obtained in the volcanic zone just north of the Taurus, over long distances. In the ensuing millennia, a highly complex form of trade established the early second-millennium BCE Assyrian trading colonies. [*See* Assyrians.] In later periods a flow of goods connected Anatolian highland and lowland resource areas as well as neighboring regions.

Trade has often been singled out as an overriding cause of cultural change or social developments. In this view the evolution of complex, large-scale trading networks stimulated the growth of urban society. Areas lacking such raw materials as metal, timber, and building stones established

methods of obtaining them. In time, this exchange became so large-scale, it necessitated an administrative organization to control the provisioning, production, and distribution of goods. Those in managerial positions thereby had access to a major source of wealth in the community and their power extended to other aspects of society. Whether trade was a prime mover or a consequence of developmental processes, it assuredly played a major role in the region of the Taurus Mountains.

K. Aslıhan Yener and Hadi Özbal (1986) have conducted several surveys in the central Taurus mountains in conjunction with a series of ore-sampling regimes for lead isotope analysis aimed at defining the social and economic organization of metal exchange in Southwestern Asia. The survey aimed to disclose broad regional and interregional patterns of trade and settlement. From 1983 to 1986, archaeological surveys located more than forty-one sites dating from the Paleolithic through the Turkish Republican period (1925–). A majority of the sites are found on the summits of hills or terraced off the slopes leading into the valley proper. Middle Paleolithic flint tools and implements of ground-stone, obsidian, and greenstone celts, which mark aceramic settlements, were found in the valley. In the flatter, intermontane valleys, large settlements were found on mound formations such as Porsuk, which dates to the second millennium BCE and later.

Several important mines were located at Bolkardağ, in a valley 15 km (9 mi.) long (approximately 40 km [25 mi.] from the strategic Cilician Gates) that passes through the Taurus mountains. The ores are polymetallic and a number of dikes are visible. Natural processes and mining activities have created many very irregular caves, cavities, and tunnels in the mountain range, some of which penetrate the mountain for up to 4 km (2.5 mi.). The range is known as an important source of silver and gold; recent analyses taken from high-altitude veins also revealed high trace levels of tin in a galena-sphalerite ore. Because this form of tin was relatively rare, the more common form, cassiterite, was searched for in the Taurus area and located by the Turkish Geological Survey (MTA) near Çamardı, 40 km (25 mi.) to the north, at Kestel mine.

The major evidence that Bolkardağ ores were used from the Chalcolithic period through the Iron Age stems from lead isotope data. Isotope ratios of lead can be used to characterize sources and objects because lead ores differ from one another in their isotopic compositions from mining region to mining region. They are "fingerprints" with which to compare isotopic ratios derived from artifact samples. The Early Bronze Age correlations are especially informative. Silver jewelry from Troy and silver- and copper-based artifacts from Tell Selenkahiyeh, Hassek, Tell Leilan, and Mahmatlar in Syria and Anatolia are a few examples of crafts and sites using Taurus ores. [*See* Leilan, Tell.] Late Bronze Age artifacts such as a silver stag from Mycenae, lead net sinkers from the Kaş-Uluburun shipwreck [*See* Uluburun], and correlations to Cypriot lead indicate that maritime trade connected Bolkardağ with coastal settlements.

[*See also* Çayönü; Göltepe; *and* Kestel.]

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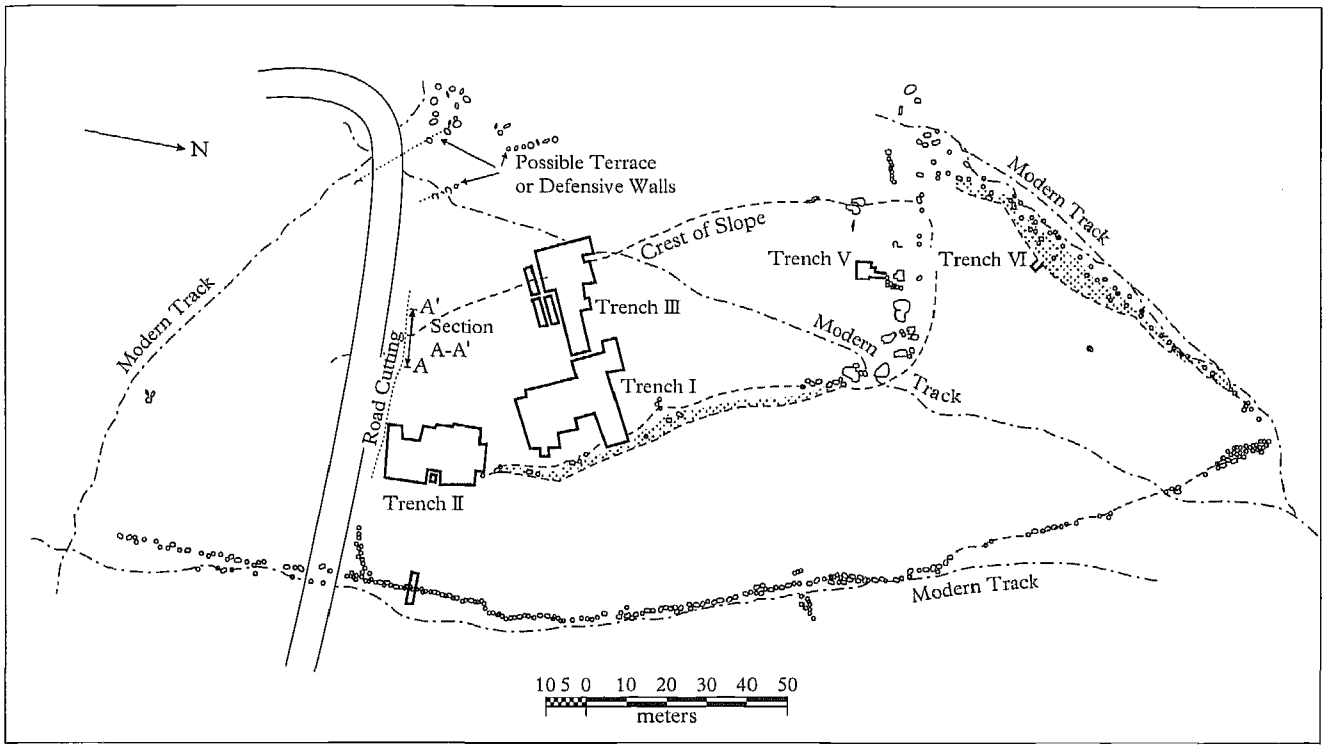
K. ASLIHAN YENER

TAWILAN, site, primarily Iron II (Edomite), located just north of Petra, in the hills of southern Jordan (30°20′ N, 35°29′ E; map reference 196 × 972). The ancient site, whose name is unknown, covers a terrace overlooking the village of el-Ji, an intensely cultivated area close to ʿAin Musa, a perennial spring. Several other Iron II sites have been discovered in the vicinity of Petra: Umm el-Biyara, Umm el-Ala, Baʿja III, and Jebal al-Kser.

Survey and Excavation. Tawilan was surveyed in 1933 by Nelson Glueck, who concluded that between the thirteenth and sixth centuries BCE it had been an important Edomite town. The site was excavated by Crystal Bennett from 1968 to 1970 and again in 1982, under the auspices of the British School of Archaeology in Jerusalem and then of the British Institute at Amman for Archaeology and History. Glueck had first identified the site with biblical Bozrah, the probable capital of Edom ("Explorations in Eastern Palestine and the Negeb," *Bulletin of the American Schools of Oriental Research* 55 [1934]: 14). He subsequently agreed to the equation that modern Buseirah was Bozrah and alternatively proposed identifying Tawilan with biblical Teman (*Explorations in Eastern Palestine* II, *Annual of the American Schools of Oriental Research* 15 [1935]: 83). Thirty years later, Roland de Vaux showed that the term *Teman* does not refer to a town but is to be equated with Edom or a part of Edom ("Téman, ville ou région d'Édom?" *Revue Biblique* 76 [1969]: 379–385).

Based on the remains he found during his survey, Glueck postulated two defensive walls that ended in "towers" on



TAWILAN. *Plan of the site.* (Courtesy P. Bienkowksi)

the northwest and on the south. Bennett excavated three main areas (I–III), and three small test trenches (IV–VI). Her excavations failed to validate Glueck's identifications: they instead revealed an unfortified, essentially agricultural Edomite town, whose occupation can be divided into eight stages. The first five, based on their pottery, date to Iron II, probably the seventh–sixth centuries BCE.

In the first settlement stage Bennett discovered a series of pits dug into the natural clay that were unrelated to surfaces or structures. In the second stage foundation walls had been built on a stone and clay fill used to level the ground. All three areas consisted of rectangular buildings with dry-stone walls that had been built on a northeast–southwest axis. Areas II and III revealed well-built structures with solid walls, stone paving, and pillars. In the third stage walls were added between the pillars in areas II and III. Major architectural additions followed, including steps to higher ground in the area III buildings. In area II were remains of a building of inferior construction whose plan could not be determined. In the fifth stage, all three main areas were destroyed, some by fire, followed by a limited occupation by squatters in area III. The other areas were destroyed and abandoned. In the sixth stage (c. first or second century CE), area II became a cemetery and areas I and III were abandoned. In the seventh stage (Mamluk period) a rough wall to mark a field boundary or a terrace wall was constructed in area II. In the final stage of occupation at the site (Mamluk period or later), a square structure (one of Glueck's towers) was built in area II.

Material Culture. In her 1982 season, in fill deposits in area II, Bennett recovered the first cuneiform tablet ever found in Jordan, a legal document from Harran in Syria. In the tablet testimony is given regarding the sale of two rams. The name and patronymic of the man responsible for the testimony are Edomite—they are compounded with the name of the Edomite god Qos. The tablet has been dated to the accession year of one of the Achaemenid kings named Darius: Darius I (521 BCE), Darius II (423 BCE), or Darius III (335 BCE), although certain attribution is impossible for an isolated text.

In 1982 Bennett also recovered the first large hoard of gold jewelry in Jordan, eighteen gold rings and earrings (along with 334 carnelian beads). The pieces were discovered inside a badly encrusted bronze bowl attached to a thick coarse-ware sherd. The bowl had been set into the sterile clay close to a burial pit, but it was not possible to prove conclusively any association between the hoard and the burial. It was originally suggested that the jewelry was of various dates between the ninth and fifth centuries BCE. However, more recent study indicates all the jewelry dates to the ninth–eighth centuries BCE.

Dating the occupation at Tawilan and at all Edomite sites is problematic and subject to revision by future discoveries. [*See* Umm el-Biyara.] The Iron II pottery, presently dated

to the seventh–sixth centuries BCE, may be earlier. The cuneiform tablet from Tawilan, though not from an occupation level, nevertheless indicates some activity there during the Persian period. Future excavation may prove that occupation continued through the Persian period.

[*See also* Edom; *and the biographies of Bennett and Glueck.*]

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PIOTR BIENKOWSKI

TAYA, TELL, site located in northern Iraq (36°11′ N, 42°43′ E). The modern Arabic name, Tell (Tall) Ṭayah, applies properly only to the central mound of the site but has been extended to cover the entire ancient settlement. The name has no meaning to local Arabs; it may be connected with the Ṭai tribe. The spelling *Tall Teir* used by Seton Lloyd (1938, p. 137) is a mistake. Local Turkoman describe Taya as an encampment of Timur Lang, to whom they ascribe a natural formation resembling a hollow road through nearby foothills. Taya probably had four ancient names. About 2500–2000 BC it developed into a substantial town with most likely a Hurrian population and then declined and was abandoned. About 1900–1800 it was reoccupied and became a large village likely to have been called Samiatum or Zamiatum, an apt name to describe the extensive ruin it then was, because the word means *wall foundations* in Akkadian. The name is attested in contemporary administrative records found at the regional center of Qatara (Dalley, Walker, and Hawkins 1976, p. 178) and is the only toponym on an official document found at Taya (J. N. Postgate, in Reade, 1973, p. 174ff.). About 850–600 Taya was a small castle, and there was a village on the site about AD 1000–1250; its names in these periods are unknown.

Taya lies on the lower southwestern slope of a range of limestone hills, outliers of the Zagros Mountains, overlooking the Sinjar-Tell ʿAfar plain. It is one of a complex of four major sites, among many smaller ones, in the plain's northeastern corner. This area is bordered by hills to the north and northeast with passes through them, by the smaller Muhallabiya complex of sites to the southeast, by steppe country with fewer sites to the south, and by the extensive Sinjar complex of sites to the west. Taya itself was the most important regional center in the mid- to late third millennium, equivalent centers at other dates being Karatepe/Tell el-Jol 6 km (3.7 mi.) to the west (Hassuna through Ninevite 5, Hellenistic), Tell er-Rimah 12 km (7.4 mi.) to the south–southwest (Old Babylonian Qatara; Neo-Assyrian Zamahu), and modern Tell ʿAfar 4 km to the northwest (Umayyad Qalʿah Merwan, ʿAbbasid, Ottoman). [*See* Hassuna; Rimah, Tell er-.]

Various calculations suggest that these centers with dependent villages could have held populations in the range of fifteen thousand to twenty-five thousand persons, supported by at least 300 sq km (115 sq. mi.) of agricultural land, extensive grazing land in the hills and steppe, and small irrigated gardens. Annual rainfall in this area is usually over 20 cm (50.8 in.), suitable for dry farming of cereals; the soil is good, and the flora and fauna were originally much richer than they are today. Food remains from third-millennium levels at Taya (J. G. Waines, in Reade, 1973, pp. 185–187) include carbonized seeds of barley *(hordeum vulgare),* wheat *(triticum aestivum),* some emmer wheat *(triticum dicoccum)* possibly as a weed, varieties of pea, lentil, grape, a cucurbital species, and apparently olive stones, although it has since been suggested that the last may be animal droppings. Animal bones (S. Bökönyi, in Reade, 1973, pp. 184–185) mainly derive from sheep or goat, pig, and gazelle, also from onager and cattle or aurochs. It is an open question whether gazelle were domesticated. Fallow deer, wild pig, and badger are also attested, and incised drawings on third-millennium pottery show fish, large birds (ostrich or bustard?) and large ruminants.

The site spreads across some 155 ha (383 acres), of land, on either side of Wadi Taya, a seasonal stream feeding Wadi ʿAbdan and Wadi Tharthar, and today has access to perennial waterholes and bitter water. Modern cultivation encroaches from the southwest. An all-weather track along the foothills traverses the site from northwest to southeast, as one did in the third millennium, and there are possible traces of an ancient direct track northeast over the hills toward Abu Maria (ancient Apku) and the Tigris Valley. About 1 km (.6 mi.) downstream of the central mound of Taya is the prehistoric site of Tepe Mahmud Agha, whose inhabitants presumably utilized the same resources as those of Taya did subsequently.

Taya was first recorded by Lloyd (1938, p. 137), among possibly Islamic sites, and described as "probably Roman." This dating, sensible at the time, was probably based on the abundance of visible stone wall-footings and on numerous large incised third-millennium sherds then regarded as Partho-Sasanian, a mistake that has probably resulted in many false datings of northern Iraqi sites. Taya was identified as mainly third-millennium by J. E. Reade on a visit in 1964, and excavated under his direction in three seasons, 1967, 1968–1969, and 1972–1973; in 1980 G. Farrant completed the plan of surface remains begun by him in 1972. The 1967 season concentrated on the central mound, where substan-

tial Old Babylonian and Neo-Assyrian levels were found to overlie the third-millennium remains; this area was also dug in 1972–1973. The 1968–1969 season investigated parts of the third-millennium town within and without the walls. Preliminary reports on the first three seasons have been published (Reade, 1968; 1971; 1973) and subsequently a short overview of the whole site (Reade, 1982).

The dating of Taya depends partly on stratigraphy and partly on surface pottery. Evidence for prehistoric occupation consists of a few sherds: Ubaid from the northwestern fringe of the site and from later levels in the walled town, and handmade flat-based bowls or trays and Ninevite 5 gray ware from the southeastern fringe. The main occupation dates within 2500–2000 and broadly represents one cultural tradition. The sequence was originally divided on the central mound (Site C, or citadel), with greatest depth of stratification, into levels 9–6, but the range and quantity of level 9 material in this area was limited, probably compressing many phases that may be provisionally reconstructed across the whole site as follows.

An original unwalled settlement became the Inner Town, with a roughly oval town-wall enclosing some 5 ha (12.4 acres) on either side of Wadi Taya and an additional 2 ha (5 acres) within a rectangular extension to the southwest. The town expanded outside the walls to occupy some 65 densely settled ha (160.5 acres) of Outer Town, with an additional 90 ha (222 acres) of lighter settlement beyond. The buildings in the Outer Town, defined now by the visible presence of stone wall-footings surviving after erosion of mud-brick superstructures, are sited around main streets running north–west, north–east and south–west. Courtyard houses of many sizes, chapels, and industrial establishments can be distinguished, with internal structural developments, also kilns and a flint-knapping area on the outskirts. Some wall lines suggest successive perimeters during development of the town, with organic rather than regularly planned growth. In one excavated house (S 1) a single significant period of occupation was preserved, with successive burial of three adults in an underground vault. Material on the floors of this house suggested an abrupt abandonment, corresponding to surface pottery on eroding floors elsewhere. Within the Inner Town an elaborate circular citadel of 50 m (164 ft.) diameter was constructed on cleared ground. The defensive wall consisted of stonework 1.6 m (5.25 ft.) thick and 3 m (9.8 ft.) high with at least 2 m (6.6 ft.) of mud brick above; casemates, presumably roofed, will have increased the width of the *chemin de ronde* (walkway along the top of a hill) to about 3 m (9.8 ft.). This area was to become the central mound. No stratigraphic link has been established between the Outer Town and the citadel; the latter is likely to have been a relatively late development within the level 9 occupation of Taya as a whole.

A pit dug into bedrock in the citadel mound produced a seal impression with Early Dynastic III affinities, about 2500–2400. The distinctive Taya 9 pottery is wheel made, the ware coarse or fine, usually pale green, often with incised decoration of triangles, comb slashes, wavy lines, and herringbone patterns. Terra-cotta figurines are common: they include many animals, wheels, chariots, a naked male charioteer, and a harnessed horse head (Bökönyi, 1972). Religious beliefs are suggested by terra-cotta figurines of naked women with prominent hips and by pedestal vessels decorated with snakes and scorpions. Glazed quartz-frit faience is attested, notably an incised blue-green beaker in a standard pottery shape. Bronze and lead were used. Bitumen was available as an impermeable wash and adhesive.

The Inner Town was reestablished on much the same lines in Taya 8, with more limited occupation in the Outer Town. The thickness of the citadel wall was increased to a width of 5 m (16.4 ft.) including the casemates. A corbeled stone gateway on the northeast incorporated stairs leading upward. The area included a bent-axis shrine, another large building, and probably a brewery and other small structures around a central courtyard. Among the finds were an Akkadian cylinder seal (c. 2300–2250), an incised shell lamp, faience vessels and beads, copper or bronze tools, and two hoards of silver rings and jewelry. The pottery is wheelmade: the fabric of the coarse pottery is generally reddish, with incised decoration much like that of Taya 9, and fine vessels include highly fired jars and bowls with decorative slips. Some black pottery has incised patterns with white infill. Further study is needed to determine whether gray stoneware beakers, of a type attested at Akkadian sites in the Khabur region, should be assigned to Taya 8 or to a late phase of Taya 9. Much Taya 8 pottery derives from a thick layer that underlay, in the citadel, foundations of Taya 7 walls.

Taya levels 7-6 incorporate several phases. The two main structures within the citadel were reused, with new smaller buildings around them. The Inner Town was occupied, at least in part, and finds included an inscribed amulet. The pottery largely resembles that of Taya 8, but there is less fine ware. Taya 6 represents the last third-millennium occupation of the citadel, with broken pottery indicating a hurried abandonment, probably during 2100–2000. A crater developed within the walls of the central mound, gradually filling with soil (Taya 5).

The central mound was resettled about 1900 (Taya 4). A few wall traces precede the formal construction of a rectangular house or shrine, and there are smaller adjoining buildings. The pottery is an early version of Khabur Ware, often painted with various simple patterns and sometimes incised; there are a few highly fired small vessels. This settlement was superseded by another (Taya 3), on a different plan, in which buildings including another large shrine or house adjoined a stone-paved courtyard. There was a succession of ovens. Barley and wheat are attested. Two cuneiform tablets were found, both sealed by or on behalf of Hasidanum, an official under Shamshi-Adad I of Assyria (c. 1810–1777); at

least one of them was dated by the eponym Idna-Aššur, probably before 1795; of two personal names of probable Taya residents, one was Hurrian, the other may be. The pottery was typical Khabur ware; there was much plain ware, and jars with painted stripes. Finds included a fine cylinder seal. This was apparently a large farming village.

About 850–750 the summit of the central mound was ringed by a massive stone terrace and probably fortified (Taya 2). There were well-built oblong rooms on the inner face of the terrace and a succession of untidy structures in the enclosed area. Pottery was typically Neo-Assyrian. A glass stamp-seal may be dated to the seventh century.

Taya 1 consists of subsequent remains on the site. There may have been a Parthian building; Sasanian graves, with some jewelry including etched carnelian beads, were dug into the summit of the central mound. Other graves may have been later. The northern wall of the old citadel, and later levels that it had supported, collapsed into Wadi Taya, probably between 600 BC and AD 1000. There was a village on and east of the central mound about AD 1000–1250. In modern times, about 1940 a house was built on the exposed stonework of the Neo-Assyrian terrace but was abandoned after the owner's death.

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JULIAN E. READE

TAYMA', site located in northwestern Saudi Arabia, in a vast inland drainage basin where, in an otherwise desolate landscape, an ample supply of groundwater provides a natural stopping place on the main north–south "incense route" along the western side of the peninsula (27°38′ N, 38°30′ E). The earliest evidence for occupation at the site consists of pottery of the type known as Qurayyah painted ware dated to the late second millennium BCE. [See Qurayyah.] Tayma' is first mentioned in Akkadian texts of the reign of Tiglath-Pileser III of Assyria, who, in about 733 BCE, defeated the Arab tribes of the region, under Queen Samsi, and received tribute from them. These and other sources of the period indicate that the inhabitants of northern Arabia were nomadic pastoralists who had become wealthy and powerful through their control of the trade routes. It has been suggested, however, that Tayma' at least, was already a permanently occupied walled town—a conclusion that may be based on a misunderstanding of the archaeological evidence. The issue is controversial and has been most recently discussed by Peter Parr ("The Early History of the Hejaz: A Response to Garth Bawden," *Arabian Archaeology and Epigraphy* 4 [1993]: 48–58).

Tayma' is mentioned in the Hebrew Bible (e.g., *Is.* 21:14) in connection with events in the sixth century BCE, by which time it had become sufficiently important for the last Neo-Babylonian ruler, Nabonidus, to move his official residence there between about 552 and 542 BCE. He may have done this because it was a center of the moon god, Sin, of whom Nabonidus was a devotee; although it was most likely that he wished to control more effectively the lucrative Arabian trade. It was Nabonidus who, according to inscriptions, embellished and fortified the oasis, perhaps for the first time. During the Achaemenid period (539–331 BCE) the town flourished, probably under indirect rule from Persia and perhaps in competition with Dedan, but it was overshadowed in the Nabatean period (first century BCE–second century CE) by Hegra. [See Dedan; Meda'in Saleh.] Judging from the writings of such Muslim authors as al-Istakhri and al-Mukaddasi, it continued to be renowned as a market town during the medieval period; however, it declined thereafter and was largely ignored by the earliest Western visitors to Arabia in the early nineteenth century.

The first description of Tayma' was given to the Western world by Charles Doughty (*Travels in Arabia Deserta,* Cambridge, 1888), whose visit in 1877 was followed by those of Charles Huber in 1880 and by Huber and Julius Euting three years later. On this latter occasion the Tayma' stone, an Aramaic stela recording the introduction of a religious cult into Tayma' and generally dated to the fifth century BCE, was removed and sent to the Louvre, where it still resides. The site was also investigated by Antonin Jaussen and Raphael Savignac, who recorded many inscriptions (*Mission archéologique en Arabie,* 2 vols., Paris, 1909–1914); by H. St. John Philby (*The Land of Midian,* London, 1957); and by Frederick V. Winnett and William L. Reed, whose publication (*Ancient Records from North Arabia,* Toronto, 1970) provides the most authoritative brief history of the site. Since 1979 the Saudi Arabian Antiquities Department has been conducting limited excavations there.

The most impressive remains of ancient Tayma' are long lines of stone walling, mostly covered with debris and blown sand, enclosing an irregular area of about 8 sq km (5 sq. mi.). It is unlikely that this area was ever entirely built over, and it is misleading to call the wall a town wall; it primarily protected the fields and irrigation systems, of unknown date, which are plainly visible. The original settlement is probably represented by a small artificial mound, or tell, near the modern Tabuk–Medina highway; other adjacent walled areas, called compounds by some scholars Garth Bawden et al., "Preliminary Archaeological Investigations at Tayma',"

Atlal 4 [1980]: 69–106), may represent successive additions to the settlement. At various localities within the enclosed area, ruined buildings are visible. The Department of Antiquities has partially excavated three groups of these, the most important so far being that known as Qaṣr al-Ḥamra, where a complex of rooms, perhaps a palace, has been revealed. One of the rooms, clearly a shrine, contained stone offering tables, a cuboid stone carved with religious motifs, and an Aramaic stela similar to the Tayma' stone. Although originally attributed to the Neo-Babylonian period, it now seems more likely that the shrine dates to Achaemenid times. The dating of other structures, including a number of burial mounds of various types, remains uncertain, although pottery of the Nabatean and medieval periods has been found in various parts of the site.

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PETER J. PARR

TEL, TELL _____. *For toponyms beginning with these elements, see under latter part of name. For a general description of tells, see* Tell.

TELEILAT EL-GHASSUL, site located at the southern end of the Jordan Valley, approximately 6 km (4 mi.) east of the Jordan River and 5 km (3 mi.) from the northeast corner of the Dead Sea (31°48′ N, 35°36′ E). It lies 290–300 m below sea level; its climate today is hot and dry, although water is available locally, about 40 m below ground level, and from the irrigation system of Jordan's East Ghor Canal. When the site was founded, the area was swampy and settlement was made on a sand bank in the midst of slow-moving fresh water. It was surrounded by a rich growth of reeds, mosses, alder, and sedge.

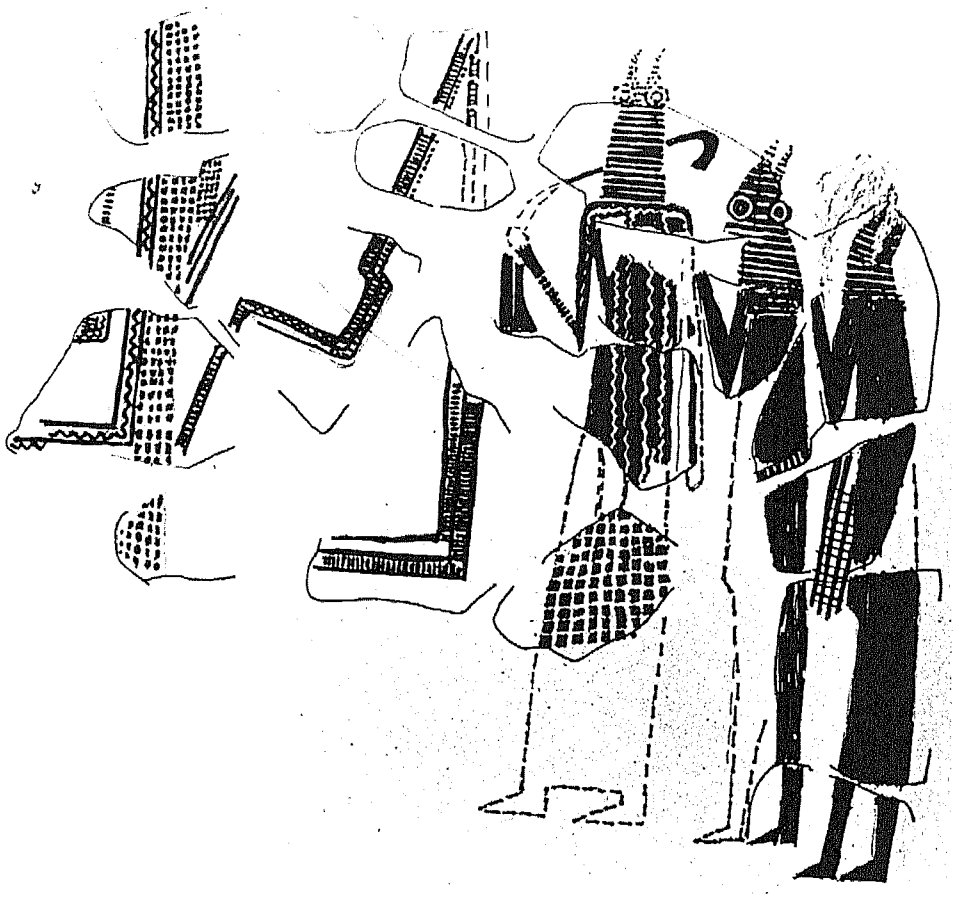
Excavations and a series of radiocarbon dates give evidence of a thriving Late Neolithic and Chalcolithic agricultural community on the site for approximately one thousand years (between 4500 and 3500 BCE). The settlement was a large one, and at its most extensive occupation, in the Chalcolithic period, probably covered 20–25 hectares (49–62 acres; Hennessy, 1989). Its location was advantageous, at the junction of major north–south and east–west routes.

The site's importance was first recognized by Alexis Mallon in 1929. Since then, the settlement has been the subject of a number of large-scale excavations by the Pontifical Biblical Institute (PBI) of Rome: from 1929 to 1938 under the direction of Mallon and Robert Koeppel, and in 1960 under the direction of Robert North. The site was more recently excavated by J. Basil Hennessy for the British School of Archaeology in Jerusalem (1967) and the University of Sydney (1975–1978). [*See the biography of Mallon.*]

Ghassul has given its name to the Chalcolithic period in Israel and Jordan. However, since the original discussions about periodization at the site by William Foxwell Albright and Mallon in the 1930s, it has become increasingly evident that a considerable span of the site's history more properly belongs to the classification Late Neolithic or Early Chalcolithic. In addition, the Ghassulian Chalcolithic should be confined to the site's upper levels, which are but one regional variant of a series of widespread, related Chalcolithic communities.

The initial Late Neolithic settlement was made up of large, circular, half-sunk houses and pit dwellings. All succeeding occupations were in large rectangular mud-brick buildings often constructed on a foundation of large river stones. Most houses consisted of a single long room (up to 12 × 3.50–5 m) with an occasional internal subdivision. The single doorway was in the long wall. Floors were of beaten earth, but sometimes the pebble foundations were covered with mud and lime plaster to give a more even surface. Walls were often finished with the same type of plaster and painted. More than twenty replasterings and repaintings have been counted on some walls (see figure 1). Scenes appear to be religious and are concerned with processions, architectural features, and naturalistic and symbolic (geometric) patterns. In the later stages of occupation, one area of the village seems to have been set aside for cult practice and separated from the domestic quarters by a circumference wall. The enclosure contained two large, well-constructed rectangular buildings with axes at right angles to each other and a wealth of cult paraphernalia. A similar Chalcolithic enclosure was discovered at ʿEin-Gedi. [*See* ʿEin-Gedi.]

Apart from the architectural differences, there is a notable Neolithic content in the few material remains from the earliest levels. The pottery is very well made, both in buff and dark-faced wares, the shapes are simple, and decoration is



TELEILAT EL-GHASSUL. Figure 1. *Wall painting.* Three masked figures in ceremonial dress approach a walled enclosure. The leader carries a sickle-shaped object in his right hand. The painting is polychrome in a rich variety of red, green, yellow, white, and black. From the Lower Chalcolithic levels, area III, this work (3 × 1.5 m) is carbon-14 dated to approximately 4200 BCE. (Courtesy J. B. Hennessy)

comparatively rare. Apart from a thin red band of paint around the rims of a few simple subhemispherical bowls, the only other decoration was the occasional use of mattered slips or incised or punctated marks (on a small percentage of enclosed shapes). Burnished surfaces are very rare. In the flaked-stone industry, blades with broad denticulation and notched and serial flaked blades have their best parallels in the Neolithic B levels at nearby Jericho or the Yarmukian culture of the Jordan Valley. [*See* Jericho; Jordan Valley.]

Many of the forms which originate in these early levels continue into the succeeding building phases of the large rectangular houses. However, it is not until the uppermost two building levels that the full range of forms and decorations normally designated Ghassulian is common. By the end of the occupation, painted wares and an elaborate repertoire of sophisticated shapes mark the end of a lengthy internal development. It is at this stage of material culture that relations with the Beersheba and coastal and Jordan Valley Chalcolithic settlements are most evident. [*See* Beersheba.]

Throughout the life of the settlement, the faunal and floral evidence suggests a mixed pastoral, agricultural, and hunting economy, with the cultivation of wheat, barley, peas, and olives and abundant evidence of pig, goat, sheep, deer, and cattle. Another industry of some significance is suggested by the first appearance of metal in the uppermost levels of the original PBI excavations. It was to have its full development in the succeeding Beersheba Chalcolithic, with the metal ore readily available in the nearby Wadi Feinan, just to the south of the Dead Sea. [*See* Feinan.]

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TELL. The term *tell* comes from the Arabic word for mound, or low hill (transliterated from Hebrew as *tel*). Tells form as successive levels of cities and towns are built over the ruins of their predecessors. They are the architectural manifestations of complex civilizations and may include imposing defensive features, the trappings of institutionalized religion in the form of temple complexes, and the symbols of power displayed by elaborate palaces.

Many tells began as cities or towns circumscribed by walls, a factor that encouraged a settlement's upward growth, rather than outward spread. The basic backbone, or structure, of a tell forms during the occupation of a site. The inhabitants construct architectural features of varying mass—city walls, terraces, ramparts, large public buildings and smaller domestic quarters. At the same time, depressions are excavated for midden deposits, storage facilities, and extracting sediment for mud brick. On the whole, these features impart an uneven topography, or cityscape, to any particular occupation phase. This variable relief is the source of immense stratigraphic complexity following abandonment and the overlay of subsequent city levels. Thus, archaeological structures and features from the same temporal strata may be at widely varying vertical levels. Another complicating factor occurs because some structures fall into disuse decades before others, creating further difficulties for modern stratigraphic correlations.

After a site is abandoned, natural erosional forces come into play on mud-brick walls, such as rainfall and burrowing animals. The brick walls collapse and become the source of a thick matrix of decayed and reworked bricky material that appears archaeologically as deep monolithic sections of sediment. They provide most of a tell's bulk. Through time, erosion and runoff smooth a site's upper layers. The slopes of the tell undergo variable forces of erosion depending upon their orientation, the amount and direction of rainfall, sediment composition, and the density of vegetation. Eventually, these erosional processes lead to the mound's dune-like shape.

Tells are a common feature in Near Eastern landscape. It has long been recognized that they contained the remains of past civilizations. Each generation of archaeologists working on tells has its own unique philosophical orientation: early excavators, such as Austen Henry Layard at Nimrud and Paul-Émile Botta at Khorsabad, were typically interested in retrieving curiosities and art objects from tells, using excavation techniques that appear uncontrolled by modern standards. It was only late in the nineteenth and early in the twentieth centuries that stratigraphic control and the preservation of a wide variety of artifacts were perceived as mandatory in excavating a tell. A foremost pioneer of modern Near Eastern tell excavation was Flinders Petrie, who enunciated the concepts of preservation of monuments; describing and collecting all artifacts; mapping all architectural features; and fully publishing all aspects of an excavation. It was Petrie's development of the technique of dating pottery by seriation that led to modern controlled stratigraphic excavations of Near Eastern tells.

[*See also the biographies of Botta, Layard, and Petrie.*]

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TELL, KHIRBET ET-. *See* Ai.

TEMPLE SCROLL. The Israeli general and archaeologist Yigael Yadin acquired the *Temple Scroll* in June 1967 from a dealer in antiquities in Jerusalem's Old City. Yadin believed that the ultimate provenance of the scroll was Qumran Cave 11, and scholars have accepted that idea as plausible. Yadin never explained his conclusion, but it is likely that he knew more about it than he felt free to say. Subsequently, a second, very fragmentary copy of the scroll was identified that was unquestionably from Cave 11. The official designations of the copies are 11Q19 (11QTemple[a]) for the main scroll and 11Q20 (11QTemple[b]) for the fragments of the second scroll. It was once believed that a text from Cave 4 was a third exemplar of the *Temple Scroll;* those portions are now assigned to the *Pentateuchal Paraphrase*

(4Q364–365), a work that may have been a source for the *Temple Scroll.*

11Q19 is the longest of the Dead Sea Scrolls, even longer than the *Isaiah Scroll* from Cave 1. Unrolled, it measures more than 92 m, comprising sixty-six columns. The text begins with a general exhortation derived from *Exodus* 34, *Deuteronomy* 7, and perhaps *Deuteronomy* 12. The opening columns of the main copy are badly broken, but enough remains to determine that this exhortation did not exceed one or one and one-half columns in length. There follows a lengthy program for the construction of a temple complex surrounded by three "concentric" square courtyards. This description occupies virtually all of columns 3–46, apart from a break in columns 13–29 for the insertion of a festival calendar. Beginning in column 45—thus overlapping the building instructions—is a series of purity laws, derived by Midrashic techniques from portions of *Numbers* and *Leviticus.* From columns 51–66, the redactor of the *Temple Scroll* presents a form of the laws of *Deuteronomy* 12–26, with some interesting additions and omissions, the pattern of which is a key to the scroll's purpose. The preserved portions end abruptly in the middle of a discussion on incestuous marriage; how much is missing following that portion is debated.

A striking aspect of the *Temple Scroll* is that its author or redactor has eliminated the name of Moses where it should appear in his biblical excerpts. This omission has the effect of rendering the biblical portions as direct communication between the scroll's author and God. The work is thus one form or another of pseudepigraphy. The author may be claiming to have found long-lost writing from the hands of Moses, the patriarch's notes, as it were, that Moses later used to write the Bible—and containing things that Moses chose not to reveal to his general readership. Or, the author may be even more audacious. He may be suggesting that Moses' prophetic mantel has fallen to him. He would thus become the "prophet like Moses" (*Dt.* 18:15) whom certain elements of society in the late Second Temple period expected as a herald of the *eschaton.* The redactional phenomena of the scroll favor this second option. The *Temple Scroll* is intended as a new *Deuteronomy,* a new "law for the land," as the first version had been, but modified to govern life in an ideal eschaton.

In addition to its obvious importance for understanding the phenomenon of pseudepigraphy among Jews in the period 200 BCE–135 CE, the *Temple Scroll* is an invaluable source on questions involving legal or halakhic developments in those years. Together with other Dead Sea Scrolls, such as the text from Cave 4 at Qumran known as MMT and the Ṭoharot texts, the *Temple Scroll* represents another approach (or, perhaps, other approaches) to many of the legal questions considered in rabbinic literature. Comparison of these materials is opening up entirely new perspectives on life and on contemporary ideas about how to live in the Palestine, from which both Christianity and rabbinic Judaism emerged.

Research on the *Temple Scroll* has focused on four very basic and interrelated questions: who composed the scroll; for what purpose; and how and when was it done? The answers, naturally, have varied. Most students of the text have connected it with a community thought to have inhabited the site of Qumran, but a sizable minority of scholarship argues that the *Temple Scroll* was not sectarian. Yadin, the scroll's original editor, thought it was intended as a tool in the context of contemporary legal polemics. The text was thus a sort of "crib sheet" to aid halakhic study. More recently, the question of the scroll's purpose has focused, as noted, on the definition of its relationship to the Bible, to *Deuteronomy* in particular. Some scholars have argued that the work is a reprise and supplement to the *Book of Deuteronomy,* but it seems more likely that the author actually intended it to replace the biblical book altogether.

Suggested dates for the *Temple Scroll* vary significantly. Hartmut Stegemann has argued for the earliest option. He sees the arrival of Ezra in Jerusalem with a Persian-backed official law as a catalyst for gathering traditional materials that had been outlawed. The *Temple Scroll* would be one such collection, which would date it to the fifth or fourth century BCE. Most scholars prefer a date somewhere in the range of 150–80 BCE, an assignment that appears most likely. The text itself contains very little, if anything, that can be dated: neither the language nor its contents lend themselves to such analysis. If, as many scholars think likely, the *Temple Scroll* was composed by the Teacher of Righteousness, its date would belong to his period of activity. That connection points to the favored period noted above, but the dating then depends on elements external to the text itself. Whichever way future scholarship will turn on the four basic questions regarding this scroll, the most promising approaches are clearly source criticism and redaction criticism.

[*See also* Dead Sea Scrolls; *and* Qumran.]

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TEMPLES. [*This entry surveys the historical development, forms and functions of the religious architecture known as temples. It comprises three articles on specific regions:*

Mesopotamian Temples
Syro-Palestinian Temples
Egyptian Temples

For discussion of the history and architecture of the Jerusalem Temple, see Biblical Temple. *For Jewish houses of worship, see* Synagogues.]

Mesopotamian Temples

The ancient Near Eastern temple is, strictly speaking, the house of a god, the place where he has chosen to dwell, and where humanity serves him, as it is obliged to do, and for which reason it was created. In his house, the god is present in the form of his statue or symbols; it is to these material forms that the rituals are addressed that are carried out scrupulously each day, every hour of the day, by a priesthood with very specialized functions. This basic function of the daily ritual, which includes all the others, meant that the temple was not the site for worship or for the gathering of the congregation to express its faith; rather, it was the place where the tasks of daily life were carried out, no different from those of humans, except that they concerned a god and as a result were based on the sacred. This anthropomorphism implies that the temple is in fact a house—that is, a shelter—and that it is necessary from the first to conceive of it in that way. However, it was not just any house; possessed by a god, it was sacred ground and could never return to the human domain. Furthermore, its function as a place of daily offering determined a spatial organization adopted as the normal formula from a very early period onward.

First Temples. How far back in time do the first Mesopotamian temples date? To answer this question is to establish the moment when the religion of the Land of the Two Rivers, the Tigris and the Euphrates, was established definitively in its most visible forms. Some archaeologists believe that they have found temples from the Neolithic period, based on either the form of the building (Kathleen M. Kenyon at Jericho, end of the eighth–beginning of the seventh millennium) or the presence of wall decoration (James Mellaart at Çatal Höyük, seventh millennium) or the presence of statuettes (Benham Abu al-Soof at Tell es-Sawwan, sixth millennium). [*See* Jericho; Çatal Höyük.] In reality, none of these criteria is in itself conclusive. Only a cluster of convergent indices can signify a sanctuary within a given edifice. In the absence of texts, the criteria for identification usually applied includes the form of the building and the nature of its installations and furnishings. Nevertheless, the same architectural form can have very varied applications: the megaron served as a temple and as a house or palace; a small masonry support is, thus, not necessarily an altar but may be a simple base with a secular function. It is indeed rare that the furniture carries on it an indication of a sacred nature. Thus, a temple can be identified only when at least two of the stated criteria are there to permit it. Within these limits, it is impossible to recognize a temple earlier than level VIII at Eridu (with the great probability that the buildings of levels XI–IX share its identity), at the end of the Ubaid period, when the first tendencies toward urbanization appear. [*See* Eridu.] Of course, that is not to say that there were no earlier places dedicated to cult, either in a different or even in a similar form. It signifies only that the identification of a temple cannot be made with a sufficient degree of certainty before that date. Whether the convergence of the certain recognition of the first temples and the appearance of the first cities is an accidental fact is also a subject to consider. A compelling link between the two developments can be established with certainty.

Constituent Parts. At first, the mass of the evidence, by its diversity, seems to reflect a complex and varied situation. A general analysis permits the recognition that the same three elements and an identical organizing principle unify all the temples that can be recognized as such: inner sanctuary, outer sanctuary, and vestibule, to which a court or annexes may be added as accessories.

Inner sanctuary, or holy of holies. The main seat of sacredness of the temple is designated the inner sanctuary, in accordance with the Jerusalem Temple, which presents the same general order. It is the place where the deity lives, even if it is a statue found there rather than an individual; it is the point most charged with transcendence because it is at this precise place that the tie is established between the divine presence and the world of humanity. The space may be confined to a podium set against a wall of the main room, or it may occupy a space more or less clearly separated from the main room. The important point is that this place appears, almost always it seems, at the end of the progression that orders the temple.

Outer sanctuary. The room where the daily rituals, especially the food offerings, were carried out is called the outer sanctuary or, somewhat generally, but inadequately, the cella. The installations that permit the conducting of the

daily service appear there. It might include the inner sanctuary in the form of a podium set against the wall, as well as precede a separate space (see below).

Vestibule. The vestibule secures the transition between the exterior world and the outer sanctuary and is thus a very important place: on one side is the exterior world, often chaotic and hostile, and on the other, the sacred site par excellence, where the god stands among mortals. The temple, like the house, formed a solid envelope, isolating a closed space from an infinite space. It is natural that the vestibule, as the point where the only relationship between the profane world and the sacredness is established, could be the place of all dangers. It is also clear that the priest could not pass from the profane universe into the sacred world without undergoing a transformation of being, most often generated by one or several transition rituals.

These three parts form the abstract basis of the organization of Near Eastern temples. The architectural form of the three components may vary, with regard to the greater or lesser complexity of the envelope, but the fundamental relationship unifying them is always the same: the succession of vestibule, outer sanctuary, and inner sanctuary. Thus, the meeting of humanity and its god is brought about in terms of a progression in space, regular and immutable. Materially, this encounter was put in solid form by the podium set against a wall (it marks the placement of the throne of the god) and by the offering table installed to face the podium, a short distance from it. The first of these two installations located the precise point of contact between god and earth; the second located the spot where the offering services of those closest to the god were maintained. This dyad generates the temple: the architectural form itself only adorns the arrangement according to the diverse forms that reflect regional and historical habits between the fourth and the first millennium. Finally, the system of access, either bent or axial in relation to the structure as a whole, has been in the past the starting point to define the types of temples. In reality the mode of access in relation to the podium/offering table group is what is important, not its relationship to the architecture, even if the architectural access often accords with the form resulting from the position of the two elements in the basic group.

Court. Contrary to common opinion, and according to well-founded documentation, the court does not occur as an essential or permanent part of the organization of religious establishments; the temple exists independently of the court. Nevertheless, archaeological exploration has not always extended far enough to uncover the relationship between built space and open space; it is likely that esplanades, like that of the great sanctuary at Emar, existed more often than current documentation seems to show. [*See* Emar.] The presence of an open-air space is indispensable for carrying out blood sacrifices, but it is possible that a single sacrificial space served several temples within a single city, as the example of Mari seems to suggest. At Mari, this role was probably held by the High Terrace called the *red mound* (Fr., *massif rouge*), and later the High Terrace of the Temple of the Lions. [*See* Mari.]

Subsidiary rooms. A number of sanctuaries present a degree of complexity that does not seem to correspond to the simple scheme of the group vestibule, outer sanctuary, inner sanctuary (to which it is reasonable to add an open-air space in certain cases and for modalities as yet undetermined; see below). More or less closely associated with the outer sanctuary or grouped in adjoining clusters with varied functions, subsidiary rooms came to attach themselves to the initial group. Most often no morphological feature permits definition of the function of these rooms, and the furnishings are only rarely significant; in most cases the annexes were designed for storage or for the daily life of the priests who lived in the temple.

Sumerian Temple. The first temples were recognized in Sumerian territory, at Eridu. Dated to the end of the fifth millennium or to the beginning of the fourth, they had the natural tripartite form of the house of the Ubaid period: one large, elongated room with a series of dependent rooms distributed regularly on each side. The entrance was located in the middle of one of the long sides. A podium and offering table comprised the cultic installations. This is practically the same scheme that appears in about 3000 BCE at the White Temple at Uruk (see figure 1), perched on its high terrace. [*See* Uruk-Warka.]

A large number of the buildings found in the different levels of the fourth-millennium *E-anna* precinct at Uruk are often considered to be temples: they offer the same type of organization, and their identification as religious architecture seems natural. Nevertheless, the absence of cultic installations should suggest caution. It is just as reasonable to see these buildings as palaces or administrative centers than as temples. This plan as a model of the temple clearly experienced diffusion because it is found at Tell ʿUqair and, in the Jemdet Nasr period, in the Temple of Sin at Khafajeh (levels I–IV), and in the north, with several unusual traits, in the Eye Temple at Tell Brak. [*See* Khafajeh; Brak, Tell.] Based on present evidence, this formula did not have true continuity, however. After the historical period (Early Dynastic), the plan was no longer utilized for an isolated temple, but only in the interior of a building complex (Temple of Shara, Tell Agrab).

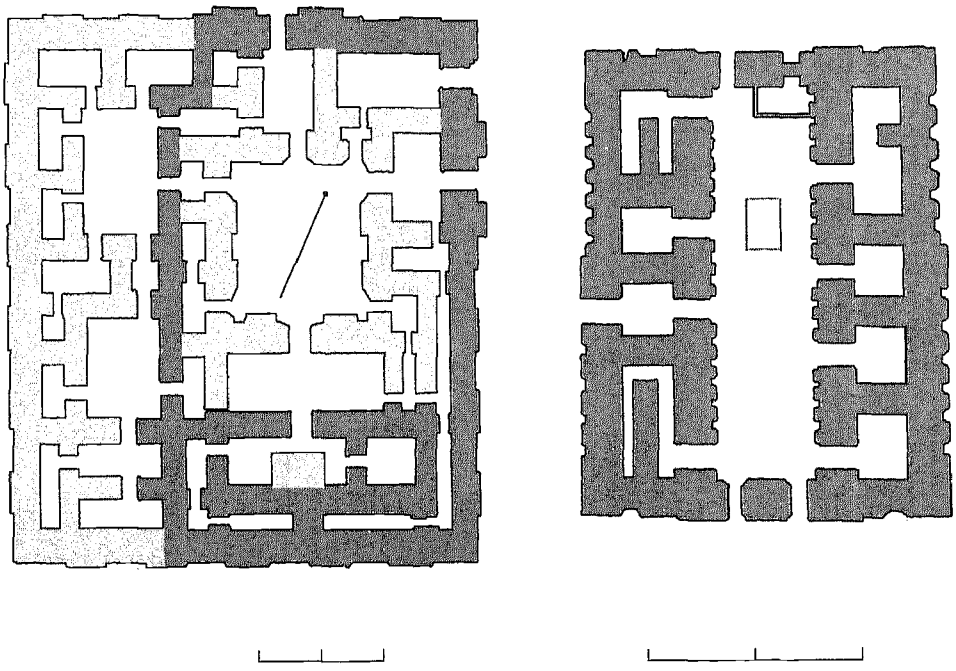
Northern Temple. The northern temple is also an elongated temple. It is structurally simpler than the Sumerian temple, however, because it takes the form of a megaron. The megaron is an elongated room with a doorway on one of its short sides; its long sides are enclosed from the doorway by antae, to form a vestibule. It differs from the Su-

merian type of temple in the location of the doorway and the absence of surrounding structures. The megaron is an ancient architectural form used for domestic purposes in Anatolia from the Neolithic period onward. It is not until Early Dynastic (third millennium) Tell Chuera, however, that it is utilized as a temple. [*See* Chuera, Tell.] In Assyria, however, at Aššur (Ishtar temple, level H), as well as at Nuzi (levels G–F) and Tell Taya, that temples are found that, while taking the elongated form, belong neither to the megaron nor the Sumerian model: their entrances are lateral and do not follow the central axis. [*See* Aššur; Nuzi; Taya, Tell.] However, this Assyrian formula seems to have been progressively phased out in favor of the megaron, which, subsequently characterizes the temple exclusively in all the northern region of the foothills of the Taurus Mountains, from the Assyrian territory to the Mediterranean Sea (where it was to enjoy a surprising posterity).

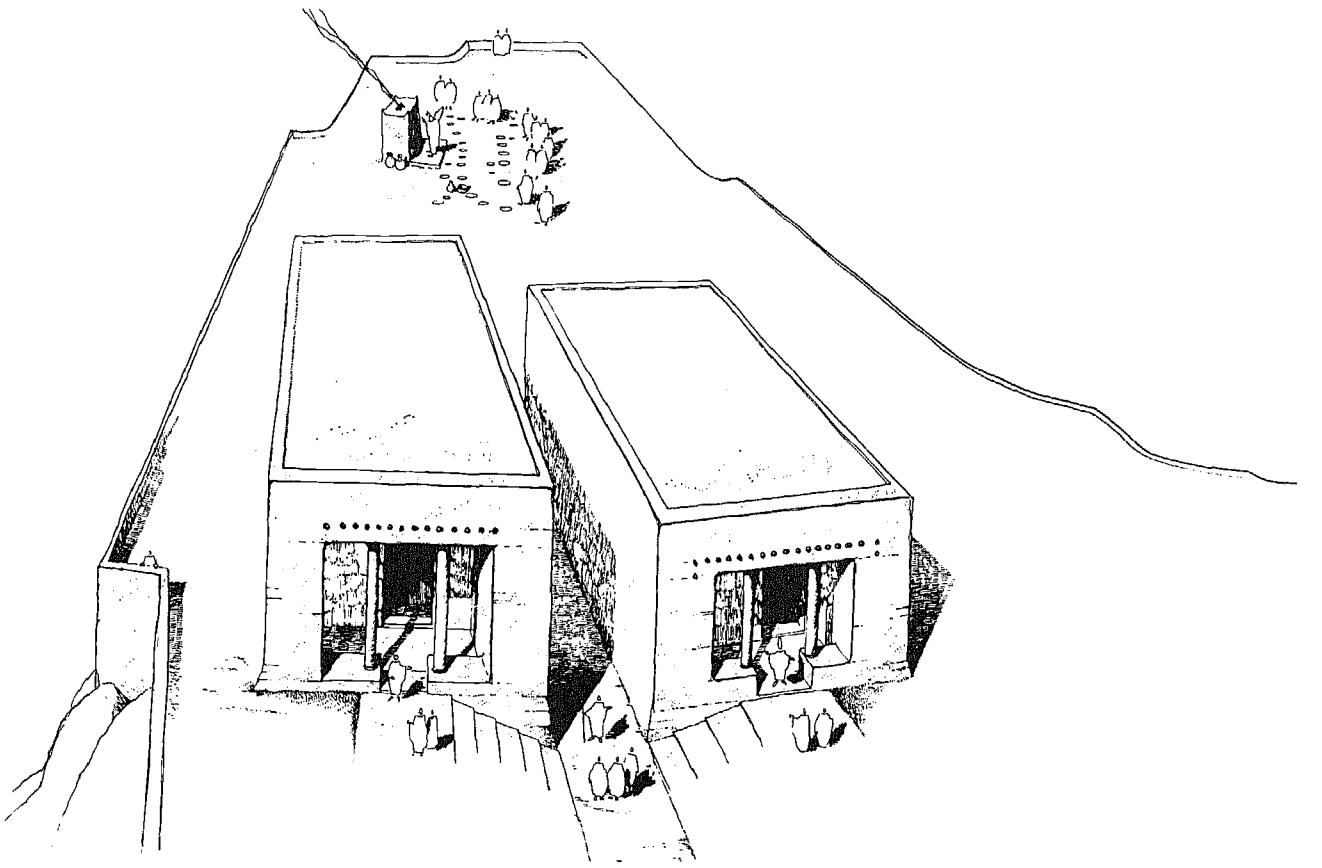
It is with the temples at Tell Leilan and Mari (Temple of the Lions), in about 2000 BCE, that the first stages in the expansion of the megaron form appear. [*See* Leilan, Tell.] In the second and first millennia BCE they spread to Assyria, with several specific characteristics, and especially to the west, where Ebla, Emar (see figure 2), Tell Fray, and Munbaqa/Ekalte demonstrate significant examples in the second millennium BCE and, later, Tell Taʿyinat in the first millennium. In Jerusalem, Solomon in choosing the western Semitic form of temple noted at this time that culturally Palestine belonged with the world of western and northern Syria. [*See* Ebla; Jerusalem.]

Babylonian Temple. In the Babylonian temple the podium is set in the middle of the long side of a narrow room (inner sanctuary) and not, as in the two other cases, on one of the short sides. This long, narrow room is reached by a door cut facing the podium, so that there is a direct view of the podium from it; this unit, called a broad room, is sometimes preceded by a similar room, which is an intermediary to the court. Offerings were certainly made in the second room.

The new arrangement of the temple appears at the turn of the third–second millennium BCE, long after the first two temple types, but it did not experience the same development. It took the place of the Sumerian model in southern Mesopotamia simply because that region fell definitively under the sway of Babylonia at the time of Hammurabi's empire. In the north, the expansion of the model collided with the tradition of the northern temple and only rare evidence for it is found. Moreover, an evolution tied to the development of the architectural organization of the temple emerged: in the earliest-known examples (Temple of Shu-Sin, associated with the palace at Tell Asmar), the broad



TEMPLES: Mesopotamian. Figure 1. *Examples of temple plans.* Left: Babylonian-type temple, first millennium BCE. Babylon, temple 2. Right: Syrian type temple. White Temple, Uruk. (Courtesy J.-C. Margueron)



TEMPLES: Mesopotamian. Figure 2. *The double sanctuary at Emar.* To the left is the temple of Baal, to the right the temple of Ashtart. Behind the temples is an esplanade with a sacrificial altar. Models of the enlongated Syrian temple. (Courtesy J.-C. Margueron)

room opened directly onto a covered central space; when that central space was open, a second room was inserted between it and the first room, demonstrating that the offering place had to be sheltered from the weather. This arrangement continued in the great Babylonian temples at Ur, Uruk, Babylon (see figure 1), Borsippa, and Nippur, up until the Seleucid period. However, even in the time of the greatest expansion of the empire, under Nebuchadrezzar, this temple type did not expand beyond the limits of Babylonia and southern Mesopotamia.

Temple-tower. Of western origin, the temple-tower made only a timid appearance in the Mesopotamian world. In fact, it occurs only at Mari in the third millennium (Temple of the Red Mound, Temple of Ninḫursag). Mari thus marks well an important meeting point between Syria and Mesopotamia. It is fair to speculate whether the restriction of the expansion of such a specialized architectural form resulted from the existence of the ziggurat in Mesopotamia and Assyria, an architectural monument that implies a cult of the high, perhaps in the image of the temple-tower.

High Terraces and Ziggurats. The raised terrace on which the temple rests appeared in the fourth millennium at Eridu. Its origin remains difficult to establish, but the existence of the simple accumulation of archaeological strata must have contributed importantly to its development. The raised terrace became an essential part of the monument at the White Temple at Uruk, at Tell ʿUqair, at the Eye Temple at Tell Brak, and, in the historical period, at Tell al-ʿUbaid and the Oval Temple at Khafajeh. With all these monuments, it was only a matter of raising the foundation level to install the temple. In contrast, from the third dynasty of Ur (twenty-first century BCE), staged terraces (with three or fewer stages) appeared in the principal cities of Mesopotamia. These terraces would have been surmounted by a temple reached by long staircases. The monuments, called ziggurats, are characteristic of Mesopotamian cities of the second millennium BCE such as Ur, Aššur, and Uruk, and of the first-millennium cities of Babylon and Nippur; they are centrally located and are dedicated to the cult of the god of the city. [*See* Babylon; Nippur; Ziggurat.]

Great Complexes. Religious architecture in Mesopotamia witnessed a progressive enlargement, beginning with the (assumed) Sumerian style of the sanctuary of about 3000 BCE (e.g., the White Temple): a large room with several lateral subsidiary rooms that did not exceed 20 m in length and occupied an area of 300–400 sq m. In the first millennium BCE, large, often gigantic complexes appeared. They included temples, chapels, a ziggurat, and multiple associated structures organized around one or several large courts, more than 300–400 m to a side (12–15 ha, or 30–37 acres) at sites such as Uruk, Nippur, Sippar, and Babylon. [*See* Sippar.] Basically, however, it does not seem that the fundamental principal of the temple was modified. The temple was always the dwelling of the god, generally the god of the city, associated with a ziggurat, a grouping to which other dwellings of gods of less importance might be added. Such ensembles occur elsewhere, but more modestly, from the third millennium (e.g., Oval Temple at Khafajeh, Temple of Shara at Tell Agrab). Certain examples, such as the Giparu at Ur (c. 2000 BCE), sheltered a community.

Palace of the God. As the residence of the god and the place of the daily offerings, the temple was the object of great care from kings: they often dedicated their energy and resources to embellishing the house of the god with gold, silver, the best and rarest wood, the most costly perfumes; nothing was too good for the divine house. The ex-votos as well as the statuettes dedicated by the faithful to their master were also deposited there. Because the wealth accumulated in these temples was the natural prey of enemy armies, it is often only fragments of that wealth that archaeologists recover. However, those fragments are sufficient to demonstrate the exceptional quality of Mesopotamian craftsmanship. They furnish, as well, indications about the cultic organization and ritual practices upon which the community believed the survival of the country depended.

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Translated from French by Nancy Leinwand

Syro-Palestinian Temples

In the nomenclature followed in this discussion, the term *temple* refers to large, sacred structures and *sanctuary* and *shrine* refer to their smaller counterparts in both North and South Canaan, the modern countries of Syria, Lebanon, Israel, and Jordan.

Canaanite Religion. Throughout the Bronze Age Canaanite religious practice was typified by a multiplicity of places of worship. Different types of sacred structures have been excavated at urban centers and isolated countryside locations throughout North and South Canaan. Textual and archaeological evidence supports the existence of priestly groups that controlled many of the forms and sites of worship. Access to some temples and shrines, or to specific areas within them, was available to the public at large, but elsewhere worship was restricted to priestly groups and royal families or to tribal or other kin groups.

Domestic worship was also a significant component of Canaanite religion, with the home an additional venue for ritual celebration. Finally, Canaanite religion included the veneration of ancestors, so that some worship took place at funerary sites.

As the house was home to the average family and the palace was home to the king and queen, so the temple was considered the home of the gods and goddesses of ancient Canaan. This domestic metaphor, however, yields fewer clues to the physical layout of Canaanite temples than to the types of rituals that took place in them: the care and feeding of the gods is the central motif of West Semitic religious rituals. In consequence, the presentation of sacrificial offerings was the sacred rite par excellence, and the remains of offerings and the paraphernalia with which they were prepared and offered are the most common furnishings and artifacts found in excavated Canaanite temples and shrines. Nonmovable altars and built-in offering benches, for example, reflect the centrality of the presentation of offerings. Sacrificial offerings of livestock, agricultural goods, and luxury items are all attested both in texts, particularly those from Ugarit, and through archaeological excavation.

Often, Canaanite temples and shrines did not stand in isolation. A sacred complex might include a major building, smaller auxiliary structures, and one or more courtyards, all

surrounded by an enclosure, or temenos, wall. Some Canaanite temples were single rooms, but others were bipartite or tripartite structures. A cella, or holy of holies, frequently blocked from public view, was often set into the rear wall of the innermost chamber. Other rooms were larger and used for the enactment of rituals, for storage, and as guardrooms and treasuries. On occasion, foundation deposits (jars filled with statues of gods, goddesses, and worshipers and with other precious objects) were deposited under temples to consecrate their construction or rededication.

Courtyards provided the venue for the sacrifice of animals, for the public presentation of offerings, for the immolation of offerings, and for the consumption of sacral meals. Therefore, large stone altars are often found in central courtyard locations. Standing stones (obelisks, *maṣṣēbôt,* or stelae) were also erected in courtyards and occasionally in the temples themselves. Auxiliary structures for the production of cultic objects and paraphernalia (particularly ceramic, metal, and textile workshops) are sometimes found in courtyards, as well. In some instances, courtyards contain *favissae,* pits used in ritually discarding sacred objects.

Middle Bronze Age IIA (2000/1950–1800 BCE). Temples and shrines of this period may be treated geographically, dividing the region into North Canaan (Lebanon and Syria) and South Canaan (Jordan and Israel).

North Canaan. In North Canaan, monumental, and at times multiple, temples stood in a number of important cities, including Ebla, Mari, Alalakh, Byblos, and Ugarit. The location of these buildings suggests that at least some were royal temples; others were used by kin groups residing in the cities' various neighborhoods.

Ebla. The Middle Bronze Age IIA–B temples at the inland Syrian site of Ebla, which preserved much of the earlier, Early Bronze Age IV construction, were found in two areas of the city, on the Acropolis and in the Lower City. Temple D, a massive tripartite, fortress-style (tower or Heb., *migdal*) temple, was located on the Acropolis alongside Royal Palace E and various administrative buildings. The Acropolis was girded by at least six Lower City temples, constructed among the city's residential neighborhoods: Fortress Temples N and B1, Temples B2, and C; Building Q (?); and a sacred building northeast of the acropolis. Temples B1 and B2 were linked by subterranean tunnels associated with a funerary cult. [*See* Ebla.]

Mari. The Temple of Dagan at Mari, on the Euphrates River, was constructed on a traditionally sacred spot west of the vast royal palace. Built by Ishtup-ilum, the temple was originally dedicated to a god called King of the Land and later rededicated to Dagan. [*See* Mari.]

Alalakh. In North Syrian Alalakh, a sequence of temples, first constructed in MB IIA, was located on virtually the same spot throughout the second millennium BCE. Of these sacred buildings, that of the MB IIC, located next to the palace of Yarimlim, is the best known. [*See* Alalakh.]

Ugarit. It has long been assumed that the Late Bronze Age Temples of Baal and Dagan in Ugarit, on the Syrian coast, were originally constructed at the beginning of the second millennium BCE. [*See* Ugarit.]

Byblos. The sequence of temples at Byblos, on the Lebanese coast, continued unbroken for some three millennia. Sacred MB IIA architecture was characterized by unroofed buildings and courtyards filled with Egyptian-style obelisks. The four MB temples located on the eastern side of the city were grouped around the public area created out of the Early Bronze Age Sacred Lake. They include the Obelisk temple, dedicated to the god Resheph, the tripartite Syrian temple (*Bâtiment* II), dedicated to the goddess Baalat Gubla, the temple that covered the EB *Champs des Offrandes,* and a small temple on the tell's southeast slope. [*See* Byblos.]

South Canaan. In South Canaan, the MB IIA was typified by small settlements that would only later develop into true cities. Attestations to religious life are therefore limited to regional or village shrines at Megiddo, Nahariya, and Tell el-Ḥayyat, as well as at several lesser known sites (Kefar Shemaryahu, Bat-Yam).

Megiddo. Cultic installations were constructed in MB IIA in the village of Megiddo, in Israel's Jezreel Valley. These include the small Cult Room 4040c and High Place D. An altar, obelisks, and artifactual remains suggest an Egyptian influence similar to that at the Byblos Obelisk temple. [*See* Megiddo.]

Nahariya. In MB IIA, Nahariya, on Israel's northern Mediterranean coast, was a specialized sacred site located at some distance from any contemporary settlement. Originally, a circular stone altar stood outside a small square building. Later, the shrine was incorporated into a large circular platform. The cultic assemblage at Nahariya was similar to those at Byblos and Megiddo.

Tell el-Ḥayyat. A sequence of temples was in use at the eastern Jordan Valley site of Tell el-Ḥayyat from MB IIA to MB IIC. The original sanctuary, a small, square building, was expanded over the years. It ultimately attained the plan of a typical fortress-style temple, known elsewhere from contemporary Ebla (see above). Houses located outside the walled sacred precinct eventually transformed the isolated rural sanctuary into a small village. [*See* Ḥayyat, Tell el-.]

Middle Bronze Age IIB (1800/1750–1650 BCE). Traditional MB IIA sanctuaries were used into MB IIB at the North Canaanite sites of Ebla, Alalakh, and elsewhere. In South Canaan, MB IIB was an era of continuing and impressive urbanization. The regional cult centers at Nahariya and Tell el-Ḥayyat were enlarged, as was the sacred area at Megiddo. At the same time, new shrines or religious installations were built at such sites as Giv'at-Sharret and Tell Kitan.

At Megiddo and Nahariya, an Egypto-Canaanite cult continued to be celebrated. Fortress-style temples, known earlier from inland Syria, were used at such Jordan Valley

sites as Tell el-Ḥayyat, Tel Kitan, and, perhaps, Kefar Rupin. Nahariya, Ḥayyat, and Kitan were regional cult centers, presumably staffed by religious professionals and used primarily by local tribal groups. Giv'at-Sharett illuminates religious life in a small Canaanite village. Canaanite religion spread to the southwest, with the establishment of "Hyksos," or Canaanite-style, temples at Tell ed-Dab'a in the Egyptian Delta.

Giv'at-Sharett. A small, two-room shrine was located at the top of the hill on which the small village of Giv'at-Sharett, near Beth-Shemesh, is located. Benches lined the walls of the larger room, and an altar stood against the back wall of the smaller one. A typical assemblage of cultic vessels and sacred objects was found in the shrine.

Tel Kitan. Several rows of stone stelae, including one carved to represent a nude goddess, stood in front of the MB IIB sanctuary at Tel Kitan. Located on a strategic hilltop on the west bank of the Jordan River, the fortress-style sanctuary served as a regional cultic center. [*See* Kitan, Tel.]

Tell ed-Dab'a. Two Canaanite-style temples were built in this Nile Delta city. Temple III was tripartite, with very thick walls; less is known about Temple V. A mud-brick altar stood in the courtyard in front of these two sacred structures. [*See* Dab'a, Tell ed-.]

Middle Bronze Age IIC (1650–1500 BCE). In South Canaan, MB IIC was an era of internal development typified by the proliferation of large, walled cities. International relations were complicated by the dominant role played by the Canaanites, or Hyksos, in Second Intermediate period Egypt. Reflecting the dangers of the era and its many political and social changes, fortress-style temples were built at the walled cities of Hazor, Megiddo, and Shechem. Smaller shrines were constructed at Tel Mor and in the gateway areas at Ashkelon and Tell el-Far'ah North (?). The regional sanctuaries at Nahariya, Tell el-Ḥayyat, and Tel Kitan remained in use. The Gezer high place, a new open-air cult place inside the MB IIC city, remains an anomaly.

Intriguingly, the architectural forms of MB temples and shrines cannot always be correlated with their locations (see below). For example, fortress-style temples were found at urban sites ranging from Ebla in the north to Tell ed-Dab'a in Egypt and in a cluster of urban (Shechem, Hazor, Megiddo) and rural (Tell el-Ḥayyat, Kefar Rupin, Tel Kitan) sites in and near the Jordan Valley. At the same time, architectonic elements of the temples found at northern sites (Ebla, Mari, Byblos, Alalakh) were also found employed at southern sites (Hazor, Megiddo, Shechem).

Hazor. The Galilean site of Hazor was home to multiple sacred sites in MB IIC. The Area A Long temple was located north of the palace in the Upper City. The fortress-style Bipartite temple, with a cult niche in its rear wall and a mud-brick altar in the front courtyard, was located in Area H in the Lower City.

Megiddo. Temple 2048 at Megiddo was first constructed in MB IIC, over the remains of earlier sacred structures. The two small chambers at the front of the building were eventually modified into towers flanking its entrance, creating a classic fortress-style temple. This sacred building remained in use well into the Early Iron Age.

Shechem. Several sacred structures coexisted in and around MB IIC Shechem, located north of Jerusalem in Israel's hill country. Two large towers containing interior staircases flanked the entrance to Fortress temple 1, just inside the city gate. A small royal chapel was constructed as part of the palace complex. The Square temple, a building with rooms arranged around a central chamber or courtyard, was located outside the city, some 300 m down the slope of Mt. Gerizim. [*See* Shechem.]

Gezer. At Gezer, on the border between Israel's Shephelah and coastal plain, the High Place, an anomalous sacred installation, consisted of ten large stone *maṣṣēbôt* in a north–south alignment, near a partially hollowed stone block. The surface in front of the line of stelae was plastered and the complex was surrounded by a low wall. [*See* Gezer.]

Ashkelon. A small, silver-plated bronze calf placed in a ceramic shrine model was found in a storeroom associated with a sanctuary at Ashkelon, on the coast south of Tel Aviv. Constructed in MB IIC, this small sanctuary stood just outside the city wall, at the base of the massive rampart surrounding the city. [*See* Ashkelon.]

Tell el-Far'ah North. A Gateway Shrine was constructed just inside the gateway at the western entry to Tell el-Far'ah (North), northeast of Shechem. It consisted of a small slab-lined installation, thought to have been a cultic basin or hearth. [*See* Far'ah, Tell el- (North).]

Late Bronze Age. Despite the political instability and devastating destructions of the Late Bronze Age, the practice of Canaanite religion continued along traditional lines throughout LB IA. As South Canaan began its process of recovery from Egyptian military intervention in LB IB–LB IIA, new temples and shrines were built along trade routes and, even more commonly, in cities. Later, in LB IIB, Egypt consolidated its control over South Canaan. In the process, it usurped indigenous religious traditions—and commanded royal and priestly complicity—in support of its own imperial demands.

Late Bronze Age IA (1500–1450 BCE). Many sacred MB IIC sites remained in use throughout LB IA—the temples at Megiddo (Temple 2048) and Hazor (Long temple), the sanctuaries at Tel Mor, Tel Kitan, and Shiloh, and the open-air shrines at Gezer and Nahariya. New construction took place, as well, at Beth-Shean and Tell Deir 'Alla.

Beth-Shean. At Beth-Shean, strategically located between the Jezreel and Jordan Valleys, a new temple was constructed on the Acropolis. The Phase R3 sanctuary was a small bench-lined structure with an unusual asymmetrical plan. [*See* Beth-Shean.]

Tell Deir 'Alla. A regional sanctuary at Tell Deir 'Alla, in the eastern Jordan Valley, incorporated an elongated cella into its plan. Across a small courtyard, three tablets, written in an as-yet undeciphered script, were found in a "treasury." Over time, the Deir 'Alla sanctuary bore an increasing resemblance to the later Egypto-Canaanite temples at Lachish and Beth-Shean. [*See* Deir 'Alla, Tell.]

Hazor. During LB IA, significant changes were made in the Hazor MB IIC temples. In the Upper City, the entrance of the Area A Long temple was lined with orthostats. With its thick walls and rectangular plan, the temple resembled those at Megiddo and Shechem, also located near palaces. The courtyard of the Area H Bipartite temple in the Lower City was enlarged and enhanced with special cultic installations, including stone altars and drainage channels for animal sacrifice. Benches were added to the main hall in the temple, and the cella was closed off from public view.

*Late Bronze Age IB (*1450–1400 BCE). Worship in South Canaan in LB IB reflected the new mood of consolidation and renewal, as relations between Canaan and Egypt stabilized. Megiddo Temple 2048 and the Hazor Long and Bipartite temples were modified and reused, and the Shechem Fortress temple was rebuilt. Nearby Shiloh remained a pilgrimage center. New temples were built at Lachish (Fosse temple) and Tel Mevorakh.

Lachish. Fosse temple I was the first in a sequence of three strategically located temples constructed at Lachish, in Israel's Shephelah, in the Late Bronze Age. Over time, the form and content of the Fosse temple was changed little, even though the building was enlarged. The floor plan consisted of a main hall and auxiliary and storage rooms. Furnishings included offering benches, storage niches, and altars. *Favissae* and storage pits were found in the courtyards surrounding the building. Auxiliary structures for the production of pottery and metal objects, for storage, and for domestic purposes were constructed nearby. [*See* Lachish.]

Beth-Shean. The then-permanent Egyptian presence at Beth-Shean was reflected in its new temple, Building 10. It had a rambling and complex plan of courtyards, altars, and subsidiary chambers, all situated around a fortress-style structure.

Shechem. As part of the LB IB reoccupation of Shechem, a new fortress-style temple was built over Fortress temple 1. *Maṣṣēbôt* from the earlier structure and a mud-brick altar were placed in the courtyard of Fortress temple 2a.

Tell Abu Hawam. Temple 50, on the eastern side of the port city at Tell Abu Hawam, near Haifa, was in use from LB IB to the end of the Late Bronze Age. It was a small, rectangular building with exterior buttressing and an entrance room on its eastern end. Temple 50 was filled with a wide range of small finds from places throughout the eastern Mediterranean. [*See* Abu Hawam, Tell.]

Tel Mevorakh. A small regional temple complex was constructed at Tel Mevorakh, several kilometers south of Tel Dor, in LB IB. Its main hall was lined with offering benches, and a stepped altar was positioned along its rear wall. Evidence suggests that cultic paraphernalia, including votive vessels and metal objects, were produced in the courtyards surrounding the sanctuary. The entire complex (sanctuary and courtyards) was surrounded by a temenos wall. Of the three successively enlarged sanctuaries at Tel Mevorakh, the one dated to LB IIB was the best preserved.

*Late Bronze Age IIA (*1400–1300 BCE). In LB IIA, South Canaan experienced relative peace and prosperity, as a result of less oppressive Egyptian policies. This allowed for the enlarging of temples and shrines at some sites and the construction of others. During this period, renovations were undertaken in the temples at Megiddo, Beth-Shean, Tel Mevorakh, Lachish (Fosse temple), and Shechem. However, the most extensive changes took place at Hazor.

The Long temple, the sacred seat of the Canaanite aristocracy at Hazor since MB IIC, went out of use and was supplanted as the city's primary sanctuary by the Area H Orthostat temple. The old Bipartite temple was reconstructed there, and the addition of a room in the front of the building transformed it into a tripartite structure. Lion orthostats lined the doorway, and other orthostats, possibly from the earlier temple, lined its walls. This newly formatted Orthostat temple reflected northern, Syro-Hittite elements. [*See* Hittites.]

The new Area C Stelae temple was a small shrine nestled in the MB rampart surrounding the Lower City. First constructed in LB IIA, it is better known in its LB IIB state. During LB IIA, it was a very small, bench-lined building with a cult niche set into its rear wall.

Other new sacred buildings and installations, including Shrine 6211 in Area C, the outdoor altar in Area F, and open-air shrines near the gateways of Areas P and K, were also constructed in LB IIA. These multiple religious sites attest to the multiplicity of worship experiences at LB II Hazor.

*Late Bronze Age IIB (*1300–1200 BCE). One characteristic of LB IIB Canaanite religion was the doubling of the number of sacred sites over that in the previous period. In LB IIB, many Canaanite religious institutions were exploited to further Egyptian imperial goals. Egypto-Canaanite temples, at least some of which were used to facilitate grain collection, were constructed at Lachish, Beth-Shean, Jerusalem, Tell Abu Hawam, Aphek, Ashdod, Ashkelon, and Gaza. Even Temple 2048 at Megiddo came under the authority of Egyptian administrators; at the same time, a private chapel was constructed in the royal palace.

Lachish. Following its thirteenth-century BCE destruction, Lachish fell under the jurisdiction of nineteenth-dynasty Egypt. At this time, a new sanctuary, the Summit temple, was constructed on the western side of the city. This new temple, which blended Canaanite and Egyptian architec-

tural forms, consisted of a large main hall, at the rear of which a cella was reached by a monumental stone staircase. In plan it resembled the strata VII–VI temples at contemporary Beth-Shean, another major Egyptian administrative center.

Beth-Shean. The founding of a new sanctuary at Beth-Shean in LB IIB is attributed to the Egyptian pharaoh Seti I. Access to the strata VII–VI sanctuary was through several entrance rooms. Its main hall was bench lined and the cella on its rear wall was reached via a seven-step staircase. Auxiliary rooms served as a treasury and for the preparation of sacred meals. An altar in the courtyard was used for animal sacrifices.

Megiddo. The increase in contacts with Egypt at Megiddo is reflected in the important changes made to Temple 2048 in LB IIB. These include the sealing of the cult niche in its rear wall and the construction of an offering bench in which Middle Kingdom Egyptian statues were buried. At the same time, the palace underwent alterations. Room 3013, a small royal chapel with an elevated platform reached by stairs, was included in its plan.

Hazor. Throughout LB IIB, the Area H Orthostat temple retained its Syro-Hittite elements. Both the temple and its courtyards were full of altars, religious statuary, cultic vessels, and sacred objects. In Area C, the cult niche in the Stelae temple was altered to form a raised platform. Ten basalt stelae, one of which was decorated with uplifted hands under an upturned crescent, were erected in the rear of the niche, together with a basalt statue of a seated man.

Shechem. At Shechem, Building 5988 was constructed in a residential neighborhood in Field IX. A mud-brick platform ran along the rear wall of this small and simple sanctuary, and a 250-kilogram stone *maṣṣēbâ* was found lying on the floor.

Ugarit. The port city of Ugarit, with its remarkable collection of tablets illuminating Canaanite religion, politics, administration, and social organization and its vast collection of architectural and artifactual data, is one of the richest LB Canaanite sites. Its temples and shrines are best known from LB IIB, the period just prior to its final destruction.

The Temples of Baal and Dagan, situated at the highest point of the city's Acropolis, were in use from early in the Middle Bronze Age through the end of the Late Bronze Age. The two-roomed Temple of Baal, including its courtyard and the large altar in it, was surrounded by a temenos wall. Stelae attest to the sanctuary's dedication to the Canaanite god Baal and stone anchors to the maritime orientation of at least one religious element of LB Ugarit. [*See* Anchors.] The nearby Temple of Dagan was similar in form to the Temple of Baal but was more massive in its construction.

The two-roomed Hurrian sanctuary, or Sanctuary of the Mitanni Ax, part of a large royal complex, resembled the two acropolis temples in plan. The Rhyton sanctuary, located in a residential district in the center of the city, was a small, bench-lined sanctuary with a three-tiered altar on its rear wall.

Amman. The so-called Amman Airport temple was an unusual square, stone building filled with luxurious imported items. It is commonly designated a temple, but it was, rather, a mortuary installation. [*See* Amman Airport Temple.]

Iron Age (1200–586 BCE). Ironically, the most renowned temple of the Israelite Iron Age, the Solomonic Temple in Jerusalem, exists only in the ancient biblical texts that purport to describe it. Although elements of its foundation may well be ensconced among the massive remains of the Temple Mount, the foundation platform of its late first-millennium BCE successor, no remains of the building itself have been found.

Prior to the construction of the Solomonic sanctuary, Israelites worshiped at numerous open-air shrines, as attested in biblical passages and through excavation. Worship also took place in small sanctuaries at Shiloh (*1 Sm.* 1:1–20) and elsewhere (see, e.g., Hazor Room 3283, a small, bench-lined shrine of the mid-eleventh century BCE).

Subsequent to assuming the crown, Solomon, the third king of Israel, constructed a magnificent tripartite temple on a mountaintop in Jerusalem (*1 Kgs.* 5–7). Although the Hebrew Bible emphatically declared the Jerusalem Temple to be the sole legitimate site for Israelite worship during the monarchical era, other temples and shrines are known through textual and architectural remains. [*See* Biblical Temple.] Along with the Jerusalem Temple, Israelite worship in the United Monarchy (1020–922 BCE) took place at Building 338 and Shrine 2081, two tenth-century BCE sanctuaries constructed as part of the massive Solomonic building project at Megiddo. The architectural features of these two buildings are not fully clear, but both seem to have been venues for public worship. A better-known sanctuary, also dated to the Solomonic era, was excavated at Lachish. Cult Room 49 was a small, bench-lined room, its bench elevated in one corner to form an altar. Other contemporary shrines were in use at Ta'anach (stratum IIB), Beth-Shean (stratum lower V), Tel Qasile Temple 118 (strata IX–VII), and Tel Amal (stratum III). Worship continued as well at open-air shrines, known from excavation and biblical passages. [*See* Ta'anach; Qasile, Tel.]

At the beginning of the Divided Monarchy (922–587 BCE), Jeroboam, king of the northern kingdom of Israel, constructed two temples, one at Bethel and one at Dan (*1 Kgs.* 12:25–31). Other than its foundation platform, no remains of the Bethel temple have been found. At Dan, excavation revealed a temenos area near the spring at the northern edge of the mound. The sacred enclosure consisted of three parts: a large ashlar platform, an open area that contained the main sacrificial altar, and an installation for preparing the olive oil used ritually. [*See* Bethel; Dan.]

Perhaps in order to preserve the sanctity of a pre-Israelite

shrine, a sanctuary was constructed in the northwestern corner of the Judaean royal fortress at Arad, in the northern Negev. In the center of its courtyard a large altar of unhewn stones was topped by a flint slab. Two shallow bowls inscribed with the Hebrew letters *qoph* and *kaph*, an abbreviation for *qōdeš kōhănîm* ("set apart for [or, holy to] the priests") were found at the foot of the altar. The courtyard opened into a narrow chamber with benches lining its back wall. Behind this entrance chamber was an elevated cella containing incense altars and stelae. [*See* Arad, *article on* Iron Age Period.]

At nearby Beersheba, a large ashlar altar is all that remains of another sanctuary from the era of the Divided Monarchy. Other sanctuaries of the Divided Monarchy have been found at Tel Qedesh and Tell es-Sa'idiyeh. Finally, a mid-ninth–mid-eighth-century BCE caravanserai was excavated at Kuntillet 'Ajrud, about 50 km (31 mi.) south of Qadesh-Barnea. At the entrance to this hostel/religious center was a small two-roomed, bench-lined sanctuary. Its plastered walls were decorated with religious motifs and it contained a number of inscribed vessels. The religious expression attested to in these drawings and inscriptions is marked by its syncretistic nature, which included worship of Yahweh, Baal, and Asherah. [*See* Sa'idiyeh, Tell es-; Kuntillet 'Ajrud.]

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BETH ALPERT NAKHAI

Egyptian Temples

The dissimilarities between the ancient Egyptian and the modern understanding of culture and religion means that sacral Egyptian architecture is poorly defined by a term such as "temple." Many of these installations were palace- or fortresslike building compounds that included a central shrine housing a cult image—the terrestrial incarnation of the god. These compounds were regarded as enclaves of the other world and secluded by high enclosure walls; only the king and specially prepared priests could communicate with the divinity. Public cult congregations were unknown, although laypersons could address minor deities in rural cult places or worship special statues erected at temple gates. Priests also provided services such as the reading of oracles.

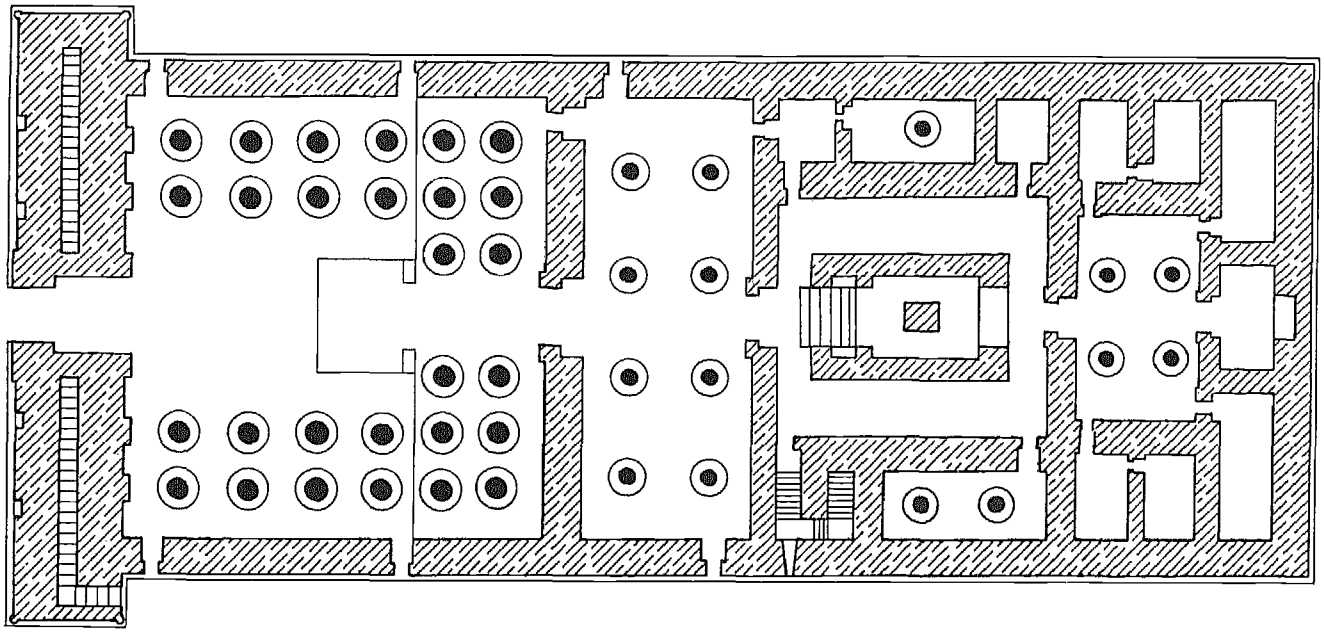
For the cult images the clergy performed daily services consisting of purification with natron and incense, a change of clothes, animation (made possible through a ritual known as the "opening of the mouth"), and food offerings. In addition, the festival calendar included numerous celebrations during which the gods left the temples in procession and traveled over land and water to the capital or to temples of affiliated divinities.

Egyptian cult buildings were characterized by distinct architectural forms and elements, which once developed were repeated throughout Egyptian history. Minor changes were dictated by religious requirements and period styles. Because sacral buildings reproduced the dwellings of the gods and represented a microcosm of the universe, architecture required a clearly calculated order, axial orientation, symmetry, dimensions, and proportions.

Origin and Development. Although temples appear as early as the fifth millennium BCE elsewhere in the ancient Near East (Syria-Palestine, Anatolia, Malta), evidence for monumental sacral buildings in Egypt exists only from the first dynasty (3100 BCE). The oldest Egyptian structures are the huge, fortresslike brick "palaces" associated with the royal tombs in the cemetery of Abydos in the province of This. As earthly sacred buildings for use in the afterlife, these burials have their prototypes in the "fortresses of the gods." Early inscriptions suggest that they were palace enclosures used for celebrating the *sed* festival and other royal ceremonies. Other templelike buildings are preserved in full-scale limestone "models" in the third-dynasty precinct of King Djoser at Saqqara. The shapes of early gods' shrines are also preserved in hieroglyphs illustrating primitive Upper and Lower Egyptian reed shelters that may have stood on artificially heaped-up mounds in imitation of mythological primeval sand hills.

At the beginning of the fourth dynasty, chapels for the royal statue cult emerge at the pyramids of Sneferu at Meidum and Dahshur and later develop into the huge statue temples found at the pyramids of Cheops and Chephren at Giza. Augmented by funerary chapels at the beginning of the fifth dynasty, the typical royal pyramid temple emerges under King Sahure at Abu Sir, creating a standard cult complex that would endure until the beginning of the twelfth dynasty.

The scarcity of early temples for the gods is perhaps explained by later destruction, the preeminence of divine king-



TEMPLES: Egyptian. *Plan of the Temple of Khonsu at Karnak.* Twentieth–twenty-first dynasty. (Courtesy D. Arnold)

ship in the Old Kingdom, and the enormous investments made for the construction of the pyramid complexes. From the twelfth dynasty onward, modest stone temples for the gods appear throughout Egypt from the Sinai to Upper Nubia.

In the eighteenth dynasty, the woman pharaoh Hatshepsut initiated a period of monumental temple building with her mortuary complex at Deir el-Baḥari, conceived by an ingenious architect, who followed the prototype of the neighboring eleventh-dynasty temple of King Mentuhotep Nebhepetre. Both the Mentuhotep and Hatshepsut sanctuaries were built into the mountain range on the western side of the Nile. Rising on high terraces, Hatshepsut's temple is adorned with pillared porticoes and frontal so-called Osirid pillars. Unique reliefs, including scenes of Hatshepsut's fleet of ships carrying an obelisk and her expedition to the land of Punt (southeast of Egypt) decorate the walls.

Under the Thutmosid kings, the temple to Amun-Re at Karnak emerged and gradually became one of the largest temple complexes in the ancient Near East. The smaller peristyle temples of Buhen and Amada are brilliant examples of Upper Egyptian architecture. The Luxor temple of Amenhotep III, the king's mortuary temple at Qurna, and his temple at Soleb in Upper Nubia are outstanding examples of New Kingdom architecture for the cult of the divine king. The structures are characterized by huge dimensions, wide festival courts surrounded by colonnades of tall papyrus-cluster columns, and colossal statues of the king (the so-called Memnon statues).

The interlude of the Amarna Period, which produced special types of solar temples (see below), was too short to influence effectively the course of sacral architecture. The more compact and austere temples of the Ramessid period (nineteenth and twentieth dynasties) lost the splendor of those of Amenhotep III; interior courts were constrained between pylons and porticoes of heavily proportioned columns. Colossal hypostyle halls were the great achievement of the period (Rameses II at Karnak, in the Ramesseum, and in Memphis; Rameses III at Medinet Habu). Their central aisles, which towered over the side aisles, created huge clerestory openings that were closed with ornamental stone windows. Rameses II is renowned for his vast temple building program, not only in Egypt but also at frontier outposts and along the Nile valley as far south as the Third Cataract (Gerf Hussein, Wadi es-Sebua, Abu Simbel).

Although most of the temples built from the twenty-first through the thirtieth dynasties were erected in Lower Egypt (the region of the Nile's delta), not one remains intact. A few examples have survived in Upper (southern) Egypt (Khargah, Ḥibeh, Hermopolis). During this time, Egypt suffered several confrontations with various foreigners such as the Libyans, Nubians, Assyrians, and Persians. The chaotic times required that gigantic enclosure walls surround sanctuaries and that the stone temple houses have few doors and openings. The desire to preserve a threatened culture and religion led to the use of more durable materials such as granite and quartzite at the ruined Lower Egyptian temples at Bubastis, Iseum, Mendes, and Tanis.

The Ptolemies usurped and enlarged some temples that had been left unfinished because of the Persian invasions

(twenty-seventh and thirty-first dynasties) and pacified pharaonic traditionalists with numerous splendid temples, mainly in Upper Egypt (Philae, Kom Ombo, Edfu). A major innovation was the replacement of the traditional hypostyle (many-columned) hall with a monumental open-fronted pronaos (also a hall with many columns abutting the front of the temple) and the wide distribution of columns with opulent composite capitals. Newly founded cities were filled with temples honoring locally important deities, for example, Serapis in Alexandria and the crocodile cults in the Faiyum. At sites such as Karanis, Dime, Qaṣr Qarun, and Abukir, these temple buildings were an exotic mixture of Hellenistic and pharaonic styles.

Under the Roman emperors, the Ptolemaic and pharaonic temple building traditions were renewed in numerous places (Dendur, Kalabsha, Esna, Dendera. Isis was particularly venerated at Philae as well as at sites outside Egypt (Rome, Benevent, Pergamon). Temples in newly established cities such as Antinoupolis were built in the Roman style. In 391 CE Theodosius I outlawed pagan cults, and the temples were closed, transformed into churches, or used as quarries.

Typology. Throughout ancient Egyptian history, sacral architecture was of different types. The most important categories were the temples for the gods, king, or the solar cult and the sanctuaries that served as barque stations or birth houses.

Temples for the gods. From the beginning, the main purpose of the Egyptian temple was to protect the divine cult image. The brick and stone sanctuaries for cult images developed from primitive reed tents built to shelter idols and soon included a covered offering or cult chamber. When the customary cult assembly of a trinity or divine family became dominant, three parallel sanctuaries opening into a common offering hall were required. The offering hall provided the stage for the daily ritual and was an important place for the display of the statues of temple sharing gods and privileged commoners, who were allowed to join in the rites performed for the lord of the house. In larger temples, the chamber for the cult image was extended to the front of the temple by means of an elongated room, where the god's traveling barque entered as at the temple of Seti I at Abydos.

Increasingly monumental pretensions led to the addition of more frontal hypostyle halls. As the dynasties advanced, these halls were mostly large, have high roofs, and are carried by papyrus columns with open (campaniform) capitals. The hypostyle "halls of appearances" were the first resting places for the barque after it left its sanctuary. The halls opened into the "festival court," another stage for more elaborate ceremonies, such as barque processions. Columned halls surrounded two, three, or four sides of the court. As of the Middle Kingdom, the front of the court was shielded by the two-towered pylon, a symbolic representation of the temple. Attached to the pylon were poles 30 to 40 meters high with colorful flags that formed the sign for *god* and proclaimed the divine character of the building.

Whereas royal-cult installations were built in stone in the third dynasty, most temples for deities were not made of stone until the Middle Kingdom. These stone buildings could be surrounded by large numbers of offices, workshops, storehouses, and priests' dwellings, generally built in mudbrick and encircled by huge brick enclosure walls, for example, at Karnak, temples of Seti I at Qurna and Abydos, the Ramesseum, and Medinet Habu. In front of the temple, a processional road passed the birth house and barque stations (see below) before reaching an affiliated sanctuary, a barque resting place at the banks of the Nile, or a canal from where the god's journey continued on a boat, as at Philae and Karnak. The roads were secluded by side walls and protected on both sides by long series of sphinxes, such as the great avenue from the Luxor to the Karnak temples.

Temples for the king. The divinity of the Egyptian king was not inherent but was bestowed after the coronation, when the divine *ka* (essential character) entered the king. This ceremony may have occurred in the Luxor temple as of the New Kingdom in connection with the celebration of the *opet* feast.

The divine powers of the king were periodically invigorated by the *sed* festival, which occasionally occurred in thirty-year intervals. These complex and enigmatic ceremonies required immense architectural installations attached to the royal palaces. Built of bricklike residential buildings, these buildings have been either destroyed or neglected by archaeologists. The *sed*-festival complexes consisted of large courts for processions and assemblies of officials and priests, throne kiosks, coronation halls and many chapels for the gods brought from all parts of Egypt to take part in the rites. A full-scale stone model of a *sed*-festival complex is preserved in the Djoser precinct at Saqqara.

Another means of assuring the survival of the king's *ka* was the cult of a statue enacted in chapels attached to major temples of the gods (*ka* houses). This practice occurred from the late Old Kingdom to the end of the Middle Kingdom. The few identified structures, such as those built by Pepi I and Teti at Bubastis consist of relatively simple shrines inside an enclosure.

The final perpetuation of the king's powers and divinity after death was accomplished in the royal tomb and the pyramid complexes during the Old and Middle Kingdoms. The "mansions of millions of years," which first appear in the twelfth dynasty and are generally known as "mortuary temples" during the New Kingdom, continue this transformation.

Beginning with the eleventh-dynasty complex of Nebhepetre Mentuhotep at Deir el-Bahari, the meaning and shape of royal mortuary temples was gradually transformed into the "mansions of millions of years." The continuation of the

king's power in the afterlife was now achieved through the king's union with divinities, who had sanctuaries in the king's temple. In the chambers corresponding to the Old Kingdom offering hall and central statue shrines, the king was now venerated as Osiris and united with Amun-Re. A solar sanctuary accommodated the king's incarnation as Re, and the sanctuary of Hathor may have reflected a kind of sacred marriage. Life-size Osirid statues occupied the front of the temples from the twelfth to the eighteenth dynasties and were later placed in the inner temple court (Rameseum, Medinet Habu), an evocation of the royal statue cult. During the nineteenth dynasty, this development product the formal architectural assimilation of the king's temple with the god's temple.

Solar temples. Temples of the omnipresent solar religion are only occasionally encountered in Egyptian history. The earliest example, the Harmachis temple of Chephren, is a monumental, granite-cased building in front of the Sphinx at Giza. Here the solar god may have been identified with the king in the shape of a royal sphinx.

Significant are the solar temples of the fifth dynasty, built in geographic, cultic, and administrative association with the pyramid complexes of Abu Sir and Saqqara. Two of eight recorded temples have been excavated (Userkaf, Neuserre); they may reflect the form of the unexcavated main Egyptian solar temple at Heliopolis. The sun temples consisted of an enormous open court for slaughtering animals with a sun altar in front of a huge, stout obelisk on a high pedestal. Formal resemblances to the royal pyramid complexes indicate a close functional connection and the great importance of the solar temple for the king's status.

Under Akhenaten, a vital association between the king and the sun god Aten led to the construction of huge solar temples at Karnak and Tell el-Amarna. These structures combine features of an eighteenth dynasty god's temple with elements specific to the sun cult. Typical are open courts, the absence of roofs and ceilings, great numbers of altars, some raised on high platforms, and pylons serving as sun gates. A new type of decorative program in the form of abundant natural growth stresses Akhenaten's devotion to Aten and the god's blessings.

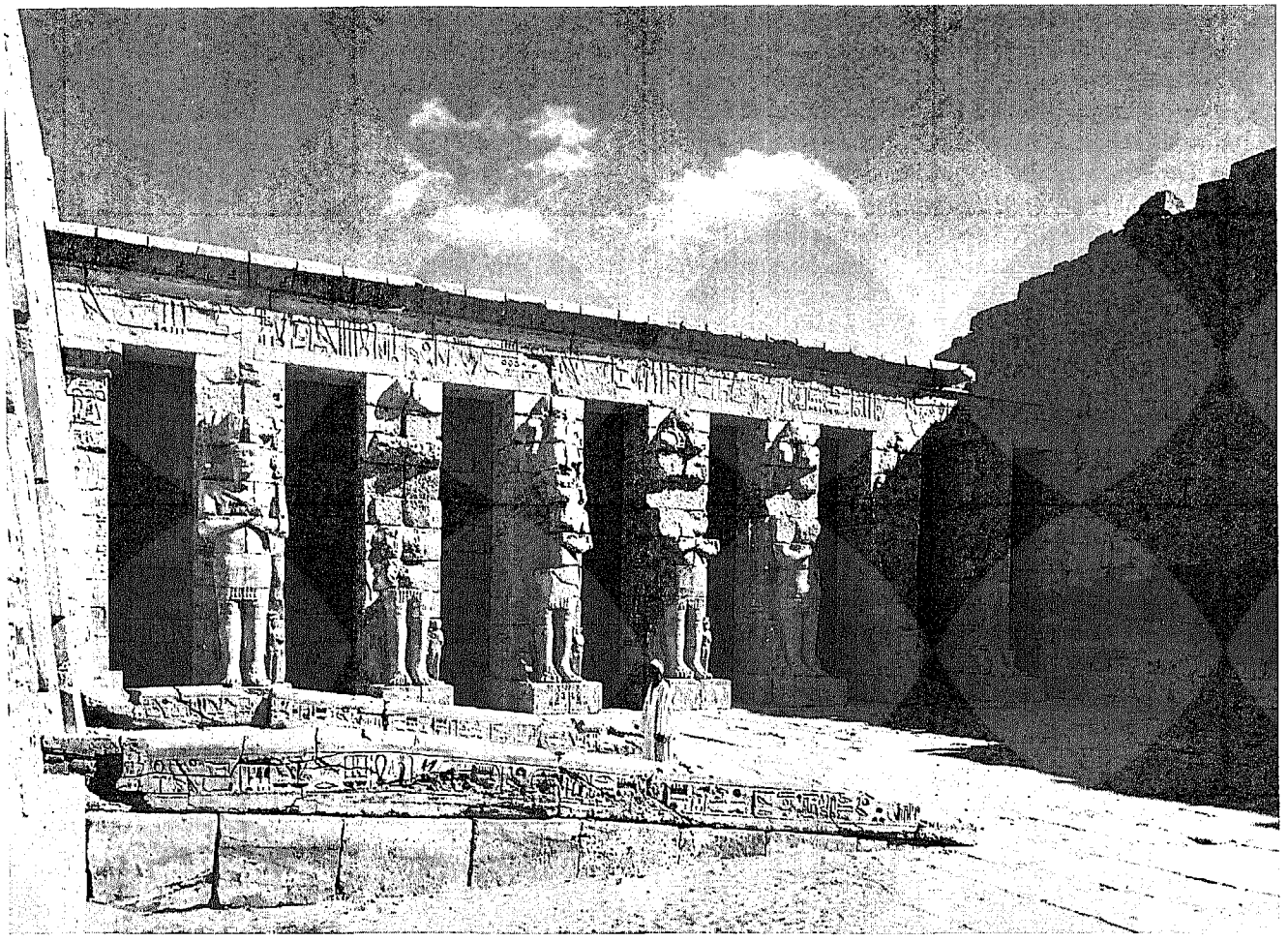
Barque stations. The statues of Egyptian gods frequently left their protected palaces and traveled by land or water to visit sanctuaries of related divinities and the king. Journeys in ceremonies such as the Theban "Luxor festival" and the "Valley feast" became especially spectacular from the New Kingdom through the Roman period. During the journey several stations were used as rest houses for the barques, which were raised on platforms and placed in shrines surrounded by pillars or columns. These kiosks often developed into small sanctuaries, such as the Kamutef Temple and the temple of Rameses III at Karnak, and the temple of the eighteenth dynasty at Medinet Habu.

Birth houses. Often described by their modern Arabic designation *mammisi,* the birth houses were originally barque stations placed along the processional roads in front of the main temple and used for the celebration of the young god's birth. In Ptolemaic and Roman temples, the rites developed into elaborate mysteries or sacred dramas. The young god seems to have been a symbol for the young king. The *mammisi* united the cult of the king to that of the mistress or lord of the main temple. As a result, the chapels grew into templelike buildings (Philae, Edfu, Armant, Dendera) consisting of three parallel sanctuaries for the young god and his parent deities; a kind of columned kiosk protects the shrine. The decoration depicts the rituals of the sacred marriage of the parent gods, and the birth and youth of the young god.

Decorative Program. The walls of Egyptian temples are decorated with reliefs and inscriptions relating to the function of the building and the ceremonies that were carried out inside it. A perfect relationship between the gods and the king as a representative of his people was depicted in these scenes. The images of living beings could transform the temple into an ideal universe in which the gods enjoyed the king's attention and rewarded him with eternal life; the intervention of priests was unnecessary.

An unwritten "grammar" closely connected the wall reliefs to the function of the individual parts of the temple and to the outside world. For example, Upper Egyptian gods, symbols, crowns appear in the southern half of the temple, and Lower Egyptian elements are found in the northern half. Scenes of processions, boating, or wars follow the same geographical direction as their actual prototypes. Asian enemies are attacking from the north of the temple entrance, African enemies from the south. Offering bearers move from the entrance to the sanctuary, the divine barque is carried from inside to the court. Outside walls were often used for public statements, such as offering and festival lists and royal immunity edicts. Magical protection of the entrance was provided by purification or apotropaic (protective) scenes, including the victorious king smiting enemies, who assumed human or animal shape. At times of intense military activity, historical scenes were depicted both outside and deep inside the temple, for example, the battle of Qadesh and the war against the Sea Peoples). Barque processions and feasts for the gods, such as the Luxor festival in the Luxor temple, appear properly oriented in the courts and hypostyle halls. Representations of offering bearers marching from the temple gate into the sanctuary supply the altars with offerings. Scenes of the daily maintenance of the cult image surround the walls of the statue sanctuary.

Symbolism. Egyptian sacral architecture has multiple levels of meaning. For example, all temples can be seen as seats of the primeval gods or hills or islands rising out of the primeval waters at the "first time." The concept of primeval



TEMPLES: Egyptian. *Court of the Temple of Rameses III at Medinet Habu.* Twentieth dynasty. (Courtesy D. Arnold)

elevation may be reflected in the naturally terraced structure of the many temples built against desert slopes, where the sanctuary at the back of the building always occupies the highest level of the complex.

Hypostyle halls can represent an image of the world. Primeval swamps are depicted by the decoration of the lower parts of the walls and by the dark color of column bases. The shape of the columns (papyrus, palm, lotus) create a world of flowers and trees that seem to grow towards the sky/ceiling of painted yellow stars on a blue ground. The temple walls represent life between the watery grounds and the sky; doors mark the transition between regions of the world. The sunbeams falling through light openings magically rejuvenate the statues. Building materials can also assume symbolic properties: the use of stone itself signals eternity, while white sand used for foundations and alabaster utilized for floors and shrines create sacral purity; gilded doors, shrines, and statues indicate divinity. Egyptian sacral architecture is enriched by symbolic properties that occasionally substitute for "real" functions so completely that full-scale model buildings can fulfill their ritual purpose without any interior rooms or cult activities, for example, the Djoser complex.

Some temples were completely designed to represent symbolically a certain aspect of the "world." For example, the architectural layout of the twenty-fifth dynasty Taharqa temple at Karnak permitted the priests to recreate in dramatic form the daily cycle of the sun in its four life phases—Khepre at sunrise, Re at noon, Atum at sunset, and the *ba* of Re at night.

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DIETER ARNOLD

TENTS. In the Near East the tent has been an integral part of life since antiquity. While the tent's social significance in tribal organization and its economic importance to pastoral nomads are known, it is less widely recognized that the tent is almost equally indispensable to agriculture, beyond its appearance alongside kitchen gardens (see below). In the Near East, sheep and goat pastoralism is intertwined with the food-production systems of sedentary people—grain and lentil culture, vines, and fruit and olive orchards—and the tent is significant to both.

Although pastoralism and agriculture are typologically discrete in some ways, people derive foodstuffs from both sources where possible. This motivates the integrated production of food from both. When people and their tents follow their flocks, they are in reality integrating the sustenance provided by their animals (including the dairy activities of summer herding) with their standard diet of grains, lentils, and vetches. The tent makes it possible to sow, to keep the flocks away from young crops, to be there when crops ripen and need harvesting, to bring the flocks back to graze the stubble and fertilize the fields with their droppings, and to sustain the family or tribe in this mobile system. Some dwell in tents year-round and others only during dry months. They roll up their tents and store them in the house or cave in which they spend the cold, rainy period from approximately November to April. Fully pastoral people who must purchase their grain are a rarity in the Near East today. In the past, when the region was forested and collected rainwater more intensively, personal food production was significantly greater and it would have been even rarer for existence to be fully pastoral. [*See* Pastoral Nomadism; Sheep and Goats; Agriculture; Cereals.]

The inhabitants of tents were often keepers of vineyards and orchards. People who lived in houses in towns and villages owned and tilled the land surrounding the town, living in tents seasonally (or, as the Hebrew Bible reports, in small huts of branches—*sukkoth,* sometimes translated as "booths") in order to monitor the ripening of their grapes and other fruit and to carry out traditional chores involving summer dairy and grain production.

The temporary labor required for this seasonally labor-intensive work attracts landless workers, both male and female, from among the seasonal and year-round nomads. They move their tents close to the fields because they then share the food raised by the landowner, while renting grazing rights for their own flocks. "Sedentary" food production thus depends on tents and tent dwellers.

Different types of tents have been used throughout history. For example, the military tents used by Sennacherib in his siege of Lachish (*ANET* 374) had an unusual shape (cf. other military tents, *ANET* 170, 171). The design of the traditional goat-hair tent, widely used by year-round nomads, as well as for partial pastoral and agricultural purposes, was probably developed millennia ago for comfort in a wide range of weather conditions (see figure 1). It is a long rectangle, often running east–west, so that its rooms open to the south. These rooms are formed by interior divider panels hung across the width of the tent; exterior panels on the south can be opened and closed individually. The "living room," where guests are received, is usually open on one or two sides, while the panels of the more private rooms are frequently kept closed.

The goat-hair tent is waterproof, making it habitable year-round, including in the rainy season. (However, full-time nomads generally move to warm areas in the winter in order to protect their flocks from the cold.) The simplicity of its sewn construction from woven panels of goat hair, generally about 100–130 cm wide and of any length needed, means that living space can be expanded or contracted on demand. Upkeep is inexpensive because single panels can be replaced

when they are worn simply by sewing in a new one—obviating the expense of replacing the entire tent. New panels of spun goat hair are woven in late summer, when women have some free time after the milking has ended and before the rains begin. The panels are woven on a ground loom outdoors. [*See* Textiles.]

The roof of the tent slopes slightly but is level enough to serve as a clean area (out of reach of animals) for drying yoghurt balls, a method of processing milk for later use, in the absence of refrigeration. Near the tent, small shelters, much like the tent itself, may be constructed out of panels, poles, and ropes to screen domestic animals from the sun.

The tent has two sets of ropes, one outside and one inside the hanging side panels. The outside ropes are weight bearing and are used to pitch the tent. To counter strong winds, they are very long, stretching perhaps 6–8 m (18 to 25 ft.) from a 3-meter-high tent before being pegged. Their almost-horizontal position makes them convenient clotheslines for hanging out the family laundry, boiled-cheese cloths, washed wool, and dyed, spun, and plyed wool. The ropes are traditionally made of sheep's wool, spun and plyed: a number of strands of plyed wool are plyed together in the opposite direction, to form a rope that does not ravel easily. Today, this homemade rope is generally giving way to nylon rope, but because it costs nothing it is still used for many pastoral purposes: tethering animals, temporarily tying sheep together for milking, and for halters and leading ropes.

The ropes inside the panels are lighter and serve to control the position of the panels. In cold weather the panels hang straight down and rocks are placed on their lower, outside edge to keep cold wind from entering the tent. In warmer weather the light ropes are pegged outside to hold the panels up and out, allowing air to enter. In very warm weather, the panel can be pinned up against the roof, so that the entire side, usually the shade side, of the tent is open and a cool breeze moves through. In oppressive sunlight a panel can screen an area from direct rays. The panels are altered several times in any 24-hour period to maintain comfort.

Divider panels are fastened across the width of the tent between the poles to form rooms, usually three or more, that are generally about 4–5 m square, providing privacy and screening the work area from the social area. The divider panels and the reinforcing strips may be decoratively woven, in geometric designs in black goat hair contrasted with white or brown wool. Reinforcing strips are sewn to the roof panels, where the supporting poles meet the roof, to keep the poles from piercing the tent fabric. At the ends of the reinforcing strips, connectors for the guy ropes (metal rings or less expensive Y-shaped pieces of wood from the fork of a small tree) are attached.

The designation "women's quarters" found in the ac-

TENTS. *Handspun and hand-woven goat hair panels are sewn together in long strips.* Reception room for guests is often open. Further rooms have sides closed for privacy, but ropes under side panels are raised to cool interior. Umm es-Sumaq, Jordan, 1992. (Courtesy Dorothy Irvin)

counts of early travelers is not entirely accurate. Rooms are assigned not by gender but by purpose; family relationship is a secondary factor and gender a tertiary one. All-male gatherings, especially if the men are not relatives or not well known, take place in the "living room"—the room set aside for receiving visitors—which is furnished with seating mats and elbow cushions. Women may stay out of the living room when male guests are present, especially if they are busy with other things or may enter only to serve. The cooking is done elsewhere. All-female and mixed, but predominantly female, groups may also meet in the living room. Men do not enter the private rooms unless they are closely related to the inhabitants. Women who are not well known to the group are received in the living room but may be invited into the private quarters when the acquaintanceship is of long duration. For large gatherings, such as family reunions, two living rooms are set up, one for men and one for women.

The system of pinning together the long, heavy roof strip, back and side strips, and divider panels makes it possible to dismantle the tent into pieces for moving, which would be virtually impossible if the 225 kg (500 lb.) or so that the tent weighs had to be moved as one piece. In earlier times, sections of the tent would be loaded on several camels for transport; today, the entire tent is usually transported by truck.

Tents have never indicated a low level of subsistence or a temporary life-style. They are aesthetically pleasing dwellings that provide even the poorest family with space, elegance, and dignity. They offer adequate privacy, easy expandability for increasing numbers of family members, a range of comfortable work areas—indoors and outdoors, shaded and unshaded—for food production, as well as considerable waterproof storage space for farm and dairy equipment, household implements, family clothing and belongings, water containers, and food supplies: hundredweight bags of wheat, barley, lentils, and vetches; skins holding milk products and woven bags of dried yoghurt balls; and bags of shorn sheep's wool and goat hair. The tent is not only a dwelling but also a highly efficient center for producing, processing, and storing the family's range of food, and, in antiquity, clothing. Its spare efficiency and the fact that work is usually carried on in the private areas can conceal the full scope of its activities from the casual observer.

In summer, tents are far more comfortable and pleasant to live in than are houses. Their mobility is a significant economic advantage, as well. When the rains have ended, the family moves from the house or cave into the tent with anticipation, for tents are almost always pitched with regard to securing a good view. There is considerable folklore surrounding this life, and tents have given rise to poetry and song. For these reasons their use has persisted with little change through periods of significant urbanization, including the present.

Tents are an archaeological blind spot because their remains are virtually nonexistent (tent poles, e.g., were of wood). Today, their pegs are bent scraps of rebar and the pins are of metal, made by the local blacksmith; in antiquity, both were generally made of wood, although an iron tent pin may turn up in an excavation. The pegs are driven into the ground using any available rock. With its goat-hair panels and sheep's-wool ropes, the tent has scarcely any pieces that would survive to attest to this most enduring form of dwelling.

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DOROTHY IRVIN

TEPE FARUKHABAD, ancient town site located on the Deh Luran plain, in the foothills of the Zagros Mountains, about 110 km west-northwest of Susa, in what is now southwestern Iran, near a traditional route connecting Susiana to Babylonia and points beyond (32°35′ N, 47°14′ E). The central mound is 25 m high and was once about 200 m in diameter. Its ancient name is not known. In recent years, rainfall has been inadequate for agriculture two years out of three, and most of the plain is used for pasture. However, nearby traces of ancient canals and samples of crop weeds and microfauna from the site indicate irrigation with the water of the seasonally variable and brackish Mehmeh River. The Mehmeh has cut away about two-thirds of the site, leaving a near-vertical face that facilitated deep stratigraphic excavations.

The site was noted by J.-E. Gautier and Georges Lampre of the Délégation Archéologique Française during their season of work at the larger central town of Mussian (Musiyan) in 1903, but it was not studied. [*See* Tepe Mussian.] During 1968, the site was the focus of an excavation designed to study trade, craft, and town growth, undertaken by the University of Michigan Museum of Anthropology, Ann Arbor, in collaboration with the Iranian Archaeological Service. It was supported by the U.S. National Science Foundation and the Ford Foundation. Two 5-meter-wide excavations (A, B) were placed 50 m apart in the southwestern river-cut face,

revealing portions of the center of the site. A one-meter-wide test trench (C) transsected the original northeast edge of the central mound.

The lowest layers at Farukhabad are unexcavated, but extrusive sherds indicate that occupation began during the early sixth millennium, during the Chogha Mami Transitional phase. The earliest layers revealed at Farukhabad had Bayat-phase structures (c. 4600 BCE), the latest phase defined in the 1963 excavations by Frank Hole, Kent Flannery, and James A. Neely at nearby Tepe Sabz (Hole et al., eds., 1969). During the subsequent Farukh phase (c. 4400 BCE), the population on the plain was about 2,200 inhabitants; Farukhabad was subsidiary to the larger center of Mussian. Emmer wheat and some six-row barley were cultivated, and sheep, goats, and cows were herded. [*See* Cereals; Sheep and Goats; Cattle and Oxen.] Ceramics were painted in the Late Susiana tradition characteristic of southwestern Iran. There were successions of well-maintained structures on mud-brick platforms and storehouses in excavation A, and of modest housing in B. Similar quantities of food debris and by-products from small quantities of local bitumen and chert production were found in both areas. However, social differentiation is indicated by concentrations of drinking cups, imported cherts, and bones from hunted gazelles around the more elaborate structures. Late in the fifth millennium, Farukhabad and most other sites on the plain were abandoned.

The site was partly reoccupied during the Early Uruk phase, perhaps by seasonal transhumants. Both excavations revealed modest housing by the Middle Uruk phase (c. 3500 BCE). Plain ceramics were made in a tradition local to Deh Luran and the nearby Zagros valleys. Barley predominated over wheat and goats over sheep. Bitumen, chert cores, and possibly goat-hair fabrics were prepared for export, and metal tools, high-quality cherts, and decorative items of marine shells and semiprecious stone were imported. Although Farukhabad was the largest among the occupied sites on the plain, and one spherical bulla with cylinder and stamp seal impressions (suggesting the administration of economic activity) was found, the small exposures did not reveal traces of public areas or elaborate residences. The Late Uruk phase at Farukhabad (c. 3300 BCE) shows striking organizational changes: the subsistance economy was broadly the same, but the crafts were reorganized. Local wares were used only for cooking jars, and most of the ceramics were mass produced in the tradition of southern Mesopotamia—well-known from Uruk, Nippur, and Susa. [*See* Uruk-Warka; Nippur; Susa.] Statistical studies of industrial debris indicate increases in the production of local chert cores and bitumen for export, particularly around an area of nonresidential buildings sampled in excavation B, but there is little indication of import. Excavation A revealed only very modest housing, with some evidence of pottery production. Sealings and tokens indicate some administrative activity. During this period, Deh Luran may have been controlled by one of the states centered elsewhere in southwestern Asia.

Post-Uruk occupation at Farukhabad continued uninterrupted. The major change in plant and animal husbandry was the addition of the domesticated pig. [*See* Pigs.] The disappearance of Late Uruk ceramic features and the development of local forms of both fast-wheel-thrown and handmade ceramics and of polychrome painted decoration mark the transitions to the Jemdet Nasr phase (c. 3100 BCE; called Early Jemdet Nasr in the site report) and subsequently to the Early Dynastic I–II phase (c. 2900 BCE; called Late Jemdet Nasr in the site report). [*See* Jemdet Nasr.] The central town of Mussian was reinhabited in the latter phase and Farukhabad again became a subsidiary settlement. The population on the plain approached five thousand inhabitants. The architecture exposed in the soundings at Farukhabad is entirely domestic. The debris in and around the more substantial residences manifests evidence that their inhabitants had more varied diets and used more imported items than did the inhabitants of the modest residences. The exporting of bitumen, chert, and perhaps cloth and the importing of metal and decorative items greatly expanded. Unfortunately, there is no evidence of administrative technology, and no direct way to evaluate the possibility that Deh Luran itself was a state center.

Tepe Farukhabad was abandoned during the mid-third millennium; the later Early Dynastic layers were badly eroded. The limited area on the summit of the high mound was reoccupied by modest domestic architecture after 2100 BCE, during the Third Dynasty of Ur and the time of the Shimaski rulers of southwestern Iran. The ceramics show generalized parallels with both Mesopotamia proper and Susiana. In about 1900 BCE, the site was rebuilt as a small fort. The ceramics show close parallels with those of Susa. The food remains show exceptional proportions of cow bones, and the remains of a domestic horse were found. It is reasonable to interpret the site as a military outpost guarding a crossing of the Mehmeh River during the periods of conflict between the Sukkalmah rulers of Susa and the Old Babylonian rulers of Mesopotamia. This fort fell into disrepair, and the hamlet on the summit of the mound was abandoned by 1300 BCE. A brief reoccupation in Late Parthian or Early Sasanian times left a stone footing on the summit of the mound and at least 2 m of occupational debris on a low terrace east of it.

[*See also* Deh Luran; *and* Persia, *article on* Ancient Persia.]

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HENRY T. WRIGHT III

TEPE GAWRA (Kurdish, "great mound"), site located within the Greater Mesopotamian region on the piedmont of northeastern Iraq 24 km (15 mi.) north–northeast of the Tigris River at Mosul and north of the Greater Zab River (36°43′ N, 40°33′ E). It is on a tributary of the Khosr River, a branch of the Tigris, near one of the few natural passes through Jebel Maqlub into the hills of the northern Zagros Mountains in modern Iran. A natural spring emerges from the hills close by. This is a zone of rainfall and irrigation agriculture and of ample pasture for sheep and goats.

Other sites near Gawra in the piedmont include Nineveh; Tell Arpachiyah, a Halafian site; Khorsabad, the capital city of the Neo-Assyrian king Sargon II; and Tell Shenshi, a small Halafian, Ninevite 5, and Early Dynastic III Akkadian site. South–southeast of Gawra lies Tell Billa, a third–first-millennium BCE site excavated by the same team that worked at Gawra (see below).

The mound was noticed early on by Western travelers because it stood a full 20 m above the plain. The main part of the mound is no more than 1.5 ha (4 acres) at its base. There may have been a lower town, but apparently only early and late in its history. The only excavation off the mound occurred at the northeast base and in area A. The former contained a very thin layer of Halafian material over virgin soil. Area A yielded 3–6 m of strata with Halafian pottery types earlier than those of level XX, but no evidence of architecture was found. Virgin soil was found at 5.22 m below the plain in this area. At the other end of the time spectrum, a small mound, Khirbet Naʿaman, was found 600 m from the main mound with Early Dynastic III and Akkadian material identical to Gawra level VI. Virgin soil was never reached on the main mound.

Excavation History. Ephraim A. Speiser investigated Gawra in 1927 during a survey of the northern third of Iraq under the auspices of the University of Pennsylvania Museum, ASOR, the John S. Guggenheim Foundation, and Dropsie College. Based on the discovery of prehistoric painted pottery at Susa and other Neolithic and Chalcolithic sites, Speiser believed that at Gawra he had found the oldest stratified site in northern Mesopotamia. [*See* Susa.] He and an architect, E. Wilenski, spent fifteen working days excavating a 5-meter-wide test trench.

In fall 1930, while overseeing excavations at nearby Tell Billa, Speiser decided to excavate the mound at Gawra as well. He designed a strategy to dig the mound by slicing off layer after layer, taking no account of natural stratigraphy. In January 1931, the first of two seasons began. Speiser dug all of levels I–VIII. In the second season Charles Bache of the University of Pennsylvania Museum, who would direct the third–fifth and seventh seasons, joined the crew. Speiser returned to direct the sixth season. Levels I–X were completely excavated. As the area of the mound increased below level X, the percentage of the area excavated declined. From levels XI/XA–XII about 50 percent of the mound's surface was exposed, from levels XIIA–XX less than 30 percent. The sample size of all Halaf and Ubaid period levels was considerably smaller than levels of the fourth millennium BCE.

The quality of recording and publication was uneven. During the course of removal, no balks were kept between excavation squares to draw stratigraphic sections. Because the numbering system for squares was changed five times in the seven seasons, many provenance assignments were incorrect, especially for the first and second seasons in the excavation report published by Speiser in 1935 (see bibliography). Bache oversaw a much more controlled excavation, with precise information on provenance and natural stratigraphy. Of the artifacts recovered, a small, arbitrary sample of whole vessels, spectacular sherds, flint and obsidian objects, seals and seal impressions, spindle whorls, metal tools, figurines, and other objects were recorded. Of that sample, perhaps 75 percent were sent to the Iraq Museum or the University Museum for storage and future study. The rest were discarded in the field.

Archaeological Sequence. Tepe Gawra is an important site because it gives an almost continuous sequence of occupations from the late Halafian period through the end of the Late Chalcolithic/Uruk period. By the time Gawra was first settled, the agricultural revolution had probably spread across virtually the entire Near East. The Hassuna period, which typified small village farming communities in northern Mesopotamia, was followed by the Halaf period. The earliest level excavated at Tepe Gawra, XX, is marked by one of the architectural hallmarks of the Halafian period, the round mud-brick tholos. The functions of these buildings may be religious or residential or they may have been used as granaries. The other hallmark of the period is its pottery, with strikingly painted geometric designs. Halafians probably do not represent a new "people" (ethnic group, linguistic group, occupationally specialized group) but, rather, social changes marked by new pottery styles. All indications in this still little-studied period are that some ranking had begun within the society of former Hassuna groups, based on control of communal grain storage or centralized production of fine Halafian ceramics (the evidence for the latter is questionable).

The following level, XIX, saw another significant change. Influences of the next great period in Mesopotamia, the Ubaid, became prominent, signified by a new style in pottery and architecture. Halaf styles continued until level XVII, however, which had a tholos structure. (Throughout its occupation, Tepe Gawra demonstrates considerable conservatism in artifact design. The same conservatism would cause the continuity of Ubaid styles into the Uruk period.)

During the Ubaid period deep social changes were in progress. Ubaid styles seem to signify widening spheres of contact and the continuing movement toward a ranked society with centralizing tendencies in religion and governance. In level XIX, a well-planned, large-scale (relative to level XX and Halaf levels at other sites) building with a podium was found. This "temple" (the podium is typical of temples, although Speiser and Arthur Tobler applied the term to buildings that did not function as temples also) and a similar one in level XVIII mirror developments in the southern alluvium of Iraq. The first of a series of temples with a layout very much like Gawra's was built in the south at Eridu in Ubaid 2 (parallel to the latest Halaf period in the north). From Gawra XIX to XV, an amazing sameness is noticeable, which marks the whole of the Early Ubaid across almost all of Greater Mesopotamia. [*See* Temples, *article on* Mesopotamian Temples.]

An unresolved question is how Ubaid societies were organized. Some have tried to use a model of Polynesian or Amerindian chiefdoms, but evidence from Gawra and elsewhere lacks the hallmarks of those societies: warfare, very distinct ranking differences in burial practice, long-distance trade, production of goods specifically for elite members of society. Also, beneath the symbolic and probably social structural changes of the Halaf and Ubaid 3 periods, the subsistence base appears to have remained strikingly similar, emphasizing rainfall agriculture and small-animal herding. One theory—that these were simple chiefdoms based on the collection of staples—fits the data from Gawra XIX–XV (see Stein, 1994).

Level XIV yielded only the foundations of a very large, well-planned building. However, it appears to signal the beginning at Gawra of the Ubaid 4 period, when many of the markers of complex chiefdoms of a Polynesian type do begin to appear. The culmination of this change is seen in level XIII, signified by three large formal temple buildings (i.e., they have some hallmarks of temples, such as orientation to cardinal points, niching, and buttressing but no preserved platforms). These buildings, according to Bache's architect's notes, did not stand simultaneously. However, their monumentality shows a new role for the leaders of Gawra—evidenced by Gawra's role as a transshipper of lapis lazuli from Afghanistan and the first use of seals as control mechanisms in governance at Gawra. Although many scholars see level XIII as evidence of a southern Ubaid intrusion, Gawra's long tradition makes it as likely that it was emulating regional patterns rather than being taken over by its southern neighbors.

The social trends set in level XIII continued and were elaborated throughout the following fourth millennium. Following a last Ubaid 4 level, XIIA (often erroneously associated with XII), the beginnings of the Uruk period are found in Gawra XII. A number of scholars see XII as a return to an agricultural village, but there is little evidence for that. The White Room complex of XII has all the earmarks of a leader's (chief's) house. In addition, the numbers of specialized craft areas are considerable: 118 seals and sealings were recovered in a pattern indicating administrative control. There may also have been a temple in the unexcavated half of the mound. From Gawra XI/XA to X and from IX to VIII, the position of the temples on the mound changed radically. The same can be said of XIA/B, which has little evidence of a formal temple. Another trait of complex chiefly society applies to Gawra XII, which ended in a conflagration, complete with evidence of skeletons on the main street.

The next level is usually denoted XIA. However, a reanalysis of the stratigraphy of XII–VIII by Mitchell S. Rothman demonstrates that XIA is actually two phases: XIB, prior to the building of the massive Round House, and XIA, when the Round House existed. The Round House seems to be a food-storage, defensive, and social center that was destroyed in a fire. The fire may or may not have been set in battle. Some scholars point to a sealing, field register no. 5-1243 as evidence of warfare, but the sealing does not show prisoners, but bearers.

All Early Uruk (Early Gawran) levels—XII, XIA/B, XI/XA—are densely populated and economically complex. From XII to VIIIA, Tepe Gawra was probably the center of a small polity, encompassing the eastern part of the plain and the first of the Zagros foothills. The polity appears independent of Nineveh, the largest nearby site, and of southern Uruk people. [*See* Nineveh.] That complexity is nowhere as evident as in XI/XA. In phase XI, specialized textile and woodworking shops mix with large ceramic kilns, a temple, administrative center (chief's house?), and private houses. Evidence from the chemical characterization of a sample of sealings shows that sealed (locked) goods were moving around the immediate area of Gawra. Evidence of seal design seems to indicates a bifurcation in authority, one group overseeing religion and governance, the other manufacturing.

Level X, probably parallel in time to the Middle Uruk period, intressed religion in the form of a large temple, which took center stage, functionally and physically. The specialized shops are absent, but the presence of a large, formal leader's house (and perhaps town hall, like the Arab *mudhif*), as well as the earliest spectacularly fitted burial tombs, indicates that its centrality endured. Level IX (Middle–Late Uruk) continued the pattern set in level X.

Level VIII is the most controversial in terms of chronology. What is apparent from the field notes is that a large terrace from level VI along the southern flank of the mound at the elevation of level VIII has confused the issue. Once artifacts from that terrace are removed from the sample, level VIII appears to be Late Uruk in date. In fact, when the fire that consumed the latest VIIIA phased burned, the Uruk period was probably far from over in the north. What is known about the three phases of level VIII is that there were craft shops, a temple, a shrine in a leader's house, and, for the first time, a formal central warehouse for manufactured goods. Based on their contents, neither the western nor central temples were temples at all. The central building was a domicile and craft shop for carving bone and stone, probably into seals and beads. The west temple was another *mudhif*like building with large stores of grain and ration bowls piled in the grain bins. Based again on the chemical characterization of sealings and seal design, the contacts outside the "Gawran polity" appear more extensive in this period than before. The knapping and transport of obsidian blades may be part of the reason.

Level VII actually appears to be a series of levels destroyed during the building of Gawra VI. The only building that remained was on the far northeastern edge of the mound. The contents of that building and the rest of the level(s) indicate a Ninevite V period date. This long period saw the reintegration of the societies of the northern steppe without much southern influence. Level VI represents a significant change in the role played by Gawrans compared to the fourth millennium. Gawra appears to have been one of a number of way stations or fortified villages in the Early Dynastic III and Akkadian system. One of the major goals of Akkadian foreign policy was to guarantee the flow of raw materials, especially metal ores from the mountainous north and east. Sargon I of Agade's grandson, Naram-Sin, had large emplacements at Tell Brak and Nineveh. [*See* Brak, Tell.] Gawra, then a very tall and narrow-topped mound, was a good location for a way station or outpost. The material remains paint a picture of Gawra as an agricultural village with some secondary strategic importance. The following levels, V and IV, have a few buildings that seem to be heavily fortified homes or storehouses. The level is coterminous with the Ur III dynasty in the south. [*See* Ur.] The period may be best represented by the fact that all three of its levels (VI–IV) were fortified and were ended by fire. The final three levels at Gawra contained small, unfortified homesteads from the period when the Hurrian-speaking Mitannian rulers controlled the whole northern tier of Mesopotamia.

[*See also the biography of Speiser.*]

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MITCHELL S. ROTHMAN

TEPE MUSSIAN, site located at the foot of the Zagros Mountains, midway between Babylonia and Susiana, to the southeast of the Deh Luran plain, some 90 km (56 mi.) northwest of Susa (32°30′ N, 47°20′ E). The name applies to an area grouping several sites: Tepe Mussian proper, Tepe Khazineh, and Tepe Ali Abad. These sites were excavated in 1902–1903 by Joseph E. Gautier and Georges Lampre on behalf of a French delegation (Gautier and Lampre, 1905). More recently, Elizabeth Carter and James Neely reexamined them in the course of an extensive survey of the Deh Luran plain.

Tepe Mussian (about 450 × 300 × 18 m; approximately 14 ha, or 35 acres) is the largest site on the Deh Luran plain. It might have been fortified during the Early Dynastic period, although the excavators found no rampart and only a few building remains of third- and early second-millennium date. The finds published consist mainly of Archaic and third-millennium painted pottery (Gautier and Lampre, 1905).

About 1.5 km from Tepe Mussian, Tepe Aliabad (about 50 × 50 × 2.5 m) was used only as a cemetery in the third millennium. The tombs are rectangular pits lined with mud bricks; the pits are either unroofed or have an ogive (or pointed)-shaped vault and were used for single or double burials. The tombs yielded many polychrome painted jars, sometimes associated with alabaster vessels and metal weapons of Early Dynastic III types.

Located 3 km (about 2 mi.) to the east of Tepe Mussian, Tepe Khazineh (50 × 50 × 9 m) has a sequence of occupation parallel to that at Tepe Mussian, although the third-millennium occupation may only be a cemetery.

The excavators, Gautier and Lampre, published an important large corpus of pottery that they divided into two stylistic groups: a prehistoric painted pottery they labeled style Ibis and a third-millennium polychrome pottery related to Susa's painted wares and called style II.

Prehistoric Sequence. The excavators lumped together the various Archaic painted wares and labeled them style Ibis because they considered them to be later than the earliest painted pottery of Susa (then called style I—i.e., Susa A or period I) but antecedent to the third-millennium painted ware (then called style II—i.e., Susa D or period IIIB–IV). It was only after the excavations at Tepe Giyan in 1931–1932 that the anteriority of the so-called style Ibis over style I was recognized.

Frank Hole's (1987) work has shown that these Archaic painted wares correspond to the greater part of the Deh Luran prehistoric sequence, from the so-called Sabz phase to the Susa A phase, between about 5100 and 3500 BCE, when Tepe Mussian was a village of some importance.

Third-Millennium Sequence. Tepe Mussian may have been abandoned during the Uruk and early Proto-Elamite periods. It was reoccupied in about 2800 BCE and experienced a period of rapid growth. During the Early Dynastic period, and until about the twentieth century BCE, it was by far the major settlement on the Deh Luran plain, at first perhaps as large as Susa itself.

To this period date the painted polychrome pottery found at Tepe Mussian and the nearby cemeteries, ascribed, despite their original features, to Susa's style II. It is mainly represented by small jars painted in black and red on a yellow-buff ground with geometric, vegetal, or animal motifs distributed onto one or more horizontal bands. The abundance and variety of this ware in the Mussian area suggest that the Deh Luran plain may have been the center of its development.

These wares were used during a time span beginning in Early Dynastic I at the earliest (Susa period IIIB?–IIIC; LeBreton's Susa Da–b, c. 2800–2600 BCE) and continuing well into the Early Dynastic III period (Susa period IVA; LeBreton's Susa Dc–d, c. 2600–2400 BCE; see LeBreton, 1957).

Despite a distinctly local appearance, the earlier wares (Early Dynastic I–II) suggest ties with the Hamrin basin and the Diyala valley, but few relationships with Susiana. The later wares (Early Dynastic III), either polychrome or monochrome, testify to a shift in cultural connections as they indicate close contacts with Susa and the Zagros uplands, where Mussian-style painted wares first appear.

In the latter half of the third millennium, the population began to decline on the Deh Luran plain. It affected Mussian in the Old Elamite (Sukkalmah) period and led eventually to its abandonment sometime before the middle of the second millennium.

Elizabeth Carter (1971) has pointed out that Tepe Mussian is the most likely candidate for an identification with Urua/Arawa, an Elamite city known from Early Dynastic, Old Akkadian, and Ur III texts and located, according to Piotr Steinkeller, "in northwestern Khuzistan, in a strategic point controlling the passage from Southern Babylonia onto the Susiana Plain" (1982, p. 246).

[*See also* Deh Luran; Elamites; *and* Susa.]

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TEPE YAHYA, site located in southeastern Iran, about 220 km (136 mi.) directly south of the city of Kerman and 130 km (80 mi.) north of the Strait of Hormuz (28°20′ N, 56°52′ E). The mound of Tepe Yahya rises to a height of 19.8 meters and covers an area of approximately 3 hectares (7 acres) at its base. The site was discovered in 1967 by the joint archaeological expedition of the Peabody Museum, Harvard University, and the Archaeological Service of Iran, under the direction of C. C. Lamberg-Karlovsky. Excavations at the site were undertaken in summer 1967–1971 and also in 1973 and 1975.

Tepe Yahya has a long, but not unbroken, sequence of occupation: archaeological excavations have identified ten major phases of occupation based on a series of radiocarbon dates and comparative stratigraphy. In addition to the excavations at Tepe Yahya a regional survey, with limited excavation, was undertaken by Martha Prickett within the Soghun Valley, in which Tepe Yahya is located, and the Shah Maran-Daulatabad basin to the west. The results of this survey offer the fullest understanding of the shifting settlement regime in this region of southeastern Iran.

At Tepe Yahya, of particular importance was the recovery of a series of Late Neolithic villages (periods VI–VII) datable to 3900–4900 BCE. Excavation uncovered a considerable number of domestic dwellings and successfully documented the subsistence pattern of the inhabitants and their material inventory. Archaeological survey indicated that sites in this period could reach a size of 10 hectares (25 acres), although most were 2–3 hectares (5–7 acres). A limited repertoire of metals was found associated with a stone tool and bowl industry and a distinctive ceramic inventory of coarse chaff-tempered wares. The wares were in later levels complemented by black-on-buff and black-on-red painted wares. The site was also occupied in the Chalcolithic period (3300–3900 BCE), period VA–C.

In the last century of the fourth millennium, Tepe Yahya was the site of a Proto-Elamite "colony." Excavations uncovered a single building complex, in excess of 500 square meters, referred to as period IVC (3100–2800 BCE). From this building twenty-five inscribed Proto-Elamite tablets, numerous cylinder sealings, and beveled-rim bowls, and other ceramic types were recovered that can be readily paralleled at Susa and Tal-i Malyan. Following the abandonment of the Proto-Elamite colony, there is a gap in the sequence until the second half of the third millennium. With the reestablishment of settlement in period IVB (2400–1700 BCE), the community is distinguished by two features: the manufacture of chlorite bowls decorated in the distinctive Intercultural Style of geometric, architectural, and animal styles and the presence of a local style of cylinder seal. The materials recovered from this settlement, which include several phases of architecture, can be readily paralleled at Shahdad. The recovery of the period's material inventory has led a number of scholars to identify this region of southeastern Iran as comprising the kingdom of Marhaši, a kingdom frequently referred to in Ur III period texts in Mesopotamia.

Period IVB is followed by the settlement called IVA (1800–1500 BCE), whose ceramic assemblage and orientation of its architecture and other material differ fundamentally from that of the preceding period. Recent analysis of these materials suggest parallels to those recently recovered in Central Asia, namely in Margiana and Bactria.

Following the IVA occupation there is a chronological gap of at least half a millennium. The Iron Age at Tepe Yahya (period III) is established between 700 and 525 BCE and is distinguished by an architectural complex consisting of large houses sealed by two large mud-brick platforms without architecture constructed on their surface. Period II (475–275 BCE) consists of large houses containing a ceramic inventory with parallels to Achaemenean ceramic types. The final occupation at Yahya (period I, 200–300 CE) consists of very poorly preserved architecture, typical Parthian-Sasanian ceramics, and limited material remains.

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TERQA, modern Ashara, site located directly on the banks of the Euphrates River (34°55′ N, 40°34′ E). The identification of the tell was one of the very first proposed in Syrian archaeology: it was established in 1910 when Ernst Herzfeld found on the surface of the site a cuneiform tablet that related the construction of the Temple of Dagan in Terqa (E. Herzfeld, "Ḫana et Mari," *Revue d'Assyriologie* II [1910]: 131–139). The tell itself is no more than 10 ha (25 acres); it seems certain that part of the ancient city has been lost to river erosion, possibly as much as half, though there is no way of determining this with precision. While no trace of an outer city has been found, it is likely that it existed and that it was swept away by flooding and/or covered by the alluvium. It has been traditionally assumed that the name of the region (Khana) was used in the titulary of the kings who ruled from Terqa. While this may still be the case (e.g., as it had been for the kings of Mari), it has been shown by A. H. Podany (1991–1993a) that the term occurs in texts that were not excavated at Terqa: accordingly, the connection between the so-called Khana texts and Terqa cannot be taken for granted.

The site is largely covered by a modern settlement, so that only about one fourth of the tell is available for excavation. The modern site has become the center of a large and populous *nahiya* (township), so that current references to it tend to omit the qualification of "tell," which is found regularly in the early literature. The site is a few kilometers south of the confluence of the Khabur River with the Euphrates, and as such it controlled the traffic on the waterways, including the canals that flowed southward toward Mari in the narrow agricultural corridor called *ah Purattim* in antiquity and *zôr* today. It is also likely that Terqa was the starting point for caravans to Tadmor (Palmyra) and the Orontes River basin.

An intensive survey conducted around Terqa by Kay Simpson (1983) has produced evidence of only a handful of Bronze Age sites, although it is known from ancient texts that many existed. The likely explanation is that these settlements were abandoned before they could develop any sizable depositional accumulation. As a result, they came to be covered by the alluvium (probably 3 m deep in historical times) and are thus altogether invisible to a regular surface survey.

History of Excavations. The first published cuneiform document originating from Syria was a text mentioning Terqa, and it had probably been found there. Because several other tablets of the same type had come to light, and because their provenance could be linked to the site of Tell Ashara, two French philologists, François Thureau-Dangin and Paul Dhorme decided to start a trial excavation there in 1923. No tablets were found during these excavations.

In 1974, Theresa Howard-Carter secured a permit from the Syrian government on behalf of Johns Hopkins University to conduct some preliminary work at the site, which was followed by a ten-day season in 1975 under the direction of Delbert Hillers. This is considered the first season. In 1976 Giorgio Buccellati and Marilyn Kelly-Buccellati assumed the direction of the excavations on behalf of the International Institute for Mesopotamian Area Studies and the University of California and California State University at Los Angeles. This was the second season and the beginning of the Joint Expedition to Terqa (which other institutions later joined). They directed the project until the tenth season, in 1984, when the field director was Daniela Buia. Beginning with the eleventh season, in 1985, Olivier Rouault became field director, and in 1989, the permit for the excavations was turned over to him; five more seasons of excavations followed. The initial long-term research strategy was to identify as many levels of the Khana period as possible and to study their relationship to earlier strata.

Occupational History. Because settlement in the lower levels of the *zôr* did not begin until the dawn of historical periods, it is not surprising that there should be no prehistoric levels at Terqa. The nearby site of Qraya, some 5 km (3 mi.) to the north, was settled in the late Proto-literate period and then abandoned for some time: this suggests that there was a shift in settlement from Qraya to Terqa at the beginning of the third millennium. The best evidence of early third-millennium occupation comes from the construction of the first phase of the defensive system, the inner wall, which dates to about 2900 BCE; the subsequent two phases were built about one century after each other. The city walls remained in use until the middle of the second millennium BCE, with evidence of local repairs in later periods. In areas B and J, evidence was found dating to late Early Dynastic III and even the Sargonic period. A sounding in area K proved to be the most promising for the late third millennium.

The end of the third millennium (known in the terminology of Mari as the period of the *Shakkanakkus*) is attested primarily from the lower strata in area F, where an extensive administrative complex has been uncovered. [*See* Mari.] The building shows a stratigraphic continuity with the period of the Amorite dynasties of Mari, which is otherwise known also from several finds from later contexts. [*See* Amorites.] It seems likely that Terqa was never independent but was always a provincial capital subject to the kingdom of

Mari. After the fall of Mari, it is generally assumed that Terqa became the capital of the kingdom of Khana—and if not then still one of its major urban centers (Podany, 1991–1993). The major strata from this period are in area C, where excavations have revealed a city quarter that includes the Temple of Ninkarrak and a domestic residential area, including what has been called the house of Puzurum from the individual most prominent in the tablets stored in one of the rooms. In area E, remains of a large structure were found that may correspond to a public building (the palace?).

Possible architectural remains dating to the early Mitanni period were found at the top of area E, but they are very limited at best. [*See* Mitanni.] (Rouault [1992] seems to date all of area E to this period, but from personal observations it appears that the level in which the Mitanni tablets were found is higher in elevation and farther south than most of the structures excavated earlier.) A good case has been made by Podany (1991–1993a) for stretching the period of "Khana" kings into the sixteenth century BCE and beyond (thus bridging the so-called dark ages), though their main center was in all probability no longer at Terqa. It still seems that, with the virtual abandonment of Terqa, an effective deurbanization took place in the region of the Middle Euphrates.

There is limited evidence of a first-millennium BCE occupation—graves (especially in the trenches of area MP) and meager sherd scatters embedded in wind-blown deposits (area E). There is, however, the mention of Sirqu (a later form of the name *Terqa*) in the Assyrian annals and a Middle Assyrian stela of Tukulti-Ninurta found on the surface in 1948. However, any sizable occupation of the site seems unlikely in these later periods either at Terqa or in the region (in spite of Podany's remarks): the few pertinent sites on the Middle Euphrates and the Khabur appear to be Middle Assyrian, and the Assyrian annals do not describe any real urban presence in the area. After a long period of abandonment, the site was reoccupied in medieval times as a specialized craft center for the manufacture of ceramics and glass objects. [*See* Glass.]

Major Architectural Remains. The city's defensive system consisted of three solid mud-brick walls, for a total width of about 20 m. Horizontal exposure was obtained only in area B, but several sections cut through the wall in the trenches of area MP indicate that the construction found there was most probably generalized throughout the site; the projected perimeter is estimated to have been some 1,800 m long. The inner wall (chronologically the first) is 5–6 m wide, with an apron of limestone boulders along the outer face: it must have served as a complete system, against both enemies and river flooding. The second wall (9–10 m wide) was built against the first one and had a girdle of limestone boulders embedded at its base. The third wall was 4–6.5 m wide and included an open space about 2 m wide, possibly a walkway within the defensive system. A wide moat encircled the outer wall.

An interesting feature of the administrative building in area F was a scribal installation—a place where it is presumed that a scribe would carry out his task. [*See* Scribes and Scribal Techniques.] A platform of baked bricks provided a clean surface on which to crouch; a jar placed next to the platform provided the supply of clay for making tablets; behind the platform was a bin that was probably used to store reference material; and baskets (like one found just outside the doorway) would have held tablets in current use. [*See* Writing Materials; Tablet.]

The Temple of Ninkarrak exhibits the same plan and dimensions as a temple of Kahat known from a cuneiform text. The layout of the temple follows a characteristic Mesopotamian plan, with a bent-axis approach, engaged columns, and rabbeted doorjambs. Only the base of the altar is preserved. A large service area (the circulation patterns are not well understood) was accessed through a small doorway from the long side of the large hall. The residential area on the other side of a street across from the temple shows no architectural particularities. [*See* Temples, *article on* Mesopotamian Temples.]

Epigraphy and Glyptics. Twenty-three tablets not found during regular excavations but generally known as Khana texts, and probably originating, in great part at least, at Terqa, are mostly legal contracts of various types (see Podany et al., 1991–1993). They share many characteristics of form and content (e.g., a punishment clause that calls for asphalt to be poured on the head of the transgressor). About two hundred tablets and fragments have been found in excavations. The best-known group is the small archive from Puzurum. Its stratigraphic setting is recorded in great detail: the texts had been scattered (rather than properly deposited) in a storage room with a mixture of household items. While the tablets were, for the most part, complete, their envelopes were mostly shattered into dozens of small pieces. The condition of the envelopes indicates that they had been broken before being placed in the room and thus the documents had lost any current value. Dated to about 1720 BCE, the texts are mostly contracts for the sale of land. Of the unpublished texts, the most interesting are those dated to the later periods because they expand what is known of the interaction between Terqa and outside controls, on the part of Babylon first and then the early kings of Mitanni. [*See* Babylon.]

The tablets found in the house of Puzurum were sealed by a number of witnesses, providing a well-dated collection of private seals in use by individuals at Terqa in about 1720 BCE. The style of the seals is characterized by the prominence of circular drill holes left as part of the pattern, the design of staffs, hats, and rosettes, in particular. The divinity is often shown seated on the left, with the resulting reversal of the action of the other figures who are shown as ap-

proaching the divinity. An Old Babylonian cylinder seal excavated in a tomb in area F identifies the seal owner as Belum.

Artifacts and Other Finds. Significant results have been drawn from botanical and zoological analysis. [*See* Paleobotany; Paleozoology.] Some cloves were found in a vessel resting on the floor of a pantry next to the storage room holding Puzurum's archive. Because cloves were grown only in the Far East, this is the first evidence for trade with that remote area. The study of animal bone remains has shown that culling patterns were not in keeping with what would be expected of full-time, specialized pastoralists, leading to the suggestion that herding practices were those of local farmers who doubled as herders, as is still the case in the area (Galvin, 1981). [*See* Pastoral Nomadism; Paleopathology.]

Next to the altar in the Temple of Ninkarrak, a small dog was excavated; a dog is the animal associated with this goddess, who represents good health. In a corner of this same cella, 6,637 beads were clustered tightly in what must have been a cloth bag that had completely disintegrated. The beads were of semiprecious stones, including lapis, carnelian, agate, and chalcedony. Seven Egyptian scarabs were part of this hoard.

The ceramics from the house of Puzurum and the Temple of Ninkarrak are dated by the tablets found on associated floors in the Khana period (as opposed to a proposed redating by Tubb [1980]). The stratified ceramic sequence from the Mari period to the Khana period in area F has been studied by Buia (1993). A clay plaque from area F came from the same mold as a plaque found at Mari.

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TEXTILES. [*This entry surveys textile remains and the development of the technologies used to produce them. It is chronologically divided into two articles:* Textiles of the Neolithic through Iron Ages *and* Textiles in the Classical Period. *For a related discussion, see also* Clothing.]

Textiles of the Neolithic through Iron Ages

The production of cloth and clothing came to occupy a large portion of women's labor during the Neolithic period, an amount sustained until machine-made cloth became available in the late eighteenth century. Between 6000 and 2000 BCE, textile technology developed largely independently in southeast Europe and the Near East. Egypt went its own way after 4500 BCE. During the second millennium BCE, trade began to move both cloth and technology around in great volume, and men became weavers also, for profit or prestige. The traditions become more difficult to separate after that.

The earliest proof of weaving in the Old World consists of a plain-weave fragment from Çayönü, Turkey, and cloth impressions on two clay balls from Jarmo in northeast Iraq, both dated about 7000 BCE. [*See* Çayönü; Jarmo.] One impression shows a balanced plain weave, the other a 2/2 basket weave (over 2, under 2, each way)—indicating that variety in techniques was already used by weavers. The variety, fineness, and evenness apparent in these impressions reveal extreme skill: weaving is clearly older than these examples. (European evidence for twisted fiber thread comes from representations of Venus figures (Lespugne, France, and Gagarino, Russia) of the Gravettian culture, before 20,000 BCE; and the Lascaux caves in France have preserved a complex Magdalenian fiber cord from 15,000 BCE.) The first woven matting is also from Jarmo, although mat weaving is technically simpler than textile weaving. The latter requires a tension device (a loom) to compensate for the lack of stiffness in the component materials.

TEXTILES: Neolithic through Iron Ages. *Child's tunic from first-dynasty Egypt.* This is the earliest preserved garment from Egypt. (Courtesy ASOR Archives)

Two Early Neolithic groups of cloth are known, in addition to more and more impressions on clay once pottery comes into use. In about 6500 BCE, several linen textiles were left in a cave in the Judean Desert at Naḥal Ḥemar (Schick, 1986). [*See* Judean Desert Caves.] None are in "true" weave, although the twining and netting techniques display skill and variety. Most remarkable is a bag-shaped ornamental net hung from a band decorated with a stone bead—apparently a hat (if so, it is the earliest preserved garment). At Çatal Höyük in Turkey, from about 6000 BCE, several textiles, now carbonized, were placed beneath a house floor (Burnham, 1965). They include plain weave and two kinds of twining; three types of selvedge, a fringe, and a rolled and whipped edge; wide cloth and narrow tapes; and coarse, fine, and very open textures. The evenness and the preponderance of true weave over twining suggest that heddles (which mechanically separate the warp for each pass of the weft) had already been invented. Laboratory analysis showed the samples to be flax—probably collected wild because no evidence of domestic flax was found at the site. [*See* Çatal Höyük.]

Fibers. All analyzed fibers earlier than the Late Neolithic period are of plant bast—in the Near East, generally flax (linen). Flax is native to the shores of the Mediterranean and specifically to the Near East where there is sufficient water. It was probably domesticated soon after 6000 BCE, reaching Egypt by 4500 BCE, when the first crude linen cloth is found there.

Although sheep were domesticated much earlier for their meat, zoological evidence suggests they had little or no usable wool at first, the wild coat being more like that of a deer (Barber, 1991, pp. 20–30). By 4000 BCE, domestic breeding had produced woolier coats, suggested by a clay figurine from Tepe Sarab in the Zagros and a shift in slaughter patterns to maintain flocks for wool. This wool molted and was pulled rather than clipped. By early Sumerian times, texts indicate several varieties of woolly and nonwoolly sheep. The Egyptians, however, continued until classical times to raise hairy, not woolly, sheep and to manufacture linen chiefly. Clipped goat hair was used in both regions for coarse cloth like sacking. [*See* Sheep and Goats.]

Hemp *(Cannabis Sativa),* used in northern and central Eurasia since at least 5000 BCE, and cotton, domesticated in India before 3000 BCE, seem not to have reached Mesopotamia until just after 1000 BCE and the Aegean in the fifth and sixth centuries BCE. Silk, domesticated in China in the

third millennium, is known to have reached Europe by about 650 BCE and may have filtered into the Near East at about the same time.

Spinning. Mesopotamians spun with the whorl uppermost on the spindle, as can be seen on cylinder-seal impressions and a few preserved spindles. Short fibers could be flicked into the thread from a pile on the ground, but long flax requires a distaff. Possible distaffs were found with spindles at Kish (late third millennium). [*See* Kish.] Spindles sometimes have two whorls.

Egyptian women dropped their spindle whorl uppermost after rolling it down the right thigh, giving the thread an S-twist that reinforced the natural twist in the linen. Fibers stripped manually from flax stalks were first spliced end to end; the resulting thread was run through a loop in the bottom of a special wetting bowl to soften it. Spinners (who merely added twist) thus pulled already formed thread to their spindles and could manage two spindles and two to four threads at once.

Europeans and Anatolians flicked and dropped their spindle whorl downward, paying out fibers into the (Z-twisted) thread with the other hand. Wool could be held in the hand, but long flax required either a distaff or preformed yarn. Bowls with internal loops have been found at several Minoan sites (e.g., Myrtos, Drakones; See Barber, 1991, pp. 73–76). Gold, silver, and copper spindles have turned up in the tombs of wealthy women at Alaca Höyük and other mid-third-millennium sites in Anatolia. Many wooden ones are known from Egypt, including one from a woman's grave at Abu Gurob: its whorl is at the bottom and its thread groove is in a "Z" instead of an "S" slant; it was locally made, but for a European wool spinner.

Looms. The horizontal ground loom was developed in Mesopotamia and the Levant: two parallel warp beams pegged out at any desired distance on the ground to stretch the warp. Bedouin and others still use this loom, which is depicted on a late fourth-millennium seal from Susa. On the seal a weaver squats at each side to pass the weft bobbin back and forth; blocks on both sides undoubtedly supported the heddle bar. A third person is apparently making a warp on a warp stand, seen in better perspective on another early seal. An early fourth-millennium Egyptian dish from Badari shows clearly the four pegs holding the warp beams, as well as three bars across the warp (shed, heddle, and beater bars?). Many Middle Kingdom depictions of textile work exist, invariably showing women weaving white linen on this loom. (Men wove mats, however.) What seem to be the major pieces of a narrow ground loom come from a fourth-millennium Judean cave, Nahal Mishmar, along with a considerable quantity of linen cloth. This loom type spread south from Mesopotamia to Egypt and eventually India.

Anatolia and southeast Europe, developed a very different loom, however, that spread northwest, the vertical warp-weighted loom, which was set up indoors rather than pegged outdoors. A few clay lumps that may have been loom weights were found at Çatal Höyük; but the craft quarters at the site have yet to be excavated. In about 5500 BCE, weights with all the earmarks of loom weights turn up in many Neolithic houses in what is modern Hungary; they then spread to the Aegean, to Switzerland (where elegantly patterned Neolithic cloth is preserved), and finally to Anatolia in the early third millennium (Early Bronze Age).

A third loom, the two-beam vertical loom, or tapestry loom, may have developed in the Caucasus and spread to Syria by the mid-third millennium. The Egyptians received it from the Syrians during either Hyksos times or Thutmosis III's Syrian campaigns (early fifteenth century BCE), when it is clearly depicted in Thutnofer's tomb at Thebes (with male weavers). This versatile loom was eventually taken to Rome during the empire and from there to other parts of Europe.

Card weaving, in which thin tablets with pierced corners replace heddles, also seems to have originated in the Caucasus. Impressions of tablet-woven fabric at Nalchik, north of the Caucasus, date to the early third millennium. Very small ivory tablets found at Susa (late third millennium) may have served this purpose. If the girdle of Rameses III, now in Liverpool, is indeed tablet woven, Egyptian weavers had become highly skilled in this method by the close of the Bronze Age.

Finally, the sprang technique uses a special plaiting frame. The technique reached Egypt from Europe sometime in the first millennium BCE.

Dyes. Evidence for dyes begins before 3000 BCE in Europe, Egypt, and perhaps the Levant. The simplest dyeing involves immersing the finished cloth or garment in a dye bath. Linen mummy wrappings from the first dynasty at Tarkhan were dyed brown, those from the fourth dynasty at Meidum were dyed red, and those from the twelfth dynasty were dyed yellow. To create patterning, the thread must be dyed before it is woven (or embroidered). To remain contrastive, however, the color must be relatively impervious to light and water. Only a few dyes are self-fixing, such as sea-snail purple (e.g., from Murex snails), indigo blue (obtained in Europe and the Near East from woad, a plant that was widespread but difficult to use), and kermes red (from a tiny lac insect related to the New World cochineal insect). These three dyes were in great demand, but they were also very difficult and/or costly to prepare. Murex and purpura snails were harvested off the coast of eastern Crete and the Levant, where shell heaps attest to their use from 2000 BCE onward. The Phoenicians were particularly famous for the "Tyrian" purple dye they produced. Varieties of kermes lived on the oak trees of southern Europe and a grass of Armenia. (Sargon II records looting much red cloth from Armenia in 714 BCE.)

Mordants (dye fixatives) seem to have been discovered in the early second millennium, perhaps by the Egyptians. That step opened the way to many other Near Eastern plant

dyes, such as reds from madder, henna, and safflower. An Assyrian "chemist's manual" contains a number of complicated recipes for dyes. The favorite mordant was (and is) alum, which the Mycenaeans seem to have imported from Cyprus, an important geological source. Eighth-century BCE dye works at Tell Beit Mirsim in Israel contained large vats of lime and potash for such purposes. [*See* Beit Mirsim, Tell.]

Felt. Mashing together the scaly surfaces of animal fibers like wool until they interlock inextricably produce felt. (Plant fibers and silk will not felt.) The first evidence of felting comes from third-millennium Anatolia (a rug) and Mesopotamia (pads and covers, mentioned in texts). Felt's real home, however, is the Eurasian steppes, where among nomadic herders it is still the main source of housing, clothing, bedding, and many utensils. It was probably invented on the steppes in the fourth or third millennium.

Patterned Cloth. Because cloth is so much better preserved in Egypt than anywhere else, Egypt must serve as the benchmark against which all other textile industries are measured—even though it was far from the leader in textile innovations. Its forte was fine white plain-weave linen—sometimes as fine as 200 threads per inch. Linen was a measure of wealth and was used for barter; it accompanied the dead to the next world in quantity, both as flat sheets and as clothing. A complete shirt from a first-dynasty tomb at Tarkhan—hemmed, fringed, and finely pleated for a close fit—was found inside out and had clearly been worn. The same weft-inlay technique used for fringes was used for weaver marks ("logos") and for white-on-white patterns of looped weft in the Middle Kingdom. (Bead nets worn over clothing account for the colored patterns seen in paintings.) In the New Kingdom, the Egyptians finally learned to use the tapestry technique (and the tapestry loom) from perhaps Syria. Heirloom tapestries from Thutmosis III and Amenhotep II in the tomb of Thutmosis IV show the initial stages in learning the technique. Tutankhamun's tapestry tunics and gloves a century later were produced with a highly sophisticated technique. An embroidered tunic with Tutankhamun's name is clearly Syrian work; perhaps a royal gift or made by resident aliens in the palace.

TEXTILES: Neolithic through Iron Ages. *Linen dress from a fifth-dynasty Egyptian tomb.* (Courtesy ASOR Archives)

Early Mesopotamian textiles are now scarce. An axe blade from Susa preserves a piece of fourth-millennium cloth woven with broad stripes of thick thread within a thinner ground weave. In the Death Pit at Ur (mid-third millennium), Leonard Woolley (1934, pp. 238–239) found some evanescent evidence of red cloth (especially on the bodices of the ladies in waiting), diagonally ribbed cloth (twill, or a tightly faced plain weave?), and cloth with long threads hanging down (the technique is unknown but reminiscent of tufted Sumerian skirts).

In the early second millennium, Assyrian women wove fancy cloth for profit, as we learn from their letters. Their husbands traded metals and textiles in Anatolia, and the women received the profits from the considerable variety of textiles they wore for the men to sell. Captive women, organized in palace workshops throughout Mesopotamia and Syria, wove fancy textiles for royal use and gift exchanges.

In the late third millennium, extremely expensive textiles from Ebla in Syria were renowned as far away as Ur, Kish, and Megiddo. The weft-faced weaves typical of Mesopotamian and Levantine finds had apparently led to true tapestry—a conclusion supported by the importation of tapestry technology into Egypt from Syria centuries later. Two fourteenth-century BCE finds (in Tutankhamun's tomb) of embroidery—otherwise unknown in Egypt—both with Syrian motifs, indicate that patterned embroidery also developed in Syria. Greek and Roman authors remark on Near Eastern embroidery.

Another expensively time-consuming textile, pile carpet, was in production before 2000 BCE in the Sumbar Valley, just east of the southern Caspian Sea, where women took to their graves several knives uniquely shaped for cutting pile. Representational and textual evidence for pile carpets in the second millennium also points toward this time and area for their origin. The earliest preserved pile carpets come from frozen tombs at Pazyryk and Bash Adar in the Altai Moun-

tains, in the mid-first millennium BCE. They are as sophisticated as any modern rug.

Anatolia presents the first twill cloth (the most easily mechanizable pattern): at Alişar in the late fourth millennium. The second comes from Georgia (Martkopi), in the third millennium. Meanwhile, the fire that destroyed Troy II in about 2600 BCE incinerated a palace loom. It was set up for weaving twill, to judge from the number, size, and positions of the loom weights, while numerous tiny gold beads in the fill indicate beaded decoration as well. Beading was popular in Anatolia and the Aegean: examples were found at Acemhöyük (Turkey) and Dendra (Greece) in the next millennium.

The scanty obtainable evidence shows the Caucasus area to have been highly innovative. Twill and tablet weaving began by the early third millennium, as did plaid (known from a site on the Fars River)—three textile techniques that turn up together in central Europe two thousand years later.

Aegean weavers worked in the European tradition of the warp-weighted loom and its technique of supplementary weft-float patterns, adding twill to the roster in the third millennium. After Troy II, shifts can be seen in Minoan loom-weight configurations, implying twill weaving. The late third-millennium village at Myrtos, in southern Crete, had a considerable amount of spinning, weaving, and dyeing equipment. A couple of centuries later, Egyptian nobles began copying in their tombs Minoan textile designs of such complexity and sophistication that the Myrtos weavers must already have been working toward this level. The exportation of ornate Aegean textiles to Egypt continued through the second millennium until about 1200 BCE. As with Mesopotamian and Syrian textiles, only a careful analysis of the available representational art in terms of what is known of the technology of weaving reveals what the typical patterns were. Except for rare examples no cloth has survived from earlier than the Roman period.

Later Developments. Accelerated trade in the East Mediterranean during the Late Bronze Age allowed fiber-artisans of one country (such as those who produced the wide array of textiles in Tutankhamun's tomb) to learn something of techniques developed elsewhere. But during the great migrations of 1200 BCE, whole populations moved, including the women who typically produced the cloth. Thus ill-fired, donut-shaped loom weights, a type associated in the Late Bronze Age with central Europe, turn up in Early Iron Age Palestine, for example, at Gezer and Tell Beit Mirsim, where entire shops equipped for weaving and dyeing have been excavated, and in Anatolia, at Gordion (see Sheffer, 1981; Albright, 1941–1943).

The fair preservation of textiles placed in Midas's tomb at Gordion and of a few pieces from the city itself (sacked a year or two year before in 690 BCE) shows us that Near Eastern cloth-making was by then quite sophisticated. The remains include felted woven and nonwoven wool, striping, weft-looping, weft-wrapping (soumak), warp-faced patterned bands (using complementary warps), and slit tapestry (Ellis, 1981). Of the famous Phrygian embroidery nothing had survived. This array of ornate textiles corresponds well to the clothing of Neo-Assyrian and Neo-Babylonian royalty sculpted on Iron Age monuments of Mesopotamia, where cloth itself has not survived. (The palace at Nineveh also contained stone thresholds, now in the British Museum, carved to look exactly like typical pile rugs, which we know were already being produced to the east; see above.)

East of Mesopotamia, the Persians too enjoyed fancy textiles, as can be seen on representations at Persepolis, but cloth itself has not survived (Petzel, 1987). Impressions on pottery from the Ferghana valley show that twill technique was known in that eastern Iranian outpost between 1100 and 400 BCE, while new finds in the Tarim basin from this same era indicate a Caucasian population using plaids, twills, slit tapestry, pile, and oblique plaiting. What of these were made locally and what imported from the west is not yet known.

Both Herodotus (1.203) and archaeologists agree that north and east of the Black Sea an entirely different technique was used to decorate fabric: painting designs onto it with color-fast dyes. Such a cloth was found in a tumulus at Kertch, in the Crimea, draped over a sarcophgus (Gertsiger, 1975). It consisted of at least six friezes of red and black mythological figures painted on buff ground, looking much like a Greek vase; the Greek lettering dates it to the fourth century BCE. Other cloths from the Crimean colonies include elaborate pictorial embroidery and pattern-woven bands.

Records and remarks concerning the woolen *peplos* or dress traditionally made each year by Athenian women for Athena suggest that the *peplos* looked much like the friezed cloth from Kertch. Using purple figures on a saffron ground, it depicted Athena and Zeus in the mythical battle of the gods and giants. After the Persian Wars, the city hired professional male tapestry weavers from the Near East to make a second, larger *peplos* every fourth year, in addition to the one woven yearly in older techniques by the women (Barber, 1992). The earliest patterned cloths to survive on Greek soil are a weft-looped linen tunic and its belt (with a supplementary warp pick-up pattern of lozenges and chevrons in colored wool on a white linen ground) from the Heroon at Lefkandi (Boeotia), about 1000 BCE (Barber, 1991); fragments of purple and white silks from the tomb of a relative of Alcibiades, about 400 BCE (Hundt, 1969); and a linen fragment embroidered in wrapped metallic thread showing lions inside a diaper pattern, from Koropi (Attica), about 420–350 BCE (Beckwith, 1954). This last piece foreshadows the metallic splendor of the Hellenistic textiles preserved in the royal Macedonian tomb at Vergina.

[*See also* Clothing.]

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Textiles in the Classical Period

Textile production occupied a central part of the work activity and consumer needs of people in all regions of the ancient Mediterranean basin. At the same time, images of the production of textiles were used commonly to represent various social relations, including "class" and gender.

Technologies of Production. The production of garments and other textiles from wool and flax required multiple steps. A passage from a third-century rabbinic text from Palestine describes this process with some accuracy: "How long did the first man labor and he could don one simple garment? Until he sheared and cleaned and combed and dyed and spun and wove and sewed. And after this he could wear the garment." (Tosefta *Ber.* 7.5). The process for wool production depended of course on the availability of wool. The shearing of wool from sheep was followed by a lengthy process during which thorns, thistles, mud, manure, and other dirt were removed from the knotted and tangled fleece. The fleece was then cleaned by hand, by washing it in warm water and cleansers and/or by beating it. The clean wool was then combed to separate its long and short fibers, to fluff them, and to arrange the wool, using a stationary or hand-held comb, into parallel strands in preparation for spinning. Wool was dyed either while it was still on the fleece or, more likely, after it was cleaned and combed. (The manufacture of dye was an industry in its own right.) Each of these steps might be performed by a separate artisan, worker, or shop. Wool was bought and sold at each of these various steps of production.

The preparation of flax also involved a lengthy process (see Pliny, *Natural History,* 19.16–18). Ripe flax stalks were picked and tied into bundles to dry, or they were dried in an oven. Once dry, the seeds were removed with a rippling comb. The retting process was begun by plunging the flax stalks into warm, stagnant water; the stalks were kept submerged by weights for several weeks, or until the stalks were fully soaked. The plant was then removed from the water and its inner fibers loosened from its outer bark and core by

pounding and beating the stalks with various types of mallets, blades, and combs. When the inner fibers were removed, they were divided into various qualities of softness, coarseness, and color and then combed in preparation for spinning.

Most textile products require fibers to be spun, although the felting of wool requires only that unspun fibers be meshed. Spinning in the classical period (Hellenistic, Roman, and Byzantine) was done primarily with a drop spindle, which is mentioned in the literature of the period. Spindles and spindle whorls have been discovered at most archaeological sites. As the most popular and most technologically advanced form of thread production in the Roman period, drop spinning works by drawing out and twisting a mass of raw fiber into a slender, strong thread. Schematically, the spinner begins by holding, at shoulder length, the spindle and whorl, which are attached to a mass of raw fiber. The spinner drops the spindle, which, as it twirls to the ground, pulls strands from the fiber mass to be twisted into thread. When the spindle hits the ground, the spinner pulls it up and winds the new thread around the rod. With the spindle at shoulder height, the process is repeated, and thread is produced that is roughly the length measured from the spinner's shoulders to the ground. The spindle whorl facilitates this process by adding weight and momentum to the spindle, thus producing a better tension and twist in the yarn or thread. The production of thread was slow and tedious and constituted the most labor intensive of the manufacturing phases of textiles. Thread and yarn were spun into various weights and thicknesses for use in rope making, braiding, crocheting, netting, and weaving (warp and weft threads).

Weaving was done on one of several types of loom in the Hellenistic, Roman, and Byzantine periods. The warp-weighted loom was constructed of two parallel sidebars connected at the top by a crossbeam. From this beam were hung vertical warp threads affixed to loom weights. The loom weights provided the tension that held the warp threads steady as the heddle was moved back and forth and the weft threads inserted. The evidence for warp-weighted looms in the archaeological record is these weights, made in sets of clay or stone. The slow reduction in number and then disappearance of warp weights from certain excavation levels allows the dating of the development of the new technology, the two-beam loom, to the mid-first century–late second century CE, depending on the region. Although invisible archaeologically, the new two-beam loom is depicted artistically. This new technology eliminated warp weights and stretched the warp from a top crossbeam to a bottom crossbeam. By most accounts, this loom produced better cloth more efficiently and with greater comfort for the weaver. Its web was worked from the bottom up, hence the weaver(s) could sit rather than stand through the long hours required to produce most woven items. Another development in weaving technology, dated to third-century Syria, was a horizontal loom that enabled the weaver to produce more intricate kinds of cloth.

Once woven, the cloth might be finished by fulling or bleaching it. This process involved additional washing in a detergent (such as soapwort) to remove the grease and dirt that had adhered during spinning and weaving. The cloth could be brushed and teased to raise the nap; linen might be bleached with sulphur; and wool cloth might be rubbed with fuller's clay to bring out the dye's color. (Cloth might be dyed or redyed even after it was worn to refresh and restore faded color. Linen and cotton fabrics were dyed after spinning and less regularly than woolen ones.) As a final gesture of care, cloth could be smoothed on a cloth-pressing mechanism, as depicted in the painting of Hypsaeus at Pompeii. Cloth could also be smoothed with stones, rods, or wooden blocks.

Both archaeological excavation and the literary sources indicate that wool and linen were the most popular types of cloth. In smaller quantities, silk, cotton, metallic threads, and even asbestos and hemp were manufactured into garments and household goods.

Social Organization and Textile Distribution. Although the technologies of production are fairly straightforward, reconstructing the social organization of production is less reliable. Most accounts of textile production in the Hellenistic, Roman, and Byzantine periods rely on the conclusions of A. H. M. Jones (1960), but with many modifications. Several issues must be considered: the gender division of labor in textile production; the organization of the "industry" throughout the social strata of free workers and slaves, wage laborers, and nonwage laborers; and how textiles and garments were sold and bought, in terms of local and long-distance trade networks. Because the organization of textile production awaits a major reassessment, this discussion reflects current uncertainties and will necessarily efface regional differences.

Traditionally, the various steps in the production of textiles were assigned specifically by gender, enforcing a culturally desirable division of labor. According to Jones (1960) women did spinning in their spare time, while men performed most of the other related tasks. In other accounts, however, both the spinning and weaving of wool were seen as female occupations. In part, these assessments are complicated by the range of social meanings (see below) assigned to textile work and the ensuing difficulty of using certain pieces of evidence to reconstruct history. Newer research indicates that many of the steps in textile production were carried out by men and women (Moeller, 1976; Peskowitz, 1993). This reflects tendencies for entire families to engage in the same trade. Inscriptions and literary references suggest, however, that, despite the participation of both men

and women in certain trades, gender divisions existed with regard to the fibers worked on (highly valued flax was assigned to men, while wool, with its lower value, was assigned to women workers) and the types of looms with which male and female weavers were associated. This gender division in weaving technology assigned the newer and better two-beam loom to men, and the older and less efficient warp-weighted loom to women.

In Rome and elsewhere, ideological written sources express a preference that clothing be produced at home by the female family members (see Suetonius, *De Vita Caesarium* 2). More generally, the production of textiles was considered to be an "industry" without a high degree of organization or centralization—that is, one that relied on home production. This view has been challenged Walter O. Moeller (1976), who argues for a highly organized textile industry at Pompeii. The debate continues. Recent studies of towns in Roman Egypt suggest that roughly 25 percent of the working population engaged in the production of textiles. Furthermore, evidence from many regions suggests that most ordinary clothing was purchased ready-made, by people at all levels of society. Another consumer of textiles and garments was armies, and in the fourth century Diocletian organized slaves to produce military requisitions.

The long-distance trade of textiles seems to have been restricted largely to high-value items produced at specific well-known centers. There is some evidence, however, to support the possibility of long-distance trade in nonluxury products and even in roughly made "work" clothing. While many questions remain, the stereotype of household self-sufficiency in which women and girls produced family clothing has been replaced by a scenario of local or regional self-sufficiency in which all the stages in textile production and the trade of textiles were part of the money economy.

Social Significance. Spinners and weavers appear in literary and legal texts and burial dedications and iconographically on funerary monuments. The references and images reflect sexual differences in ancient societies and convey a multitude of often contradictory meanings: referring to literary figures, such as Lucretia, spinners and weavers symbolized the sexual chastity, marital loyalty, domesticity, and industriousness expected of elite matrons (Livy, *History* [*Ad Urbe Conditia*] 1.57; see also Mishnah *Ket.* 5.5; and letter 107, Jerome to Laeta, "Instruction for Rearing a Virgin Christian Daughter"); when referring to lower-class women, they were accusations of promiscuity and sexual transgression. Male spinners and weavers were described as men whose masculinity was not normative; ancient authors such as Clement of Alexandria accused male textile workers of effeminacy (*Paedagogus* 2.11–12). More broadly, images of spinning and weaving were associated in the Roman Empire with the battle against cultural decadence (Suetonius, *De Vita Caesarium, Divus Augustus* 64). Imperial artwork such as the frieze of Minerva on Domitian's Forum Transitorium deploys symbols of textile production as metaphors and exempla of imperial values and morality (D'Ambra, 1993).

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THAJ, the largest archaeological site of the Hellenistic, Parthian, and early Sasanian period in northeastern Arabia, located at 26°52.5′ N, 48°42.9′ E in Wadi al-Miyah, about 90 km (56 mi.) from the Saudi Arabian port of Jubayl. Although knowledge of the site's existence dates to the mid-nineteenth century CE, Thaj was not visited by a European until 1911, when W. H. I. Shakespear, a military officer serving in the diplomatic post of political agent in Kuwait for the Government of India, copied two inscribed grave stelae he found on the surface of the site. In 1942, H. R. P. Dickson and V. P. Dickson visited Thaj, but it was only during the early 1960s that a number of surface finds made by ARAMCO (Arabian American Oil Company) oilmen and their families were communicated to scholars in Europe and America, arousing serious interest in the site. In particular, several dozen inscriptions in epigraphic South Arabian script, but written in a local, North Arabian language (the so-called Hasaitic inscriptions, after the name *al-Hasa,* a traditional Arabic designation for this region), were published at this time. Visits by members of the Danish expeditions working in Kuwait and Bahrain led ultimately to a limited sounding in 1968. In 1977 the site was visited by a survey

team directed by D. T. Potts and C. C. Lamberg-Karlovsky from Harvard University working together with the Department of Antiquities in Riyadh, and in 1982 and 1983 a small team directed by Potts from the Freie Universität Berlin carried out a survey and soundings at the site, again in cooperation with a team from Riyadh. A Saudi Arabian team continued this work in 1984.

Thaj is located to the south of a large *sabkha,* or salt flat. It consists of a walled area as well as an extramural area of occupation and is ringed on three sides by more than five hundred burial mounds. The city wall of Thaj is shaped like an irregular parallelogram. It is built entirely of cut stone bonded with gray gypsum plaster. On average, the city wall is 4.5 m thick, and extends for no fewer than 2,535 m. A series of projecting turrets and buttresses is preserved on the eastern and southern sides of the enclosure. Within this area lanes and streets separate a dense concentration of domestic houses. German excavations in one large building in 1983 revealed a sequence of four periods of occupation. Periods I and II predate the construction of the city wall. Both the period II and III levels contained Mesopotamian eggshell ware, a fineware produced during the Seleucid and Parthian periods (e.g., at Seleucia on the Tigris). Period III contained sherds of Greek black-glazed bowls with rouletting and stamped palmettes on the interior, probably of a third-century BCE date. Identical sherds were recovered in association with the foundations of the southwestern corner tower of the city wall, where a separate excavation took place; they suggest that period III in the city is contemporary with the construction of the city wall. Period IV was represented by the remains of a massive building and contained, apart from the local wares that ran throughout the entire sequence at the site, a number of bowl shapes in apparent imitation of Roman terra sigillata that probably do not predate the first century CE. The fact that a large number of coins, typical of Thaj and other northeast Arabian sites (debased imitation Alexanders), has been found at the largely first century CE site of ed-Dur in the United Arab Emirates also suggests that Thaj was still inhabited at this time. Moreover, the discovery of three fourth-century CE Roman coins on the surface of Thaj suggests that the site was occupied into the Early Sasanian period. This would be confirmed, moreover, by the recent identification on the site of a stone ashlar with several crosses cut into it, almost certainly from a Nestorian church or grave. In the context of the history of Nestorian Christianity in the Gulf, the find can hardly predate the fourth century CE.

As the largest Seleucid period site in eastern Arabia, Thaj was certainly a town of importance. The massive scale of its fortification wall suggests a prosperous community, and many scholars have tended to identify Thaj with the Arabian emporium of Gerrha, whose inhabitants, according to Strabo (16.4.19) were among Arabia's richest citizens. Agatharchides' reference to Gerrhaeans at Petra receives some slight confirmation by the 1968 discovery in the Danish sounding of a diagnostic piece of painted Nabatean fineware datable to about 75 BCE–0 CE. Two copper coins of Aretas IV, dating to 5/4 BCE and 38/39 CE, have also been found on the surface at Thaj.

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D. T. POTTS

THAYER, JOSEPH HENRY (1828–1901), leading scholar of New Testament and Greek who actively promoted American involvement in Syro-Palestinian archaeology. Thayer was a staunch supporter of the short-lived American Palestine Exploration Society. In 1895, as president of the Society of Biblical Literature (SBL) he challenged it to work to establish an American center for oriental studies in Palestine. Five years later, through his labors with a committee of four other scholars, the American School of Oriental Research was founded, to be based in Jerusalem. Thayer served as the organization's first chairman until his death. He secured the support of twenty-one colleges, universities, and seminaries for the fledgling institution, which was also endorsed by the SBL, the American Oriental Society, and the American Institute of Archaeology. Thayer held memberships in the first two, as well as in the Archaeological Institute of America. He was elected a fellow of the American Academy of Arts and Sciences in 1887.

Thayer is perhaps best known for his work in the field of New Testament studies and philology. He translated, edited, and revised Carl L. W. Grimm's *A Greek-English Lexicon of the New Testament* (New York, 1887), translated two Greek grammars into English, and wrote extensively on biblical literature and language. Thayer was also on the translation committee for the Revised Standard Version of the New Testament. He studied at Harvard College and Andover Theological Seminary, and received from Harvard, Yale, and Dublin universities a Master of Arts, Doctor of Sacred Theology, and Litt. D, respectively. Thayer was Professor of Sacred Scripture at Andover Theological Sem-

inary from 1864 to 1882 and was appointed Bussey Professor of New Testament Criticism and Interpretation in 1884, a position he held until his retirement in 1900, the year before his death.

[*See also* American Schools of Oriental Research; *and* Society of Biblical Literature.]

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CHARLES E. CARTER

THEATERS. Two separate areas can be distinguished in the history of the eastern Mediterranean basin during the classical period: Asia Minor (western Anatolia) and Egypt; and Syria-Palestine and Arabia. Asia Minor and Egypt were exposed to Greek culture for several hundred years and the first theaters there were erected as early as the fourth to third centuries BCE. However, in the area of Syria-Palestine and Arabia the process of hellenization was not so well developed and the earliest theaters were erected only at the end of the first century BCE.

Theaters in Anatolia. Western Anatolia and especially the region of Ionia, was already a target for Greek settlement in the twelfth and eleventh centuries BCE. The first cities established there, as early as the sixth century BCE, became centers of Greek creativity.

It was the meeting between Greek culture and the diverse local cultures that created Hellenistic culture. The process preceded the success of Alexander the Great, but the far-reaching changes that followed him in Anatolia in the fourth and third centuries BCE hastened the process. Rome's domination of Anatolia in the second century BCE did not culturally change its image. Under conditions of peace and economic prosperity, Hellenistic culture continued to flower and flourish in the first centuries CE as well.

The tens of theaters known in Anatolia were erected over a long period, from the latter part of the fourth century BCE to the second century CE. Their ground plans, designs, and methods of construction provide evidence of the region's rich and eclectic culture.

Typology and architecture: Hellenistic period. The first theaters in Anatolia (at Miletus, Ephesus, Pergamon, and Priene) were erected in the latter part of the fourth and over the course of the third centuries BCE. Those at Miletus and Ephesus were expanded and altered most significantly during the Roman period, whereas the theater at Priene was preserved exceptionally well without Roman additions. It represents the definitive, final stage in the process of Greek theater design, and hence its great importance.

The Priene theater is built of local stone on a natural slope at the center of the city, extending over an area of two insulae. Its auditorium (the *koilon*) extends over half the orchestra; topographic restraints determined its U-shaped ground plan. The two *paradoi* (sg., *parados,* an open passage between the *koilon* and the stage structure [*skene*] in the Greek theater) that run between the auditorium's supporting walls *(analemmata)* and the skene lead to the round orchestra. The skene is two floors high. Its facade faces the auditorium. The stage (the *logeion*) rests on a row of pillars arranged parallel to the wall of the skene.

Typology and architecture: Roman period. Theaters in Anatolia in the Roman period can be subdivided into three distinct types: Hellenistic theaters enlarged and significantly altered in the first centuries CE; new theaters erected in the first and second centuries CE with Roman construction methods but with plans that imitate those of Hellenistic theaters; and theaters whose architecture is clearly Roman. The first group is characterized by additional construction in the auditorium (the cavea) area. In the theaters at Miletus and Ephesus the auditorium was doubled and even tripled. The expansion at Ephesus, for example, made it the largest theater in the ancient world, with more than twenty-four thousand seats. Additional changes advanced the stage area toward the auditorium by reducing the size of the orchestra. The facade of the skene facing the orchestra was decorated with a set of columns and an entablature, and statues were placed in the niches (the future *scaena frons* characteristic of Roman theaters). In the course of the second and third centuries CE, the orchestra in many theaters was adapted to serve as the arena of an amphitheater. The bottom rows of seats were removed and a high protective wall was erected around the orchestra, making it possible to hold gladitorial combats there.

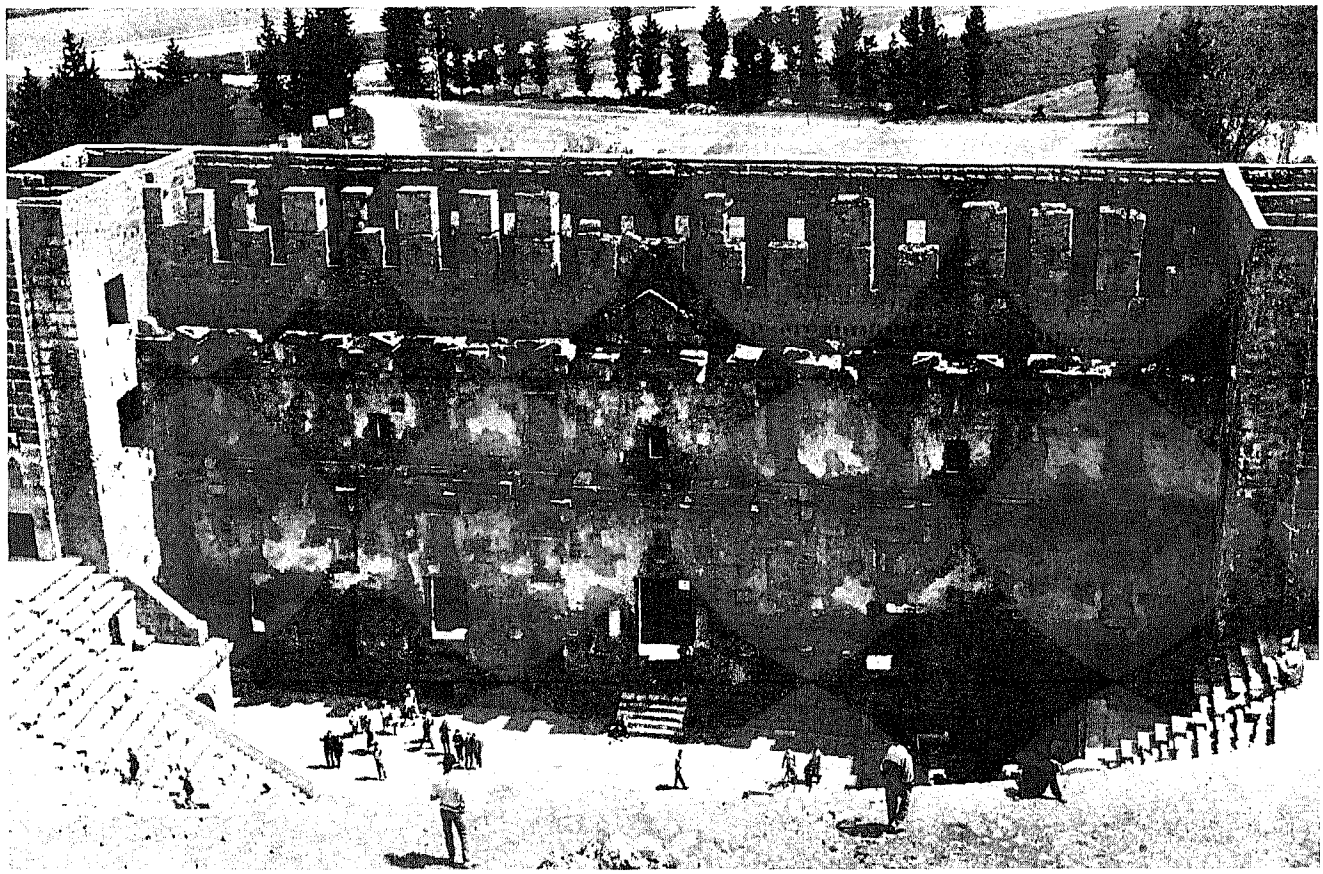
The second group is exceptional and especially interesting because it is unparalleled in other regions of the Roman Empire. In cities such as Side or Perge (Pamphylia) or Myra (Lycia), theaters were erected in the second century CE whose plan copied that of Hellenistic theaters—the auditorium occupied more than half of the orchestra circle. The latter was round, and the skene structure was separated from the auditorium. These hallmarks of Hellenistic theaters were, however, constructed using engineering-architectural solutions that are undeniably Roman. Most prominent are the artificial slopes created to hold the auditorium. The

slopes were created by a complex system of radial passageways built of sloping barrel vaults (vomitoria) and continuous corridors, semicircular in shape, covered with barrel vaults *(ambulacra)*.

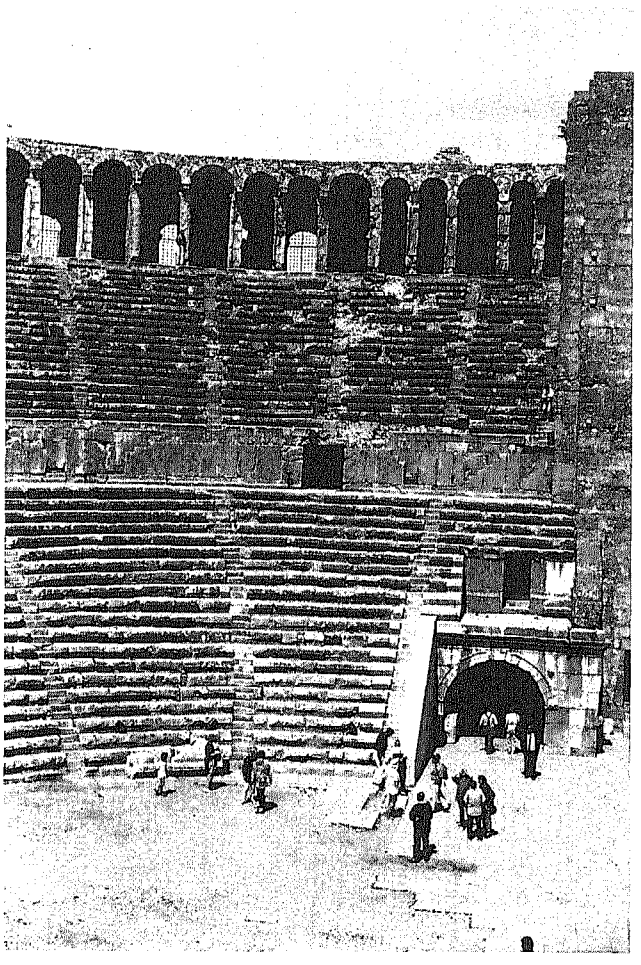
Only a few clearly Roman theaters were erected in Anatolia, all in the second century CE. The best known is the theater at Aspendos in Pamphylia, erected between 161 and 180 CE and planned by the architect Zeno, son of Theodorus. It is the most complete and best-preserved Roman theater in the roman world. It was located in the eastern sector of the city, at the foot of the acropolis; the wings of its stage (versurae) joined its semicircular auditorium to the stage structure (the scaena) (see figure 1). There were staircases and rooms in the *versurae*. Above the two passageways leading out of the theater, directly to the orchestra *(aditus maximi)*, were the seats of honor (the *tribunalia*). Parallel to these, two additional passageways (itinera *versurarum*) led from the wings of the stage to the stage itself *(pulpitum)*. This latter component is the only one that did not survive. The stage structure's facade (the *scaenae frons*) is preserved to its original height and, with the upper end of the auditorium, forms one continuous horizontal line. Around the top of the auditorium, at its upper level, a covered passageway (the porticus) is also completely preserved. (see figure 2).

Few of the original decorations belonging to the *scaenae frons* have survived (five entrances, and not the usual three, led to the stage itself). The Aspendos theater is the only one in the ancient world whose corbels are preserved in their full circumference—from the stage to the length of the auditorium's semicircular wall.

Theaters in Syria-Palestine and the Provincia Arabia. Although the region had been exposed to classical culture as early as the latter part of the fifth century BCE, and it had been directly ruled by the Hellenistic kingdoms from the beginning of the fourth century BCE, the first theater in the region, at Caesarea, was not erected until 20–10 BCE. Thus far, twelve theaters have been found west of the Jordan River: at Sepphoris, Dor, Legio, Beth-Shean (two theaters), Shumi (Shuni), Caesarea, Sebaste, Shechem, Antipatris, Jericho, and Elusa; east of the river, eighteen theaters have been found at Sahr, Gadara/Umm Qeis (two), Philippopolis, Qanawat/Canatha, Abila, Adraa, Bosra, Pella,



THEATERS. Figure 1. *Theater at Aspendos, Pamphylia.* General view toward the *scaenae frons* and the two *versurae*. The *pulpitum* is missing. Second half of the second century CE. (Photograph by M. Luz; courtesy A. Segal)



THEATERS. Figure 2. *Theater at Aspendos, Pamphylia.* Partial view of the orchestra, the *cavea*, the *porticus*, and the *aditus maximus*. Note one of the *tribunalia* (seats of honor) located above the *aditus maximus*. (Photograph by M. Luz; courtesy A. Segal)

Hammath-Gader, Birketein, Gerasa/Jerash (two), Philadelphia/Amman (two), and Petra (two) and in Wadi Sabra.

Chronological/geographical framework. Three theaters were erected in Herod the Great's kingdom (37–4 BCE): at Caesarea, in Jerusalem, and in Jericho. A fourth was presumably initiated by his son Antipas at Sepphoris. The theater at Caesarea was part of a very impressive urban complex intended to symbolize the Hellenistic character and spirit of Herod's kingdom. The theater in Jerusalem has not yet been located, but the theater in Jericho was built near the winter palace and was part of a complex that also included a hippodrome and, apparently, a gymnasium. The Herodian theaters were not intended to disseminate the culture of the classical theater to a new audience. The content and language of the Greek theater at that time were foreign to most of the Judean kingdom's population.

Between the latter part of the first century BCE and the first century CE, five theaters were erected in the Nabatean realm: at Sahr (Trachonitis), Elusa (the Negev), two at Petra (Edom), and in Wadi Sabra, near Petra. The theater at Sahr is part of a sanctuary, as is the theater in Wadi Sabra, whereas at Elusa it is in an urban context. The large theater at Petra lies at the very heart of the necropolis, while the small one is in the city itself. There is no knowing what the specific functions of the Nabatean theaters were. It may be that, like the Herodian examples, they were built to demonstrate a political-cultural imperative; however, it is also possible that, at least in part, they served the need to worship in general and to worship the dead in particular.

The first theaters in the hellenized cities were erected in the latter part of the first century CE and the beginning of the second—one hundred years after the Herodian theater was built at Caesarea. Most of these theaters were erected on the initiative of cities and funded by them. The first built in this period is the South Theater at Gerasa (92 CE), erected near the Temple of Zeus and part of the city's early sanctuary. The theaters at Pella and Bosra were erected subsequently, the latter at about the time it became the capital of the Provincia Arabia (106 CE). Hence, it may be that the initiative for its construction was not municipal-local but governmental or provincial.

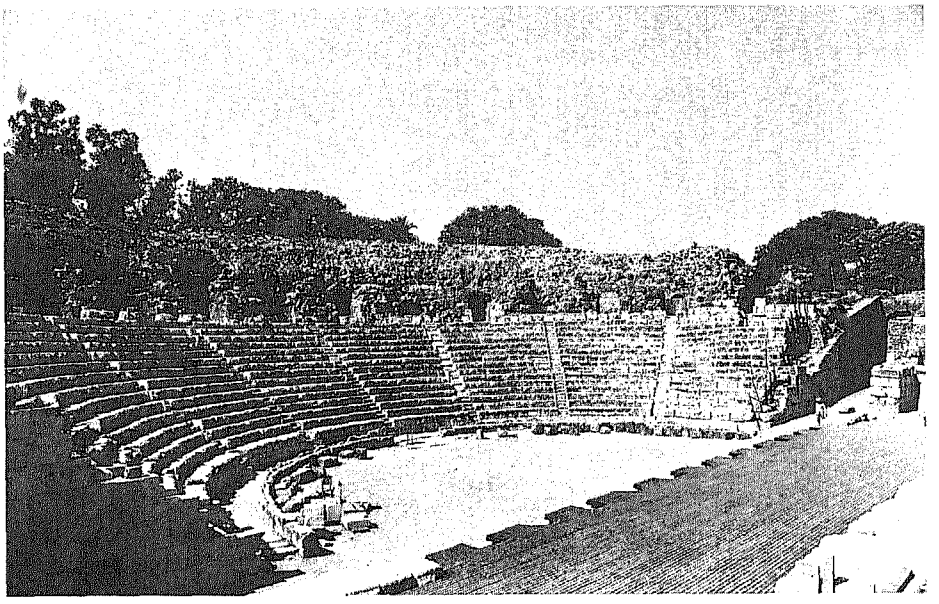
At the beginning of the second century CE, the cities of Judea (Judah) and the Provincia Arabia began to flourish. In the days of the Antonine emperors theaters were erected on municipal initiative for local audiences: two in Philadelphia, the North Theater in Gerasa, and a theater each at Canatha and Shechem.

Most of the theaters in Palestine and in the Provincia Arabia were constructed in the latter part of the second century CE and the first half of the third. The region's cities reached the height of their prosperity during the Severan dynasty (193–235). In this span of time, theaters were erected at Beth-Shean (two) and at Sebaste, Dor, Hammath-Gader, and Shumi (Shuni) and in Transjordan at Gadara (two), Abila, and Birketein, near Gerasa (see figure 3).

The Herodian theaters did not reflect the true cultural needs of most of Judea's population and were a foreign implant on its landscape. This also seems to have been the case in the Nabatean realm, where the theaters served as the architectural framework for mass gatherings for purposes of worship, and apparently for necrolatry.

On the other hand, the theaters erected by the Hellenistic cities were mass-amusement installations that provided entertainment of the simplest sort. A check of the historical and literary sources, including Talmudic ones, verifies that theaters, first and foremost, served an audience of a hellenized Oriental cultural complexion that was satisfied with presentations of mime and the like. It is reasonable to assume that it never saw a tragedy or comedy.

Typology and architecture. The thirty theaters known in the region can be divided into two distinct groups: urban and extraurban (located in sancturaries) theaters. Urban



THEATERS. Figure 3. *Theater at Beth-Shean.* General view from the *pulpitum* toward the orchestra and the *cavea.* (Photograph by S. Hashman; courtesy A. Segal)

theaters were built for the citizenry, whereas those built outside the cities were intended to serve the pilgrims visiting the various worship compounds. Most of the urban theaters were erected without considering the city's street network—the site was generally selected for topographic reasons, for example, at Beth-Shean, Sepphoris, Sebaste, and Gadara. On the other hand, the North Theater at Gerasa is a fine example of a theater carefully integrated into the city's street network. In plan the theaters in the region are Roman and not Hellenistic. Hence, their orchestra is a semicircle rather than a circle and their seating, which partially rests on an artificial slope, does not extend beyond the orchestra semicircle. At the same time, almost all the region's theaters were erected on the slopes of hills in order to avoid having to build artificial slopes. Hence, in most instances, the lower seating complex *(ima cavea)* is set on a natural slope and the upper one *(summa cavea)* rests on an artificial slope. In keeping with the topography and constraints of a site, the upper sections of the cavea were erected in various ways. In most cases, they were sloped, radial, barrel-vaulted passages (vomitoria) that intersected with a semicircular corridor roofed by a continuous barrel vault (ambulacrum). Sometimes the *summa cavea* rests on an artificial sloped mound of earth supported by two semicircular monocentric parallel walls covered by a continuous barrel vault or the entire seating complex rests on an artificial slope of pressed earth supported by two semicircular monocentric parallel walls whose interior space is filled with earth.

As was customary in Roman theaters, stage structure *(scaena)* and seating complex *(cavea)* were turned into a unit by means of the *versurae,* or "wings." Typically there were three entrances in the stage's facade. The stage *(pulpitum)* extended to the foot of the *scaenae frons,* which was separated from the orchestra by the *proscaenium.*

The region's theaters were built of local stone and only the *scaenae frons* decorations, including its three-dimensional sculpture, were marble. The construction and original architectural solutions of the thirty theaters thus far discovered are outstanding. The largest theater in Syria-Palestine, at Philadelphia, could hold about seven thousand spectators; the smallest (Sahr in Trachonitis) held about four hundred. On the average, this region's theaters held about forty-five hundred people. Compared to theaters in Anatolia and North Africa, these are small. Yet, their construction, location, and distribution confirm the cities' ability to meet the considerable cost and engineering and architectural challenges entailed in erecting such complex installations. Most theaters continued to serve their original purpose until the latter days of the Byzantine period, which attests to their having truly expressed the cultural needs of most of the urban population in this region of the Roman world.

[*Most of the sites mentioned are the subject of independent entries.*]

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ARTHUR SEGAL

THUREAU-DANGIN, FRANÇOIS (1872–1944), French Assyriologist. Born in Paris, Thureau-Dangin joined staff of the Louvre museum in 1895, was nominated to the Académie des Inscriptions et Belles Lettres in 1917, and was curator of the Louvre's Near Eastern Antiquities Department from 1925 to 1928. His research constitutes the groundwork of what is currently known about the character of the cuneiform writing system and the deciphering of the Sumerian language. He published numerous Sumerian and Akkadian texts and interpretive monographs that still form the basis of scholarship on ancient Mesopotamian history, religion, and science.

A brilliant student of Jules Oppert (one of the pioneers of cuneiform decipherment), Thureau-Dangin was entrusted, in 1895, with studying the enormous quantity of literary, royal, and administrative inscriptions unearthed at the Mesopotamian site of Telloh by Ernest de Sarzec, who, by 1877, had established the existence of the Sumerians. Thureau-Dangin's first concern was to trace the evolution of cuneiform writing. In *Recherches sur l'origine de l'écriture cunéiforme* (Paris, 1898), he published a list of six hundred signs comprising their most recent and most ancient forms. His classification of signs, adopted by all Assyriologists and still in use, allows for a single mode of transcription for both Sumerian and Akkadian. This work led to two publications: *Le syllabaire accadien* (Paris, 1926), and *Les homophones sumériens* (Paris, 1929).

The publication of his book *Les inscriptions de Sumer et d'Akkad* (Paris, 1905) constituted a decisive step in the deciphering of the Sumerian language. In it he transcribed, translated, and established the grammatical rules of all the known royal inscriptions from the Archaic Sumerian era to the dynasty of Larsa at the start of the second millennium BCE. This seminal work, the first written synthesis of the Sumerian language, was immediately translated into German.

Thureau-Dangin enhanced the collection at the Louvre with numerous texts that were published, beginning in 1910, in a series entitled *Textes Cunéiformes du Louvre*. His autographs are unsurpassed. As good a historian as he was a philologist, he published the contents of the documents in his many articles, mainly in the *Revue d'Assyriologie et d'Archéologie Orientale*, of which he was coeditor.

Thureau-Dangin was also a field archaeologist. He conducted several surveys in 1924 at Tell Ashara (ancient Terqa), on the east bank of the Euphrates River. In 1927–1928 he excavated Tell Ahmar (ancient Til Barsip), on the west bank of the river, a mission that uncovered a ninth-century BCE provincial Assyrian palace. He simultaneously excavated at the neighboring site of Arslan Tash.

[*See also* Akkadian; Sumerian; Sumerians; *and* Til Barsip.]

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BEATRICE ANDRÉ-SALVINI

TIBERIAS, city located on the western shore of the Sea of Galilee, north of the hot springs known as Hammath Tiberias and bounded on the west by Mt. Berenice (200 m above sea level).

History. Named for the Roman emperor Tiberius, the city was founded in 20 CE during the reign of Herod Antipas, son of Herod the Great. In 61 CE the city was annexed to the kingdom of Agrippa II and remained a part of it until Agrippa's death in 96 CE. In 100 CE Tiberias came under Roman rule and, like the rest of the empire, began to prosper. It became a Roman colony in the reign of Emperor Elagabalus (218–222 CE). The institutions of Jewish leadership—first the Sanhedrin and then the patriarchate—both

were transferred from Sepphoris at this time, and Tiberias became the political and spiritual capital of the Jews. In the early third century, Rabbi Yohanan (d. 270), leader of the Sanhedrin, established the Great Beth Midrash ("academy"), possibly at the foot of Mt. Berenice. According to tradition, the greater part of the Jerusalem Talmud was codified there (see below).

The city's prosperity continued—and even improved—after the Muslim conquest in the seventh century. Tiberias became the capital of the Jund Urdun ("Jordan district"), whose boundaries roughly corresponded to those of the former Byzantine Palaestina Secunda (with its capital at Beth-Shean). Jews continued to constitute the majority of the population, followed by a sizable Christian community and a smaller number of Muslims. Tiberias was the capital of Galilee until the Crusaders captured it in 1099. The city was made the capital of the Galilee principality, which roughly corresponded to the Jund Urdun. The city wall was restored, and a large fortress was built to the north of the Roman-Byzantine city. The inhabitants then clustered around this fortress, from which the modern city of Tiberias would develop. In 1187, at the battle of Hattin, the city fell to Salah edh-Din (Saladin) and remained under Ayyubid rule until 1240, when the whole of Galilee once again came under Crusader control. Christian rule was short lived, however. In 1247 the city fell to Mamluk forces and remained under Muslim rule until the arrival of the British in 1917–1918.

Excavation Results. The first systematic excavation at Tiberias, of the southern gate and its environs, was conducted in 1973–1974 by the Israel Department of Antiquities and Museums, the Institute of Archaeology of the Hebrew University of Jerusalem, and the Israel Exploration Society, under the direction of Gideon Foerster. The gate, built in 20 CE, apparently marked the bounds of the city with a commemorative arch. When the Byzantine city wall was built in the sixth century, it was integrated into the gate, which then became part of the city's fortification system.

A long colonnaded street *(cardo)* that ran parallel to the Sea of Galilee extended north from the southern gate several hundred meters to the site's municipal area. In this area Bezalel Rabani, during the largest salvage excavation at the site under auspices of the Israel Department of Antiquities (1954–1956), uncovered the remains of the central *cardo* as well as the bathhouse and marketplace. The bathhouse abuts the *cardo* to the east. It is probably the bathhouse frequently mentioned in Talmudic sources. Built in the fourth century, it was used continuously until the city was destroyed in the eleventh century. Although its plan changed very little throughout this period, the structure itself underwent numerous alterations and restorations. Its length (east–west) was 42 m and its width (north–south), 31 m, for a total area of approximately 1,300 sq m. Some of the walls survived to a height of 2.5 m. North of the bathhouse and adjoining the *cardo,* Rabani uncovered three rows of column bases covering an area of more than 800 sq m. He dated these remains to the sixth century and interpreted them as a vaulted marketplace. At the eastern end of each two stood a huge square pillar, probably part of a tetrapylon, which had apparently

TIBERIAS. Figure 1. *General view of the basilical hall of the urban villa, looking east.* (Photograph by Sando Mondrein; courtesy Y. Hirschfeld)

TIBERIAS. Figure 2. *General view of the church atop Mt. Berenice, looking east.* (Photograph by Zev Radovan; courtesy Y. Hirschfeld)

supported an arch that spanned an adjoining street—the remains of similar pillars were found on the other side of the street.

About 80 m northeast of the bathhouse the remains of an urban villa complex (1,400 sq m) was cleared first by Adam Druks in 1964 and recently by Yizhar Hirschfeld (1993). The villa was built with a basilical hall and large courtyard according to symmetrical well planning (see figure 1). Two construction stages were discerned: the first dated to the fourth century CE, the second to the fifth–sixth centuries CE. The villa is situated in the center of the complex; it continued in use until the end of the Early Arab period.

In 1976 Fanny Vitto, on behalf of the Israel Department of Antiquities, uncovered a two-chambered, aboveground Roman tomb (8 × 10 m) in the Qiryat Shmuel neighborhood of the city. Numerous human skeletons were found in both chambers.

While leading a salvage expedition for the Israel Antiquities Authorities at the foot of Mt. Berenice in 1989–1990, Hirschfeld discovered a Roman (second–third centuries CE) theater to the west of the *cardo* about 130 m south of the baths. In 1990–1994 he excavated a 35-meter stretch of its wall built out of large basalt blocks that probably constituted its northeast corner. Preserved to a height of about 5.5 m, the wall helped support the spectator seats. A small portion of the stage, which faced north, also was uncovered. The theater's seating capacity has been estimated at about five thousand, comparable to that of the Roman theater uncovered at Beth-Shean. [*See* Beth-Shean.]

Also at the foot of Mt. Berenice, about 250 m from the shore, Hirschfeld excavated a Roman public building beneath the remains of private houses. This large (about 200 sq m) rectangular structure was built in the early third century CE and continued in use until the middle of the Byzantine period, during which it underwent few changes. The building's most impressive remnant was its mosaic pavement: a geometric design, devoid of human or animal images, with a white background decorated with three square black frames, each enclosing a series of triangular red frames. [*See* Mosaics.] A stepped bathing pool, possibly a

miqveh, or ritual bath, was uncovered on the east side of the pavement. [*See* Ritual Baths.] It has been conjectured that this building was the great academy where most of the Jerusalem Talmud was redacted. The neighboring caves in the cliffs of Mt. Berenice were referred to by Jewish scholars in antiquity as the caves of the Great Beth Midrash, substantiating the possibility.

From 1990 to 1992, while excavating on the summit of Mt. Berenice, Hirschfeld uncovered a church and monastery just inside the city wall (see figure 2). [*See* Churches.] According to Procopius the city-wall was constructed during the reign of Justinian in 527–565 (Procopius, *Buildings* 5.9.21). The site is on a peak overlooking the Sea of Galilee and was likely chosen because from it the area where Jesus conducted his Galilean ministry is visible.

The large basilical structure (48 m × 28 m), was built of basalt stones; its floors were paved in polychrome mosaics and fine marble tiles. Fronting the structure was a courtyard with a huge square cistern; three entranceways led from this courtyard to the church. A large central apse in the eastern wall was flanked by two smaller apses. Two rows of columns supported the roof, which probably was made of wooden beams and clay roof tiles. A smooth stone block with a hole (18 m in diameter) at its center was found underneath the altar in the central apse. The block resembles anchors found in and along the shore of the Sea of Galilee; however, its weight—nearly half a ton—is ten times that of the average ancient stone anchor. [*See* Anchors.] Considering its findspot, the stone may have had a religious significance, as in early Christianity the anchor was a symbol of security and hope (e.g., *Heb.* 6:19). Not long after this church was destroyed in the devastating earthquake of 749, it was rebuilt; the newer structure continued in use until the end of the thirteenth century.

The remains of one of the "thirteen synagogues" of Tiberias referred to in the Talmud was uncovered at the northern edge of the site in 1978–1979 by an excavation team led by Ariel Berman. The style of the mosaics in the floors indicates that the synagogue was built in the sixth century; it remained in use during Muslim rule in Palestine and was repaired after the earthquake of 749. In the twelfth century, when Tiberias was a Crusader city, a broad vault was built over it.

South of the city, at Hammath Tiberias, the site of hot springs famous for their healing qualities, two synagogues were uncovered during two seasons of excavations (1961–1963) conducted by the Israel Department of Antiquities under the direction of Moshe Dothan, assisted by Immanuel Dunayevsky and Shlomo Moskowitz.

[*See also* Galilee; Hammath Tiberias.]

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YIZHAR HIRSCHFELD

TIGRIS. The Tigris River (Ar., Dijlah; Tk., Dicle; Akk., Adiglat; Sum., Adigima) originates in the southern slopes of the Taurus-Zagros mountains of eastern Anatolia, a range that rises to 2,000–2,500 m (6,600–8,200 ft.) above sea level, and separates the Tigris catchment from the Euphrates drainage and from the lake basins of Van and Urmia. The Tigris winds in a southeasterly direction through upland basins and narrow valleys of Turkey, where the river has a 1:500 average gradient as it drops from Ergani (1,000 m [3,300 ft.]) to Cizre (350 m [1,150 ft.]). Once in Iraq, the river moves through a rolling piedmont plain and drops with a gentler 1:1,500 gradient, passing Mosul at 210 m [690 ft.] In northern Iraq, the river cuts deeply into the surrounding plain, forming a narrow alluvial zone bounded by cliffs and hills. South of Samarra (65 m [210 ft.]), the river enters the extensive Mesopotamian alluvial plain, where it forms first a meandering single channel and then a braided channel shortly before joining the Euphrates River to form the Shatt al-Arab and emptying into the Persian Gulf. In this section, the river has the extremely low gradient of 1:15,000 south of Baghdad and 1:30,000 as it approaches the Shatt al-Arab. Along its approximately 1,900 km (1,200 mi.) length, the river receives water from left-bank tributaries that drain different sections of the Taurus-Zagros ranges. The most important of these tributaries are the Batman Su and the Bohtan Su in Turkey, and the Upper Zab, the Lower Zab, the Adhaim, and the Diyala in Iraq.

The flow of water through the Tigris system is extremely variable through the year, in response to the predominantly winter rainfall and spring meltwaters in the uplands. The average peak flow occurs in March, April, and May, the flow in the different subdrainages peaking at slightly different times (the Lower Zab and the Diyala peaking in March, the Upper Zab in May, and the Tigris north of Mosul in April). The flow is also extremely variable from year to year, modern records at Mosul showing annual averages ranging from about 200 cu m/sec. (7,000 cu. ft./sec.) to 900 cu m/sec. (32,000 cu. ft./sec.). Moreover, locally heavy winter rains in the Taurus and Zagros make the river subject to disastrous flooding, and living and farming on the Tigris floodplain is notoriously risky.

The winter rainfall is adequate in amount and regularity for dry farming along the northern sections of the Tigris, down to the confluence of the Upper Zab, and in the upper

reaches of all its major tributaries. But south of the Upper Zab, the Tigris flows through areas in which dry farming is unreliable or impossible, although the average rainfall does support pasture land east of the Tigris and south of the Upper Zab, making this Transtigridian area important for animal herding. Unlike the Euphrates, the Tigris is ill suited to irrigation because of its tendency to destructive floods and to its deeper incision into the alluvial plain. Accordingly, population traditionally has concentrated in the piedmont zone of northeastern Iraq (dry farming) and along the Euphrates River (irrigation). Farther north in the Taurus-Zagros foothills, arable land, not rainfall, is the limiting factor, and cities like Diyarbakır occur only in the larger plains of the upper Tigris drainage. The higher rainfall does maintain lush pasturage and forest cover, and animal herding is an important component to economic life.

The Tigris drainage offered several additional attractions. The Diyala penetrates the western folds of the Zagros Mountains and ultimately gives access to the Iranian plateau and the Khorassan road that runs toward Central Asia. Other routes lead to the Van and Urmia basins, mountain valleys farther north, and ultimately to the Iranian plateau. The Tigris itself offers access to eastern Anatolia and a direct route to the rich Malatya, Elazig, and Mus plains of the Euphrates drainage. Rich sources of copper occur in the Taurus range at the headwaters of the Tigris, the Ergani-Maden area being only the best known; silver and other metals also exist. The uplands also contain various useful rocks, like limestone for building and flint for chipped stone tools. Furthermore, bitumen seeps exist in many places between the Tigris and the Taurus-Zagros high country.

Archaeological investigation of piedmont and mountain basins in the Tigris drainage has revealed a long succession of prehistoric cultures. Shanidar Cave, near the Upper Zab, contains Neanderthal burials in Middle Palaeolithic levels, and the other Paleolithic and Epipaleolithic sites also lie in the Zagros valleys. The Taurus-Zagros foothills are an important part of Robert Braidwood's "hilly flanks" hypothesis about the beginnings of food production, and important pre-pottery and ceramic Neolithic sites occur in this zone (e.g., the aceramic sites of Hallan Çemi and Çayönü, with permanent architecture and early use of copper).

The middle Tigris area was home to several late Neolithic and early Chalcolithic cultures, characterized by a succession of incised and painted pottery styles during the sixth and fifth millennia BCE. The Hassuna and Halaf cultures flourished in the piedmont zone where dry farming was the basis of life, and farther south the Samarran and Ubaid cultures relied on irrigation. The Halaf culture achieved an enormous distribution along the southern fringe of the Taurus Mountains, and is present through the upper Tigris drainage and into the Lake Van basin. During the fifth millennium, the Ubaid style of pottery replaced the Halaf styles in the north, as reflected in the archaeological sequences at Tepe Gawra and elsewhere in the middle Tigris drainage.

The settlement history of southern Mesopotamia expresses the disadvantages of the Tigris for settled, agricultural life. The cities of Sumer and Akkad relied mainly, if not exclusively, on the Euphrates River system for irrigation, and the principal southern Mesopotamian cities were located on the Euphrates channels. The Diyala River, on the other hand, supported cities like Eshnunna (Tell Asmar), Tutub (Khafajeh), Ishchali, and others, the excavations at which have provided rich archaeological and textual information about early Babylonia. Moreover, the northern edge of the alluvium and the Transtigridian areas were important for animal husbandry. During Kassite and Isin II times, for example, the Transtigridian area held tribal groups, often only nominally under state authority, whose social structure was based on extended families (lineages). Similarly, the Arameans who started arriving during the eleventh century most commonly inhabited the Tigris portions of the Babylonian alluvium, and maintained a kinship-based social organization.

The secondary role of the Tigris changed late in the first millennium. The Macedonian Greeks founded a capital city at Seleucia on the right bank of the river. The Parthians and Sassanians moved the capital across the river to Ctesiphon, a site most famous for the enormous arch that survives from a palace of Khusrau I. The ʿAbbasid caliph al-Mansur founded Baghdad in the 760s, and the later caliphs al-Muʿtasim and al-Muʿtawakkil built an enormous city at Samarra during the ninth century CE. These places enjoyed access to surrounding regions in all directions: by canal to the Euphrates and Syria, the Tigris into eastern Anatolia, the Diyala onto the Iranian plateau and Central Asia, and down the Tigris to the Persian Gulf. Use of the Tigris for irrigation expanded during the same periods, as the Seleucids increasingly tapped into the Tigris, and the Parthians constructed increasingly complex irrigation systems. These developments reached a peak with the construction of the Nahrawan irrigation system, the main feeder of which left the Tigris in the area of Samarra, crossed and absorbed both the Adhaim and the Diyala, and watered fields east of the Tigris. The civil strife and the Mongol invasion led to the decline of these cities and the regional irrigation works.

Cities appeared in northern Mesopotamia by the mid-third millennium BCE, exemplified by Tell Taya in the Jebel Sinjar region and other urban areas in the Khabur drainage farther west. On the Tigris, the early phases of the Ishtar Temple at Aššur (Qalʿat Sherqat) belong to this period, and Nineveh had been occupied since Hassuna times. The creation of cities and their wealth in the dry-farming zone laid the foundation for Assyria's subsequent imperial history, both as the prize of other kingdoms, and as the source of the Middle Assyrian and Neo-Assyrian empires. The geography of northern Mesopotamia also contributed to this

role, by offering trade routes. Indeed, the Cappadocian trade of the early second millennium, when Assyrian mercantile communities lived in Anatolian cities, is the best known period of Aššur's early history.

Although Aššur (associated with the national god of the same name) and Nineveh were the traditional centers of Assyria, Middle Assyrian, and Neo-Assyrian kings repeatedly established new royal cities. The new foundations included Kar Tukulti-Ninurta, just upstream from Aššur, but the greatest concentration of Assyrian cities lay in the dry-farming area north of the Upper Zab and east of the Tigris. These places, including Nimrud (Kalḫu), Kar-Shalmaneser, Khorsabad (Dur Sharrukin), and Balawat (Imgur-Bel), have provided the best-known examples of Assyrian art and culture, including palace and temple architecture, wall reliefs, and enormous apotropaic (protective) winged-bull figures, obelisks and altars, the Nimrud ivories, the Balawat bronze-door reliefs, and the libraries of Sennacherib and Ashurbanipal.

The Semitic-speaking Assyrians were not the only linguistic or ethnic community to occupy the middle Tigris during historic times. The Hurrians, known primarily by their personal and place names, first appeared during the third millennium, when they were most common east of the Tigris and in the Khabur area. By the mid-second millennium, Hurrians had spread across large areas of Syro-Palestine, forming local dynasties and then the Mitanni federation, centered on the Khabur triangle, that subordinated Aššur and played a key role in fourteenth-century BCE international politics. At this time Arrapha (modern Kirkuk) and Nuzi, both in the upper Adhaim drainage, were important Mitanni centers. The Mitanni federation fell apart in the fourteenth century, under the pressure of a resurgent Assyrian state.

The smaller plains and valleys of the upper Tigris offer less scope for urban growth and powerful states. The archaeological evidence indicates that the upper Tigris drainage contained relatively few Bronze Age settlements (the nature of which are poorly known) but that Iron Age sites are more common. The Middle and Neo-Assyrian royal inscriptions provide the basic knowledge of the petty kingdoms and tribal chiefdoms that occupied the small plains in upper Tigris and Upper Zab drainages. Hurrians continued to rule petty kingdoms in the upper Tigris hill country after the Mitanni collapse. Middle Assyrian kings campaigned against the forty kings of Na'iri, Musri, and Uruatri, in the region between the upper Tigris drainage and Lakes Van and Urmia, and against the Hurrian kingdoms (Shubari lands) along the Tigris itself; for a brief time during the thirteenth-century Assyria controlled much of the upper Tigris (Katmuhki). The ninth-century Assyrian kings campaigned regularly in the upper Tigris, including Musasir (with its shrines to the Hurrian gods Teišeba and Khaldi, in the upper Great Zab), Amed, and Katmukhi, briefly establishing a Nairi province. Several Assyrian kings left reliefs and inscriptions at the source of the Tigris, to commemorate their passage through the region.

New groups like the Muški, probably speaking an Indo-European language and related to the Phrygians, began arriving in the eastern Anatolian uplands in the twelfth century BCE and moved into the upper Tigris from where they briefly threatened Assyria. An Aramean dynasty (Bit-Zamani) came to rule Amed (the classical Amida, modern Diyarbakır) by the tenth century, and Arameans were strongly present in the Shubari and Katmukhi districts of the upper Tigris drainage. However, the major development was the emergence, despite the obstacles of geography, of the Urartian state from the multitude of petty Hurrian kingdoms during the first centuries of the first millennium BCE. The Urartians soon expanded their control over neighboring regions in the ninth and eighth centuries, and by the early eighth century they confronted Assyria around the upper Tigris. Both Assyria and Urartu disappeared during the rapid changes of the mid-first millennium, with Cimmerian and Scythian incursions and the rise to regional domination by the Neo-Babylonians and Medes, soon followed by the world empires of the Achaemenids, Seleucids, Romans, Parthians, Sasanians, and Byzantines. The upper Tigris remained a pivotal zone of imperial confrontation, as illustrated by the bloody history of Amida.

[*See also* Assyrians; Diyala; Euphrates; Hurrians; Khabur; Mitanni; *and* Taurus Mountains. *In addition, many of the sites mentioned are the subject of independent entries.*]

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CHRISTOPHER EDENS

TIL BARSIP, impressive ancient site of Tell Ahmar, Syria, located on the east bank of the Euphrates River, about 20 km (12 mi.) south of modern Jerablus (a large town 3 km, or 2 mi., south of the ancient city of Carchemish on the other side of the Syrian-Turkish border), about 100 km (62 mi.) northeast of Aleppo, and 140 km (87 mi.) north of Tabqa, roughly following the Euphrates, where the dam that creates Lake Assad is located (36°39′ N, 38°07′ E). Tell Ahmar was the location of Til Barsip, the capital city of the Aramean kingdom of Bit-Adini, possibly called Masuwari as a Hittite city (Hawkins, 1983). [*See* Arameans; Hittites.] It was renamed Kar-Shalmaneser immediately after its conquest by Shalmaneser III in 856 BCE. A French expedition directed by François Thureau-Dangin excavated the site in three seasons (1929–1931) after initial soundings in 1928. Thureau-Dangin published the results in 1936. A salvage project there has been directed by Guy Bunnens of the University of Melbourne since 1988, following a survey of the site and surrounding area in 1987.

The site is situated at the edge of a terrace overlooking the alluvial plain of the Euphrates, about 1.5 km upstream from the confluence with the Sajur River. It is configured into three distinct areas: the acropolis (250 × 150 m) which originally stood 25 m above the surrounding plain; a second section extending 350 m to the west of the acropolis that is 10–15 m higher than the surrounding plain; and a very large semicircle (diameter, 1,200 m) centered on the acropolis that marks the third area and barely rises above the level of the surrounding plain. Excavation has documented the following periods of occupation: Ubaid, Early Bronze, Iron Age I and II, Persian, Hellenistic, Islamic, and modern.

The best-known material from the early sequence at Tell Ahmar comes from the hypogeum tomb excavated by Thureau-Dangin (Thureau-Dangin and Dunand, 1936, pp. 96–119). This rich assemblage of 1,045 complete vessels includes cups, chalices, a variety of plain bowls, chalice bowls, tripod bowls and jars, plain jars, "teapots," and a variety of exotic vessels in common wares and metallic wares with variants in black and with delicate red-line decoration. Bronze tools and weapons include shaft-hole axes, daggers, pins, spearpoints, and a decorated rein guide. This tomb group has for decades been a primary point of comparison in the middle of the third millennium for the archaeological assemblage of northwestern Syria. Recent salvage excavations along the Euphrates now place it in a broader EB context with an abundance of material from places like Tell Halawa (Orthmann, 1981) and Tell Hadidi (Dornemann, 1988) to the south and Jerablus/Tahtani (Peltenburg, 1994), Kurban Höyük (Algaze, 1990), and Noršuntepe (Hauptmann, 1982) to the north. [*See* Grave Goods.]

Only sherds indicate earlier occupation in the Ubaid and possibly Uruk periods, but a larger ceramic corpus from the beginning of the Bronze Age (early third millennium) is now available and is best represented by reserved slip wares (Bunnens, 1990, pp. 25–44, 46–99).

There seems to be a break in the occupation sequence until an Aramaic or Neo-Hittite occupation is established on the acropolis in Iron Age I. Little is published of the Iron Age pottery, but several large, possibly palatial buildings were excavated in an area more than 70 × 55 m on the acropolis. It is still unclear whether this complex is in some way associated with Aḫuni, the ruler of Bit-Adini mentioned by Shalmaneser III in an 858 BCE inscription. Luwian inscriptions in Hittite hieroglyphic script, probably dating primarily to the ninth century BCE, were found on the second level of the tell, on the west. [*See* Luwians.]

After the conquest of Til Barship by Shalmaneser III, an Assyrian palace covered the entire area of the acropolis. [*See* Palace.] More than 132 × 88 m was excavated; the building originally was larger, but had been eroded away. The palace was very elaborate, with stone door sockets and sills, floors paved with burned bricks and complex pebble mosaics, and a well-constructed drainage system. It was also decorated throughout with murals. [*See* Wall Paintings.] Excellent examples of Assyrian art are preserved here in multicolor decoration that adds a unique aspect to an otherwise limited color palette for the art of the period. In addition to a large variety of standard Assyrian geometric decorations are extended scenes of the Assyrian king hunting lions, holding audiences, and receiving tribute; processions with horses, chariots, soldiers, and prisoners; scenes of executions; representations of fish men, bull men, and genii; and scenes of rituals. All of these are well known from the palace reliefs at

Nineveh, Khorsabad, and Nimrud. [*See* Nineveh; Khorsabad; Nimrud.]

Assyrian occupation continued through the Neo-Assyrian period (to 612 BCE) and covered the lower tell as well as the acropolis. One of the gates of the defensive wall that ran along the edge of the lower tell was excavated. The gate was decorated with monumental lion orthostats. The inscription on the lions identifies them as dedications by the *tartân* (Assyrian military governor) Shamshi-Ilu, who apparently served Shalmaneser IV, Ashur-dan III, and Ashurnirari VI during the first half of the eighth century BCE. A number of other Assyrian inscriptions were found on the lower tell, including two stelae of Esarhaddon (680–669 BCE) and a stela dedicated to the goddess Ishtar. Many fragments decorated in relief in Assyrian and local art styles were also recovered.

Recent excavations have contributed a rich collection of objects from large private dwellings in several areas on the lower tell (Bunnens, 1993–1994). Black-and-white pebble mosaics were used as flooring in several of these buildings. One building shows remains of decorated wall plaster and another yielded a fragment of a cuneiform tablet. [*See* Cuneiform.] Cylinder and scarab seals, decorated ivories, bronze fibulae, armor scales, horse trappings, and an iron dagger and iron blades were among the many objects found. [*See* Seals; Jewelry; Weapons and Warfare.] Thin palace ware and fine gray and red-slipped wares are represented among the large quantities of pottery excavated.

The later occupations at Tell Ahmar were not extensive. There are remains of Persian-period tombs with typical grave goods, including scarabs, bronze bowls decorated in repoussé, bronze bracelets, and other bronze vessels. The Hellenistic occupation was the most extensive of the later occupations but was still very limited. Dressed stones were found in this level that may have been part of the socle belonging to a small sanctuary. Coins of Antiochus VII, Demetrius II, Antiochus VIII, and Antiochus IX bracket a period between about 138 and 95 BCE for this occupation. A selection of typical Hellenistic mold-made figurines was also associated with this level. Very little of the site's Islamic and modern remains has been published.

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RUDOLPH H. DORNEMANN

TILE. [*This entry comprises two articles:* Building Tile *and* Decorative Tile.]

Building Tile

Baked clay roof tiles were invented in Greece in the first half of the seventh century BCE. At first simply a means of waterproofing a roof, tiles soon became vehicles for decoration, and as such were a distinctive characteristic of Archaic Greek architecture, primarily on temples. The technology and taste for tiles spread over much of the Mediterranean in the second half of the seventh century, reaching Anatolia by about 600 BCE. The tradition there, flourishing for the next hundred years, was characterized by elaborate, often figural decoration, the use of relief-molded friezes, and the application of tiles to both sacral and nonsacral architecture.

Evidence for Anatolian tiles is concentrated in western coastal areas (e.g., at Miletus and Didyma in Ionia; Neandria and Larissa in Aeolis). [*See* Miletus.] Ionian colonization in the Black Sea area brought tiles to Sinope and Akalan on the Pontic coast. Overland trade routes funneled the technology to inland sites (e.g., Sardis on the Hermus River; Gordion on the plateau). [*See* Sardis; Gordion.] The exact mode of transport is uncertain, although itinerant coroplasts equipped with tools, molds, and pattern books are likely. Tiles have not been found farther east than Boğazköy and Pazarlı, within the bend of the Halys River. [*See* Boğazköy.]

The principal roofing system in Anatolia was a hybridization of the Greek Corinthian and Laconian styles, combining flat pan tiles with rounded cover tiles. The regular Corinthian style was also used. Roofs were often bichro-

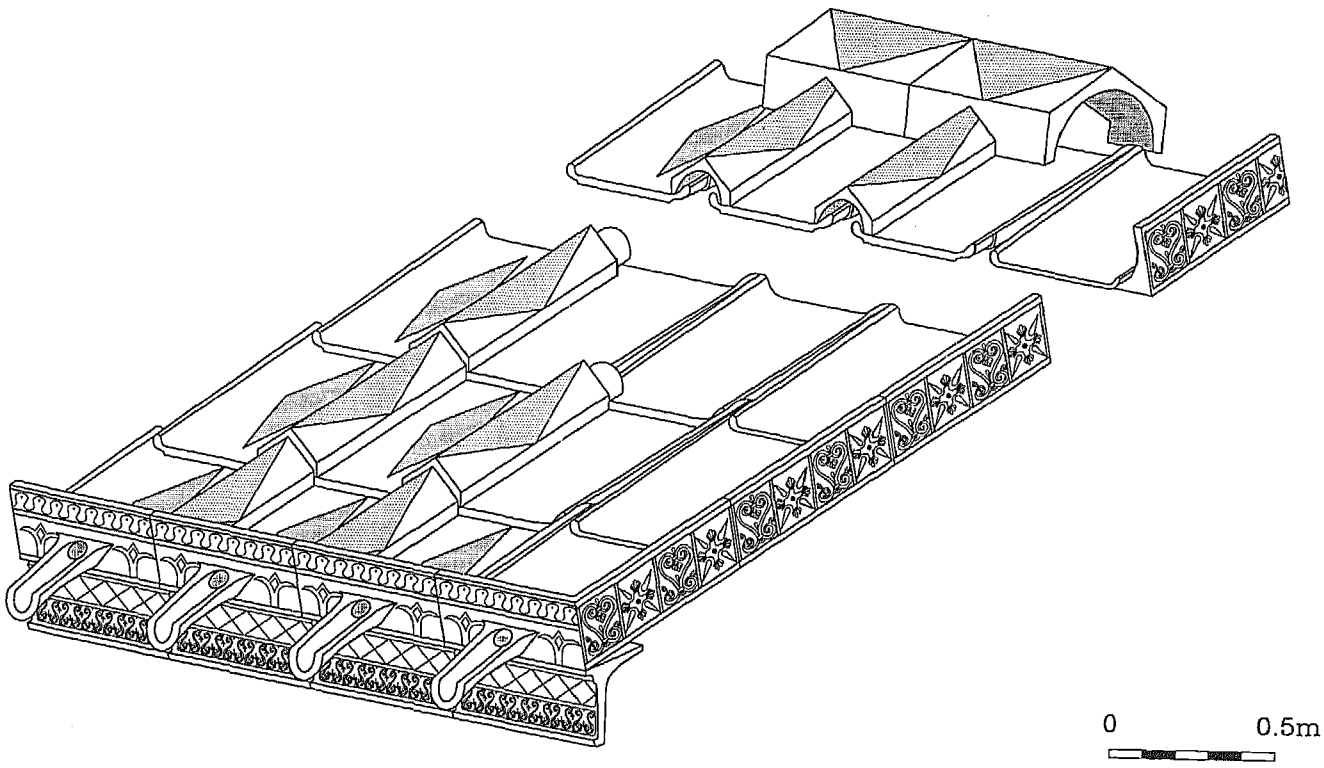
matic—the individual tiles slipped black, white, or red. Some tiles carried more elaborate decoration: a large lozenge at Miletus, Sardis, and Gordion (see figure 1); chevrons at Sardis. A predilection for patterned roofs characterized the Anatolian tradition. The method of draining water over the eaves, as well as the sorts of decoration applied at the roof's edge, varied from region to region.

Southern Ionian coroplasts adhered largely to mainland Greek practice, employing simple eaves tiles and antefixes. A characteristic roof, datable to the third quarter of the sixth century BCE, was recovered in a temenos along the Sacred Way between Miletus and Didyma. The eaves tiles are decorated in relief with a guilloche, the pentagonal antefixes with a gorgoneion. Lotus blossoms or lion protomes decorate antefixes at neighboring sites. Also typically Greek is the use of a raking sima (a vertical gutter along the raking eaves of a double-pitched roof). One example from Didyma is painted with the so-called Doric leaf pattern, in close imitation of Greek types from the second quarter of the sixth century. [*See* Didyma.]

Coroplasts in northern Ionia, Aeolis, and Lydia made use of the lateral sima (a tall gutter pierced by spouts along the horizontal eaves). Such simas were rare in Archaic Greece but were a defining feature in these regions. Raking simas were also employed. Both types of gutter were richly decorated in relief with motifs inspired from the repertoire of Greek metalwork and pottery painting. Figural scenes such as chariot racing were prominent, as were Greek egg-and-dart moldings. Tile types such as the disk acroterion show influence from Greek Laconia.

Lateral and raking simas were also used inland at Akalan, Düver, and Gordion. More typical of the region, though, as at Düver, Gordion, and Pazarlı, was a type of roof that employed spouted eaves tiles and antefixes that clamped over their front edge. In contrast to western Anatolian practice, antefixes and raking simas at inland sites frequently carried geometric patterns such as checkerboards, lozenges, or frets—ornaments derived from the traditional Phrygian decorative vocabulary. There is an intriguing similarity between Phrygian tiles and the decoration of rock-cut facade monuments in the Phrygian highlands, although the relationship between the two media remains unclear.

The hallmark of the Anatolian tile tradition was the decorative frieze, made up of revetment plaques molded in relief and brilliantly painted. Such friezes sheathed the horizontal and raking geison, or wooden beams in half-timbered constructions. At western sites, decorative motifs take on an obviously Greek flavor—either abstract, such as the lotus and palmette, or figural, such as Herakles battling centaurs. Inland, at Düver, a series of revetments decorated with a horseman and griffin displays a more "Anatolian" style. On the plateau, at Gordion and Pazarlı, motifs have a distinctly Near Eastern bias: bow hunting from a chariot or heraldic lions, bulls, and goats. The taste for decorative friezes may



TILE: Building Tile. Figure 1. *Reconstructed roof, Gordion.* (Courtesy M. R. Glendinning)

have derived from the Near East, as represented by Assyrian or Syro-Hittite relief sculpture, although the exact mechanism and extent of such influence is in question. [*See* Assyrians; Hittites.] The tile friezes possibly bore some relationship to the genesis of the Greek Ionic frieze, although the former were no more than repetitive bands of decoration and were never narrative.

In Anatolia the tradition of using decorated roof tiles peaked during the second and third quarters of the sixth century BCE. Although tiles remained in use throughout the rest of antiquity and into the Byzantine era, later examples were greatly simplified and far less decorated. Finds such as a public tile standard at Assos suggest that economical, standardized production became more important than ornamentation. Hellenistic and Roman roofs (e.g., at Assos, Priene, Sardis, and Gordion) consist of flat pans and pitched or rounded covers, with decoration limited to the antefixes (e.g., palmette and scrolls), the front edge of the eaves tiles (e.g., meander), or an occasional lateral sima (e.g., tendrils and palmettes). In Byzantine times expedient use was made of identical curved tiles for both the pan and cover elements. A separate architectural tradition in the Roman and Byzantine periods involved the use of tiles (bricks, essentially) to form decorative patterns of masonry.

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MATTHEW R. GLENDINNING

Decorative Tile

The art of tile production for architectural decoration, which flourished in Mesopotamia and Achaemenid Iran during the first millennium BCE and persisted through the Parthian period, seemingly ceased in the seventh century CE with the Sasanian Empire of Persia. It was revived in the Islamic Empire of ʿAbbasid Iraq in the ninth century CE and spread rapidly throughout the Islamic world: technical perfection was achieved in the later imperial tradition of Spain, Morocco, Iran, and Turkey. While Byzantium incorporated some of the utilitarian ceramic ware and decorative vocabulary developed by the ʿAbbasids and succeeding Muslim dynasties, tiles for wall decoration were never a favored medium in the non-Islamic Near East.

The monumental architecture of the Assyrian capital of Babylon under Nebudchadrezzar II (604–562 BCE) exemplifies the mastery of the art of tile production for architectural decoration. Sixty mighty lions measuring three meters high with glazed yellow or red manes are cast in relief and set in a blue glazed ground and appear along the processional way leading to the Ishtar Gate. The Ishtar Gate, the 10.5-meter-high double gate that affords entry to the massive royal palace and urban complex of the Assyrian capital and holy city, dated to 580 BCE, also includes these regal lions greeting and impressing visitors to Babylon. Dragons symbolizing the generative force of new life, and bulls, serving as the chief of the gods, appear in alternating rows on the walls of the south palace complex. In all, 575 animals adorned the palace walls and massive entrance gate, 152 of which survive. Each glazed brick was produced as a unit and fitted later into the composition and formed the facing of the mud-brick construction of the city. City walls were covered with yellow, palaces with red, and temples with white glazed bricks, a gleaming urban polychromy declaring the power of the Assyrians. [*See* Assyrians; Babylon.]

After the Persian conquest of Babylon in 539 BCE, the Persian Achaemenid capital of Susa at Elam inherited the glazed tile tradition of Babylonian fame. Glazed gryphons, bulls, archers of the royal bodyguard, and large rosettes are the typical iconographic motifs proclaiming the Babylonian conquest and Achaemenid dominion from the walls of Susa. While ceramic production continued through the Parthian and Sasanian periods, tiles are not the favored medium for wall decoration again until the early Islamic period. [*See* Persians; Susa.]

The earliest surviving examples of ʿAbbasid wall tiles are located in the mid-ninth-century architecture of the ʿAbbasid capital at Samarra, Iraq. [*See* Samarra, *article on* Islamic Period.] The technique is metallic luster, an Islamic innovation in the eighth century, in which a metallic pigment is applied in patterns over a white tin glaze and then fired a second time in a reducing atmosphere. The original intent of using luster was to imitate the forms and designs of the more prestigious art of metalwork. After 850 CE, luster was

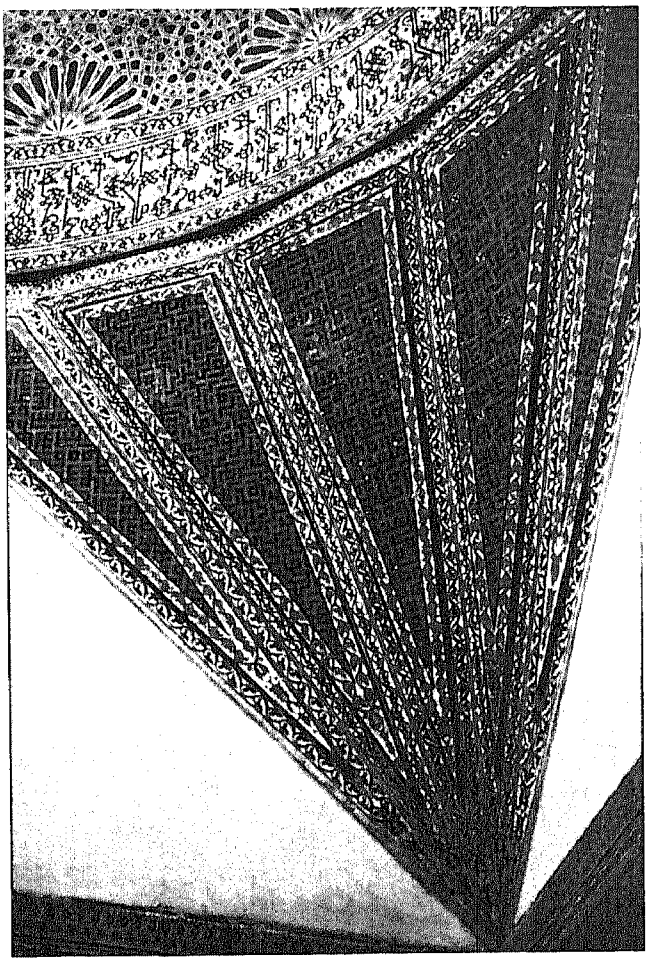
first used in wall tiles for architectural decoration, with the center of the industry in Baghdad. [*See* Baghdad.] The slightly later (860 CE) incorporation of 150 luster tiles stylistically similar to the Samarra tiles as part of the *miḥrab* (prayer niche) decoration of the Great Mosque of Kairouan (Qayrawan, in present-day Tunisia) indicates that the method of production and usage had spread extensively in the Islamic world of the period. Some of the tiles were brought from Baghdad and others made on site by a craftsman from Baghdad, suggesting that there were itinerant craftsmen moving from site to site.

Iran, Twelfth–Thirteenth Century. From 1100 CE in Iran, the principles of polychrome tile production evolved slowly, culminating, at the beginning of the thirteenth century, in a grand tradition of wall decoration that altered the course and the aesthetics of Iranian architecture. Colorful tiles covered large expanses of the sand-colored walls of buildings, focusing attention on the decoration of both the exterior and interior of monumental architecture, including private mansions, mosques and mausolea. [*See* Mosque; Mausoleum.] The type of building dictated the decorative repertoire. For example, religious buildings excluded figural motifs, favoring the Word of the Qur'an, and floral and geometric motifs. The palaces, unrestricted by the avoidance in Islam of figural imagery in religious buildings, freely explored princely leisurely iconography, such as narrative depictions of epic literature and classical poetry and of heroic exploits. There was growing technical refinement in tile production methods and decoration and the inclusion of artisans signatures suggest the elevated status of the art of ceramics. Tiles no longer imitated metalwork but were themselves imitated in other media.

The center of Iranian industry was in Qashan and the fame of Qashan tiles and ware spread far and wide in the Islamic world, after the thirteenth century. The Persian and Turkish word for tile was *kāshī;* in Arabic, *qashānī* (from Qashan). The period witnesses the experimentation with and the perfection of techniques of underglaze polychromy emphasizing brilliant blues and lustre with its more subdued palette of browns and dark blue for tile decoration.

As early as the end of the twelfth century, tombs in the northwest Iranian town of Maragha demonstrate the progressive introduction of polychrome underglaze tile mosaic for exterior decoration. The emphasis is on brilliantly colored turquoise and dark blue mosaic—purportedly possessing protective magical qualities—in geometric patterns set in sand-colored stucco ground, and also used for Qur'anic inscriptions circumscribing the circular or polygonal brick mausolea. [*See* Inscriptions, *article on* Inscriptions of the Islamic Period.] In luster technique, there was an emphasis on bold design rather than on precision. Because luster did not survive weathering, the technique lent itself only to interior decoration. Whole walls of secular and religious buildings were covered with luster tiles grouped together in combinations of eight-pointed stars with cross tiles. Large luster-tile slab *miḥrab*s employing conservative Qur'anic quotations and floral arabesque also were popular.

Anatolia, Twelfth–Thirteenth Century. The Seljuq Turks introduced tile production to Anatolia (Asian Turkey) from Iran and achieved perfection of it in the thirteenth century. The usage of tile decoration in Anatolia rejected tile for exterior decoration and restricted its use to the interior of buildings. The Karatay Medrese (Ar., *madrasah;* theological school) in Konya in central Anatolia of 1252 monumentally deploys tile mosaic in the large Qur'anic inscription that circumscribes the dome and in the floral arabesque and Kufic style inscriptions of the Turkish triangles supporting the dome (see figure 1). The favored colors in



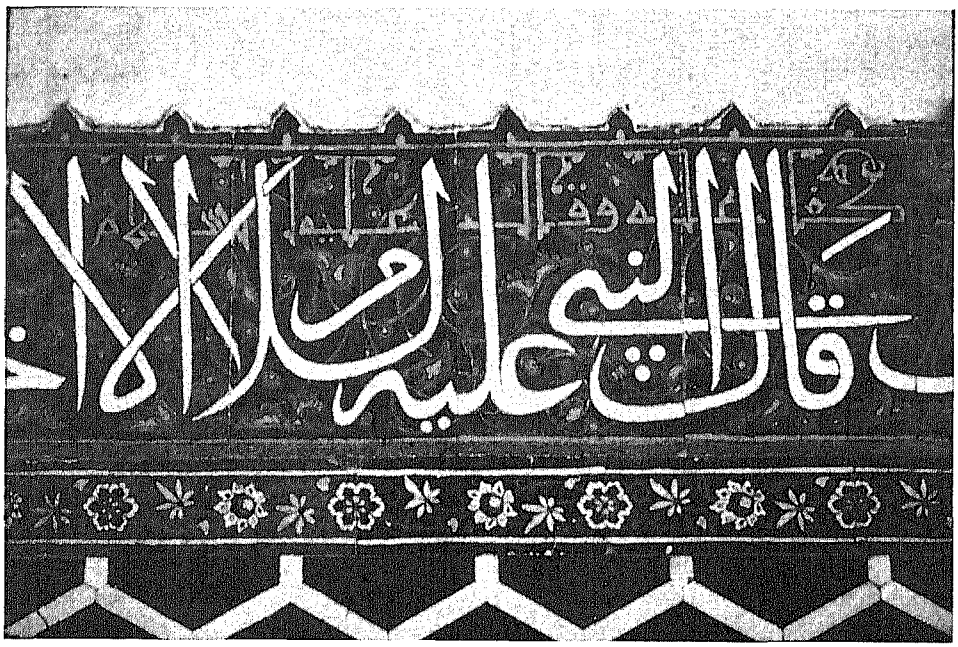
TILE: Decorative. Figure 1. *Karatay Medrese (theological school) in Konya, Turkey.* Interior view showing the transition zone to the dome of Turkish triangles with Kufic inscriptions in black, turquoise tile mosaic, and also polychromy tile mosaic. Qur'anic inscription in elaborate foliated Kufic script circumscribes the base of the dome above which is the complex geometric strapwork of the dome interior. Built in 1258 by the Seljuk Turks. (Courtesy B. St. Laurent)

Anatolia are black, turquoise, and dark blue on a white stucco field.

Fourteenth–Seventeenth Century. Tile for architectural decoration flourished in fourteenth–seventeenth-century Ilkhanid (Mongol), Timurid, and Safavid Iran; and in the Ottoman Empire in the fifteenth and sixteenth centuries. The princely art of decorated tiles developed in Iran in the previous two centuries evolved to a major royal art form. In Iran, there was a continuity of development from the Seljuq tradition in the Ilkhanid period to more profuse and elaborate usage of tile decoration in the tomb of the Ilkhanid ruler Öljeitü in northwest Iran. The Timurids in Iran expanded the vocabulary, palette, and extent of usage, with entire buildings sheathed both inside and out with a revetment of tiles and tile mosaic, culminating in the grander scale of the royal Safavid tradition and exemplified in the seventeenth-century Masjid-i Shah or Royal Mosque of Isfahan. [*See* Isfahan.]

The early Ottoman Empire, rather than continue with the method of the Seljuq Turks, rediscovered the Persian tradition of tile revetment for the interior of monumental buildings. In 1420, Sultan Mehmet I brought Persian craftsman to his capital Bursa to decorate his royal mosque and tomb complex called the Green Mosque. The fifteen foot *mihrab* in *cuerda seca* and tile mosaic techniques, the green and gilt tile dadoes, bordered by delicate inscription bands (see figure 2) and foliate arabesque in blues, greens, and yellow with a touch of white of the mosque interior, and the royal pavilion testify to the highest quality of Persian craftsmanship and include the signatures of Persian artisans. In exception to the Turkish proclivity for interior tile decoration, the exterior of his tomb is also covered with turquoise tiles. In the sixteenth century, the workshops of the town of Iznik crystallized the distinct and grand Ottoman imperial style apparent in the decoration of the mosque of Rustem Pasha and the Süleymaniye Mosque in Istanbul. Tile mosaic is abandoned to the exclusive use of porcelainlike square tiles, an innovation of this period, and large rectangular tile panels. Carnations and tulips in red, purple, green, and yellow proliferate on a white ground surrounded by the graceful calligraphic leaves that define the Iznik style.

Thus, an Islamic imperial tile tradition that originates from the ancient Near East witnesses an initial revival in ninth-century Iraq, with a subsequent effloresence as a princely art in twelfth- and thirteenth-century Iran and Anatolia. In fourteenth- and fifteenth-century Ilkhanid and Timurid Iran, tile becomes a popular medium for royal monumental architectural decoration displaying regional technical and stylistic distinctions. The royal workshops of the Safavids and the Ottomans produced the grand imperial



TILE: Decorative. Figure 2. *The Green Mosque (Yeşil Cami) in Bursa, Turkey.* Interior view of the royal mosque of the early Ottoman Sultan Mehmet I built in 1420, showing the top of a tile dado in one of the iwans. This detail shows the double inscriptions, one in Kufic script in yellow above the larger cursive selection in white surrounded by floral arabesque and a polychrome floral border of rosettes and floral motifs. All surmount the dado in blue tiles seen at the bottom of the illustration. (Courtesy B. St. Laurent)

traditions and monuments whose tile revetments distinctly identify and proclaim their imperial dominion.

[*See also* Architectural Decoration; *and* Building Materials and Techniques.]

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BEATRICE ST. LAURENT

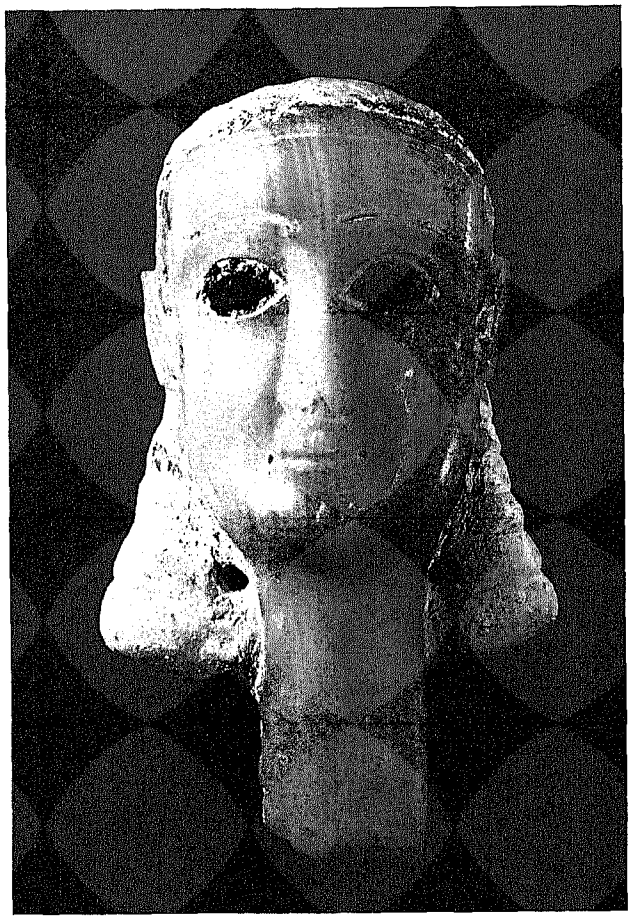
TIMNAʿ (modern Hajar Kohlan), site in Arabia located about 15 km (9 mi.) north of Hajar Bin Humeid beyond the town of Nuqub (15°02′02″ N, 45°48′4″ E). It was the capital of the Kingdom of Qataban, one of the five kingdoms in pre-Islamic South Arabia, which included Saba' (biblical Sheba), Ḥadhramaut, Ausan, and Maʿin. It occupies the west bank of the Wadi Beihan, which flows northward, draining runoff water from the northern slopes of the southern mountains. The mound is oval, with perhaps 10 m of stratified occupation debris, and covers an area of about 19.48 ha (52 acres), with its long axis oriented northeast–southwest. The Timnaʿ cemetery occupies the western slope of a small rocky hill some 500 m north–northeast of Timnaʿ known locally as Ḥeid Bin ʿAqil. The site's identification as Timnaʿ was established in 1924 by Nikolaus Rhodokanakis, while assembling all known Qatabanian inscriptions.

In 1950 the American Foundation for the Study of Man (Wendell Phillips, president, and William Foxwell Albright, archaeological director) began an excavation of the site, assisted by Albert Jamme, Alexander M. Honeyman, Friso Heybroek, Charles Inge, and Richard LeB. Bowen, Jr. During the 1951 season, E. Burcaw supervised digging in the South Gate area; James Swauger, assisted by John Simpson, supervised work at the Temple site; and Robert Shalkop was in charge of excavating the Timnaʿ cemetery. Gus Van Beek assisted in drawing plans of the South Gate and cemetery areas.

South Gate. Only the uppermost stratum of an area measuring about 61.5 m NNW-SSE × 48.0 m WSW-ENE was excavated. This area contained the remains of the South Gate, a small plaza, two streets, and several large buildings. The gate consisted of two towers flanking a flagstone-paved passage. Both towers were constructed of enormous coursed blocks, and their outer wall faces were covered with South Arabic inscriptions. In the east tower, a stairway led to an upper story. Two stone benches—each one built against one of the towers—faced each other across the passage.

The gateway gave access to the open plaza, from which two parallel streets led northwestward separated by Building B (Yafash House), at the base of which two magnificent bronze sculptures, each featuring a lion ridden by an infant male child, were found. Fronting the westernmost street was Building A (Yafaʿam House). Across the easternmost street Building D (Hadath House) consisted of two or more stories. These names are known from inscriptions on the buildings themselves, a relatively common feature in pre-Islamic South Arabia. Farther along and neighboring Building D, Building C, as yet nameless, was constructed of the finest ashlar masonry found at Timnaʿ. Above the ashlar courses of the first floor, Buildings D and perhaps C may have featured post-and-beam construction, utilizing a framework of heavy wooden beams enclosed with curtain walls, judging from the many burned and broken beams in the debris. Remains of roughly contemporary buildings at Shabwa with fragments of charred wooden beams still in place suggest that this type of construction was well known in the region. [*See* Shabwa.]

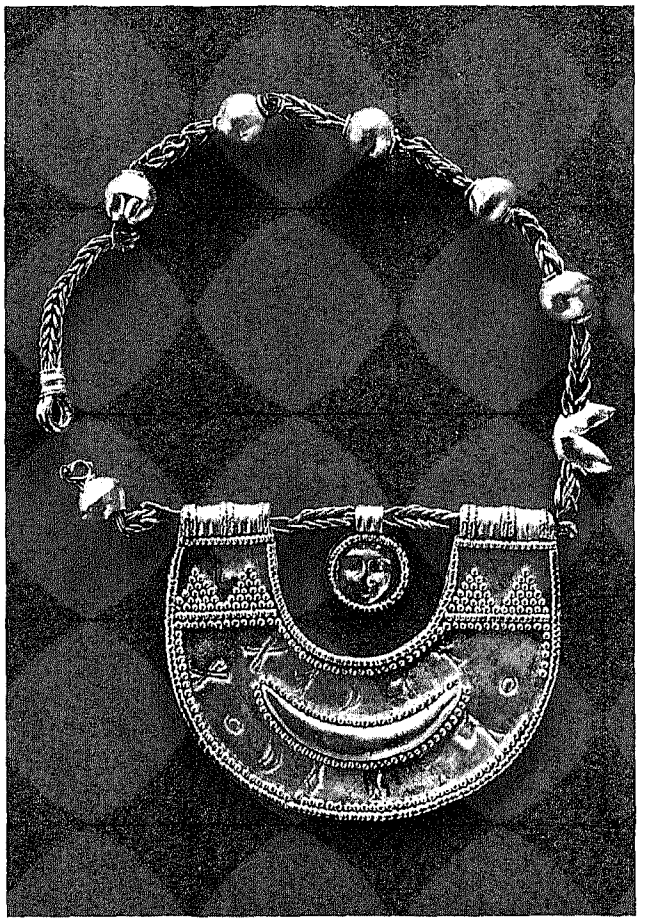
Temple. The Temple structure (about 49.0 × 41.5 m) is oriented on an east–west axis and consisted of three sections: the Temple itself, a court, and possible storerooms. The Temple is the major and oldest section on the east end and is built of massive blocks, larger than those of the South Gate towers. In its walls was a series of huge recessed niches. The Temple was ascended through a marble-paved court via a marble staircase (about 6.5 m wide) with four steps. The main entrance to the court was also via a marble staircase, but of nine steps, on its north side, and a marble pavement extending at least another 7.7 m. Adjacent to the court and against the north wall of the Temple stood a large stone water tank. Several of the paving blocks in the court were inscribed, each with a South Arabic letter; the arrangement of the letters, similar to that of the Ethiopic alphabet, probably preserves the earliest known order of the South Arabic alphabet. A series of probable storerooms surrounding the court on the south, west, and north sides was represented by a series of parallel crosswalls. A deep sounding disclosed the walls of an earlier structure below the massive blocks of the Temple. The earlier structure had been built of much smaller blocks and its wall had buckled outward slightly



TIMNAʿ (ARABIA). Figure 1. *Calcite alabaster head from the Timnaʿ cemetery.* Hair is styled by an overlay of plaster. The holes on either side of the neck probably carried the necklace shown in figure 2, from the same tomb. (Courtesy G. W. Van Beek)

from the weight of the later structure. It has been suggested that the earlier structure was a palace rather than a temple, but the evidence is inconclusive.

Cemetery. On Ḥeid Bin ʿAqil, a rock hill about 0.5 km north of Timnaʿ, Honeyman and Shalkop excavated the Timnaʿ cemetery in 1950 and 1951, respectively, covering an area of about 2,550 sq m. In area A, on the lower slopes, three successive mortuary chapels ascended the hill, the earliest built of mud and the later ones of stone. A large mausoleum complex occupied area B, about three times larger in area than the chapels. The mausolea share a common plan, featuring square burial structures of rubble, fronted on a central aisle, each structure consisting of four or five parallel partition walls divided into two or three vertical chambers (about 2.0 × 0.75 m) to accommodate individual burials. Burials of prominent individuals seem to have been accompanied by a stone box either with an alabaster head portraying the deceased or a relief inscribed with the individual's personal and family names. The stone box was closed by one- or two-leaf doors and securely fastened by a vertical peg that pierces the roof and is held in place by a horizontal pin. The finest alabaster head yet discovered came from such a tomb (see figure 1); from that same tomb came a gold necklace in the form of a crescent curving below a solar disk and bearing the name *Hagarlat ʿAlay Fariʿat* (see figure 2); it had probably been attached to the alabaster head through two holes between the line where the neck and hair meet. All the tombs excavated had been plundered; although few human bones were found, some of the tombs contained ashes, indicating the practice of cremation. Objects such as highly stylized ibexes, bulls, and diverse architectural fragments provide a view of a wealthy culture that stressed the arts of sculpture, architecture, and writing. The many objects that were imported illustrate a range of origins: Rome, Greece, Asia Minor, the Levant, and Ethiopia. By 1991, little remained of these structures because Timnaʿ was largely robbed of all visible building stone to build houses, except for the massive blocks of the Gate Towers and the Temple.



TIMNAʿ (ARABIA). Figure 2. *Gold necklace bearing the female name "Hagarlat ʿAlay Fariʿat."* (Courtesy G. W. Van Beek)

[*See also* Ḥadhramaut; Hajar Bin Ḥumeid; Qataban; Sheba; *and* South Arabian.]

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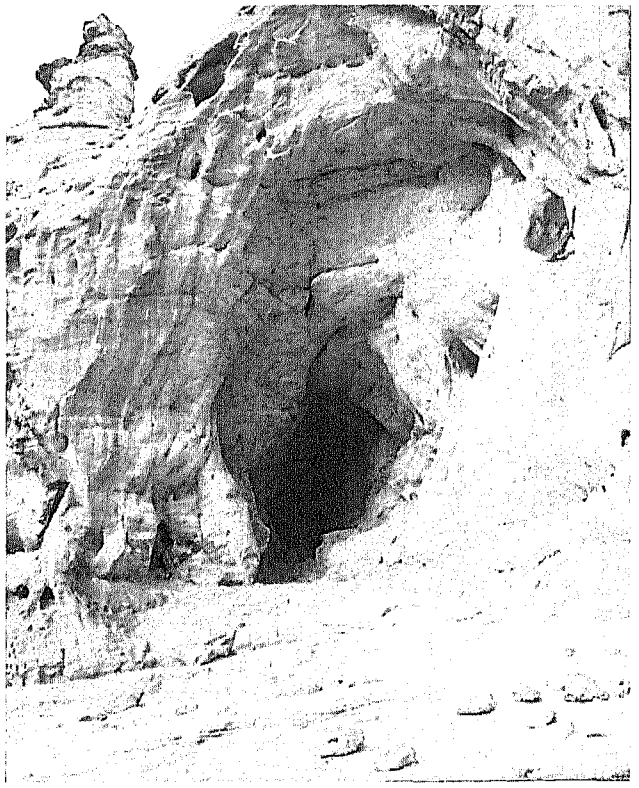
GUS W. VAN BEEK

TIMNAʿ (Ar., Wadi Meneʿiyeh), valley in the Negev, part of the ʿArabah, located about 30 km (18.5 mi.) north of the Gulf of Eilat/ʿAqaba. The area has been exploited over the centuries for its deposits of copper ore. Much investigated by nineteenth and twentieth-century explorers, Timnaʿ was extensively surveyed and excavated between 1959 and 1990 by Benno Rothenberg, joined after 1964 by an interdisciplinary team of scientists and sponsored chiefly by the Haaretz Museum in Tel Aviv.

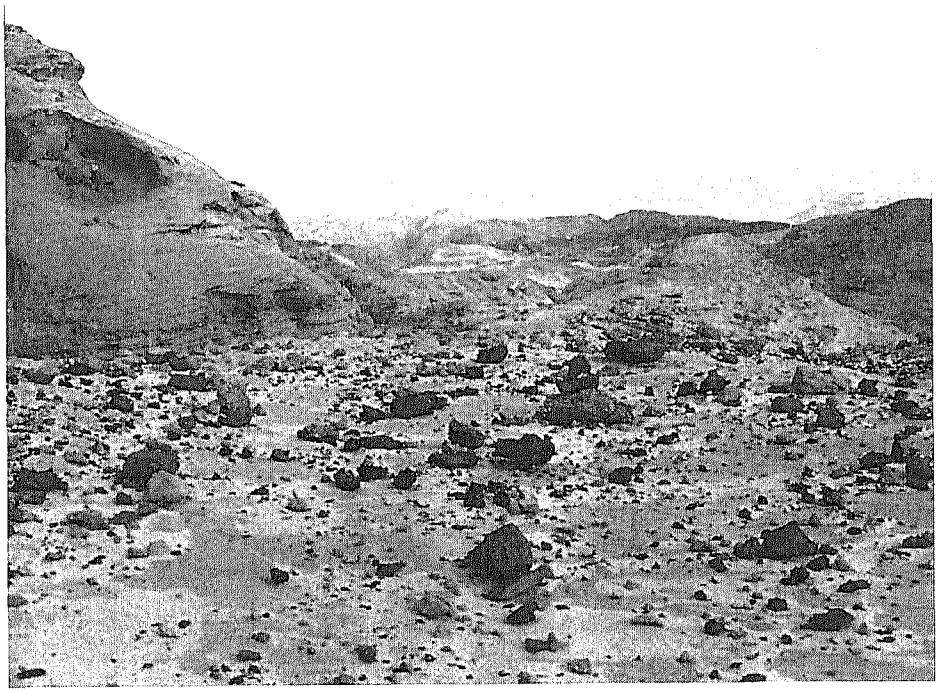
Nearly a dozen mining camps and at least one smelting site have been investigated. They date from the Late Chalcolithic to the Roman and Islamic periods, but especially to the Late Bronze Age, when Egyptian (nineteenth–twentieth dynasties) expeditions and garrisons were maintained there.

The Timnaʿ mines themselves comprise deep vertical shafts extending as deep as 35 m—narrow, horizontal galleries driven deep into the rock, sometimes branched, and saucerlike depressions in the hillsides. Such sophisticated shaft-and-gallery mining techniques as those discovered at LB Timnaʿ had hitherto been unknown before the Roman period in Europe.

One Egyptian New Kingdom mining site (site 30) was a very large smelter, with three phases of use, surrounded by



TIMNAʿ (NEGEV). *Copper mine shaft.* One of many such shafts hewn into the soft sandstone walls of the Timnaʿ cliffs. Located at site 24. (Courtesy Jay Lininger, MATRIX Publishing Co.)



TIMNA' (NEGEV). *Copper slag.* The dark-colored slag is randomly scattered at the base of the Timna' cliffs at site 2. Note the mined out copper pockets in the sandstone cliff, to the left. (Courtesy Jay Lininger, MATRIX Publishing Co.)

a defensive wall. It was in use into the Early Iron Age, with a brief reuse in the tenth century BCE. There, as elsewhere at the site, the painted so-called Midianite and handmade Negebite wares were found alongside local pottery.

The most spectacular discovery was an Egyptian temple at the base of the sandstone massif long known as Solomon's Pillars. Its major phases date to the time of Seti I (1318–1304 BCE) and Rameses II (1304–1237 BCE); it apparently was destroyed by an earthquake (site 200). The original shrine (stratum III) was rectangular in plan, with a small raised naos and a niche on the back wall. Later additions were a side chamber, a row of monoliths, and stone elements, such as a Hathor pillar and various altar fragments that were in secondary use (stratum II). A tented sanctuary (stratum I), perhaps used by Midianites after the Egyptian abandonment (c. mid-twelfth century BCE, was attested by fragments of heavy red and yellow textiles and a gilded copper serpent. The earlier Egyptian deposits included large quantities of pottery; votives in stone, alabaster, faience, terra cotta, bronze, and gold; and animal and Hathor figurines, plaques, jewelry, scarabs and seals, and a small sphinx.

Nelson Glueck's explorations in Wadi Timna' in the 1950s and his excavations in the late 1930s at the site of Tell el-Kheleifeh (which he identified as a Solomonic period smelter and seaport) connected the Timna' mines popularly with the fabled "King Solomon's mine." [*See* Kheleifeh, Tell el-.] For the most part, however, mining activity at Timna' was Egyptian-sponsored and mostly Late Bronze Age in date.

[*See also* Metals, *article on* Artifacts of the Neolithic, Bronze, and Iron Ages; *and* Temples, *article on* Egyptian Temples.]

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WILLIAM G. DEVER

TOMBS. In the ancient Near East tombs took on a number of different forms that reflected the nature of building materials, topography, social status, ethnic or tribal affiliation, and spiritual beliefs. In broad, symbolic terms, tombs

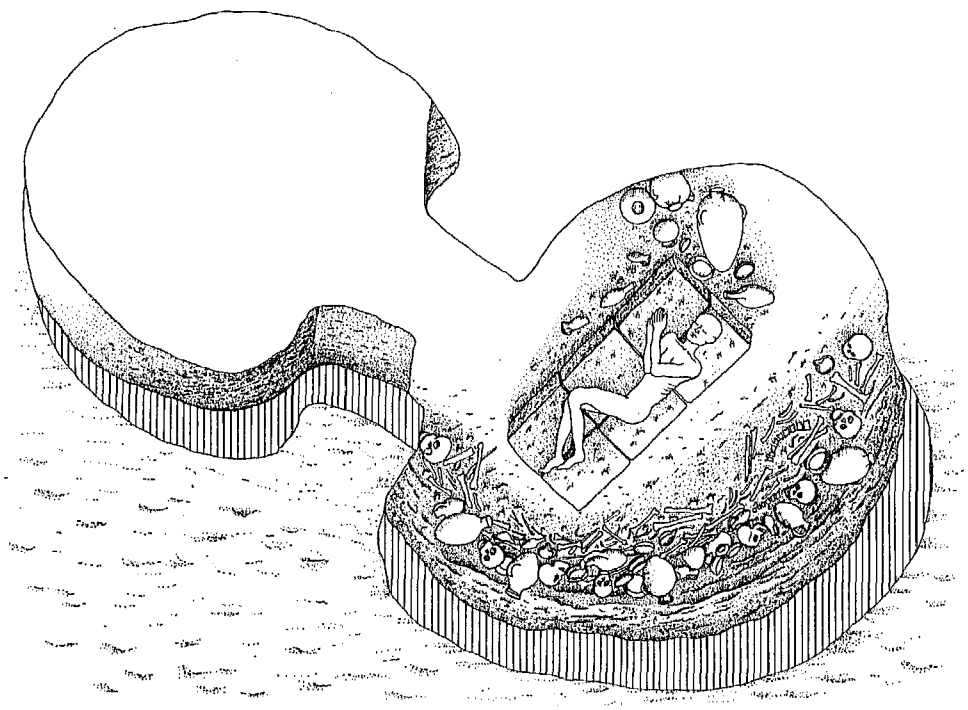
were apparently perceived as simulations of either the womb (implying the expectation of rebirth) or a dwelling (with ancestors) or both.

From the meager prehistoric evidence (from the Paleolithic to the Neolithic Ages) tombs consisted of simple pit burials inserted under the living surfaces of caves (in the Paleolithic) and huts (in the Epipaleolithic and Neolithic). By the Pottery Neolithic, infants were being interred in ceramic jars (Tel Dan, Tel Teo in the Hula Valley of Israel, Tel Qatif in the Gaza Strip) and adults in tumulus or cairn tombs (Eilat).

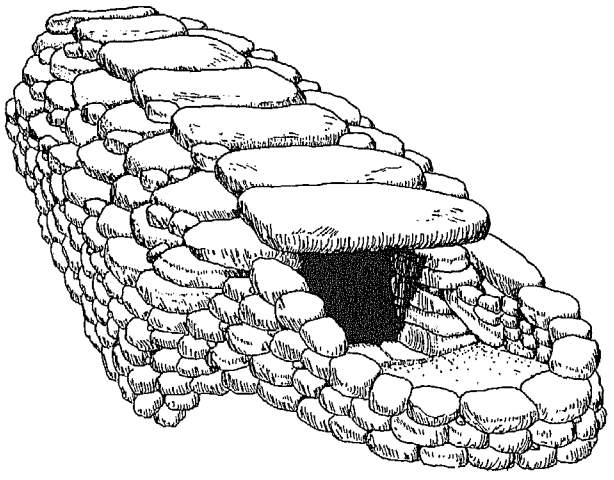
The Chalcolithic period saw the crystallization of several new tomb types and burial practices. Communal burial grounds were separated from settlements, though the tradition of intramural infant inhumation continued. The rock-carved or natural cave tomb became the standard type and remained so until the Islamic period. Constructed tombs in the form of tumuli (at Eilat, Shaʿar ha-Golan, Neveh Yam), and grave circles (the *nawamis* in the Sinai Desert and in the Shiqmin cemetery) became more commonplace. The pottery or stone ossuary came into vogue as the preferred receptacle for secondary interment of selected bones. [*See* Ossuary.] Stone-lined and capped cist tombs are found in some places, the most prominent example being Adeimeh, across the Jordan River from Jericho.

In the Bronze Age Levant the rock-carved or cave tomb was by far the most common type for adults and juveniles. This type reached its classic form in the shaft tombs at sites such as Bab edh-Dhraʿ, Jericho, and Jebel Qaʿaqir. In the steppe and desert regions, dominated by nomadic or semi-nomadic pastoralists, tumuli tombs were the standard practice, while the dolmen tomb tradition developed along the Syro-African Rift Valley, in tandem with the tumulus and rock-carved tomb. [*See* Pastoral Nomadism.] At Bab edh-Dhraʿ, early Early Bronze I shaft tombs were gradually supplanted by above-surface, round burial structures (EB IB–EB II) and finally by large rectangular "charnel houses" (EB III). In the EB IV, the shaft-tomb tradition was resumed. However, the Bab edh-Dhraʿ above-surface burial structures and the length of the burial sequence are unique thus far for the Early Bronze Age.

The tomb forms of the Early and Intermediate Bronze Ages carried through into the Middle and Late Bronze Ages, but with several innovations. The constructed, corbeled tomb (at Tel Dan, Tel Kabri, Megiddo, Jericho, Tell ed-Dabʿa) and the subfloor burial of infants in jars were imported (or reintroduced in the latter case) into the southern Levant from Syria/Mesopotamia. The bilobate cave or shaft tomb made its appearance toward the middle of the Middle Bronze Age, particularly along the coast at sites such as Tell el-Farʿah (South). In the Late Bronze Age, multiple burials in cave and shaft tombs continued as before in the high-



TOMBS. *Cut-away drawing of a rock-cut tomb with shaft.* (From T. E. Levy, ed., *The Archaeology of Society in the Holy Land*, New York, 1995)



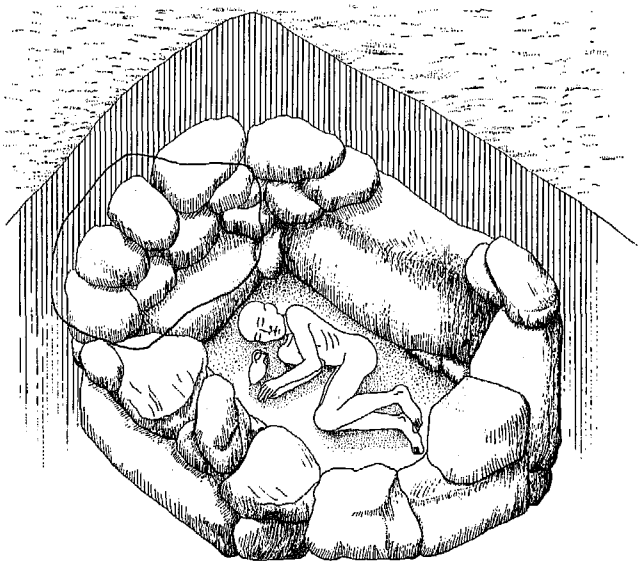
TOMBS. *Stone chamber tomb.* (From T. E. Levy, ed., *The Archaeology of Society in the Holy Land*, New York, 1995)

lands, but along the coastal zone individual cist tombs and pit burials became the norm. At the same time, rectangular chamber tombs with introductory passages (dromos), benches, and the occasional supplementary room appeared (at Tell el-Farʿah [South], Tell el-ʿAjjul, Beth-Shean, and on Cyprus), as did clay coffin burials (larnakes and anthropomorphic coffins)—all of which have been interpreted as exhibiting various degrees of foreign influence (Syrian, Anatolian, Mycenaean, Cypriot, Egyptian).

In the Early Iron Age (1200–1000 BCE), tomb types and burial practices seem to have continued LB traditions on the coastal plain and in lowland valleys. The highlands are strangely devoid of evidence for mortuary behavior, unless LB cave tombs were still in use. For the Iron Age II, most of what is known about tomb forms comes from Judah, especially Jerusalem. The classic Judahite tomb resembles the rectangular LB chamber tombs of the coast (see above), with forecourts and raised benches or troughs to support or contain the cadaver, Hathor wig-shaped headrests, and subsidiary repositories for the secondary collection of bones moved to make room for more recent inhumation. This configuration is also reminiscent of the typical quadripartite dwelling plan typical of the period throughout Israel. [*See* Four-room House.] Some of these tombs include architectural details carved into the rock and identifying, warning, or incantory inscriptions. The northern part of the inland Levant is somewhat lacking in tombs. Tombs on the Phoenician coast (e.g., Achziv) are mainly shaft tombs and cist burials, continuing Bronze Age traditions that lasted into the Persian period. Kraters containing cremations are also characteristic.

Three general tomb types have been discerned for the Persian period: (1) rock-hewn chamber tombs containing benches or troughs that continue Iron Age traditions; (2) built, dug, or hewn cist tombs; and (3) shaft tombs. The latter two types appear within the Persian period itself—cist tombs being a more eastern tradition (Persia, Mesopotamia, inland Syria) and shaft tombs being a western, littoral tradition (Cyprus, coastal Syria-Palestine). The eastern cist tradition may also include burial in metal or ceramic chests or jars, while the western shaft tradition occasionally incorporates the use of anthropoid sarcophagi, in the Egyptian and Phoenician style.

In the Hellenistic period the loculi ("burial niche," or *kokh* in Hebrew) tomb appeared in northern Egypt and became the dominant type in the southern Levant. Some of the earliest examples are found in the Mareshah (Marisa) necropolis (second century BCE) and in Jerusalem (the tomb of Jason). The other significant class of sepulcher in this period—one that appeared toward the end of the Second Temple period and remained current into the Byzantine period—was the arcosolia tomb, defined by its arched recesses containing burial troughs or benches. Loculi and arcosolia often occur in the same tomb. The dead were placed in coffins or on biers in the loculi, or in troughs or benches under arcosolia. Following a period of at least one year, the fleshless bones were collected and deposited in a charnel room (until the reign of Herod beginning c. 40 BCE) or in ossuaries (from the time of Herod until the third or fourth century CE), made of stone or clay (the latter was more common in the later Roman period). In some cases the dead were interred in stone sarcophagi, but this technique was apparently reserved for the very rich. [*See* Sarcophagus.] Tombs of this period also had benches (for the preparation of cadavers and the placement of ossuaries) and forecourts. They were often sealed by a round, rolling stone (Heb., *golal*). Some, like Herod's family tomb in Jerusalem and the

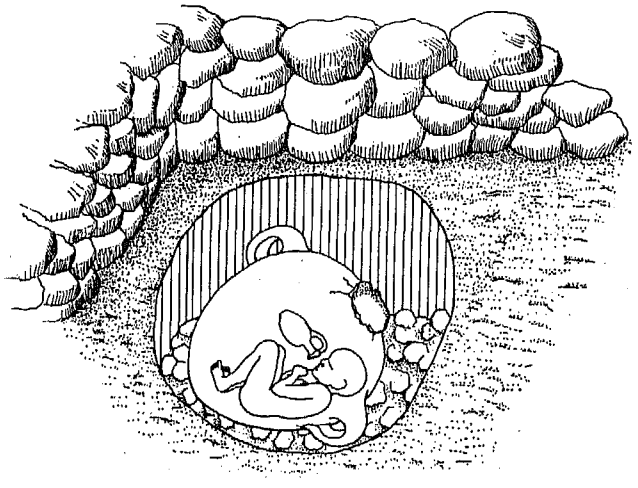


TOMBS. *Stone-faced cist tomb.* (From T. E. Levy, ed., *The Archaeology of Society in the Holy Land*, New York, 1995)

Ḥorvat Midras tomb in The Shephelah of Judah, were paneled with ashlar masonry. The great necropolis at Palmyra included very large and ornate tomb structures of three kinds: subterranean "hypogea" with loculi (the most frequent), tower tombs (originally perhaps serving as monuments for hypogea), and the least common, atrium tombs. [*See* Necropolis.]

The monumental tombs of the Hellenistic and Roman periods were characterized by the elaborate ornamentation of their facades. Monumental Jewish tombs (the best examples can still be seen in Jerusalem and Beth-Sheʿarim) were carved in nonfigural, vegetal, and geometric motifs and included a prominent marker, often in pyramidal or tholos form, called the *nefesh*. The same features, but including figural depiction, can be observed in the tombs at Palmyra and in the Nabatean necropolis at Petra. [*See* Petra.] An important source of information concerning tomb decoration and structure is the ornamentation of stone ossuaries. The remains of tomb paintings are quite rare in tombs of this period; the best (and perhaps only) examples come from the Jericho cemetery excavated by Rachel Hachlili and Ann Killebrew.

In the Late Roman period, two new phenomenon entered the tomb repertoire of Palestine. Alongside the consanguineous loculi and arcosolia tombs, the catacomb necropoli at Beth-Sheʿarim and Beth-Guvrin came into being, comprised of large burial halls and corridors carved in the bedrock and containing the remains of various unrelated families. While many features were retained from the Early Roman period (arcosolia, loculi, sarcophagi, decorative techniques and motifs) other aspects changed: ossuaries were no longer used and burial was primary, unless it concerned bones transported from afar for interment in the Holy Land. Figural motifs, including human ones, became acceptable—even adorning the tombs of rabbis. The use of frescoes became more common as well (at Lohamei ha-Getaot, Abilah, Ashkelon). [*See* Wall Paintings.]



TOMBS. *Jar burial.* (From T. E. Levy, ed., *The Archaeology of Society in the Holy Land*, New York, 1995)

The second development of the Roman period was the mausoleum: generally a square or rectangular planned, above-ground, closed structure containing sarcophagi. These often served as access to subterranean loculi or arcosolia tombs via doorways in their interiors. [*See* Mausoleum.]

For most periods it is usually assumed that extant tombs represent only a portion of the original population. The simple pit burials of the Dead Sea sect as revealed at Qumran, lacking any burial goods, and the cist burials in the Byzantine cemetery at Reḥovot in the Negev testify to the simplicity with which some parts of society may have buried their dead—generally the impecunious or otherwise ideologically inclined. In poorly drained environments that alternate between damp and dry, this type of interment may have virtually disappeared from the archaeological record.

[*See also* Burial Sites; Burial Techniques; Catacombs; *and* Cave Tombs. *In addition, many of the sites mentioned are the subject of independent entries.*]

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DAVID ILAN

TOOLS. *See* Lithics; Metals.

TOURISM AND ARCHAEOLOGY. In the Near East archaeology and tourism are made for each other, or so they seem. They spring from a common root and share a common past. In the case of antiquities tourism, they pursue a common goal: archaeological remains. Outwardly the two appear highly compatible, even perfectly complementary. Upon closer examination, however, their relationship is highly ambiguous, even problematic. This ambiguity arises from a host of complex issues—political, economic, religious, intellectual—bearing on the relationship of archaeology and tourism and their relevance to society at large (Ucko, 1988, 1989b, 1990). An understanding of this begins with an account of their shared origin and common history.

Origins and History. In the nineteenth century an abiding Western curiosity in the Near East gave rise both to archaeology and to tourism. This curiosity, fed by a mixture of religious enthusiasm and intellectual inquisitiveness, economic cupidity, and political design, generated an overwhelming interest in the antiquities of the Near East. In previous centuries ancient ruins, the objective of nineteenth-century tourists and archaeologists alike, had exerted a powerful attraction on travelers in the region. Herodotus is the best-known though certainly not the first Westerner to visit the pyramids (*Histories* 2.124–128). To label that fifth-century Greek a "tourist," however, would be anachronistic. Tourists and tourism, like archaeology, are uniquely modern.

Tourism is travel for diversion, a modern enterprise made possible by the global reach of rapid, inexpensive transportation and the increasing numbers of people willing to pay handsomely to be diverted. These diversions are of necessity safe and not too strenuous, for tourists dislike unmade roads and civil insecurity. Tourism is not pilgrimage, nor is it exploration, although religious pilgrims and early explorers in the Near East were forerunners of later tourists and archaeologists (Ben-Arieh, 1983).

Explorers like Napoleon's *savants,* Ulrich J. Seetzen, Johann Burckhardt, Edward Robinson, and others were all serious travelers bent on discovery, not diversion. In their arduous and often dangerous travels, they located ancient places and described standing ruins, some of which, like Baalbek, Palmyra, and Petra, were recognizable offshoots of a classical civilization already well known in Italy and Greece. Their discoveries set the stage for what followed.

Throughout the nineteenth century, in a mostly pacific, if not always tranquil, Ottoman Near East, tourism and archaeology flourished side by side. By 1900, Egypt, already extensively explored archaeologically, had become a well-established tourist destination, a transformation wrought by an amenable colonial administration and a flotilla of tourist steamers plying the Nile. Until World War I, the Nile Valley and the Holy Land attracted the majority of Western tourists and most of the archaeologists (Silberman, 1982, 1995; Vercoutter, 1992). After 1918 the dissolution of the Ottoman Empire and the assumption of mandatory powers by Britain and France opened the rest of the Near East to archaeologists and to tourists.

The years between the world wars were halcyon. In Europe and America, museums and learned societies devoted to study of the ancient Near East proliferated, as did university departments that trained students to conduct research on behalf of such institutions. By filling western museums with Near Eastern artifacts, academic archaeologists made the ancient world accessible to the modern. Spectacular discoveries, like the tomb of Tutankhamun, and popularized accounts, like the Chicago Oriental Institute's documentary film *The Human Adventure* shown across the United States in the 1930s, widened the general public's knowledge of the ancient Near East, knowledge that translated into a penchant for travel. While there remained remote corners like highland Yemen and interior Arabia, large portions of the Near East lay open to travelers and scholars alike. For both, curiosity prompted access and access piqued further curiosity.

During the late 1930s and 1940s, civil unrest and the global disruptions of World War II, followed by the regional conflicts and population displacements provoked by the founding of the state of Israel, effectively curtailed access to the region but did not check the motivating curiosity. In the more pacific 1950s and early 1960s, despite regional episodes of insecurity and bouts of xenophobia, tourism rebounded and archaeology thrived once again. Continuing discoveries, such as the Dead Sea Scrolls, had the same popular impact as the excavation of Tutankhamun's tomb decades before.

Events after World War II shaped archaeology and tourism in the Near East. The emergence of postcolonial nation-states in the region fomented a new relationship between the two. Foreign archaeologists ceased to be the informal agents of resident colonial administrations and became instead the formal guests, admitted under sufferance and not by right, of sovereign states, which claimed full ownership of the antiquities within their boundaries (ironically a situation akin to the Ottoman period). Tourism came to be regarded as a source of much-sought foreign currency income and something to be promoted as a matter of state policy. Ministries of tourism discerned that antiquities attracted tourists and that antiquities fitted naturally into official schemes to boost tourism and thereby state revenues.

A Natural Fit. The Western experience with the Near East during the previous 150 years prepared the way. Tourism in the Near East was unquestionably regarded as international tourism from the developed West to the developing Near East. Tacitly this recognized economic reality because only travelers from the developed world had disposable in-

come to pay for expensive diversions abroad. (Left aside temporarily was the nearby, potentially large market for local and regional tourism, which could only develop in the aftermath of permanent regional peace.)

International economic development agencies, such as the World Bank, were inclined to see the same natural fit between international tourism and antiquities. International cultural organizations such as UNESCO reinforced this by designating selected archaeological sites as elements of a "world cultural heritage" (UNESCO, 1991). Such designations served to authenticate individual government's claims for the distinctiveness of their cultural heritages and to enhance their country's status as a tourist destination. Such designations also influenced decisions by international donors about funding for programs of archaeological site preservation and promotion and affected how local departments of antiquity planned for preservation (e.g., Wigg, 1994). Recently donor policies have shifted in favor of private over the public sector investment for tourism development, a trend that has enlarged the direct role of private entrepreneurship in antiquities-based tourism in the Near East.

This perception of "natural fit" is the prevailing view on the relationship between archaeology and tourism. *Prima facie,* this opinion is valid. Archaeology discovers and explains significant remains lying unsuspected beneath the surface. Tourism connects these remains with the traveling public's knowledge and imagination in ways that make them at once interesting, intelligible, and diverting. This perception is reinforced by the indisputable fact the ancient remains do attract tourists and tourism does makes money. Although the fit between tourism and archaeology seems natural enough, however, the two are in fact independent, even divergent, phenomena.

Disjunction of Tourism and Archaeology. Tourism is hardly indispensable for archaeology. For most archaeologists, tourism is something that happens after they leave a site. Typically archaeologists, whether foreign or local academic researchers or antiquities department personnel, play a minimal role in preparing sites for tourism and none at all in the economic decisions leading to such preparations. Archaeologists, moreover, do not go to ancient sites as tourists seeking diversion but as professionals seeking information. With the exception of sites actively under excavation, the information they seek is not to be found in situ on overgrown, eroded mounds, but rather in published excavation reports, field records, drawings, photographs, and museum collections.

Archaeology is not indispensable to tourism. Ancient monuments were known and enjoyed, if not properly understood, long before the advent of archaeology. For millennia before they were investigated scientifically, the pyramids were cloaked in a mystery that detracted not at all from their allure. For tourists, the perceived role of archaeology is to expose sites worth seeing. What qualifies as "worth seeing" are usually monumental or otherwise visually spectacular ruins. Tourists (and their guides) are singularly uninterested in ruined farmsteads or abandoned nomad camps; although, as archaeologists rightly insist, these too are important parts of the archaeological record. The problem is that research agendas and tourist itineraries do not necessarily coincide. The touristic appeal of a site may be completely contrary to its archaeological significance.

Prehistoric sites present a particular problem in this regard. They are rarely well preserved (though some exist, e.g., Khirokitia in Cyprus, Çatal Höyük in Turkey) and so require a great deal of interpretation to make them comprehensible to the interested nonspecialist. Two of the largest and most important Neolithic settlements in the southern Levant, Jericho in the Jordan valley and 'Ain Ghazal east of Amman, are decidedly not tourist attractions. Neolithic Jericho, exposed only at the bottom of Kathleen Kenyon's narrow trenches, is mostly buried under meters of later accumulation. 'Ain Ghazal, although unburdened by later occupation, lies in an industrial suburb of the modern Jordanian capital at the intersection of two expressways and opposite a sewerage treatment plant—a decidedly unappealing location. Neither prehistoric site invites more than a cursory notice, if that, from any but the most determined tourist.

Sites in the Near East chosen for touristic promotion almost exclusively have some monumental aspect. They are usually Roman in date (e.g., Beth-Shean, Caesarea, Jerash), or possess some significant connection with particular national histories (e.g., Babylon, Giza, and Masada). Such sites already are part of popular cultural knowledge and in effect sell themselves. Such archaeological sites are ready-made tourist infrastructure, needing only some on-site amenities and adequate advertisement to make them attractions. These attributes are expressly cited in economic arguments for antiquities-based tourism.

Economics of Antiquities-Based Tourism. The contention that antiquities, through tourism, can be made to "pay their own way" sway skeptical economists, who resist altruistic appeals for site protection grounded in abstract principles of cultural-resource management. The logic runs thus: ancient monuments are like natural resources; they are in place and already paid for. The only capital expense required is that of making them accessible and intelligible to tourists. (This effort frequently consists simply of erecting a sign at the site and marking its location on a map.) Antiquities attract foreign tourists and foreign tourists spend hard currency, not just on admission fees, guides, and souvenirs, but also on food, lodging, transportation, and a range of other related services.

There are dangers however, in "digging for tourism." Because investments in touristic development must return a profit, economics may dictate criteria for site preservation

at odds with academic archaeological research. The dilemma is how to balance the rival demands of site preservation and touristic promotion. Site preservation, properly done, serves very long term goals with no immediate (or even eventual) payoff in public attention or financial benefit. Tourism, on the other hand, can excite wide popular interest and earn hard cash. This imbalance means that excavations of sites being developed for tourism are vulnerable to charges that archaeological rigor will be sacrificed for economic gain, not only in unearthing remains but also in post-excavation site restoration.

All excavated sites, whether developed for tourism, require post-excavation protection. The simplest and most economical means is backfilling, although this does not leave much worth seeing on the surface. Consolidation of excavated remains is a minimal measure intended to prevent further deterioration of ruins exposed to the elements. Restoration designed to recreate ruins as they appeared in antiquity is the ultimate and most costly step. Because restoration can bring about profound changes in archaeological remains, questions of whether, how, and how much to restore are fraught with controversy. There are issues of appropriate technical applications, such as what materials are strongest and least obtrusive for structural reinforcement or the most effective way to shelter delicate mosaics. There are philosophical and aesthetic debates over how much to restore and how much to leave to visitors' imaginations. There are economic arguments about the costs of post-excavation treatments in relation to calculated returns on investments for increasingly elaborate restorations. The thorniest question of all is who finally determines the extent of site restoration. This decision is rarely made by archaeologists but often by architects, landscape planners, tourist consultants, and ministry officials with varied, even conflicting aims and ideas. Political or religious forces may also play a role, as when religious proponents insist that ancient houses of worship be reconsecrated for modern use (as occurred at Masada) or politicians decree that excavated structures be refurbished as modern national symbols (as the Iraqis intend for the ziggurat at Babylon). Ultimately, whoever pays for site restoration may dictate not only its shape and scope but also its technical and aesthetic detail (Ucko, 1989c; Killebrew and Hachlili, forthcoming).

Even if the preservation *versus* restoration dilemma can be resolved, antiquities tourism is not without its drawbacks. Ancient sites, despite their apparent solidity, are actually quite fragile. The mere presence of visitors at an archaeological site, no matter how well conserved, can cause damage; and the more visitors, the more severe the damage. This is evident already in Egypt, where pharaonic-period tombs and temples are suffering from the accumulated effects of the exhaled breath and sweating bodies of the thousands of tourists who thread their way through the ruins annually. The impact of increased tourism can extend beyond the site itself into the surrounding environment. At Petra in Jordan, the Sik, the spectacular natural gorge leading into the site, is threatened by clouds of dust churned up by increased motor traffic through it. Efforts are underway to control this situation, but some irreparable harm has already occurred. Archaeological sites that attract too many tourists can fall victim to their own success.

Museums. Museums seem to offer a benign alternative to touristic promotion of sites. Archaeological museums, the distilled essence of archaeological research, constitute a complementary focus for the attentions of both tourists and archaeologists. Moreover, in museums it is possible to present antiquities in protected, interpretive contexts unachievable at archaeological sites. The complex and ambiguous relationship between archaeology and tourism, however, extends even to museums. Understanding that relationship begins again with past history.

National archaeological museums were established in every colonial capital in the Near East—Cairo (1902), Damascus (1919), Beirut (1920), Baghdad (1926), Jerusalem (1929), and Amman (1951). At their founding, they conformed in architecture and arrangement to prevailing metropolitan notions of the preservation and display of antiquities. At independence, they were bequeathed to their respective emergent nation-states along with firmly fixed western notions of what museums should be. With few exceptions, these museums and the ideas behind them have changed little in the intervening years. Today they face manifold challenges: aging physical structures, outdated exhibition galleries, cramped storage facilities overflowing with new finds, chronic understaffing, and persistent underfunding. Despite these problems, national museums in the Near East continue to attract tourists and archaeologists because they remain *the* repositories of their countries' most significant archaeological discoveries.

Archaeological museums established since nationhood, notably in Israel and in the Gulf Arab states, have followed more modernizing trajectories. This situation is also true of smaller local museums and site museums created throughout the region, both those developed by departments of antiquity, such as the Idlib Museum in Syria (which serves as a regional museum and as the Ebla site museum), and those founded by various universities, like the National Maritime Museum at Haifa University and the Museum of Jordanian Heritage at the Yarmouk University Institute of Archaeology and Anthropology.

National archaeological museums (or their parent departments of antiquity) have also originated exhibitions that have traveled outside the region, attracting and informing both tourists and archaeologists. A partial list includes *The Treasures of Tutankhamun* (Egypt, 1976–1979), *The King's Highway* (Jordan, 1986–1987) and *Ebla to Damascus* (Syria,

1985–1987), and *King Herod's Dream* (Israel, 1988–1990). The newly instituted practice of long-term loans of archaeological artifacts to Western museums, such as the Chalcolithic materials lent to the Metropolitan Museum of Art in New York by the Israel Antiquities Authority in 1994, promises to have a similar popularizing and educational effect.

Archaeology, Tourism, and Nationalism. National museums of archaeology and the collections they hold represent the cultural heritage of their respective nations. Cultural heritage is a useful thing for nation-states, providing a sense of national identity and a focus for political solidarity. It is also a commodity that can be sold to foreigners, not as artifacts (though this practice occurs) but as something to be experienced through tourism. The questions remain, which cultural heritage to market and whose national story to tell? In a region as politically, ethnically, religiously fragmented as the contemporary Near East, competing nationalisms can and do make incompatible demands on the custodians of archaeological sites. The presentation of sites, selecting some for preservation and promotion and omitting others, can be politically, religiously or ethnically expressive (Silberman, 1990, Ucko, 1989a). This extends as well to museums, where arrangement and emphasis (as well as omission) in the display of artifacts can be equally significant (Anderson, 1983; chapter 10).

Archaeological monuments are tangible symbols of the past, but as archaeologists know, monuments do not speak for themselves; they must be interpreted. The main aim of archaeological research therefore is to unearth, interpret, and understand the past through its relict material culture. Archaeologists realize that this endeavor is a complex process involving many tentative interpretations. Such tentativeness is difficult to convey appropriately to nonspecialists, who visit archaeological sites or museums in search of simple messages from these tangible symbols of the past.

Future Prospects. Because the success of tourism depends not only on interest and access but also on civil security, it is vulnerable to disruptions that create insecurity. In a region still striving toward peace and stability, tourist clienteles and public images painstakingly built up can be shattered in an instant by violence. That violence need not erupt into war, as it did in 1990–1991 in Iraq and Kuwait. A single savage act is sufficient. Political extremists know this and have in some cases (as in Egypt and Turkey) deliberately targeted tourist facilities or tourists themselves in calculated efforts to topple sitting governments. No tourist seeks such risks, so the effects of violence can be chilling for tourism.

In the mid-1990s, the prospects for peace are promising. Recent moves toward reconciliation in the region will reshape the relationship of archaeology and tourism once more. The opening of once-closed frontiers will eliminate existing artificial limitations to travel and research. Barriers to local and regional tourism, as those that once existed between Jordan and Israel, are already coming down. A stable peace will also make the region a more attractive destination for international tourists. Increasing tourism will contribute to foreign currency earnings, in turn helping spur economic growth, which in its turn will help solidify the peace. There remains the danger, however, that the haste to foster such growth will overwhelm attempts to restrain development for the protection of antiquities. Unregulated development threatens serious impacts on the very antiquities that are objects of archaeological research and touristic interest.

[*See also* Development and Archaeology; Museums and Museology; Nationalism and Archaeology; *and* Restoration and Conservation.]

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TRANSJORDAN. [*This entry provides a broad survey of the history of Transjordan as known primarily from archaeological discoveries. It is chronologically divided into five articles:*

Prehistoric Transjordan

Transjordan in the Bronze and Iron Ages

Transjordan in the Persian through Roman Periods

Transjordan in the Byzantine Period

Transjordan in the Islamic Period

In addition to the related articles on specific subregions and sites referred to in this entry, see also History of the Field, *article on* Archaeology in Jordan.]

Prehistoric Transjordan

Except for a few unsystematic surveys and excavations earlier in the twentieth century (e.g., Field, 1960; Rhotert, 1938; Waechter et al., 1938; Zeuner, 1957), interest in the prehistory of Transjordan remained relatively casual until the 1960s, when Diana Kirkbride's excavations at Neolithic Beidha (Kirkbride, 1966), near Petra, demonstrated the attractions that this underexplored landscape held in store. Research accelerated in the 1970s (Garrard and Price, 1975–1977; Henry et al., 1981), and since the onset of the 1980s Transjordan has become a principal focus of prehistoric investigations in the Levant.

Ecological Setting. The ecological diversity that characterizes Transjordan's varied terrain can be classified into four major north–south trending environmental corridors (Madany, 1978; Henry, 1986). From west to east, these include: the Rift Valley system, including the Jordan Valley, the Dead Sea basin, and the Wadi ʿArabah. [*See* Jordan Valley.] This region is hot and, for the last two areas, dry; the western highlands and adjacent slopes, which receive the highest precipitation (200–600 mm per year) and enjoy relatively moderate temperature ranges; the steppe region, which, with 100–200 mm of annual precipitation is unarable but which provides considerable pasturage for animals; and the eastern and southern deserts, with less than 100 mm of precipitation and seasonal but sparse vegetation. Much of the northeastern part of this area is covered with basalt flows. Underground aquifers drain a vast region of eastern Transjordan, southern Syria, western Iraq, and northern Saudi Arabia, resulting in the oasis springs and pools of the otherwise arid Azraq basin. [*See* Azraq.]

Changes in climate during the Pleistocene and Holocene epochs strongly influenced the distribution of vegetation in the countryside of Transjordan. Paleoclimatic and paleobotanical information is scantiest for the Lower Paleolithic period, although geological evidence from the Azraq area indicates periods of stable ground cover fluctuating with episodes of erosion and deposits of windblown silts and sand (Besançon et al., 1989; Hunt, 1989), a cyclic phenomenon that has been partially corroborated by undated pollen profiles (Kelso and Rollefson, 1989). [*See* Dating Techniques; Paleobotany.]

The earlier part of the Middle Paleolithic appears to have been a cool period with considerably higher rainfall than at present, although a period of desiccation began about 60,000 years ago, increasing in intensity through the Upper Paleolithic with an interlude of amelioration from about 35,000 to 25,000 years ago. The Epipaleolithic began under mild conditions, but wet and dry intervals fluctuated every two thousand–three thousand years, culminating in the moist circumstances for the Natufian period (Henry, 1986, pp. 8–12). The situation for the Neolithic is frankly confusing, despite the intensity of research in Transjordan and the surrounding region. Claims for increasing regional aridity at about 6000 BCE (e.g., Kenyon, 1979; Horowitz, 1979) seem unfounded on the basis of excavations at ʿAin Ghazal (Rollefson and Köhler-Rollefson, 1989), although modern conditions may have been attained sometime in the fifth millennium. [*See* ʿAin Ghazal.]

Cultural Developments. The earlier phases of the Lower Paleolithic period are poorly known in Transjordan. The only candidate for an Early Acheulean ascription is Abu Khas, near Pella in the Jordan Valley (Villiers, 1983), where artifacts show technological and typological similarities to ʿUbeidiya in Palestine. [*See* Pella; ʿUbeidiya.] However, since the artifacts were redeposited from their original location by erosion, the age is uncertain. The same problems apply to the late Middle Paleolithic collection from Wadi ʿUweinid in eastern Jordan (Rollefson, 1984).

By contrast, Late Acheulean sites are numerous, although only two have been excavated, both in the Azraq basin (Hunt and Garrard, 1989; Copeland, 1991). Results of these excavations and surface collections from throughout the country indicate the existence of three principal Late Acheulean traditions based on variations in tool types and technology: the western Levantine Late Acheulean (cf. Rollefson, 1981), the desert wadi Acheulean, and the Azraq facies (Copeland and Hours, 1988).

In general, it appears that the Late Acheulean inhabitants of Transjordan roamed the countryside in small bands of perhaps ten–fifteen people. One exception to this is the site complex at Fjaje in southern Transjordan, where the distribution of artifacts indicates a seasonal concentration of autonomous groups to "harvest" herds of animals migrating from the Wadi ʿArabah to the Jordanian plateau (Rollefson, 1985).

Middle Paleolithic sites are absolutely abundant throughout Transjordan, accounting for 60 percent or more of the

sites discovered in recent surveys (e.g., MacDonald et al., 1983; Rollefson, 1987a). All of the assemblages conform to the Levantine Mousterian; earlier claims for a Yabrudian presence in northeastern Transjordan have not been borne out by recent investigations (Copeland and Hours, 1988). Two phases of the Middle Paleolithic are evident: an early phase dominated by blades and elongated Levallois points followed by a younger phase, characterized by smaller Levallois flakes and Mousterian points (Copeland and Hours, 1988). Examples from the earlier stage are the excavated deposits from 'Ain Difla in west-central Transjordan, dated by thermoluminescence to 120,000 BP (Clark, 1991), and the assemblages dug from Tor Sabiha and Tor Faraj, south of Ras en-Naqb. [*See* Ras en-Naqb.] The younger phase is reflected by the artifacts from Wadi Enoqiyya just north of Azraq. The transitional (Middle–Upper Paleolithic) Emireh industry is known from several surface exposures in the Wadi el-Hasa (MacDonald et al., 1982; 1983). [*See* Hasa, Wadi el-.]

Despite a decrease in the number of Upper Paleolithic sites, the rate of assemblages per thousand years is comparable to that of the Middle Paleolithic (Rollefson, 1987a, p. 772). The Levantine Aurignacian tradition, based heavily on the production of endscrapers and burins, has been identified in the Ras en-Naqb area, and examples of the blade-bladelet Ahmarian tradition are known from Wadi el-Hasa and the Azraq basin (Byrd and Garrard, 1990).

Tools made on bladelets ("microliths") dominate the inventories of Epipaleolithic sites, although larger tools continue to be important. Chipped-stone assemblages show considerable local diversity in the use of specific techniques and particular configurations of tool types (Henry, 1988; Byrd, 1988), although in general they conform to the Kebaran-Geometric, Kebaran-Natufian sequence of the rest of the Levant. [*See* Carmel Caves.] Settlement diversity is also pronounced during the Epipaleolithic, ranging from small, ephemeral campsites to extensive and deep occupation horizons. The Geometric Kebaran sites Jilat 6 and Kharaneh IV extended over 2 ha (5 acres). Jilat 6 included several dwelling floors, two coated with red ocher, and Kharaneh IV has produced Transjordan's oldest human burials (Rolston, 1982).

Natufian hunter-gatherers ranged from the northeastern deserts (Betts, 1982) to the southern extremes of Transjordan (Henry et al., 1985). Sites vary from small, temporary camps (Byrd, 1989; Gebel, 1988) to large, semipermanent or perhaps permanent settlements (MacDonald et al., 1983; Edwards et al., 1988). The substantial settlement at Wadi Hammeh 27 in the Jordan Valley includes an impressive array of ground-stone artifacts, dwellings, and artwork, as well as several human burials with grave goods. Azraq 18 in eastern Transjordan produced at least eleven burials (Byrd and Garrard, 1990). Although the initial steps leading to agriculture are probably to be found in the Natufian (Gebel, 1984, pp. 7–8), it is not until the Neolithic that definite evidence of human control over plants and animals is found. [*See* Agriculture.]

Two small Pre-Pottery Neolithic A (PPNA) sites have been identifed on the basis of the presence of Khiamian points: Sabra 1 near Petra and Jebel Queisa, south of Ras en-Naqb. In northern Transjordan, the cave of 'Iraq ed-Dubb in Wadi Yabis has produced a broad range of information, including an oval structure, human burials, well-preserved plant and animal remains, and a chipped-stone industry with Khiamian points, all associated with a C-14 date of 8000 BCE; it is not yet clear if the plants include domesticated varieties. [*See* Yabis, Wadi el-.]

The PPNB period witnessed a considerable series of developments, including rectangular architecture (Banning and Byrd, 1987); the domestication of animals (Köhler-Rollefson, 1988; 1989a); local and regional population growth (Rollefson, 1987b; 1989); and an elaboration of ritual practices (Rollefson, 1983a; 1986; Tubb, 1985).

The early PPNB is poorly known in Transjordan, although the phase is signaled by the presence of Helwan projectile points at Jilat 7 in the Azraq area and ad-Daman near Petra. Surface indications of curvilinear architecture and Helwan points at Abu Hudhud in Wadi el-Hasa hold considerable promise for future excavations (Rollefson, n.d.).

The middle PPNB and late PPNB constitute the "classic" Levantine Neolithic period, which can be described in great detail for Transjordan as a consequence of the work conducted at Beidha and 'Ain Ghazal. [*See* Beidha.] The small- to medium-sized middle PPNB farming villages relied on cereal and pulse agriculture and hunting supplemented by goat herding (Köhler-Rollefson et al., 1988). [*See* Cereals.] This mixed-subsistence base was lucrative, at least in the short term (Köhler-Rollefson, 1988), leading to the growth of late PPNB "megasites" such as 'Ain Ghazal, Wadi Shu'eib, and perhaps Basta, all of which extended over more than 12 ha (30 acres). [*See* Shu'eib, Wadi; Basta.] The strain on the delicate ecological systems forced the abandonment of several middle PPNB settlements, however, such as Jericho and Beidha (Rollefson and Köhler-Rollefson, 1989). [*See* Jericho.] The degradation of local environments was exacerbated by demands on forests for fuel to manufacture the lime plaster that was typically used for house floors and walls (Rollefson, 1990b). The removal of trees and brush also eliminated numerous wild-animal habitats, so that by the end of the late PPNB cattle, pigs, and perhaps sheep had been domesticated to replace the variety of disappearing wild species. [*See* Cattle and Oxen; Pigs; Sheep and Goats.]

There is a wealth of evidence pertaining to ritual and religion from middle and late PPNB sites, best typified by the materials from 'Ain Ghazal. Three principal types of human burials occurred, including a subfloor or courtyard, flexed, and decapitated style for most people over the age of a year or so; "trash-pit" burials for about a fourth of the adult pop-

ulation, with skulls left intact with the body; and infant "disposal," with skulls left intact, sometimes occurring as foundation deposits. The first style is probably a family ritual that, along with several plastered skulls, was associated with ancestor veneration (Rollefson, 1983a; Simmons et al., 1990). The second style suggests at least an incipient social hierarchy within the community. The treatment of infants may indicate an absence of "social value" for babies, a possible psychological accommodation for a society that experienced a 30 percent infant mortality rate (Rollefson et al., 1984). [*See* Burial Techniques.]

Human figurines of baked or unbaked clay figured prominently in the lives of the people, and at least one type is clearly identifiable with human fertility. With only one exception, human figurines were broken at or near the neck, a "ritual decapitation" that paralleled the normal burial style. Clay animal figurines were also numerous, and cattle overwhelmingly dominated the identifiable pieces. Several specimens bore cord impressions behind the heads, as if they were haltered, and two cattle figurines were ritually "killed" and buried beneath a house floor (Rollefson, 1986).

The most stunning ritual objects are lime-plaster statues and busts found in three caches at ʿAin Ghazal. One cache has been stratigraphically dated to before 7100 BCE; another produced two C-14 dates of about 6700 BCE; and the third cache can be assigned to about 6500 BCE. It seems probable that the smaller busts (about 45 cm high) represent mythical lineage or clan members, and the taller statues (about 90 cm high) might represent mythical village founders.

The effects of the growing population of Transjordan during the late PPNB, and the sustained degradation of local environments, are reflected in the establishment of hamlets, hunting camps, and specialized "burin sites" in the eastern steppe and deserts. Jilat 7, for example, included several round structures and domesticated barley and wheat but no domesticated animals. The camp at Azraq 31 produced domesticated cereals, probably domesticated sheep or goats, and the remains of numerous wild animals (Garrard et al., 1988). Dhuweila is only one of a large number of late PPNB hunting camps in the Basalt, or Black, Desert, some of which appear to be associated with hunting traps called kites (Betts, 1988b; 1989). Burin sites are known from much of Transjordan (Rollefson et al., 1982; MacDonald et al., 1983), but they are especially concentrated in the arid parts of eastern Transjordan. The function of burin sites remains enigmatic, although they may be associated with pastoral camps (Betts, 1988a).

By the beginning of the sixth millennium, all known farming villages in the southern Levant were abandoned with the exception of ʿAin Ghazal, Wadi Shuʿeib, and perhaps Basta. These PPNC sites, not far from the steppe, continued to thrive as agricultural settlements, but changes in chipped-stone tool production, architecture, subsistence economy, and ritual all indicate major departures from late PPNB norms (Rollefson, 1990a; Rollefson and Köhler-Rollefson, 1993). It appears that some of the village people spent considerable time with their herds in the unfarmable steppe and desert, beginning a process that would eventually lead to fully segregated farming and pastoral economies (Köhler-Rollefson, 1989b). PPNC burials were normally subfloor or courtyard interments, but the skull invariably remained intact with the rest of the body. Most burials also included "offerings" of pig bones (Rollefson et al., 1991). Animal figurines were relatively sparse, and the few PPNC human figurines do not show ritual decapitation, suggesting a major shift away from the religious beliefs of the PPNB period.

With the emergence of the Pottery Neolithic (PN) period, Transjordan witnessed the founding of numerous new farming hamlets in areas not damaged by PPNB ancestors (Kafafi, 1988; Gordon and Knauf, 1987), in addition to maintained occupations at ʿAin Ghazal and Wadi Shuʿeib. It is now clear that pottery manufacture was a locally developed technology and not imported from the northern Levant (Rollefson et al., 1991), although trends within the PN period in Transjordan and Palestine are admittedly difficult to trace. Yarmukian pottery is characteristic of northern Transjordan and differs considerably from the PNA wares and decorative styles found in the Jordan Valley, the Dead Sea basin, and Wadi el-Hasa (Kafafi, 1990; Kenyon, 1979; Bennett, 1980; MacDonald et al., 1983). The pottery from the upper layers at ʿAin Ghazal is entirely Yarmukian, but at Wadi Shuʿeib there are occasional lenses of PNA sherds within the greater Yarmukian stratigraphic sequence (Simmons et al., 1989). [*See* Ceramics, *article* on Typology and Technology.]

The transition from the PPNC to the Yarmukian is well documented at ʿAin Ghazal, and the initial phases of the Yarmukian at the village maintained the agricultural and herding scheme of the preceding aceramic antecedents. Near the end of the sequence at ʿAin Ghazal, however, substantial architecture was replaced by flimsy, hutlike structures, signaling the end of ʿAin Ghazal as a permanent settlement; it was visited instead on a temporary basis, probably in the late summer or autumn, by full-time sheep/goat pastoralists. Contemporaneous sites in the steppe and desert flourished in number (Betts, 1986; Rollefson, 1988).

PN ritual practices are poorly known. Although a number of clay animal and human figurines (including "coffee-bean" fertility examples from ʿAin Ghazal and Tell Abu Thawwab), have been recovered, not a single Yarmukian burial has, implying that off-site cemeteries may have been the rule. A small apsidal structure at ʿAin Ghazal may have served some public function in view of its unique shape and the presence of exclusively fine-ware ceramics (Rollefson et al., 1991), but to what end could not be determined. A late PN site in Wadi Ziqlab, perhaps ascribable to the PNB of the fifth millennium (Banning et al., 1989), yielded several slab-lined burials with accompanying pottery vessels; so far,

however, there have been no comparable examples from elsewhere in Transjordan. [*See* Ziqlab, Wadi.]

Surveys have identified numerous Chalcolithic sites throughout Transjordan's Rift Valley and western highlands, but so far only a few have been excavated. The most productive research has focused on Teleilat el-Ghassul and Abu Ḥamid. It now appears that the Chalcolithic derived from local late Neolithic roots (Hennessey, 1982; pp. 57–58).

Covering about 6.5 ha (16 acres), Abu Ḥamid's small houses (about 25 sq m) and associated storage and processing facilities reflect a rural agricultural village that was probably typical for the Jordan Valley and adjacent slopes. Crops included olives, figs, flax, cereals, and legumes. [*See* Olives.] Domesticated animals consisted of cattle, sheep/goat, pigs, dogs, and ass; hunting and fishing were rarely pursued. [*See* Dogs.] The artifact inventory was generally mundane, characterized by pottery, baskets, and chipped-stone and ground-stone pieces. Clay animal figurines were rare, and only a few violin-shaped human figurines were recovered. To date no human burials have been found at the site, indicating that separate cemeteries were the rule. [*See* Abu Ḥamid, Tell.]

Teleilat el-Ghassul was a huge settlement, extending over more than 20 ha (49 acres). The houses were large (about 35–60 sq m) and regularly situated, suggesting that some central planning authority may have existed (Levy, 1986, p. 88). Not enough information has been assembled to determine if the Transjordanian Chalcolithic settlements were arranged in a hierarchical political system analogous to chiefdoms, but if this was the case, then Ghassul was undoubtedly a chiefly center.

One area of the site revealed a walled sanctuary area containing two buildings with painted walls from which cultic vessels and clay figurines were recovered. The only human burials found were infants; adults were evidently buried outside the settlement, perhaps in a formal cemetery. Evidence of the subsistence economy parallels that of Abu Ḥamid.

Teleilat el-Ghassul may have served as a regional ceremonial center in view of the remarkable murals recovered from several of the buildings (Cameron, 1981). Depicted in vivid primary colors (red, green yellow, black, brown, and white), clusters of geometric shapes, processions of masked humans, and occasional animal designs combine to suggest a magico-religious system under the control of a full-time priesthood that oversaw common rituals and a calendar of special rites. [*See* Teleilat el-Ghassul; Wall Paintings.]

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GARY O. ROLLEFSON

Transjordan in the Bronze and Iron Ages

The archaeology of the region east of the central point of the Great Rift Valley is, in many ways, still in its infancy. Biblical connections encouraged early archaeologists to focus on the central territories of ancient Israel, while social and political difficulties in Transjordan discouraged early archaeological exploration. In the 1930s Nelson Glueck pioneered the work in Transjordan by surveying most of the region, discovering many sites unknown before his time and showing that it was possible to do archaeological work there (Glueck, 1970). Only since the 1960s has excavation work on Bronze and Iron Age sites in Transjordan been begun in earnest.

Since the last synthesis on Transjordan (Sauer, 1986), considerable new evidence for the Bronze and Iron Ages has been published, both from surveys and excavations (e.g., Homes-Fredericq and Hennessy, 1986–1989; Ibach, 1987; Miller, 1991). Although closely related to very well-documented archaeological syntheses west of the Jordan River, many of the new finds emphasize significant differences between Transjordan and Cisjordan. The archaeology of Cisjordan can no longer be used as a paradigm for the events east of the Jordan.

Transjordan has three geographic zones running north–south: the east bank of the Rift Valley, including the Jordan River, Dead Sea, and 'Arabah; the arable plateau, which, because of its relatively high altitude, receives enough rain for dry farming, narrowing as it proceeds south; and the eastern desert, which cannot support agriculture without springs and irrigation. Settlement patterns in these three regions are often strikingly different. The Jordan Valley, for instance, tends to have closer connections to the west than it does to the Transjordanian plateau. [*See* Jordan Valley; Judah.]

Early Bronze I–III Periods. The Early Bronze Age begins after the Chalcolithic period (c. 3300 BCE). It is characterized by the growth of urban centers, primarily in the northern part of the country. Although many of the sites are in or very near the river valleys (where water sources could support irrigation agriculture), other sites, including some of the largest ones (e.g., Jalul and Madaba, south of Amman; Tell el-Ḥuṣn, near Irbid), controlled large dry-farming territories on the plateau. This and the presence of the large EB I site of Jawa (North) in the northeastern desert, with its complex system of water management, confirms new evidence from pollen that the climate was most likely wetter than today (Sauer, 1994). [*See* Jawa.] Climate was probably one of the reasons why this period was the most populated in Transjordan until near the end of Iron II (eighth–seventh centuries BCE).

Jawa (North) was one of the most remarkable EB I sites. It was surrounded by a well-preserved city wall and a large gate through which access was gained to a large settlement; outside the walls, in the valleys surrounding the city, a complex series of waterworks included dams, embankments, sluices, and reservoirs. [*See* Reservoirs.] A megalithic tomb, probably a dolmen, from EB IB Tell el-'Umeiri near Amman, that contained twenty burials, twenty complete ceramic vessels, and a few beads has helped to solve the mystery of the chronology and function of similar undated tombs throughout the southern Levant. [*See* Tombs; 'Umeiri, Tell el-; Grave Goods.] Another site, Bab edh-Dhra' at the entrance to the Lisan peninsula of the Dead Sea, has produced one of the largest EB I cemeteries so far uncovered in the Levant containing shaft tombs. It is the type-site for EB I in Transjordan. [*See* Bab edh-Dhra'.]

EB II–III saw the floruit of urbanization. The inhabitants of Bab edh-Dhra' built a strong fortification wall and large buildings on the high points inside the city and expanded the cemetery in EB III with charnel houses (small buildings in which bodies were burned and buried). A neighboring site, Numeira, was a small town preserved by a fire that left more than a meter of burned debris. The most significant EB site in Transjordan, however, is Zeraqun, northeast of

Irbid. [*See* Zeraqun, Khirbet ez-.] It contains a holy precinct with twin temples and a round sacrificial altar with stairs similar to the complex of temples at Megiddo in modern Israel. [*See* Altars; Megiddo.] There is also a large building complex (possibly a palace), a stepped water shaft descending for more than 100 m from a scenic cliff face overlooking the Yarmuk River valley, and strong defenses surrounding an extensive domestic settlement.

The EB material culture was similar to that west of the Jordan, suggesting close cultural and possibly ethnic connections. Within the ceramic assemblage, several forms are widespread, such as holemouth jars and cooking pots, large pithoi with flaring rims and rope molding around the upper shoulder, high-handled juglets, hemispherical bowls, and band painting (in EB IB). Among the weapons, mace heads were frequent. [*See* Weapons.] After pottery, the objects found most frequently are stone grinders for food production. The period's monumental architecture resembles that appearing east and west of the Jordan River in the temples and altars at Megiddo and Zeraqun. The region's domestic architecture, however, is not uniform except that, at most EB sites, such as Tell el-ʿUmeiri, houses are conceived as compounds with living, storage, stable, and courtyard spaces combined into a single housing complex. Such compounds reflect the integration of dispersed agricultural settlements into large urban sites, perhaps for security reasons. Artistically, seal impressions in Transjordan are similar to those found in Cisjordan with geometric designs rolled over pottery by a cylinder seal.

Early Bronze IV (or Middle Bronze I) Period. Toward the end of the third millennium (c. 2300 BCE), urbanism decreased in favor of nomadism. [*See* Pastoral Nomadism.] Large cemeteries at sites with no settlements, but near perennial water (e.g., Bab edh-Dhraʿ, Pella, Tiwal esh-Sharqi, Amman), attest to the nomadic element. [*See* Pella; Amman.] Settled sites in the Jordan Valley and the southern part of the region are primarily not large urban centers, but small agricultural villages and towns. The conversion from the sophisticated urbanism of EB II–III to that of pastoral nomadism in EB IV was probably caused in considerable part by a drying of the climate—drier even than today.

The largest site from this period in all of the southern Levant is Khirbet Iskander in Wadi el-Wala, north of Wadi el-Mujib. [*See* Iskander, Khirbet.] It is the only truly fortified site with a city wall, defensive tower, and gate so far excavated. Tell Abu Niaj, in the northern Jordan Valley, was one of the small villages. Its neighbor and similar site, Tell el-Ḥayyat, produced an uninterrupted transition to the Middle Bronze Age. [*See* Ḥayyat, Tell el-.] Other small settlements include Tell Iktanu in the southern Jordan Valley; ʿUmeiri; Lehun and ʿAroʿer, on the north rim of Wadi el-Mujib; and Ader and Khirbet Ḥabaj, near Kerak. [*See* Iktanu, Tell; Lehun; ʿAroʿer.] Both Iskander and ʿUmeiri also included nearby cemeteries.

Although the EB IV lifestyle was drastically different from that during the period's earlier stages, the material culture still retained primarily EB traits. The pottery was handmade, with forms that naturally arose out of earlier ones. Unlike the universalism of the EB I–III ceramic forms, this period saw the rise of families of pottery that can be isolated to regions (for the Amman region, cf. Palumbo and Peterman, 1993). Many of the tombs contained copper weapons, such as daggers, along with pottery; most of the burials were secondary. [*See* Burial Techniques.]

Middle Bronze Age. Urbanism began to develop again in about 2000 BCE, heralding the Middle Bronze Age. However, Transjordan did not experience the same growth patterns as Cisjordan. Glueck (1970) postulated that there was a significant gap in occupation on the southern Transjordanian plateau during the Middle and Late Bronze Ages. Although the length of the "gap" Glueck proposed is no longer argued, there certainly was a reduction, compared to the flourishing Early Bronze Age. A wetter climate allowed the growth of new urban centers, often on top of EB sites, especially in the Jordan Valley and on the northern and central plateaus, but there was still very little occupation in the southern regions. Urban centers on the plateau were similar to those in Cisjordan, but there tended to be more space between them.

The major excavated sites are primarily in the Jordan Valley, where there was closer communication with the prosperous west. Pella, in the north, contained an often-rebuilt brick city wall and burials within the city as well as outside, in large cemeteries. A temple with thick walls and small houses were found at Ḥayyat. At Tell Deir ʿAlla, in the central Jordan Valley, walls were preserved for more than 2 m in height, with a possible rampart against the city wall; at Tell Nimrin, in the southern part of the valley, there is a very deep, bricky deposit with several phases visible in a road cut. [*See* Nimrin, Tell.]

On the plateau, the Amman citadel and ʿUmeiri have produced ramparts similar to those in the west; ʿUmeiri's rampart includes a dry moat at the bottom. The fact that MB pottery has been found in quantity at many other excavated sites (Abu Snesleh, Abila, Jerash, Deir ʿAin ʿAbata, the Baqʿah Valley, Mekhayyat) and in surveys throughout northern Transjordan, including the eastern desert, suggests this period will become much better known. [*See* Abila; Jerash; Baqʿah Valley.] Jawa (North) contains a fortress above the EB ruins that still preserves corbeled roofing stones.

It may be that MB urbanization only slowly reached the plateau. The best-documented plateau site is ʿUmeiri, but its remains are from the very end of the period. At several locations, EB IV shaft tombs have been found reused early in the period by MB IIA burials. It may be that the pastoral lifestyle of EB IV continued into the beginning of the Middle Bronze Age on the plateau. Elements of MB material culture resemble those in Cisjordan, including finely made pottery,

often with white or cream slips and a reddish-brown painted design called chocolate-on-white ware that begins near the end of the period.

Late Bronze Age. In Cisjordan the Late Bronze Age began in about 1550 BCE. There is so little excavated material from this period in Transjordan that there is no way to support or reject this date. Along with an apparently drier climate, the number and quality of sites diminish in the Late Bronze Age and remain virtually absent from the southern part of Transjordan. In many respects, the period is a continuation of the Middle Bronze Age. Ceramic forms continue but in degenerated wares and painted patterns. The international trade represented by imported items in Cisjordan and the Jordan Valley is only weakly apparent on the plateau.

The major excavated sites are in the Jordan Valley. Pella produced finds primarily from tombs, but the site is well known from the Amarna letters, and Deir ʿAlla contained a small shrine from late in the period. [*See* Amarna Tablets; Deir ʿAlla Inscriptions.] Other deposits occur at Tell es-Saʿidiyeh and Abu Kharaz. [*See* Saʿidiyeh, Tell es-.] Tombs were excavated at Kataret es-Samra in the south. On the plateau, Umm ed-Dananir in the Baqʿah Valley included burial caves and possibly a square temple. The old Amman airport held a small square sanctuary (possibly similar to that at Umm ed-Dananir) that may have been used for human sacrifice or funerary functions, including cremation; this site contained most of the imported pottery and objects so far found on the plateau. [*See* Amman Airport Temple.] Other materials in secondary context have come from Abila and Qwelbeh, near Irbid, and Jerash. In the region east of the Dead Sea, ancient Moab of the Bible, surveys have found considerable evidence for LB occupation, perhaps even heavier than in the Amman region. [*See* Moab.] However, south of Wadi el-Hasa virtually nothing has appeared either in excavations or surveys. [*See* Hasa, Wadi el-.]

Toward the end of the Late Bronze Age, a fresh wave of settlements began that continued into the following Iron I period. Excavated sites include Irbid, Tell el-Fukhar (near Irbid), the Baqʿah Valley, ʿUmeiri, Ḥesban, and possibly Madaba (based on tombs). [*See* Ḥesban; Madaba.] These sites are not continuations of the MB and earlier LB sites, but include, along with late LB pottery and objects, pottery that is also akin to the Iron I, such as large quantities of collared pithoi. It is likely that these sites represent the settlement processes of the nomadic groups that eventually became the national groups of Transjordan known from the Bible and other literary sources: Gileadites, Ammonites, Moabites, and Israelites.

Iron Age I. Beginning in about 1200 BCE or slightly earlier, the Iron I period is characterized by a rapid rise in the number of settlements throughout the plateau, except south of Wadi el-Hasa, as the climate seems to have become slightly wetter. The settlements that began toward the end of the Late Bronze Age continued. Edom probably existed as a nomadic tribal group, and parts of Midian may have come into the southern portions of Transjordan from the Hijaz. [*See* Edom; Midian.]

The Philistines and Canaanites most likely shared a large part of the Jordan Valley, where the major urban centers were located. [*See* Philistines; Canaanites.] Tell es-Saʿidiyeh included a large courtyard building that may have been a governor's residence; and the covered staircase that descended to the water table on the north slope of that site was an important public feature. At Tell el-Mazar, in the central valley, vessels from the Phoenician coast and a few from Egypt were imported in the eleventh century BCE; a large courtyard building from the tenth century BCE that contained cultic ceramics (chalices, a cult stand) was also found there. [*See* Mazar, Tell el-; Phoenicia.] At Deir ʿAlla, extensive remains from twelve phases were found, including Philistine pottery, metallurgical tools for bronze production, and possible city walls with a gate. There was also evidence of an earthquake in about 1200 BCE. [*See* Deir ʿAlla, Tell.]

On the northern plateau is the ancient mound of Irbid, with a cemetery and a possible city wall. [*See* Irbid.] Recent excavations at Fukhar have produced domestic dwellings with large quantities of collared pithoi and the only Philistine potsherd so far found on the plateau. The sites in the Amman area include the Baqʿah Valley, with its cave burials; Saḥab, with domestic dwellings and collared pithoi; Ḥesban, with a cistern and a rock-cut water or defensive installation; and ʿUmeiri. [*See* Saḥab; Cisterns.] The latter has the most coherent fortification system from this time in the southern Levant, including a dry moat, a rampart, and a casemate wall; houses inside the wall were preserved up to 2.5 m high. At ʿUmeiri more evidence was found for the 1200 BCE earthquake (see above). Although ʿUmeiri was larger than most highland villages, and certainly much better fortified, its material culture represents that of the earliest highland villages in Cisjordan, including about ninety reconstructable collared pithoi.

In Moab, small-scale excavations have unearthed village sites at Lehun and ʿAroʿer along the north rim of Wadi Mujib. Baluʿ, Medeinet el-Muʿarrajeh, and Medeinet el-ʿAliya on the south rim were more major sites, but both seem to belong to near the end of Iron I. [*See* Baluʿ.] Medeinet el-Muʿarrajeh may have copied the idea of a dry moat from ʿUmeiri. Only soundings at very small, shallow sites have produced Iron I pottery in Edom, south of Wadi el-Hasa at Baʿja and Sela. It is likely, however, that other sites will produce Iron I remains in the future. Other excavated sites with secondary or small deposits include Nimrin, Abu el-Kharaz, Abila, Jerash, and Feinan. [*See* Feinan.] Cemeteries were found at Saʿidiyeh, Mafraq, and Madaba. Surveys throughout Transjordan have shown Iron I sites frequently, in all regions but on the southern plateau.

Two assemblages of material culture can be discerned related to geographic regions and lifestyle. The sites in the Jordan Valley contain finds related to the major Canaanite and Philistine urban cultures of the coastal plain and large valleys in Cisjordan. They tend to contain imported pottery and objects and public buildings. The sites on the plateau are much poorer, with a limited assemblage of finds similar to the highland village settlements in Cisjordan. Several scholars have suggested tentative related tribal backgrounds for the groups inhabiting those sites in both Cisjordan and Transjordan, noting the similarity of finds at ʿUmeiri and the villages of the hills north of Jerusalem. [*See* Jerusalem.]

Iron Age II. Although early archaeologists placed the beginning of the Iron II period after the invasion of Shishak (Sheshonq) in about 921 BCE, most Israeli scholars now begin it in about 1000 BCE, with the commencement of the Israelite monarchy and the new millennium. There is not enough evidence from tenth-century BCE Transjordan to confirm this new periodization or not. Indeed, the evidence from well-documented excavations for sites before the eighth century BCE is not strong. This does not mean that occupation at that time was weak, but rather that the excavation of that material has not yet taken place.

The Iron II period is characterized by the rise of the monarchies of the small national groups on the plateau: Aramean Damascus, Ammon, Moab, and Edom. [*See* Damascus.] They enabled a gradual but steady rise in prosperity, exemplified by a much richer and finer material culture toward the end of the period. There was also a rising national awareness. During Iron I, the social structure of the plateau was probably tribal in nature, with loyalties expressed to local families and clans before any larger entity. By the last century of Iron II, however, the copious finds illustrate regional developments in language dialects, writing, and pottery, which more or less correspond to the national boundaries known from the literary evidence. This could only have happened with national unity imposed from strong central governments. A slightly wetter climate may have abetted these processes.

The sites in the Jordan Valley probably belonged to Israel or Judah for the most part. Pella, curiously not mentioned in the Bible, may have been an exception; it may have belonged to Damascus, as did Tel Hadar to the north. [*See* Hadar, Tel.] The best sites for studying the early stages of Iron II were there—such as the walled city of ninth- and eighth-century BCE Saʿidiyeh that contained a small house shrine; a block of relatively poor houses was excavated from the eighth century BCE there, as well. At Deir ʿAlla the inscription of a vision received by the prophet Balaam (*Nu.* 22–24) was found in a layer dated to about 800 BCE. Tell Nimrin has so far produced only a few potsherds from the Early Iron II.

On the plateau, excavations have produced very little from the Early Iron II, except for collared pithoi at Umm el-Hedamus (near Irbid). Surveys, however, have found many sites, including one of the largest tells in Jordan, at Ḥusn and Irbid. Even in the Amman region, sites are few. The Amman citadel has produced potsherds, the ninth-century Amman Citadel Inscription, and a few fragmentary architectural remains have been published, but nothing very coherent has yet emerged. The same is true at Saḥab, ʿUmeiri, and Jawa (South). Jalul (east of Madaba) has, however, produced a monumental flagstone street approaching a gate complex and a tripartite pillared building or a four-room house. The large reservoir at Ḥesban, possibly to be identified with one of the "pools in Heshbon" (*Sg.* 7:4), seems to have been built in this period. East of the Dead Sea, in Moab, excavations at Dhiban (Dibon), although recovering much pottery from Early Iron II, were unable to form a coherent picture of any building. [*See* Dibon.] At Baluʿ, recent excavations have located extremely well-preserved remains from possibly as early as the ninth century BCE, and tombs have been excavated at Madaba and Irbid.

There is much more information for the Late Iron II period, but most of it comes from the plateau, where the number of excavated sites is burgeoning, primarily in the central and southern regions. The Jordan Valley has not been as productive as it was for the earlier periods: its fortunes may have fallen with those of northern Israel near the end of the eighth century BCE. At Saʿidiyeh the domestic quarter with its block of houses continued into the seventh century BCE, but at Deir ʿAlla only a series of pits has been uncovered, and very little beyond a cemetery has been found at Mazar. In the northern plateau, only small deposits with potsherds and fragmentary architecture have appeared at Abila, Fukhar, and Jerash.

In the Amman region many sites are giving a good picture of the late Ammonite kingdom. In the Baqʿah Valley small sites that include towers or agricultural buildings, such as Rujm al-Ḥenu, are scattered across the valley. Overlooking the Baqʿah Valley at Ṣafut, domestic buildings and a large corpus of typical Ammonite pottery has been found. On the Amman citadel many small finds have enriched the period, but the most dramatic remains come from the many tombs and towers/agricultural buildings in the immediate area. South of Amman, at Jawa (South), a structure with two stairways has been excavated within a city fortified with a casemate wall. ʿUmeiri produced a large administrative compound with domestic structures to accommodate the bureaucrats who were administering a royal wine-production facility. Other sites with significant deposits, but less coherent architecture, include Ḥesban, Saḥab, Jalul, ʿIraq el-Amir, and Mt. Nebo. [*See* ʿIraq el-Amir; Nebo, Mount.]

In Moab, Baluʿ has extremely well-preserved houses (several with their corbeled stone roofs still intact). Other excavations have found less coherent remains at Dhiban (Dibon), Umm er-Rasas, Lehun, ʿAroʿer, and Udruḥ, however. [*See* Umm er-Rasas.]

Excavation in Edom has been far more productive than in Moab, primarily because it received more attention from Crystal-M. Bennett's series of early excavations. She uncovered domestic sites on top of Umm el-Biyara in Petra and at Tawilan outside Petra. [*See* Umm el-Biyara; Petra; Tawilan.] She also excavated part of an Assyrian fortress and Edomite structures at Buṣeirah, the capital of Edom. [*See* Buṣeirah.] At the head of the Gulf of ʿAqaba Glueck's excavations at Tell el-Kheleifeh uncovered a trading depot probably associated with Red Sea shipping. [*See* Kheleifeh, Tell el-.] Less significant finds have been made at Petra, Baʿja, Khirbet Dor, Sadeh, Abu Kharaz, Feifa, and Feinan.

The end of the Iron II period is difficult to establish in Transjordan. In the Amman region there is no clear break. Sites like ʿUmeiri, where it has been clearly shown, and Ṣafut, Ḥesban, the Amman citadel, and others seem to extend through the Babylonian period and into the Persian period with no breaks.

[*See also* Cities, *article on* Cities of the Bronze and Iron Ages; *and the biographies of Bennett and Glueck.*]

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Transjordan in the Persian through Roman Periods

Transjordan continued under foreign domination throughout much of the Persian through Roman periods, as the Persians, Ptolemies, Seleucids, and Romans ruled in succession. But this era also witnessed the rise of the Nabateans, one of the most brilliant indigenous civilizations in the history of Transjordan.

Persian Period (539–332 BCE). Little is known about the history of Transjordan in the Persian period. Written evidence is extremely scarce and few excavated sites have yielded material evidence of the period. A few scraps of evidence may be gleaned from the Hebrew Bible, although none can be dated after the mid-fifth century BCE.

Transjordan, Palestine, Syria, and Phoenicia all fell within the Persian province, or satrapy, called "Beyond the River" (i.e., the Euphrates River), possibly based on earlier Assyrian and Babylonian terminology (Olmstead, 1944). The province was governed by a Persian satrap, who in turn supervised territorial subdivisions administered by lesser Persian officials or local notables. Although the names of several such administrative districts are known for Palestine, there is less evidence that the Persians organized Transjordan in such a fashion. They may have installed the Jewish Tobiads to govern Ammon from ʿIraq el-Amir, where two Aramaic inscriptions dated to the fifth or fourth century BCE refer to a member of the Tobiad family. [*See* ʿIraq el-Amir.]

The paucity of written evidence is paralleled by limited material remains from Transjordan. All the regional archaeological surveys report little or no Persian period pottery or any other artifactual evidence from this period. This paucity is in sharp contrast to the preceding Iron II period, which is characterized by numerous occupied sites throughout the region. Some Persian period occupation is attested at a few sites, such as Tell Deir ʿAlla, Tell es-Saʿidiyeh, and Tell el-Mazar in the Jordan Valley. [*See* Deir ʿAlla, Tell; Saʿidiyeh, Tell es-; and Mazar, Tell el-.] Copper mining seems to cease in the Wadi ʿArabah in this period (c. 400 BCE). In addition, the dense concentrations of Iron II sites farther south, in Edom, also were abandoned by about 400 BCE. Thus, it appears that in the Persian period the sedentary population in Transjordan underwent widespread decline and most of the region was outside direct Persian administration.

Certainly the collapse of the Iron Age kingdoms in the sixth century BCE opened the eastern desert frontier to nomadic Arab encroachment. Herodotus (3.88, 91) states that the Arabs were independent of Persian authority, although they did provide logistical support or military contingents to the Persians on occasion, such as for the invasion of Egypt by Cambyses in 525 BCE (Herodotus 2.7–9).

John R. Bartlett (1979) argued for continuity in southern Transjordan from the Iron II Edomites to the Nabateans of the Hellenistic period. However, recent soundings at several Iron II sites failed to demonstrate any continuity of occupation. In Edom, continuity from Iron II into the Persian period has been asserted for such sites as Tawilan and Buṣeirah. Yet, Piotr Bienkowski's (1990) reappraisal of this evidence, including an analysis of the stratigraphic context of a cuneiform tablet that mentions a "King Darius" and a

hoard of Persian jewelry from Tawilan, concludes that this case is unproven. Bienkowski notes that all three of the Edomite sites that have been extensively excavated (Tawilan, Buṣeirah, Umm el-Biyara) were abandoned after fire and/or destruction. [*See* Tawilan; Buṣeirah; Umm el-Biyara.] Whether or not continuity of occupation into the Persian period is accepted, all these sites seem to have been abandoned before the beginning of the Hellenistic period. Finally, Tell el-Kheleifeh, an Iron II stronghold near ʿAqaba, on the Red Sea, also seems to have been permanently abandoned in the Persian period. [*See* Kheleifeh, Tell el-.] Bartlett, modifying his views, now suggests that the Edomites evolved from a sedentary agricultural people to a more pastoral folk (Bartlett, 1990). These people mixed with the newly arrived Nabateans, who were then pastoral nomads who eventually dominated the descendants of the Edomites. (The origins of the Nabateans are shrouded in mystery, but they were present in southern Transjordan by the late fourth century BCE.) It is possible to speculate that the Persian period in Moab evolved in a similar fashion, with the ascendancy of an intrusive nomadic Arab population over the sedentary descendants of the Moabites. These groups probably mingled as the nomads sedentarized. [*See* Edom; Moab.]

Hellenistic Period. Persian rule ended abruptly in 332 BCE, with the conquest of the entire region by Alexander the Great. Alexander, or his immediate successors, such as Perdiccas, may have founded several Macedonian or Greek colonies in the region, although the later sources that assert these foundations may be suspect. After the breakup of Alexander's empire, Transjordan fell to the Ptolemies of Egypt, who ruled until the end of the third century BCE. Little is known of Ptolemaic rule in Transjordan. Ptolemy II Philadelphus (282–246 BCE) refounded Rabbat Ammon (modern Amman) as Philadelphia, but there is only limited archaeological evidence elsewhere of this century, such as at Pella in the Jordan Valley. [*See* Ptolemies.]

The Nabateans were firmly established in southern Transjordan by the end of the fourth century BCE. Stories of their wealth were sufficient to entice a plundering raid by Antigonus the One-Eyed, one of Alexander's former generals, in 312 BCE (Diodorus 19.95). Diodorus, relying on the eyewitness account of Hieronymous of Cardia, describes the Nabateans as completely nomadic and dominating the caravan trade in incense and other luxury products between the Arabian Peninsula and Palestine. The Zenon papyri suggest that the Nabateans were present in northern Transjordan by the mid-third century BCE. By the early second century BCE, if not earlier, the Nabateans were ruled by a monarchy. Their first attested king is Aretas I (c. 170–160 BCE). [*See* Nabateans.]

The conquest of the region by the Seleucids under Antiochus III (200 BCE) seems to have inaugurated a new period of prosperity for Transjordan. Antiochus and his successors fostered the development of several major cities in the north, whether preexisting settlements or new urban foundations. This is suggested by late coins of Pella, Gerasa, Gadara, Abila, and Esbus, which reflect Seleucid dynastic toponyms such as Antioch and Seleucia. Artifactual evidence from these cities suggests commercial contact with major centers of the Hellenistic world, such as Egypt, the Aegean, and Asia Minor. The cultural life of these Greek cities in northern Transjordan must also have been vigorous, as suggested by the several intellectual figures who hailed from them—the satirist Mennipus (third century BCE) and the poet Meleager (c. 140–70 BCE) were both from Gadara. The construction of the Tobiad castle known as Qaṣr el-ʿAbd within an artificial lake at ʿIraq el-Amir is dated to the early second century BCE. [*See* Seleucids.]

The decline and eventual collapse of the Seleucid Empire in the late second and early first centuries BCE brought renewed political turmoil to the region. The resulting power vacuum encouraged the expansion of the Nabateans northward and the Jewish Hasmonean state eastward across the Jordan. Some Greek cities in the north, such as Pella, were destroyed. Most of the others fell under the control of the local dynasts—the Hasmonean or Nabatean. Evidence from Strabo (16.4.21, 26) suggests that the Nabateans had evolved into a largely sedentary people by the first century BCE. This roughly coincides with the earliest evidence for Nabatean sedentary occupation of their capital at Petra, in Edom, which has been dated to the late second or early first century BCE. Caravans hauling frankincense and myrrh traveled north from the Arabian Peninsula, converged on Petra, and then moved west across the Negev desert to Gaza on the Mediterranean or north to Damascus and Syria. A number of Nabatean towns and road stations emerged to service this traffic.

Roman Period (63 BCE–324 CE). The chaos and warfare that plagued much of Transjordan in the Late Hellenistic period ended with the arrival of the Roman general Pompey in 63 BCE. Pompey, who had extinguished the Seleucid dynasty and annexed much of Syria as a Roman province, was content to rule the remainder of Syria, Palestine, and much of Transjordan through a system of native client rulers.

Pompey established the Greek cities as efficient instruments of local Roman administration. Thus, he liberated the ones in northern Transjordan from Jewish and Nabatean control and began their reconstruction. The gratitude of these cities to their liberator is illustrated by their adoption of a new Pompeian era in 64/63 BCE, reflected in their later civic coinage. The Greek cities retained local autonomy but were administratively attached to the Roman province of Syria. There is no evidence that Pompey organized the Greek cities of northern Transjordan and southern Syria into a league or federation called the Decapolis. This Greek term, meaning "ten cities," appears only in first century CE

sources (*Mk.* 5:20, 7:31; Pliny, *Nat. Hist.* 5.74) and refers to an administrative region under a Roman prefect supervised by the governor of Syria (Isaac, 1981). [*See* Decapolis.]

The cities within Transjordan included Gadara (Umm Qeis), Abila (Qweilbeh), Capitolias (Beit Ras), Dium (modern site uncertain), Gerasa (Jerash), Pella (Ṭabaqaṭ Faḥl), Philadelphia (Amman), Esbus (Tell Ḥesban), and Madaba. Each of these cities administered an extensive rural hinterland that formed a largely contiguous territory. The cities formed a distinct Greek cultural unit that distinguished them from the surrounding Semitic regions. The cities developed Greek civic and religious institutions and were laid out on a rectangular grid of streets. All were fortified and acquired many of the accoutrements of typical Roman provincial cities, such as colonnaded streets, classical-style temples, baths, theaters, nymphaeums (fountain houses), and hippodromes (racetracks). [*With the exception of Dium, all of the sites mentioned above are the subject of independent entries.*]

All this public building, most of which was paid for by local benefactors, implies considerable economic prosperity in the Roman period. The basis of much of this prosperity must have been the fertile agricultural hinterland. However, the cities also benefited from the commercial traffic that passed through their territories and from local industries. Hundreds of inscriptions, mostly in Greek, suggest that the urban elite was largely composed of hellenized Semites. The degree to which Hellenism spread to the lower urban classes or to the rural population of their municipal territories is difficult to gauge, but presumably these remained largely Semitic in language and culture. The largely Jewish district of Peraea, located on the east bank of the lower Jordan River north of the Dead Sea, remained part of the client kingdom of Judea (Judah).

The remainder of central and southern Transjordan comprised the heart of the Nabatean kingdom. Recent archaeological surveys have revealed dense Nabatean settlement of the regions east and southeast of the Dead Sea. Many sites are located along the major commercial arteries and presumably benefited from the caravan traffic. A series of small, but splendid Nabatean sanctuaries, such as Khirbet et-Tannur, appeared along these routes. [*See* Tannur, Khirbet et-.] The density of settlement is so great, however, including marginal sites along the eastern desert fringe, that the bulk of the population must have been engaged in agriculture and animal husbandry. Strabo (16.4.24) in fact indicates that by the early first century CE much of the Arabian luxury traffic had already shifted to an alternate route via the Red Sea ports of Egypt, bypassing Nabatea. Hence, some scholars have suggested that the Nabateans were forced by these circumstances to rely increasingly on indigenous resources, such agriculture, animal husbandry, and the mineral resources of the Wadi ʿArabah and the Dead Sea. The Nabateans developed sophisticated hydrological installations at such sites as Avara (Ḥumeima), just north of ʿAqaba, to exploit limited water resources. The sophistication of Nabatean technology is perhaps best reflected in their fine painted pottery. Petra itself apparently reached its peak during the reign of Aretas IV (9 BCE–40 CE). A number of major monuments in the city date to this period, such as the main theater and the temple known as Qaṣr el-Bint. [*See* Ḥumeima; Petra.]

Apart from the various sedentary peoples of Transjordan in the Roman period, there is also exceptional evidence for nomads in the eastern desert, the Safaitic and Thamudic tribes. These Arab nomads were very literate people who left thousands of inscriptions and drawings in the eastern desert. The inscriptions are laconic and difficult to date but suggest that the tribes were camel bedouin who practiced regular patterns of transhumance across the desert frontier. [*See* Safaitic-Thamudic Inscriptions.] The existence of a system of Nabatean fortifications along the desert edge suggests that relations between the then sedentary Nabateans and the nomadic tribes were not always peaceful.

In 106 CE, the Nabatean kingdom was annexed by the Roman emperor Trajan and incorporated into the new province of Arabia, which also included several southern Decapolis cities. The Roman annexation appears to have been peaceful, with little or no resistance from the Nabateans. Bostra (Bosra), a city in southern Syria just north of the modern Jordanian border, became the capital of the new province, which was governed by a senatorial legate appointed by the emperor. The Babatha papyri from caves near the Dead Sea, reveal some details of the Roman administrative organization (Naphtali, 1989). Trajan built a major highway, the Via Nova Traiana ("Trajan's new road") that extended from Bostra in the north to Aila (ʿAqaba) on the Red Sea in the south. The Nabatean army was incorporated into the Roman army and transferred out of the province. It was replaced by a sizable Roman force, led by the Third Cyrenaica Legion based at Bostra, and a number of auxiliary units. Latin inscriptions on milestones attest the construction and periodic repair of both Trajan's road and several other provincial roads throughout the Roman period. [*See* Bosra; ʿAqaba.]

The economic prosperity enjoyed by Transjordan continued under Roman rule through the second and into the third centuries CE. A number of cities embarked on major public works programs, most funded by local elites but others by imperial patronage. An example of the latter is the emperor Hadrian, who spent the winter of 129–130 at Gerasa. Most of the cities began to mint their own bronze coinage and some received honorific titles, such as *colonia*.

Transjordan did not escape the general turmoil that struck the Roman Empire in the mid-third century. The great Sasanian Persian invasions of the Roman East (c. 260 CE) did not reach this far south, but the meteoric rise of Palmyra, in

Syria, resulted in the defeat of the provincial Roman army and the Palmyrene occupation of Arabia. Nomadic Arab tribes apparently exploited Roman weakness and increased their pressure on the desert frontier.

The emperor Diocletian (284–305) reunified the empire and began a massive military buildup along the desert frontier in Transjordan. He constructed many new fortifications, deployed new military forces, and systematically repaired the provincial road system to facilitate military traffic. The most important Diocletianic military foundation was the legionary fortress at Betthorus (el-Lejjun), east of the Dead Sea, which housed the Fourth Mars Legion. This fortified frontier, known as the *limes Arabicus,* was intended to control the raids of nomadic Arab tribes. [*See* Lejjun; Limes Arabicus.] Diocletian also reorganized the provincial administration by partitioning the old Trajanic province of Arabia. Transjordan south of the Dead Sea and east of Wadi 'Arabah was transferred to the province of Palestine. The region east of the Jordan River and the Dead Sea remained a truncated province of Arabia. The success of Diocletian's policies in restoring a large measure of security and prosperity to the region is reflected in the dense pattern of settlement revealed by various regional surveys and by programs of church construction in the succeeding Byzantine period.

[*See also* Jordan Valley.]

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Transjordan in the Byzantine Period

The period between the reign of the emperor Constantine (332 CE) and the Muslim conquest in the mid-seventh century CE is identified in the history of the Near East as Byzantine, and as Late Roman in other geographic regions. The nomenclature *Byzantine* derives from the capital city of the Eastern Roman Empire, Byzantium/Constantinople (modern Istanbul), which exerted control over all of the eastern Mediterranean basin. Because the initial impetus for archaeological research throughout the Near East was the explication of the biblical milieu, the Byzantine period was neglected by early archaeologists. The study of the period fell within the purview of scholars dealing with religious or art history, whose primary concern was monumental remains. Within the last thirty years, the continuity of human occupation from the Roman to the Islamic period has been researched stratigraphically and with a growing emphasis on social history.

As early as the 1920s, the perspective of archaeological research in Jordan was broad: excavations were being conducted on the Amman citadel (Roman/Byzantine Philadelphia; modern Amman) and at Gerasa/modern Jerash. Neither site has been continuously excavated, however, because they have been continuously inhabited. In Jordan, it is almost axiomatic that "some Byzantine" will be found in excavation. A further impetus to understanding the period came with the research conducted on the material culture from Pella (Smith, 1973) and Hesban (Sauer, 1973).

Sites. Byzantine-period sites have been identified in every topographic and environmental zone, although site types are diverse: encampments and farmsteads, particularly along fertile *wudyan* ("valleys"); industrial areas, including wine and olive presses, located between urban areas); fortlike installations, often reused from earlier periods, such as those surrounding Amman (see below); military installations, such as those along the limes Arabicus; villages; towns; cities; and monastic complexes. As archaeological techniques have developed, so has the ability to identify sites and interpret their interrelationships. Modern surveys, as well as the contributions from nineteenth- and early twentieth-century explorers, travelers, and archaeologists, indicate a landscape with a flourishing Byzantine settlement pattern in which the cities were interdependent with the hinterland in a local and regional network.

Among the most significant Byzantine sites are those identified as the Decapolis cities, although the Hellenistic and Early Roman administrative understanding of the identification did not have the same meaning. Six of the Decapolis cities were located on the border of northwestern Transjordan, in the Byzantine province of Palaestina Secunda: Amman/Philadelphia and Beit Ras/Capitolias (at various times within the boundaries of the Provincia Arabia); Umm Qeis/Gadara, Wadi Qweilbeh/Abila, Ṭabaqaṭ Faḥl/Pella, and Jerash/Gerasa. These cities, excluding Beit Ras/Captiolias, were all earlier tell sites. All of these sites have been excavated to varying degrees. [*See* Decapolis.]

During the Roman period, earlier aspects of cities were incorporated into a stone-built urban environment, modified and expanded from the Hellenistic concept. The configuration of the cities included gates, walls, *cardini,* and *decumanii,* forming insulae delineating public and private spaces. Public space consisted of a forum, theater, odeum, nymphaeum, temple, hippodrome, or bath, with the largest of the cities having multiple facilities. Outside of the city limits, there were extensive necropoli. The urban environment required intricate water and sewage systems, as seen in the remnants of aqueduct systems at Gadara, Capitolias, Abila and other sites throughout the country. [*See* Aqueducts; Baths; Odeum; Theaters.]

The population reused this architectural environment by modifying it. The theaters and odea, at Ṭabaqaṭ Faḥl/Pella, for example, were altered to meet other needs. As the population converted to Christianity, earlier temples and synagogues were reconfigured into churches, such as at Gerasa. The replacement of the central Roman authority of the polis system and the divisions within the Christian community contributed to the transformation of the cities: as authority rested with church hierarchies, public space was used to accommodate the construction of churches and to provide market space.

It is the tessellated (mosaic) pavements within several excavated churches that have so interested Byzantine art and religious historians. The most famous is the Madaba mosaic map, dated to about 560 CE, which depicts holy sites from the Bible and the area's major geographic features, among them the Jordan River, the Dead Sea, and the Nile Delta. The map is located in the modern Church of St. George in Madaba, only one of several Byzantine-period tessellated pavements found in the town. These pavements and those from surrounding sites—Maʿin, Umm er-Rasas (ancient Kastron Mefaa), Mt. Nebo (the place identified by the Byzantines as where Moses is purported to have looked across the Jordan River), Mukhayyat, and ʿAin Mousa—indicate the wealth of parts of the Byzantine community, give the names of officials (ecclesiastical and municipal), and attest to the continuance of the community following Muslim hegemony. Although Madaba-region pavements are the best known, there are others of equal importance from other cities—from Petra and such outlying areas as Riḥab, Khirbet el-Burz, and Khirbet es-Samra. [*See* Mosaics; Madaba.]

The Jordanian "hauran," or steppic sites (Umm el-Jimal, Umm as-Surab, Dayr al-Qaf, Dayr al-Qinn) experienced extensive Byzantine occupation. They differ from the inland urban areas in the following ways: architectural style (their affinities are more to southern Arabia); building techniques (which varied with the use of the indigenous basalt); a lack of a systematic insulae system of spatial arrangement; and a waste system that was not the intricate, below-the-street, stone sewage system of other sites. As at the inland sites, churches proliferated. At some desert sites (e.g., Azraq, Qaṣr al-Ḥallabat) there are indications of occupation earlier than the Islamic period. They, as well as sites to the south and along the Dead Sea (e.g., the Byzantine monastic complex at Deir ʿAin ʿAbaṭa, the Church of St. Lot), show intricate water systems both within the inhabited areas (cisterns) and in the surrounding fields (irrigation channels). [*See* Irrigation.]

Material Culture. During the approximately three hundred years of the Byzantine period, its material culture exhibits only gradual changes. Regional studies—that is, comparisons of corpora from two provinces or from linked cities (e.g., the *trichora* cities, Jerash/Gerasa, Ṭabaqaṭ Faḥl/Pella, and Beth-Shean/Scythopolis)—are of recent design, as are studies of particular types of material culture as indicators of custom, trade networks, manufacturing, and social stratification.

Architectural innovation in the period was related to the development of the church and its decoration. This innovation appears in arches, apses, domes, and roofing techniques. It appears that the Byzantines altered their building techniques to strengthen them to meet natural disasters, such as earthquakes. They used different-sized ashlar blocks, shortened the spans of arches, and used a mortar tension-reducing system. Churches, public buildings, elite private residences, and tombs were decorated with patterned tessellated pavements in which classical themes or the natural world were recreated both on floors and walls; intricately carved and inscribed stone (imported marble and local stone) with floral or religious motifs; and painted plaster and frescoes. The painted tombs at Abila attest to the wealth of some in the Byzantine community there, as well as to a commonality in the use of artistic themes and iconography with other parts of the Byzantine world. As a result of protection by the government of Jordan, the emphasis in research at these sites has been on their monumental remains, except at Pella and Gerasa, where the researchers have investigated the two cities' domestic sectors (see Smith, 1973; Zayadine, 1986).

The pottery from Byzantine sites both varies from site to site and is consistent with types from other regions. The consistency has permitted detailed studies of trade patterns, once clay sources and manufacturing centers have been identified (Sauer, 1973). All methods of manufacture were employed: hand, slab, coil, slow-wheel, fast-wheel, and molding, as well as in combination. The pottery is generally kiln fired rather than reduction fired. Surface treatments vary: incising, combing, painting, washes, slips, ribbing, or ridges. Frequent imports are the so-called Late Roman slipped fine wares, "Late Roman C" apparently being the most frequent. There is evidence of local imitations of the forms; however, no local kilns have yet been excavated. Decoration reflected the population's new religious affiliation: crosses and other images associated with Christianity (fish) are represented. Fine-ware bowl forms identified in the Galilee region are also found in northern Transjordan. Amphorae were shortened and took on a more squat appearance throughout the empire. Forms from the coastal area of Palaestina Prima (the Gaza jar) are found infrequently. Ubiquitious in northwestern Transjordan and in the Hauran, but less frequent south of Amman, is the biansulate red- or dark-ware amphora/jar first published by Smith (1973). It was reduction fired and the body was painted with circular loop designs. The form is an excellent chronological indicator, for most sites in Palestina Prima, when associated with clear stratigraphic layers—particularly because it has been shown that the form continues well into the Islamic period (Walmsley, 1987). Lamps were molded and are consistent with corpora to the west, with the "candlestick" form being the most frequent. A unique lamp form is the "Jerash lamp," identified as originating from Jerash by inscriptions from Early Umayyad examples, not by kiln evidence. Although "slipper" shaped, it has a high, pinched handle in a stylized zoomorphic form. Basin forms of varying sizes, lanterns, and types of candelabra have been reported from other areas, but infrequently.

Metal and glass are less often found preserved at archaeological excavations. Researchers have reported finding iron tools (blacksmith and carpenter), several types of iron nails used on roof and coffin construction, decorative metal, other metal implements (the latter are the least numerous), and copper basins and bowls. Glass remains consist of tesserae, cups, beakers, bowls, and bowl lamps from chandeliers.

Numismatic data have not been collated by site and mint for recent archaeological excavations. (The best data for these remains are to be found in individual site reports.) Because of the continuity of habitation at several ancient urban sites to the present, hoards and/or in situ coin corpora are uncommon.

Conclusion. During the Byzantine period, Jordan was intensely settled. By synthesizing the data from nineteenth- to early twentieth-century researchers with the results of recent work, it is possible to describe the nature of settlement in detail. It was the advent of Christianity, the gradual conversion of the population, and the alterations to the administrative structure of the region that precipitated changes in the material culture, in architecture, pottery, glass, and coins. Despite the fact that there has been a marked increase in archaeological research for the Byzantine period in Transjordan, it is only within the last decade that social history—with all its concommitant refinements of interpretation—has become a priority. It will take several years, however, before new synthetic analyses that include the church/monastic hierarchy, and all associated materials can be formulated and compared with those belonging to the urban and hinterland settlements. When such studies take place, Byzantine studies in Transjordan will have come of age.

[*See also* Abila; Amman; Azraq; Beit Ras; Beth-Shean; Ḥesban; Jerash; Limes Arabicus; Pella; Qaṣr al-Ḥallabat; Umm el-Jimal; Umm er-Rasas; *and* Umm Qeis.]

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Transjordan in the Islamic Period

Islam and the Byzantine world first confronted each other directly in Transjordan in a skirmish at Mu'ta, south of Kerak (al-Karak), in 629, during the lifetime of the prophet Muhammad. Over the next decade, Muslim raids deep into Transjordan and Palestine led to repeated defeats of the Byzantines, already exhausted by a disastrous war with Sasanian Iran that had only ended in 628. Muslim victories at Ajnadayn, al-Fihl (Pella), and Yarmuk overwhelmed the Byzantines, leading to the fall of Damascus in 635, of Jerusalem in 638, and the withdrawal of the Byzantine army from Syria. [*See* Sasanians; Pella.]

In 638, the second caliph, 'Umar al-Khattab, traveled from Medina through Transjordan to accept the surrender of Jerusalem from its patriarch, Sophronius. 'Umar also traveled to al-Jabiya in the Jawlan to organize the government of Greater Syria, creating the system of *junds* ("military districts") that survived as administrative units until the Crusades in the eleventh century. Much of Transjordan and northern Palestine henceforth constituted the *jund* of al-Urdunn.

In 661 Mu'awiyah became the first Umayyad caliph, and with his accession, Damascus became the capital of the Islamic state. Amman (Byzantine Philadelphia) became Transjordan's main administrative town, with its governor's palace within the walls of the Roman citadel overlooking the city. [*See* Amman.] Although built in the local stone tradition, the palace's four iwans and their decoration reflect Sasanian models, part of the eclectic character of Early Islamic art and architecture.

Transjordanian villages in the Balqa' and the Hauran, which generally had been occupied since at least Nabatean and Roman times, continued to be settled under the Umayyads with little if any sign of disruption or destruction. [*See* Nabateans.] This continuity is especially marked in ceramics, with late Byzantine pottery indistinguishable from the earliest Islamic pottery until a distinctive Umayyad pottery emerged. Many places settled before the advent of Islam remained settled throughout the Early Islamic period. Much of the population probably remained Christian, but the presence of Muslims in this period is marked by the conversion of churches into mosques (e.g., Umm el-Jimal)—although at some places, such as Umm al-Walid, Qastal, and Jerash, new mosques were built to meet the needs of the Muslim community. [*See* Churches; Mosques; Umm el-Jimal; Jerash.]

The tribes of Transjordan and Syria were a mainstay of the Umayyad regime, providing military forces that helped sustain the vast territory of the Umayyad caliphate. Mu'awiyah had already resorted to the desert margins near Amman and, in time, the Umayyads' predilection for the region and their reliance on tribal support from those eastern areas of Transjordan were reflected in their intensive building in the region, with major palatial structures at Qastal, Quṣayr 'Amra, Qaṣr al-Ḥallabat, Qaṣr al-Meshatta and Qaṣr al-Tuba. [*See* Quṣayr 'Amra; Qaṣr al-Ḥallabat; Qaṣr al-Meshatta.]

Routes from Damascus, Jerusalem and Egypt to Medina and Mecca all pass through Transjordan, following the ancient Arabian caravan road that was adopted by the Islamic *hajj* ("pilgrimage"). The roads to the Hijaz from Egypt and southern Palestine also passed through al-'Aqaba, a major site founded in the Early Islamic period. [*See* 'Aqaba.]

With the overthrow of the Umayyads in 750 by the 'Abbasids, Greater Syria became a backwater. Instead, the 'Abbasids' new capital, Baghdad (founded in 762), attracted population and wealth; the 'Abbasids tended to avoid Transjordan and Syria, marked as they were by pro-Umayyad sympathies. The Umayyads' palatial foundations in the marginal lands of Transjordan fell into disuse, and only old, established settlements farther west (e.g., Amman, Pella, Jerash) seem to have continued to be settled. The continuity of town and village life in western Transjordan and Palestine emerges in the descriptions provided by the tenth-century geographer al-Maqdisi.

In the course of the ninth century, the 'Abbasids' grip on central government deteriorated and the southern regions of Syria passed under the Tulunids, the 'Abbasids' governors in Egypt. However, by the late ninth century, the authority of the Tulunids became more tenuous. Transjordan suffered raids by the North Arabian Bani Tayy', who pushed the established local tribes westward, depriving them of land they had held since Byzantine times. The Tayy' so disrupted Transjordan that the later Tulunids were no longer able to guarantee the annual Damascus pilgrimage caravan.

The Jarrahid clan emerged as the dominant tribal group among the Bani Tayyi', briefly ruling from Ramla—although they were an unstable political presence. [*See* Ramla.] After the establishment of the Fatimid caliphate in Egypt in 969, the Jarrahids attempted to maintain relations with both Cairo and the Byzantines in northern Syria. In the end, however, southern Syria came under Fatimid domination.

The tenth–eleventh centuries lack clarity in Syria in general, although excavations at Amman show that the citadel remained occupied. The Byzantines threatened northern and central Syria, while the Fatimids dominated the south.

In the latter decades of the eleventh century, the westward advances of the Seljuk Turks and Turkoman tribes led to the diminution of Fatimid power in Syria; the Byzantine presence collapsed after their defeat at Manzikert in eastern Anatolia in 1071.

The coming of the Crusades in 1099 created an entirely different political framework, and new states were carved out on the coast. The southernmost Crusader state, the Kingdom of Jerusalem, bordered an isolated Fatimid Egypt in the south, with its eastern border on or beyond the Jordan River. Among the effects of the Crusades was the rapid development of military architecture, well demonstrated in Transjordan at Shawbak and Kerak. In the Islamic world the military emerged as the leading group in society, reflected in the rise of the *mamluks* (military slaves), who emerged as patrons of the luxury crafts.

From the first, the Crusaders pursued an aggressive policy in Transjordan. In 1110 they raided Petra, where they encountered a community of Christian monks, and in 1121 they attacked Jawlan, took Jerash, and carried off Arab herdsmen's flocks in the Hauran. [*See* Petra.] Perceiving a vacuum southeast of the Dead Sea, in about 1115 they built the fortress of Krak de Montreal at Shawbak to protect the southern approaches to Palestine. Other fortresses were built at ʿAqaba and on the offshore island of Graye (Jazirat al-Fara'un). In line with the same strategy, fortresses were built at Wuʿaira in the Petra valley and at al-Kerak (Petra Deserti), the old Byzantine Charachmoba. The latter was the greatest of these, built in 1142 by Pagan the Butler; it was the lynchpin of the Crusader presence in Transjordan. [*See* Kerak.]

After the initial blow of the Crusader invasion of the Near East, the Muslim counterattack took time to develop; however, the Zangid rulers of Mosul fought back, taking Edessa in 1144. In 1154 the Zangid sultan Nur al-Din took Damascus, creating a unified Islamic state that ran along the Crusaders' eastern frontier. Nur al-Din then projected his power southward, through Transjordan to the Hijaz and toward the rich prize of Egypt, then weakly ruled by the Fatimids. A Zangid expedition finally brought the Fatimid caliphate to an end in 1171. Nur al-Din's officer, Salah ad-Din al-Ayyubi (Saladin), emerged first as the dominant figure in Egypt and then, with Nur al-Din's death in 1174, as Nur al-Din's successor in Syria as well, founding the Ayyubid regime. With Egypt and Syria eventually unified under him, Salah ad-Din prosecuted the war with the Crusaders. However, in the early years of his rule, the Crusader presence in Transjordan, especially at al-Kerak, severely threatened Ayyubid communication among Egypt, Syria, and the Hijaz.

Muslim caravans from Syria to the Hijaz were forced eastward for security reasons, passing through Transjordan via Burquʿ and Azraq along Wadi es-Sirḥan into northern Arabia. [*See* Azraq.] Nur al-Din's general, Shirkuh, went on pilgrimage along this easterly route in AH 555/1160 CE, rather than risk Crusader attack. In the south, the route from Cairo through Sinai to ʿAqaba was similarly imperiled. [*See* Cairo; Sinai.] As to the land route between Damascus and Cairo, only heavily armed bands could risk marching to Egypt through the Transjordanian desert, using remote wells like those at Jafr.

Under the imaginative and unscrupulous Reginald de Chatillon, al-Karak became a base for raids deep into northern Arabia; he built boats on the Dead Sea that were carried to ʿAqaba in order to raid Islamic ships and towns along the Red Sea. Those sorties threatened not only the holy cities, but the Egyptian economy as well.

The situation was completely transformed in 1187, when Salah ad-Din's army defeated the Crusader army at Hattin in northern Palestine, capturing the king of Jerusalem and most of the Crusader leadership. After this massive victory, Jerusalem and most of Palestine were at last regained by the Muslims. The Crusaders were confined to the Mediterranean coast, having lost Kerak and the rest of the fortification system in Transjordan and Syria to the Ayyubids. Although the Crusaders had been driven out of Transjordan, military considerations remained paramount. The Ayyubid sultan of Damascus, al-Malik al ʿAdil (1196–1218), built a new fortress at ʿAjlun; in 1237, ʿIzz al-Din Aybak, on behalf of the Ayyubid sultan of Damascus, al-Malik al-Muʿazzam, rebuilt the Roman fort at Azraq, the main fortress controlling traffic from Wadi es-Sirḥan to Transjordan. [*See* ʿAjlun.]

After the death of Salah ad-Din in 1193, the Ayyubid territories began to be divided among his family—although the family retained a degree of unity. In 1250, the last Ayyubid sultan in Egypt was overthrown by *mamluks*, while independent Ayyubid princes continued to rule in Syria and Transjordan. In 1260, a pagan Mongol army invaded Syria after sacking Baghdad and killing the ʿAbbasid caliph. [*See* Baghdad.] They reached as far as northern Palestine, where the Egyptian *mamluks* defeated them near Nazareth. [*See* Nazareth.] In the aftermath of the battle, a *mamluk* general, Baybars I, emerged as sultan, ruling both Egypt and the ravaged territories of Syria.

Al-Karak remained under an Ayyubid prince, al-Mughith ʿUmar, until he was taken and killed by Baybars in 1263. Kerak became one of the "kingdoms" of Syria, ruling much of Transjordan; however, it was the second city of the sultanate and lower in status than Damascus.

The remoteness of Kerak made it a useful retreat for the insecure, the dissident, and the rebellious. Thus, Sultan Nasir Muhammad ibn Qala'un abandoned Cairo in 1309 to evade the growing power of his great amirs. Ostensibly, he was to make the pilgrimage, but instead he stopped in Transjordan, establishing himself at al-Karak with his own *mamluks*. He recruited an Arab tribal army, with which he returned to Cairo. He executed his overbearing amirs and regained the sultanate. In 1389, Sultan Barquq did much the

same: he went from Cairo into exile in Kerak in 1389, where he found support and subsequently recovered the throne in Cairo.

Palestine and Transjordan were spared the Mongol attacks of the late thirteenth century, while on the Mediterranean coast, the Mamluks took the last Crusader strongholds by 1291. Many areas of Transjordan saw a revival for the first time since the Umayyad period. In the Hauran, Balqa', Moab, and Edom, archaeological evidence suggests a revival of settled life. [*See* Moab; Edom.] In the Jordan Valley and southern Ghor there also is evidence of a sugar industry in Ottoman times whose origins may go back to the Mamluk period. [*See* Jordan Valley.] In the remote mountains flanking Wadi ʿArabah, the ancient copper mines were reworked under the Mamluks.

In the early sixteenth Century, the threat by the Portuguese to Red Sea shipping led the Mamluks to cooperate with the rising Ottoman power in Istanbul/Constantinople. [*See* Constantinople.] Coastal defenses were improved and a new fort was built at ʿAqaba by the Mamluk sultan al-Ghawri. However, in 1516 al-Ghawri was defeated by the Ottomans in northern Syria; the following year, Cairo fell, the Mamluk sultanate ended, and the Ottomans emerged as rulers of the entire Near East.

In Transjordan under the Ottomans, the traditional interest of Muslim rulers in secure passage for pilgrimage continued. A series of fortifications was constructed along the pilgrim road from Damascus to the Hijaz on the orders of Süleiman II and his successors: at al-Qutrana, Dhat al-Hajj (1554), and Qal'at el-Hasa. They remained a means of exercising control over these more remote areas until the Hijaz Railway made them redundant.

[*See also* ʿAbbasid Caliphate; Ayyubid–Mamluk Dynasties; Crusader Period; *and* Fatimid Dynasty.]

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TRANSPORTATION. From the earliest periods of recorded history in the ancient Near East, land transportation is well attested. It appears to have played a major role both in the region's history and in its sociological and technological development. The frequency of travel and transportation is recorded in all periods in written records. It is generally motivated by the same activities that involve people everywhere: commuting to work, visiting friends and relatives, attending religious festivals; buying and selling goods; and attending weddings, funerals, banquets, and the like.

Three categories of travel were especially significant in the ancient Near East. The first is that of traders. The need to transport goods and materials from region to region influenced, more than any other single factor, the development of an intricate system of roads and highways spanning the Fertile Crescent. Trade was also responsible for the region's cultural cross-pollination, a phenomenon of great social and historical import.

A second significant category of travel is that of the messengers who functioned as the postal service. Messengers linked the various cultures of the Fertile Crescent in active communication, profoundly influencing the region's history. From the early Sumerian period onward, royal, civil, and private messenger services flourished. The widespread activity of messengers is attested, for example, by the 379 Amarna tablets of the second millennium BCE, which represent vigorous correspondence between Egypt and the rest of the Near East. Later, imperial Persian messengers covered the Royal Road from Persepolis to Sardis (about 2510 km, or 306 mi.) in nine days, averaging about 275 km (171 mi.) a day. This efficient postal service was set up somewhat like the Pony Express in frontier and colonial America whose posting stations were about 24 km (15 mi.) apart and supplied fresh horses and riders. During the Roman period the extensive *cursus publicus,* the state postal and messenger service, included regular stops along the main highways where horses could be changed; larger stations and inns were established about one day's journey (37 km, or 23 mi.) apart.

The movement of armies constitutes the third significant category of travel and transportation, accounting for a large percentage of the activity along the thoroughfares of the ancient world. Those armies of course also accounted for many notable historical developments in the region.

The primary mode of travel throughout the ancient Near East was by foot. Even government officials normally trav-

eled that way. Travel by donkey was generally reserved for women, children, and the infirm. Riding the mule, horse, and camel is almost unattested until the first millennium BCE, and even then it remained relatively uncommon.

The light horse-drawn chariot appeared early in the second millennium BCE as a means of transportation and quickly became an invaluable military vehicle. The chariot continued in use during the Roman period, when the carriage became more popular. One type of the latter, the *verreda,* was drawn by four mules and could transport two or three people. A two-wheeled *birota,* on the other hand, had three mules and carried one or two passengers.

The transportation of goods and materials of considerable size and weight was generally by means of donkeys, carts, and wagons. The most common means of land transportation, attested as early as the fourth millennium BCE, was the donkey, an animal able to move easily along steep and stony mountain paths difficult for wheeled vehicles and uncomfortable or dangerous for camels. Caravans of donkeys are frequently mentioned in the Old Assyrian and Old Babylonian periods and throughout the second and first millennia BCE. The use of other animals—the mule, ox, and camel—in transporting goods was far less common. The camel, which came into more general use at the very end of the second millennium BCE, had the advantage of being able to carry about five times the capacity of the donkey and could travel for extended periods of time without water, making it especially valuable for desert transportation.

Wheeled vehicles apparently originated in Sumer during the early third millennium BCE. The earliest type was a heavy four-wheeled, ox-drawn wagon, from which the two-wheeled cart developed—a lighter vehicle that could be drawn by horses or mules. Clay models of covered wagons have been found in Sumerian sites from as early as 2500 BCE, and wagons and carts frequently appear in both the written records and the art of the entire region. Carts and wagons were especially useful for transporting heavy loads, such as large quantities of metal, timber, and military supplies. During the Roman period the most common means of land transportation was the ox-drawn wagon, normally pulled by eight oxen or horses in the summer and ten in the winter. Heavy goods, such as army supplies, were all transported by even larger wagons, called *clabulariae,* which could carry as much as 1,500 Roman pounds. Express goods were carried by the swifter *cursus velox,* which employed several types of lighter carriages.

[*See also* Camels; Carts; Chariots; Equids; Roads; *and* Wheel.]

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TUFNELL, OLGA (1904–1985), English archaeologist. In 1922 Tufnell worked as a secretary in London for W. M. Flinders Petrie. In 1927 she joined Petrie's team in Egypt and then his expedition in southern Palestine, first at Tell el-Far'ah (South) and then at Tell el-'Ajjul. Not having studied archaeology formally, she gained experience, knowledge, and training at those excavations, working with Petrie and his assistants, principally James L. Starkey. [*See* Far'ah, Tell el- (South); 'Ajjul, Tell el-; *and the biographies of Petrie and Starkey.*]

In 1932, following a rift with Petrie's wife, who had an active role in the management of the Tell el-'Ajjul expedition, Starkey decided to open his own large-scale excavations at Tel Lachish (Tell ed-Duweir). A number of Petrie's assistants, primarily G. Lankester Harding and Tufnell, went with him. The excavation at Lachish lasted for six seasons, coming to an abrupt end when Starkey was murdered by Arab bandits in January 1938. [*See* Lachish; *and the biography of Harding.*]

Tufnell returned to England, where she dedicated herself to the monumental task of publishing the results of the Lachish excavations, a project that took about twenty years (with an interval during World War II). *Lachish II,* on the Canaanite fosse temple, appeared in 1940; *Lachish III,* which reported on the Iron Age remains, appeared in 1953; and *Lachish IV,* the Bronze Age finds, appeared in 1958. Tufnell also wrote a number of papers on other subjects. In 1984, shortly before her death, she published a detailed book on the scarabs of the early second millennium BCE.

Tufnell's main contribution to the Lachish excavations was the registration, classification, and study of the finds. Her publication of the Lachish pottery and her typological

divisions are excellent and most useful in modern terms. She made penetrating observations, especially remarkable because she lacked formal training in ceramics. Her most important observations regarding Lachish, were not accepted at the time by the scholarly world but have since been proved correct by subsequent excavations at the site. Her assessment that the last Canaanite city (level VI) was not destroyed until after the reign of Pharaoh Rameses III (twelfth century BCE) and that level III was destroyed in 701 BCE by Sennacherib, king of Assyria, has been confirmed.

In addition to her devotion to archaeology, Tufnell is remembered as a modest and kind person. During her stay at various excavations, she served both as archaeologist and nurse, providing medical help from an expedition's dispensary to local Arab villagers.

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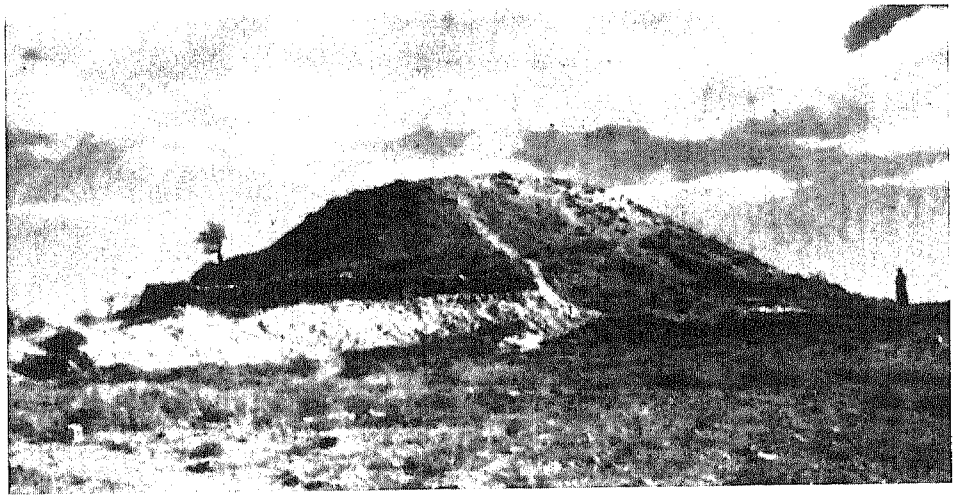
DAVID USSISHKIN

TUMULUS. An artificial mound of stones and/or earth (the term *cairn* is sometimes used interchangeably), a tumulus (Ar., *rujm;* Heb., *rogem*) most often covers a burial cist or chamber. Tumuli are found throughout the Near East and beyond. They tend to be located in ecological zones (steppe, hilly maquis, and desert) more amenable to pastoralism than field-crop agriculture, such as in the Negev desert, on the Transjordan plateau, in the central and Carmel highlands of Israel, and on the Syrian steppe.

Tumuli are variously constructed: the most common form is a stone circumference filled with stone and earth to form either a conical mound or a flat-topped, drum-shaped structure. A burial chamber constructed with upright slabs or stone courses or sunk as a cist, usually occupies the center. The chamber's roof—generally of slabs—can be either covered by the tumulus or flush with its top. Dolmens were always covered by tumuli. [*See* Dolmen.] Monumental tumuli, such as the mysterious Iron Age group in the Jerusalem area and Rujm el-Hiri on the Golan Heights, comprise another type. Tumuli are often associated with other features, such as enigmatic, single or double rows of stones, and cupmarks and altars, all of which imply symbolic/cultic behavior.

Like the dolmens, the floruit of the tumulus phenomenon in the Levant seems to occur in the Early Bronze and Intermediate Bronze Ages, although earlier origins are possible and later use is documented. The Baghouz tumuli near Mari in Syria date to the Middle Bronze Age, and the great tumulus fields of Bahrain (ancient Dilmun) appeared in the third millennium and remained in use until the Early Islamic period (seventh–eighth centuries CE). Of all the tumuli in the ancient Near East, those of Phrygia, in Asia Minor, dated to the Archaic period (first half of the second millennium BCE), were the wealthiest and the most monumental. [*See* Gordion.]

Tumuli functioned primarily as burial structures. Most tumuli fields include at least a few that contain human skeletal material. Mordechai Haiman (1992) has suggested that fields containing larger tumuli not closely associated with settlements are also the locus of a mortuary cult. Like dolmens, tumuli fields may also mark territorial boundaries.



TUMULUS. *One of the great tumuli in the Jerusalem area.* Dated to the Iron Age II period, c. eighth century BCE. (Courtesy D. Ilan)

Particularly large tumuli, such as Rujm el-Hiri, the Iron Age tumuli around Jerusalem, and those of Phrygia most certainly functioned as symbols of power and the sites of an elite mortuary cult.

[*See also* Burial sites; Burial Techniques; Dilmun; *and* Rujm el-Hiri.]

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DAVID ILAN

TUNISIA. *See* Carthage; North Africa.

TURKEY. *See* Anatolia.

TURVILLE-PETRE, FRANCIS (1901–1942), prehistorian and archaeologist. Born in Great Britain and educated at Oxford University under the supervision of R. R. Marett, Turville-Petre joined the British School of Archaeology in Jerusalem after graduating from Oxford, arriving in Palestine in 1923. He surveyed along Naḥal ʿAmud in the eastern Galilee and in 1925–1926 excavated the Emireh and Zuttiyeh caves under the auspices of the British School. He published a full account of his excavations in 1927. His conclusions concerning the transitional character of the lithic industry from the main layer of the Emireh cave were later confirmed when Dorothy A. E. Garrod identified the Emireh assemblage, which she named Emiran, as the industry marking the transition from the Mousterian to the Upper Paleolithic. The assemblage contained few blades, numerous flakes including Levallois points, and among the retouched points were end-scrapers and some burins. Turville-Petre's discovery of a fragmentary skull at Zuttiyeh, which is one of the earliest human fossil remains ever found in the region, brought him instant fame. Later testing confirmed that the skull is related to the Acheuleo-Yabrudian culture, currently dated as more than 250,000 years old.

Turville-Petre spent 1929–1930 in Berlin for medical treatment. In 1930, he conducted a survey and excavation of a field of dolmens east of Korazim, near ʿAmiʿad in the eastern Galilee. In 1931, following an invitation from Garrod, he excavated in the Kebara cave in the Carmel range, where he uncovered Natufian, Kebaran, and Levantine Aurignacian layers. He described the finds from the first two in a preliminary report (the last was studied by Garrod). He also tested the Mousterian deposits but did not report his results. From 1933 to 1941, Turville-Petre lived mainly in Berlin; he later settled in Greece, on St. Nicholas Island. In the wake of the 1941 German invasion of Greece, Turville-Petre was evacuated to Cairo, where he died the following year.

[*See also* Carmel Caves; *and the biography of Garrod.*]

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OFER BAR-YOSEF

TYANA, classical city located on the southeastern Anatolian plateau, and its surrounding region, the *Tyanitis,* on the north side of the Toros-Bolkar Mountains and to the west of the Ala Mountains. Tyana controlled the north end of the Cilician Gates, which open the way between these mountains down into Cilicia. The ancient city was located beneath the modern town of Kemerhisar, some 20 km (12 mi.) southwest of Niğde, following the discovery of classical inscriptions on the *höyük,* or city mound. The area was surveyed by a Turkish archaeological team in the 1980s but has not been excavated. The Roman aqueducts that led to the site are still visible. Iron Age sites (principally Zeyve Höyük and Tepebağlari, and Göllüdağ) probably belonging to the kingdom have been excavated but are poorly reported.

An earlier form of the name Tyana is identified in that of the city of Tuwanuwa, attested in the cuneiform Hittite texts of the Ḫattuša archives (c. 1650–1200 BCE). A bridge between the two names is provided by a stela with a hieroglyphic Luwian inscription found at Bor, near Kemerhisar, that names Warpalawa (c. 740–705 BCE), a local king of the city Tuwana, in the Neo-Hittite period (see below).

The cuneiform Hittite references show that the city of Tuwanuwa was incorporated into the Hittite kingdom at its

inception (Edict of Telipinu, 4; *Keilschrifttexte aus Boğazköy* [*KBo*] vol. 3, text 1, col. 1, l. 10; *Kielschrift urkunden aus Boğazköy* [*KUB*], vol. 11, text 1, col. 1, l. 9; *KBo*, vol. 3, text 67, col. 1, l. 9), but that it frequently fell into enemy hands (Decree concerning *hekur Pirwa*, *KBo*, vol. 6, text 28 obverse l. 9; Deeds of Šuppiluliuma, *KBo*, vol. 14, text 3, col. 4, ll. 21, 40, 42, and *KUB*, vol. 19, text 18, col. 1, ll. 16, 17; see Hans Güterbock, *Journal of Cuneiform Studies* 10 (1956), 76 ff.). Some towns of Tuwanuwa were included in the Sahurunuwa Donation (*KUB*, vol. 26, text 43 obverse l. 38). The town and its gods remained important in the Hittite cult: they are mentioned in the Muršili Plague Prayer (*KUB*, vol. 6, text 45, col. 2, l. 18 ff.; text 46, col. 2, l. 58 ff.); the KI.LAM festival (*KBo*, vol. 10, text 24, col. 5, ll. 1, 8); the *nuntariyasha* festival (*KUB*, vol. 10, text 48, col. 2, l. 7); and on the AGRIG list (*KUB*, vol. 26, text 2, reverse l. 4).

In the Iron Age, the kingdom is known only through attestations of its king, Warpalawa, who is referred to in inscriptions of Tiglath-Pileser III, to whom he paid tribute in about 740, 738, and 732 BCE (Hawkins and Postgate, 1988: 31–40 as Urballa the Tuhanean (i.e., *Tu'anean*). His father's name was Muwaharani (I) (IVRIZ 4 inscription) and clearly controlled the sites of Ivriz, Zeyve Höyük (alias Porsuk), and Bulgarmaden, as may be seen from the inscriptions of IVRIZ 1 and BULGARMADEN. Göllüdag may also have belonged to his kingdom. He was still on the throne as late as 710 to 709 BCE, when he is attested in a letter of Sargon II that identifies his kingdom as squeezed between that of Mita of Muški (Midas of Phrygia) and that of the Assyrian governor of Cilicia (see Parpola, 1987, no. 1). The Old Phrygian inscriptions found at Kemerhisar are connected with Mušķi/Midas and doubtless belong to this period. Warpalawa was succeeded by his son Muwaharani II, whose stela was found at Niğde (NIĞDE 2).

In the classical period, the fortified mound of Tyana (at Kemerhisar) was attributed by Strabo to Semiramis (*Geog.* 12.537). The occasional Hellenistic, Roman, and Byzantine historical references to Tyana are supplemented by inscriptions found in the province.

[*See also* Hittites.]

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J. D. HAWKINS

TYRE, site located on one of two sandstone reefs about 2 km off the coast of southern Lebanon (32°16′ N, 35°13′ E). Classical tradition states that King Hiram (969–936 BCE) joined the two reefs with landfill, enlarging the city to about 40 acres. In succeeding reigns, further enlargement allowed the creation of ports on the northern and southern sides of the island. This island stronghold was joined to the mainland by Alexander the Great in 332 BCE, who constructed a causeway from the mainland in order to subjugate the city. By Roman times sand from sea currents quickly built up against this causeway, forming the present isthmus. Tyre was essentially an administrative and religious center dependent on food and water supplies from its "sister town," Ushu, on the coast, which stood amid rich and well-watered agricultural land. Ushu is known only from literary references as it lies beneath the modern city.

Excavations at Tyre, undertaken since the 1830s, have concentrated on the Roman and Byzantine remains on or just below the surface, with little attention given to pre-classical times. This omission was partially addressed by a limited excavation on the site of the original city by Patricia Bikai in 1973–1974, working under the auspices of the Lebanese Department of Antiquities. Her excavation extended to bedrock and produced a general building and pottery sequence for most of the period from about 2700 to 700 BCE. This excavation remains the basis for the archaeological history of Tyre before Hellenistic times (see below). A large gap in this sequence occurs in about 2000–1600 BCE, during which time the city may have been abandoned.

In 1990 the appearance of quantities of burial urns, funerary pottery, inscribed Phoenician stelae, and jewelry on the local antiquities market signaled a major discovery found by clandestine digging. The artifacts were traced to a site on the mainland close to the Roman hippodrome. While most of the material illegally discovered has been sold, scientific excavations are underway to recover what may be an important cemetery dating from the end of the Late Bronze Age into the Iron Age, about 1300 to 500 BCE.

Bronze Age. Literary references to Tyre are alleged in the Ebla texts (third millennium) and in the Egyptian Exe-

cration texts (c. 1800 BCE); however, the first is incorrect, the second uncertain. [*See* Ebla Texts.] The earliest reliable occurrences are in the Ugaritic texts and the Tell el-Amarna letters (Late Bronze Age). [*See* Ugarit Inscriptions; Amarna Tablets.] From that time onward, Tyre regularly appears in Egyptian, Assyro-Babylonian, Persian, and other contemporary texts, attesting to its importance as a major trade stronghold on the Mediterranean coast.

Herodotus, who visited Tyre in the mid-fourth century BCE, reports, on the authority of local priests, that the city had been founded some 2,300 years previously—that is, in about 2750 BCE (*Hist.* 2.44). Whether by coincidence or because of actual records maintained in the city archives, this date corresponds closely to the earliest known archaeological material. Little is known of the city in this early period, but in Bikai's limited sounding, which reached the lowest strata, remains of large stone walls and other occupational evidence were found (Bikai, 1978). Tyre was therefore already a permanent town in the Early Bronze Age II and there is clear evidence for houses and occupation in the following EB III. There is as yet no explanation for the apparent abandonment of the site during the entire Middle Bronze Age (c. 2000–1600 BCE). A sterile layer of sand a meter and more thick separating the Early and Late Bronze Age levels indicates that the site probably remained unoccupied during this time.

In the earlier Late Bronze Age, the site was used for burials and storage pits, but the city was not rebuilt until the late fifteenth century BCE. A century later, the correspondence of its ruler Abimilki to the Egyptian Akhenaten (included in the Amarna letters) shows that Tyre was then a client state of the Egyptian Empire. Abimilki was most concerned with the advance of Sidonian forces into his territory, their capture of the mainland town Ushu, and the resulting lack of water and food normally supplied to Tyre by that town. Once Egyptian rule was restored in Canaan, Tyre resumed its vassal status through the rest of the Late Bronze Age.

There is some disagreement in the literature over the fate of Tyre and other Phoenician cities during the critical twelfth century BCE, when the LB palace economies collapsed and the new socioeconomic structure of the Iron Age was being formed. This was the result, largely, of growing populations, overtaxation, and the like, but newcomers from the Aegean world, the so-called Sea Peoples, also played their part. They invaded Anatolia, destroyed major coastal cities such as Ugarit on the North Syrian coast, took over Cyprus, and may even have attempted an invasion of Egypt. On the other hand, the archaeological record at Tyre, Sarepta, and other Phoenician sites shows no destruction, and literary works of about 1100 BCE indicate that four of the primary coastal cities—Tyre, Sidon, Byblos, and Aradus—were then thriving trade centers. [*See* Sarepta; Phoenicia; Sidon; Byblos.] Trade between Cyprus and Tyre is well in evidence in the period; it is possible that the founding of the Tyrian colony at Kition (Larnaca) took place this early. [*See* Cyprus; Kition.]

Iron Age. During the early part of the Iron Age (c. 1150–900 BCE), the Phoenician cities were free to develop their own economies: the older empires were gone, and the empires that would arise in the east had not yet been formed. Tyre and the other Phoenician cities were thus untroubled by foreign intervention. The strong port cities that developed during this period embarked on a westward expansion into the Mediterranean, certainly led by Tyrian merchant fleets. While many reasons are suggested for this, the most important was the search for new sources of metal to support a growing Phoenician industrial complex in the manufacture of bowls, jewelry, and other metal objects. A welcome by-product of the search for metal was the creation of a trading empire that provided new customers for Phoenician products. Cyprus, with its rich sources of copper was the logical first step; evidence of a Phoenician commercial presence on Cyprus exists in the eleventh century BCE. By the eighth century BCE, Phoenician merchants had reached the silver, tin, and copper mines of Spain, a route maintained by Tyre that established small trading and way stations along the coast of North Africa. [*See* North Africa.] Among these was Carthage, later to become a large and independent urban center challenging Rome for domination in the western Mediterranean. [*See* Carthage.]

At this time, Tyre also engaged in commercial expansion to the east under King Hiram I (969–936 BCE), to whom Herodotus (*Hist.* 2.44) ascribes the enlargement of the city by the joining of the two original islands and the rebuilding of harbors and temples. Tyrian expertise in architecture and crafts was thus already well-known when Hiram contracted with the new Hebrew monarchy in the Canaanite hill country to help construct King David's palace and Solomon's Temple in Jerusalem. [*See* Jerusalem.] In addition, Hiram and Solomon entered into a joint maritime venture between the Red Sea port of Eilat (Ezion-Geber) and Ophir (probably on the Somali coast). It is difficult to assess the extent of Tyre's political influence then and in the succeeding centuries. It certainly appears to have been the leading Phoenician commercial center and had treaty relationships with neighboring states—the best known being that of the marriage of the Tyrian princess Jezebel to King Ahab of Israel (*1 Kgs.* 16:31–32). However, there is no real proof of Tyrian hegemony over other Levantine cities or Tyrian rule over eastern Cyprus, as is sometimes suggested. The question has been obscured by the metonymic use of *Sidonian* to refer to Phoenicians in general. A Phoenician text from Cyprus, for example, refers to a Tyrian ruler as "king of the Sidonians" and the Hebrew Bible (*1 Kgs.* 5:6) calls the inhabitants of Tyre "Sidonians."

During the period of Assyrian domination (883–612 BCE), Tyre, like the other Phoenician coastal cities, was not subjected to outright conquest and occupation. [*See* Assyrians.] The Assyrians, rather, imposed tribute and taxes; as long as those were forthcoming, there was no need for military action. The Levantine cities presented no real threat to Assyrian security, and it was in land-locked Assyria's interest to maintain firm but limited control over the Phoenicians' rich Mediterranean commercial empire that produced their annual tribute. A ninth-century BCE engraved bronze band from an Assyrian palace gate now in the British Museum portrays the island fortress of Tyre and Assyrian ships rowing Tyrian tribute to the mainland. Revolt against this mild Assyrian rule was swift and merciless. The first recorded siege and destruction of a Phoenician city is that by Sennacherib (704–681 BCE), who punished Sidon and other towns, including Ushu and the northern Canaanite cities of Achziv and Akko, for their refusal to pay the annual tribute. [*See* Achziv; Akko.]

Sidon was again destroyed under Esarhaddon (680–669 BCE), who also put down the revolt of a coalition led by King Baal of Tyre. A treaty between Esarhaddon and Baal restored Tyre's dependencies stretching south into Philistine territory but gave an Assyrian official resident in the city far-reaching authority over its commerce. The final Assyrian assault in Phoenicia was by Ashurbanipal (668–627 BCE), again against Baal of Tyre, who once more had refused to acquiesce to foreign domination. Tyre was forced to submit through the simple expedient of cutting off its mainland food supply.

Toward the end of the seventh century BCE, Assyria was conquered by Babylon; during the reign of Nebuchadrezzar (604–562 BCE), the former Assyrian vassals in the west were absorbed into the new, but short-lived, Babylonian Empire. Josephus (*Against Apion* 1.56) records a long siege of Tyre; although the city was not taken, Tyre became a vassal under resident Babylonian officials, one of whom is named in a series of letters from Tyre to the Babylonian court. Shortly thereafter, the Persians, under Cyrus II, incorporated all the western provinces into their own empire.

Persian Period. Throughout the long period of Assyrian and Babylonian domination in Phoenicia, Egypt played a passive role in Levantine affairs. There is solid evidence of trade connections, especially in southern Canaan and with the coastal cities, including Tyre. Egypt sent contingents of troops to join northern coalitions against Assyria, but these were always defeated. At about the time of the fall of Nineveh in 612 BCE, Pharaoh Psammetichus I, founder of the twenty-sixth dynasty, claimed suzerainty over the Phoenician cities; his successor, Necho II, is generally credited with a short period of rule in southern Canaan, although there is little evidence to support this. Herodotus notes that Pharaoh Apries (589–570 BCE) sent an army against Sidon and fought a naval battle with Tyre, a reference that may reflect Egyptian aid to Tyre during Nebuchadrezzar's siege of that city. In general, Egyptian political influence in Canaan was intermittent and without any real lasting effect.

With the fall of Babylon in 539 BCE, Phoenicia came under Persian dominance and, along with Cyprus and Egypt, constituted the fifth satrapy of the Persian Empire, with Sidon as the seat of the Persian governor and his administration. The Persians had a vested interest in both the western commercial ties of the coastal cities and their fleets, which became part of the Persian military forces in their unsuccessful attempt to conquer Greece. Persian dominance gave Phoenicia a period of relative peace and prosperity, situated as it was in the center of a trade network stretching from Gibraltar to Persia, from the Caucasus to Nubia. The introduction of coinage, first at Sidon, in about 450 BCE, greatly facilitated this international commerce; Tyre, Aradus, and Byblos began minting coins soon thereafter.

The prosperous and peaceful life of the Phoenician cities was interrupted by revolts from time to time, especially in the fourth century BCE, encouraged by both Greeks and Egyptians. Several cities saw this as an opportunity to rid themselves of Persian influence in local affairs, although the population was divided between its Greek and Persian sympathies. In 392 BCE, Tyre either joined with or submitted to Evagorus I of Salamis, who was aided by Athens and Egypt, during his war to unite Cyprus and free the island. [*See* Salamis.] This failed and, although Evagorus retained his throne, Tyre reverted to Persian authority. Other rebellions by Sidon in 362 and 347 BCE were also put down, in the latter case with the destruction of the city. The role of Tyre in these revolts is obscure. Persia was thus able to maintain control over Phoenicia, but rising pro-Greek sentiments, Egyptian interference, and the desire to escape Persian rule helped pave the way for the Macedonian conquest.

Hellenistic–Roman Periods. In 332 BCE, after a seven-month siege by Alexander the Great, who constructed a mole to the island (see above), Tyre capitulated to yet another empire. Under Alexander's successors, the Seleucids, Tyre prospered; by Roman times it had become a major commercial center in the east. It is essentially the Roman city that is visible today, along with later Byzantine remains. A paved road with extensive necropoleis on either side led from the mainland through a monumental archway into the city proper. [*See* Necropolis.] Inside the archway, the city's central colonnaded street with shops along either side has been largely reconstructed by the Lebanese Department of Antiquities. An aqueduct ran beside this street bringing water from a mainland spring. [*See* Aqueducts.] The major features of the Roman city are a huge Roman bath and a hippodrome, one of the largest in the Roman world, that could seat some sixty thousand spectators. Later structures include a fourth-century basilica and a Crusader cathedral.

[*See also* Phoenicians.]

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UBAID (Ar., Tell al-'Ubaid), site located 6 km west of Ur, on the right bank of the Euphrates River in Iraq (30°58′ N, 46°05′ E) that has given its name to the last period of the prehistory of Mesopotamia. This small mound, 350 m long and 6–7 m high, was explored on behalf of the British Museum in 1919 by Harry R. Hall (1922), who recovered painted sherds, now known to be similar to those from Eridu that, at the time, he could compare only with those collected at Susa, in the Iranian province of Khuzistan. He also discovered several later objects—fragments of columns inlaid with stone mosaic and copper animals. In 1923–1924, C. Leonard Woolley, responsible for the exploration of the large neighboring site of Ur, carried out a productive excavation at Ubaid, resuming Hall's work. Woolley explored the historical as well as the prehistoric strata. He initiated the use of the name *Ubaid* for the long period with painted ceramics whose traces he also explored in soundings at Ur. This terminology, accepted by all, is still in use. Finally, in 1937, Pinhas Delougaz (1938) and Seton Lloyd (1960), who were working at the time on behalf of the Oriental Institute of the University of Chicago at Khafajeh, in the valley of the Diyala River in central Iraq, worked at Tell al-'Ubaid. In only four days at the site they discovered that the great temple excavated by Hall and Woolley was the same type as that at Khafajeh, but with an oval circuit wall. The site has not been excavated since. [*See* Khafajeh.]

The periodization of the prehistoric occupation of Ubaid was definitively set in 1960 by Joan Oates, based on analysis of the ceramics from Eridu, which was occupied during nearly the entire Ubaid period. [*See* Eridu.] Two new phases have been added to her subdivisions (Ubaid 1–4, early–late): Ubaid 0, the earliest (recognized at Tell el-'Oueili and several sites surveyed but not excavated), and Ubaid 5, the latest (attested at 'Oueili, Ur, Tell Madhhur, and several sites in the Arabian Gulf). [*See* 'Oueili, Tell el-; Ur.] In terms of absolute chronology, according to the most recent carbon-14 datings obtained at 'Oueili, the Ubaid began in about 6200 BCE, Ubaid 4 lasted from about 4800 to 4300 BCE, and Ubaid 5 from about 4300 to 3800 BCE.

At Tell al-'Ubaid, the habitation area, investigated in a trench 30 × 2.1 m opened in the center of the mound, seems to have consisted of houses of light construction—wattle or straw matting layered with pisé—essentially reed hut, plastered with mud that did not preclude the use of pivot stones. The material recovered did not permit distinguishing between an Ubaid 4 or 5 dating, but it certainly indicated a very late Ubaid date: the finds consisted of painted and especially monochrome pottery, sometimes incised; sickles and pestles of baked clay; grooved balls of clay; fragments of sickles with large flint teeth; limestone hoes; small polished axes; and terra-cotta figurines. The lightly constructed huts at Tell al-'Ubaid, which must date to 4000–3800 BCE, demonstrate the fact, also observed at Ur, that in lower Mesopotamia, at the end of the Ubaid period, housing was made of light materials. The only important constructions were probably the large family or clan reception rooms (as at Eridu VII–VI) or the granaries (as at 'Oueili). [*See* Granaries and Silos.]

A short distance south of the trench, a vast cemetery was surveyed. The site's British excavators covered the area rapidly because of the apparent poverty of the remains. They uncovered ninety-four tombs that represent a vast period of time (Ubaid 3–4, 5000–4300 BCE)—only three of which seemed on the basis of the pottery found there to belong to the final phase of Ubaid. To the north of the cemetery and sounding, excavation uncovered a single structure, a large temple whose foundation date is not known. In fact, the only stage of the building excavated was a reconstruction, according to the text of a stone foundation tablet, by "A-anepada, king of Ur, son of Mesannipadda, king of Ur, for Ninḫursag." The king Mesannipadda, of the first dynasty of Ur, reigned in about 2500 BCE. This great sanctuary strongly resembles the Oval Temple at Khafajeh and one found at Lagash, present-day al-Hiba, not far from Telloh. [*See* Girsu and Lagash.] These vast structures set in an oval enclosure wall and identified by inscription, are clearly separate from the surrounding habitation areas, which is especially evident at Khafajeh. They are very isolated, not only by their enclosure wall, which fits poorly into the urban design, perhaps on purpose, but also by the terrace on which they are set. At Tell al-'Ubaid, the great oval enclosure wall (85 × 65 m) was probably doubled in the interior by a concentric, smaller enclosure (as at Khafajeh). A rectangular terrace 33 × 26 m was constructed in the center of the en-

closure of unbaked plano-convex bricks on a stone socle. Perpendicular to its southeast facade, a staircase with several stone treads gave access to the summit of the terrace. In addition, a small lateral stair, also of stone, was arranged parallel to the southwest facade, which was later incorporated in an annex. The sanctuary itself, which has since disappeared entirely, probably stood on this terrace.

At the foot of the terrace, on either side of the principle stair, Hall and Woolley retrieved numerous decorative elements fallen from the facade, or perhaps from the doors. Some scholars think that the decoration was located next to the main staircase leading to the terrace. All the objects are presently housed in the British Museum. The finds include eight copper bulls with a wood and bitumen core, the small heads of birds and of a lion; the heads of leopards; a large copper plaque (2.38 × 1.07 m) representing an eagle, perhaps lion-headed, grasping two stags; numerous clay nails whose heads are in the form of a flower; stone birds; and copper columns ornamented with stone mosaics. Also found were the elements of a decorative panel out of shells, set into bitumen, that represents a rare milking scene (see Gouin, 1993); and some fragments of statuary in the round. These sparse and scattered vestiges demonstrate the extraordinary wealth of ornamentation in this sanctuary, which continued to be maintained, in particular by Shulgi, king of the third dynasty of Ur, in about 2100 BCE. They are the most beautiful examples known of the decoration of a great Sumerian sanctuary in the middle of the third millennium BCE.

[*See also* Ceramics, *article on* Mesopotamian Ceramics of the Neolithic through Neo-Babylonian Ages; Mesopotamia, *article on* Prehistoric Mesopotamia; *and the biography of Woolley.*]

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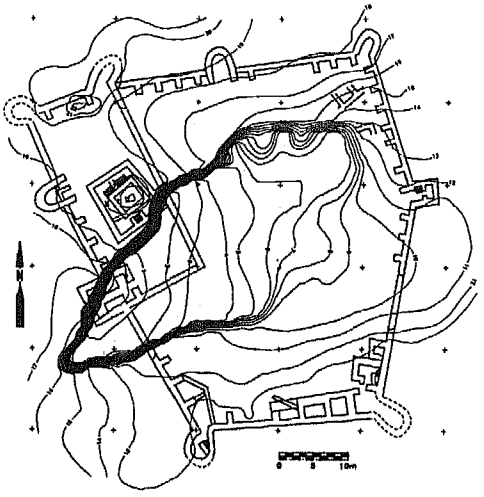
Translated from French by Nancy Leinwand

UBAR (alternately Wabar/Aubar), a region/city in the proximity of the Rub al-Khali sand desert of southern Arabia or a location to the south of it somewhere near eastern Yemen or western Oman (18°15′31″ N, 53°39′05″ E). Medieval Arabic sources point to Ubar as a land in eastern Yemen. Early Islamic Arab historians suggest that the region was connected to the land of the Mahra, near al-Shihr, and al-Akhaf (Tkach 1897, pp. 1832–1837; 1913a, pp. 1073–1074). Originally, the region reportedly was well irrigated, forested, and had many fortresses and palaces. In the local tradition, destruction was brought down on the people by their wickedness, and the ruins became choked with sand from great winds or drought. Eventually, the area was abandoned. Several authors tie the Ubar area to both the Mahra and the long-lost people of Ad. The assumption that Ubar was a single city comes from the more fanciful embroideries of the *Thousand and One Arabian Nights,* particularly the stories "The Keys of Destiny" and the "City of Brass."

Other than St. John Philby in the early 1930s (1933, pp. 157–180), few Westerners have searched for Ubar/Wabar. A key to the mystery is in the term *Iobaritae* used by Ptolemy (6.7.24) to define a tribal group living inland of the region known as Sachalitai (Stevenson, 1932, pp. 137–140). Both terms appear in modern Dhofar on copies of Ptolemy's map and in the *Periplus of the Erythraean Sea,* among other terminology consistent with a locality in the northern Indian Ocean (Casson, 1989, pp. 170–173). Central to the matter is identifying the Iobaritae with the Islamic term *Ubar.* J. Tkach thought the people of Ubar lived in deep antiquity and had disappeared prior to the coming of Islam (1913a, p. 1074). In the nineteenth century, Western scholars argued that the Iobaritae were the later Ubars (Tkach, 1897, p. 1836). Scholars are divided today on the connection.

With the first investigations at Dhofar in the late 1950s, the site of Khor Rori (long identified with Moscha of the *Periplus* account), was confirmed to be ancient SMHRM (Albright, 1982, cf. the arguments on pp. 3–10; Doe, 1983, pp. 147–150). Its gateway inscription in Epigraphic South



Arabic specifically mentions the S'KLHN frankincense district (Albert Jamme in Albright 1982, pp. 42–45; Pirenne, 1975; Beeston, 1976) and supports the term *Sachalitai* used by both the *Periplus* and Ptolemy. Based on the archaeological survey on the Salalah plain (1992–1995), it is debatable, however, if the term *Moscha Limen* used by the *Periplus* is to be identified with the Khor Rori location (see Doe, 1983, p. 21) because SMHRM = Moscha is largely conjectural. Ptolemy's harbors and settlements on the Salalah plain can now be more readily identified, based on the current archaeological survey of this region carried out by Juris Zarins. At least seven major sites from Khor Rori to Raysut (and perhaps Mughsayl) must be considered in reference to Ptolemy's locations.

It appears that Ptolemy's placement of the Iobaritai in the hinterlands behind the Sakalan region is also accurate (*contra* Groom 1994, pp. 207–208). The three localities (Iula, Marimatha, Thabane) identified with the Iobaritae may be tied into the Mahra occupation of the region. These identifications are contingent on solving problems of scale and on the distortion inherent in all copies of Ptolemy. (For the contemporary distribution of the Mahra, see Dostal, 1967, and Lonnet, 1985; as a contemporary term in the classical period, see Müller, 1991.)

Bertram Thomas's observation that the road to Ubar (1932, p. 161; see also Groom, 1994, p. 208) headed into the Rub al-Khali was the basis for the recent investigations by Zarins and the Jet Propulsion Laboratory Scientists Ron Blom and Robert Crippen into the location of Ubar. LANDSAT/SPOT/THEMATIC MAPPER remote-sensing images supplied by the Jet Propulsion Laboratory of the area Thomas noted recorded a long route beginning near Wadi Mitan through the southern Rub al-Khali. Projecting the route northward, the destination would have been either Ayun/Layla in the central Tuwaiq Mountains or the oasis of Jabrin on the northern edge of the Rub al-Khali (Philby, 1933, pp. 86–106). Archaeological work in the Rub al-Khali discredited the theory that large, permanent settlements belonging to the Ubar region would have been located in the sands (Edens, 1988). Tracing the tracks Thomas discovered back to the nearest ancient permanent source of water led to the discovery of Shisur (Ar., "cleft," or "fissure"). Known to explorers since Thomas (1932, p. 136) and Wilfred Thesiger (1984, p. 100), and even visited by archeologists in 1973 (Pullar, 1974, p. 41; 1975, pp. 49, 71–73) the site and region were not systematically investigated until 1990–1992.

A brief surface examination of the Shisur promontory led to a detailed study of the site and region by Zarins in 1991–1992 as director of the Transarabian Expedition. Data from this study and the excavations (1992–1994) now confirm that the site is most likely Marimatha, the largest settlement on Ptolemy's map, in the territory of the Iobaritae. The Shisur site, apparently a collapsed limestone cavern, is now a large sinkhole. Earthquake activity ruptured the aquifer beds (Umm ar-Radhuma A–B) and water flows to the surface in several springs. Fracturing and sink-hole collapse have been seen at Shisur and in the surrounding area. The events shaping the region's current geomorphology are dated to the last phases of the Pleistocene. Wadi Ghadun, 2 km (1 mi.) west of Shisur, represents the region's other major geomorphological feature. The now dry stream was a major feature during the Pleistocene and Early Holocene, flowing past Shisur and skirting the Rub al-Khali, 25 km (16 mi.) to the north.

A preliminary assessment of the site's history is based on the excavation of 3-meter squares laid in a large grid. The earliest human activity belongs to the Neolithic period (phase III, c. 3500–2500 BCE), although more than twenty-five sites of the period are known around Shisur that extend occupation back to about 6000 BCE (phase I). Possible Upper Paleolithic (100,000–40,000 BP) materials may be located to the east. Nondescript stone tools at Shisur may belong to the Bronze Age (2500–1000 BCE), but any formal buildings date to the Iron Age (c. 1000–0 CE). Ceramics only appeared in the region, at Dhofar (Tkach, 1913b), in the Iron Age—in contrast to Yemen (2500 BCE) and northern Oman (4500 BCE), so that investigations are focusing on the structural and material culture sequences of the Iron Age and later. [*See* Yemen; Oman.]

The earliest fortress at Shisur may be Early Iron Age. A small enclosure protecting the springs was built with semi-dressed stone walls with interior partitions. Both detailed stratification and the material culture suggest that the fortress was enlarged in the Iron Age and that occupation peaked in the early first centuries CE. The walls of the fortress were then enlarged, more interior rooms were added, and a proper gate and additional towers were built. The material culture resembles that of both Yemen (imported raw chlorite schist, sandstone, and basalt, which were crafted into finished products) and northern Oman (Parthian red wares connected to Sohar). [*See* Sohar.] The distinctive red-burnished wares with dot-and-circle/rouletting motifs have yet to be identified outside Dhofar. Other Hellenistic wares with appliqué point to connections with eastern Saudi Arabia, specifically the Jabrin, Thaj, and Dammam regions. [*See* Thaj.] After a four-century hiatus (c. 400–800 CE), probably caused by earthquake activity that destroyed a large portion of the site, or economic collapse the complex was formally reoccupied in the ʿAbbasid period and finally abandoned by 1400. Excavation at the bottom of the sinkhole revealed more than 5 m of occupation, all attributable to bedouin use since 1400.

The region surrounding Shisur parallels the focus of the central formal complex. Especially to the east, campsites and small-scale satellite occupation can be seen for more than 10 km (6 mi.) along an arc of small hills. At Hailat Araka, 40 km (25 mi.) away, a similar occupation pattern may be

present: limited examination yielded principally large-scale Neolithic and possible Bronze Age occupations. Irrigation channels and fields reported at Shisur are now obscured by modern oasis and farm activity (Thomas, 1932, p. 131). This situation may parallel the ʿAin Humran complex on the Salalah plain, where irrigation channels and field walls can still be seen.

As a whole, the Shisur region, because of its perennial water supply, was the focal point of commerce and agriculture. Based on Ptolemy's observations, it appears that the Iobaritae were the ancestors of the Mahra peoples inhabiting this plain and conducting incense trade across the Rub al-Khali and elsewhere. The smaller satellite sites with perennial water dot the backslope of the Nejd. Ptolemy's sites of Iula and Thabane may be Andhur and Mudai (or Habarut), respectively, in Dhofar. Following the collapse of the incense trade and possible topographical changes in the region caused by climate and/or earthquake, the Mahra retreated to the mountains to the south sometime after the tenth century (Dostal, 1967, pp. 123–135, esp. fig. 19). The medieval Arab trade network through the region was destroyed by the Portugese in the fifteenth century (Guest, 1935, pp. 407–408).

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JURIS ZARINS

ʿUBEIDIYA, hilltop site about 0.5 km east of Tell ʿUbeidiya and west of the Jordan River, on a mound whose slopes range from 160 to 205 m below sea level. Geologically, this formation was originally named *Melanopsis stuffe* (Picard, 1943) and later as the ʿUbeidiya Formation (Picard and Baida, 1966). Excavation of the prehistoric site of ʿUbeidiya was sponsored by the Israel Academy of Sciences, under the direction of Moshe Stekelis (1960–1966) Ofer Bar-Yosef and Eitan Tchernov (1967–1974), and more recently with Claude Guérin of the University of Lyon (1988–1994).

The site's numerous angled and folded layers, excavated with heavy machinery, contained animal bones and worked stone artifacts. The formation reflects the depositional history of a Lower Pleistocene freshwater lake and its immediate environment. The lake occupied the area now covered by the Sea of Galilee and an additional 30 km (18 mi.) to its south. More winter rain was experienced then, so that oak forests at times covered the valley slopes of the central Jordan Valley. Stratigraphically, the excavations exposed a sequence of expansion and retreat for the ʿUbeidiya lake. Its final regression, caused by tectonic movement, may also have been responsible for its disappearance (Picard and Baida, 1966). [*See* Jordan Valley.]

A series of trenches revealed more than sixty layers on both sides of a small anticline. Many of the archaeological horizons exposed may have been continuous on the other

side of the anticline before the top was completely eroded. Numerous artifacts were recovered from the different layers, including core-choppers, polyhedrons, spheroids and subspheroids, handaxes, picks, and abundant retouched and unretouched flakes. Those artifacts that had originated in the gravelly beach contexts tended to be abraded, whereas the least frequently abraded items were recovered from clayey layers.

The site's main tool groups can be grouped according to the raw materials used: core choppers, polyhedrons, and many flakes were made of flint; spheroids from limestone; and handaxes from basalt, with a few from limestone and flint. The size of the desired shape probably dictated the choice of the raw material. The site's lithic assemblages resemble those of the lithic industries of the Developed Oldowan and Early Acheulean in East Africa's Olduvai Gorge, specifically Upper Bed II (Bar-Yosef and Goren-Inbar, 1993).

Faunal correlations and the paleomagnetic reversed position of most of its sequence provide a date for 'Ubeidiya of 1.0–1.4 million years ago. The extensive faunal collection is primarily Eurasian in origin, with only a few species from Africa. It includes more than one hundred species of mammals, reptiles, and birds, among them hippopotamus, horse, deer hedgehog, leopard, wild camel, lemming, bear, fox, rhinoceros, elephant, gazelle, oryx, and hamster. Those fauna originating in Africa include giraffe, a few species of rats, hippopotamus, warthog, and a species of wild sheep.

These varied fauna would have encouraged scavenging, and the Mediterranean flora made available leaves, fruit, and seeds to supplement the diet of early hominids. Although no human remains were found in situ, the worked-stone artifacts are presumably the work of *Homo erectus*. The rich archaeological and zoological information from 'Ubeidiya for the early Lower Paleolithic constitutes the best evidence for the movement of *Homo erectus* out of Africa.

[*See also* Paleobotany; Paleoenvironmental Reconstruction; *and* Paleozoology.]

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OFER BAR-YOSEF

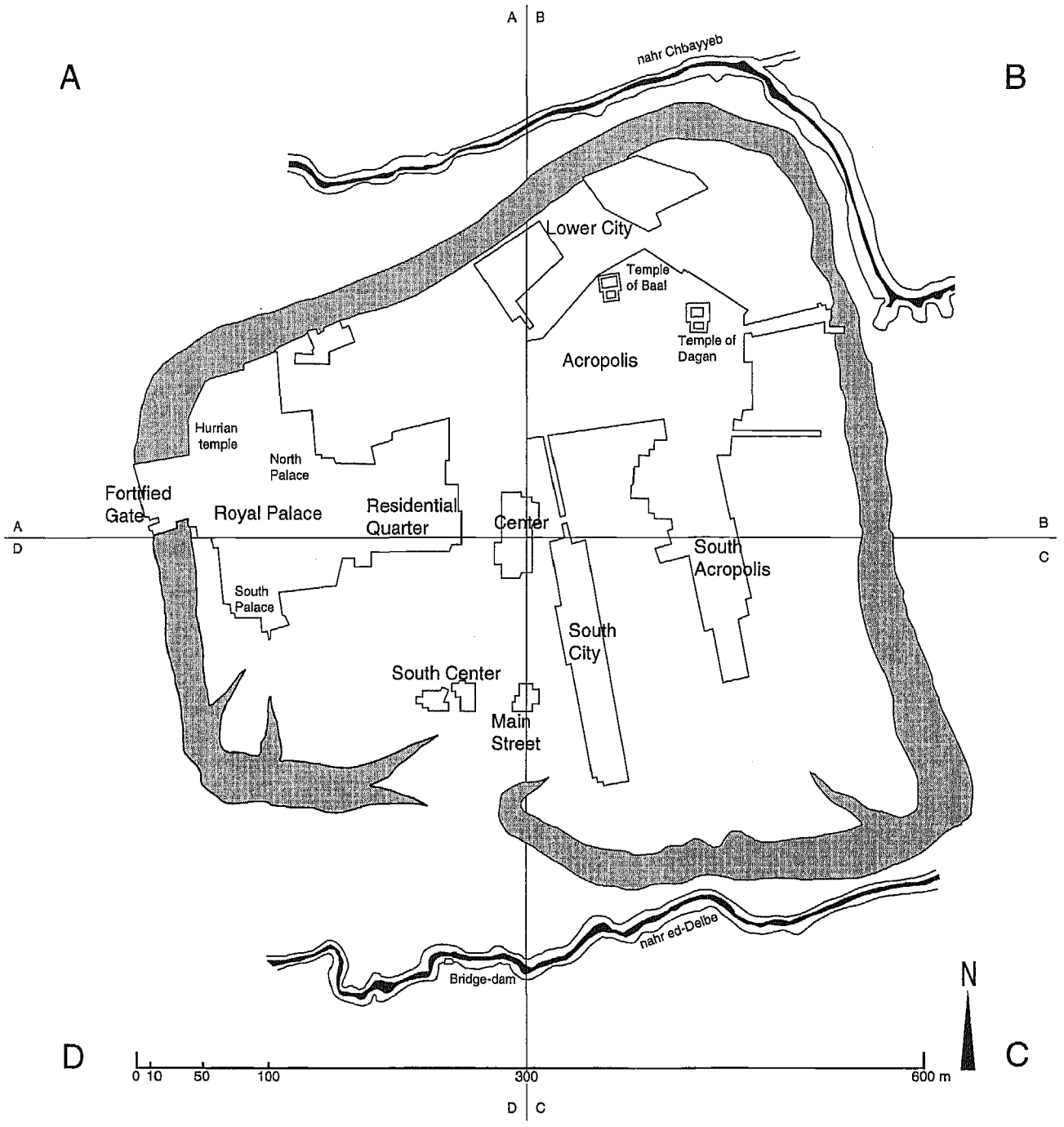
UGARIT, an ancient kingdom on the Mediterranean coast of Syria, whose capital of the same name was established on the mound of Ras Shamra, located 10 km (6 mi.) north of Latakia (35°36′ N, 35°47′ E). The mound of Ras Shamra is encircled by two small seasonal streams (Nahr Chbayyeb to the north and Nahr ed-Delbeh to the south) that join (Nahr el-Fidd) to flow into the bay of Minet el-Beida, about 800 m away; its broad agricultural plain divides the plateau of Bahluliyah, and the Alaouite Mountains from the sea. Five km (3 mi.) to the south lies the promontory of Ras Ibn Hani, where an Ugaritic settlement of the Late Bronze Age is located.

The kingdom extended for about 2,000 sq km (1,240 sq. mi.). It was bounded by the Mediterranean Sea (to the west); the Bayer and Bassit Mountains (to the north); the Alaouite Mountains (the so-called coastal chain of the Jebel Ansariyah), which are 1,567 m high (to the east); and the area of the Jableh and Nahr as-Sinn (to the south). A permanent river, the Nahr al-Kabir, drains the waters of the mountains to the north; its valley (to the northeast) opens the route to central Syria. On the northern horizon, the Jebel al-Aqra (1,780 m high) is ancient Mt. Sapanu (Mt. Zaphon; the Romans' Mt. Casius), where Baal, the storm god, resided.

The city visible on the surface of the mound is that of the Late Bronze Age (see figure 1). In its present state, it is defined by the surface area of the mound (more than 20 ha, or 49 acres), which does not correspond to the area of the LB town: to the northeast, more than 50 m were undermined by the meandering of the Nahr Chbayyeb; to the east, and especially the south, modern farming prevents examination of the extent of the ancient habitation.

In 1929, texts were recovered from the mound of Ras Shamra that were written in several languages. Among them was an otherwise unknown language, that of Ugaritic, inscribed in cuneiform writing according to a new alphabetic system. The texts revealed a new world of cultural, religious, and mythological traditions, essentially of the fourteenth–thirteenth centuries BCE, that further demonstrated the first-rank importance of Ugarit in the history of the Near East.

The interpretation of the texts discovered since 1929 at Ras Shamra led to the identification of the site as ancient Ugarit, mentioned in second-millennium BCE texts from Mari, Boğazköy, and Tell Amarna. Texts from Ebla have perhaps furnished the earliest mention of the name (2400



UGARIT. Figure 1. *Plan of the city.* (Courtesy M. Yon)

BCE) but it is questionable. [*See* Mari Texts; Boğazköy; Amarna Tablets; Ebla Texts.]

The port of Minet el-Beida is probably ancient Ma'ḫadu (Leukos Limen of the Greeks, the White Port of the Crusaders). There is some doubt about the ancient designation of the site of Ras Ibn Hani (Appu? Biruti? Rešu?). The single large river, the Nahr al-Kabir, is designated as Rahbanu. The Ugarit texts in Akkadian and Ugaritic from the fourteenth to the beginning of the twelfth centuries BCE enabled progress in localizing the ancient toponyms of the realm, sometimes identified by comparing them with present-day names. [*See* Ugarit Inscriptions.]

Archaeological Investigation. After the accidental discovery in 1928 of a funerary vault at Minet el-Beida, the Mission Archéologique Française, directed by Claude F.-A. Schaeffer explored the harbor foundation and then the mound of Ras Shamra 800 m from the shore (1929–1970). The mission was subsequently directed by Henri de Con-

tenson (1971–1974), Jean Margueron (1975–1977), and Marguerite Yon (since 1978). [*See the biography of Schaeffer.*]

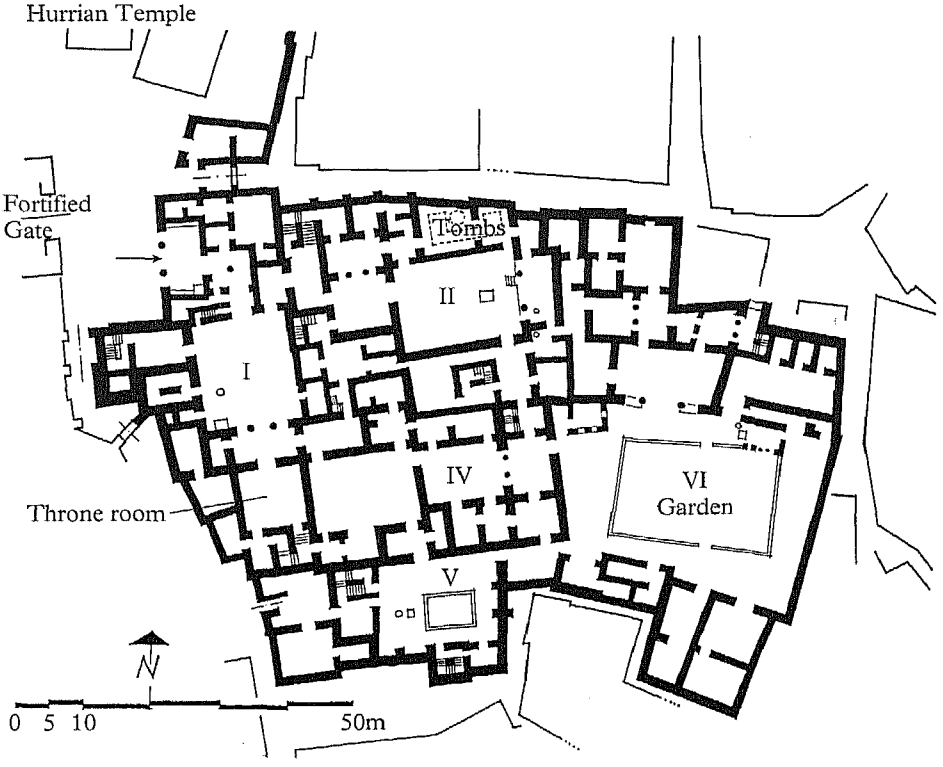
The first campaigns concentrated on Minet el-Beida's harbor settlement and tombs (1929–1935) and on excavating the mound of Ras Shamra. Urban areas were excavated on the Acropolis (1929–1937), including two temples and the House of the High Priest, with its mythological tablets and inscribed bronze tools that permitted the decipherment of Ugaritic in 1930 by Hans Bauer, Edouard Dhorme, and Charles Virolleaud. [*See the biography of Virolleaud.*] From 1932 to 1937, residential areas in the Lower City, East and West, and below the Acropolis (north and northeast) were explored.

Exploration of the northeastern part of the mound began in 1937–1939. Buildings were uncovered that are known as the Palace of the Queen Mother, the Building with Four Pillars, and the so-called Hurrian Temple. Excavation of the Royal Palace, with its fortification on the west, was begun at that time (see figure 2). It was resumed, after the discovery of the main archives, following World War II (1948–1955). The excavation of the once-inhabited areas to the east of the palace, the houses in the Residential Quarter, with their deposits of archives and rich furnishings, was continued between 1953 and 1974. Included in the monumental complexes sometimes recognized as palaces are the vast North Palace (excavated in 1968–1971), perhaps a royal palace that preceded the last royal palace; and the South Palace (the "Little Palace," or "House of Yabninu," excavated in 1964–1965), with its archives. Between 1959 and 1964, large north–south trenches revealed other habitation areas in the South City (1959–1960) and on the South Acropolis (1961–1964) that included important tablets. A post-Ugaritic installation in the middle of the mound (Persian and Hellenistic period) was excavated in 1971–1973.

Deep soundings were undertaken to explore periods earlier than the Late Bronze Age to the west of the Temple of Baal (1953–1960) and in the Garden of the Royal Palace, or court III (1954–1955). The most important of them, sounding H (1962–1974), on the west slope of the Acropolis, revealed 15 m of occupation and gave the most complete stratigraphy of the site (seventh–second millennia).

In 1975–1976, a large LB dwelling was excavated northwest of the mound. Since 1978, the project has focused on urbanism and architecture, including excavation of the area at the center of the city and an architectural study of the South City Trench (excavated in 1959–1960). A square opened in the southern area (South Center) produced new batches of tablets in an archaeological context, the "house of Urtenu" (1986–1994). A study of the urban topography led to the opening (since 1992) of a square on the Main Street, the principal access route in the city, on the axis of the bridge-dam (excavated 1988) that crossed the Nahr ed-Delbeh to the south.

The emergency excavation of a small mound next to the sea at Ras Ibn Hani (about 5 km, or 3 mi., from Ras Shamra) uncovered a new Ugaritic settlement with a palace, fortifi-



UGARIT. Figure 2. *Plan of the Royal Palace.* (Courtesy M. Yon)

cations, and texts (thirteenth–twelfth centuries BCE) and a Hellenistic fortress. The site was explored by a Syro-French expedition directed by Adnan Bounni and Jacques Lagarce. [*See* Ras Ibn Hani.]

Stratigraphy and Chronology. The best-known period on the mound of Ras Shamra in terms of texts and archaeological remains is the Late Bronze Age, in particular the fifteenth–twelfth centuries BCE). It is the apex of a history five millennia long.

Neolithic period. Human occupation by farmers, hunters, and fishermen began in the period of sedentarism in Syria-Palestine (level VC, seventh millennium). Subsequently (levels VB, 6000–5750 BCE; VA, 5750–5250 BCE), new technologies appeared: the breeding of domesticated animals, houses built of stone according to a rectilinear plan, and the manufacture of containers (the "white ware" of plaster and baked ceramic).

Chalcolithic period. In the Chalcolithic period (level IV), new influence from the East led to a profound transformation and reduction in the size of the inhabited area. The site's Halaf phase (5250–4300 BCE) is characterized by painted pottery, diversified architecture, the development of crafts, and the breeding of small livestock. Its Ubaid phase (level III C–B, end of the fifth–fourth millennia) witnessed the appearance of copper. [*See* Ḥalaf, Tell; Ubaid.]

Early Bronze Age. After about 3000 BCE (level III A), occupation of the site evolved considerably. The Early Bronze stratum presented urban characteristics (alleys, a city wall). The site's architecture, formerly of unbaked brick (phase 1), utilized stone more and more. Tools, mainly of stone, now also included metal objects (copper, bronze). Pottery demonstrated relationships with the contemporary sites of Cilicia, North Syria, and Palestine. Phase 3 showed a rapid development of bronze metallurgy (weapons, tools). In about 2200 BCE, the mound was abandoned, like other sites in the Levant, for a period of about a century (or two?).

Middle Bronze Age. In about 2000 BCE (level II), the site began a new life, with the arrival of nomadic populations that settled in Syria (cf. Amorites). Certain groups *(porteurs de torques)* seemed expert in metallurgy (molds for jewelry and weapons were recovered). The architecture of phase 1 is not known, only its large collective tombs. In phases 2 and 3 (c. 1900–1650 BCE), a new urban civilization united the Syrian coastal traditions and the new influences. The town, which gradually covered the entire surface of the mound, was protected by a strong wall. [*See* Amorites.]

Two temples on the Acropolis and the Hurrian Temple northeast of the mound may have their origin in the Middle Bronze Age. Excavation has produced many objects from the Middle Bronze period, notably Egyptian, with hieroglyphic inscriptions. Some scholars have proposed the political domination by pharaohs of the twelfth dynasty. The name *Ugarit* is also mentioned in the Mari texts (royal visits, the trade in tin), which attests to continued relations between northern Mesopotamia and the coastal realm (Courtois, 1979; Saadé, 1979).

Late Bronze Age. The end of the MB period (c. 1650 BCE) and the phase that followed (until the Amarna period, fifteenth century BCE) remains an obscure period in the Levant. The building called the North Palace was probably constructed at the beginning of the Late Bronze Age. The Late Bronze level I at Ugarit experienced a new expansion of urban development, spectacular prosperity, and the growing importance of royal power (fifteenth–thirteenth centuries BCE). The succession of kings and their relations with foreign powers are known from the texts found in the archives of Ugarit and elsewhere (e.g., Amarna) and by the seals that mark official documents. [*See* Seals.] The written documents give evidence for the use of several languages, mainly Akkadian and Ugaritic.

The history of the kingdom of Ugarit is tied to the powers that surrounded it and on which it depended (Mitanni, Egyptian, Ḫatti) and to neighboring realms—friendly or hostile, according to the circumstance or period (Carchemish, Amurru, Siyannu, Qadesh, Tyre, Sidon, Byblos, Berytus/Beirut). In about 1400–1350 BCE, Ugarit fell under Egyptian control. After 1350 BCE, the expedition of the king of Ḫatti, Šuppiluliuma made the Mitanni submit to Hittite domination. Ugarit, Amurru, Qadesh, and other small kingdoms also passed into the Hittite sphere of influence. [*See* Mitanni; Carchemish; Tyre; Sidon; Byblos; Beirut; Hittites.]

In the latter half of the thirteenth century BCE, the royal authority monopolized the wealth of Ugarit. The kingdom was founded on a flourishing economy, but its weak military capacity continued to fail. Ugarit was probably destroyed at the beginning of the twelfth century BCE, in raids by the Sea Peoples, who plundered and set fire to it and numerous other sites. [*See* Philistines, *article on* Early Philistines.] The annihilation of Ugaritic civilization necessarily had other causes as well—economic, social, and political—that explain the total and final abandonment of the town by its inhabitants in about 1180 BCE. Evidence of occupation in the later Persian and Hellenistic periods only appeared in a small portion of the site south of the Acropolis (Stucky, 1983).

Fortifications. The MB city was surrounded by ramparts (see figure 3) for most of that period. To the north, erosion caused their disappearance, except to the north of the Acropolis, where portions were found in a sounding (1934). Soundings revealed the remains of a wall to the east, as well. To the south, here and there below earthen embankments, traces of a Main Street appeared that ran from the south toward the center of the city.

To the east, an imposing fortification protected the access to the Royal Palace: a stone glacis (a 45-degree slope), a square tower (14 m on a side) protecting a pincer gate and hidden access by a ramp (now disappeared), and a postern leading behind the tower. This area was profoundly transformed in the Late Bronze Age with the construction of the

UGARIT. Figure 3. *City rampart, with rear gate and tower above.* (Courtesy Mission Française de Ras Shamra-Ougarit)

Royal Palace. Successive enlargements were also carried out on the fortified gate that protected the palace on the west.

The fortified gate leading only to the royal area did not provide access to the town for its inhabitants or its merchants transporting merchandise from the port. Exploration of a wide depression on the south slope confirmed (1992) the hypothesis of a Main Street that crossed the Nahr ed-Delbeh by way of the bridge-dam (still being excavated). This would have been the principal route leading from the roads on the plain into the interior of the city. Other routes of access were probably used: another bridge was probably located to the north, and to the east, relatively gentle slopes lead toward the terrain cultivated for agriculture.

City Plan. The space delimited by the contour of the mound allowed several occupation zones. About 6 ha (15 acres) were explored on the surface, less than one-third of the tell. One part of the urban area was reserved as the royal domain (the palace zone); it was spread over 10,000 sq m and was isolated architecturally from the rest of the city. The area of the Acropolis revealed two large temples. The remainder of the site consisted of residential areas.

Palace area. The Royal Palace, constructed in several phases (fourteenth–thirteenth centuries BCE), is a spectacular monument in terms of its size (at its maximum 120 m east–west and 90 m north–south; it covers close to 1 ha, or 3 acres) and the quality of its construction (cut stone, rubble, wood, *terre pisé*). Its successive enlargement corresponded to the expansion of royal power and its administration. A dozen stone staircases and a number of walls preserved to the floor of the upper level attest to the existence of at least one upper story. In its final stage, its elaborate floor plan reveals the differentiation of space on several levels: administrative (regulation of the affairs of the realm mingled with those of the palace), public and official, and private.

On the northwest the palace was entered from a paved square that opened onto the fortified gate, entry was through a vestibule with two columns; a vast court (I) then led to the "throne room." Various smaller rooms (guardrooms, administrative offices), with stairways leading to upper floors, yielded deposits of administrative documents and correspondence (the West Archives, Annex Office of Archives).

To the south and east of this official zone, groups of rooms were organized around other courts and rooms (II, IV, VI). The royal tombs were found to the north of court II. Numerous private houses were also found to include a family tomb. The area of court IV and room VI held the Central Archives (juridical texts and royal contracts; from which 135 impressions of dynastic seals permit the reconstruction of the succession of the kings of the fourteenth–twelfth centuries BCE). The grouping around court V, to the south, with its rectangular basin, constituted one of the most recent building efforts; in this area the very important South and Southwest Archives were found that may have fallen from an upper story.

The eastern part of the palace included a large garden (III), onto which private apartments opened: one room (northwest of the garden) yielded luxurious furniture inlaid with ivory (bed panels, a small round table). The rooms to the northeast of the garden yielded the East Archives (economic texts). Several groups of rooms to the north of the

palace were connected to the area: the Arsenal; the Residence of the Military Governor; the Building with Pillars (once wrongly designated by Schaeffer as Stables); and the Hurrian Temple. The palace area carefully bounded and protected from the city by continuous walls and well-defended gates, also boasted elaborate arrangements, restricted to it, for personal hygiene, such as drainage pipes and sewer mains. [*See* Personal Hygiene.]

The administrative and financial texts and lists of villages and crafts lead scholars to believe that royal power was expanded in the course of the thirteenth century BCE (see above). The physical extension of the royal area in relation to the rest of the town and the concentration of the archives found in the palace confirm this conclusion.

Acropolis. The temples on the Acropolis were designated the Temple of Baal (it housed a stela of Baal with a thunderbolt and an Egyptian stela with a dedication to "Baal Saphon") and the Temple of Dagan (its stelae are inscribed in Ugaritic). The Temple of Baal was built in an enclosure. Strong foundations supported a platform upon which the building stood. It was composed of a vestibule reached by a stair on its facade and a larger rectangular room. A monumental interior stairway wound around three sides of the structure, which permits an approximation of its total height at about 18 m. The temple, in the form of a tower, supported a platform on its roof on which certain rituals took place (cf. the mythological text found in 1930 [*CTA* 6; *TO* 1, 480–574], where the king Keret offers a sacrifice "at the top of the tower"). The height of this tower, on an acropolis 20 m above the plain, made it a characteristic element of the landscape and a landmark visible from far at sea. The seventeen stone anchors counted in this temple demonstrate its veneration by sailors. [*See* Anchors.] The quality of the offerings (e.g., gold vessels) indicate the importance of the cult. The Temple of Dagan, of which only the enormous foundations remain, took the same tower form.

Close to the temples isolated in their enclosures, blocks of houses were reached by narrow streets. This quarter was not only a simple middle-level habitation area, for the house known as the House of the Grand Priest or (the Library) is located between the two temples. From 1929 onward it yielded an important collection of bronze weapons and utensils bearing dedications to the "chief of the priests." The inscriptions furnished one of the keys to the decipherment of Ugaritic, and the most important mythological texts were discovered there (*TO* 1).

Residential areas. Ugarit's city plan for the southern part of the mound reveals no regularity. As a result of excavation since 1992, a central axis has begun to appear, coming from the south (Main Street). From the Residential Quarter to the South Acropolis Trench, roughly parallel streets follow the curves of the site's east–west contour approximately; they are connected by short, narrow transverse alleys. These define blocks of varied shapes that lack both an orthogonal pattern and any regularity. This circulation network overlies an older network, created over the course of centuries by the disorderly evolution of a living habitat.

Ugarit's residential areas appeared in various parts of the city: in the Lower City, in housing on the acropolis, in the South Acropolis Trench, and in the Residential Quarter. How the residential areas were organized and their domestic architecture (materials, plans, construction techniques) have been studied recently in several quarters: the South City (*RSO* 10), City center (*RSO* 3), South Center, and Main Street.

In spite of the observations of former excavators, specific districts reserved for craftsmen and a population of elevated rank could not be confirmed. Clear social overlapping appeared: the large houses of the rich, small, simple habitations; and urban craft activities coexisted in the same blocks. The social rank or function of the owners (wealthy merchants, royal officials, representatives of foreign powers) can be deduced from the presence of archives, as in the Residential Quarter (in the Houses of Rasapabu, the Scholar, and Rap'anu, the bronze armorer), South City (House of the Literary Tablets), South Acropolis (House of the Priest-Magician), and South Center (House of Urtenu).

Cult places are identified across the city's habitation areas (religious activities were omnipresent). These sanctuaries integrated into the insulae opened directly onto the public streets or belong to blocks otherwise occupied by residential buildings. Their sacral character is recognizable in their architectural organization (the Rhyton Temple in the City Center) and/or, when the plan of an area is poorly preserved or difficult to interpret, in the furnishings discovered: ceremonial rhytons, cultic furniture, incense burners, statuettes and stelae), and objects tied to the practice of divination such as inscribed liver and lung models. Domestic cults, which are a manifestation of the popular religion, are attested by the number and dispersion across the inhabited areas of small idols (pendants in precious metal, terra-cotta figurines).

It is difficult to estimate the population of the town of Ugarit in the last phase of its history. Texts (financial, mainly) and the size of the houses and their supposed density suggest six thousand to eight thousand inhabitants for the thirteenth-century BCE city, out of twenty-five thousand inhabitants for the whole kingdom. Archaeological indices lead to the belief that the population increased in the course of the thirteenth century; the increase in the density of habitation agrees with what can be inferred from the texts.

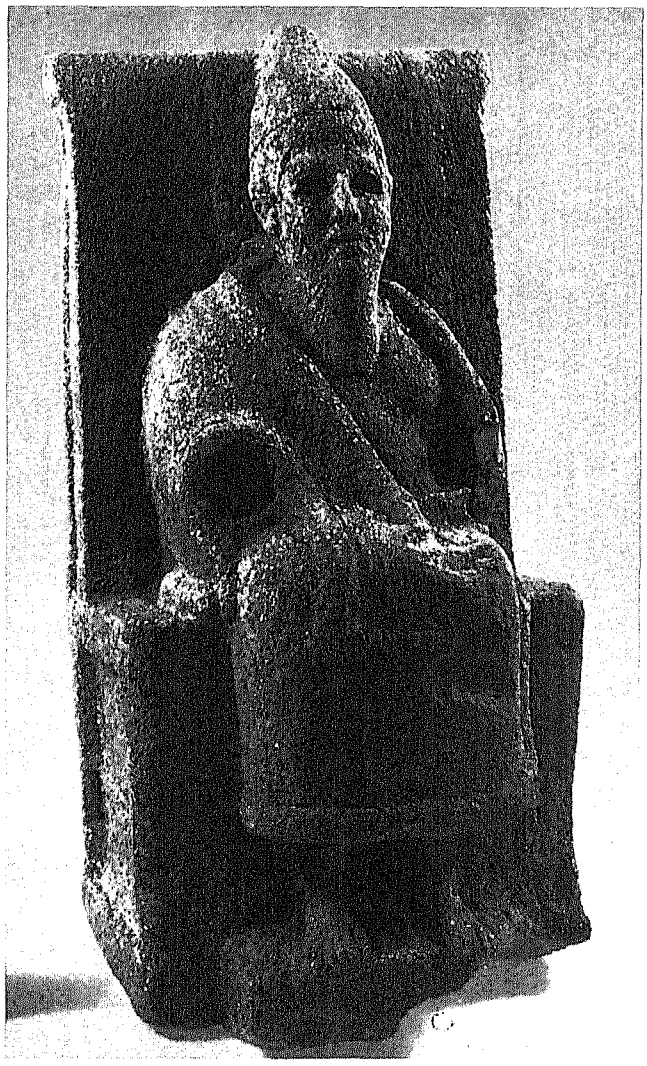
Material Culture. Numerous objects, attesting to the technical competence of the craftsmen of Ugarit, reveal strong technical specialization and artistic skill. Craftsmen worked in all sorts of materials: ceramic, stone, ivory, metal, faience. Pottery was mainly of local manufacture. Mycenaean, Cypriot, and Minoan imports constitute statistically a small part of the ceramic repertoire, but the evidence they

provide for international exchanges, the population's tastes, and the transfer of techniques is significant.

Sculpture is represented by several stelae (see figure 4) and stone statues (see figure 5); technical and stylistic analyses demonstrate the existence of local workshops. In the minor arts—molded figurine manufacture, vessel decorating, engraving, ivory carving and glyptic—the artists of Ugarit produced objects for the gods and kings that count among the most accomplished in the LB Levant, including ivory furniture from the Royal Palace and gold cups found on the Acropolis. [*See* Furniture and Furnishings, *article on* Furnishings of the Bronze and Iron Ages; Stelae.] Artistic and intellectual activities, strongly tied to religious concerns, are known from the texts moreso than from archaeology. The musical instruments discovered in the excavations (bronze cymbals, ivory rattles, and a horn) evoke the ceremonies that once produced the ritual texts and mythological recitations. [*See* Musical Instruments.] Literature was supported by a scribal profession. No precise arrangement for a school has yet been recognized, but several abecedaries, lexicographical documents, and student copies prove that students learned to write and that a fraction of the population learned technical vocabulary and foreign languages according to pedagogical techniques.

[*See also* Palace; Ugaritic.]

UGARIT. Figure 4. *Stela of Baal preparing to strike.* (Courtesy Mission Française de Ras Shamra-Ougarit)



UGARIT. Figure 5. *Statue of the god El.* (Courtesy Mission Française de Ras Shamra-Ougarit)

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MARGUERITE YON

Translated from French by Nancy Leinwand

UGARITIC. The Ugaritic language belongs to the West Semitic language group and is probably a late manifestation of one of the Amorite dialects; its phonetic inventory is closest to that of the Old Arabic and Arabian languages. It is the only West Semitic language written in a cuneiform script, alphabetic in character rather than syllabic and apparently invented in the first half of the second millennium BCE, in imitation of alphabetic linear scripts. The language has only been known since 1929, when the first texts were discovered at the site of Ras-Shamra on the north Syrian coast. The script was essentially deciphered within a year by scholars working independently, although subsequent refinements were necessary and minor corrections continue to be made. Texts in the Ugaritic language are presently attested only in the area of Ugarit, but brief and/or fragmentary texts using the Ugaritic writing system are attested from Kamid el-Loz in Phoenicia to Beth-Shemesh in Canaan (Dietrich and Loretz 1988: 205–296).

A vigorous debate was originally waged over the proper assignment of the language within the Semitic language group, with no real consensus ever reached. The historical and linguistic links with the peoples grouped under the general heading "Amorites" makes the description given above plausible, although much more Amorite data is required to demonstrate the link. Paucity of data also impedes the description of relationships with the later West Semitic languages. At this stage it is only possible to say that linguistically the best parallels are with the Arabic and Arabian families of languages, while literally the closest ties are with Hebrew.

The basic writing system, like all the later Northwest Semitic alphabetic systems, is consonantal, with no provision for noting vowels. The reconstruction of the vocalic aspect of the language must rely, therefore, on four types of data: (1) the existence of three *'aleph* signs, a distinctive feature of the Ugaritic alphabet (see below); (2) Ugaritic words in polyglot vocabularies ("dictionaries" written in syllabic script with columns for Sumerian, Akkadian, Hurrian, and Ugaritic); (3) Ugaritic words appearing in Akkadian texts, either alone or as glosses to an Akkadian word; and (4) comparative Semitics.

The language is characterized by a conservative phonology and morphology. The basic alphabet consists of twenty-seven signs (as compared with twenty-two in Phoenician/Hebrew), at the end of which three signs have been added: one sibilant ({š} = no. 30) and two supplementary *'aleph* signs ({å} = no. 1, {î} = no. 28, and {ů} = no. 29). Although the two *'aleph* signs were apparently added in order to give three signs that could be used in the writing of languages that permitted vowel-initial syllables (e.g., Hurrian and Akkadian), the three signs are used in Ugaritic texts in a quasi-syllabic fashion to represent consonant + vowel: {å} = /'a/ or /'ā/; {î} = /'i/, /'ī/, or /'ê/; {ů} = /'u/, /'ū/, or /'ô/). The Ugaritic alphabet has signs for all of the consonantal phonemes known from Arabic, with the exception of /ḏ/, which has shifted to /ṯ/; usage of certain signs, in particular {ḏ} and {ẓ}, however, shows that there is not a perfect match between graphs and phonemes.

Nominal morphology is characterized by a full case system, the productive use of three grammatical numbers (singular, dual, and plural), the retention of the feminine singular ending *-t*, and the absence of a definite article. The most striking features of morphosyntax are the retention of

UGARITIC. *Tablet showing the Ugaritic alphabet.* (Courtesy ASOR Archives)

the case vowel in the construct state (e.g., *ksỉ ṯbth* = */kussa'u ṯibtihu*, "the throne of his dwelling") and the inconsistent use of "chiastic concord" with the numbers 3 through 10 (i.e., a masculine noun is modified by what appears to be a feminine form of the number and vice versa).

The verb system is similar to the other West Semitic systems. Striking characteristics are the use of a Š-causative stem, of which only remnants are found in the later West Semitic languages; infixed- or prefixed-*t* variants, with middle/passive functions, of each of the major transitive stems; the probable existence of an internal passive voice for each of the transitive stems; and a complete set of mood distinctions marked by suffixation in the imperfective system (-ø = jussive, *-u* = indicative, *-a* = volitive, and *-an(na)* = "energic"). The poetic texts preserve the archaic use of a ø-ending *yqtl* preterite.

Because the language is still relatively poorly attested, it is difficult to describe the lexicon in comparative Semitic terms and give proper weight to word classes. Three primary facts are clear: (1) the most basic terms are common Semitic (family terms, geographic terms, and names, etc.); (2) there are many lexical isoglosses with Arabic (though the number would certainly be reduced if there were more Hebrew and Phoenician texts); and (3) the primary verbs of movement (e.g., "walk," "ascend," "descend") are closer to the Phoenician/Hebrew camp than to Aramaic or Arabic—although, as would be expected, Ugaritic has its own peculiarities (e.g., *tbˁ* as the primary verb for "to depart").

For purposes of grammatical and literary analysis, the Ugaritic corpus must be divided into two classes, poetry and prose. Poetry is characterized by an archaic form of the language, particularly in verbal morphosyntax, and is attested only for religious texts. Most of these are major mythological texts dealing with divine society and politics and with relationships between humans and gods. In addition, there are several minor mythological texts, sometimes with a practical application; incantations; a prayer embedded in a prose text; and a funerary ritual—all in poetic form. Prose is used for letters; administrative texts of all types, including contracts; and for religious texts reflecting ritual practice.

[*See also* Ugarit; Ugaritic Inscriptions.]

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DENNIS PARDEE

UGARIT INSCRIPTIONS. Inscriptions in nine languages and/or writing systems have been found at the site of Ras Shamra, ancient Ugarit. The inscriptions are in Ugaritic, Akkadian, Sumerian, Hurrian, Egyptian, hieroglyphic Hittite, Hittite, Cypro-Minoan, and Phoenician. With the exception of some of the Egyptian inscriptions and the one in Phoenician, most date to the last two centuries of primary occupation at the site (c. 1400–1186 BCE). In addition to these writings from the site's floruit, a number of coins, dating from Alexander to the present, have been found there or in the area (*Ugaritica,* vol. 7, Paris, 1978, pp. 181–185).

Of these languages/scripts the largest corpora belong to Akkadian and Ugaritic. Because the site was abandoned at the end of the Late Bronze Age, with only relatively ephemeral occupations thereafter, one would not expect to find Phoenician inscriptions. Indeed, only one is known, associated with a later occupation, perhaps imported from elsewhere (*TEO* 414 [*TEO* = Bordreuil and Pardee, 1989; see bibliography]). Six objects inscribed with "Cypro-Minoan" characters, in an essentially undeciphered script, were found at the site and a seventh is from the area (*TEO* 418). A single tablet bears an entirely Hittite inscription; another is a trilingual—a Sumerian literary text with Akkadian and Hittite versions; and a third is a bilingual wisdom text in Akkadian and Hittite (*TEO* 422; Laroche, 1968, pp. 769–784). Hieroglyphic Hittite, which is a different language from classical Hittite, is attested by some seven seal inscriptions, including one that is bilingual with Akkadian (*TEO* 418, 422). Approximately one hundred Egyptian inscriptions are mentioned in the excavation inventories (*TEO* 418). Those discovered in the early years received a good deal of publicity, but a comprehensive collection has never been published. They are mostly short dedicatory texts or inscribed scarabs; several consist of only a cartouche.

Hurrian inscriptions were apparently quite numerous at the site, although only fragments remain of many of them (Laroche, 1968, pp. 447–544). Peculiar to Hurrian is that both syllabic writing and the Ugaritic alphabetic system were used to represent it (*TEO* 418, 422). Equally unusual is the mixing of Hurrian and Ugaritic in ritual texts (*TEO* 418), a very different phenomenon from polyglot vocabularies or bilinguals, where one text is the more or less literal translation of the other. Although Sumerian was clearly part of the curriculum of a Levantine scribe in the Late Bronze Age, most of this erudition appears at Ugarit in conjunction with another language, either as the source text of a bilingual—the target language normally being Akkadian—or as one column in multilanguage vocabularies (some monolingual—i.e., Sumerian-only vocabularies exist). The Mesopotamian lexicographic tradition was well known at Ugarit (van Soldt, 1991, 747–753), where a major contribution to the genre was made—namely, the four-language vocabulary list, with columns for Sumerian, Akkadian, Hurrian, and Ugaritic words, all written in syllabic script (Huehnergard, 1987).

The two major languages in everyday use at Ugarit in the Late Bronze Age were the local language, known to modern scholars as Ugaritic, and Akkadian, the international lingua franca of the time. Hundreds of tablets and fragments inscribed in one or the other of these two languages exist. Occasionally, both languages appear on the same text, although this usage is largely limited to Ugaritic administrative texts, where a total may be expressed in syllabic script. This entry will focus on the fact that the form of the Akkadian language in use at Ugarit was peripheral (compared with its attestation in Mesopotamia) and on the distribution of texts written in Akkadian as compared with Ugaritic. [*For fuller general treatments of the two languages, see* Akkadian; Ugaritic.]

Two principal studies have been done in recent years of the Akkadian as written at Ugarit (Huehnergard 1989; van Soldt 1991). These must be used in conjunction with studies of texts in peripheral Akkadian originating from the same general time and area (Alalakh, Tell el-Amarna, and Emar; cf. Mari earlier, and, even earlier, the similar, though linguistically different, situation at Ebla). To date, only the el-Amarna texts have been the object of publications of the same quality as those on Ugarit Akkadian.

The dialectic features of Akkadian can be organized under

two main headings, orthography and grammar. The first has to do with the Sumero-Akkadian syllabic writing, wherein the signs are polyvalent, permitting multiple writings of a given syllable. Local usages developed that can be described and quantified. Grammatical features, on the other hand, may reflect either outside origins and subsequent influences—for example, a Babylonian origin with Assyrian influences—or the effect of the local language on the lingua franca. The last influence is of particular interest, for it can reveal features of the substrate language that the alphabetic writing system does not reveal.

In general, the Akkadian texts from Ugarit are not so severely marked by the local language as is the case with many of the Amarna texts. [*See* Amarna Texts.] Were it not for the polyglot vocabularies, we would have relatively few Ugaritic words attested as glosses in Akkadian texts. Moreover, with the exception of a few lexical usages, the non-normative Akkadian features are for the most part attested in the other western peripheral corpora (Huehnergard, 1989, pp. 283–284).

The use of Ugaritic or Akkadian was decided, broadly speaking, by the intended reader/audience and by the function of the document. Thus, most international correspondence would be in Akkadian, whereas letters between Ugaritians would be in Ugaritic. Nearly one hundred documents are attested in Ugaritic, twice the number in Akkadian, providing a unique opportunity to compare the epistolary genre couched in a local language and in a lingua franca. It is true, of course, that a greater proportion of the Akkadian letters will represent usages of other areas because the tablets would have been sent to Ugarit from abroad (many of the texts edited by Jean Nougayrol in *Palais Royal d'Ugarit,* vol. 4, Paris, 1956, represent international correspondence). The question is open as to whether documents representing international correspondence in Ugaritic are translations or originals (whether the document actually carried to Ugarit was inscribed with one language or the other) and whether a scribe capable of writing Ugaritic would have been, for example, in the Hittite or Tyrian court. All that can be said for certain is that, to date, no doublets have been found—that is, an Akkadian original and a corresponding Ugaritic translation.

Akkadian was preferred for legal texts, not only for those of an international character, such as treaties or tribute lists, but also for those establishing a legally binding situation or marking a change of ownership between parties at Ugarit. Fewer than ten legal texts written in Ugaritic are known to exist, only a fraction of the total existing in Akkadian (much of *Palais Royal d'Ugarit,* vol. 3, published by Nougayrol in 1955, was devoted to land transfers in Akkadian). Most of these legal situations involved the king, either as a party to international agreements or as the highest legal authority at Ugarit—land transfers are usually expressed, fictitiously or not, as having been effected by the king himself ("on this day, King so-and-so has taken the property of $Party_1$ and given it to $Party_2$").

Administrative documents are primarily in Ugaritic, but not exclusively so: nearly nine hundred such documents are known in Ugaritic (including fragments whose classification is not absolutely certain), about a hundred in Akkadian (many of the texts edited by Charles Virolleaud, [vols. 2 and 5] 1957 and 1965, respectively, are administrative texts in Ugaritic, while many of the texts edited by Nougayrol, vol. 6, 1970, are administrative and in Akkadian). The reason for the choice of one language over the other is usually not clear, in no small part because of the laconicity characterizing the genre in both languages. Many of the administrative documents are simple lists, of personal or place names, organized according to various criteria (e.g., personal names organized by occupation or place of origin). Frequently, each name on the list is followed by a number, indicating receipt or donation by this person or place of a certain commodity. The purpose of the document would usually, although not always, have been indicated in the heading of the text itself; unfortunately, the heading is often damaged or missing entirely, with the result that the entities designated by the numbers may be unknown or uncertain.

The distribution of religious and literary texts stands in contrast with the genres previously mentioned by being much more clearly demarcated: all texts reflecting local practice and belief are in Ugaritic; Akkadian is used only for literary texts of Mesopotamian origin (Nougayrol, 1968, pp. 265–319). Thus, the eighty-odd texts of a ritual, divinatory, or incantatory nature are all in Ugaritic, as are the mythological texts dealing with West Semitic deities and heros. Among the Ugaritic texts are several—such as those dealing with misformed births—that might be expected to have a Mesopotamian origin. No immediate source has been found for any of these, however, and the purity of the Ugaritic language, with virtually no trace of translational elements, argues for a long history of the genre in the local language.

The one area where local religious concerns overlap with Mesopotamian erudition is in that of identification of the divinities occurring in the two areas. Two kinds of texts exist in which local deities are identified with divinities known to Mesopotamian religious science. One is the polyglot vocabulary lists, written in syllabic script, where divine names are included alongside common nouns (Nougayrol, 1968, 246–249). The other is the so-called pantheon texts, which consist of simple lists of divine names. Two different such lists are known, each attested in more than one exemplar: they are monolingual, in Ugaritic or syllabic script, arranged in identical order in each language/writing system. One of these lists is attested twice in Ugaritic (RS [Ras Shamra] 1.017, 24.264) and once in syllabic script (RS 20.024). The other list is found in two exemplars but only in syllabic script (RS 26.142, 1992.2004). The ritual character of the lists is proven by an Ugaritic text containing, among other things,

two lists of sacrifices to deities arranged in the same order as that of the two "pantheons." Though the ritual function of the two lists is clear, and though their importance is proven by the multiple exemplars in different writing systems, the meaning of the groupings and of the associated rituals remains unclear.

[*See also* Mesopotamia, *article on* Ancient Mesopotamia; Ugarit.]

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DENNIS PARDEE

'ULA, AL-. *See* Dedan.

ULUBURUN, or Great Cape, cape located 8.5 km (about 5 mi.) southeast of Kaş, Turkey (36°08′ N, 29°41′15″ E). In 1982 a Late Bronze Age shipwreck was discovered only 60 m off the east face of Uluburun, 400 m from its tip, by sponge diver Mehmet Çakır. Excavations by the Institute of Nautical Archaeology at Texas A&M University, in 22,413 dives between 1984 and 1994, revealed a unique cargo lost in the late fourteenth century BCE.

The ship lay on a steep slope with its stern at a depth of 44 m and its bow at 52 m, with artifacts tumbled down to 61 m. Built of cedar in the ancient shell-first tradition, with pegged mortise-and-tenon joints holding its planks together and to the keel plank, it was about 15 m long. A fence of wicker is reminiscent of fencing seen on Egyptian depictions of contemporary Syrian ships and of the wicker fence Odysseus constructed to keep the waves out of his vessel (*Odyssey* 5.526).

The cargo consisted mostly of raw materials, items of trade already known to the excavators primarily, and in some instances only, from ancient cuneiform texts or Egyptian tomb paintings. The major cargo was ten tons of Cypriot copper in the form of 318 flat ingots comprising the typical four-handled ingots weighing about 24 kg apiece; nearly identical two-handled ingots (which disprove the questionable notion that four-handled ingots were cast in imitation of dried ox hides); flat, pillow-shaped ingots; and planoconvex discoid "bun" ingots. Nearly a ton of virtually pure tin ingots (the earliest known) in both the four-handled and bun shapes represent the correct ratio, if mixed with the copper, to have formed eleven tons of bronze; the source of the tin is not known.

More than 150 diskoid glass ingots, in cobalt blue, turquoise, and lavender, are likely the *mekku* and *ehlipakku* listed in tablets from Ugarit and el-Amarna as items traded from the Syro-Palestinian coast, and the cakes of "lapis lazuli" and "turquoise" (as opposed to "genuine lapis lazuli" and "genuine turquoise") shown as tribute from Syria in a relief of Thutmosis III at Karnak, Egypt. [*See* Ugarit Inscriptions; Amarna Tablets.] They are the earliest intact glass ingots known. Those of cobalt blue are chemically identical to the blue glass in eighteenth-dynasty Egyptian vases and in Mycenaean pendants, suggesting a common source for all. [*See* Glass.]

Logs of what the Egyptians called ebony, now known as blackwood *(Dalbergia melanoxylon)* from tropical Africa, and of cedar are also unique archaeological finds. A ton of terebinth resin from the *Pistacia atlantica* or *Pistacia terebinthus* tree, known to have grown in the Near East and on the islands of Cyprus and Chios, was carried on the ship in more than one hundred Canaanite amphoras. This is the first scientifically identified find of this substance, which may be the Egyptian *snṯr* brought in Canaanite jars from the Near East to the pharaoh to burn as incense in religious rituals.

Other raw materials include ivory in the form of whole and partial elephant tusks and more than a dozen hippopotamus teeth; murex opercula, a possible ingredient for incense; tortoise carapaces, possibly intended as sound boxes for musical instruments; and ostrich eggshells that were probably intended to be embellished with faience or metal spouts to create exotic canteens.

Manufactured goods were also on board. At least two of ten large pithoi (storage jars) contained Cypriot export pottery, including base-ring II, white slip II, and white-shaved and bucchero wares; lamps; and probably "wall brackets" of unknown purpose. Several faience drinking cups were crafted as the heads of rams or, in one case, a woman. Ca-

ULUBURUN. *Archaeologist Faith Hentschel measures the precise location of a copper oxhide ingot.* (Copyright Frey/INA)

naanite jewelry includes silver bracelets, or anklets, and gold pendants, one with a nude goddess in relief holding gazelles and another with a falcon grasping hooded cobras. A gold goblet is of uncertain origin. Assorted beads are of agate, gold, faience, glass, and Baltic amber. Other artifacts include two duck-shaped ivory cosmetics boxes with hinged-wing lids, copper caldrons and bowls, a trumpet carved from a hippopotamus tooth, and more tin vessels than had previously been found throughout the Bronze Age Near East and Aegean. A stone ceremonial scepter-axe or mace is of a type otherwise known only in the northern Balkans.

Bronze weapons on board include arrowheads, spearheads, daggers, and Canaanite, Mycenaean, and probably Italian swords. Bronze tools include awls, drill bits, a saw, chisels, axes, and adzes. The largest collection of Bronze Age zoomorphic weights includes a sphinx, cows and bulls, lions, ducks, frogs, and a housefly, with one ornate weight bearing the figure of a cowherd kneeling before three of his calves.

Foodstuffs, whether as cargo or for shipboard use, include almonds, figs, olives, grapes (or raisins or wine), black cumin, sumac, coriander, and whole pomegranates, with a few grains of wheat and barley. Lead net sinkers, netting needles, fishhooks, and a bronze trident are evidence of fishing from the ship.

A tentative date of around 1316 BCE for the ship's sinking has been obtained by tree-ring analysis of a log (perhaps cargo, perhaps firewood) that presumably had been freshly cut when the vessel last sailed. This matches the fourteenth century BCE date of the Mycenaean pottery, and the date of a unique gold scarab of Egypt's Queen Nefertiti that could not have been put on board before her time in the middle of that century. The scarab was found near a jeweler's hoard of scrap gold (Canaanite medallions), silver (Canaanite bracelets), and electrum (an Egyptian ring); if it was part of this hoard, the suggestion is that the ship sank after the reign of Nefertiti, at a time when her scarab would have been worthless except for its gold value.

Ascertaining the nationality of the ship is also problematic. Assyrian, Syrian, and Kassite cylinder seals were recovered but do not necessarily mean that there were merchants on board from those lands because collections of seals were commonly sent as tribute or gifts from Near Eastern rulers to both Egyptian and Aegean rulers. Most of the cargo could

have come from the Syro-Palestinian coast and Cyprus, but cargos do not identify the nationality of the ships that carried them either. Stronger evidence of nationality comes from the ship's twenty-four stone anchors. They are of a type virtually unknown in the Aegean but often found in the sea off the coast of Israel. Also found reused as building blocks in temples and tombs in Ugarit, Byblos, and Kition, this type of anchor seems to have been manufactured at Tell Abu Hawam and Tel Nami in Israel. [*See* Abu Hawam, Tell; Nami, Tel; Anchors.] An ivory-hinged boxwood diptych whose interior would have held wax writing surfaces (now missing) was found in a jar of whole pomegranates; parts of other diptychs appeared elsewhere on the site. Although they are of the type mentioned by Homer in his only reference to writing (*Iliad* 6.169), these diptychs are most likely of Near Eastern origin. A partly gold-clad bronze statuette of a female, perhaps the ship's protective deity, is Canaanite. On the other hand, the Mycenaean glass relief beads, bronze pin, spears and knives, tools, eating ware (cups, dipper, flasks, and a pitcher), and a pair of swords and merchant's seals suggest the presence of at least two Mycenaeans on board.

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CEMAL PULAK and GEORGE F. BASS

UMAYYAD CALIPHATE. In 661 CE political power shifted away from family of the prophet Muhammad and passed to the descendants of one of the old Quraysh elite families of pre-Islamic Mecca, the Bani Umayya. The first Umayyad caliph, Muʿawiyah, was the son of Abi Sufyan, the pagan leader of Mecca at its submission to Islam in 630. After Byzantine Syria had been conquered by the Muslims, Muʿawiyah, now converted to Islam, was appointed as its governor around 640 with Damascus as his seat, replacing the old Byzantine administrative centers at Caesarea and Bosra.

Muʿawiyah inherited the Greek-based bureaucracy of Syria and Palestine and the Syrian Arab tribal forces, which had formerly defended the old Byzantine desert frontier. These tribes were either Christian or partly converted to Islam initially and they became the military mainstay of the Umayyad regime. In essence, the Umayyads inherited in Syria something of the old Arab Ghassanid federate kingdom that had guarded the eastern frontier of the Byzantine Empire in the sixth century. In his turn, Muʿawiyah protected the interests of the Syrian tribes by deflecting Arab immigrants from the Arabian Peninsula away from Syria to other territories like Iraq or Egypt.

When the third caliph, ʿUthman ibn ʿAffan, was murdered in 656, the prophet Muhammad's son-in-law, ʿAli ibn Abi Talib became caliph. Muʿawiyah, as a senior relative of ʿUthman, emerged as the leading protagonist of those seeking retribution for the murdered ʿUthman, opposing ʿAli's caliphate for his failure to bring the killers to justice. Muʿawiyah's Syrian forces fought ʿAli at Siffin on the Euphrates in north Syria in 657, where it was eventually decided to submit the question of the caliphal succession to arbitration. The negotiations were overtaken when ʿAli was murdered by a discontented Khawarijite in 661 and Muʿawiyah emerged as the only figure able to exercise power, and to establish a caliphate. As a result, political power definitively shifted to Damascus and away from Medina.

Among those who opposed this outcome were the Shiʿat ʿAli, the party of ʿAli, who were strongly represented in al-Kufa. They held that the Imamate or Islamic leadership rightfully belonged in the family of the Prophet and that it should have passed from ʿAli to his son al-Husayn. With the killing by Umayyad forces of al-Husayn at Karbala in 680, an intense sense of wrong was engendered among the Shiʿa,

enhancing their already deep-seated opposition to the Umayyad regime.

At Muʿawiyah's succession in 661, the caliphate reached from the western frontier of Libya to the eastern borders of Iran. During ʿAli's caliphate, the conquests had languished, but they now resumed. The final conquest of North Africa was initiated after the foundation of Qayrawan in 670, which allowed the Muslims to resume their westward advance into the Berber territories of modern Algeria to arrive at the Atlantic by 700. From North Africa, they initiated the conquest of Spain in 710–711, which ended with a deep raid as far as Poitiers near Paris in 732. Meanwhile, the Umayyads also resumed raids into Byzantine Asia Minor, which culminated in the unsuccessful siege of Constantinople in 674–680.

Little remains of monuments built by Muʿawiyah: a dam at al-Ta'if in the Hijaz has an inscription in his name dated AH 58/677–678 CE, presaging the interest of later Umayyads in irrigation. A description dated to 670 CE of the mosque of al-Aqṣa at Jerusalem—a rough building of reused columns able to accommodate a congregation of three thousand—probably records Muʿawiyah's work. Nothing remains of Muʿawiyah's palace at Damascus, the Qubbat al-Khadhra, although it presumably related in some degree to excavated Umayyad urban palaces at al-Kufah, Jerusalem and Amman. The excavations of the palace at al-Kufah, possibly built by the Umayyad governor Ziyad ibn Abihi, show a plan derived from Sasanian forms, with emphasis on the hierarchical position of the governor in formal audience in the palace. This eastern formula found its way thereafter into later Umayyad palaces and eventually into the ʿAbbasid palaces of Baghdad and Samarra.

After the death of Muʿawiyah in 680, the succession of his son Yazid was not recognized by ʿAli's son al-Husayn or by ʿAbd Allah ibn al-Zubayr. The latter was descended from the ʿAbd al-ʿUzza branch of Quraysh and his mother was the daughter of Abu Bakr, the first caliph: his aunt was ʿA'isha, the Prophet's favorite wife. When Husayn was murdered at Karbala by Umayyad forces, Ibn al-Zubayr announced himself as caliph at Mecca, feeling secure in his strong connections with the Prophet's family. His rebellion was initially successful, and al-Kufah, Egypt, and parts of Arabia and Syria all adhered to his cause. Meanwhile, the Umayyad succession passed to ʿAbd al-Malik of the Marwanid branch of the family, and for over a decade there were two claimants to the caliphate, the one based in Mecca, and the Umayyad candidate in Syria. In the end, the military strength of the Umayyads won out and their hegemony was restored after besieging Mecca and killing Ibn al-Zubayr.

The victory of ʿAbd al-Malik over Ibn al-Zubayr marks the reunification of the caliphate and the beginning of the reconsolidation of the state: in about 695, the administrative system was reformed. Arabic became the official language of the administration, replacing Greek and Pahlavi. The coinage was also reformed, and a purely Islamic coinage was instituted. It was so successful that it set the basic formula of Islamic coinage for centuries thereafter.

Even before the defeat of Ibn al-Zubayr, ʿAbd al-Malik had begun to develop the Ḥaram esh-Sharif enclosure at Jerusalem, the major holy site under his jurisdiction during the civil war. The only Islamic monument in Jerusalem before his day was the rough al-Aqṣa structure already described. North of it, ʿAbd al-Malik built the Dome of the Rock, a great octagon constructed over a natural rocky outcrop, and surmounted by a gold dome. Its formal origins lay in commemorative and celebratory buildings of the Byzantine period, including the Anastasis (327–335), the Church of the Ascension (c. 378), and the Tomb of the Virgin (fifth century), all at Jerusalem. [*See* Jerusalem.]

The Dome of the Rock was decorated on the exterior and interior with mosaics showing Qur'anic inscriptions with foliage and Sasanian-style crowns. It has been interpreted variously as a monument to the victory of Islam over the other monotheistic religions, and a reference to the Islamic paradise. The decoration would be more readily understandable had Palestinian churches of the Byzantine period survived intact, but even without them, it seems clear that the Dome of the Rock is a product of the islamization of the iconography and architecture of the eastern Mediterranean that had already been the common source of both Christian and Judaic decoration in the Near East.

In the early years of the 8th century, the Umayyads embarked on a series of territorial expansions. As Muslim power was being projected westward to Spain, raids across the Byzantine frontier culminated in the last great Umayyad siege of Constantinople in 716–717. Al-Hajjaj, their vigorous governor in the east (al-Mashriq), founded al-Wasit in Iraq in 702–705 as an administrative town from which he governed Iran and Khurasan. When the Muslim forces resumed their eastward conquests, they advanced beyond the old Sasanian borders towards the Iranian and Turkic lands of Transoxiana (Ma wara nahr) in Central Asia. At the same time the Muslims carried their advance as far as Sind (modern Pakistan) in India where a mosque has been excavated at Banbhore, dated to in 727–728.

The wealth deriving from these conquests coincides with the foundation by the first Marwanids of a series of major new Islamic buildings, almost all mosques. These provided the community with monuments comparable with the great imperial Byzantine monuments in the Near East. Al-Walid I completed al-Aqsa at Jerusalem as well as the palace at Jerusalem in a program of extravagant grandeur that had been initiated by his father, ʿAbd al-Malik. This included the Ḥaram Mosque at Mecca; the Great Mosque of Sanʿa in Yemen with materials from the sixth century cathedral, and the Mosque of ʿAmr at al-Fustat, which was covered with mosaics.

The Prophet's mosque at Medina (707–709) was also expanded to incorporate the tombs of the Prophet and the first

two caliphs. The walls were clad with marble paneling and wall mosaics showing trees and buildings, although nothing of this scheme, survives. The only indications of the quality of these lost decorations is preserved in the contemporary mosaics of the Great Mosque of Damascus which al-Walid I also enlarged and lavishly decorated with marble, gold leaf, and glass wall mosaics, with a river, trees and architecture.

The architectural motif that is so significant in the Medina and Damascus mosaics was an inheritance from Late Antique imagery in which it was used in geographical contexts and as a general honorific frame for apostles, saints, and books of the Gospels. Adapted to an Islamic context, the same element of honor persists, so that a Qur'an of Umayyad date found at San'a also has an architectural frontispiece. Likewise, a series of stylized columns and arches appear in chapter headings of an Umayyad Qur'an found in the mosque of 'Amr ibn al-'Aṣ at al-Fustat: the process at work in all these cases is that of adapting pre-Islamic subject matter to Islamic purposes.

The Arabic sources vary as to the authors of the Umayyad mosaics. It is said that Byzantine craftsmen participated in the decoration of the Prophet's mosque at Medina although it is also suggested that the craftsmen were Syrian and Egyptian craftsmen from within the caliphate. The wall mosaics of the churches of the pre-Islamic Near East are almost entirely lost, and very little pre-Islamic painting survives either, although both must have been more influential on Umayyad art than we can ever know. However, the discovery of sophisticated pre-Islamic paintings at Qaryat al-Fau in Saudi Arabia and at Shabwa in Yemen suggests that there may have been an Arabian antecedent for the Umayyads' taste for mural decoration. [*See* Qaryat al-Fau; Shabwa.]

The mosaics at the Dome of the Rock and the Great Mosque of Damascus are the earliest surviving Umayyad religious decorations. Their carefully selected content suggests the existence of some element in Islamic society self-conscious of Islam's need to present its credo visually and to be able to select motifs that conveyed the religious beliefs of the Muslims. They relentlessly excluded representations of living beings, relying on nonfigurative motifs drawn from Byzantine and Sasanian traditions, and Qur'anic inscriptions in Kufic script. This formative process created an Islamic artistic vocabulary, appropriate to the most important religious monuments of the caliphate. However, no true synthesis can be said to have been achieved at this stage, and there is no coherent Umayyad "style" as there was a century or more later under the 'Abbasids.

Knowledge of Umayyad urban settlements has greatly increased since the 1980s. Umayyad secular architecture was once most familiar from the palatial buildings in the countryside and on the desert margins of Jordan and Syria. These must still be regarded as a very important part of the Umayyad architectural record, reflecting taste, self-image and the interests of the Umayyad aristocratic elite, and a major means for understanding Umayyad society, but they should also be seen in context of a far broader pattern of settlement and building in the towns and villages of the region.

A distortion in our understanding of the evidence also deserves comment. Jordan is exceptionally well documented archaeologically for this period when richer areas like Palestine, Syria, and Iraq are less well-understood. The same is still more true of Arabia. This distortion may thus give overly great emphasis to Jordan and its monuments.

Towns like Caesarea, Jerash, Beisan (Beth-Shean) and Umm el-Jimal have been excavated, and they show that settlement continued unbroken from Roman and Byzantine times into the early Islamic period, although particular buildings often underwent a change of use, were adapted, or were built anew. This pattern was probably common in many of the old established towns of Palestine and Syria. Faced with a vital economy, the Umayyads seem to have been careful to avoid disrupting the existing settlements in Syria and Palestine. [*See* Caesarea; Jerash; Beth-Shean; *and* Umm el-Jimal.]

Umayyad palaces in the major urban centers are better known today since the excavations at the Qala' at Amman, the palace at Jerusalem adjacent to al-Aqsa, and the palace at al-Kufa. Of these sites, the Amman citadel is the best understood: it stands within the old Roman fortifications of Jebal al-Qal'a, overlooking Amman. It has a formal reception hall that reveals a strong Sasanian element in its decoration and design, conforming to a general tendency to adopt Sasanian imperial forms which is marked in the later Umayyad period.

Apart from these buildings, major lost Umayyad urban palaces include Mu'awiyah's Qubbat al-Khadra' at Damascus, and the palaces at al-Wasit, al-Fustat, and Ramla, founded as the local government center in Palestine by Sulayman ibn 'Abd al-Malik around 715, when Umayyad attention to Jerusalem was waning: it is still largely unstudied.

No single explanation accounts for the numerous Umayyad rural sites, and many of them probably served a variety of purposes. Some were probably related to the need to retain contact with important tribal leaders who were the mainstay of the military forces holding together the vast Umayyad Empire. Some sites seem to have presaged the caravanserais of later Islamic times. Qaṣr al-Kharana (ca 710) and Qaṣr al-Tuba (743–744) in the Jordanian desert seem to have fulfilled this role, and there are buildings at Qaṣr al-Ḥayr al-Gharbi and Qaṣr al-Ḥayr ash-Sharqi, which have also been described as *khans* or caravanserais. [*See* Qaṣr al-Ḥayr al-Gharbi; Qaṣr al-Ḥayr ash-Sharqi.]

Some of these rural buildings suggest a peripatetic Umayyad monarchy, as the princes of the ruling house moved from residence to residence according to season and need. Some places like Khirbat al-Minya and Khirbat al-Mafjar in Palestine were too hot to live in comfortably in summer but would have been clement in winter. The peripatetic nature

of the Umayyads also shows itself in the shifting seat of the caliphate. Although Damascus was Muʿawiyah's seat, and he seems to have built nothing in the desert, he would camp in the *bādi ya* where the later Umayyad palaces of al-Muwaqqar, Qastal, and al-Meshatta were eventually built. Later, Sulayman developed Ramla in Palestine, Yazid II lived at Muwaqqar and Beit Ras in Jordan, and Hisham lived on the Euphrates at Rusafa. The last Umayyad caliph, Marwan II, chose to live at Harran (now in southern Turkey). [*See* Mafjar, Khirbat al-; Qaṣr al-Meshatta; Ramla; Beit Ras; *and* Rusafa.]

The finest of the late Umayyad palaces are marked by lavish extravagance, especially those associated with Hisham and al-Walid II. After the assassination of al-Walid II in 744, his successor was forced to abjure extravagant building projects and the failure to complete al-Meshatta and al-Tuba has been taken as a consequence of al-Walid's fall.

There is a marked concentration of these palatial buildings in the countryside of Jordan, Palestine, and Syria, reflecting the Umayyads' attachment to these districts. The distribution of many of their rural foundations suggests that they were sited in relation to particular roads: Qaṣr Burquʿ, Khirbet al-Bayda', and Qaṣr Jabal Usays are located along a desert road from north Arabia through the Wadi es-Sirḥan to central Syria. Qaṣr al-Tuba of al-Walid II in eastern Jordan lies on a route from Tayma' and the Sirḥan. Al-Qastal, al-Muwaqqar, and al-Meshatta are located on the more westerly route between Amman and the Hijaz, the preferred pilgrim road from Syria throughout the Islamic period. Khirbat al-Minya near Tiberias is close to the road from Damascus to Ramla and Minya, which was still a halt on the official postal route (barid) in the thirteenth century, and Khirbat al-Mafjar (c. 735) near Jericho is close to the road from Amman to Jerusalem.

Qaṣr al-Ḥayr al-Gharbi, Qaṣr al-Ḥayr ash-Sharqi, and Khirbat al-Mafjar preserve evidence of large-scale irrigation systems installed to serve their surrounding agricultural estates and these palaces have been compared to Roman latifundia. At both Khirbat al-Mafjar and Qaṣr al-Ḥayr al-Gharbi, there is decorative imagery that reflects the agricultural character of the estates amidst which these palaces stood. Thus, al-Mafjar, the floor mosaics of the vast bath-hall include a representation of an *ethrog* and a *lulab*, Jewish symbols of the harvest that are found in Palestinian synagogue mosaics. At Qaṣr al-Ḥayr al-Gharbi, one of the great floor paintings shows a Greek earth goddess, Gaia, holding a cloth full of fruit, abundance appropriate to an agricultural estate.

At other sites, the agricultural element is less pronounced or absent altogether. Qaṣr al-Ḥallabat in northern Jordan is attributed to Hisham and was one of several buildings which were formerly Roman *limes* (border) fortresses. Ḥallabat was reconstructed as a palace, with a limited area of field terracing. However, numerous representations of prey in its floor mosaics suggest that a major activity of its residents was hunting. Ḥallabat is also an interesting example of the way in which the old Roman defense line on the desert was made redundant by Islam's creation of a border-free territory from the Indian Ocean to north Syria, for the first time since the fall of the Nabateans in the second century CE.

As the decorative scheme of the Ḥallabat mosaics imply, hunting was a favored pastime of the aristocracy, just as it had been with the Romans, the Byzantines, and the Sasanians. It was also a significant aspect of life and art in pre-Islamic Arabia where hunting may have had a sacred character. The chase is also represented in the desert bathhouse of Quṣayr ʿAmra and at Qaṣr al-Ḥayr al-Gharbi, the latter in a style derived from Sasanian imagery. It is a clear enough indication of the importance of the chase to the Umayyads. [*See* Qaṣr al-Ḥallabat; Quṣayr ʿAmra.]

Umayyad paintings, sculptures and mosaics show a remarkable diversity and it is clear that the Umayyads had no reluctance to include representations of living beings as long as the context was not religious in character. There is also a persistent desire to show Umayyad princes in the context of the standard royal imagery of the period—the six kings of the world at Quṣayr ʿAmra, in a standard Byzantine formula; or the plaster sculptures of Hisham in Sasanian garb that stood over the exterior doorways at al-Mafjar and Qaṣr al-Ḥayr al-Gharbi. Hisham's concern with the appearance of Sasanian royalty was also demonstrated in his interest in a volume of representations of past Sasanian princes and their dress, reflecting growing preference for Sasanian models in the later Umayyad period.

The death of Hisham in 743 marks the beginning of a period of turbulence that finally culminated in the collapse of the Umayyad regime in 750. As tensions between Umayyad factions undermined the strength of the regime from within, the effort of ruling the caliphate through the overstretched Syrian tribal forces at their disposal finally became too much. Those excluded from power by the regime and its supporters increasingly showed their resentment in Islam-inspired insurrection against the government. The Shiʿa especially had never been reconciled to Umayyad rule, and others felt excluded from power by an Umayyad monopoly. A series of rebellions gave expression to these sentiments, culminating in an uprising in Khurasan in the name of the ʿAbbasid family, whose claim to rule was rooted in their descent from the Prophet's uncle, al-ʿAbbas. Leading a coalition of anti-Umayyad forces, the ʿAbbasids defeated the Umayyad armies in Khurasan and advanced on northern Syria and Egypt, where the last Umayyad caliph, Marwan II, was killed in the Faiyum. The Umayyad clan was massacred and replaced by an ʿAbbasid caliphate that avoided Syria and its hostility toward them. Instead, they made Iraq their seat of government, where the center of gravity in terms of the economy and population had already shifted, and this was reflected in the foundation of Baghdad in 762.

The 'Abbasids' caliphate was a far more centralized state than that of the Umayyads. The 'Abbasids emphasized their religious claims to hold the office of caliph, where the Umayyads had emphasized their family's prestige and lineage in terms more tribal than Islamic. However, caution must always be exercised in any interpretation of the Umayyads' intentions, as the historical sources for the period are provided principally by authors working under the hostile 'Abbasids, ensuring that the Umayyads were presented in the worst of irreligious lights. The Umayyad monuments are thus especially important as sources which generally eluded the 'Abbasid interpolation of the record.

After their fall, sympathy for Umayyad claimants persisted in Syria but the country itself became a backwater, eclipsed by Iraq and Egypt, and it only reemerged to prominence in the twelfth century under the Zangids and Ayyubids. However, in Spain an Umayyad regime continued, refounded with emigré Syrian support in 755 at Cordoba by 'Abd al-Rahman I (a grandson of Hisham), who had escaped the massacre of his relations. Secure in their Spanish exile, the Umayyads were to enjoy a quite extraordinary efflorescence, which endured until the early eleventh century.

[*See also* 'Abbasid Caliphate; Damascus; Fustat; Mecca; Medina; Mosque; *and* San'a.]

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'UMEIRI, TELL EL-, site located near the southern extent of the hilly region surrounding Amman, Jordan (about 15 km, or 9 mi., south of it), on the northern boundary of the Madaba plain, between the Amman National Park and the Queen Alia International Airport Highway (just to its west), 12 km (7 mi.) northeast of Tell Ḥesban (map reference 1420 × 2324). Across the highway to the east is Tell el-'Umeiri East and just to its north, Tell el-'Umeiri North. The three tells grew up around a perennial spring.

In the nineteenth century, among the explorers who visited the region of Tell el-'Umeiri was Charles Warren, for the Palestine Exploration Fund (PEF), in 1867. He noted that *Amary* was the name of the district, as well as three ruins in it. Claude R. Conder (also for the PEF), while unable to locate the spring, also referred to the three tells in connection with "el-Ameireh." Most explorers, however, bypassed the region, probably because it was not (until recently) near a main thoroughfare and because the other hills surrounding 'Umeiri obscured its importance. Motivated by a desire to discover the ancient borders of Ammon, four German scholars explored the region to the west (Gese in 1958), southwest (Hentschke in 1960; Fohrer in 1961), and south (Reventlow in 1963) of Amman in the late 1950s and early 1960s. Among their discoveries was a series of boundary forts they believed represented ancient Ammon's western border. [*See* Ammon.] Typically, these forts consisted of a rectangular building with an adjacent watchtower; most of these sites are now thought to be farmsteads rather than defense installations. [*See* Farmsteads.]

The first substantive description of the site resulted from the Ḥesban hinterland survey of 1976 (Ibach, 1987). Tell el-'Umeiri West, site 149, was noted as a major site of 16 acres with a spring, considerable evidence of architecture, and huge quantities of sherds. The sherds ranged from the Chalcolithic through Iron Age II periods, with most intervening periods represented. Tell el-'Umeiri East, site 150, was described as a medium site with even more visible architecture, caves, and cisterns; its pottery ranged from the Iron Age through the Umayyad period and included the Roman and Byzantine periods. A third site was noted to the north that contained mainly Mamluk ruins. K. Von Rabenau (1978) appears only to have been concerned with site 150. During a two-month survey in 1979, Franken, with four others, completed the most thorough investigation to that date. Franken concluded that the tell and the surrounding area appeared to reflect almost all of the country's cultural history (Franken and Abujaber, 1989, p. 1). Dividing his findings into four "cycles" (Neolithic–Early Bronze, Middle Bronze–Iron Age, Roman–Islamic, 1850–the present), he advocated urgent investigation. Finally, Abujaber (1984), one of 'Umeiri's landowners, completed his own research on the development of agriculture in the region during the nineteenth century CE, a development to which his own forebears had contributed substantially.

After 'Umeiri's rediscovery by the Ḥesban survey, but before its excavation, Donald Redford visited the 'Umeiri region in 1981 for a three-week survey of sites in Transjordan in which he sought to identify nos. 89–101 of Thutmosis III's list of Asiatic toponyms. After sherding Tell el-'Umeiri West and studying its topography, he concluded that it fulfilled the criteria for nos. 95–96 on the list: its perennial spring was the largest in the vicinity, it had been occupied in the Middle/Late Bronze Age, and it was strategically located. "The evidence thus seems strong *'yn/krmn,* or the Abel Keramim of the Bible (*Jgs.* 11:33), is indeed to be sought at the site of 'Umeiri West" (Redford, 1982, pp. 69–70).

'Umeiri West was excavated by Larry G. Herr as part of the ongoing Madaba Plains Project, directed by Lawrence T. Geraty for a consortium of institutions (Andrews University, together with Canadian Union College, La Sierra University, and Walla Walla College), for five seasons to date (1984–1994). 'Umeiri West is the best-preserved Early Iron I city (c. 1200 BCE) so far uncovered in Jordan. It was fortified by a dry moat cut out of the bedrock at the bottom of the site's western slope. A retaining wall held back a massive rampart running up the slope to the fortification wall. This wall comprised two parallel walls with cross walls in a casemate plan. This is the largest, most coherent defensive system in Palestine from the Early Iron I period. These defenses were built on top of those of the MB IIC period, which also produced a rampart. That city has not yet been reached. An earthquake at the beginning of Iron I split the bedrock underlying the rampart and causing the MB rampart to erode. The Iron I inhabitants rapidly rebuilt the rampart.

In the casemate rooms, beneath 1.5 m of fallen and burned mud bricks, storerooms with flagstone floors contained the fragments of approximately forty collared pithoi: some were lined against the walls, others had fallen from the building's second story. Mixed with the vessel fragments were the charred bones of at least two humans, an old man (based on worn teeth and large bone structure) and a young person. An enemy had apparently thrown spears (five bronze lance and spearpoints were found in one of the rooms) and slingstones into the city and then set fire to it, killing the old man and his younger compatriot who had

been on the upper floor of the house. In the same area fragments of an alabaster vessel were found. Some archaeologists suggest that the city may have been destroyed by the arrival of the Ammonites, whose kingdom gave its name to the modern city, Amman. [*See* Amman.]

Many of the walls of neighboring structures are preserved to a height of more than 2 m by destruction debris, which hid them from sight for more than three thousand years. East of one of the casemate rooms and connected to it by a doorway was a large pillared room. Six pillar bases have so far been uncovered, on top of which wooden posts probably held up the roof. A substantial doorway led through a thick wall separating the structures to other rooms on the east. Beneath this door were the remains of an earlier phase. Unfortunately, the stones in the walls were burned so severely that many are cracked and some of the walls are in danger of collapse (although one stands about 3 m high). Most of the floors are paved with flagstones, but very few objects were found on them. A cultic standing stone was found in 1992 by the Madaba Plains Project. They also removed a plastered pool used by the site's Jewish inhabitants as a ritual cleansing pool in the Roman period (many parallels for the pool can be found from this same period in Jerusalem surrounding the Temple and elsewhere in Israel). [*See* Ritual Baths.]

The excavation exposed the top of the Iron I destruction layer but did not proceed farther. No less significant for the history of Jordan are the thick walls of the imperial Persian administrative center on the southwest of the site. Although the main floors were destroyed by erosion and the basement floors have not yet been reached, the finds—many figurines and approximately forty seals and seal impressions bearing the names and identity symbols of official bureaucrats—indicate the building's importance. (The most dramatic find is the so-called Baalis seal impression, found in 1984; cf. *Jer.* 40:14.) [*See* Seals.] Most of the impressions are of poor quality, with only scratches on their sandstone faces, but several preserve the names and titles of officials of the Late Ammonite monarchy and the treasurers or governors of the Persian province of Ammon (c. 500 BCE). The bureaucrats working in these buildings, and living in the houses immediately to the north, administered and supported a series of agricultural estates surrounding Tell el-ʿUmeiri, from Jawa in the east to Naʿur in the west. [*See* Jawa.] They seem to have produced wine to export in lieu of taxes to their Babylonian and Persian overlords.

The Hesban survey (within a 5-km, or 3-mi., radius of ʿUmeiri) discovered more than one hundred sites, ranging from roads and winepresses to limekilns, farmsteads, watchtowers and forts, and towns. A picture of complex farming systems is emerging from this study that seems to emphasize grain and fruit (especially grape) cultivation. Agricultural technologies included the use of dams and embankments along the valley bottoms to retard erosion and maintain groundwater for successful dry farming. The discovery of cave dwellings with animal corrals from the last few centuries assisted in understanding the way nomadic populations lived in the region during periods of urban growth and decline. [*See* Viticulture; Irrigation; Pastoral Nomadism.] Excavation has taken place as well at Rujm Selim, a large agricultural complex; Al Dreijat, an Iron Age fortress; Khirbet Rufeisah, with unusual Early Arabic inscriptions in a cave/cistern; a nearby Late Iron II rural complex; and, on the slopes of ʿUmeiri, an EB IB megalithic burial (dolmen), an EB IV "cemetery," and an MB IIC cave-tomb. Surveys were also conducted of ʿUmeiri East and ʿUmeiri North, and a random square survey was begun in the territory around Jalul.

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LAWRENCE T. GERATY

UMM EL-BIYARA, mountain at the center of the city of Petra, in Jordan (30°21′ N, 35°25′ E; map reference 191 × 970), rising 300 m from the valley floor. The ancient site is on the mountain's flat, trapezoidal summit, approximately

5.5 hectares (14 acres) in area. Occupation has been dated to the Iron II (Edomite) and Nabatean periods. Other Iron II mountaintop sites in the vicinity are Umm el-Ala, Ba'ja III, and Jebal al-Kser; the Iron II site of Tawilan is also nearby. [*See* Tawilan.]

Iron Age pottery associated with walls and foundations was first collected on the surface of Umm el-Biyara by George Horsfield and Agnes Conway in 1929 ("Sela-Petra, the Rock, of Edom and Nabatene," *Quarterly of the Department of Antiquities of Palestine* 7 [1938]: 1–42; 9 [1941]: 105–204). Nelson Glueck was the first to undertake soundings there (1933–1934), collaborating with Horsfield in 1933 (Nelson Glueck, "Further Explorations in Eastern Palestine," *Bulletin of the American Schools of Oriental Research* 51 [1933]: 13–14). As a result of his work, Glueck equated Umm el-Biyara with biblical Sela in the time of Amaziah of Judah (c. 796–781 BCE). In 1955, William H. Morton carried out additional soundings. He found "Edomite" pottery associated with jumbles of stone blocks but no evidence of walls ("Umm el-Biyara," *Biblical Archaeologist* 19 [1956]: 26–36).

Crystal-M. Bennett excavated at Umm el-Biyara in 1960, 1963, and 1965, revealing less than one-third of the site. She found an unfortified Iron Age settlement consisting of a group of houses with long corridor rooms from which small square rooms projected. The houses were built of sandstone, which breaks naturally into flat slabs. In the main part of the excavation the houses were built against a single long wall that ran the length of the excavated area. Similar longhouses are known at the contemporary nearby mountaintop site of Umm el-Ala and may reflect the paucity of timber for roofing.

Settlement at Umm el-Biyara was evidently domestic, judging from the quantity of loom weights and spindle whorls recovered. Buildings were mostly constructed directly on the bedrock. A large number of deep cisterns were found cut into the summit, presumably the water supply, but it is not clear whether they are Edomite or Nabatean. The pottery shows characteristic Iron II shapes, although, unlike assemblages at other Edomite sites, such as Buṣeirah, Tawilan, and Ghrareh, it was unpainted. [*See* Buṣeirah.] The difference may be related to chronological factors, with unpainted pottery probably dating earlier, or to site location, with remote mountaintop sites not influenced by the painted ceramic traditions of Edom. The settlement's main area was destroyed by a fire. Although Bennett found sherds in post-occupation levels that may be Hellenistic, it is likely that settlement took place only in the Iron Age (seventh–sixth centuries BCE).

Bennett's two main objectives were to verify or disprove the identification of Umm el-Biyara with biblical Sela and to obtain a group of stratified "Edomite" pottery. In fact, neither was fulfilled. Umm el-Biyara is essentially a one-period site whose sequence of occupation, destruction (and a final occupation in one area), abandonment, and collapse lacks sufficient stratification to enable the development of a pottery sequence.

An absolute date was provided by a clay seal impression discovered in one of the rooms. Its inscription has been restored as "Qos-Gabr, King of Edom," who is mentioned

UMM EL-BIYARA. *View of the mountain from the Petra valley floor.* (Courtesy P. Bienkowski)

twice in Assyrian inscriptions of Esarhaddon and Ashurbanipal, in contexts dated between 673 and 667 BCE. This seventh-century date is the only absolute date available for Edom, and the dating of all Edomite sites and their associated material is still largely dependent on this seal impression. There was no occupation that could be dated to the period of Amaziah (early eighth century BCE). It is now generally accepted that Umm el-Biyara should not be identified with biblical Sela. Another possible candidate is modern Sela, near Buṣeirah in northern Edom, an isolated prominence with evidence of Edomite and Nabatean occupations (Stephen Hart, "Sela': The Rock of Edom?" *Palestine Exploration Quarterly* 118 [1986]: 91–95; Manfred Lindner, "Edom Outside the Famous Excavations: Evidence from Surveys in the Greater Petra Area," in *Early Edom and Moab: The Beginning of the Iron Age in Southern Jordan,* edited by Piotr Bienkowski, Sheffield, 1992, pp. 143–144).

Bennett's excavations deliberately did not extend to the Nabatean remains on Umm el-Biyara. There is a Nabatean temple on the edge of the plateau, perhaps the reason for the construction of the (ceremonial?) stairway leading to the summit, including a massive ramp that turns through 180 degrees on its way up the slope. At the base of the mountain characteristic Nabatean facades are carved into the rock. None of the Nabatean remains on Umm el-Biyara have been excavated, so their precise date is unknown.

[*See also the biography of Bennett.*]

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PIOTR BIENKOWSKI

UMM EL-JIMAL, an extensive rural settlement constructed of black basalt in the lava lands east of Mafraq, a seventy-minute drive northeast of Amman, Jordan (39°19′ N, 36°22′ E). One of the largest and most spectacular archaeological sites in Jordan, Umm el-Jimal is located on the edge of a series of volcanically formed basalt flows that slope down from the Jebel al-Druze, a mountain 50 km (31 mi.) to the northeast. This sloping black bedrock provided ancient Umm el-Jimal with two basic resources: stone for constructing sturdy houses and water for drinking and agriculture. The ancient name of the site is not known. David L. Kennedy has argued convincingly that Thantia, Howard C. Butler's suggested name (see below), is better located to the west on the Via Nova (Kennedy and Riley, 1982, pp. 148–152). Henry I. MacAdam (1986) has put forward Surattha, from Ptolemy's *Geography,* as an alternative.

What survives aboveground is an amazingly well-preserved Byzantine/Early Islamic town nearly a kilometer long and a half-kilometer wide, with 150 buildings standing one to three stories high and several towers up to five and six stories. The site's dramatic skyline of somber stone at first gives the impression of a bombed-out modern town. Only close up does it become apparent that this is not a modern war casualty, but an agglomerate of fifteen-hundred-year-old ruins. Inside, the visitor is plunged into a scene of eerie beauty. Walls run in every direction, without apparent plan or order. Neatly stacked courses of stone protrude from a mad confusion of tumbled upper stories. The blue-gray basalt everywhere gives a somber and cool sense of shadow that belies the blaze of bright desert sun. Here and there pinnacles of wall extend their fingers of cantilevered roofing beams to create gravity-defying silhouettes against the cloudless sky. Doorways and alleys lead from room to room and building to building. Large private houses predominate, but there are also fifteen churches from the sixth and seventh centuries, a praetorium, a barrack, gates, and numerous reservoirs.

Umm el-Jimal became known to travelers in the mid-nineteenth century, but the first major work there was done by the Princeton University Expedition to Southern Syria in 1905 and 1909, directed by Butler. Butler (1913) published a list of early visitors to the site who had recorded their impressions. It was first reached in 1857 by Cyril Graham, who published a brief description of the ruins the following year. In 1861–1862 William H. Waddington copied several inscriptions and, more than a decade later, Charles Doughty passed through the ruined city. At about the same time Selah Merrill, then the American consul in Jerusalem, visited it. Gottlieb Schumacher published the first architectural plans, of a church and the city gates, in 1894. In 1901 René Dussaud and Frederic Macler copied several inscriptions. [*See the biographies of Butler, Merrill, Schumacher, and Dussaud.*]

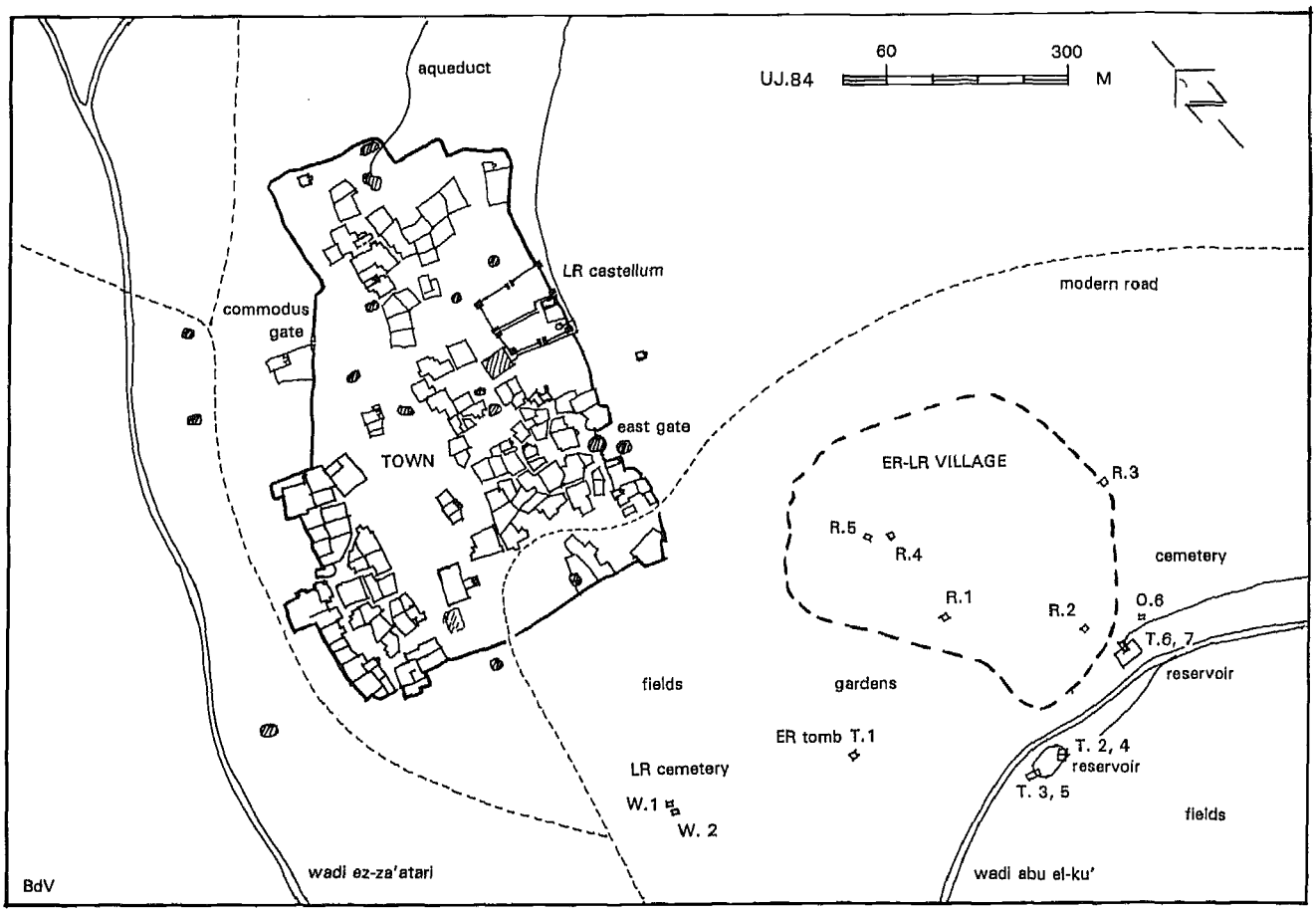
In winter 1904–1905, Butler's team made the first site map, which included public buildings: the praetorium, barracks, 15 churches, reservoirs, gates, 20 houses, and monumental tombs. He published it with an excellent text and restored plans of typical buildings (Butler, 1913). Enno Littmann cataloged numerous Greek, Latin, Nabatean, Safaitic, and Arabic inscriptions (Littmann et al., 1913). George Horsfield published early aerial photographs (Horsfield, 1937), and Nelson Glueck included Umm el-Jimal in his assessment of Nabatean influences on southern Syria (Glueck, 1951). In 1956, G. U. S. Corbett did exploratory

excavations of the Julianos church, from which he determined that Butler's founding date (fourth century) was erroneously based on a reused funerary text (Corbett, 1957). [*See the biographies of Horsfield and Glueck.*]

The Umm el-Jimal Project (1972–1995) excavated for eight field seasons over twenty-two years, under the direction of Bert de Vries, for Calvin College, Grand Rapids, Michigan. The first phase of the project consisted of five campaigns that ended in 1984. There is a current phase of excavation that is a series of summer field seasons. The project's overarching purpose has been to understand rural life on the Arabian desert frontier during the succession of Roman, Byzantine, and Early Islamic hegemonies. This began with the study of what was visible aboveground—the Late Antique town already described—but two major discoveries forced a backward expansion of historical horizons. The first was a fourth-century Roman fort *(castellum)* within the town's perimeter wall that was ruined and abandoned as the town grew around it. The second was a totally ruined village, about half the size of the town and 200 m to its east, dated to the heyday of Nabatean and Roman expansion in the Hauran (first–third centuries CE). [*See* Nabateans.]

The 1972–1973 season was devoted to mapping the site, to fill in details omitted from Butler's selective architectural survey. In 1974 preliminary soundings were dug as a representative sampling, which determined that the basic stratigraphic profile ranged from Late Roman to Umayyad. In 1977 the focus was on four major structures: the barrack, praetorium, house XVIII, and the perimeter wall. It was concluded that the town was continuously inhabited from the Late Roman through the Umayyad periods; no Early Nabatean Roman occupation levels were found. Fall 1977 was devoted to consolidating the barrack perimeter walls with force-pumped aerated cement.

In 1981 new work included the excavation of the northeast church, the Numerianos church, various water channels, and the Via Nova Traiana (6 km, or 4 mi., to the west). This work confirmed that the standing buildings are mainly the



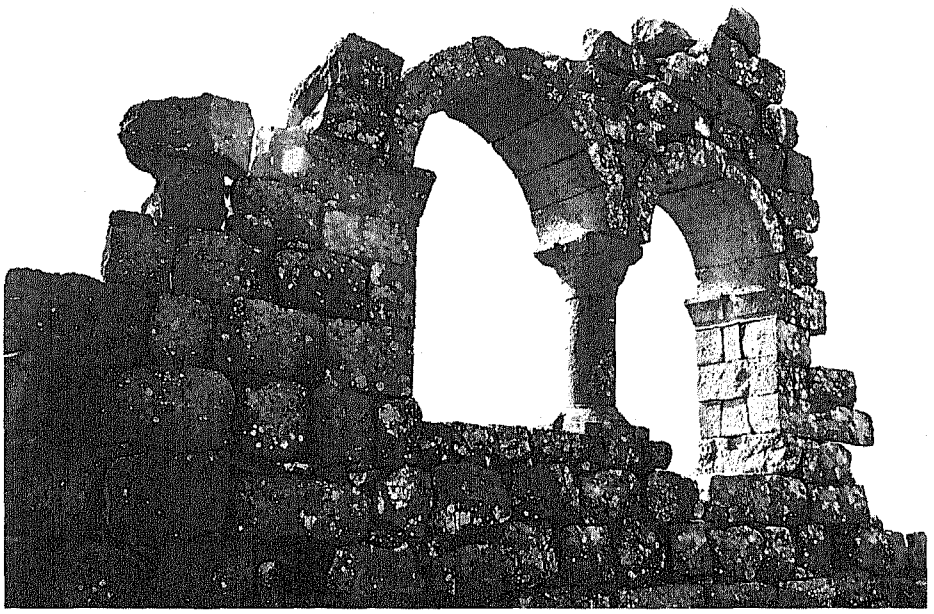
UMM EL-JIMAL. *Plan showing relationship between the Late Antique town and the Nabatean-Roman village.* Areas labeled O, R, T, and W are 1984 excavation areas. (Drawing by Bert de Vries)

product of a rural agrarian culture that flourished in the Hauran from the fourth to eighth centuries CE. A major discovery was the identification of the ruined area (100 × 100 m) between the Roman reservoir and the east church as a *castellum* built in about 300 and used as part of the Roman frontier defenses in the fourth century. In January 1983, the gate of house XVIII was cleared and its walls consolidated.

In 1984 further work was done on the churches and the *castellum,* while the focus shifted to activities outside the walls of the Byzantine-Umayyad town. These included completing a walking survey of terrain within 10 km (6 mi.) of the town and excavating cemeteries and reservoirs east of it. The major discovery in that season was the Nabatean/Roman village (called al-Herri) buried under the rubble field adjacent to the reservoirs. The village began in the late first century CE, at the time of the last Nabatean expansion into southern Syria, flourished in the second and third centuries, and was destroyed during the turmoil of the late third century. The presence of this Nabatean/Roman site does much to explain the lack of earlier occupation layers under the Byzantine town. The numerous reused Nabatean and Greek inscribed tombstones must have been robbed from the cemeteries of this earlier village.

In 1992 architectural studies of four Late Roman and Early Byzantine structures (houses 35, 49, 119, and the praetorium) and detailed mapping of the *castellum* and the Nabatean/Roman village were carried out, including low-altitude aerial photography by Wilson and Ellie Myers. These survey data have been used to develop Geographic Information System (GIS) computer images and maps of the site. The 1993 season focused on consolidation and site development, including stabilizing the high walls of the praetorium and excavating house 119 in preparation for its adaptation as a museum and visitor center. House 119 proved to be a completely Umayyad construction on a cleared Byzantine domestic site. Field research in the 1994 season concentrated on the systematic excavation of the Nabatean-Roman village and studying the sixth-century burials outside the later town.

In summary, from the first to the third centuries CE, a small Arab village with both Nabatean and Roman features flourished at al-Herri. A praetorium and a few other imperial Roman structures were erected 200 m to the west. In about 300, the *castellum* was built; it lost its military function late in the fourth century. The much smaller barrack that replaced it was constructed early in the fifth century. As the imperial military presence diminished, the Early Byzantine town (fifth–sixth centuries), consisting of 129 houses and 15 churches, prospered, a product of a self-sufficient economy and political security. This town survived in somewhat diminished form through the Umayyad period. Following plague and earthquake in the mid-eighth century, the only human presence at the site for the next century was squatters in the ruins. Then, after centuries of inactivity, the town enjoyed a brief revival when Druze resettled it between 1910 and 1935.



UMM EL-JIMAL. *Double windows of House XVIII, viewed from the northwest.* (Photograph by Bert de Vries)

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BERT DE VRIES

UMM ER-RASAS, site located 30 km (18 mi.) southeast of Madaba in Jordan (31°30′ N, 35°55′ E; map reference 2374 × 1010). The extensive and well-preserved ruins consist of a rectangular fortified camp, or castrum (158 × 139 m). An open quarter of about the same size was found outside the castrum to the north.

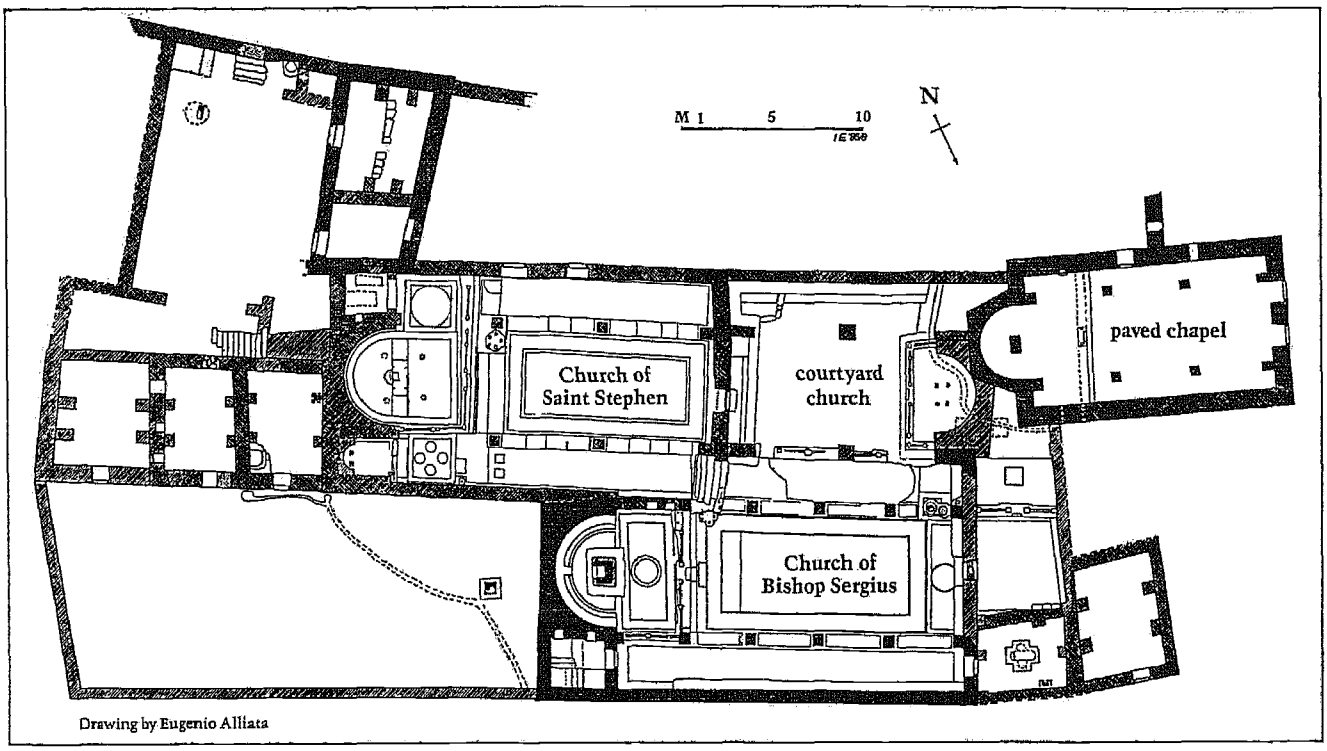
The ancient names of Umm er-Rasas were Mephaath/Mefaa/Kastron Meffaa/Mayfaʿa, as attested three times in the inscriptions in the mosaic floors of the site's excavated churches. Mephaath is listed as one of the places on the Moab plateau (*Jos.* 13:18, 21:37; *1 Chr.* 6:79, and *Jer.* 48:21). It was one of the Levitical towns that belonged to the tribe of Reuben. Eusebius, in his *Onomasticon* (128.21), and the *Notitia Dignitatum* list a Roman military camp in Mefaa. The biographies of the prophet Muhammad also record Mayfaʿa as the village whose inhabitants killed Zayd ibn ʿAmr, a pre-Islamic monotheist, on his way to Mecca to convert to Islam.

A team from the Franciscan Archaeological Institute in Jerusalem, led by Michele Piccirillo, has been conducting annual excavation seasons at the site since 1986, in collaboration with the Jordan Department of Antiquities. Their work has focused on a cluster of churches, rooms, and courtyards in an enclosed area in the northeast part of the site north of the castrum. They have named the cluster the St. Stephen complex, after the main church of the group (see figure 1).

The Church of St. Stephen, identified as such by its mosaic dedicatory inscription, is of exceptional importance. Its lovely nave mosaic depicts a number of cities in Transjordan and Palestine: Kastron Mefaa itself (including an enigmatic image of an isolated standing column), Amman, Madaba, Ḥesban, Maʿin, Rabba and Kerak in Transjordan; and Jerusalem, Nablus, Samaria/Sebaste, Caesarea, Lod, Beth-Guvrin, Ashkelon, and Gaza in Palestine. Representations of ten cities in the Egyptian Delta are also included as part of a Nilotic motif. The dedicatory inscription in the nave mosaic was damaged and repaired in antiquity; thus, the date as it now reads, 787 CE, is questionable and may be restorable as 718 CE. The apse mosaic has an intricate geometric design with a dedicatory inscription dated to 756 CE. These floors are among just a very few church mosaics in Jordan datable after the Muslim conquest. The many images of people and animals in the nave mosaic suffered deliberate damage that was carefully repaired. Limited probes below the eighth-century mosaics have revealed evidence of an earlier phase of the church.

Adjoining the Church of St. Stephen on the north is the Church of Bishop Sergius, which has a mosaic floor dedicated in 587 CE. The images in this mosaic floor suffered deliberate damage as well. To the west are a baptistery and funerary chapel. To the west of the Church of St. Stephen is a courtyard that was later converted into a chapel. To its west is the so-called Church of the Aedicula, with a flagstone pavement, the oldest church in the complex (sixth century CE). A series of rooms is to its south. Also part of the complex are rooms surrounding a courtyard to the east of the Church of St. Stephen and a courtyard serving as an atrium, along with another chapel to the south. Many burials have also been found throughout the complex.

The second area that has been under excavation by the Franciscans since 1989 is the Church of the Lions in the southeast part of the site, north of the castrum. It is a large



UMM ER-RASAS. Figure 1. *Plan of the St. Stephen complex.* (Courtesy ASOR Archives)

church surrounded by a series of rooms, forming a large ecclesiastical complex. Its mosaic is only partially preserved and does not have a surviving dedicatory inscription. The images in the mosaic floor were deliberately damaged. The mosaic also includes a second depiction of Kastron Mefaa with an isolated standing column. The church has an exceptionally well-preserved ambo (pulpit).

The church of the priest Wa'il, excavated in 1990 by Taysir Attiyat for the Department of Antiquities, is a small, single-apsed church in the northwest part of the site. It's mosaic floor is somewhat damaged. The inscription in the nave mosaic mentioning the priest Wa'il provides a dedication date of 586 CE for the church. The images were deliberately damaged.

Another prominent monument at the site is a well-preserved tower located about 1.3 km to the north of the castrum. It is 15 m high with a small, single-apsed basilica on its east side. This church, excavated by the Franciscans in 1987, and datable to the sixth century CE, has a plaster floor. Immediately to the north of the tower are large buildings, partially restored by the Department of Antiquities in the 1970s, near some covered water reservoirs.

Since 1988, the Mission Archéologique Suisse (Fondation Max van Berchem) under the direction of Jacques Bujard has been excavating inside the castrum in a complex of two side-by-side churches in the southeast corner. The construction of the two churches postdates the construction of the castrum wall. The north church is the earlier of the two. It is a single-apsed basilica with a heavily damaged mosaic floor belonging to a second phase. The images were deliberately damaged. An inscription provides a dedication date of either 578–579 or 593–594 for the mosaic. The south church is also a single-apsed basilica. Its mosaic floor is very badly damaged, and no dedicatory inscription is preserved. The Swiss team has also cleared portions of the large courtyard to the south of the two churches and a portion of the exterior face of the east castrum wall.

The town as a whole appears to have been largely abandoned by the late eighth or early ninth century. Because excavation has focused on the churches from the Byzantine and early Islamic periods, the nature of any Iron Age or Nabatean settlement remains unexplored. Iron Age sherds were found in one deep sounding in the St. Stephen complex, however.

[*See also* Churches; Mosaics.]

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ROBERT SCHICK

UMM QEIS (ancient Gadara), site located on the northern Transjordanian tableland east of the Jordan Rift Valley (32°37′ N, 35°41′ E). The layout and size of the ancient city were apparently adapted to the topography of a flat limestone plateau that drops steeply on the north, south, and west from an altitude of 364 m above sea level. This plateau commands a panoramic view across the great plain of the Jordan Valley, the Lake of Tiberias (biblical Lake Gennesar), the Yarmuk Valley, the Golan Heights, and Mt. Hermon.

The identification of Gadara with the site of the ruins of present-day Umm Qeis was determined by Ulrich J. Seetzen as early as 1806 (*Reisen durch Syrien*, ed. Friedrich Kruse et al., vol. 1, Stuttgart, 1854, p. 368) and has long been regarded as settled. The main evidence is provided by the hot springs at el-Ḥamma (Emmatha) in the Yarmuk Valley, for which nearby Gadara (situated 553 m above el-Ḥamma) was famous, that are still found there. First mentioned by the first-century BCE Roman geographer Strabo (16.2.29), they have been praised ever since for their medicinal qualities.

According to Siegfried Mittmann (*Beiträge zur Siedlungs- und Territorialgeschichte des Nördlichen Ostjordanlandes*, Wiesbaden, 1970, p. 130) Gadara lay 16 Roman miles from both Capitolias/Beit Ras and Scythopolis/Beth-Shean; Roman milestones remain from both roads, as well as from that leading from Gadara to Tiberias. The springs, also named Termae Haelia are at the third milestone on the road between Capitolias and Tiberias.

Claudius Ptolemaeus (*Geographia* 14.22), a second-century CE Roman writer, includes Gadara on his list of eighteen cities belonging to Coele-Syria and the Decapolis. Pliny the Elder (*Nat. Hist.* 18.74) noted that historians differed in listing the Decapolis cities; his own list of ten, which included Gadara, dates to the first century CE. [*See* Decapolis.]

Of the cities of the Decapolis, Gadara is most renowned as the birthplace of illustrious men, among them Philodemus the Epicurian, a contemporary of Cicero, and the great poet Meleager.

Gadara was first visited by Seetzen in 1806 and surveyed by Gottlieb Schumacher in 1886. This was followed by sporadic fieldwork that recovered a Late Antique bath in the northwest section of the site with a mosaic floor and a mosaic inscription (1959), a subterranean mausoleum (1968), and a Late Roman tomb (1969), which was cleaned. [*See the biography of Schumacher.*]

Since 1974, the German Evangelical Institute for the Archeology of the Holy Land has undertaken systematic survey, excavation, and restoration work at Umm Qeis. [*See* Deutsches Evangelisches Institut für Altertumswissenshaft des Heiligen Landes.] A 1974 survey yielded evidence for an occupation at least as early as the seventh century BCE. However, in considering the history of Umm Qeis/Gadara, it is the literary tradition that is relied on primarily Polybius (*Hist.* 5.54–85) described the region of Gadara as one of several locations under Ptolemaic control before the conquest of Antiochus III in 218–217 BCE. During the final conquest of Transjordan and Palestine by this Antiochus in 198 BCE, Gadara was incorporated into the Seleucid kingdom—an important event in the city's history. According to Stephan of Byzantium (*Ethnika* 128.30), the city was called Antiochia and Seleucia, and it minted coins bearing the title "Antiochia" to commemorate the heritage of Seleucid control. [*See* Seleucids.]

Josephus, the first-century CE Roman historian (*Antiq.* 13.13.3; *Wars* 1.4.2), mentions that Gadara was freed from the control of the Hasmonean king Alexander Jannaeus by the Roman general Pompey during Pompey's campaign in Syria in 63 BCE. It was part of the reorganization that resulted from the formation of the Provincia Arabia after the Romans annexed the Nabatean kingdom and its capital city, Petra, early in the second century CE. [*See* Nabateans.] Additional reorganization took place in the Roman Empire with the creation of the Provincia Palaestinae. By about 429 CE, Palestine and Transjordan were subdivided into Palaestina Prima, Palaestina Secunda, and Palaestina Tertia. George Adam Smith has pointed out (*Historical Geography of the Holy Land*, 25th ed., rev. London, 1931) that Gadara was listed as one of the cities in Palaestina Secunda.

During the New Testament era, a visit by Jesus to the region of Gadara is attested (*Mt.* 8:28). The city is best re-

membered in connection with the story of the Gadarene swine. By the beginning of the fourth century CE, Gadara had a bishop who attended the Council of Nicaea (325 CE). As a result of the discovery of its magnificent basilica by the German Evangelical Institute for the Archaeology of the Holy Land under the direction of Ute Wagner-Lux (1976–1980), Gadara is among the major Christian centers in Transjordan, which include Jerash/Gerasa, Madaba, and Petra. [*See* Jerash; Madaba; Petra.] The remains of other monuments in the city include two temples, two theaters, a fortified acropolis, paved colonnaded streets, a monumental gateway, a necropolis, a nymphaeum, two mausolea, a stadium, and two public baths along the south side of the *decumanus maximus*.

The excavation of the bath building in 1977–1983 by a Danish team headed by Svend Holm-Nielsen discerned three main periods in its history. The first was terminated by a destruction possibly caused by an earthquake in about 400 CE. In the second, the building continued as a bath but on a much reduced scale, the gradual change indicating an economic decline at Gadara. At some time in the first half of the seventh century, the use of the building as a bath came to an end. In the third period of its history, the bath was used for habitation and workshops. A section of the building seems to have been used as an Islamic prayer place in the Umayyad period. Al-Baladhuri, a ninth-century Arab historian says (*Kitab futuh al-buldan* [Book of the Conquest of the Countries], ed. M. J. de Goeje, Leiden, 1866, p. 126) that in the middle of the seventh century Gadara was captured by the Muslims and became one of the cities of the new Arab administrative district of Falastin (Palestine).

UMM QEIS. *Ruins of the central portion of the basilica.* (Courtesy A. Hadidi)

Little is known of Gadara's history in ʿAbbasid and later periods. Neither Christian nor Muslim writers provide any indication of whether Gadara was settled during the Ayyubid-Mamluk period. The frequency and distribution of sherds from this period (eleventh–thirteenth centuries CE) at Gadara probably reflect the existence of a few farms in the immediate vicinity. Accounts of Arab travelers and geographers indicate that there was a sharp decline in the city's wealth and population and that gradually Gadara passed from a Greco-Roman town of considerable importance, even boasting a university in its heyday, to a field of ruins.

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ADNAN HADIDI

UNDERSEA EXPLORATION SOCIETY OF ISRAEL.

In 1959, hundreds of amphorae were hauled up from the sea bottom by trawler fishermen from Kibbutz Maʿagan Mikhaʾel. The investigation of that rich collection of archaeological finds was the impetus for the establishment of the Undersea Exploration Society of Israel (UESI). The following year, the American explorer and diver Edwin Link arrived in Israel to explore the Herodian harbor at Caesarea, providing the Israeli group of navy-trained divers and the kibbutz's Elisha Linder, who had traced the provenance of the amphorae on the sea floor, with an opportunity to participate in an underwater excavation. Soon after, pioneer American archaeological diver Peter Throckmorton was invited to serve as guide and mentor in conducting underwater surveys for the growing number of enthusiastic UESI vol-

unteers. This component of learning by experience extended to include the application of advanced technology for searching and surveying the sea floor, like the sonar developed by H. Edgerton.

Members of the UESI have participated in marine archaeological excavations elsewhere in the Mediterranean region as well: at the Yassıada wreck in Turkey; at Kyrenia in Cyprus; and in the Straits of Messina and the Lake of Bolsena in Italy, among them. The knowledge obtained while training abroad and diving at home raised the society's professional standards and its reputation among archaeologists.

During UESI's first decade, its members participated in the major harbor excavations at Akko, ʿAtlit, and Caesarea. Its local branches at various coastal settlements, while monitoring assigned stretches of the coastline, were recording and rescuing important finds, such as the Shavei-Zion Tannit figurine wreck. [*See* Shavei-Zion, *article on* Underwater Site.] The UESI also works in the Sea of Galilee and the Red Sea. The society was instrumental in the creation of the National Divers Federation and participates with oceanographers in interdisciplinary maritime study projects. In 1972, Elisha Linder, joined later by Avner Raban and Yaʿacov Nir of the UESI, initiated a program of graduate study at the University of Haifa in the history of maritime civilizations. Although, gradually, volunteer divers have given way to professionally trained marine archaeologists on excavations, the divers on many expeditions continue to be drawn from UESI's rank and file.

[*See also* Akko; ʿAtlit-Ram; Caesarea; Maʿagan Mikha'el; Underwater Archaeology; *and* Yassıada Wrecks.]

ELISHA LINDER

UNDERWATER ARCHAEOLOGY. The field of underwater archaeology offers unique information about the past because artifacts found under water are often better preserved, and in larger quantities, than those found on land, where in the past ceramics and glass eventually were broken through use, metal objects were melted down and recast, and raw materials were transformed into manufactured goods after they were unloaded from the ships that transported them. Organic material often simply disappears. Furthermore, if artifacts are from a shipwreck that can be dated precisely, as is often the case, they can be equally well dated, contributing to the establishment of precise chronologies.

The archaeology of ships, sometimes called nautical archaeology, also reveals design and construction details of various types of watercraft—of merchant vessels, such as those found at Serçe Limanı, Uluburun, and Yassıada in Turkey; warships, a ram at ʿAtlit in Israel; and fishing boats, such as the Galilee Boat recovered from the Sea of Galilee. Underwater archaeology, however, also embraces the study of ancient harbors, as at Caesarea in Israel, and inundated settlements, such as several Neolithic sites in the sea south of the port of Haifa. [*All of the sites mentioned above are the subject of independent entries.*]

Underwater archaeology in the Near East began, as elsewhere, with chance finds made by fishermen, sponge divers, and, after the invention of self-contained underwater breathing apparatus (SCUBA), both sport and scientific divers. Ancient wrecks have been reported off the coasts of every country washed by the Mediterranean or Red Seas.

It was a discovery by sponge divers near Cape Gelidonya, Turkey, that led in 1960 to the first complete excavation on the floor of the Mediterranean. The approach to that excavation was to adapt, as much as was practical, standard land techniques to the underwater environment. The site was mapped by triangulation with meter tapes (details were added to plans from pencil drawings made under water on plastic paper) and from site photographs taken with cameras in watertight housings. Instead of shovels and wheelbarrows, excavators used air lifts, or nearly vertical suction pipes, to remove overburden. Because sunken objects often become encased in layers of calcium carbonate over time, it was necessary to chisel free from the seabed large clusters of solidly concreted artifacts. These were raised with balloons filled with air after being attached to the clusters and were then dismantled on land. [*See* Cape Gelidonya.]

The Cape Gelidonya excavators learned that the major problem in working under water is lack of time, for in order to avoid decompression sickness, each excavator could work for only about an hour a day in two dives. Thus, in the 1960s, the excavation of Late Roman and Byzantine shipwrecks at Yassıada, Turkey, led to the development of devices to improve efficiency, especially in mapping. These included metal grids placed over a site to break it into squares 2 meters on a side; a scaffolding to support movable photographic towers; underwater plane tables; and ultimately a system of mapping stereophotogrammetrically by moving a camera along a horizontal bar floated over the site. Later, the stereophotographs were taken from a research submersible that glided above the seabed as an airplane flies over land. An air-filled Plexiglas hemisphere on legs (called an underwater telephone booth) allowed divers to talk to one another or, via a cable, to the surface; and a submersible decompression chamber allowed excavators to make longer dives by decompressing longer. It was also in the 1960s that the first ancient wreck was located by side-scan sonar, near Yalıkavak, Turkey.

In the late 1970s, at Serçe Limanı, ceramic containers were sieved for seeds and other organic remains for the first time, with excellent results, and excavators gained more diving time by decompressing on pure oxygen. By the 1980s, the new techniques for underwater mapping were abandoned at Uluburun, because of the rugged seabed terrain, and mapping was again done with hand-held meter tapes and plumb bobs, although a newly invented acoustic mapping system (SHARPS) was also used.

Except for limitations on time, the major difference between underwater archaeology and land archaeology has to do with conservation. When an iron artifact falls into the sea, for example, it can be completely covered by calcium carbonate within a year. This thickens over the ages as the iron disintegrates through corrosion, leaving a perfect mold inside. Hundreds of amorphous lumps of concretion are plotted on wreck plans and are then X-rayed to see the outlines of what once was inside. The natural molds of concretion are next broken into pieces, the slight remains of rust are removed, and the cavities are filled with epoxy. Once the epoxy hardens, the concretion is removed with pneumatic chisels, leaving exact replicas of the original implements.

Waterlogged wood will quickly shrink and warp out of recognition in air as its cells collapse, unless it is bulked with something before the water in them evaporates. Excavators of the fourth-century BCE Greek shipwreck near Kyrenia, Cyprus, using polyethylene glycol, were the first to conserve the fragmentary timbers of a Mediterranean ship, which they reassembled in the early 1970s from thousands of fragments of wood held together with stainless steel wire. This process was repeated in the 1980s and 1990s on the eleventh-century Serçe Limanı ship.

[*See also* Anchors; Ships and Boats.]

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GEORGE F. BASS

UNITED ARAB EMIRATES. In 1971, the former Trucial States of Abu Dhabi, Dubai, Sharjah, Ajman, Umm al-Qaiwain, and Fujairah formed a federation called the United Arab Emirates (UAE). In this they were soon joined by the northernmost emirate. In the Oman peninsula, Ras al-Khaimah. Archaeological exploration in the former Trucial States began in the late 1950s with a Danish expedition from the University of Aarhus (1959–1965) working on a series of large collective burials and on an associated settlement from the mid- to late third millennium BCE on Umm an-Nar island in Abu Dhabi. In 1968, Karen Frifelt took up the expedition's work in the Hili district of the Buraimi oasis and Beatrice de Cardi undertook the first of several surveys in Ras al-Khaimah. In 1973–1974 an Iraqi team worked at a number of important sites, and a series of French missions under Serge Cleuziou and Rémy Boucharlat was inaugurated in 1977 to investigate Hili 8, Rumeilah, and Mleiha. Meanwhile, numerous other foreign teams began projects in the mid- and late 1980s at sites ranging from prehistoric shell middens to the medieval port of Julfar. Many of these are still underway.

The UAE occupies an important area at the base of the Arabian Gulf and consists of four environmental zones. The flat, sandy desert foreland on the coast, which extends from the bottom of the Qatar to the beginning of Ras Musandam, is backed by a strip of fertile, well-watered gravel plains. To the east and north of these rises the massive Hajar mountain range, which runs like a backbone down the center of the Oman peninsula. To the south, the desert begins, punctuated only occasionally by oases like Liwa, and gradually merges into the great Rub al-Khali sand sea. The so-called east coast of the UAE is that portion of Ras al-Khaimah, Sharjah, and Fujairah that represents a continuation of the Batinah coastal plain of Oman and fronts the Arabian Sea. There, a series of historically important harbors, such as Dibba, Khor Fakkan, Fujairah, and Kalba, look eastward toward the Indian subcontinent; traditionally, the Gulf ports of Abu Dhabi, Dubai, Sharjah, Ajman, Umm al-Qaiwain, and Ras al-Khaimah have been more oriented culturally toward Iran, Bahrain, and Iraq.

Sites belonging to the late prehistoric Arabian bifacial lithics tradition (c. 4500–2800 BCE) are found at many points along the Gulf coast of the UAE, from Abu Dhabi in the south to Ras al-Khaimah in the north, and inland around Khatt and Jabal Hafit. The coastal sites exploited the rich marine resources available, particularly shellfish, and probably represent seasonal encampments of pastoralists who spent the winter in the interior with their herds and their summers on the coast. By about 3100 BCE, a large sedentary settlement with mud-brick architecture had been established at Hili 8, in the Abu Dhabi part of the Buraimi oasis. A full range of domesticated cereals, including emmer; bread wheat; two-row, six-row hulled, and six-row naked barley; and sorghum (?), as well as dates and melons, were being grown there, and domesticated sheep, goat, and cattle were kept. Wild camel and equids were also being hunted. The site is contemporary with a series of stone burial cairns of the so-called Hafit type containing individual inhumations. The burials have yielded imported Mesopotamian ceramics and beads of the Jemdet Nasr and Early Dynastic type. By the middle of the third millennium BCE, a distinctive culture complex known as Umm an-Nar (c. 2700–2000 BCE) had emerged, characterized by well-made black-on-red/orange painted pottery (see figure 1); soft-stone vessels decorated with a simple dotted double circle; large circular communal graves faced with well-cut ashlar masonry; and large circular fortifications built of mud brick and/or stone (about 20–40

UNITED ARAB EMIRATES. Figure 1. *Ceramics from a late Umm an-Nar tomb.* At Tell Abraq, c. 2100–2000 BCE. (Courtesy D. T. Potts)

m in diameter). Historically, this culture, which was in touch with the Indus Valley, eastern Iran, and Mesopotamia, probably represents the land known in cuneiform sources as Sumerian Magan (Akk., Makkan). Copper mining and refining was a major industry in the interior, where substantial areas of Bronze Age slag have been identified (e.g., near Maysar in the Wadi Samad).

During the Wadi Suq period (c. 2000–1200 BCE) fewer settlements seem to have existed, perhaps as a result of slightly more arid conditions. Tell Abraq, however, was occupied continuously from the Umm an-Nar period through the Iron Age, demonstrating that the abandonment of sites was not a universal phenomenon. At Shimal, in Ras al-Khaimah; Qidfa, in Fujairah; and Qaṭṭarah, in al-ʿAin, large graves constructed of local stone have been found (c. 2000–1700 BCE) containing the characteristic fineware beakers and spouted jars of this period, as well as an impressive amount of bronze weaponry (e.g., swords and socketed spearheads). Contact with Bahrain in the early second millennium BCE is indicated by a sizable amount of Barbar red-ridged pottery at Tell Abraq; later contacts with Mesopotamian and Elam are suggested by Kassite and Middle Elamite ceramics. The camel was probably domesticated by about 1500 BCE, according to the latest evidence from Tell Abraq.

The Iron Age (c. 1200–300 BCE) can be divided into at least three distinct phases, based on the evolution of the ceramic assemblage. This was a period of expanded settlement throughout the region, possibly as a result of the introduction of a new form of irrigation in which groundwater was tapped via subterranean surface channels (Pers., *qanat;* Ar., *falag* [sg.], *aflag* [pl.]). Key settlements include Tell Abraq, Rumeilah, and Rafaq. There are few Hellenistic period sites, but an important settlement existed at Mleiha in the interior of Sharjah, where monumental graves; workshop areas for bone, stone, and metal; domestic houses; and part of a square fortress with square corner towers have been excavated. Mleiha was also the site of a mint. The first century CE is best represented at ed-Dur, on the coast of Umm al-Qaiwain. Imported goods such as terra sigillata, Indian red polished ware, glazed Parthian pottery, Roman glass, southeast Iranian black-on-red Namord pottery, Mesopotamian eggshell ware, and Characene coins attest to the site's cos-

mopolitan nature. A third–fourth-century CE phase is also represented in area F at ed-Dur, where examples of early Sasanian glass have been found in a group of burnt offerings and shallow inhumations. A Late Sasanian/Early Islamic horizon is known at Jumeirah, in Dubai, where several large buildings, possibly a caravanserai and market, have been found. The most important medieval site investigated to date is the port of Julfar, on the coast of Ras al-Khaimah, where the abundance of Far Eastern ceramics and coins attests to the far-flung nature of the site's international trade during the fourteenth–early sixteenth centuries CE. The Portuguese are also known to have built a fort there during their brief period of supremacy in the region.

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D. T. POTTS

UPPER EGYPT. The southern portion of Egypt, known as Upper Egypt, was divided into twenty-two nomes based upon the Karnak list from the reign of the twelfth-dynasty king Senwosret (Sesostris) I (1971–1926 BCE). The traditional southern border was Aswan at the First Cataract of the Nile. The northern border was between Lisht and Dahshur just north of the entrance to the Faiyum. The narrow ribbon of the Nile Valley within Egypt lies in Upper Egypt. The territory included in Upper Egypt can be divided into three parts: southern Upper Egypt, from Aswan to Thebes; northern Upper Egypt, from Nag el-Medamud to Qaw el-Kebir; and Middle Egypt, from Asyut to Lisht.

The textual and archaeological records from Upper Egypt are much more extensive than from Lower Egypt. The record is biased by the fact that modern excavation focused more on the monumental art and architecture of the south, and because of better preservation on the dry margins of the upper Nile Valley than in the low lying and wetter Nile Delta.

The Upper Egyptian sequence of predynastic cultures begins in the fourth millennium BCE. The earliest is the Badarian followed by the Naqada I and II periods (consisting of the Amratian and Gerzean cultures) that was to develop into the dominant "great tradition" of early pharaonic civilization, and to overtake the Delta to effect a unified kingdom.

Already at the end of the Amratian period (Naqada I) the site of Hierakonpolis, ancient Nekhen, modern Kom el-Ahmar, was developing into a major urban center with specialized ceramic and beer production known from the archaeological record. By late Gerzean and Protodynastic (Naqada III) times, Hierakonpolis was one of several possible "mini-states" in the area of the Qena bend, where the course of the Nile swings east toward the Red Sea and then back westward. Hierakonpolis, situated just below the bend, must have been a virtual late Predynastic capital; other important settlements of the time include Coptos and Naqada, near the entrance of the Wadi Hammamat connecting the valley to the Red Sea coast. According to later tradition, the kings of the first dynasty hailed from This, capital of the eighth nome (province), just north of the Qena bend. The first-dynasty royal tombs are found at Abydos on the desert edge to the southwest of This. Abydos became the cult center of Osiris at the end of the Old Kingdom (c. 2150).

These centers became somewhat provincialized with the great move to the north during the third and fourth dynasties in the early Old Kingdom (c. 2650–2465). The pyramid clusters of Abu Roash, Giza, Abu Sir, Saqqara, and Dahshur all properly belong to Memphis, the new capital, situated in the first nome of Lower Egypt. Toward the end of the Old Kingdom, the Upper Egyptian provinces reasserted themselves as important centers in their own right with major cemeteries containing the tombs of local administrators at sites like Gebelein, Deir el-Gabrawi, Meir, and Deshasha. At Aswan are the tombs of sixth-dynasty nomarchs (provincial governors) and caravan leaders whose tomb biographies—a genre just developing at this time—inform us about the political situation between Egypt and Nubia toward the end of the Old Kingdom. About the same time, the tomb of Inti at Deshasha appears to portray the Old Kingdom seige of a fortified center in Palestine.

When the Old Kingdom collapsed shortly after the reign of Pepi II, penultimate ruler of the sixth-dynasty, Upper Egypt broke up into its constituent nomes. There is evidence

of extremely low Nile flood levels and famine in Upper Egypt during the ensuing First Intermediate Period (seventh–mid-eleventh dynasties, c. 2150–2040). As large polities coalesced toward the end of this period, those in Upper Egypt formed again in the area of the Qena bend under the control of the Intefs from Thebes, modern Luxor. The center of power in the north was the first nome of Lower Egypt ruled by the dynasty of obscure rulers, some of whom were named Khety, at Herakleopolis, modern Ihnasya el-Medina. The tombs at Asyut from this period tell us in very fragmentary texts about the armed conflict between the two powers.

The southerners were once again victorious and the Middle Kingdom (late eleventh–twelfth dynasties, c. 2040–1780) was inaugurated by a descendant of the Intefs, Nebhepetre Mentuhotep, who built the great terraced temple at Deir el-Bahari that Hatshepsut copied and superseded generations later. The founder of the twelfth dynasty, Amenemhat I, moved back to the north and established his capital of Itj-tawy ("seizing the two lands") near Lisht where he revived pyramid-building. The succeeding kings of the twelfth dynasty built their pyramids at Lisht (Senwosret I), Dahshur (Amenemhat II, Amenemhat III, Senwosret III) and near the Hawara channel that gives access from the Nile valley to the Faiyum (another by Amenemhat III, Senwosret II).

Kings Senwosret I and III built a string of great mud-brick fortifications in lower Nubia, particularly around the Second Cataract where the Semna and Kumma forts became checkpoints for Nubian trade passing northward. The forts signify Egypt's concern with its southern border, probably because of the Kerma culture growing toward statehood below the Third Cataract. The twelfth-dynasty rulers were also concerned with the northeast, more for commerce than coercion, although some texts give evidence of a campaign of Amenemhat II in Palestine (Nicholas Grimal, *A History of Ancient Egypt,* Cambridge, 1992). Egypt's fears were apparently well founded, for when the Egyptian kingdom began to disintegrate in the thirteenth dynasty (after c. 1780), the strong secondary state of the Hyksos filled the power vacuum in the northeast Delta, and the Nubian Nile Valley came under the domination of the Kerma rulers.

When the Egyptian kingdom reasserted itself by attacking and defeating the kingdoms of Kerma and of the Hyksos, it was, once again, from the area of the Qena bend under seventeenth-dynasty kings. The final expulsion of the Hyksos under Ahmose (c. 1550–1525) initiated the eighteenth dynasty. Thebes and Upper Egypt experienced a golden age. Pyramids were abandoned for royal tombs to be replaced by rock-cut corridor tombs in the Valley of the Kings (see below). Thebes became a southern capital in counterpart to a revived Memphis in the north. The east bank was given over to settlement, probably palaces and temples of the state god, Amun-Re, his consort, Mut, and their child, Khonsu. The west bank became a vast necropolis, both royal and private, with the tombs of the nobles scattered across the el-Qurna hill, the Valley of the Queens to the south, and the Valley of the Kings to the north. The eastern base of the pyramidal hill that towered above these communal cemeteries supported a string of mortuary temples that grew during the course of the eighteenth through the twentieth dynasties (1550–1070).

For more than four hundred years the west bank of Waset (ancient Luxor), known as the Valley of the Kings, was the burial ground for royalty and all important government officials. The chapels of private individuals continued to be decorated with lively scenes of everyday life. The kings' tombs, however, bore scenes of the magical-religious texts known as the *Book of the Dead,* the *Book of Gates,* and the *Book of What is in the Underworld.* In these texts, the deceased kings joined the sun-god in his nightly journey through the underworld to be reborn with him in the morning on the eastern horizon. Funerary temples were built on the west bank. On the east bank, the importance of the royal cult was being eroded by that of the state gods, especially that of Amun-Re at Karnak. All the great temples such as the temple at Luxor were decorated with sculpted and painted relief scenes on all available space.

Recently the tomb of the sons of Rameses II was rediscovered in the Valley of the Kings. It was used for the burial of fifty-two sons of the king and may also have a second level. It is the largest tomb in the valley.

The construction of the tomb changed during this time. The simple oval or rectangular graves of the predynastic period were expanded to include a building above the ground with a superstructure consisting of a flat roof and vertical mud-brick walls. At the beginning of the Old Kingdom the kings built their tombs as pyramids. There are about ninety-seven pyramids dated from the third dynasty until the end of the Middle Kingdom. Every pyramid complex consisted of the pyramid, a surrounding courtyard and enclosure wall, a temple at the pyramid's eastern base, a causeway to the valley floor, and a valley temple.

The influence of Thebes and Upper Egypt diminished toward the end of the New Kingdom in favor of cities in the Delta that had been established already in the eighteenth dynasty. Kingship was weakened in the south by the growing power of the priesthood of Amun, until Upper Egypt came to be under its administration, and twenty-first-dynasty pharaohs ruled from the north. The sequence of royal burials in the Valley of the Kings came to an end. Thebes and Upper Egypt were never to regain the dominant position they held in the New Kingdom as Egyptian power became increasingly concerned with international relations to the northeast and northwest. The Delta grew in importance as Egypt faced and was subjugated by the empires of Assyrians, Persians, Macedonians, and Romans.

[*See also* Abydos; Asyut; Faiyum; Giza; Lower Egypt; Naqada; Nile; Pyramids; *and* Saqqara.]

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ZAHI HAWASS

UR (Ar., Tell el-Muqayyar), site located in southern Mesopotamia (modern Iraq) along a former branch of the Euphrates River (30°56′ N, 46°08′ E). The site was identified as Ur in the 1850s by the British consul at Basra, J. E. Taylor, who was employed by the British Museum to investigate a number of southern Mesopotamian sites, about which almost nothing was known at the time. He dug at the corners of the ziggurat mound at the site, uncovering a number of baked clay cylinders inscribed in cuneiform. The inscriptions detail the history of the building of the ziggurat and named the city as Ur, which for many people implied an identification with the biblical city of Ur of the Chaldees, the birthplace of Abraham (*Gn.* 11:28–31).

Following Taylor's work, the site was left untouched until nearly the end of the century, when a team from the University of Pennsylvania excavated there briefly. Immediately following World War I, R. Campbell Thompson and H. R. Hall tried their luck. It is C. Leonard Woolley, however, director of twelve field seasons at the site (1922–1934), who is credited with most of the archaeological work at Ur.

The Woolley expedition was jointly sponsored by the University Museum of the University of Pennsylvania and the British Museum. It was a model for its time in terms of the quality of much of the fieldwork and the timeliness and thoroughness with which the work was published. Woolley's engaging and prolific popular prose, his flair for publicity, the spectacular nature of some of his finds, and the connections he drew between Ur and the Bible all combined to produce strong public interest in his work, rivaling that elicited by King Tutankhamun's tomb in Egypt. Since 1934, work at the site has been limited to that associated with the restoration of the ziggurat by Iraqi archaeologists.

Ur was occupied for approximately four thousand years, from the Ubaid (fifth millennium) to the Neo-Babylonian (mid-first millennium BCE) periods. However, as is invariably the case on large, deeply stratified Near Eastern mounds, the earlier phases of occupation have been far less extensively investigated because of their inaccessibility. Ur's long history has also played a role in limiting access to its past. The city reached its zenith in the Ur III period (c. 2100–2000 BCE), when it was the capital of an empire and its kings undertook extensive building programs, obscuring earlier structures. Woolley's predilection for excavating in the so-called Temenos area of the site—the location, since very early in Ur's history, of major temples and other elaborate buildings—also contributes to a picture of life at Ur that is heavily, albeit not exclusively, centered around the community's religious and civic core.

To explore the early occupations of Ur, Woolley instructed his workmen to sink several deep test pits. Under the fourth-millennium occupational layers (see below) they encountered a thick, culturally sterile layer thought to have been deposited by the action of water. This was quickly dubbed the "Flood Stratum" and interpreted as the remnants of the biblical flood. In fact, the deposit may be a wind-borne dune or, if water-borne, a product of just one of many floods that were common occurrences in Mesopotamia prior to modern damming of the rivers.

Below the sterile "Flood" deposit were the remains of Ubaid occupation. Ur may have reached a size of 10 ha (25 acres) in the Ubaid period, making it one of a number of larger towns amid a landscape of predominantly small villages. However, the remains that Woolley excavated reveal a picture of ordinary domestic life. No intact architecture was recognized, but bits of mud brick and remnants of reed-and-mud constructions were recovered, mixed with domestic debris including pottery with simple painted designs; stone tools for a variety of cutting, pounding, and grinding tasks; sickles made of highly fired clay; and spindle whorls.

In addition to the domestic remains, the excavations encountered a small number of Ubaid graves. Individuals were interred on their back, accompanied by a few pots, occasionally clay figurines, and more rarely beads or animal bones. There are few differences in the ways these individuals were treated at death, apart from distinctions attributable to age and sex.

The scanty excavated remains from the Uruk and Jemdet Nasr periods (c. 3900–2900 BCE) are nevertheless sufficient to suggest that Ur remained a town of some importance. Excavations around the later ziggurat revealed an Uruk-period temple platform, consisting of a terrace wall built of characteristically Uruk *Riemchen* bricks (square in cross section) and a floor strewn with thousands of the clay cones favored for decorating the facades of public buildings of this period. Elsewhere on the site pottery kilns accompanied by masses of pottery were uncovered. A portion of an extensive cemetery was also excavated. Woolley attributed the graves

to the Jemdet Nasr period, but recent reevaluations assign them to the Uruk through Early Dynastic II periods. Bodies lay on their side in a crouched position, frequently accompanied by clay pots, stone vessels, and beads, and less often by metal (copper or lead) vessels or other small copper items.

In the succeeding Early Dynastic period (c. 2900–2350 BCE), the temple platform, already prominent in the Uruk and Jemdet Nasr periods, was rebuilt at least twice. Kitchens, storerooms, and a series of rooms interpreted by Woolley as shrines were found on top of it. The temple that was presumably the principal building on this platform is not directly attested, having been buried beneath the massive ziggurat built by the Ur III king Ur-Nammu.

Not far from the temple platform was a rubbish dump, known as the seal-impression strata (SIS). The dump included burnt mud-brick debris, pottery, clay tablets, and the many clay sealings from which the strata take their name. Based on its location as well as its contents, the rubbish probably derives from temple or civic buildings of the Early Dynastic period. The seal impressions include those known as the city seal impressions because of their protocuneiform symbols, which are thought to stand for city names. The sealings had been used to close doors, presumably of storerooms, as well as jars and other containers. The relative frequency with which certain city names co-occur may relate to the strength of economic connections between cities.

Dug into this rubbish dump were the graves of the Royal Cemetery. The cemetery was used as a burial place from the Early Dynastic III through the Post-Akkadian periods (c. 2600–2100 BCE) and contained approximately two thousand graves (although many badly disturbed ones were unreported). The cemetery derives its name from sixteen of the graves, all of which date to the earliest portion of its use. Unlike the hundreds of other graves, these sixteen, known as the Royal Tombs, contained brick and/or stone chambers in which the dead were placed. All of the tombs contained multiple burials of individuals apparently placed in the grave to accompany the principal deceased person ("human sacrifice"). Where subsequent disturbance did not remove the evidence, the tombs included great riches of precious metal and semiprecious stone jewelry, containers, weaponry, musical instruments, seals, and furniture. However, as Woolley himself pointed out, a number of the so-called private graves also contained similar types and quantities of riches. What best distinguished the "royal" tombs were their construction and seeming evidence of human sacrifice.

On the basis of the treatment of the deceased and the discovery in several of the tombs of inscribed artifacts naming a person as "king" or "queen," Woolley argued that these were the tombs of royalty. However, none of the inscribed artifacts were found directly associated with the principal deceased individual, and they may have been gifts from others, rather than possessions of the dead person. Although it cannot be stated with certainty who was buried in the Royal Cemetery graves, a consideration of the full range of interments and comparison with burial practices at contemporary sites suggest that the Royal Cemetery includes personnel from both religious and civic institutions.

Apart from the continuing use of the Royal Cemetery for burial, there is little direct evidence of the Akkadian period at Ur, although contemporary texts indicate that it remained an important city. An alabaster disk showing a ritual act of libation has an inscribed dedication from Enheduanna, who was a daughter of Sargon, the founder of the Akkadian dynasty. Enheduanna served as *en*-priestess (high priestess) of Nanna, the patron god of Ur. Enheduanna's installation in the post of *en*-priestess at Ur may represent one means by which Sargon sought to cloak his rule of the many city-states of Sumer and Akkad in a mantle of traditional legitimacy.

For approximately a century, from about 2100 to 2000 BCE, Ur was the capital of an empire known today as Ur III. During this time, as well as during the subsequent two centuries, Ur was an important port of trade linking Mesopotamia with the lands along the Gulf and beyond. The empire is also well known for its elaborate bureaucracy, as attested by the large number of tablets dealing with accounting matters that have been recovered from sites of this period. The city itself attained a size of at least 50 ha (124 acres).

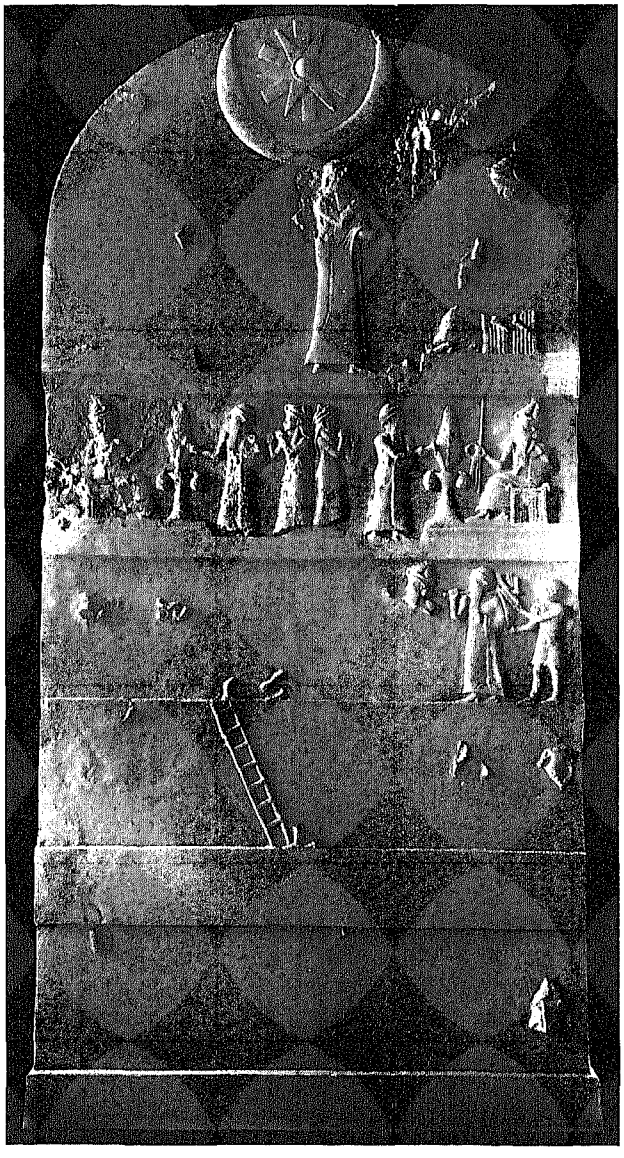
The first king of the dynasty, Ur-Nammu, began an ambitious program of building at Ur; what is known of this construction is confined primarily to the central religious area. Many of the buildings were finished or elaborated by King Shulgi, Ur-Nammu's son. Although the destruction of Ur by the Elamites at the end of the Ur III dynasty resulted in the razing of most of these buildings, the foundations provide an idea of the layout of the core of the city.

A large raised area, dubbed the Temenos by Woolley, was dedicated to the moon god, Nanna, and his wife, Ningal, as indicated by inscribed foundation deposits. Prominent within the Temenos was the ziggurat built by Ur-Nammu, on top of which the main temple probably stood, although no trace of it remains. The other buildings on the ziggurat terrace were badly destroyed at the end of the Ur III period but are thought to have served similar functions to those of the Early Dynastic period. The use of the Great Court of Nanna, a sunken court immediately in front of the ziggurat terrace, is unclear: Woolley's interpretation of it as a storage building for offerings brought to the temples has been challenged; it may have served as a place where the people of the city could approach the deities and the sacred symbols of them. Other buildings within the Temenos include the Ḫursag, possibly a palace; the Ganunmah (called Enunmakh by Woolley), which included a bank of storage chambers; and the Giparu, built over Early Dynastic remains of a similar building and serving as the dwelling of the *en*-priestesses as well as their burial place. Although there is little archaeological evidence for the Ur III city outside the

Temenos, there are indications that it was enclosed by a wall and surrounded by river channels or canals on all but its southern side.

The carved monument known as the stela of Ur-Nammu was found in pieces scattered around the ziggurat terrace (see figure 1). Large portions of it were not recovered, but the remaining fragments show scenes of Ur-Nammu receiving orders to build Nanna's temple and illustrations of animal sacrifice and musicians that may represent a celebration following the completion of the building project. The inscriptions on the stela include a list of canals built by order of Ur-Nammu.

Although much at least of the city's central area was destroyed in about 2000 BCE, presumably by invading Elamites, the city was soon rebuilt by the kings of the nearby city of Isin, who claimed to be the legitimate heirs of the Ur III state. Although Ur no longer served as the political capital, it functioned as an important religious and commercial center during the Isin-Larsa period (c. 2000–1760 BCE). The city reached its maximum areal extent of at least 60 ha (148 acres), and settlement in the immediately surrounding region seems to have peaked.



UR. Figure 1. *Stele erected by Ur-Nammu.* Dated to the third dynasty. (Courtesy ASOR Archives)

Excavations in the Temenos area provide testimony to the rebuilding of many structures within it. In various excavations around the city outside the Temenos, Woolley's work revealed residential quarters. Extensive exposures of domestic buildings were made in two central locations: the area known as EM, close to the southwestern edge of the Temenos, and the AH area, somewhat farther to the southeast. Numerous clay tablets found in the houses have been interpreted as indicating that the EM area was inhabited primarily by temple officials, whereas the occupants of the AH houses were more diverse. Both residential areas are composed of densely packed buildings separated by narrow, winding streets. The houses are typically built around an open central courtyard onto which most of the remaining rooms opened. Woolley argued that the houses contained two stories, a contention that has been challenged. Nearly half of the houses contain a room that appears, on the basis of its internal features, to have been used as a chapel. The functions of other rooms are more difficult to specify because of the infrequency of features or lack of information on where in the buildings artifacts were found. Nonetheless, the size, shape, and positioning of rooms shows considerable consistency among houses. Interestingly, fewer than 10 percent of the houses contain a clearly identifiable kitchen, indicating that cooking and baking must often have taken place outside the home.

Individuals of all ages were buried beneath the floors of the houses, in simple pits, clay coffins, pots, or brick tombs, accompanied by a range of pottery and jewelry, including beads, bracelets, finger rings, and earrings. Some individuals received greater wealth in grave offerings than others.

With the rise of Babylon in the eighteenth century BCE and continuing environmental degradation in southern Sumer, Ur's fortunes, as well as those of the other southern cities, began to decline. The city wall of Ur and many of the major public buildings were once again razed, this time following a major rebellion by the southern cities against Babylon's overlordship in about 1740 BCE. Nonetheless, the city remained occupied, and there is no indication of substantial destruction in the residential areas excavated. During the next few centuries people repaired and reused standing houses, rather than build new ones, and continued the practice of burying their dead beneath house floors. In about 1400 BCE, the Kassite king Kurigalzu restored many of the religious buildings in the Temenos area. Accompanying the

renewed building in the city was a proliferation of rural settlement.

Although the city remained occupied for another millennium, it seems not to have regained its earlier glory. A seventh-century BCE governor undertook restoration and some new building activities in the Temenos area, and the Neo-Babylonian kings Nebuchadrezzar (604–562 BCE) and Nabonidus (555–539 BCE) had the ziggurat, Temenos wall, and some residential areas rebuilt. However, not long after, in about 400 BCE, the city was abandoned.

[*See also* Isin; Larsa; Mesopotamia, *article on* Ancient Mesopotamia; Ubaid; and Uruk-Warka.]

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SUSAN POLLOCK

URARTU. The highland state of Urartu stretched from the eastern bank of the upper Euphrates River to the western shores of Lake Urmia, and from the mountain passes of northern Iraq to the Caucasus Mountains. The kingdom dominated eastern Anatolia in the eighth and seventh centuries BCE. It is noteworthy historically for its rivalry with Assyria and archaeologically for its massive fortress architecture and sophisticated metalwork. For a time, Urartu was the strongest state in the Near East. Its distinctive and relatively uniform culture, much of it imposed from above, to judge from the royal focus of the surviving documentary and archaeological evidence, permeated this realm. Urartu's glories, however, were relatively short lived and were forgotten soon after the kingdom fell victim to a violent destruction in the late seventh or early sixth century BCE. Even the name of Urartu faded from view: it was transformed into Ararat by later vocalizations imposed on the Hebrew Bible.

Origins. The word *Urartu* is taken from Assyrian records, not from those of the Urartian people themselves, who called their kingdom Bianili. When it first appears in texts in the thirteenth-century BCE in the variant form Uruatri, the term has geographic rather than political connotations. It designates a land divided among petty kingdoms in the vicinity

of Lake Van. Neither archaeology nor textual records shed much light on the situation there until about the middle of the ninth century BCE, when evidence of increasing political consolidation appears concurrently with more regular Assyrian intrusions. By the late ninth century, Urartu was a single polity on the north and east shores of Lake Van, governed from a capital at Tušpa (modern Van) by a native dynasty that left cuneiform inscriptions of building and military activities in its own language.

The population over which this emerging monarchy extended its authority appears, on linguistic grounds, to have been autochthonous. The Urartian language is neither Semitic nor Indo-European; it is related to Hurrian, which itself is thought to have migrated from the very areas in which the Urartians later came to power into the northern fringes of Mesopotamia in the third millennium. The genetic relationship of Hurrian and Urartian is close, and most scholars now favor the theory that they are sister branches with a common parent. In recent years, a relationship with living northeastern Caucasian languages has been posited, although this remains controversial.

History. The debt that the creators of the kingdom of Van owed their Assyrian antagonists is exemplified by the inscriptions of the first of the royal line, Sarduri I (c. 830–c. 820 BCE): they are not only written in Akkadian but are virtually plagiarized from display inscriptions of Ashurnasirpal II. This cultural dependency diminished as Urartu entered a phase of rapid conquest under Sarduri's successors, Išpuini (c. 820–c. 790 BCE) and Menua (c. 790–775 BCE), who appear to have established the template for the empire. The frontiers were quickly moved outward to the banks of the Araxes River, to the western bend of the Euphrates near Malatya, and to the southern and western shores of Lake Urmia. Menua in particular was a prodigious builder. His surviving inscriptions dedicating temples, storehouses, and fortresses outnumber those of all other Urartian rulers put together. From bronze plaques, belts, helmets, vessels, and horse trappings (most found in illicit excavations but attributable to specific kings thanks to the cuneiform notations they bear), it is clear that the basic canons of Urartian art were already formed by this time.

The trajectory of Urartian expansion continued for most of the eighth century BCE under three rulers: Argišti I (c. 770–c. 750), Sarduri II (c. 750–c. 720), and Rusa I (c. 720–c. 713). The first two have left lengthy inscriptions in the form of annals, demonstrating that they, like Assyrian kings of the same era, campaigned annually, and sometimes even more often, harvesting booty that was presumably an important source of revenue in the royal economy. The territory the two added appears for the most part to have been in the north, in what is now the Republic of Armenia. In the second half of the eighth century BCE, Assyria, which had been in eclipse for decades, revived in time to thwart Urartian ambitions south of the Taurus Mountains. The most celebrated confrontation between the two powers, however, took place in 714 BCE, when Sargon II of Assyria launched a campaign into the northern Zagros Mountains and, after defeating Rusa in battle, invaded a portion of Urartu itself.

Sargon's depredations were not fatal to the kingdom, but the reign of Rusa I does appear to be a turning point in several respects. Intelligence reports to the Assyrian king reveal that Urartu was in turmoil: at least one revolt against Rusa had broken out, and Cimmerians, mounted warriors who were to wreak havoc among the more sedentary peoples of Anatolia for a generation, made their first appearance in history by inflicting a major defeat on Urartian forces. It may merely be a coincidence, but from this time onward, Urartian royal inscriptions become much less abundant.

Nevertheless, Rusa's successor, Argišti II, recorded conquests farther east than any of his predecessors; Rusa II, a contemporary of Esarhaddon of Assyria (680–669 BCE), created massive fortress-cities at Karmir Blur, Bastam, and Toprakkale—sites that are today the primary sources of information on Urartian material culture. During the seventh century BCE, Urartu and Assyria appear to have coexisted more harmoniously than previously.

The end of the kingdom is obscure. Virtually every site that has been excavated had been put to the torch, but neither agents nor the dates of the destructions have been unambiguously identified. The thread of Urartian chronology breaks after Rusa II because there are insufficient native documents to establish either the order or the number of kings. In the sixth century BCE, political control of the area passed first to the Medes and then to the Persians; the Armenians, linguistically unrelated to the Urartians, became the dominant ethnic group.

Aspects of the Civilization. The Urartian state exploited and reinforced the defensive potential of its mountainous territory by creating fortresses on the edges of alluvial plains. Although some settlements associated with these fortresses have been investigated, the archaeology of Urartu has largely been focused on defensive and administrative networks, not settlement systems. It may well be that considerable cultural diversity existed below this state-created level, which was, after all, quite rapidly imposed.

Urartian fortresses, however, were a major part of the economy. They contained massive storage facilities, attested by large pithos magazines and dedicatory inscriptions of storehouses whose capacities are given in impressive quantities of either dry or liquid measure. Some sort of redistributive system is implied by their prevalence.

The spread of the Urartian state also appears to have coincided with the introduction of irrigation agriculture in eastern Anatolia. The amount of land available for this was severely restricted by the terrain, and the kingdom was ultimately composed of approximately twenty isolated pockets in which population and agricultural production were concentrated. Some of the territory between these was exploited by pastoralists, but evidence for Urartian culture itself is concentrated in the alluvial pockets.

Urartian kings appear to have been almost perpetually engaged in construction activities, and the scale of their enterprise is astonishing, given the presumably limited resources of manpower at their disposal in this mountainous environment. The normal practice was to construct citadels on elevated ground, carving footings walls directly into bedrock. The basic construction material was mud brick, supported by stone socles. Both the thickness of the walls and representations of fortresses in art indicate that the structures were several stories high, capped by crenellated battlements.

Ashlar masonry was employed in special structures, most conspicuously in a distinctive type of tower temple that had a square, single-room ground plan with reinforced corners. Every one of the eight archaeologically known examples of these towers is located on high ground within a fortress, and was thus the product of royal architectural planning. The testimony of texts confirms that building temples and performing sacrifices at them was a royal prerogative and obligation, and with an emphasis that suggests a form of state religion. Although the Urartian pantheon consisted of hundreds of deities, including such venerables as the storm god Teišeba and the sun god Šiwini (important gods of the Hurrians), royal inscriptions and building projects focus overwhelming on a supreme god named Haldi, who is prominent only in Urartian culture.

The Urartian's stoneworking abilities are also manifest in rock-cut chambers. Cult niches, false gates as places of worship, and subterranean chambers and staircases were hewn out of living rock in all parts of the kingdom. The largest of these projects were royal tombs at Van, consisting of multiple rooms and numerous niches.

Among the majority of the population, the dead were laid to rest in more modest surroundings. There is some evidence of cremation, with remains placed in urn fields, as well as of simple interment. Illicit excavations of cemeteries have flooded the antiquities market with unprovenienced bronze objects, including horse trappings, weapons, plaques, and decorated bronze belts. On these, and on the modest number of objects of art that have been found in association with citadels, a fondness can be seen for animal motifs, floral decoration, and the anthropomorphic representation of deities astride lions and bulls. Urartian art lacks the narrative character of Assyrian palace art. While some reliefs of quite high quality are known, this does not seem to have been as favored a form of artistic expression and architectural decoration as it was south of the Taurus Mountains.

[*See also* Anatolia, *article on* Ancient Anatolia; Assyrians; Hurrian; *and* Mesopotamia, *article on* Ancient Mesopotamia.]

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URBANIZATION. *See* Cities.

URKEŠ. *See* Mozan, Tell.

URUK-WARKA, ruined ancient city in southern Iraq, situated about 35 km (22 mi.) east of a main course of the Euphrates River, which flows through the provincial capital of Samawa (coordinates of ziggurat at Uruk: 31°19′18.5″ N, 45°38′25.6″ E). The name *Uruk* is the Akkadian rendering of a pre-Sumerian toponym UNUG, Erech of the Hebrew Bible (*Gn.* 10:10; *Ez.* 4:9). The modern name of Uruk is Warka.

The first excavator of Uruk was the Englishman William K. Loftus, in 1849 and 1853. About half a century later, the site was visited by Robert Koldewey, the excavator of Babylon (1899–1917). In 1912 Koldewey, acting for the Deutsche Orient-Gesellschaft (DOG), entrusted the direction of an archaeological expedition to Uruk to Julius Jordan, who had previously worked with him at Babylon and at Aššur with Walter Andrae. [*See the biographies of Koldewey and Andrae.*]

Only one campaign could be conducted before the outbreak of World War I. Work recommenced in 1928: eleven campaigns were carried out under the direction of Jordan, A. Nöldeke, E. Heinrich, and H. J. Lenzen. Excavation was once again halted by World War II.

Work was resumed in 1953, under Lenzen's direction, through 1967, and then, until 1977, under H. J. Schmidt. R. M. Boehmer has directed excavations since 1980.

At the time Uruk was founded, the Euphrates and the Tigris Rivers had not yet joined to form what is now the Shatt al-Arab. [*See* Euphrates; Tigris.] The coast of the Persian Gulf was situated about 80 km (50 mi.) farther to the northwest than at present. Uruk lay in well-watered, marshy alluvial land, covered by a network of river tributaries. For thousands of years, reed and mud thus constituted the most important building materials at the site, to which every stone had to be imported.

Uruk was founded in the fifth millennium, specifically during the last (the fourth) phase of the so-called Ubaid period. Ubaid levels were reached in deep soundings in the middle of Uruk, in Eanna (Sum., "house of heaven"), as well as in the western part of the city, in the area of the Anu Ziggurat; the deepest layers are today under groundwater. [*See* Ubaid; Ziggurat.] Remains of a Late chalcolithic culture were found there, of which the remnants of monumental buildings are significant. They appear to be so-called *Mittelsaal* ("middle hall") houses, which probably served as cult buildings, and are situated at the base of the ziggurat that had existed in the building's earliest phases. The pottery, of which numerous sherds have been found, is often painted and, occasionally, is of very fine quality. Clay figurines of cattle and numerous fragments of sickles indicate a farming culture. [*See* Agriculture.]

Uruk first consisted of two cities—Uruk and Kullab. Adam Falkenstein (1941) proposed that Kullab was situated in the precinct of the ziggurat of Anu (the great god of heaven), Uruk farther to the east, in the area later called Eanna. During the Uruk period, at the latest, both areas were united to form the city Uruk. The Uruk period, which followed the Ubaid 4 period, was first identified as such in Uruk. In this phase the city was so important an entire phase of Early Mesopotamian culture was named after it.

The excavations in Eanna uncovered the remains of an advanced civilization that was the oldest altogether. Remnants were found of numerous buildings of monumental scale, which have been interpreted as cult or administrative buildings. One of the most ancient is the so-called Limestone *(Kalkstein)* Temple. Its foundation layers consist of slabs of limestone that had been quarried west of the Euphrates, some 80 km (50 mi.) from Uruk, at the western edge of the Arabian shelf. The temple belongs to Uruk level V (c. 3600 BCE). Among the other buildings probably belonging to this level are the so-called Stone Building *(Steingebäude)* and the Stone Cone Temple *(Steinstifttempel).* The former consists of two surrounding passages and one middle room with a central platform. It was situated at the base of the extended ziggurat of Anu (phases F–B); its function remains unknown. The latter is so far the oldest known water sanctuary of any city in Mesopotamia. All three of these buildings share the use of limestone; in the case of the Limestone Temple, very hard cast-lime masonry was employed. The lower part of the outer walls of this building, situated inside a temenos, were decorated with gray-black, white, and red stone cones, after which it was named. Temple buildings of the *Mittelsaal* type were erected on the ziggurat and repeatedly renovated. The latest building phase is represented in part by the White Temple, in some sections still 2.5 m high, its walls covered with white plaster.

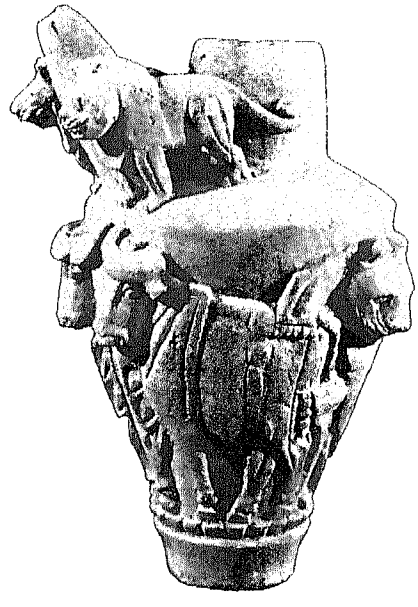
Construction activities flourished during the period of Uruk level IV, which was also characterized by numerous monumental buildings. In addition to small and large *Mittelsaal* buildings (e.g., buildings A, B [22 × 3.6 m], and C [54.25 × 22.5 m]) and *Hallenbauten* with occasional elaborate cone mosaics *(Pfeilerhalle,* or "hall of pillars"; *Rundpfeilerhalle,* or hall of round pillars", *Hallenbau*), there are unique building designs: buildings D and E; the subterranean Riemchen building (Riemchen are compact small bricks with a square section), which may have been laid out as a cenotaph and that was filled with a great number of cultural goods; and the Great Court *(Grosser Hof),* which

may once have been a garden. Carbon-14 dates from beams from temple C suggest a date of about 3500 BCE for the beginning of level IV, a finding supported by certain archaeological finds of Mesopotamian origin in Egypt at the time of Naqada IIc/d–III.

Beyond this grand architecture, there will have been private houses and a first city wall in this period at Uruk; their existence, however, has not yet been proven because of the city's enormous size (about 10 km, or 6 mi., in circumference), the depth of the archaeological layers (occasionally greater than 20 m), and because the excavators have concentrated their work in the city center. An indication for the existence of the city wall can be seen in a cylinder seal impression on a jar stopper from Uruk, excavated in Habuba Kabira. [*See* Seals; Habuba Kabira.] This seal impression demonstrates knowledge of the cylinder seal, which at the time probably developed from cylindrical beads decorated with incised geometric motifs and that, in its representations, immediately achieved high artistic quality.

Glyptic in this period consists, among other subjects, of heraldic scenes with mythical animals that are represented somewhat later in Egypt also: buildings (temples), the feeding of the temple herds, animal fights, lion hunts, and war scenes in which prisoners are taken.

Fine art also developed in other media: stone masons produced stone vessels decorated for the first time with basreliefs or with nearly three-dimensional figures; artisans even dared to use hard basalt (imported from northern Syria), for which figurative decoration for the most part had to be ground out, because copper and bronze tools were too soft for such work. Metal casting, already well known in the Ubaid 4 period, was employed not only to produce weapons and tools, but also small statues, using the lost-wax technique. [*See* Weapons, and Warfare.] Producing objects out of more than one element was particularly popular: for example, a limestone bull sculpture with silver legs and horns; stone vessels in which multicolored stone was used as decoration; and black-white-red or yellowish-gray mosaics covering the surface of clay or stone cones in patterns reflecting those of colorful reed mats. [*See* Mosaics.]



URUK-WARKA. *Decorated yellow sandstone ewer.* Proto-literate period; height, 8 in. Iraq Museum, Baghdad. (Scala/Art Resource, NY)

Pictorial representations are, in contrast to the Ubaid 4 period, no longer found on pottery. Mass-produced ware developed in the Early and Middle Uruk periods. The beveled-rim bowl, produced in molds and probably used as a rationing vessel or baking mold, was found in such numbers as to constitute a diagnostic ware of the Uruk period.

The development during the Uruk IV period of the so-called protocuneiform pictographic script represents perhaps the greatest achievement in early intellectual history. [*See* Cuneiform; Writing and Writing Systems.] It offers modern research a rich view of developments during the Archaic period. Precursors of writing were small clay and stone symbols, so-called tokens—a number of which were apparently transferred from three- to two-dimensional representation on clay tablets. [*See* Tablet.] Excavations at Uruk discovered far and away the greatest number of such tablets—indeed, the only known examples of texts from the earliest phase of writing came from this site. Uruk thus represents a unique center of early cultural development.

In the earliest script there is a sign—the pictographic representation—of a reed bundle, which later represented the goddess of love and war, Inanna (Sum., "lady of heaven"; Akk., Ishtar). She was, and remained until the end of Babylonian culture, the main goddess of Uruk. [*See* Babylonians.]

Late Uruk culture ends during the Jemdet Nasr period; it is represented at Uruk by level III. The following, so-called Early Dynastic period is, in its first phase (ED I), a time of radical change. Uruk was, as evidenced by numerous surface finds of pottery, even more intensively settled then than during the Uruk period. A mud-brick fortification wall (approximately 10 km long) that was, according to references in cuneiform literature, erected by Gilgamesh, enclosed the city. Remains of this wall are still visible. Little has been unearthed of the other construction works—merely houses and scant remains of monumental buildings. A high terrace was erected in Eanna. The population seems to have decreased in the ED II period. Scattered evidence points to settlement in only the western section of Uruk. The following ED III period left traces in the entire city, including in Eanna, where the terrace constructions were continued.

At the end of the ED III period, the sovereign of Uruk, Lugalzagesi, achieved rule over all of southern Iraq. This afforded him the power and means to commence an aggressive building program. The immense, so-called *Stampf-*

lehmgebäude ("pisé building") in Eanna—of which so far only foundations in an area of about 10,000 sq m have been excavated—and a large terrace in the northern part of Uruk are to be credited to his reign. It seems that both projects remained uncompleted, probably because the ruler was vanquished in a battle against Sargon of Akkad sometime around 2340 BCE. [*See* Akkade.]

After his victory, Sargon had the city walls of Uruk razed. He built his own Ishtar sanctuary, the Ulmash, in his city, Akkade. As a result, the cult of Ishtar in Uruk lost so much of its earlier significance it was merely administered part-time by the daughter of Sargon, Enheduanna. [*See* Cult.] Her main function was that of high priestess of the moon god Nanna in Ur. Lugalzagesi's monumental constructions were certainly also abandoned for this reason. Meager surface finds in Uruk suggest that there was a painful decline in the size of the population, which apparently only inhabited the northern half of the city. The Akkadian rulers paid tribute to Ishtar of Uruk just the same, as the fragment of a high-quality statue of a seated figure demonstrates. It is to be dated on stylistic grounds to the end of the reign of Sargon or to the reign of one of his sons—Manishtushu or Rimush. The statue may have been one of their sister Enheduanna's offerings in her priestly function.

The northern part of the city remained residential during the following Neo-Sumerian period. [*See* Sumerians.] After a short interlude, during which King Utuhegal of Uruk ruled Sumer, southern Iraq came under the rule of the kings of Ur. The first ruler of this dynasty, the so-called Third Dynasty of Ur, was Ur-Nammu. He pursued intensive building activities in Uruk (in Eanna the holy precinct of Inanna/Ishtar), in the course of which a ziggurat was erected over the Early Dynastic terraces. Up until the Seleucid period the precinct was repeatedly the object of more or less intensive construction. [*See* Seleucids.]

This empire collapsed in about 2000 BCE. Following a period of decline of some one hundred years, city rulers assumed control of Uruk in the early Old Babylonian period. One of these, Sinkashid, had a palace built for himself in the western part of the city that contained a peristyle court, one of the earliest known in the Near East.

According to the number and range of distribution of the surface finds in Uruk, the population was once again in decline; the primary residential area stretched from west to northeast. At the end of the eighteenth century BCE, settlement seems to have ceased altogether (no finds have been recovered from the second half of the Old Babylonian and the beginning of the Kassite periods). [*See* Kassites.] The reasons for this development are unclear; there was, in any case, no life-threatening change in climate because in neighboring Larsa the periods are well documented. [*See* Larsa.]

Settlement can be established only 250–300 years later in Uruk (c. 1450 BCE). The Kassite ruler Karaindash erected a small long-axis temple, dedicated to Inanna, in the eastern part of the ziggurat, that displays nearly life-sized mountain gods and water goddesses with vessels from which the water of life flows. This was a clear recollection of the original home of the Kassites, in the wet northeastern highland. The divinities, standing in niches in the outer facade, are made of molded bricks, a technique simultaneously employed in the eastern highland known as Elam. [*See* Elamites.] The selection of the settlement area also speaks for a new beginning at Uruk. It leaves the older areas in the northwest, north, and northeast untouched, stretching instead from the west through the southwest to the south. It can only be suspected that the primary temple precinct of that time is to be found below the Seleucid monumental structures Bit Resh and Irigal.

The population of Uruk in the period of the following Second Dynasty of Isin seems to have withdrawn to the confines of Eanna; clear evidence of settlement beyond this area is not known from that period. The Neo- and Late Babylonian periods once again witnessed more intensive construction work in Eanna—above all by the Assyrian kings Sargon II (710–705 BCE) and Esarhaddon in their function as rulers of Babylonia. Sargon built a new temenos wall around the ziggurat district (the first had been erected by Ur-Nammu), and the ziggurat was also renovated. Earlier, the Neo-Babylonian ruler Marduk-apla-iddina II (722–710 BCE) had erected, for Ningishzida, god of the nether world, a small temple east of the ziggurat, next to the Karaindash construction. Outside of the temenos were the houses of wealthy families. From the sixth and fifth centuries BCE of the Late Babylonian period the business associations of these families reached as far as Babylon. Settlement remains were found, moreover, in the southwest section of Uruk.

The Achaemenid period saw the steady continuation of Late Babylonian culture, which, in the Seleucid era, flourished again, despite Hellenistic influence, before it finally ceased to exist in the course of the Early Parthian period. [*See* Parthians.] There were, it appears, three rulers during the Seleucid period. The name of the first is unknown, and the second and the third bore a Babylonian name, to which they added a Greek name: Anuuballit Nikarchos and Anuuballit Kephalon. The casing of the ziggurat in Eanna, with mud bricks and a thin exteriors surface of baked bricks is, in all likelihood, to be credited to the first ruler, as is the reconstruction of an enormous mud-brick terrace (210 × 200 m) in the west, adjoining, on the southeast, additional terracing (90 × 80 m) and serving as substructure for a ziggurat. The two following rulers then erected two enormous temple complexes, one for Ishtar of Uruk (205 × 198 m) at Irigal and the other for Anu, who, with his wife Antum, was worshiped in the Bit Resh (213 × 167 m). This latter building lies close to the old Anu ziggurat, which then was connected to the terrace constructions (see above). That this building was a sanctuary of Anu is, failing any contradictory evidence, the very probable conclusion reached by Falken-

stein (1941). It is based on the spatial proximity of the building to the Bit Resh and on the idea of cultic continuity. [*See* Cult.] The type of construction (baked bricks) of this cultic building was very costly. It is not Greek, but rather represents the survival of the broadroom temple, known for almost two millennia in Mesopotamia. [*See* Temples, *article on* Mesopotamian Temples.] Greek influence may, on the other hand, be found in the minor arts—above all in the numerous terra cottas, in which Greek motifs replaced Late Babylonian ones, as was true as well of Babylonian glyptic. Two tumuli about 1.8 km north of Uruk contain Hellenistic furnishings; their opulence suggests that they contain the graves of the rulers of Uruk mentioned above. A third hill, about 2 km north of Uruk, which, because of its size, has not been examined, may also contain a tumulus—possibly that of the first of the three builders of the Seleucid period (see above). The clay-tablet archive of a priest found in Parthian houses in the southeastern part of Uruk contained, on the other hand, exclusively Babylonian, rather than Greek, cultic and prophetic texts, together with numerous administrative documents. [*See* Libraries and Archives.] Constructing these buildings certainly consumed enormous sums: the city's opulence can only be explained as a consequence of its position on a trade route going from India through the Persian Gulf to Greece.

After the Parthians conquered Mesopotamia, trade was blocked by an "Iron Curtain," and Uruk sank into oblivion despite the evidence of the presence of some wealthy citizens with richly furnished villas. [*See* Villas.] Babylonian culture died a slow death. The last known cuneiform tablet in the Babylonian language found in Uruk is from 108 BCE. The great temples of the Seleucid period fell into decay, and smaller buildings were constructed within them; a temple, whose ground plan corresponds to that of a temple erected in 111 CE in the southern part of Uruk, was built much later in the Bit Resh. Its type of construction is rooted in Roman architecture, and the inscriptions found in it are no longer Babylonian but Greek. The temple seems to have been built by merchants from the region of Mosul and dedicated to the otherwise unknown Gareus. Sea griffins are found as decorations on its capitals. The existence of this sanctuary may be understood as an indication of trade relations between the northern Mesopotamia/Mediterranean and Persian Gulf regions—the latter represented by apotropaic sea monsters. Beyond the temple precinct were workshops that produced glass and ceramics. [*See* Glass.]

Following the Parthian period, the Sasanians can be traced, above all in the southern part of Uruk, through finds of coins. [*See* Sasanians.] Such finds cease in the beginning of the fourth century CE. Activity in the workshops (see above) would have continued, but the Sasanian residential area lay to the southeast, outside of the city wall, well into the Late Sasanian period. A shift of an arm of the Euphrates in the eastern part of the city, farther to the east, may have forced the last inhabitants to abandon Uruk; they probably moved to a chain of hills, along a now no-longer visible watercourse (approximately 4 km, or 2.5 mi., east of the city), whose surface bore Sasanian material. The Sasanians attempted in vain to defend "al-Warka" in 634 CE against the assaulting Arabs; according to the archaeological record, al-Warka then did not designate Uruk itself, but presumably a tell about 4 km east of Uruk.

[*See also* Mesopotamia, *article on* Ancient Mesopotamia.]

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V

VAUX, ROLAND DE (1903–1971), professor of history and archaeology (1935–1971) and director (1945–1965) of the École Biblique et Archéologique Française in Jerusalem. Roland de Vaux earned a *Licence ès-Lettres* from the Sorbonne and was ordained a priest before entering the Dominican Order in 1929. His first book (1934) revealed his talent for medieval research, but it was a 1933 article on the relationship between Adonis and Osiris that alerted his superiors to his potential as an orientalist. He was sent to Jerusalem in 1933 and lived there until his death. One of the last of a generation of scholars whose mastery of excavation techniques was matched by a sophisticated understanding of ancient documents, he made significant contributions to both biblical studies and Near Eastern archaeology.

De Vaux was one of the moving spirits behind the celebrated Jerusalem Bible, to which he contributed the annotated translations of *Genesis, Samuel,* and *Kings;* he also wrote the two-volume *Les institutions de l'Ancien Testament* (1958–1960), which has been translated into many languages. Its originality of conception was reinforced by the author's sure grasp of the evolution of Israelite religious and civic structures. De Vaux did not live to see the publication of the first volume of his life's work, *Histoire ancienne d'Israël* (1971). A second volume was extracted from his notes by François Langlamet. Unhappy both with the optimism of William Foxwell Albright, who, he believed, failed to recognize the complexities of the biblical text, and with the skepticism of Martin Noth, who, he thought, did not do justice to the archaeological data, de Vaux sought to find a middle ground by critically assembling all pertinent data. Remarkable for its control of primary and secondary sources, his history reflected the state of research at the time of its publication. Scholars have since become more cautious about the possibility of writing a history of the patriarchs or of the Israelite conquest.

De Vaux's first excavation (1944), the ninth-century Arab caravanserai at Abu Ghosh, was published as *Fouilles à Qaryet el-Enab, Abu Gosh, Palestine* (1950). From this apprenticeship he went on to excavate for nine seasons (1946–1960) at Tell el-Far'ah (North), which he identified as Tirzah, the first capital of the northern kingdom. [*See* Far'ah, Tell el- (North).] An able practitioner of the Wheeler-Kenyon method of excavation, his annual provisional reports in the *Revue Biblique* were models of description and judgment. He died before publishing a final report. His mastery of the field is, however, evident in his surveys of ancient Palestine in the Neolithic, Chalcolithic, and Early Bronze Ages (1970, 1971). Many of his articles were collected under the title *Bible et Orient* (1967).

Work at Tell el-Far'ah was interrupted by the discovery in 1947 of the Dead Sea Scrolls. G. Lankester Harding, then director of the Jordanian Department of Antiquities, entrusted de Vaux with the excavation of Khirbet Qumran. [*See* Qumran.] He completed the project in five seasons (1951, 1953–1956). In 1952 he excavated the caves in Wadi Murabba'at and directed the exploration of the caves in the cliffs north and south of Qumran. [*See* Murabba'at.] In 1958 he excavated at Khirbet Feshkha, a farm on the outskirts of Qumran. Preliminary reports of these excavations, which were indispensable in establishing the historical context of the scrolls, appeared regularly in the *Revue Biblique.* The nearest to a final report that de Vaux produced was his 1959 Schweich Lectures at the British Academy, London. First published in French (1961), a thoroughly revised and expanded text was eventually translated as *Archaeology and the Dead Sea Scrolls* (1973).

Once the quantity of textual material coming out of the Qumran area was recognized, de Vaux was invited to organize an international and interconfessional team to publish the documents. He solicited nominations from professional organizations and eminent scholars in Europe, England, and the United States and brought together a group as balanced as political circumstances permitted, both with respect to religion (four Catholics, three Protestants, and one Agnostic) and nationality (two French, two English, two American, one Pole, and one German). He contributed the archaeological section to each of the five volumes of *Discoveries in the Judaean Desert* that appeared under his general editorship.

[*See also* Dead Sea Scrolls; École Biblique et Archéologique Français.]

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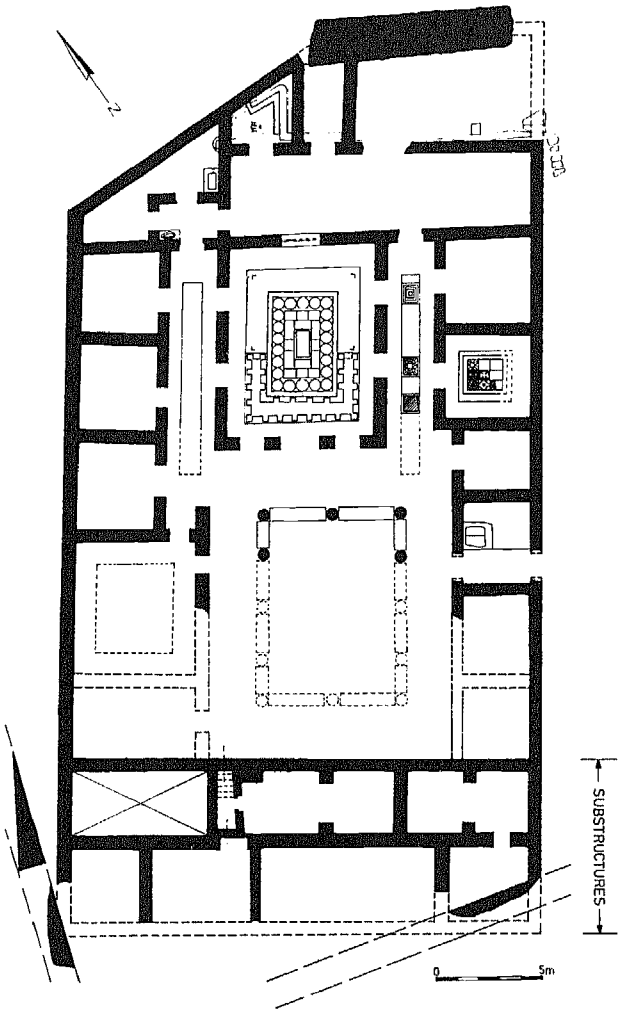

VILLA. *Plan of a Roman villa.* Sepphoris, Israel. (Courtesy Joint Sepphoris Project)

VILLA. In the eastern provinces of the Roman Empire, the development of villas of distinctly Roman type—with mosaics, baths, and other luxury features—was less common than in the west. Throughout most of the Roman east the nucleated village (Gk., *kome*), not the villa, formed the principal unit of rural settlement. The building of Roman villas, where it did occur, was restricted mainly to suburban areas on the outskirts of major towns. Greek writers refer to these villas as *proasteia* or *kepoi* (lit., "gardens"), usually implying their association with small landholdings, especially vineyards and orchards.

The influence of Roman villa building can be seen at an early date in the Herodian palaces at Jericho and Herodium. Here Roman construction technology was used to create magnificent royal residences that included baths, colonnades, and halls decorated with imported marble and other luxury building materials (see Netzer, 1975, 1990). During the first centuries of Roman rule in the east, however, such an imitation of Roman villa architecture is rare. Few of the villas excavated in the eastern provinces have been dated earlier than the fourth century CE. Examples include second-century villas found near Ephesus and Antioch, and the recently excavated third-century villa at 'Ein-Ya'el near Jerusalem (for a discussion of the mosaics, see Roussin, 1993; compare the fine third-century mosaics from the "Roman Villa" at Sepphoris, for which see Meyers et al., 1992). Compared with many western villas these were not particularly luxurious buildings, but their marble columns, bathing installations, and mosaics reflect a growing taste for Roman technology and sophistication.

In contrast to these romanized suburban villas, most rural buildings in the eastern provinces preserved a strong regional character. On the Syrian plateau and in the hill country of Judea (Judah) survey and excavation have revealed the remains of numerous stone-built village houses and farms *(villae rusticae)* that belong to a distinctive, non-Roman architectural tradition. The recent excavation of two

utilitarian farm buildings (containing wine presses, stables, and storerooms) at Manṣur el-ʿAqeb near Caesarea provides further illustration of enduring local building practices in the countryside of the Roman east (for these excavations, see Hirschfeld and Birger-Calderon, 1991).

In the Late Roman period, following the transfer of Roman imperial power to Constantinople in the early fourth century CE, the evidence for Roman villas in the eastern provinces increases significantly. Written sources contain frequent reference to rich villas the imperial family built or acquired in the region of the new capital. These included several villas along the Bithynian coastline, as well as the great suburban palace at the Hebdomon on the Sea of Marmara. Built originally as a seaside villa by the emperor Theodosius, this celebrated imperial residence was extensively rebuilt by Justinian in the sixth century, with the addition of a new audience chamber and banqueting hall (see Thibaut, 1922).

The example set by the imperial family was emulated by the wealthy urban aristocracies. Late Roman sources tell of many senatorial families with elegant villas on the outskirts of Constantinople. Most of these villas included bathhouses and other luxury features; in one case a private hippodrome is attested. In his treatise the *Antiochikos* (Or. 11.234–239), the fourth-century orator Libanius talks admiringly of the many rich villas and gardens that existed at Daphne, a hilltop suburb of Antioch. A contemporary suburban villa of typical Greco-Roman design is described in a letter by Gregory of Nyssa. This villa, located in the Roman province of Galatia, combined an elegant colonnaded interior with a strongly built and turreted exterior designed primarily for security purposes.

The evident Late Roman boom in villa building in the east hinted at in the written sources is supported by a growing amount of archaeological evidence. At Antioch, excavation has revealed several fine Late Roman villas in suburban locations, including the richly decorated villa at Yakto (see Lassus, 1938). Traces of luxury villas have also been noted in the suburban zone around Roman Beirut. A more rudimentary type of villa is represented by recent discoveries at Jalame near Haifa. There the remains of a fourth-century rural building include hypocausted floors and a mosaic-lined wine press. The site also produced considerable evidence for glass making, suggesting an important additional component of the local villa economy (see Weinberg, 1988).

[*See also* Baths; Building Materials and Techniques, *article on* Materials and Techniques of the Persian through Roman Periods; House; Mosaics; *and* Peristyle House.]

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VILLAGES. The most characteristic form of rural settlement across Western Asia from the beginning of settled life down to the present day has been the village. It has formed, with towns and cities, an essential part of the settlement hierarchy. Many of the fundamental aspects of village life were first established by the people of ancient Western Asia and persisted there over a very long period of time.

Geographers define villages as clusters of five or more households, whose inhabitants are primarily engaged in agriculture and related pursuits. Villages usually contain a few workshops run by specialist artisans, and some of their inhabitants may conduct a little commerce. There are some modest distinctions of wealth and class among the inhabitants. Provision for religious needs often takes the form of a building constructed especially to accommodate rituals and ceremonies. Villages are located adjacent to good arable land with access to a regular supply of water. The villages of ancient Western Asia possessed several of these features, though not all were present at the beginning.

Villages across Western Asia had a characteristic form and structure that took shape at the inception of settled life more than ten thousand years ago. They were always nucleated—consisting of a tight cluster of houses with only narrow lanes

between them and with few open public spaces. Nucleated villages are typically found in regions with few water sources, which obliged groups of people to build their houses close together near a spring or well. Such villages were relatively easy to defend, even without the protection of a circuit wall. Few villages in Western Asia had walls, but many needed the protection against marauding pastoral nomads such the dense agglomerations of buildings afforded. Some farming activities—preparing the soil for planting, animal herding, and constructing irrigation works—historically were performed by the community as a whole; and the village itself held some of the land adjacent to it in common. In such communities authority over access to land, water, and grazing rights was vested in a governing body or an individual. These villages were essentially self-sufficient in the necessities of life, but also participated in a larger world through their relations with nearby towns. They provided the towns with their surplus of food and their craft products, receiving in return goods not made in the village. At times of strong government, they were subject to a central political authority and owed it tribute.

Traditional village houses were built of locally available materials—stone in the uplands and mud brick on the plains. The rooms were often quite small because they were used mainly for sleeping and eating. The warm climate encouraged people to conduct most of their other activities such as food preparation, cooking, and crafts out-of-doors, in walled yards alongside their houses. It was there, too, that they kept their livestock and stored their crops. There was a sharp distinction between the private activities of the household within its walls and the public life of the village beyond. Traditionally, the household was the women's domain, while the men worked the fields and tended the livestock, with help from the women and children in labor-intensive times such as the harvest. The basic social and labor unit was the household, but lineage affinities were also an essential feature of traditional village societies in Western Asia.

The origins of these villages and their distinctive way of life lay in the first sedentary settlements formed by Epipaleolithic hunters and gatherers toward the end of the Pleistocene epoch. One of the oldest of these was a hut for a single household built at 'Ein-Gev on the east shore of the Sea of Galilee by people of the Kebaran culture, about sixteen thousand years ago. [*See* 'Ein-Gev.] The first true villages were established during the twelfth millennium BP (based on uncalibrated C-14 determinations). At 'Ain Mallaha, a site of the Natufian culture, in the Upper Jordan Valley, and at Abu Hureyra on the Middle Euphrates River. At 'Ain Mallaha a series of circular huts was set close together on a hillside near a spring. The Epipaleolithic village of Abu Hureyra 1 was composed of a series of multiroomed pit dwellings roofed with timber, branches, and reeds, later replaced by aboveground huts. Inhabited for one thousand five hundred years, this site was one of the first permanent villages established in Southwest Asia. Both settlements were inhabited by hunters and gatherers, demonstrating that village life began before the inception of farming.

The development of agriculture based on cultivated crops and herds of domesticated animals about 10,000 BP provided a firm economic basis for settled life. New villages were founded all across Western Asia, and they remained the predominant form of settlement for three thousand years. These Neolithic villages were much larger than those of the Epipaleolithic era, an indication of the growth in population that took place following the adoption of farming.

The houses in the earliest Neolithic villages were round or oval, with one or more rooms. These structures, architecturally similar to the huts found on Epipaleolithic sites, have been found in villages from Pre-Pottery Neolithic A Jericho in the west to Mefa'at on the eastern fringe of Mesopotamia. [*See* Jericho.] They seem to have been lived in by extended families. Later, the round houses were replaced by rectilinear ones with multiple rooms. It was a relatively easy task to extend such a structure, so the house could be expanded to accommodate a growing family. Diana Kirkbride (1966) and Brian Byrd (1994) have documented the change from round to rectilinear houses at Beidha in about 9000 BP and identified a large building in the center of the village that the community used for meetings and other events. [*See* Beidha.] The people of Jericho constructed a large stone wall around the village, in part for defense, and a stone tower inside, the earliest monumental architecture in the world.

The society of these early villages was largely egalitarian, with no individual enjoying significantly greater wealth than another. Burials under the floors of houses and special treatment of skulls suggest that people throughout the Levant and in Asia Minor revered their ancestors and believed in an afterlife. Special buildings for the dismemberment of the dead found at Çayönü and Nevalı Çori in southeast Asia Minor provide the earliest evidence for the construction of ritual buildings. [*See* Çayönü; Nevalı Çori.]

The inhabitants of these early villages engaged in some minor exchange of exotic goods, mainly obsidian from Asia Minor, other stones, and marine shells. Once pottery began to be made, in about 8000 BP, it too was exchanged. Such traffic, albeit on a modest scale, enabled these communities to maintain social contacts with each other that facilitated, for example, obtaining marriage partners. These contacts became more regular once the first towns developed after 7000 BP. The foundation of true urban settlements in the Halaf and Ubaid cultures (e.g., at Tell Ḥalaf in the northern Jezireh and Eridu and Tell 'Uqair in southern Mesopotamia) marked the emergence of a settlement hierarchy that persisted into modern times. [*See* Ḥalaf, Tell; Ubaid; Eridu.] Trade in pottery, obsidian, and, doubtless, perishable goods increased between the villages and these new towns; however, each village continued to be self-sufficient in food.

During the historical periods, the density of rural settle-

ment waxed and waned according to political circumstances and fluctuations in rainfall. In times of political stability village life could prosper, but when order broke down it might be severely disrupted. Similarly, a series of dry years could lead to a sharp regression of villages along the extensive margins of the dry farming zone. Thus, numerous villages on the Middle Euphrates River were inhabited during the Early and Middle Bronze Ages, but settlement sharply declined during the Late Bronze Age into the Iron Age; it seems that during the episodes of Mitannian and Hittite supremacy, rural settlement faltered. Numerous villages were founded in Roman and Byzantine times—two of the high points of rural settlement during the lengthy period of human occupation being considered here; many of those villages were abandoned during the decline of village life that took place as the Byzantine hold on Western Asia weakend.

The advent of urbanism created conditions in which institutions and individuals could acquire extensive estates farmed by a dependent peasantry, for example in Mesopotamia during the Ur III and Old Babylonian periods, on the ʿAmuq plain during the eighteenth century BCE, and in the extensive later domains of the Sasanian kings. The villages that housed those farmers were relatively impoverished, with little in the way of community facilities. Villages that controlled their own lands, especially in the more fertile regions, were more likely to enjoy a degree of prosperity.

One of the more distinctive features of Western Asia today is its mosaic of peoples: villages adjacent to each other may be inhabited by different ethnic groups with noticeably different material goods. Given the movements of peoples recorded in historical documents from earlier periods, it is likely that this pattern has ancient roots and may account for the differences in artifacts sometimes noted between contemporary sites.

The most striking element of village life in Western Asia is, however, its extraordinary continuity. The houses excavated in the Neolithic village of Abu Hureyra 2 on the Euphrates (c. 8000 BP) are similar in external shape and in many details of construction to those found in the region today. Similarly, the large, multiroomed dwellings found at the Ubaid site of Tell Madhhur in the Hamrin basin in eastern Mesopotamia inaugurated a type of house plan that was to remain typical of villages there into modern times. The farming economy on which the villagers themselves depended almost from the beginning—the cultivation of wheat, barley, and legumes and the raising of domestic animals (notably sheep, goats, and cattle)—has remained the basis of rural life.

[*See also* Cities.]

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A. M. T. MOORE

VINCENT, LOUIS-HUGUES (1872–1960), professor of archaeology at the École Biblique et Archéologique Française in Jerusalem (1895–1960), characterized by William Foxwell Albright (1961) as "the unrivalled master of Palestinian archaeology." Vincent entered the Dominican

Order in 1890. The following year he was sent to Jerusalem, where he remained until his death.

Born with an artist's eye for architectural features, quick to appreciate the significance of the ceramic typology formulated by Sir William Flinders Petrie in his excavation of Tell el-Hesi in 1890, and assiduous about visiting every type of excavation, Vincent was admirably equipped to write the first scientific synthesis of the results of Palestinian archaeology (1907). Thereafter, in more than two hundred articles in the *Revue Biblique,* he reported and critically evaluated every new excavation.

Such mastery made Vincent "tutor of all" (Albright) the new archaeologists who came to Palestine after World War I. In 1922, John Garstang, director of the Mandatory Department of Antiquities, invited him to be a member of the committee that officially fixed the division and names of the archaeological periods for ancient Palestine.

Vincent recorded the incidental finds of Montague Parker's hunt in 1909–1910 for the Temple treasures on the Ophel ridge (1911) as well as the discoveries made beneath the Ecce Homo Convent in Jerusalem (1933). His own excavations at ʿAin Douq (1920) and Emmaus (Amwas)/Nicopolis (1932) were no more than salvage operations because of lack of funds. His enduring achievement is the series of massive studies of monumental complexes in Bethlehem (1914), Hebron (1923), and Jerusalem (1912–1926, 1954–1956). Though subsequent investigations have inevitably imposed corrections, these volumes remain indispensable because of the quantity of data they assemble, their record of what has since disappeared, and the integration of textual data supplied by F.-M. Abel.

[*See also* École Biblique et Archéologique Française.]

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JEROME MURPHY-O'CONNOR, O.P.

VIROLLEAUD, CHARLES (1879–1968), French epigrapher of cuneiform. After studying history, geography, and Semitic languages in Paris at the Sorbonne and the École des Langues Orientales Vivantes from 1897 to 1900, Virolleaud set out to copy cuneiform tablets from Nineveh in the British Museum's collection and, later, in Istanbul, Sumerian tablets from Lagash. While teaching at the Université de Lyons, he published his work on Chaldean astrology (1905–1912). He visited Anatolia in 1909 and spent 1913 in Persia. From 1920 on, he was in charge of the antiquities department France had organized in Lebanon and Syria. In 1928 the discovery of a tomb at Minet el-Beida, which led to the identification of Ras Shamra with Ugarit, gave an unforeseen direction to his scientific activity: in 1929, Claude F.-A. Schaeffer entrusted him with a number of tablets written in an unknown cuneiform writing. Without waiting until he had deciphered the writing, and with the language the writing recorded also unknown, he put the texts at the disposal of specialists (Virolleaud, 1929, pp. 304–310). After examining the texts he arrived at several conclusions: he observed that the small number of symbols indicated an alphabetic system; that words so brief did not include vowels; and that the first sign of inscriptions on bronze objects might indicate that they were votive in nature. Influenced by his observations and also by the tomb's Mycenaean affinities, he at first thought he was working with an Aegean language. On 1 and 5 of October and on 8 December 1930, the identifications contributed by Hans Bauer, Virolleaud, and Édouard Dhorme, covering the entire alphabet, resulted in the full decipherment of the Ugaritic alphabet. Virolleaud became director of studies of the fifth section (religious sciences) of the École Pratique des Hautes Études in Paris, where his courses were based on newly discovered texts until the end of his career.

[*See also* Chaldeans; Ugaritic; Ugarit Inscriptions; *and the biography of Schaeffer.*]

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PIERRE BORDREUIL

Translated from French by Melissa Kaprelian

VITICULTURE. Archaeobotanists have sought the earliest evidence for cultivation of the grape vine (*Vitis vini-*

fera L.) within the zone where its wild ancestor (*Vitis vinifera* subsp. *sylvestris*) occurs naturally: southern Europe, along the northeastern Mediterranean and Black Sea coasts, inland across northern Syria and southern Anatolia, and into the Caucasus and Central Asia (Zohary and Hopf, 1993). Although the wild vine would have grown primarily in relatively moist riparian environments, vineyards, irrigated and not, have extended its range.

Through cultivation, grape seeds tend to become thinner, but the wild and domestic types (*Vitis vinifera* subsp. *vinifera*) cannot be definitively distinguished on morphological grounds alone. Archaeobotanical evidence for cultivation therefore also includes occurrence on archaeological sites of grape seeds in substantial quantities and of the charred wood of the vine (the latter more likely to reflect discarded pruned branches than firewood collected from the wild).

Applying these criteria, the earliest archaeological examples of grape were most probably collected from the wild. Few in number, they date to the Aceramic Neolithic, more than nine thousand years ago (e.g., from Çayönü, Aswad, and Jericho). [*See* Çayönü; Jericho.] Cultivation of the vine seems to have begun during the fourth millennium in Southwest Asia (Zohary and Hopf, 1993). Grape-growing and wine-producing sites dating to the end of that millennium are found in Egypt. By the mid-third millennium, viticulture had spread throughout Southwest Asia and beyond. It is in archaeological deposits from that time that concentrations of seeds are found from the Mediterranean to eastern Iran: for example, in burial offerings at Bab edh-Dhraʿ, Jordan, and Shahr-i Sokhta, Iran. [*See* Bab edh-Dhraʿ.] Evidence of the growing importance of the vine appears in the high frequency of grape seeds in archaeobotanical samples from third-millennium deposits at Kurban Höyük, Turkey. Also at that site was a large pit containing many charred seeds, stems, and fruit remains of the grape. A high concentration of mineralized grape seeds in a cess deposit at Malyan (c. 2000 BCE), in southern Iran, is probably the best direct evidence that the fruit was eaten (Miller, 1991). [*See* Malyan.]

The earliest evidence for wine comes unexpectedly from Godin, in western Iran (late fourth millennium), where residues of tartaric acid were identified from distinctive jars (McGovern and Michel, 1994). [*See* Godin Tepe.] It is known from later texts that where the vine was an important cultigen, its primary use was for wine production. However, viticulture was even practiced by the irrigation civilizations of lower Mesopotamia, where the grape and its products (like syrup) seem to have remained specialty items (Powell, 1994).

In addition to the archaeobotanical, chemical, and textual evidence for viticulture, the vine is depicted in the art of ancient Southwest Asia, appearing, for example, on a few Elamite (c. 2000 BCE) sealings from southwestern Iran. By Assyrian times, images of vineyards around besieged cities were used symbolically to distinguish landscape from wilderness.

The products of the vine have many culinary uses whose cultural significance extends beyond their immediate dietary value. Grapes, raisins, and grape syrup should not be underestimated as sources of sweeteners for peoples who did not have many ways of getting quick and tasty calories (Powell, 1994). In addition, wine vinegar can be used in preserving food. The vine was (and continues to be) most important in wine making, however.

It is difficult to identify the technology associated with small-scale wine production. The stoppered jars in which wine residues were found at Godin were particularly suited to their storage task: clay "rope" designs applied to the outside of 30- and 60-liter vessels would have prevented rolling, which suggests that they may have been stored horizontally (Badler, 1994). No grapes were found in the archaeobotanical samples, however, and no wine-pressing installation was excavated. Grape cultivation on a large scale, at least in the Levant, seems to be associated with wine production as early as the third millennium (Early Bronze Age), when grape presses are carved into bedrock (Stager, 1985).

Wine became the primary drink in the eastern Mediterranean region for social as well as religious occasions. As grapevines take several years to mature, the development of viticulture on a large scale requires social stability. Lawrence Stager (1985) suggests that in the Levant widespread adoption of viticulture and wine production are associated with that development as early as the Early Bronze Age. By Late Antiquity, it had become a major trade item as well in those areas with access to relatively cheap sea transport (McGovern et al., 1994). In contrast, wine is scarcely mentioned in Mesopotamian texts until the Middle Bronze Age, when those societies came increasingly in contact with the Levant. In Mesopotamia, therefore, wine seems to have been restricted to luxury or religious contexts (Powell, 1994).

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NAOMI F. MILLER

VITREOUS MATERIALS.

[*This entry surveys the history of vitreous materials with reference to the technologies used to create them, the uses to which they were put, and their overall role in the cultures and societies in which they figure. It comprises four articles:*

Typology and Technology
Artifacts of the Bronze and Iron Ages
Artifacts of the Persian through Roman Periods
Artifacts of the Byzantine and Islamic Periods

The first serves as a general overview, while the remaining articles treat the artifacts of specific periods and regions. For related discussion, see also Glass.]

Typology and Technology

The term *vitreous materials* encompasses a range of artificial glassy and glazed materials. In addition to glass in the generally accepted sense, it includes materials as diverse as pottery glazes and Egyptian Blue, a synthetic pigment that may contain a negligible proportion of glass. These materials are grouped on the basis of a number of rather loose criteria. First, they are silicates, the products of high temperature processes, or pyrotechnologies, which cause the production of a certain amount of glass in the material. Second, they are typically not clay based, although they may be associated with fired clay material, as in the case of pottery glaze. Finally, in Near Eastern archaeology, early vitreous materials tend to be based on the chemical system soda-lime-silica (Na_2O-CaO-SiO_2). Some vitreous materials based on mixtures of lead oxide and silica were introduced but, before Islam, their importance tends to have been peripheral.

Among the particular difficulties in dealing with vitreous materials is the problem of identification. Typically high-fired, fine-grained, and glassy—commonly with a layered structure which may hide the nature of the core and often turquoise or blue in color—there has been confusion between the various frits and faience, with blue minerals such as azurite, and with glazed and fired clay bodies. The problem is compounded by weathering, which may dramatically modify color and morphology, as well as remove glaze layers, completely eliminating the original characteristics. Recourse to scientific techniques such as microscopy and X-ray diffraction may be necessary if an accurate and unambiguous identification is to be made. [*See* Microscopy; X-Ray Diffraction Analysis.]

Terminology. Because the application of some terms contradicts modern technological practice, the terminology of early vitreous materials has been found to be wanting. However, terms such as *frit, faience,* and *glassy faience* are used in numerous important publications, and to abandon them now would only add confusion to an already troubled area. The current consensus of understanding, follows.

Glass. A glass is a material which was formed in the molten state and cooled sufficiently rapidly so as to retain the disordered structure of a liquid. While modern glass is commonly colorless and transparent, early glass was commonly colored and often opaque; it was intended to imitate precious and semiprecious stones such as turquoise and lapis lazuli. These effects were achieved by the solution of colorant metal ions in the glass and the addition of an opacifier, which by producing a dispersion of fine particles, inhibits the transmission of light.

Glaze. A layer of glass which coats another material is a glaze. In an early Near Eastern context, glazes may be found on stones, particularly steatite (talc) or quartz, on frits and on clay-based pottery, brick, or tile. [*See* Tile.]

Frit. A frit is a polycrystalline body (i.e., it is composed of many crystalline grains) which has been heated so that it sintered (the constituent grains adhered as a result of localized melting at their points of contact). Such frits are commonly porous and relatively weak and friable because of the low degree of melting. Two types of frit, faience and Egyptian Blue, are commonly encountered.

Faience. A composite material, faience is composed of a sintered quartz body with an overlying glaze. A sintered quartz body without glaze can be found and may not, strictly speaking, be termed faience. However, faience glazes are thin and readily removed by weathering; it may be extremely difficult to determine if an object now of sintered quartz was originally faience in the strict sense of the term. Closely related to faience in composition and structure is stonepaste, a quartz-rich frit body developed by Islamic potters late in the first millennium CE. Other, less common categories of vitreous material include glassy faience, essentially a glassier variety of faience body, but with a distinctive composition.

Egyptian Blue. A synthetic copper calcium silicate ($CuCaSi_4O_{10}$, equivalent to the natural mineral cuprorivaite), Egyptian Blue commonly occurs intimately mixed with quartz (a raw material which has not completely re-

acted), sometimes along with a certain amount of glass formed in firing. Also distinguishable are pale-blue and green frits, high-lime/low-copper relatives of Egyptian Blue which are glassy or have crystalized a pale calcium silicate rather than the deep-blue copper calcium silicate characteristic of Egyptian Blue itself. However, unambiguous identification of these depends on physicochemical methods.

In view of the difficulties in identification, P. R. S. Moorey (1994) points to the benefits of a purely descriptive terminology based on macroscopic features: glazed composition for faience and faiencelike materials and unglazed composition for fritlike materials where a glaze may not be unambiguously identified. Such an approach is to be prefered to guesswork, where it is not possible accurately to characterize the materials concerned.

Raw Materials. Silica, the major constituent of glass, is found almost everywhere in the form of quartz sand or pebbles of quartz or chert; however, the melting point of the pure material, at around 1700°C, is substantially above the temperatures that were attainable in preindustrial kilns and furnaces. The production of vitreous materials depends on the dramatic fluxing effect of alkalis and lime on this high melting temperature. The admixture of a few percent alkali will allow a substantial amount of melting at temperatures well below 1000°C; about 20 percent will allow complete melting and the formation of a glass at these relatively moderate temperatures.

Two sources of alkaline flux appear to have been used by early Near Eastern craftsmen. The most widely available was the ash produced by the burning of plants that grew in saline (desert) environments. In addition to soda, these plant ashes contain substantial amounts of potash, lime, and magnesia. The alternative source of alkali was natron, a naturally occuring mineral soda (the trona of geologists). The only major natron deposit currently recognized as a source for the ancient Near East is in Wadi Natrun in Egypt. Natron is a relatively pure form of soda and lacks the impurities characteristic of plant ash. Chemical analyses may therefore provide an indication of the alkali source used—natron-based materials having low potash and magnesia relative to soda.

Pure alkali silicate glasses are soluble in water; a glass or glaze must contain some lime (calcium oxide) as well, to render it stable. It is believed that lime was not usually deliberately added to early vitreous materials as a separate ingredient; instead, it was included incidentally, as a component of either the flux or the sand. In order to make a successful glass or glaze using a pure natron, a calcite-bearing sand was introduced as a source of both silica and lime; the use of a plant ash provided sufficient lime with the alkali to allow the use of a relatively pure silica source such as crushed quartz pebbles.

Manufacture and Fabrication. Archaeological evidence for the manufacture of faience, frit, and glass from their raw materials is rare; where reported, it has, on the whole, proved less enlightening than might have been hoped. Most of what is understood depends on ethnographic observations of traditional crafts, analysis of the materials themselves, experimentation, and the interpretation of limited textual evidence.

A faience body was prepared from very fine crushed quartz or sand bound by water, probably with a small amount of gum. It could be modeled using simple tools and by the New Kingdom period in Egypt was being pressed into open-face molds. While a pure quartz body lacked the plasticity to allow it to be thrown on a potter's wheel, it has been suggested by Pamela B. Vandiver (in Kaczmarczyk and Hedges, 1983) that in Ptolemaic times a small amount of clay was introduced to allow vessels to be thrown. Three methods of glaze application were possible: (1) by mixing alkali with the body when wet, which migrated or effloresced to the surface as the body dried (on firing, the alkali-quartz mixture at the surface reacted to form a glaze); (2) by burying the shaped faience object in an alkaline glazing mixture which, on firing, reacted with the body to produce a surface glaze layer by a process termed cementation; and (3) by applying a raw glaze mixture or already fritted glaze to the surface. Evidence for all three approaches—efflorescence, cementation, and application—has been reported from the examination of faience artifacts. Colorants were added to the glaze mixture or to the body itself, as finely divided pigment particles or as colored frit or glass. Some of these moved to the surface as the object dried, producing a strongly colored layer. Surface coats or slurries of colored body material could also be added and polychrome effects achieved by the inlay of colored body material. The systematic study of the decorative techniques used in faience production is in its infancy, however.

Egyptian Blue appears to have been formed from a mixture of calcite-quartz sand, copper oxide, and a small amount of alkali. The presence of small amounts of tin or arsenic in some of the material suggests that the copper source was scale formed by heating copper-metal scrap. Upon firing, the calcium and copper oxides, with a proportion of the quartz, reacted to form the Egyptian Blue compound. The alkali formed small amounts of a melt phase which helped the reaction proceed faster and at lower temperatures. The color of the Egyptian Blue depended on the grain size of the crystals formed and their concentration. In turn, this depended on controlling the proportions of raw materials, the degree of grinding, and any repeated grinding and refiring of previously fired material. Like faience, Egyptian Blue could be molded or worked into shape in an unfired state; alternatively, it could be worked after firing. In addition, it was crushed and used as a pigment in mural painting and pottery decoration. [*See* Wall Paintings.]

Experimental replication suggests that the firing temperatures of frits such as Egyptian Blue and faience were similar—in the range of 850–1000°C. Durations were probably of the order of hours, as opposed to days or minutes. Firing

atmospheres were generally oxidizing, as copper is almost invariably in an oxidized, blue state. These conditions are typical of those that were used to fire pottery kilns throughout the Near East. The development and production of frits and faience did not depend on special or extreme kiln or furnace regimes, but rather on the skilled manipulation of the materials used. The glazing of pottery or stone required temperatures similar to those used in firing faience, frits, and pottery itself. The examination of glazed steatite has shown that the glaze was applied by both the cementation and application approaches; on clay-based pottery, brick, and tile, the raw glaze mixture or a glaze frit would have been applied.

The production technology of glass is considerably more demanding. Although based again on a mixture of alkali and silica, the production of a fully molten, homogeneous melt which could be cooled to a glass would have required higher temperatures and longer melting times. A multistage process, involving preliminary fritting of the raw materials and intermediate crushing and grinding, may have been used. Manipulation of molten glass in the hot, plastic state, and the need repeatedly to reheat an object during the fabrication process (so that it could be continually worked), would have required specially designed furnaces with different characteristics from those used in pottery or metalwork. Glassmaking itself, when fully developed, is likely to have involved skills, procedures, and equipment considerably more sophisticated than those involved in the production of other vitreous materials.

Origins and Early Development. Early experiments with glazed stones are likely to have stemmed from observations of glazing which accidentally occurred when alkaline fuel ash reacted with pebbles or small worked-stone objects in a strong fire. By the mid-fifth millennium, small faience objects, with a core of crushed quartz, were widespread. Many early glazes are turquoise or blue, from dissolved copper; this association with copper has prompted speculation of a relationship between the development of the early vitreous materials industries and copper metallurgy. Direct evidence for such an association early in the Bronze Age is yet to be presented, although in the Late Bronze Age workshops producing vitreous materials were sometimes located close to those of metallurgical and other industries (e.g., Qantir, Egypt).

Small objects of a glass-rich material, typically colored blue and without a distinctive glaze layer, are known from a number of sites dating to the late third millennium. Although the results of detailed physical examinations of these objects have not been published, they appear to represent the earliest glass in the strictest sense. They were finished using cold-working lapidary techniques and are generally considered to have developed from the background of faience and glazing technology, where overfiring or poor compositional control are likely to have resulted in the accidental formation of glass from time to time. Egyptian Blue appears as a pigment in Egyptian wall paintings in the late third millennium, itself a product of the same technological background and consisting of similar raw materials combined in different proportions.

The appearance of the first glass vessels in western Asia in about the sixteenth century BCE marks a revolution in the fabrication of the material. These vessels were produced on cores of sand or clay. The core was coated by dipping it in a crucible of molten glass or by trailing molten glass onto it. Decoration was added by trailing molten glasses of various colors onto the surface of the vessel; it was made smooth by rotating it on a flat stone. The innovative element of this approach is in the manipulation of the glass in the molten state and the application of its plastic properties. Higher temperatures and novel furnace designs are likely to have been required. The color palette of glass was extended to include reds, greens, yellows, and whites, as well as blues, based on a range of metal oxides, including those of copper, cobalt, manganese, antimony, and lead. These colors were also applied to objects made of faience. Glazed pottery vessels appear at about the same time as the earliest glass vessels; the two developments are considered by many authorities to have been related.

Later Developments in Glass. The reemergence from the dark age at the end of the second millenium BCE saw the continuation of technologies for vitreous materials, but the major advances of the first millennium were in the field of glassmaking, rather than in faience or frit production. [*See* Glass.] Foremost are the changes which eventually allowed the development of the Roman glass industry on an unprecedented scale. One of the most important of these was a change in the formulation of glass which occured in the seventh or sixth century BCE. Up to that time, most glass had been based on a mixture of plant ash and crushed quartz—materials which had to be collected by foraging and which required labor-intensive preparation. The new approach involved the preparation of glass from a mixture of natron and sand. These were materials which could be quarried from virtually inexhaustible deposits and, furthermore, required minimal processing before use in the glass batch. This allowed a major increase in capacity, which fed the growth of the Hellenistic and Roman industries. The major source of natron appears to have been Egypt, although Pliny (*Nat. Hist.* 36.190) indicates that glass sand was obtained from near the mouth of the Belus River, near Haifa, in modern Israel. Recent excavations (Gorin-Rosen, 1995) indicate that, by the end of the Byzantine period, and perhaps considerably earlier, glass was being melted in large tank furnaces with a capacity of 8–10 tons on the Syro-Palestinian coast. From there it could be transported in broken or "chunk" form to wherever it was required.

A further development was in the ability to control the natural color of glass. After about the seventh century BCE,

it was found that adding small amounts of antimony to glass counteracted the green or blue coloration caused by iron oxides; from the second century BCE onward, manganese was used for this purpose. A further impetus to the industry was the development of glassblowing in Syria-Palestine late in the second half of the first century BCE. This development allowed substantial increases in the rate of vessel production. Furthermore, blowing allowed the production of very thin-walled vessels, which increased the number which could be produced from a given glass batch. Along with the earlier changes in glass composition, the introduction of blowing encouraged the production of large quantities of inexpensive, thin-walled, transparent tablewares and revolutionized the role of glass in society. Although in the eighth–ninth centuries CE in Syria and Egypt, glass production reverted to the traditional plant-ash alkali formulation, the techniques of blowing and decoloration by the addition of manganese continued through to the modern period.

Islamic Glaze and Ceramic Technology. From the Late Bronze Age through to the Islamic period, pottery glazes were soda-lime-silica compositions. Lead-oxide-based glazes were introduced in the Roman period, but they were not widely used and their potential was not developed. However, in the eighth or ninth century CE, in response to the fine ceramics being imported from China, Islamic potters in Iraq developed the technique of adding tin oxide to the pottery glaze, to make it white and opaque. The tin was commonly added with a certain amount of lead to an alkali glaze—or alternatively a lead-tin-silica-glaze formulation was used. At about the same time, Iraqi potters began to add glass and additional quartz to their pottery bodies. This new pottery body evolved into the so-called stonepaste or quartz-frit body, composed predominantly of quartz with some glass and clay. It is very similar to the faience bodies of earlier periods, although it appears to have developed separately. These innovations were taken up and developed by potters in other centers—in Egypt and Syria. They resulted in the production of nearly white ceramics, which were well suited for painted decoration in oxide colors and with luster, a fine metallic coat of silver or copper. The tin-glaze and luster techniques were the foundations of later medieval pottery industries in the West—in Spain and in Italy.

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IAN C. FREESTONE

Artifacts of the Bronze and Iron Ages

The versatility of silicate technology made possible the development of many types of frits, glasses, and glazes with different carriers in the Bronze and Iron Ages. The most common were faience, glass, glazed pottery, glazed steatite, and blue composition ("Egyptian Blue").

Faience. Invented in the fifth millennium, probably in northern Mesopotamia, faience was one of the first synthetic materials. It consists of a crushed and moulded quartz (cf. silica sand) composition core with an alkaline glaze generated by efflorescence, cementation, or application techniques. Because simple alkaline glazes adhered so well to this carrier and ubiquitous quartz could be readily modeled, faience was the most popular vitreous material of the Bronze and Iron Ages. P. B. Vandiver and W. D. Kingery refer to it as "the first high-tech ceramic" (Vandiver and Kingery, 1986, p. 19). "Glazed frit," possibly to be equated with faience, is reported from seventh millennium BCE Jericho, but

VITREOUS MATERIALS: Bronze and Iron Ages. *Polychrome faience rhyton.* International style from Kition, Cyprus. Dated 1300–1200 BCE, height 26.8 cm. (Courtesy Department of Antiquities, Nicosia, Cyprus)

this seems inherently unlikely and requires scientific verification.

Tell Brak in northern Mesopotamia provides the clearest evidence for state-of-the-art faience production in the fourth millennium. Beads were incorporated into temple bricks, and zoomorphic seals or amulets—molded bears, ducks, hares, and monkeys—are extensions of a previously plain repertoire. In Egypt at that time, copper-colored blue glaze imitating semiprecious stone was sometimes decorated with black or brown glaze.

Although vessel formation existed in Mesopotamia and Egypt in the fourth millennium, regular production of these luxury products only began in the third millennium, when it also expanded to Elam. Vessels in Sumer were elaborated with incised and sculpted decoration. The repertoire also included seals, tiles, rods, figurines, mace-heads, and beards, the last two probably belonging to temple statues. New glaze colors—red, white, green, and possibly yellow—are attested for the first time in the north. A wagon model from a grave at Tell Bi'a in Syria also demonstrates precocious innovations in the north. While small beads became common, larger faiences remained prestigious: a cylinder on a metal rod figured in Mesannipadda's gifts to the king of Mari, and wall inlays may have been inserted in King Shulgi's mausoleum at Ur.

It is not certain if production existed in Syro-Palestine in the Early Bronze Age. Small disc beads, while fairly common, may have come from prolific centers in Egypt. The advent of faience on Cyprus and Crete, where industries subsequently excelled, may be historically correlated with a notable expansion of Egypt's maritime links with Byblos in the fourth dynasty (c. 2575–2465 BCE). In Mesopotamia,

during the Ur III period (c. 2112–2004 BCE), Akkadian terms sometimes identified with vitreous materials appear. However, their exact meaning and significance are controversial.

Centers of bichrome vessel production were established in the Levant and probably in Anatolia in the Middle Bronze Age (c. 2000–1550 BCE). Northern workshops supplying vases in native and egyptianized styles were probably attached to the royal courts, based on the evidence of both types of vessels in palaces and royal tombs. Faienceworkers, probably from Egypt, flourished at Byblos, where they equipped temples and royal tombs; another derivative industry in ancient Palestine created specialized cosmetic containers.

The zenith of western Asiatic faience production was in the later part of the Late Bronze Age (c. 1400–1200). Production is attested at Tyre, Beth-Shean, and probably Babylon, but workshops proliferated, some, perhaps, beyond the management of palaces and temples. Mass production of personal ornaments, cylinder seals, and vessels ensued. Polychromy, a belated adaptation of technological innovations made by glassworkers in the sixteenth century BCE, was widespread. Previously, faience imitated semiprecious stone, now inlaid metalwork. It was executed by direct glazing and overglazing, and so was a development independent of Egypt, where polychromy was effected by inlaying and outlining glazes. Carefully selected metal colorants yielded variants of blue, green, brown, yellow, white, gray, black, red, purple, silver, and, probably, transparent glazes. Another characteristic of this florescence is that, because a stylistic "koine" was established, it is difficult to pinpoint the sources of widespread faience artifacts. For example, distinctive female-face pendants with bitumen inlays, probably souvenirs from temples, are found from Cyprus to Susa.

Faience was used especially in temples and as funerary offerings. In the Ishtar Temple at Aššur, it was used for votive figurines and body parts, furniture inlays, and decoration such as amulets, bracteates sewn on robes, statue inlays, plain and figurative wall tiles and knobs, elaborate vessels, and other objects. Tassels may have belonged to equestrian harnesses, for which there are identical examples at el-Kurru in Nubia. Vessels found in the cemetery at Mari, in Syria, are typical of the Late Bronze Age. Their small size, narrow necks, and lids suggest that most had contained precious ointments or the like.

Of all the major regions in the Near East, only ancient Palestine, and perhaps Anatolia, does not seem to have had a vessel-production industry. Egyptian domination precluded local patronage of gifted faienceworkers. Canaanite rulers therefore looked mainly to Egypt for such luxuries. In addition, colorful faiences in the Fosse Temple at Lachish and the Ḥathor shrine at Timnaʿ may have been sent directly from there as votives. Canaanite faience assemblages reflect the Egyptian popularity of bowls with Nilotic scenes. These also reached coastal Syria and Cyprus, where copies may have been produced. In that region, eclectic craftsmen fashioned some of the choicest Near Eastern faiences by blending Egyptian, Asiatic, and Aegean styles and techniques. As shown by head goblets in the Uluburun shipwreck off of southwest Turkey, their products were sent abroad, probably to the west, where a derivative center may have been established in Late Mycenaean Greece.

In the Iron Age, following destructions associated with the Sea Peoples, faience production in the Near East waned considerably. Only in the highlands of Iran and Elam, in the twenty-fifth and twenty-sixth dynasties in Egypt, on Rhodes, and probably in Phoenicia were there innovating centers of production. Monochrome, mass-produced Egyptian and egyptianized amulets, beads, and scarabs increase throughout the Levant, but tenth-century BCE Phoenician expertise is most clearly evident in a set of vessels and figurines from Lefkandi in Euboea. Iranian production is noted for its polychromy; Egyptian for its delicate openwork beads, plain lotiform chalices, and chalices with scenic compositions; and Rhodian for a variety of small egyptianized cosmetic containers. The marked decline of faienceworking in Mesopotamia was the result of the impact of polychrome pottery.

VITREOUS MATERIALS: Bronze and Iron Ages. *Monochrome faience pilgrim flask.* Depicted is an image of Bes. From Gurob, c. 1300–1200 BCE, height 16 cm. (Courtesy Ashmolean Museum, Oxford)

Glass. Isolated finds of pre-sixteenth-century BCE glass are reported from Troy to Iran and Egypt, but the dates and composition of many are suspect. Safely stratified examples in graves, like a pinhead from Nuzi, a bead from Tel Dan, and several beads in composite necklaces from Dinkha Tepe, indicate the occasional use of glass, much of it as a by-product from faience and metalworking. Raw glass from Akkadian–Ur III deposits at Eridu, Tell Asmar, and Tell Brak is significant because it demonstrates intentional production (whatever the glass may have been used for eventually) and its relative frequency in Mesopotamia at that time. This phase in the history of glassmaking constitutes stage 1, a preadaptive phase in which the distinctive properties of glass were not exploited and its occurrence was infrequent and irregular. An Egyptian royal pectoral with blue glass inlays and purple ones fused to a plaster substrate and inlays from the tomb of King Ahotep (c. 1550 BCE) may also belong to this stage.

Profound technical innovations in vitreous materials occurred in about the sixteenth century BCE in northern Mesopotamia and northern Syria. Polychrome core-formed glass vessels, together with glazed pottery, appear then. The former exhibit new pyrotechnological skills distinctive of glass: fusing, coiling, trailing, and marvering. Multicolored bottles were made on a removable core of clay and dung in a manner recalling lost-wax casting in metal. That metalworkers were closely associated with this innovation, no doubt in conjunction with faienceworkers, is also indicated by the associated use of a range of metal oxides to achieve contrasting colors on the same vessels. This formative juncture in the history of vitreous materials, which equates with the start of stage 2 (working glass industries), took place at a time of political upheaval in northern Mesopotamia, a time when working practices of diverse craftsmen belonging to the earlier Amorite palaces were being reorganized. Their vessels are found in northern Mesopotamia and their cast nude-female plaques and spacer plates for separating strands of beads in necklaces as far afield as Greece.

Asiatic glassmaking innovations were probably transferred to Egypt during the expansionist reign of Thutmosis III. Soon, an independent tradition of elegant core-formed glass vessels was established there under royal authority. The Egyptologist W. F. Petrie retrieved detailed information on glass workshops at Amarna, whereas in western Asia the only evidence is indirect—cullet from Aššur and ingots from Alalakh and Tell Brak. The Brak ingots are from a Mitannian palace, so that there, too, glass production was under royal patronage. That it was internationally esteemed is clear from royal requests for specific colors, from its rank immediately below gold and silver in the representation of Thutmosis III's dedication of Syrian booty on a limestone relief from the Amun-Re temple at Karnak, and from the gold foil that liberally frames a glass pyxis found on Cyprus. Bead manufactories were far more numerous and perhaps differently organized.

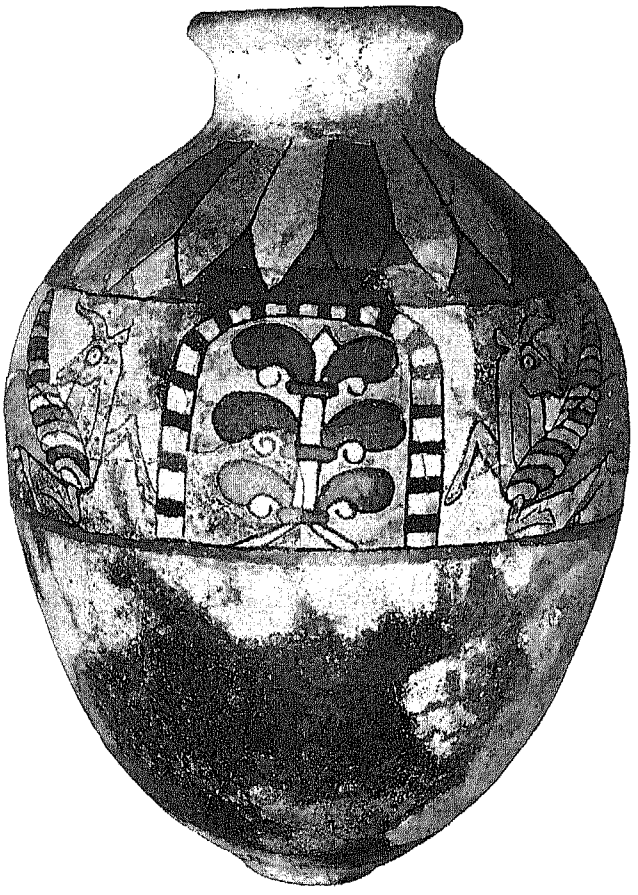
During the fourteenth–thirteenth centuries BCE, mosaic and marbled glass, which facilitated the incorporation of human, animal, and plant motifs, became popular in Mesopotamia. Stylistic considerations indicate the existence of independent glass-vessel production in northern Syria and perhaps on Cyprus, but Canaan made do with Egyptian imports. As in the rest of western Asia, glass vessels are mostly associated with palaces, temples, and the graves of the wealthy. They were used to hold costly liquids. Glassmakers fashioned a wide variety of opaque, colorful objects. The properties of glass, unlike those of faience (which remained essentially an imitative industry), were worked in the hot state and led to the production of highly distinctive vessels.

As with other industries, the continuity of glass production was beset by the problem of scarcity of material from the twelfth to the ninth centuries BCE. Crude tenth-century BCE glass vessels indicate a desultory continuity in Egypt. Compositional details of products from a factory at Frattesina in Italy suggests that some Near Eastern glassworkers may have been dispersed there in the collapse of Bronze Age palatial society. When vessel making revived in the eighth century BCE, rather mediocre core- and rod-formed examples are complemented by an important innovation: cast and cut translucent glass. These predecessors of clear blown glass were fit for royalty (examples are an alabastron from the North West Palace at Nimrud with an inscription of Sargon and a petaled bowl from a royal tomb at Gordion in Turkey). Phoenician glassworkers imitating crystal were probably responsible for the development, but they may have accomplished it in Assyria, where so many examples have been found, rather than in Phoenicia itself. By the seventh century BCE, both types of glass production were carried out in the Mediterranean region.

Glazed Pottery. The difficulty in effectively binding existing alkaline glazes to ceramic bodies was overcome in northern Syria and northern Mesopotamia during the sixteenth century BCE, as part of the same pyrotechnological revolution that brought about working glass industries. Glazers and glassworkers produced identical bottle shapes for northern Mesopotamian patrons, but glazers were restricted to monochrome blue. A derivative monochrome glazed-vessel industry was established in fourteenth—thirteenth-century BCE coastal northern Syria. Egypt did not produce glazed pottery in the Bronze and Iron Ages.

By the fourteenth century BCE, Mesopotamian glazers took steps to realize a major potential of glazed pottery: architectural decoration. At the provincial site of Nuzi, numerous glazed wall knobs were fixed to the walls of the Ishtar Temple. Glazers were employed for similar works on a monumental scale in Elam, and less so in Babylonia.

Once glazers prevented different colors from mixing on pottery bodies, they could produce bricks with polychrome



VITREOUS MATERIALS: Bronze and Iron Ages. *Polychrome glazed pottery jar.* In Neo-Assyrian style. From Ziwiye, c. 800 BCE, height 13.5 inches. (The Metropolitan Museum of Art, Harris Brisbane Dick Fund, 1951 [51.29.1])

designs on a monumental scale. This was achieved in Assyria at the end of the second millennium or in the ninth century BCE by installing slender ribs between the colors, a variation on goldworkers' cloisonné techniques. From the time of Ashurnasirpal II, Assyrian palace, temple, and fort facades were embellished with shimmering geometric and representational designs. It was a development destined to have many successors, from Neo-Babylonian to Islamic times.

Assyrian glazers applied the same polychromy techniques to pottery vessels by the ninth century BCE. In metropolitan Assyria, standardized polychrome bottles appeared commonly in tombs. A derivative industry prospered in northwestern Iran, while others began in Elam and Babylonia. In the late eighth century BCE, another center of production started in northern Syria, but its products are technically and stylistically related to the Babylonian industry, perhaps as a result of Assyrian deportations of Babylonian craftsmen. The importance of the center in northern Syrian is that it led to the foundation of secondary industries in the Mediterranean region. After the sixth century BCE, polychromy declined and utilitarian monochrome production became the norm.

[*See also* Glass. *In addition, many of the sites mentioned are the subject of independent entries.*]

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EDGAR PELTENBURG

Artifacts of the Persian through Roman Periods

Before the invention of glassblowing in the first century BCE, vitreous artifacts were produced by the labor- and energy-intensive techniques of cast molding, rod forming, and core forming. As a consequence, glass in the pre-Roman periods was limited to a restricted number of forms: simple beads, furniture inlays, and luxury vessels used for cosmetics and in the dining room. The glassblowing and mold-blowing techniques developed during the Roman period, however, allowed glass to become as inexpensive and ubiquitous a commodity as it is today.

At the end of the Late Bronze Age (c. 1600–1100 BCE) there appears to have been a rapid decline in the production of glass artifacts in Egypt and western Asia (Barag, 1985). Although it seems from the dearth of evidence that few, if any, glass vessels were made in the early first millennium BCE, the appearance of glass beads in tenth- and ninth-century BCE contexts suggests that the art of glassworking did not entirely disappear in the Early Iron Age. Neo-Assyrian texts that record glass recipes have antecedents in second-millennium BCE Middle Babylonian and Hittite texts (Oppenheim et al., 1970). Two unusual mosaic glass beakers with figural decoration from a late ninth-century BCE level at Hasanlu may represent heirlooms from the thirteenth century BCE. In Egypt, the New Kingdom tradition of using cast, opaque glass in inlays seems to have revived in the Saite period, though the production of core-formed vessels stopped after the twenty-first dynasty (Grose, 1989). Cast monochrome and mosaic glass inlays for ivory and wooden furniture were produced by Phoenician craftsmen in the ninth and eighth centuries BCE, preserved examples of which have been found at Nimrud, Arslan Tash, Megiddo, and Samaria.

Glass vessels were once again produced in some numbers in Mesopotamia during the eighth and seventh centuries

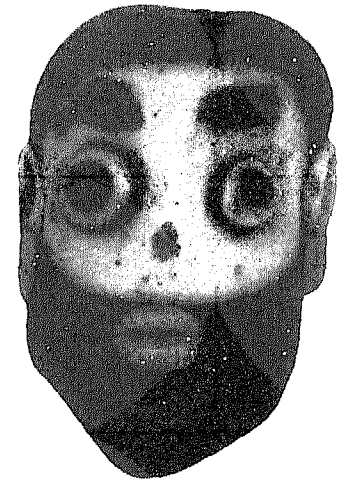
VITREOUS MATERIALS: Persian through Roman Periods. *Western Asiatic unguent bottle (alabastron) probably from Mesopotamia.* Late eighth or seventh century BCE. Height 8.6 cm. (Courtesy The Toledo Museum of Art, purchased with funds from the Libbey Endowment, gift of Edward Drummond Libbey, 1961.39)

BCE. Mesopotamian-produced core-formed glass alabastra and juglets have been found in Assyria, Bablyonia, Elam, Urartu, and Palestine, as well as in eastern and central Mediterranean contexts of the eighth and seventh centuries BCE (Barag, 1985). In addition to reviving the earlier techniques of core forming, glassworkers of this period discovered how to create monochrome glass in shades ranging from natural light green to intentionally decolorized or, more rarely, purple, blue, and blue-green. Monochrome cast-and-ground glass bowls and other vessels were found in great numbers in eighth- and seventh-century BCE contexts at Nimrud, including a thick vase inscribed with the name of Sargon II, and are also known from Khorsabad and Kuyunjik (Barag, 1985). An unusual late eighth-century BCE cast-and-ground mesomphalos phiale (shallow drinking vessel) from tumulus P at Gordion probably belongs to the same tradition (Grose, 1989). Stylistic similarities with Phoenician metal and ivory objects and the presence of cast monochrome vessels from early seventh-century BCE contexts on Crete and in Italy suggest that the discovery of this type of glass may well have been made by Phoenician artisans. [*See* Phoenicians.] By the seventh century BCE, Phoenician glassworkers were producing inlays of transparent painted glass and monochrome glass beads. By the sixth century BCE, glass technology had spread from the Near East and had become established at Greek, Punic, and Etruscan centers.

Persian Period. There is some limited evidence that the production of cast monochrome and core-formed vessels continued in the Neo-Babylonian and Early Achaemenid periods, though not on the same scale as in the previous eighth and seventh centuries (Moorey, 1994). During the Late Achaemenid period, a different type of cast monochrome vessel was produced in a lost-wax technique that employed a high-quality, intentionally decolorized glass particularly resistant to weathering. The earliest dated example of an Achaemenid cast monochrome vessel was found in a Cyrenaican tomb with Attic pottery from the third quarter of the fifth century BCE (Michael Vickers, "An Achaemenid Glass Bowl in a Dated Context," *Journal of Glass Studies* 14 [1972]: 15–16). In Aristophanes' *Acharnians* (ll. 73–75), first produced in 425 BCE, an Athenian ambassador returning from Persepolis boasts of having drunk from luxurious Persian gold and glass vessels, indicating the high esteem in which Achaemenid glass was held in antiquity. A related, but distinct, group of Achaemenid cast monochrome glass bowls has been found in fourth-century BCE contexts at Persepolis and at Ephesus (Oliver, 1970). The glass decorative elements used by some Greek sculptors and architects seem to have been made from raw monochrome glass imported from the Near East.

The production of core-formed vessels in Mesopotamia may have died out at the end of the sixth century BCE, when glass perfume containers made in East Greece began to be imported into the Near East (Grose, 1989). Greek core-formed glass alabaster, aryballoi, amphoriskoi, and oenochoae have been found in Syria, Jordan, and Israel in contexts ranging from the late sixth century BCE through the Hellenistic period. A related series of tall, narrow kohl tubes, formed on a rod without a core, were produced in both the eastern Mediterranean and the Near East during the sixth–fourth centuries BCE. [*See* Cosmetics.] Workshops active in northwest Iran and in Mesopotamia during the late fifth and fourth centuries BCE seem to have been responsible for two groups of rod-formed kohl tubes that are square in section and made of a dark translucent glass decorated with opaque glass threads combed into tight zigzag designs (Barag, 1975; Grose, 1989).

The rod-forming technique had been used to make colored glass beads in Mediterranean and Near Eastern workshops from at least as early as the ninth century BCE. Rod-formed polychrome opaque glass beads and pendants in the shape of human or demonic heads and animals have been found in large quantities in Syro-Palestinian, eastern Mediterranean, and Punic contexts from the early sixth–the third centuries BCE. [*See* Jewelry.] While the origin of these beads has been variously ascribed to Phoenician, Punic, or East Greek centers, it is likely that they were produced in a number of different workshops over a period of several centuries (Barag, 1985). Monochrome glass was also extensively used to produce seals and scarabs in the Persian Empire, and examples have been found at sites from Cyprus to Mesopotamia. [*See* Seals.]



VITREOUS MATERIALS: Persian through Roman Periods. *Eastern Mediterranean head pendant, probably from Phoenicia or Carthage.* Late seventh through fifth centuries BCE. Length 3.0 cm. (Courtesy The Toledo Museum of Art, purchased with funds from the Libbey Endowment, gift of Edward Drummond Libbey, 1976.57)

Hellenistic Period. The evidence indicates a sharp decline in the production of luxury glass vessels in the Near East during the century following the Macedonian conquest of the Achaemenid Empire. Achaemenid-style cast bowls may have continued to be produced in eastern Mediterranean workshops into the third century BCE, but the East Greek core-formed industry probably died out by 300 BCE. Few products from the new glass houses established in Italy and elsewhere in the Mediterranean in the third century BCE have been found in the Near East. One notable exception is a fragment of a gold-glass pyxis lid recovered in Babylon (Barag, 1985).

The second century BCE witnessed a dramatic renaissance in Near Eastern glass production. Monochrome, colorless, and intentionally colorized hemispherical bowls with simple molded or pinched ribs or with lathe-cut grooves around the rim were manufactured in large numbers at several different centers, including some located along the Phoenician coast, perhaps at Sidon. These hemispherical bowls were made with a simplified molding technique that involved sagging a heated disc over a convex mold. Hundreds of examples of hemispherical bowls have been found at sites on Cyprus and in Israel, and more than six thousand have been recovered from the small settlement at Tel Anafa (Israel) in levels dated to between 125 and 80 BCE (Grose, 1989). Simple plano-convex gaming pieces made out of the same type of monochrome glass have been found throughout the Near

VITREOUS MATERIALS: Persian through Roman Periods. *Eastern Mediterranean footed bowl (krater) possibly from Egypt, but reported to have been found in Italy.* Mid-late third century BCE. Height 17.7 cm. (Courtesy The Toledo Museum of Art, purchased with funds from the Libbey Endowment, gift of Edward Drummond Libbey, 1980.1000)

East and the Mediterranean, including a deposit of thirty thousand from the temple of Eshmun near Sidon (Maurice Dunand, "Verroteries d'enfants dans le temple d'Echmoun à Sidon," *Bulletin du Musée de Beyrouth* 30 [1977]: 47–50). [*See* Games.]

By the end of the third century BCE, glassworkers had rediscovered how to manipulate preformed canes or cane sections to produce a wide variety of polychrome mosaic glass vessels. It has been proposed that this discovery was made in Alexandria, where Egyptian glass artisans had a long tradition of working with glass canes. However, the distribution of the earliest examples of mosaic glass vessels suggests that they are products of southern Italian centers. In any case, mosaic glass vessels have been discovered at a number of Anatolian, Cypriot, and Near Eastern sites, including Nimrud, where Austen Henry Layard recovered a mosaic network-pattern bowl.

Core-formed vessels reappear in the Syro-Palestinian region in the late second and first centuries BCE. These Late Hellenistic core-formed types are easily distinguished from the earlier Mediterranean examples by shape and fabric. Piriform alabaster and globular amphoriskoi with looped handles of transparent glass are especially common on Cyprus and the Syro-Palestinian coast, where they were presumably made.

Roman Period. The most momentous development in the history of glassmaking—the invention of glassblowing—seems to have been made on the southern Levantine coast in about the middle of the first century BCE. Finds of glass tubes, partially blown bulbs, and wasters from a pre-40 BCE deposit in Jerusalem suggest that the first steps toward glassblowing involved the inflation of heated, preformed glass tubes (Yael Israeli, "The Invention of Blowing," in Newby and Painter, 1991, pp. 46–55). Glass artisans soon realized the advantages of using a metal blowpipe to manipulate heated globs of glass, and by the end of the first century BCE the art of glassblowing had spread to many centers throughout the Roman Empire.

During the first four centuries of the common era, workshops from western Europe to Mesopotamia took advantage of the glassblower's ability to fashion quickly and inexpensively a wide variety of utilitarian vessel shapes; glass became as commonplace, and probably as inexpensive, a commodity as ceramics. Assemblages of Roman glass display a remarkable consistency throughout this vast region, no doubt reflecting a high degree of interaction among Roman-period glass houses. Nearly every excavated Roman site has yielded glass dishes, plates, bowls, beakers, drinking cups, flasks, and perfume containers as well as glass bracelets, beads, gaming pieces, bezels, and other objects. Because individual glass workshops probably used glass from a number of different sources, including primary producing centers and recycled glass, attempts to define chemically regional groups most likely will continue to be inconclusive. Nonetheless, given the intrinsic difficulties of transporting fragile glass vessels, it can be assumed that most Roman sites were largely supplied by local glass workshops. Detailed studies of some glass corpora, such as those from Cyprus, Karanis, and Dura-Europos, have isolated some regional traits—Cypriot painted beaker lids, tooled pad bases characteristic of Egyptian products, and crude imitations of Syro-Palestinian forms at Mesopotamian sites. Literary and epigraphic references attest to the vitality of Egyptian, Phoenician, and Jewish glass workshops.

The proliferation of inexpensive blown glass did not, however, result in an immediate cessation in the production of handmade luxury wares. The mosaic glass tradition survived to the middle of the first century CE and cast monochrome ribbed bowls continued to be produced until the end of that century. In the second quarter of the first century CE, glass artisans discovered how to create decorated vessels by blowing glass into multipieced molds. It has long been assumed that the mold-blowing technique was developed at Sidon, though recently Italy has been suggested as a place of origin (Grose, 1989). From the third quarter of the first century through the fourth century CE, workshops throughout Europe and the eastern Mediterranean mass produced mold-blown vessels decorated with a wide variety of vegetal and figural scenes. During the same period, both eastern and western glass workshops produced colorless blown vessels decorated with wheel-cut designs, some of the finest of which are masterpieces of the intaglio technique.

There was no sharp change in the patterns of glass manufacture or use after the establishment of Constantinople in 330 CE. The basic categories of Late Roman glass types continued into the seventh century CE, when, with the rise of

VITREOUS MATERIALS: Persian through Roman Periods. *Fragment of an eastern Mediterranean bowl with a shallow, wheel-cut intaglio hunting scene on the exterior.* Third–fourth century CE. Preserved height 5.3 cm, estimated diameter 17.5 cm. (Courtesy The Toledo Museum of Art, purchased with funds from the Libbey Endowment, gift of Edward Drummond Libbey, 1923.1888)

Islam, a new era in the history of glass in the Near East began.

[*See also* Glass. *In addition, most of the sites mentioned are the subject of independent entries.*]

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MURRAY C. MCCLELLAN

Artifacts of the Byzantine and Islamic Periods

Glass was a ubiquitous commodity in the Near East during the Byzantine and Islamic periods. It was fashioned into utilitarian vessels, windowpanes, and inexpensive jewelry. It also was used to create luxurious mosaic decorations and ritual vessels for churches, synagoges, and mosques. In Late Antiquity, as today, glass was a part of the lives of the rich and the poor alike.

Byzantine Glass. From the fourth to mid-seventh century CE, the glass industry differed little from that in the preceding three hundred years. Since the invention of glass-blowing in the first century BCE and the development of the mold-blown technique in the following century, glass artisans had been able to make large numbers of vessels both quickly and inexpensively. Because it was relatively easy to manufacture glass objects but difficult to transport them, glass workshops were likely to be established near urban centers throughout the Byzantine Empire.

There were two distinct stages in the ancient glass industry: the initial production of raw glass, or cullet, and its subsequent crushing, refiring, and shaping. This two-step process was necessary because ancient kilns could not reach temperatures sufficiently high to fuse the basic soda-lime-silica components of ancient glass in a single firing. While it is probable that some glass factories undertook both activities, it is clear that there were centers dedicated to the large-scale manufacture of raw glass for sale to smaller workshops. These centers were no doubt located close to sources of good sands, such as the deposits at the mouth of the Belus River (the Na'aman River, north of Haifa), as well as in areas where an ample supply of wood for charcoal could be obtained. At one such center in Israel, Beth-She'arim, on the Kishon River, an 9.7-metric-ton (8.8-ton) slab of devitrified glass was uncovered in a fourth-century CE context (Brill, 1967). Because the poorly fused Beth-She'arim slab was unusable, it had been abandoned. A similar large slab, now in the Museum ha-Aretz in Tel Aviv was found at Rishpon, north of that city, on Israel's Mediterranean coast (Weinberg, 1988). That these large slabs were intended to be broken up and taken to smaller workshops is suggested by a third-century CE reference in the Babylonian Talmud (*Shab.* 154b) that mentions the transport of glass lumps on donkeys.

Glass cullet from Beth-She'arim may have been sent to a glass workshop located a few kilometers to the east, at Jalame. The Jalame glass factory, dated by its excavators to 351–383 CE, was situated in an isolated complex that had been a functioning agricultural villa earlier in the century (Weinberg, 1988). The Jalame complex, the only early Byzantine glass-manufacturing factory excavated to date, included a furnace room, a glass-sorting area, and a massive dump of broken glass. No ceramic crucible fragments were found at the site, and it appears that the glassworkers at Jalame used small, rectangular limestone crucibles that would have been used for only a single melting of a relatively small amount of glass. Large numbers of broken vessels, manufacturing waste, and fragments of cullet were uncovered in the sorting and dump area to the south and west of the furnace, indicating that at Jalame, at least, little or no care was taken to save broken glass for reuse.

The wide range of utilitarian vessels produced at Jalame include the most typical shapes in use during the early Byzantine period: bowls, cups, jugs, bottles, jars, and conical beakers with sharp rims formed by cracking the vessel off from the blowpipe; the latter could have served as either drinking vessels or as lamps. These early Byzantine vessels tended to be decorated only minimally. Some jugs, bottles, and jars have simple mold-blown or pattern-blown ribbing, whereas tall flasks frequently were adorned with added trails. Conical beakers and bowls could be decorated with applied dots of a dark-blue glass. Rarely, simple designs were cut with a wheel on bottles and bowls.

In addition to these vessels types, windowpanes, bracelets, glass weights and stamps, and tesserae cut for mosaics were produced in the early Byzantine period. Windowpanes, which were either flat or crowned, tended to be made from a deeply tinted greenish or bluish glass that would not have admitted a great deal of light. Bracelets were frequently made of a very dark blue or green translucent glass and were occasionally decorated with tooling. Tesserae for mosaics, usually cut from thin cast slabs, appear in a range of colors, including some with thin gold foil sandwiched between colorless glass. Some small glass disks with stamped inscriptions were used as weights, while others seem to have been used as tokens. In contrast to glass vessels, the more portable bracelets, tesserae, and weights and tokens were often traded great distances from their place of manufacture.

In the Late Byzantine period, the proliferation of new churches and synagogues stimulated the glass industry. In addition to windowpanes and glass tesserae, lamps and goblets for liturgical uses were often supplied by glass workshops, which thrived (van Saldern, 1980). The period also saw the production of elaborately decorated vessels, such as the engraved chalice found in the cathedral at Jerash, or the group of late sixth–early seventh century CE mold-blown hexagonal bottles with Christian and Jewish religious symbols (Barag, 1970, 1971). Quantities of three-handled hanging lamps and stemmed lamps for polycandela have been discovered in synagogues at Beth-Shean in Israel and Sardis in Anatolia and in churches at el-Lejjun, Khirbet al-Kerak, Jerash, and Pella in Jordan, at Samaria in Israel, and elsewhere (Meyer, 1988). Stemmed glass vessels, which, during the sixth century CE replaced the conical beaker as the dominant form used for lamps and drinking vessels, are also frequently found in settlement contexts, such as at Caesarea in Israel, where a hoard was recently discovered near the Byzantine city wall (Michael Peleg and Ronny Reich, "The

VITREOUS MATERIALS: Byzantine and Islamic Periods. *Palestinian hexagonal jar with Jewish symbols, probably made near Jerusalem.* Dated around 578–629 CE. Height 8.0 cm. (Courtesy The Toledo Museum of Art, purchased with funds from the Libbey Endowment, gift of Edward Drummond Libbey, 1923.1358)

Byzantine City Wall of Caesarea Maritima," *'Atiqot,* Eng. ser., 21 [1992], p. 155).

While the Jewish glass industry is particularly well documented in the textual and archaeological record, it is apparent that glass workshops were located throughout the Late Roman Empire. Even Cyprus, an island with no natural silicon sands, seems to have had a thriving glass industry in the Byzantine period, apparently supplied with raw cullet shipped from the mainland. Glass factories no doubt played an important role in their regional economies, though the location of the Jalame workshop and references to laws prohibiting the establishment of glassworks within city walls suggest that glass artisans did not fully participate in the *urbanitas* of the empire.

Islamic Glass. The Arab conquest of the Byzantine provinces of Syria and Egypt in the seventh century CE initially brought little change to the production of glass in the Near East. Glass workshops under the early Umayyad dynasty continued to produce simple flasks, lamps, and goblets of light greenish or bluish transparent glass. With the rise of the 'Abbasid caliphate in the eight century CE, however, Islamic glassworkers encountered the rich tradition of the Sasanian glass industry, which specialized in elaborate wheel-cut, faceted bottles, bowls, and ewers. While glass production in the remnants of the Byzantine Empire stagnated in the last two centuries of the millennium, Islamic glass production underwent a renaissance. Mesopotamian and Persian glass from the eighth and ninth centuries CE includes such luxury vessels as square bottles with faceted designs, elegant ewers with wheel-cut patterns of running animals and stylized flowers, and short flasks with mold-blown and relief-cut designs. Finds from Samarra on the Tigris River and Antioch in Syria testify to the reemergence at this time of the mosaic, or millefiori, technique, in which cane sections of colored, opaque rods are fused to form open bowls and plaques (Pinder-Wilson, 1991).

A major glass center developed at Fustat (Old Cairo) in the eighth century CE that produced glass for more than two hundred years. As the excavation of this area has revealed, quantities of simple blown vessels as well as more luxurious wheel-cut pieces were produced (Pinder-Wilson and Scanlon, 1973). Most early Islamic glass was composed of colorless or slightly tinted fabrics; however, intentionally colored glass was also used, such as the opaque blue-green glass of the engraved bowl, likely a product of Fustat, in the Treasury of San Marco in Venice. Syrian and Egyptian glassworkers in the eighth century CE were also responsible

VITREOUS MATERIALS: Byzantine and Islamic Periods. *Bottle with wheel-cut ornament, probably Iranian.* Ninth–tenth century. Height 15.0 cm. (Courtesy The Toledo Museum of Art, purchased with funds from the Libbey Endowment, gift of Edward Drummond Libbey, 1947.5)

for developing two new decorative techniques: applying stamped designs and inscriptions using carved metal tongs, and lustre painting. The latter technique, in which metal oxides are applied to a vessel with sulphur and vinegar and fired in a reducing kiln, was used to produce vessels with elaborate polychrome Kufic inscriptions, such as one from Fustat that was dedicated to the governor of Egypt in 772 CE (Pinder-Wilson, 1991).

A spectacular collection of Fatimid glass has been recovered from a ship wreck off the coast of Turkey, near Serçe Limanı, in about 1036 CE (Bass, 1984). [*See* Serçe Limanı.] In addition to a cargo of ceramic cooking vessels, Byzantine transport amphoras, intact glass vessels, arsenic ore, and raisins, the ship was carrying a ballast of nearly three tons of glass cullet. Two-thirds of this ballast was in the form of broken chunks of raw cullet; the remainder was composed of approximately one million glass fragments. It is estimated that the fragments represent the remains of some ten thousand to twenty thousand vessels, in addition to waste-glass trails and glass pads cracked off from pontils. More than two hundred vessel types have been identified, including beakers, handleless and one-handled cups, dishes, bowls, jugs, bottles, flasks, jars, and lamps. A large number of these vessels were decorated with mold-blown and pattern-blown designs, including diamond, honeycomb, and vegetal patterns, or with wheel-cut designs of geometric, floral, and animal motifs. The Serçe Limanı ship, evidently plying the waters between Fatimid Syria and the Byzantine coast during a period of quietude after the peace treaty of 1027 CE, was clearly supplying a number of small glass workshops with raw material; the evidence suggests that, in the Mediterranean at least, there was little long-distance trade for finished glass vessels.

The Seljuk conquests and the collapse of the Fatimid dynasty in 1171 severely disrupted the established Islamic glass industry. It has been hypothesized that glassworkers fleeing Cairo set up a new production center in Corinth, Greece, during the late twelfth century, although a recent redating of the Corinthian material suggests that the glassworks there may date to after the Norman conquest in the early thirteenth century. In any case, it is clear that the late twelfth century was a period of cross-fertilization between Islamic and European glass-manufacturing traditions. The so-called Hedwig glasses, bucket-shaped vessels decorated with elaborate relief-cut heraldic lions, griffins, and eagles, may have been made by Islamic workers in Norman Sicily and traded to northern Europe (Pinder-Wilson, 1991). A class of tall, dark-blue translucent bottles found in Greece and on Cyprus was decorated with enamel and gold-paint techniques apparently developed in Egypt and Syria. Conversely, the Western tradition of prunted, or fused, decoration appears on Islamic glass in the early thirteenth century.

During the thirteenth century, the cities of Aleppo and Damascus in Syria were renowned as major centers of glass production. Both produced elaborate enameled vessels, although it is not clear whether the stylistic differences traditionally attributed to each center are valid. Also during this century, tall sprinkler bottles and small flasks with multicolored marvered decoration became popular. Vessels of these types have been uncovered at the thirteenth- and fourteenth-century Red Sea port of Quseir el-Qadim and have been interpreted by their excavators as export goods destined for India and east Africa (Whitcomb, 1982). In the fourteenth century, the Syrian centers produced a series of magnificent enameled hanging lamps, often with painted inscriptions recording the commissioning of the lamp, that were distributed throughout the Mamluk territories.

VITREOUS MATERIALS: Byzantine and Islamic Periods. *Flagon, probably Syrian.* Dated to about 1300 CE. Height 13.6 cm. (Courtesy The Toledo Museum of Art, purchased with funds from the Libbey Endowment, gift of Edward Drummond Libbey, 1927.317)

It is unlikely that the Aleppo glass industry survived the Mongol sack of 1260, whereas the Damascus workshops continued until their workers were carried off by Tamerlane's troops to Samarkand in 1400, ending a long tradition of glassworking. After this event, luxury glass vessels used in the Mamluk sultanate were supplied by Venetians or Persians.

[*See also* Glass. *In addition, most of the sites mentioned are the subject of independent entries.*]

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MURRAY C. MCCLELLAN

VOGÜÉ, MELCHIOR DE (1829–1916), French Orientalist, first a count and then a marquis, born to a very old family of the Vivarais (central France) and educated in Paris. Following a diplomatic internship, de Vogüé became attracted to Oriental studies. His first trip to the Near East, in 1853, resulted in his first book *Les églises de la Terre Sainte* (Paris, 1860). In 1860–1861, he explored Palmyra and the Hauran. Early in 1862, with the epigraphist W. Waddington and the architect E. Duthoit, Vogüé made a brief but important survey of Cyprus (in the place of Ernest Renan) and then returned to Syria. A second book appeared in 1864, *Le Temple de Jérusalem*. His most important work, *Syrie centrale*, in two volumes (Paris, 1865–1877) included a study of the region's architecture; a third volume (in two parts, 1868–1877) reported on Aramean and Sabean inscriptions, for by then de Vogüé had mastered Semitic epigraphy.

After the 1870–1871 Franco-Prussian War, Vogüé again served as a diplomat, as ambassador to Constantinople (beginning in 1871) and to Vienna (beginning in 1875). After Renan's death (1892), de Vogüé became president of the commission for the *Corpus Inscriptionum Semiticarum (CIS)* at the French Académie des Inscriptions et Belles-Lettres (of which he had become a member in 1868). De Vogüé was in charge of volume 2 of the *CIS*, for Aramean inscriptions (1889–1907). A member of many learned societies, he was greatly renowned for his mastery of several fields in Oriental studies, especially those dealing with archaeology, inscriptions, and ancient coins. Some of his numerous articles were republished in *Mélanges d'archéologie orientale* (Paris, 1868) and in 1909 he received, in Paris, as a tribute, the book *Florilegium, ou Recueil de travaux d'érudition dédiés à Mr le marquis Melchior de Vogüé*. The marquis was an impressive figure in terms of science and in probity.

[*See also the biography of Renan.*]

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OLIVIER MASSON

VOUNI, site of the only excavated classical palace on Cyprus (35°09′ N, 32°47′ E). The Vouni complex was built on a promontory 268 m (879 ft.) above the sea, 6.5 km (4 mi.) southwest of Soloi, at the beginning of the fifth century BCE. The initial construction phase of the palace and its associated town was probably undertaken by a Cypriot king who needed headquarters for a garrison. The palace was essentially Near Eastern in plan (Müller, 1932; Maier, 1985), its main apartments were arranged around a colonnaded court, one side of which was reached by a monumental staircase. According to the Swedish Cyprus Expedition excavators (Gjerstad et al., 1937), the two building periods belonging

to this first phase of the palace are dated from about 500 to 450. There was a temenos complex associated with the palace of the first period. Deposits of votive sculptures were found along the staircase leading to the altar court of the temenos. Along the northeast side were ranged rows of limestone figures, and on the southwest side there were only terra-cotta statuettes. Similarly arranged but smaller groups of sculpture were found in other rooms of the temenos. The entire complex was defended by a massive fortification wall whose rampart was traced around the entire perimeter of the plateau atop the mountain, and then downward toward the sea, enclosing the settlement within.

The ruler of Vouni in the mid-fifth century rearranged the royal apartments. The "second" palace consisted of state apartments (with bathrooms) reached by a monumental staircase and large storerooms all constructed around two separate courtyards. The dates of this second phase are believed to be around 450–440 to about 380. A temple of Athena was built on the upper terrace of the plateau at the time of the reorganization of the palace. The platform on which the temple stands was cut into the limestone bedrock of the mountain; where there was a dip in the surface it was filled in with limestone chips. This is the same leveling technique used at the Lady sanctuary at Aradhippou and in the temenos of the Young Lord at Idalion.

The settlement area at Vouni extended down the slopes of the hill toward the sea, with roads traceable to Marion on the west via Limnitis and Soloi to the east. Between the settlement and the palace, on the northern slopes of the hill, between about 225 and 190 m (738–623 ft.) above sea level, rock-cut tombs contemporary with the second palace period were found. The entrances of these tombs gave directly onto the slope, making the use of a dromos unnecessary. All the tombs were emptied by the time modern excavators came to investigate.

Thus the town at Vouni was built in topographic zones. At the lowest level lay the houses, well built of cut stone. Above them was a strip of tombs, and above those was the palace surrounded by small chapels and secondary temenoi. At the top was the sanctuary of Athena. At the beginning of the fourth century the palace was destroyed by fire and not rebuilt, and the settlement went out of existence.

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PAMELA GABER

VOUNOUS, Early Bronze Age site on Cyprus. Standing proud of the coastal plain that runs gently down to the sea from the steep north slopes of the Kyrenia range, Vounous, more accurately, Vounoi, is a hillock in northcentral Cyprus (35°18′54″ N, 33°22′26″ E). The top of the hill forms a small limestone plateau bounded to the south, east, and west by deep ravines leaving the naturally defined northern slope as a choice burial ground. The reasons for this decision were clearly determined by the soft, homogeneous, easily excavated quality of the rock and perhaps also the moderate incline, which ensured proper drainage. Bellapais, with its fine fourteenth-century abbey, is the nearest village, 2 km (1 mi.) to the southwest; hence the site's full name is Bellapais *Vounous*.

The presence of Early Bronze Age burial chambers in the area was first mentioned in 1926 by Einar Gjerstad, who called the site Kasafani *Keranienkomi*. Extensive looting in this locality was reported to the Department of Antiquities in 1931, and the ensuing excavation of thirty-one tombs that year and another seventeen the following was conducted by Porphyrios Dikaios, curator of the Cyprus Museum. These rock-cut tomb chambers, which are approached via an open-air passage *(dromos)*, were numbered consecutively 1–48 and subsequently published by Dikaios in 1940. The quantity, quality, and variety (shape and decoration) of pottery, as well as the copper-base tools, weapons, and ornaments accompanying the single or multiple burials were impressive. Anthropomorphic and zoomorphic figures applied to pots, in addition to clay models, provided valuable insight into the material culture and customs of the Early and Middle Bronze Age.

In 1933 Claude F.-A. Schaeffer, representing the National Museums of France, collaborated with Dikaios in the excavation of a further thirty tombs, numbered consecutively 49–79, which, apart from a preliminary report in 1936 by Schaeffer, remain unpublished. The final excavations at *Vounous* were sponsored by the British School of Archaeology at Athens and directed by James R. Stewart in 1937. He investigated a further eighty-four tombs, numbered consecutively 80–164, located in Cemeteries A and B, the latter previously dug by Dikaios and Schaeffer. Stewart's report

published in 1950, was followed in 1962 by a detailed analysis of all his finds from *Vounous*, classified according to the most complex typology ever devised for archaeological material. Since 1974 this seemingly inexhaustible burial ground has suffered from repeated bouts of looting.

To date the greatest number of excavated Cypriot Early Bronze Age tombs with the most varied ceramic assemblage comes from the *Vounous* cemetery. It has played a central, often controversial, and ambiguous role in any discussion dealing with the development of the period, a situation exacerbated by the absence of any excavations at the contemporary but elusive settlement(s) expected to exist in the vicinity. Nevertheless, the cultural material certainly belongs near the beginning of a vigorous artistic tradition that lasted seven hundred years, starting around 2400 BCE.

The economic basis for such a conspicuously wealthy community remains obscure. The site is not near copper mines or an obvious trade route for the export of metal and other products, yet the presence of several Levantine and Aegean objects suggests contacts beyond the island's shores.

[*See also the biographies of Dikaios, Gjerstad, Schaeffer, and Stewart.*]

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STUART SWINY

W

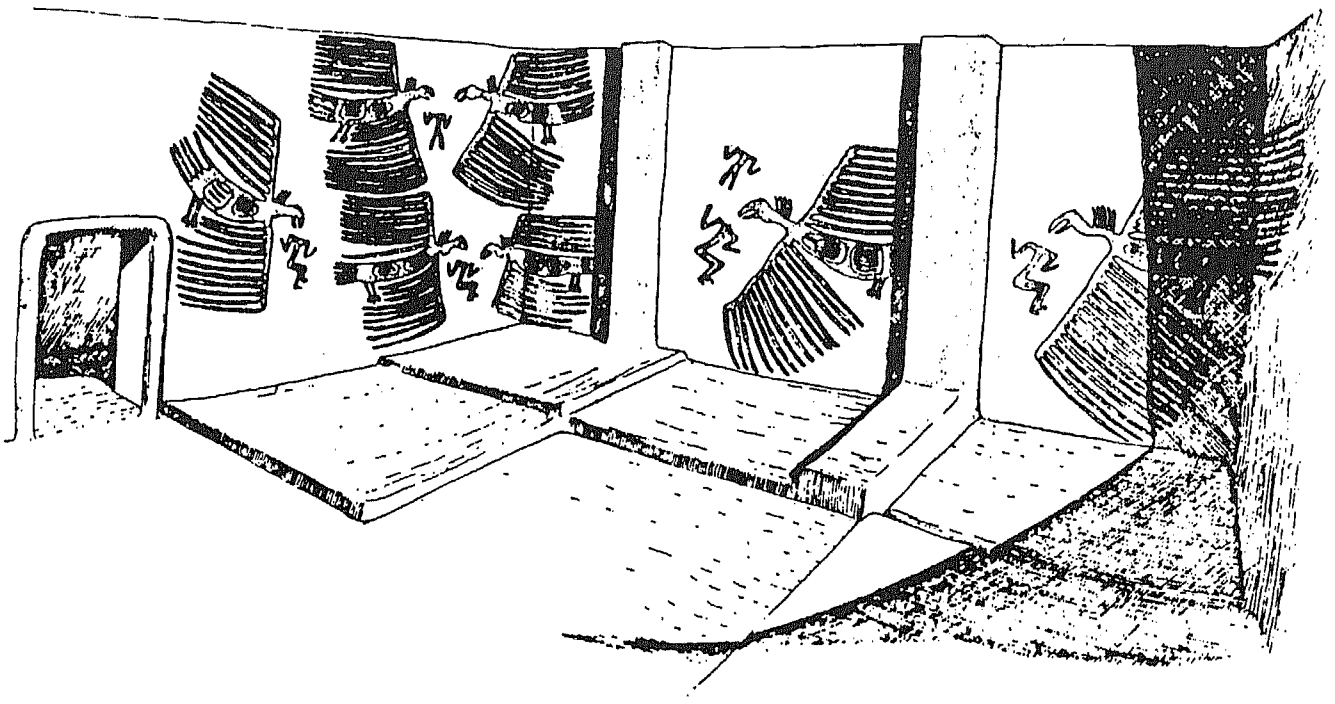
WADI _____. *For toponyms beginning with this element, see under latter part of name.*

WALL PAINTINGS. In the ancient Near East, wall painting was one of the most widespread and important artistic media. Although less able to withstand the ravages of time than other art forms, it is widely attested among the sedentary cultures of western Asia in many periods and contexts—as private domestic decoration, on official religious and palatial buildings, and eventually in tombs as well. Essentially as old as architecture itself, the popularity of wall painting depended not only on its inherent potential for rich, colorful effect on any scale, but also on the tractable and relatively inexpensive nature of the technique. Generally, the paint consisted of earthen pigments suspended in a water medium and applied to a dry plastered (mud, lime, or gypsum) surface. As such it could easily reproduce the scale and effect of other, more costly media, such as monumental relief or textiles.

During the Neolithic period (ninth–sixth millennia), wall painting emerged initially as monochrome embellishment at sites across the Levant, Anatolia, and Iran; it remained current in the Near East for millennia. The first polychrome wall paintings were simple zigzags patterns, although more elaborate geometric compositions evolved fairly rapidly in the later Neolithic in the centuries before and after 6000 BCE. The wall paintings from Çatal Höyük in Anatolia include multicolored compositions of triangles and lozenges organized as larger panels; they have been dubbed the Kilim style because of their similarity to the patterns in the woven rugs and wall hangings still produced in modern Turkey. By the early sixth millennium, the painters of Çatal Höyük had developed fairly complex figural compositions: hunting scenes, large birds of prey in flight above schematic headless humans (see figure 1), and the first known landscape, with a volcano. While the imagery of these paintings seems to have focused on the natural environment and the role of hunting in the protourban economy, their significance and the function of the buildings they decorated (possibly religious) remain uncertain. [*See* Çatal Höyük.] The wall paintings in the Late Neolithic houses at Tell Bouqras and Umm Dabaghiyeh in Syria suggest that the animal and geometric repertory at Çatal Höyük was current over a broader area of the Near East then. [*See* Bouqras.] In the ensuing Chalcolithic and Early Bronze Ages (fifth–fourth millennia), geometric ornament became the dominant mode of painted wall decoration in Anatolia, Iran, the Levant, and Syria (see figure 2). Notable exceptions are the mid-fourth-millennium enigmatic paintings from Teleilat el-Ghassul in Jordan: in one highly stylized, masklike human faces and animals grouped around a large starlike emblem and in others, a leaping tiger and a group of standing and seated human figures. [*See* Teleilat el-Ghassul.]

What is known of wall painting in Mesopotamia begins with Sumerian culture in the fourth millennium, primarily in the Protoliterate period (3500–3000 BCE), in which the development of monumental religious architecture stimulated the production of large-scale programs of wall painting. The Late Protoliterate temple at Tell ʿUqair continued the monochrome treatment and rectilinear ornament that had long been current in wall painting across western Asia. At ʿUqair, however, the geometric repertoire was enriched by files or pairs of human figures (divinities?) and animals that would soon come to typify Sumerian, or Mesopotamian, glyptic art and sculpture. The private domestic wall painting of this and later periods retained the simpler monochrome or geometric format. The wall painting of the succeeding Early Dynastic era, and indeed of the entire third millennium, is poorly documented. The only surviving examples are the fragments of bulls and human figures from the Temple of Inanna at Nippur, and the related imagery in the Temple of Ninḫursag at Mari (Tell Hariri). Because the architecture of the Akkadian period is virtually unknown, no wall paintings of this era have yet been discovered. Even the well-attested Neo-Sumerian monuments of the late third millennium have so far failed to produce any remains of wall painting.

The rich array of paintings from the Amorite palace at Mari (Tell Hariri), datable to the Old Babylonian period in the nineteenth or eighteenth century BCE, constitutes the earliest known Near Eastern program of painted decoration from a royal residence. The Mari paintings display various scenes of ceremonial (especially worship or presentation)



WALL PAINTINGS. Figure 1. *Paintings, room VII, Çatal Höyük.* (After J. Mellaart, "Excavations at Çatal Hüyük, 1963: Third Preliminary Report," *Anatolian Studies* 14 [1964]: 65, fig. 20)

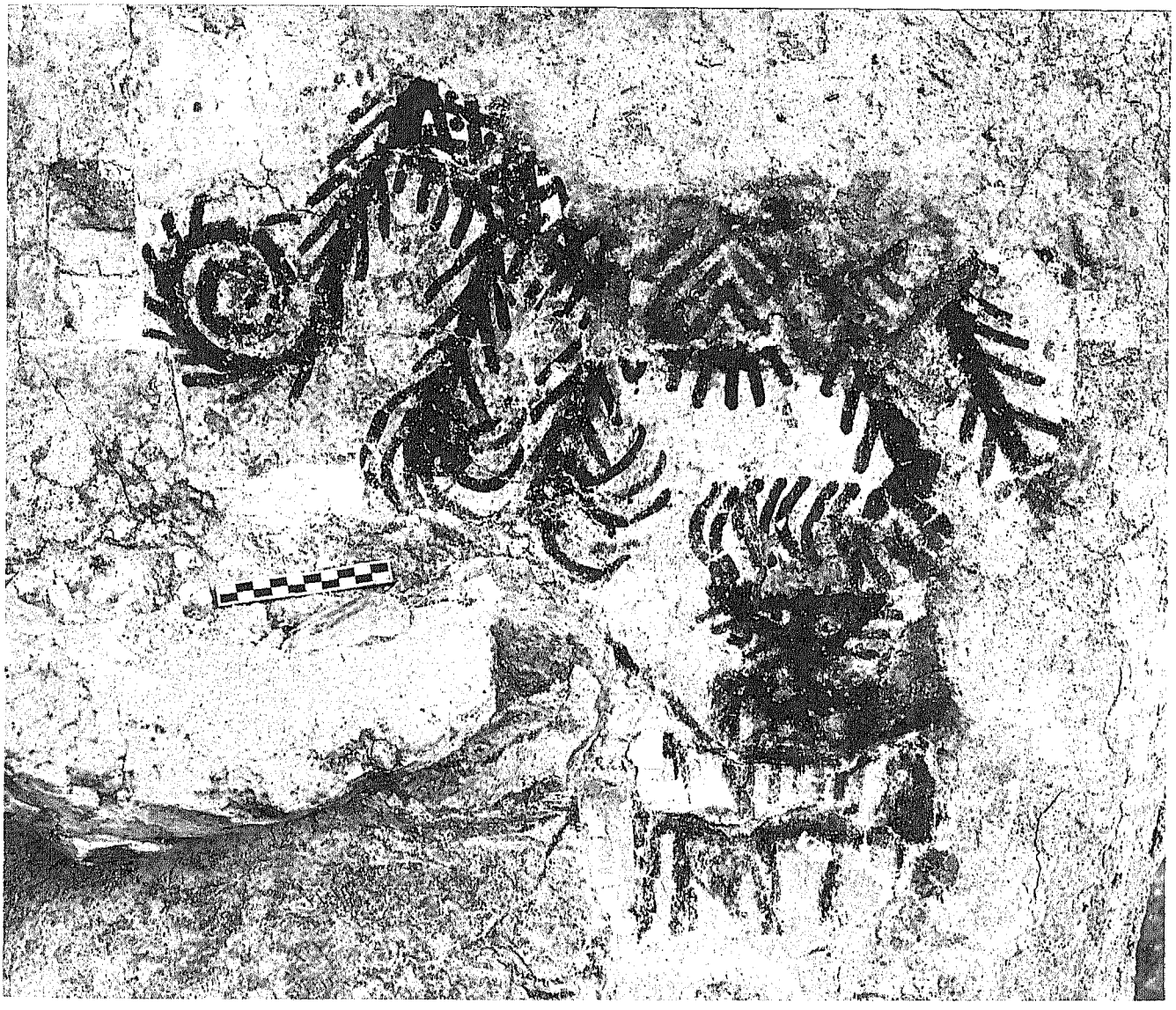
imagery, asserting the ruler's privileged claim to divine guidance and support, along with images of abundant water and vegetation, symbolizing agricultural prosperity (see figure 3). Since they conform only generally to the iconographic traditions of earlier Akkadian or Sumerian and contemporary Old Babylonian sculpture, the Mari paintings help to form some notion of the corresponding Mesopotamian wall painting of the later third millennium. [*See* Mari.]

While the Mari paintings demonstrate the impact of Sumero-Babylonian art on the Semitic cultures at the periphery of Mesopotamia, the landscape in the wall paintings of the level VII palace at Alalakh (Tell ʿAṭchana, eighteenth century BCE), near the North Syrian coast, reflects the pictorial themes and sinuous dynamism of Minoan art. Also of Minoan inspiration are the painted imitations of stone wall orthostats and timber lacing in the level VII palace and the later second-millennium house 39/A of level IV at Alalakh, and in the palace at Qatna, somewhat farther south. [*See* Alalakh; Minoans.] The presence of Minoan ornamental motifs and fictive stonework in some of the Mari paintings also shows that the Syrian interior was not immune to such influence from the west at an early time. In the same way, the paintings of the Mitannian governor's palace at Nuzi betray the impact of Levantine traditions farther into Mesopotamia later, in the fifteenth century BCE. [*See* Nuzi.] There, the stylized, voluted sacred trees inserted amid a textilelike geometric polychrome framework reflect the fertility imagery of contemporary Syrian, or Canaanite, art; at the same time, the stylized bull heads and Hathor masks reflect the impact of Egypt on the Levant. The wall paintings of the Middle Assyrian king Tukulti-Ninurta I (1244–1208 BCE) at his palace in Kar-Tukulti-Ninurta (Tulul al-ʿAqir) near Aššur, adapt, in their turn, the sort of stylized trees and framework of the Nuzi paintings; they document further the assimilation of Levantine precedent that provided the basis for the sacred tree imagery of Neo-Assyrian art during the first millennium BCE. In contrast, the Late Kassite period paintings (twelfth century BCE) from the Babylonian palace at Dur Kurigalzu (ʿAqar Quf) represent a more local, Mesopotamian tradition; these consist of files of male figures, possibly officials, painted along the dados of deep doorways. Although the style is closely related to contemporary Kassite relief sculpture, the processional imagery also prefigures one of the major themes of later Assyrian and Persian art.

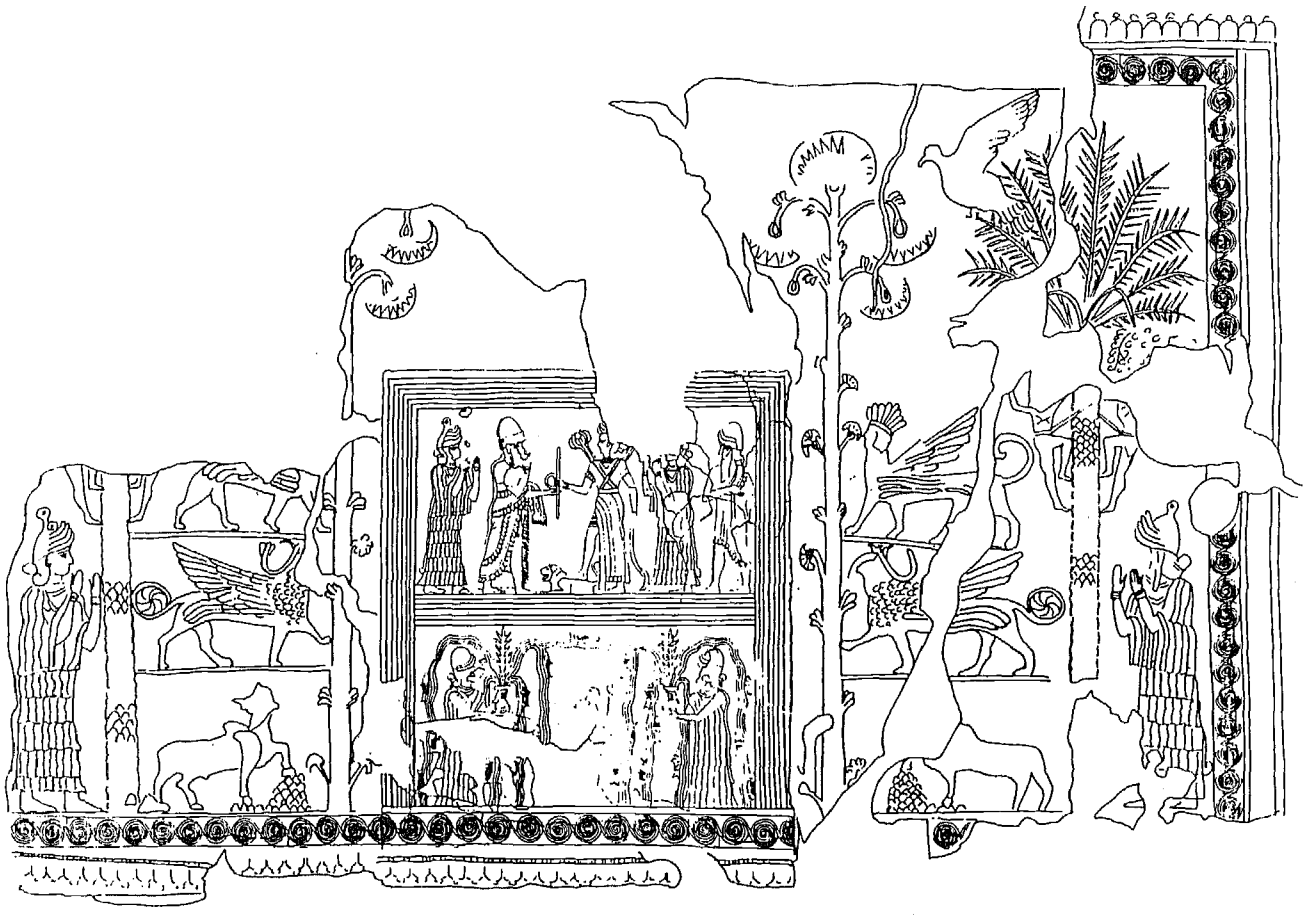
Wall painting continued to play a leading role in Near Eastern palatial decoration of the first millennium BCE. The finds from Nimrud (Kalah), Khorsabad, and Til Barsip indicate that such decoration was a standard feature of Neo-Assyrian palaces. The painting from residence K at Khorsabad (Dur Sharrukin, 722–705 BCE), where the king and an attendant reverently confront a standing deity, recalls the imagery of the Mari paintings a millennium earlier. The Assyrian taste for multiple, superimposed rows of stylized lotuses, palmettes, and other plants in the paintings from Khorsabad, Til Barsip, Nimrud, and Tell Sheikh Ḥamad also recalls the Middle Assyrian paintings of Tukulti-Nin-

urta I or those from Mitannian Nuzi. The extensive series of paintings from the provincial Assyrian palace at Til Barsip in Syria, datable to the ninth and eighth centuries BCE, closely parallels the kingly themes of court ceremony, military conquest, and hunting current in the monumental wall relief of Neo-Assyrian royal palaces (see figure 4). The Til Barsip paintings also provide important evidence for the polychromy of the corresponding wall reliefs that were originally painted. Above all, they suggest the significant role that monumental wall painting may have played in the development of such pictorial architectual relief in Near Eastern art of the first millennium BCE. The paintings at Tell Sheikh Ḥamad demonstrate the impact of palatial decoration on the houses of the wealthy elite. What is known of the painted embellishment of religious buildings at this time is unfortunately only fragmentary. [*See* Nimrud; Khorsabad; Til Barsip; Sheikh Ḥamad, Tell.]

In contrast to the rather slim and isolated evidence for the second millennium BCE in Anatolia, first-millennium BCE sites in the area are relatively rich in remains of wall paintings, especially to the east, in the Urartian kingdom of the Van region during the eighth and seventh centuries BCE. Despite their distinctive, local style, the paintings of divinities from the temple at Arin-Berd and the stylized floral frieze from the palace at Altintepe reveal the impact of Neo-Assyrian wall painting on that of Urartu. [*See* Urartu.] Egyptianizing features in the hunt scene from the palace at Arin-Berd, however, suggest connections with contemporary



WALL PAINTINGS. Figure 2. *Paintings, building IV, Arslantepe.* End of the fourth millennium BCE. (Courtesy M. Frangipane)



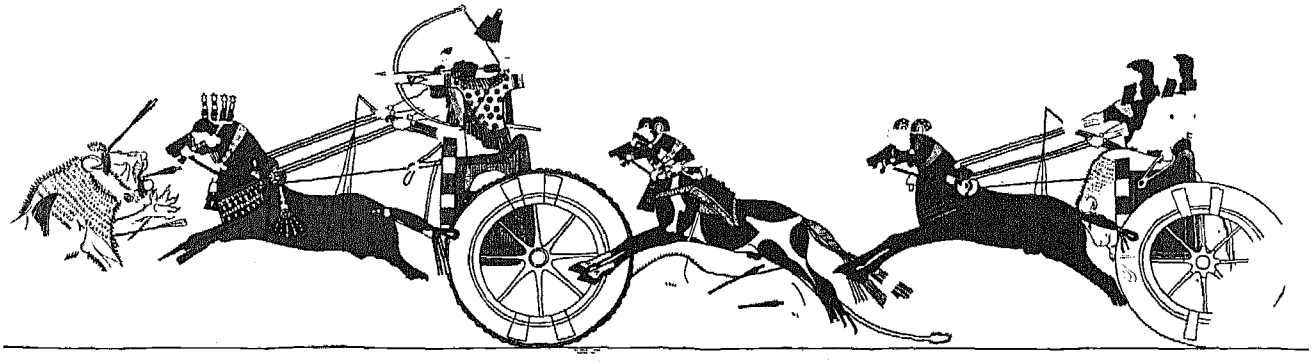
WALL PAINTINGS. Figure 3. *Painting, court* 106, *Palace of Zimrilim, Mari.* (Adapted from J. Lauffray, in A. Parrot, *Mission archéologique de Mari*, vol. 2, pt. 2, *Le Palais, peintures murales*, Paris, 1958, pl. 11)

North Syrian, or Phoenician, art. A strong egyptianizing tendency is also evident in the fragmentary wall painting of a seated female figure at Ḥorvat Teiman in southern Israel, the only early first-millennium site in the Levant that has so far produced any wall painting. The style reflects not only proximity to Egypt, but the Egyptian orientation of the Canaanite and Phoenician art that exerted a formative impact on the art of the Israelite kingdom.

The first millennium BCE also witnessed a marked upswing in the currency of glazed ceramic brick and tile, which provided a more durable form of wall painting. Some were small-scale, with one or more figures or ornamental motives depicted per tile, but the technique could also be used for large-scale compositions consisting of many bricks. Eventually, the process was applied to brick relief sculpture as well. The Assyrians of the first millennium preferred the more painterly flat glazed tiles, but in Babylonia, and farther east, in neighboring Elam in southwest Iran, the flat variety was often used alongside polychrome glazed ceramic relief. The best-known monuments of this type are the monumental floral and animal compositions on the Ishtar Gate and the facade of the throne room at Babylon, constructed by Nebuchadrezzar II in the early sixth century BCE. In keeping with local Elamite tradition, the Persians of the Achaemenid period (559–332 BCE) retained the use of both flat and relief polychrome glazed brick. Decoration of this type figured especially prominently in the royal palace at Susa, the Persian capital, where the technique was used to depict the types of imagery executed in stone relief at the palace of Persepolis: figures of the king, composite animal guardians, and processions of soldiers and attendants. Remains of true wall painting, however, are exceedingly rare in Achaemenid Persia. Fragmentary remains from the palace of Artaxerxes II at Susa nevertheless indicate that like the Assyrians before them, the Persians too had an official tradition of wall painting that closely paralleled the themes and composition of contemporary architectural sculpture. The late sixth and early fifth-century BCE tomb paintings discovered in Lycia in Anatolia, at the western extreme of the Persian Empire, are essentially Greek in style or workmanship and local in function, although the ones at Karaburun depict Persian ritual and costume. [*See* Babylon; Lycia; Persepolis; Susa.]

The conquest of the Persian Empire by Alexander the Great (332–323 BCE) and the consequent imposition of Greek political, religious, and material cultural standards greatly altered artistic development in the Near East for centuries to come. The peoples of the more westerly and coastal regions of Anatolia had long before adopted the outward forms of Greek art, and during the Hellenistic period a similar situation developed under the Seleucid monarchy in much of Syria and the Levant. Even in Mesopotamia and Iran, which eventually shook off Greek political control with the advent of the new Iranian dynasty of the Parthians (171 BCE–249 CE), native Asiatic artistic traditions continued to coexist in fluid interaction with imported Greek conceptions. Although the evidence is fragmentary, wall painting figured prominently in the official buildings and wealthy villas of the Seleucid period. The remains of paintings from Aššur, the palace at Hatra, and central Asiatic sites such as Toprak-Kala and Kaltchayan demonstrate that the Parthians too made ample use of this medium. In the first- or second-century CE paintings at Kuh-i-Khwaja in eastern Iran, Greek themes and styles were mixed with poses and costume derived from central Asiatic art. Farther west, among the Semitic peoples at the frontier of the Roman Empire, the already synthetic Parthian artistic traditions interacted with Greco-Roman artistic concepts, a process perhaps best exemplified in the various wall paintings from the Roman caravan town of Dura-Europos. The votive paintings from the temples of Bel and Zeus Theos, and the temple of the Palmyrene gods, combine a strong emphasis on frontal pose, costume, and stylistic abstraction associated with Parthian art, alongside details of dress, military regalia, and winged victories of Greco-Roman derivation. A similar syncretism of Greco-Roman and hellenized Iranian artistic alternatives typifies the most famous of the Dura wall paintings—an extensive assortment of scenes from the Hebrew Bible produced for the synagogue shortly before the town was destroyed in 256 CE. These paintings constitute a rare exception to the ban on images customary for Jewish religious art, and they attest to the greater artistic flexibility that Jewish communities may have assumed in the mixed cultural environment of this region. Nevertheless, at times, the cultural balance could tilt decidedly: the New Testament imagery of the paintings from the Christian baptistery at Dura seem to relate more directly to Greco-Roman prototypes from the West, while the equestrian hunting and banqueting scenes in the mithraeum and house M7 reflect a more Parthian, or Iranian, taste. Farther west, in the wall paintings in the tomb at Tyre, the style, format, and mythological subject matter were entirely Roman. The winged victories and mythic subjects painted in the Tomb of the Three Brothers at Palmyra also attests to a more overtly Greco-Roman taste sometimes adopted among the local Syrian peoples. [*See* Dura-Europos; Palmyra; Parthians; Tyre.]

This situation continued to obtain down to the end of antiquity. Classical standards prevailed in the Roman or Early Byzantine provinces of Asia Minor and the Levant, but trailed off toward Mesopotamia and eastern Anatolia. Across the Euphrates River, under the rule of the Sasanian Persian dynasty that succeeded the Parthians (249–651 CE), a hellenized Iranian art remained broadly current across much of the Near East and was stimulated periodically by contacts with central Asiatic art, and even from the hellenized art of northern India. Sasanian wall painting has only rarely been preserved, but Roman literary sources attest to its importance in palatial decoration. [*See* Sasanians.] The third–fourth-century examples from Susa are still stylistically related to those from Kuh-i-Khwaja, just as they recall the Parthian hunting imagery of paintings at Dura-Europos. With the emergence of the Arab Empire and the end of Late Roman or Byzantine political authority in Syria and the Levant during the seventh century CE, the Asiatic transformation of Greco-Roman themes and styles also assumed a new momentum and vitality in the nascent art of Islam. Despite the Islamic ban, figural wall painting remained a significant medium for the secular sphere in wealthy private residences like the early Umayyad pleasure villas at Quṣayr



WALL PAINTINGS. Figure 4. *Painting, room 27, Assyrian palace, Til Barsip.* (After F. Thureau-Dangin and M. Durand, *Til-Barsib*, Bibliotheque Archéologique et Historique, vol. 23, 1956, pl. 530)

'Amra in Jordan and Qaṣr al-Ḥayr West in Syria. [*See* Quṣayr 'Amra; Qaṣr al-Ḥayr al-Gharbi.] The paintings adapted the courtly imagery and bathing scenes popular in Late Roman and Sasanian art. Such painting was still current in the ninth century 'Abbasid palace at Samarra in Iraq. However, it was in the domain of arabesque and geometric ornament, in the more durable medium of glazed tile, that the old Near Eastern tradition of wall painting found its fullest expression under Islam. [*See* Samaria, *article on* Islamic Period.]

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DAVID CASTRIOTA

WARFARE. *See* Weapons and Warfare.

WARREN, CHARLES (1840–1927), renowned excavator of Jerusalem's Temple Mount and southeastern hill (1867–1870). Most of General Sir Charles Warren's military service was spent in South Africa, where he took part in the relief of Ladysmith. He served briefly as chief commissioner of the London Metropolitan Police (1886–1888) and at the time of his retirement was colonel commandant of the British Royal Engineers (1905).

In 1867 Warren was commissioned by the Palestine Exploration Fund (PEF) to study the features of Jerusalem's historic structures. Although his excavations of the south and southeastern walls of the Old City have been dismissed by some (Roger Moorey, *A Century of Biblical Archaeology,* Cambridge, 1991) because they failed to resolve the area's formidable topographical questions, this is to ignore the wider significance of Warren's work. His investigations, which preceded the development of stratigraphic excavation, are still noteworthy because of the careful plans and diagrams he provided, achieved by exploring, under extraordinarily arduous and dangerous physical conditions, much of underground Jerusalem. These were published with the Jerusalem volume (London, 1884) he edited with Claude R. Conder.

By mapping rock contours, Warren was able to establish, for the first time, the relationship of the walls of the Haram esh-Sharif on the Temple Mount to the rock surface. He also examined the waterworks deriving from the Gihon Spring and was the first to go through the Siloam Tunnel on the city's southeastern hill.

Before leaving Palestine in 1870, Warren explored the southern part of the country and the area east of the Jordan River. His major publications include *Recovery of Jerusalem* (with Charles W. Wilson, London, 1871), *Underground Jerusalem* (London, 1876), and *The Temple and the Tomb* (London, 1880), in which he refuted the theories of the architectural writer James Fergusson (1808–1886), author of a contentious pamphlet on the Holy Sepulcher and other works about Jerusalem. Warren was distinguished as a Knight Grand Cross of St. Michael and St. George, a Knight Commander of Order of the Bath, and a fellow of the Royal Society. His involvement in Palestine continued for sixty years. He joined the committee of the PEF in 1871 and remained a member until his death.

[*See also* Jerusalem; Palestine Exploration Fund; *and the biography of Conder.*]

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YOLANDE HODSON

WAR SCROLL. One of several scrolls found in Cave 1 at Qumran, near the Dead Sea, the War Scroll (1QM) was acquired by the Hebrew University of Jerusalem and first published (posthumously) by Eliezer D. Sukenik in 1955; two rather small and inconsequential fragments appeared in Discoveries in the Judaean Desert (vol. 1, pp. 135–136). The fullest edition to date is that of Yigael Yadin, which includes an extensive introduction. It contains nineteen columns that describe a war sometimes defined as taking place between the "children of light" and the "children of darkness" (aided by the "Kittim") but sometimes between Israel and the Gentiles. This and other variations in language and ideology suggest a composite document, whose sources have nevertheless been organized in a fairly coherent way.

Column 1 summarizes the entire war, opening with a battle between the children of light and the children of darkness—the latter being nations living in Palestine or on its borders (the traditional biblical enemies of Israel—Edom, Moab, Ammon, and Philistia) and in league with the Kittim, who are present in Syria and Egypt and whose "domination" is thereby ended. Columns 2–9 deal in more detail with subsequent battles between the twelve tribes of Israel and the nations of the world (based on *Gn.* 10). They involve six-year campaigns interspersed with sabbatical years, making a total of forty years of combat, including the initial battle. Column 2 opens with the restoration of the Temple cult in Jerusalem (in the seventh year of the war, after the defeat of the Kittim?). Columns 3–9 describe the inscriptions on trumpets and banners, the lengths of banners, battle arrays and weaponry, the ages of participants, and, finally, military maneuvers. Columns 10–14 comprise a variegated collection of liturgical pieces. Columns 15–19 describe in detail a seven-stage battle between the children of light and the children of darkness, directed by priests, assisted by heavenly hosts, and finally won by direct divine intervention (probably the one also described in col. 1).

The scroll thus combines a nationalistic scheme of world conquest by Israel with a seven-stage dualistic confrontation between the forces of light and darkness. The balance between fantasy and reality is precarious: the dualistic battle proceeds as if minutely choreographed; the nationalistic sections (cols. 2–9) contain some realistic data, such as the use of guerrilla tactics and lightly armed troops. Its genre has recently been compared with Hellenistic and Roman military manuals. It is certainly not an apocalypse. Its descriptions of the weaponry and tactics led Yigael Yadin to posit an imperial Roman date for it—and certainly most scholars see the Kittim in 1QM as the Romans. The scroll might be seeking to converge both dualistic and nationalistic eschatological schemes in a struggle against Roman domination. The manuscript probably dates to the late first century BCE or the first half of the first century CE.

Fragments found in Cave 4 at Qumran contain material similar to 1QM, which has led to attempts to construct an "original" War Scroll or to see 4QM as an abbreviated edition. Given the evidence of the sources in 1QM, it may be more likely that a variety of materials was in circulation concerning a possible future war, an idea rooted perhaps in the independent army constituted under the Hasmoneans.

[*See also* Dead Sea Scrolls.]

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PHILIP R. DAVIES

WATER TUNNELS. In the arid climate of the ancient Near East, the need for water was always fundamental and its proximity dictated the location of early settlement sites. Eventually, surface waters along rivers and lakes were manipulated into complex irrigation systems, rainwater was husbanded in storage reservoirs and cisterns, and underground sources, marked by oases and springs, were tapped by wells.

Water sources for agrarian use—crop irrigation and animal husbandry—were normally on the outskirts of a settlement site. However, as large population centers developed, their walled defenses made external access not only inconvenient, but a fatal weakness when under siege. Access via closed tunnel systems became an adaptation to the need for an intramural water supply.

Since the late nineteenth century, archaeologists working in Palestine have identified and explored such systems, most notably at Jerusalem, Gibeon, Megiddo, Gezer, and Hazor. At the first three, the systems exploited natural springs located on the slopes of their lower tell. These springs were created by natural karst-forming processes: the migration of groundwater through joints and bedding planes dissolves

and forms channels in the limestone bedrock. Interruptions in the bedding planes at fault lines or erosion at valley locations produces exposures at which water flows freely or settles into pools, or catchments. The caves and pools at the Gihon Spring at the foot of Mt. Ophel in Jerusalem are classic expressions of this process.

The various initiatives taken to secure springs and to access their waters from within a city are best illustrated at Megiddo, where three historical stages are evident. The first, prior to the tenth century BCE, involved only protecting the spring chamber by covering it and constructing a stairway access that could be blocked and masked under siege. A more ambitious second stage, constructed during the reign of King Solomon in the tenth century BCE, included a camouflaged gallery running through and below the city wall, connected to a long, covered stairway that lead downslope to meet the earlier entry to the spring chamber. In the ninth century BCE, a third-stage adaptation was engineered: a wide shaft, 35 m (115 ft.) deep, was sunk inside the city; from its base, a lateral tunnel 61 m (200 ft.) long was hewn to the spring chamber. The tunnel was pitched slightly downward, so that the water from the spring flowed to a storage sump at the base of the shaft. Water could be drawn from there by descending a long staircase that spiraled down the outer walls of the shaft opening.

A slightly earlier (twelfth century BCE) example of the second-stage, covered-stairway type is found at Tell es-Sa'idiyeh (biblical Zarethan), and intramural shafts and tunnels similar to the Megiddo stage-three constructions are found at Gezer and Hazor. However, at the latter two sites, the systems lead to internal subterranean pools, not to external springs. Their builders tapped waters deep in bedrock, a significant innovation. The ambitious scale of these shaft-and-tunnel excavations suggests that the engineers did not proceed by chance. A key to their confidence in finding subterranean water may be seen at Gibeon (Ar., el-Jib).

Gibeon's systems offer additional parallels to each of the three Megiddo stages, but with a significant difference in the third stage. Although, as at Megiddo, a tunnel was cut from the spring some 33.5 m (110 ft.) in the direction of the internal shaft, it ended some 4.6 m (15 ft.) away from the shaft base. The connection most likely was not completed because a feeding aquifer had already been tapped at the bottom of the shaft. If Gibeon's third-stage shaft system is indeed the "Pool of Gibeon" in *2 Samuel* 13–17, it would have been built before about 990 BCE and would thus be the earliest of the known and datable open-shaft/tunnel structures.

The most elaborate and complex of these early systems is on ancient Jerusalem's southeastern hill below the City of David. Its main elements were identified by explorers in the nineteenth century. In 1838 Edward Robinson discovered the 533 m (1,750 ft) long Siloam Tunnel (Hezekiah's Tunnel) that carries water from the Gihon Spring on the east to the Siloam Pool on the southwest; in 1867 Sir Charles Warren investigated a vertical shaft (Warren's Shaft) leading up from one of the lower spring and tunnel chambers to a more horizontal ramp tunnel that enters the city; and in 1886 Conrad Schick explored an irrigation tunnel in the bedrock (the Siloam Channel) that leads south from the spring and has windowlike openings all along the eastern ridge.

In the 1980s, the geological study carried out by Yigal Shiloh and his team showed that the development of each of these systems involved exploitation of natural karst features in the bedrock. Thus, the vertical shaft and the ramp tunnel above it were originally parts of a natural dissolution channel that was further shaped and expanded to provide access to the Gihon's waters from within the city walls. Based on its identification with the *ṣinnor* ("gutter" or "pipe") mentioned the story of David's conquest of the city in *2 Samuel* 5:6–10, early explorers referred to it as the Jebusite Shaft. It was accordingly dated pre-Davidic, before 1000 BCE. Although it is reasonable to assume that elements of the natural shaft and channel were present in David's time, the construction date for the more developed system cannot be ascertained on present evidence. However, the paleography of an inscription found in the Siloam Tunnel dates its construction securely to about 705 BCE, in the reign of Hezekiah. [*See* Siloam Tunnel Inscriptions.] Moreover, if the Siloam Channel is the "upper outlet of the waters of Gihon" that Hezekiah closed to direct waters west, as recorded in *2 Chronicles* 32:30, a *pro quem* date for the construction and use of that feature is also established.

[*See also* Cisterns; Gezer; Gibeon; Hazor; Jerusalem; Megiddo; *and* Pools.]

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JOE D. SEGER

WATZINGER, CARL (1877–1948), art historian and archaeologist, whose main research interest was in Greek art in the ancient Near East. Watzinger was born in Darmstadt, Germany. As a student he was awarded a fellowship (1901) to study at the German Institute in Athens. In 1903 the German Oriental Society commissioned him to publish wooden sarcophagi that had been excavated at Abu Sir in Egypt. The

product of his research was *Griechische Holzsarkophage aus der Zeit Alexanders des Grossen* (1905). He became a lecturer at Humbolt University in Berlin (1904–1905) and was a professor at the universities of Rostock (1906–1909), Giessen (1909–1916), and Tübingen (1916–1948).

Watzinger's archaeological work in the Near East began during World War I. He and Karl Wulzinger, the Byzantinist, worked with Theodor Wiegand, who had been appointed to lead extensive expeditions to Turkey, Syria, and Palestine. During this period, Watzinger worked at Jericho and Megiddo, two of the key sites in Palestine. The archaeological results of these expeditions were published as *Jericho: Die Ergebnisse der Ausgrabungen* (1913), by Ernst Sellin and Watzinger, and *Tell el-Mutesellim,* by Gottlieb Schumacher and Watzinger (1908–1929). Although excavation techniques were not fully developed at the time, the results of Watzinger's work were well published and remain useful research tools. Perhaps the best overview of Watzinger's many accomplishments in the fields of art history and archaeology appears in his biography of Wiegand (1944).

[*See also* Jericho; Megiddo; *and the biographies of Schumacher and Sellin.*]

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THOMAS A. HOLLAND

WAWIYAT, TELL EL-, site located in the Beth-Netofa Valley in Israel's Lower Galilee, some 12 km (7 mi.) north of Nazareth (map reference 178 × 244). The mound, one acre in diameter, rises above the valley floor to a maximum height of 3.75 m. The settlement's original name is unknown. On the basis of a biblical passage (*Jos.* 19:13–14), F.-M. Abel (*Géographie de la Palestine,* Chicago, 1938) suggested that the original name of Tell el-Wawiyat was Neah, a settlement within the territory of the tribe of Zebulon. Unfortunately, the modern name of the site (Ar., Tell el-Wawiyat; Heb., Tel Vavit), provides no assistance in securing this identification.

In 1986 and 1987 two seasons of excavation took place at the site under the direction of Beth Alpert Nakhai, J. P. Dessel, and Bonnie L. Wisthoff. The project was sponsored by the University of Arizona, in conjunction with the William F. Albright School of Archaeological Research in Jerusalem and the American Schools of Oriental Research. William G. Dever was archaeological adviser to the excavation. Thirteen 6 × 6 squares, revealing six strata of occupation, were excavated, twelve of them in the eastern sector of the tel. Archaeological remains dating to the Iron Age were found 20 cm below the surface.

Middle Bronze Age II–III. The earliest period uncovered at the site, discounting several sherds from the Chalcolithic and Early Bronze Ages, was the Middle Bronze Age II–III (seventeenth–sixteenth centuries BCE). The remains of stratum VI were limited to two child jar burials dated to MB III. One contained the bodies of two children, aged five and three, while the other contained an infant who died before reaching six months of age. The pottery placed within these two burial jars was most elegant in form.

Late Bronze Age. No architectural remains from stratum V, the Late Bronze Age I (fifteenth century BCE), have been uncovered at Tell el-Wawiyat. The limited ceramic repertoire associated with the stratum is best seen as reflecting the end of the Middle Bronze Age tradition.

The most common find attributed to stratum IV, the Late Bronze Age II (fourteenth–thirteenth centuries BCE), was ceramic vessels. Unexpectedly, there was a great deal of imported pottery, attesting to Tell el-Wawiyat's wealth and its cosmopolitan character during this period: most was Cypriot, including White-Slip milk bowls and vessels in Basering I and II, and Monochrome, White-Painted, and White-Shaved wares. A limited amount of Mycenaean pottery and one Minoan sherd were also found. Included among the vessels produced locally for domestic use was the typical range of cooking pots, storejars, and bichrome kraters.

A simple ceramic figurine showing a mother embracing her child was among the artifactual remains of the period. One building, originally constructed in LB II, but better known from the Iron Age IA, provides almost the full extent of the architectural evidence from this period.

The proximity of Tell el-Wawiyat to several other settlements, including the large city of Ḥinnatuni (modern Tel Ḥannaton) and the smaller Tel Qarnei-Ḥittin, as well as its wide range of imported wares, elucidates the nature of the LB II settlement. This hamlet was likely a way station under the control of Ḥinnatuni, supplying food and lodging to travelers and traders crossing the Lower Galilee.

Iron Age. Two stratum III (Iron Age IA, late thirteenth–twelfth centuries BCE) buildings separated by spacious open areas have been excavated. A large building in squares M–N in the northwestern quadrant of the excavated area was comprised of two main rooms and several smaller chambers. That this building was used for domestic activities is attested to by its assemblage of storejars, cooking pots, baking trays, and stands found with flint blades, basalt and limestone

mortars, grinding stones and pestles, and worked-bone awls and needles.

The building complex in squares K–L in the southeastern quadrant of the excavated area was originally constructed in LB II and remained in use in Iron IA. Its main room contained an unusual assemblage: a basalt and limestone jar stand, a stone column base, a ceramic oven, and hewn and plastered stone blocks. The partially articulated bones of a cow lay on the floor in a corner alcove. In another room a very large stone bin set into the floor was surrounded by a double wall. Among the artifactual remains were a spearhead, a steatite jewelry mold, a delicate basalt tripod, a broken Astarte figurine, and remnants of gold leaf. The K–L building complex, with these unusual objects suggestive of elite status, had a specialized, possibly cultic function.

That the Iron IA site evolved from its LB II predecessor is apparent in the ceramic and architectural continuity between the two periods. While Iron IA Tell el-Wawiyat was a farming hamlet, those living there led socially and economically complex lives.

In stratum II (Iron Age IB, eleventh century BCE), both stratum III buildings were modified: numerous small walls subdivided their spacious rooms. It seems, then, that in Iron IB, squatters, possibly early Israelites, reoccupied the abandoned Iron IA Canaanite village.

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BETH ALPERT NAKHAI

WEAPONS AND WARFARE. The earliest weapons found in the Near East are microlithic projectile points from the Mesolithic period, some, at least, of which were used as arrowheads. There is no evidence that these weapons were used for any purpose other than for hunting. The earliest evidence of fortifications is found in the Pre-Pottery Neolithic A settlement at Jericho. It was surrounded by a stone wall preserved to a height of 7 m which boasted an internal tower preserved to a height of 9 m. [*See* Jericho.]

Fortifications, which may be taken as evidence for the practice of warfare, appeared as early as about 4300 BCE at Mersin, in Cilicia, where a solid wall with projecting sections and simple interval towers was integrated into a ring of houses constructed on the wall's interior face. [*See* Cilicia.] The system featured a simple straight gate passage, flanked by towers. By 3000 BCE, the city of Uruk in southern Mesopotamia was surrounded by a fortification wall about 9.5 km (6 mi.) long, built, according to the Epic of Gilgamesh, by Gilgamesh himself. [*See* Uruk-Warka.] Excavations have not as yet revealed details of this monumental system. By 3000 BCE the cities of Egypt were fortified with massive, solid walls strengthened by equally massive solid interval towers, sometimes rectilinear and sometimes semicircular. Although there are no excavated examples, Egyptian gateways in later periods were always of the simple straight type, and it is likely that they were so in this period also. It appears that the Egyptians had not developed very sophisticated tactics in field warfare. They had, however, clearly made great advances in siege warfare, as tomb paintings show the use of siege ladders and an early version of the battering ram to create breaches in walls.

The first period for which there is extensive evidence of fortifications in the Levant is Early Bronze II, in which a number of towns were surrounded by single curtain walls, often with solid rectilinear straddle towers and external semicircular interval towers (e.g., at Arad, Ai, and Jericho). [*See* Arad; Ai.] The interval towers would have enabled the defenders to use enfilading fire against any attacking force, a major technological advance and necessary to the successful defense of a curtain wall. In EB III the fortifications of the towns of the Levant were strengthened and elaborated, to an astonishing degree, with the introduction of sloping ramparts (glacis) at the outer foot of fortifications and the use of covering walls in advance of the main curtain. Gates developed from the simple opening in the EB II curtain wall into straight and bent-axis external towers, sometimes with sloping access ramps angled so that an attacker approached the gate with the right (sword) hand nearest the curtain wall, leaving him unshielded against the fire from the defenders on the walls.

In about 2000 BCE, a sequence of events began which ultimately led to the revival of state-organized society in the Levant. Among the most important of these events were the collapse of the empire of the third dynasty of Ur (c. 2000 BCE) and the reunification of Egypt by Mentuhotep II (c. 1900 BCE). The first excavated evidence of fortifications in Egypt, the twelfth-dynasty fortress at Buhen, is from this period. It was a menacing highly sophisticated construction, with a multiple trace, straddle towers at the corners, interval towers along both the curtain and the covering wall, a scarp, and a counterscarp. The covering wall is fitted with arrow

slits. It is curious that in a fortress otherwise so sophisticated the gate is a simple straight passage, though flanked with massive solid towers. With the revival of Egypt came the revival of trade in the eastern Mediterranean and the revival of fortified towns.

Middle Bronze II A culture initially appeared in coastal Syria/Lebanon, from which it later spread southward to Palestine. Fortifications reappear in MB II A, with simple single trace-curtain walls. Little is known of the fortifications of this period. MB II B, however, saw the construction of the most impressive fortifications in the history of the Levant. The essential element of the system consisted of a dramatically enlarged version of the sloping ramparts first seen in the Early Bronze Age and now frequently faced with plaster, which sometimes extended into the matrix of the rampart as part of its construction. The plaster facing served two functions: in peacetime it protected the artificially steep slope from erosion, while in time of war it would have served to make the slope too slick to climb, especially if water were poured down it.

The transition between MB II A and B is generally agreed to be linked to a major political event—the fall of the Egyptian Middle Kingdom—although the exact nature of the link is still disputed. If the inscriptions of the New Kingdom pharaohs are taken at face value, Egypt was attacked and conquered by the armies of the kings of Syria-Palestine; however, these accounts were written hundreds of years later and are highly propagandistic justifications of the conquests by the New Kingdom pharaohs. At any rate, it is clear from both textual and archaeological evidence that Syro-Palestinian rulers took over Lower Egypt and ruled it for a period of at least a century. In this position they controlled Egypt's trade and wealth and their homeland prospered accordingly. This prosperity led to an increase in population unparalleled in the ancient Levant.

As settlements grew in size it became necessary to extend fortifications beyond the ancient tells. At sites such as Hazor, the largest settlement in the southern Levant, enormous artificial ramparts were constructed enclosing large areas of level ground which were then built up as part of the settlement. [*See* Hazor.] Because of erosion at the tops of the ramparts it is not clear whether the ramparts were crowned with walls in every case; however, in those cases where the top of the rampart is preserved, as at Jericho, there is evidence of a fortification wall on top of the rampart. At Gezer there is evidence of the use of a multiple trace, with a covering wall in advance of the curtain, as well as of the use of massive rectilinear straddle towers and a massive projecting solid tower gate with three internal piers. [*See* Gezer.] Elsewhere, the towers are chambered, but the use of three internal piers is general.

The transition from the Middle Bronze Age to the Late Bronze Age was also connected to a series of major political events. Once again, however, the precise nature of the connection is disputed. In about 1600 BCE the first dynasty of Babylon was brought to an end by conquest by the Hittite king Muršili I, and in about 1550 BCE Ahmose I, first king of the eighteenth dynasty of Egypt, expelled the Syro-Palestinian dynasts, known through an error of translation as the Hyksos, from Egypt. [*See* Babylon; Hittites; Hyksos.] Muršili I was assassinated on his return to Ḫattuša/Boğazköy, but Ahmose's successors, most notably Thutmose III, went on to conquer Palestine and Syria as far as the Euphrates River. [*See* Boğazköy; Euphrates.] The Levant thus fell within the Egyptian empire and became subject to Egyptian imperial policy. Archaeologically, these historical events are to be linked to the cultural shift from the Middle to Late Bronze Ages, although the dating of the archaeological shift in historical terms is still in question.

In weapons and warfare, as in most other cultural aspects, the Late Bronze was a continuation of the Middle Bronze Age. However, some very significant changes took place: at virtually every site in Palestine the massive MB fortification systems were abandoned, although at a number of the excavated sites (e.g., Lachish and Megiddo) imposing new gateways were constructed. [*See* Lachish; Megiddo.] These gateways do not appear to have had any defensive walls and would appear to have functioned ceremonially primarily. From the Amarna letters it is learned that order was maintained by small contingents of Egyptian troops; other Egyptian texts tell of an administrative system linked by messengers in chariots. [*See* Amarna Tablets, Chariots.] The absence of fortifications would appear to have been a deliberate Egyptian policy to prevent the rise of overly mighty subjects. One of the few exceptions was Hazor, where the MB fortifications continued in use throughout the Late Bronze Age. This has been taken by at least one scholar to indicate that Hazor lay outside the area of Egyptian control/interest. Another important exception is Ugarit, the great trading center on the Syrian coast, where a portion of the fortifications in front of the great royal palace has been excavated. [*See* Ugarit; Palace.] There the excavators found a massive solid tower with a gate tunnel whose construction owes nothing to the Levantine tradition of construction. It most closely resembles the postern tunnels in the fortification system of the Hittite capital Ḫattuša in central Anatolia—a simple, straight passage with a section consisting of a pointed, corbeled arch. This reflects both the importance of the Hittites in the Late Bronze and their dominance of northern Syria in the latter part of this period. The fortifications at Ḫattuša are among the most impressive in the ancient world, with a massive multiple trace, generally set at the top of a ridge, to give maximum advantage to the defenders. The main curtain is a casemate wall with massive chambered interval towers. The covering wall is solid, with smaller chambered interval towers set between the interval towers of the curtain. The gate passage is flanked by projecting massive chambered towers, with two internal piers,

and is approached from the right by a sloping ramp, to put attackers at a maximum disadvantage.

By the fourth millennium, two types of bow are known to have been in use. Mesopotamian pictorial depictions show a simple self-bow; Egyptians show themselves using a double-convex self-bow, possibly with the tips strengthened with horn. It is unlikely that these bows were compound. Curiously, there is little evidence for the bow and arrow in the EB Levant. The main weapons appear to have been the mace and the battle-ax, indicating hand-to-hand combat, rather than longer-range fighting. The existence of deep systems of fortifications, however, indicates that the bow must have been in use, along, probably, with the sling, which has a deadly accuracy to a range of at least 100 m. The heads of the arrows must have been of hardened wood.

It is debatable whether anything which could properly be called a sword was in use in the Early Bronze Age, although there were long, straight, double-sided stabbing daggers. The reason for the lack of swords is that these require a hard metal, at least bronze, and the only metal in use in the Levantine EB was copper. Thrusting spears and possibly javelins were also used in this period for massed infantry assaults. The most important weapons for hand-to-hand combat were the semicircular battle-ax and the mace: both were mounted on long, slender hafts, whose flexibility would have added to the force of the blow; both also were for use against soldiers unprotected by metal armor. Little is known of the conduct of armies in the field in Egypt, and nothing at all in the Levant, in this period. In Mesopotamia, however, it is clear that field armies were highly organized and used sophisticated tactics. The Stela of the Vultures, erected by King Eanatum of Lagash (c. 2500 BCE) shows his Sumerian infantrymen advancing in a true phalanx, protected by shields and armed with long thrusting spears. [*See* Girsu and Lagash; Sumerians.] This formation made the Sumerian armies a formidable fighting force in the absence of powerful long-range weapons. The phalanx of infantry was accompanied by mobile spearmen mounted in four-wheeled war carts drawn by teams of onagers. [*See* Carts.] These war carts lacked steerable front wheels and were slow and cumbersome, not to be confused with the chariots of the Late Bronze Age (see above). Their primary use was probably to break up opposing infantry formations in advance of an assault by the infantry.

In Mesopotamia, the period beginning in about 2200 BCE saw the introduction of a revolutionary new weapon, the composite bow, which is first seen in the hands of Naram-Sin, King of Agade. His armies, like those of his grandfather, Sargon the Great, reached as far as the Mediterranean Sea. Yigael Yadin (1963) suggests that this weapon, with its unprecedented range and power, was a major factor in these conquests. The collapse of state-organized society in the Levant at the end of EB III brought an end to fortifications, which were beyond the means of the agricultural villages which remained the sole form of human settlement. Nevertheless, there is clear evidence of conflict between these communities, in the form of an abundance of personal weaponry. Most male burials in Middle Bronze I/EB–MB/EB IV (as the period is variously known in the Levant) are accompanied by a distinctive form of dagger—long, slender, double edged, and weakly attached to the hilt by rivets. A more formidable weapon was the battle-ax, which was crescent shaped, with a cylindrical socket for the haft. In addition, numerous javelin heads and some stabbing spears have been recovered. A development which has recently been shown to have occurred in this period is the invention of the long slashing sword, of which only one example is known, currently preserved in the British Museum. This is an impressive weapon, nearly a meter long and double edged, with a sharp, piercing point. It is curious that this development appears to have had little or no influence, as such swords are nowhere depicted artistically. While most of these weapons could have had peaceful uses in hunting, the evidence currently available indicates that hunting played a very minor role in the economy of these communities. [*See* Hunting.]

Weapons underwent a certain degree of development in MB II. The crescentic battle-ax became heavier and generally had a socket for the haft. The advent of bronze body armor and helmets led to developments in the battle-ax, which became elongated and slender. Ultimately, it was reduced to a heavy armor-piercing spike, rather than the cutting edge it had been in the Early Bronze period. The widespread use of bronze also led to the development of the first swords, which were sickle shaped, with the cutting edge on the outside of the curved portion of the blade. This type of sword was also probably a development from the crescentic ax of the Early Bronze Age; like the ax, as distinct from the straight sword which supplanted it at the end of the Bronze Age, it could not be carried in a sheath, which made it less convenient than the latter form proved to be. The daggers of this period were distinctive, having a broad, veined blade attached to the hilt by rivets in a short tang. These daggers frequently had a crescentic pommel, often of stone. The type originated in Mesopotamia in the Early Bronze Age and in the Middle Bronze Age spread throughout the Near East and into Europe (those carved on the sarsen stones of Stonehenge, England, are the most far-flung examples). Javelins and socketed thrusting spears were also in widespread use, as were slings, known primarily through artistic depictions.

Although the compound bow had long been in use in Mesopotamia, surviving bows from Middle Kingdom Egypt, like the artistic depictions of bows, are all of the simple self-bow type, although some of them are slightly double convex. At some point, probably late in MB IIC/MB III, a weapon was introduced into the Levant which was to change the shape of warfare in the ancient Near East and become the most important tactical factor until the end of the Bronze

Age. This formidable weapon was the horse-drawn, two-wheeled war chariot. Lightweight and highly maneuverable, the chariot served both as an assault weapon to break up infantry formations and as a mobile firing platform. As the infantry had no answer to the onslaught of chariots, particularly when they were used en masse, they quickly came to dominate warfare. In the form in which they were introduced into the Near East they came from the steppes of Central Asia. The manual used for training horses throughout the region then is known for its Indo-European technical terms, including the equivalent of the medieval knight: the *maryanu* warrior, or charioteer. Yadin (1963) suggests that the deep fortifications which appeared at the beginning of MB II were the response to the introduction of this weapon. The view is not supported by the evidence from the Levant, however, which suggests that in this period society was feudal, dominated by a warrior aristocracy in which the most prestigious element was the charioteers. This is reflected even in the Egyptian New Kingdom, where the king was depicted as a charioteer, although the form of the society was very different. What is clear from the universality of massive and deep fortifications is that warfare was widespread in the MB Levant and that the wealth and power evident in the cities required the defense implied by their fortifications (although the identity of the enemy against whom the defenses were raised is not clear).

The Late Bronze Age saw only one significant development in Levanto-Egyptian small arms: the introduction of the compound bow from Mesopotamia. This was a formidable weapon, with a far greater power, range, and accuracy than any bow hitherto available to soldiers in the region. Amenhotep II is recorded as having shot at a copper target about 6 cm thick from his chariot, the arrows striking with such force that they went through the target and out the other side. Even allowing a certain degree of exaggeration to glorify the king, this is a significant demonstration of the power of this weapon. In addition, the compound bow had the advantage of being much shorter than the simple self-bows which had preceded it, making it the ideal weapon for use in chariots and by massed bowmen against infantry. When combined with units of slingers, units of bowmen greatly increased the fighting power of the infantry, although they still were no match for the power of the chariotry.

The end of the Late Bronze Age came shortly after 1200 BCE and was marked by one of the greatest political upheavals in world history: the collapse of both the Mycenaean and Hittite civilizations within the space of a few years. In the ensuing chaos there was a substantial invasion of the Levant by both a land army and a fleet of warships—the whole collectively known as the Sea Peoples, who very nearly succeeded in conquering Egypt and who took over the coastal plain of Palestine. These invaders brought with them a new series of weapons developed in western Europe in the course of the previous centuries: a new type of body armor consisting of overlapping bands of bronze and a new type of long, straight, double-edged slashing sword, stronger than the earlier Near Eastern model because of its single-piece (bilt and blade) cast construction. These weapons were not generally adopted by the armies of the region, however.

After an interval of a century (c. 1000 BCE) new, independent kingdoms began to emerge from the ruins of the Egyptian empire in the Levant. In coastal Syria and Lebanon the Canaanites, now becoming known as Phoenicians through their Greek contacts, began to establish a network of seaborne trading colonies, first on Cyprus and then farther west. [*See* Canaanites; Phoenicians.] For the first time since at least the mid-fifteenth century BCE, the cities of the Levant began to be fortified. The new fortifications were to some extent a revival of the ancient Canaanite tradition, but with innovations which arose from its redevelopment. Within the area which was to emerge as the Israelite kingdoms, a clear development sequence can be seen, beginning with villages in which the houses, built in a continuous ring around a central space, presented a blank external wall which formed a sufficient defense against small-scale attacks. [*See* House, *article on* Syro-Palestinian Houses.]

As the size of the settlements grew more significant, fortifications were required. These developed rapidly, possibly influenced by those of the Phoenician cities to the north. In detail, however, the fortifications of the Israelite cities were very different. From the beginning they involved the use of a multiple trace, with a curtain wall and an advanced covering wall. Interval towers provided enfilading fire; later, Assyrian bas-reliefs demonstrate that in time of war the coverage from the tops of walls and towers was increased by the addition of projecting wooden platforms. [*See* Assyrians.] Gateways became more formidable, with the addition of a fourth internal pier, and the gate tower itself was changed from a projecting bastion to an internal tower—with the advantage that it could not be surrounded by enemy attackers. The gate approach became much more of a defense in depth, with a series of towers and gates along the passage leading up to the main city gate at the top of the city mound. This approach was almost invariably from the right, thus exposing the sword side of the attacking soldiers to the flanking fire of the defenders on the walls. Curtain walls could be of either casemate or solid construction, as circumstances demanded. The use of ramparts with prepared surfaces also continued, sometimes with a plaster facing and sometimes with a stone facing.

A major technological development in this period, which had a profound effect on weapons and warfare, was the introduction of iron. The advantage of iron lay not so much in its hardness, which was no greater than that of bronze, as in its cheapness. Iron ore is found in most areas of the Near East, and, while the process of smelting iron is more complex than that required for copper, iron is far more abundant than the tin required to turn copper into weapons-grade

bronze. Iron arrowheads quickly become abundant, as did iron daggers and swords, enabling the arming of larger numbers of soldiers than ever before. Initially, warfare was little different than it had been throughout the Late Bronze Age, with large numbers of chariots supported by massed infantry, as can be seen in the account of the battle of Qarqar in 853 BCE, between Shalmaneser III of Assyria and a grand alliance of Syro-Palestinian kings (including Ahab of Israel, whose chariot contingent is recorded as having been the largest on the Syro-Palestinian side). This battle, however, can be seen as a turning point: it is the last major chariot battle recorded. Shortly thereafter, the Assyrians pioneered a new type of warfare which rendered the chariot-based armies obsolete.

The Assyrian infantry was organized into three types of unit: spearmen, bowmen, and slingers. The spearmen were the shock troops and carried a thrusting spear considerably longer than they were tall. The significance of this weapon is that it was the forerunner of the spears carried by the Greek phalanx and, when presented by the first two ranks of an infantry formation, made that formation invulnerable to a chariot charge—which would simply impale itself on the massed spears. Behind the spearmen came the bowmen and slingers, who, with their massed fire, could break up chariot attacks at long range before they came within range of the spearmen. These innovations were not the only, and not necessarily the most important, made by the Assyrians, however. From the beginning of the Bronze Age the towns of the Levant had been built on hilltops because of the defensive advantages of this elevation. It greatly increased the normal 2:1 ratio of attackers to defenders required for battlefield success. The Assyrians were the first to develop sophisticated siege machinery with which to attack the fortified cities of the Near East. Two weapons in particular are significant, the siege tower and the mobile battering ram.

The siege tower enabled the attackers to return defensive fire from a level as high as, or even higher than, that of the defenders. While this could not have suppressed the defensive fire generally, it could have suppressed it along a short stretch of the wall, which would have made the work of those attacking the wall itself much easier. The mobile battering ram consisted of a wheeled vehicle with a body covered in copper or leather armor in which the soldiers operating the ram could work secure from the fire of the defenders. [*See* Leather.] The ram itself was suspended from the frame of the body and consisted of a long beam with a metal head. The early models had an ax-shaped head, but the later models, following an experiment with boar's-head rams, consisted of a large spearhead. Regardless of the type of head, the method of operation was the same: the head of the ram was forced into the stone or brickwork of the wall and then used as a lever to pry the wall apart, causing it to collapse; a breach was thus created through which the infantry could attack. Israeli excavations at Lachish revealed the method of defense against these engines, which was to build a massive mound of earth and stone against the inner face of the wall in the sector being attacked by the rams. This countertactic did not succeed in saving Lachish, however, whose conquest Sennacherib appears to have considered his greatest victory.

The results of the Assyrian innovations were far-reaching. Perhaps the most noticeable result is that after the fall of the kingdom of Judah in 586 BCE, hardly any of the city mounds in the Levant were ever reoccupied by a major city. With the defensive advantages of elevation removed by the new siege machinery, the disadvantages of living on the top of the hills were all that remained. Henceforth, all cities were built on the level ground at the foot of the ancient tells.

The Babylonians, who succeeded the Assyrians in 612 BCE, and the Persians, who conquered Babylon in 539 BCE, made few changes in the military armamentarium, organization, and tactics laid down by the Assyrians. [*See* Babylonians; Persians.] The beginning of the use of mounted archers came in this period, but their initial impact was slight because two key technical developments—the invention of the saddle and the invention of the stirrup—had not yet taken place. The major innovation by the Persians was that, as a result of the vast extent of their empire, they were able to field huge armies, which enabled them to overwhelm any potential foe by sheer force of numbers. In their operations against Greece the Persians did, however, carry out combined operations—coordinated operations of the Persian army and the Phoenician fleet.

The Persian armies were routed in the second half of the fourth century BCE by Alexander of Macedon, who brought against them the new combination of the Greek phalanx, with its formidably disciplined troops armed with very long lances and protected by heavier armor and shields than any previous troops. The use of shields by the troops inside the phalanx to protect the front ranks (which deployed their lances against the enemy) from the missiles of the slingers and bowmen made this the most impressive fighting formation the world had yet seem. The additional use of cavalry to attack the flanks of the enemy gave Alexander a tactical advantage the Persians were never able to counter. It is significant that most of the battles fought by Alexander were in the field. His siege operations, as at Tyre and Gaza, were demonstrations of the superiority of the offensive over the defensive in fortifications in this period and account for the abandonment of the tells. [*See* Tyre.] The Greeks developed very sophisticated methods of naval warfare based on the bireme, trireme, and quinquereme, with, respectively, two, three, and five banks of oars. These ultimately enabled them to dominate the eastern Mediterranean in their competition with the Phoenicians. [*See* Seafaring.]

After Alexander's brilliant tactical innovations, the Hellenistic commanders, like the Babylonians and Persians who

followed the Assyrians, settled into an increasingly rigid tactical routine, based on the phalanx and flanking cavalry units. It was this increasing tactical rigidity which left the Hellenistic armies of the east vulnerable to the more tactically flexible and maneuverable Roman legion, a weakness demonstrated by the campaign of Pompey the Great in 63 BCE. Where the Hellenistic infantry had relied on its long stabbing spears, the Roman infantry relied instead on a short, straight, double-sided stabbing sword and a short, heavy stabbing spear which could also be thrown with accuracy up to 25 m. When the two types of formation first faced one another at the battle of Pydna, the legions allowed the phalanx to pass through their ranks and then closed in on it from all sides. Individual Roman soldiers slipped between the spears of the phalanx to attack the relatively defenseless Macedonian soldiers. To the battering rams and siege towers of the Assyrians the Hellenistic generals added *catapultae, ballistae, onagri,* and *scorpiones.* The first was a very large crossbow, capable of firing, dependent on the size of the engine—anything from a large arrow to a spear in a flat trajectory with great force and considerable range. The second was based on the same principle as the first but could throw much heavier weights in the form of large stones or beams. The *onager* used a long lever arm, powered, like the first tow engines, by twisted cords. The arm was wound down by means of a windlass, and when the trigger was released the slingstones, larger stones, or containers of burning oil or naphtha ("Greek fire") was hurled in an arc over the enemy fortifications. The *scorpion* could be either a kind of catapult or a miniature *onager.* In addition, the Romans used battering rams of the same type as those developed by the Assyrians; they used them to attack fortifications by means of mines which sought to bring down the overlying wall by creating a cave-in. The defenders of cities quickly developed the technique of countermining beneath the attackers' mine, to collapse the latter before it could collapse the overlying wall. The Byzantine military largely represented a continuation of the Roman military tradition, with its reliance on heavy infantry and limited use of cavalry.

In the seventh century CE, the armies of Islam burst out of Arabia and began a series of conquests which would take them to the gates of Constantinople, India, and, in the west, to southern France. These armies were, at least initially, both lightly armed and lightly armored, and their success was based largely on those factors. The Arab armies were superbly mounted as well, which gave them a mobility their Byzantine and Persian opponents could not match and with which they could not cope. In the course of the following centuries the Arab armies acquired an infantry arm. Influenced by the Byzantine fortifications they captured, they developed their own school of sophisticated fortifications, which were built by Salah edh-Din and his successors to counter the Crusader castles in the Holy Land.

[*See also* Fortifications; Lithics; *and* Metals.]

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RUPERT CHAPMAN

WEIGHTS AND MEASURES. Insofar as it pertains to the ancient past, metrology (the investigation and theory of measurement) has two primary purposes: (1) to describe *systems* of measurement, and (2) to determine the *absolute values* of the various units of measure. This article describes how these two goals are accomplished and provides a brief historical overview of measurement in the Near East; references to works that describe systems and discuss absolute values are provided in the bibliography.

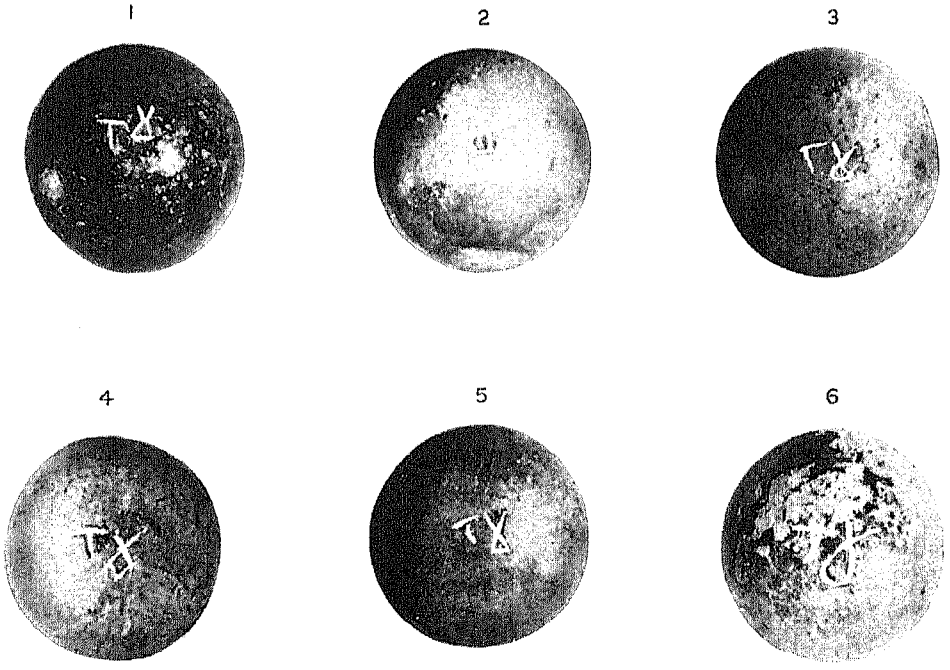
For the ancient Near East full systems of measure can be described only for Babylonia and to a lesser extent for Egypt. Where adequate written documentation exists, one can describe the *relative ratios* of components in a system of measurement, as, for example, 80 chains = 1 mile or 8 quarts = 1 peck. This kind of relationship can usually be inferred

from accounts that contain individual entries followed by totals and is best documented for Mesopotamia, from which we also have surviving tables of weights and measures. Linkage of one type of measurement with another, for example, 1 (wine) gallon = 231 cubic inches, is usually discernible only in textual sources. Mathematical texts sometimes utilize such linkages, and ancient authors occasionally mention these linkages. The extant mathematical texts from Mesopotamia and Egypt begin with the Middle Bronze Age, and linkages between types of measurement, for example, between length and capacity, are encoded in the number coefficients used in Babylonian mathematics. However, specific statements about the relationship of one type of measurement to another do not antedate discursive-narrative literature, of which the oldest surviving example of a complete work is that of the fifth-century BCE Greek historian Herodotus.

Determining *absolute values* for ancient measures means the process by which ancient units are equated with modern units. In stating modern equivalents the metric system is preferred because of its lack of ambiguity (there are, for example, still three measures in the range of 1 liter that are all referred to by the English term *quart*). Like all measurement, so-called absolute values are approximations, and the nature of the evidence at our disposal means that many of these approximations are rather imprecise. In using modern approximations of ancient units it is always advisable to reckon with the possibility of a ±5 percent margin of error; in some cases the margin of error will be smaller, but in other cases even greater. There are three major types of evidence upon which these modern approximations rest.

First, there are objects that represent ancient standards. Weights constitute the only unequivocal evidence of this type. Stone was preferred as the medium for weight standards in the Bronze Age. In the first millennium BCE a gradual shift to metals is evidenced by specimens, mostly of bronze and lead, and also by the noticeable diminution of stone weights. In the Byzantine and Islamic periods, glass was used for precision standards, but metal must have continued in use for making ordinary weights. For the Near East, the shift from stone to metal mediums has had the same ironic result as the shift from cuneiform to alphabetic writing: like clay, stone was relatively cheap and not easily re-formed, whereas most metal was probably melted down and recycled. This has led to disproportionately better representation for the Bronze Age than for later periods.

A small number of surviving weights are inscribed with their unit values and sometimes the name of the "owner" (usually a god or ruler), and some of these are preserved intact. By weighing these perfectly preserved, inscribed objects, the weight norms that they imply can be deduced. Sets of inscribed weights incorporating multiples or fractions of a single standard are not extant, and, in fact, the vast majority of all surviving weights are entirely without mark of any kind. Thus, the "units" represented by these various



WEIGHTS AND MEASURES. *Series of marked shekel weights from Lachish.* (Courtesy ASOR Archives)

objects have to be inferred from their masses alone. If the relative ratios of the underlying system are well known from written documentation, as in Mesopotamia, and if the mass of the object is in the 10-gram range or larger, it is usually possible to deduce the implied "unit" incorporated in an ancient weight specimen. Smaller units, however, are much more difficult to sort out, and these constitute a large portion of surviving weights.

A few extant objects of wood, stone, and metal represent ancient standard of length. Most of these are cubits (forearms) or portions of cubits, with divisions into palms of four or five fingers, and sometimes into fingers and smaller subdivisions. The three oldest datable examples are from Mesopotamia: two graduated rules showing a palm of five fingers and fingers divided into smaller subdivisions engraved on statues B (fragmentary) and F of Gudea (twenty-second century) implying the use of a cubit in the 50 cm (20 in.) range and a notched bronze bar found at Nippur, which is probably earlier than Gudea's reign (the cubit standard it seems to imply—518 mm (20.4 in.)—suggests a date prior to Naram-Sin of Akkad). For the Middle Kingdom through the Roman period (c. 2000 BCE–395 CE) in Egypt there are a few wooden and stone examples and, for the early Islamic period, there remains a gauge that measured the level of the Nile engraved on the rock wall of the island ar-Rauḍa/Roda (dated by inscription to 861 CE). The cubits implied by these objects fall in the 50–54 cm range. It should be noted, however, that none of the extant items incorporating standards of length possess the official character of the inscribed weights. Although some weights are inscribed with the unit and are said to be "true weight" or the weight of a god or ruler, nothing comparable exists for measures of length.

The situation for capacity measures is similar to that for length but is fraught with more uncertainties. Only wood and metal are likely to have been used for standard measuring vessels. Baskets may have been used for actual measurement but only after comparing them with true standards. However, no measuring receptacles of wood have survived, and none of the bronze vessels is inscribed with the unit it is supposed to represent. Another category of evidence compensates in part for the dearth of measuring vessels: these are jars or bowls of stone or pottery inscribed with a statement of the capacity. Absolute values for ancient capacity units rest primarily upon this type of evidence. However, an element of uncertainty always remains when using marked jars for metrological purposes. Because they were not intended to be actual standard measuring vessels, the "full" mark is never indicated. An added uncertainty is the level of accuracy in measuring, both by the ancient people who filled the jar and inscribed its contents and by the modern scholars who measured and reported them.

The second type of evidence that can be used, with caution, to establish absolute measures consists of uninscribed objects that incorporate repetitions of the same magnitude of measure and tell us that this magnitude had some metrological significance. This type of evidence is best exemplified by unmarked weight specimens, bricks for length measures, and pots of a more or less standard size for capacity measures. Such evidence, however, has never been systematically utilized, because many examples from specific locations and specific times have to be measured. With a sufficiently large sample, statistical analysis can be applied to the data, and the "inductive metrology" advocated long ago by W. M. F. Petrie can be practiced. Perhaps because of the prodigious amount of painstaking and tedious work, the potential of this evidence has never been realized. It seems likely that "inductive metrology" will continue for a long time in its current inchoate state.

The third type of evidence, which assumes importance from the fifth century BCE onward (and is especially important for the Islamic period), consists of statements by authors equating Near Eastern measures with Greek, Roman, Venetian, or some other better-known (at the time of the reference) measure. The value of this evidence depends upon the following: (1) the precision of the original approximation; (2) the degree of precision with which the "known" measure can be interpreted; and (3) the reliability of the manuscript tradition. Even where we can be relatively certain that the manuscript tradition is sound, the first two factors entail a margin of error that may vary significantly. These approximations are frequently accorded more value by modern scholars than they actually possess.

It remains to summarize the history of weights and measures in the Near East. This can be divided broadly into three periods: prior to the invention of writing around 3000, between about 3000 and Alexander the Great (c. 330 BCE), and after Alexander.

For the first period, clay counters or tokens and the earliest Mesopotamian script imply measurement of some type. It seems probable that systems of length measures based on body parts like the forearm and the hand and on related time-distance measures like a day's journey as well as on locally accepted units of capacity were widespread in the Near East in the late fourth millennium, though nothing certain can be said. The many local standards that appear in later eras may well reflect survivals of "prehistoric" measures. However, given the difficulties of describing even textually documented standards, it is unlikely that any of the "prehistoric" metrological systems can be accurately reconstructed.

The second period is characterized by a few dominant systems reflected in relatively abundant records written in Mesopotamian cuneiform (and its relatives) and in Egyptian hieroglyphs and hieratic, as well as by a limited amount of material ("monumental") evidence. These dominant sys-

tems are best known for Babylonia in the era from the Akkad Empire through Old Babylonian (c. 2300–1600) and, to a lesser extent, for Egypt from the twelfth through the twentieth dynasties (c. 2000–1100). These systems owed their dominance to the following two factors: (1) they were embedded in the system of writing and were passed along as a part of the scribal craft; and (2) centralized administrations (temple and palace) had a vested interest in recordkeeping. These forces tended to foster standardized systems of measurement, and these systems clearly had considerable effect upon measurement even beyond the economic world of the temple and palace. Despite occasionally expressed opinions to the contrary, there is, however, no evidence for any attempt to enforce universal metrological standards. Of these two systems, the influence of the Babylonian was more widespread, coinciding approximately with the use of cuneiform. The precise nature of this "influence" remains unclear. A common theme of older (and occasionally of newer) works on ancient metrology was the "migration" of "standards" from one place to another, for which Babylonia was a favorite source of derivation. These theories were spun largely in the absence of written evidence. When we have both written and material evidence, as in northern Mesopotamia, Elam, Syria, and Anatolia, however, it is clear that the Babylonian system was adapted rather than wholly adopted. It is not even clear that the numerous "mina" norms in the range of 450 to 525 grams were derived from Babylonia.

The third era begins with the Macedonian Greek conquest of the Near East and continues up until relatively recent times. Greek conquest of the Near East had three important results for the history of metrology. First, it accelerated the tendency to abandon the traditional Bronze Age scripts of Mesopotamia and Egypt for the more practical alphabet. Second, the metrological systems of the ruling Greeks, and later of the Romans who followed them, gradually spread widely in the Near East. Third, the spread of coinage led to the development of metal monies of nominal value. All three factors have affected our ability to describe the metrology of this era. The widespread adoption of the alphabet over the first millennium BCE radically reduced the survival of ancient economic records (upon which we primarily depend for reconstruction of metrological systems) because alphabetic writing was primarily used on perishable materials and has survived only in exceptional climatic conditions like those of Egypt. Whereas coinage provides an additional type of evidence for weight metrology, the development of nominal-value coinage, where the name of the coin bears no relationship to its actual weight (a significant break with earlier tradition), greatly complicates the study of weight standards. It was this complex metrological world that the Arabs inherited when they conquered the Near East in the seventh century CE. When Arabic literary sources begin to become fairly abundant in the ninth century, they indicate the existence of many local standards and systems of measurement, and this undoubtedly reflects realities that are simply not recorded in the extant ancient written evidence.

[*See also* Coins; *and* Metals.]

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MARVIN A. POWELL

WEILL, RAYMOND (1874–1950), French Egyptologist and archaeologist who headed a scientic expedition sponsored by Baron Éduard de Rothschild to the southern

part of the Ophel hill (City of David, Jerusalem), in 1913–1914 and 1923–1924. Weill was born in Elbeuf, France. He was an officer in the Corps of Engineers, after which he studied history and philology, at the age of thirty, and earned a Ph.D. from the École Pratique des Haute Études. He worked with Flinders Petrie in the Sinai Desert as well as at other sites in Egypt and was co-founder of the French Egyptological Society.

Weill was the first in Jerusalem to expose a wide excavation area rather than dig tunnels, as earlier explorers in the city had done. He uncovered Roman quarries that had damaged earlier remains, among them two long, vaulted horizontal rock cuttings, reached via shafts. Weill identified the hewn areas as the tombs of the Judean kings. The assertion generated serious differences among scholars, but the cuttings are not considered to have been tombs.

Weill's most significant discovery was a Greek inscription mentioning two synagogue leaders, Theodotus and his father, Vettenos. Assigned paleographically to the Second Temple period, the inscription is important evidence that synagogues coexisted with the Jerusalem Temple.

Following his first campaign in the City of David, Weill returned to France to take part in World War I. He was severely wounded in battle, for which he was awarded the Legion of Honor.

[*See also* Jerusalem.]

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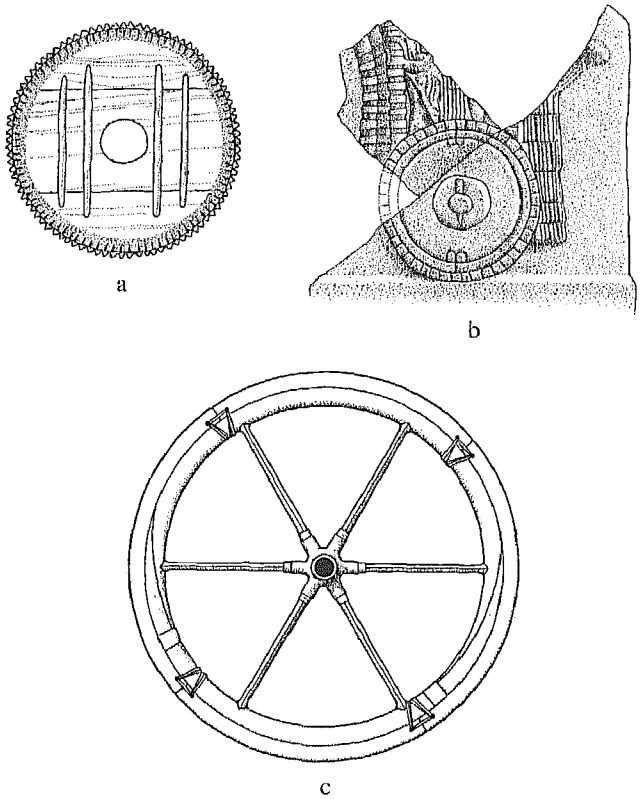
RONNY REICH

WHEEL. Archaeological evidence for the wheel appears in the Near East as early as the Early Dynastic II period (c. 2750–2650 BCE). Earlier pictographs from Uruk level IVa (c. 3100 BCE) show sledges raised over what are either two captive rollers or four disk wheels. Remains of actual wheels were found in graves at Kish, Ur (Early Dynastic III), and Susa (figure 1a) in the mid-third millennium. These were all tripartite: made of three planks cut vertically from a tree trunk and held together by external battens as well as by rawhide, with wooden or metal tires (from 0.50 to 0.83 m. in diameter) that were sometimes hobnailed. This construction is considered a response to a shortage of wide boards of local timber. The wheels appear to revolve on fixed axles.

A variation of this wheel first appears on a stela of Gudea in the Ur III period (figure 1b), in the late third millennium. It shows what seems to be a relatively small solid wheel rimmed by two metal half tires with hobnail tread, secured

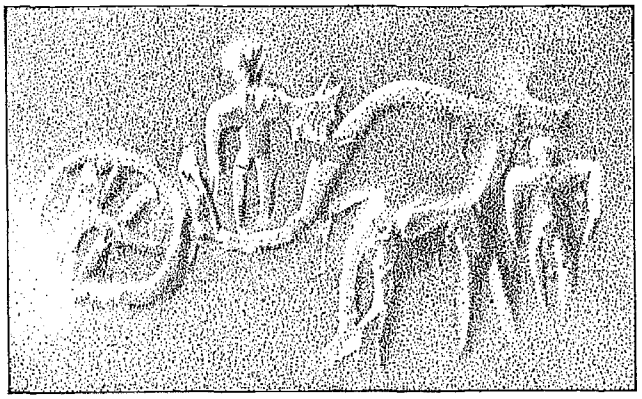


WHEEL. Figure 1. *Wheel types.* (a) reconstruction of a wheel type from graves in Kish, Ur, and Susa, mid-third millennium BCE; (b) depiction of a wheel on a stela of Gudea, late third millennium BCE; (c) drawing of a six-spoked wheel surviving from eighteenth-dynasty Egypt. (After Littauer and Crouwel, 1979)

by clamps at their ends. Actual metal tires in six or seven segments, with a clamp at either end and one in the middle, indicate disk wheels with diameters of 0.67–0.97 m. These come from early second-millennium Susa, Aššur, and elsewhere.

Of lasting significance were attempts to lighten the disk wheels, as first seen on a third-millennium seal from Hissar IIIB (figure 2). On it, the central plank, through which the axle passes, is narrowed to a diametral bar; the flanking planks of the tripartite wheel are eliminated, and the former bonding slats are turned into sturdy transverse bars between the diametral bar and the felloe. This crossbar wheel is also clearly illustrated in the second millennium BCE, fixed on a revolving axle; it has remained in use with simple carts in various parts of the world. [*See* Carts.]

By far the most important innovation was the spoked wheel, which first appeared with four to eight spokes, in Anatolian and Syrian glyptics and other graphic remains from the early second millennium BCE. Actual four- and six-spoked wheels (figure 1c) survive from eighteenth-dynasty Egypt. These have composite spokes made from single rods, half oval in section, and heat bent in the middle to form an



WHEEL. Figure 2. *Depiction of a wheel on a seal from Hissar IIIB.* Third millennium BCE. (After Littauer and Crouwel, 1979)

angle (of 60 degrees for a six-spoked wheel and 90 degrees for a four-spoked one). The "legs" are glued back to back to the "legs" of the adjacent spoke, the resultant whole spoke being fully oval in section. The wider diameter of the spoke is set at right angles to the felloe, which is composed of two lengths of heat-bent wood, overlapping at the ends. Rawhide, applied wet, constricted and solidified the naves and felloes. This construction, based on tension and without metal parts that could be jolted loose, required great skill to make and was vulnerable to dampness. It is attested in Egypt, the Levant, and the Aegean.

A spoked wheel based on a different principle is illustrated in Assyrian reliefs of the early first millennium BCE. [*See under* Chariots.] Its six or eight spokes are simply set in a cylindrical or barrel nave, which may be a metal case, with short tubular projections to receive the spoke ends. The deep felloes are made of butt-ended sections of plank, their inner edges lying in a metal channel. Such a wheel is the ancestor of all later wooden spoked wheels.

Practically nothing is known of the impact of the earliest wheels in Mesopotamia in the late fourth millennium BCE. From Early Dynastic II and III remains at Kish and Ur it is clear that the shortage of timber of adequate girth imposed the tripartite disk construction and, that, lacking iron for tires and battens to consolidate them, the wheels cannot have been very strong. Because wood axles were also limited in the weight they could bear, it is unlikely that wheeled vehicles were used to transport heavy goods. What pack animals could not carry would have been transported by sledge, for which there is ample evidence from fourth-millennium tablets from Uruk to seventh-century BCE reliefs of Sennacherib, and from actual finds and tomb paintings in Egypt from the twelfth dynasty to the twenty-first dynasty.

Third-millennium representations in Mesopotamia show disk-wheeled vehicles in military, hunting, cult, and travel contexts only. Evidence for their use in warfare, for which they were clearly unsuitable, fades rapidly after the middle of the millennium. That wheeled vehicles were considered prestigious is clear from their burial in richly furnished graves (Kish, Ur, Susa). Their economic and political impact seems to have been negligible, but because possessing them demonstrated conspicuous expenditure, it could reinforce social ranking.The appearance, in about 2000 BCE, of the spoked wheel and horse draft—both essential for the true chariot—did not produce a suitable military vehicle immediately: the team's harness and its control had to be improved first. Evidence for this appears initially on early Syrian seals of the eighteenth century BCE.

The use of the chariot in warfare undoubtedly affected military strategy, but its impact may have been less than first appears, for several reasons. Because infantry always accompanied chariotry, campaigning speed could hardly change. Analysis has also shown that chariot tallies were often inflated. Furthermore, much of Near Eastern terrain is mountainous, rocky, marshy, or sandy—unnegotiable for chariots yet, the prestige of the chariot—costly to make and maintain—was enormous, enhancing the standing of all chariot owners. Economically, it stimulated the growth of several occupations: wheelwright, carriage maker, armorer (charioteers wore more body armor), and horse breeders and trainers.

[*See also* Transportation.]

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J. H. CROUWEL and MARY AIKEN LITTAUER

WHEELER, MORTIMER (1890–1976), one of the legends of archaeology in the twentieth century. Born in Glasgow, Scotland, to a journalist and his wife, Robert Eric Mortimer Wheeler was called Eric in his youth. His first wife, Tessa Verney, with whom he had one son, called him Rik, or Rikky, by which he was known for the rest of his life.

There are two Wheeler autobiographies, *Still Digging* (London, 1955) and *My Archaeological Mission to India and Pakistan* (London, 1976), both of which reflect many of the strengths and weaknesses of the genre, and one biography, Jacquetta Hawks's *Adventurer in Archaeology: Biography of Sir Mortimer Wheeler* (New York, 1982).

Wheeler focused his early scholarship on the remains of Roman Britain. In 1907 he entered University College London, where he earned an M.A. and D. Litt. After World War I he went to the National Museum of Wales as keeper; he became director in 1924. In 1926 Wheeler became director of the London Museum. His two most famous excavations of this period were at Verulamium (1930–1933) and Maiden Castle (1934–1939), where he perfected his field methodology and trained students. From this post he played a major role in establishing the Institute of Archaeology at London University. In 1943, while on military service in World War II, he was posted to India as the director general of the Archaeological Survey, where he served until 1948.

The government of India gave Wheeler a broad mandate, and he undertook the complete reform of its archaeological enterprise. This involved more training of students and establishing a school of archaeology, which remains active today as the Institute of Archaeology, New Delhi. He also carried out four training excavations: in the early historic city of Taxila (1944–1945); at the Roman trading emporium of Arikamedu (1945); in the Indus city of Harappa (1946); and of megaliths and Early Historic remains at Brahmagiri-Chandravalli (1947). Wheeler returned to the subcontinent to excavate Mohenjo-Daro (1950), another Indus city, and Early Historic Charsada (1958), both in Pakistan. He was an innovative digger and his writings on field methodology, especially *Archaeology from the Earth* (Oxford, 1954), are important contributions to excavation methodology.

After India, Wheeler became a public figure, although he still lectured at the university level. A brilliant participant on the BBC game show "Animal, Vegetable, and Mineral," he became Britain's television personality of the year in 1954. He also served effectively as a tour leader, bringing groups to ancient sites in the classical world, the Near East, India, and Pakistan. His base for many years was the British Academy, where he was a long-time honorary secretary (1949–1968).

Wheeler's personality was flamboyant, even theatrical. He was a leader, a man given to command, but quick to anger, and he could be insensitive and difficult with those around him. The honors he received in his lifetime were many: commander of the Indian Empire (1947), a knighthood (1958), and honorary degrees from a number of British universities.

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GREGORY L. POSSEHL

WILSON, CHARLES WILLIAM (1836–1905), British Royal Engineer (1855) whose meticulous surface survey of Jerusalem (Ordnance Survey of Jerusalem, 1864–1865) provided the basis for all subsequent studies of the city. Wilson served as secretary to the North American Boundary Commission (1858–1862), during which time he gained invaluable survey experience. In the course of his military career as a major-general, he held many prestigious appointments, among them director of the Topographical Department of the War Office (1870–1876), British consul general in Anatolia (1879–1882), chief of the Intelligence Department in Garnet Wolseley's force in Egypt (1882–1885), and director general of the Ordnance Survey of Great Britain (1886–1894). He was a Knight of the Garter, Knight Commander of Order of St. Michael and St. George, and a fellow of the Royal Society. He earned honorary Doctor of Civil Law (Oxford, 1883) and Doctor of Laws (Edinburgh, 1886) degrees.

Wilson's survey work led to the founding of the Palestine Exploration Fund (PEF) in 1865. The £500 contributed by Baroness Burdett-Coutts to the cost of this project did not include the pay of the officer in charge, but Wilson accepted the appointment for the War Office, even though he believed it to be a fool's errand. Jerusalem was surveyed according to standard Ordnance Survey practice, at scales of 1:500, 1:2,500, and 1:10,000. The resulting plans, not just of the whole city, but also of important buildings, together with ninety diagrams and eighty-three photographs, were published by the Ordnance Survey in 1866. It was the first time that the topography of Jerusalem had been so accurately recorded. In 1865–1866 Wilson, with Samuel Anderson, undertook a reconnaissance survey of Palestine, during which Wilson was the first to identify the synagogue at Chorazín. His other archaeological forays, such as to Capernaum, Mt. Gerizim, and Kefar Bir'am, were superficial investigations; however, the plans he made of these places remain a valuable record of the sites as they were in the nineteenth century.

Wilson went on to carry out the survey of Sinai (1868–1869), concluding that Jebel Musa was the true Mt. Sinai. In 1871 he prepared the guidelines for the Survey of Western Palestine (1871–1877), commissioned by the PEF. In the last six years of his life he turned his attention to resolving the controversy surrounding the identification of the sites of Golgotha and the Holy Sepulcher. His findings, published in several papers in the PEF's *Quarterly Statement*, were published separately by the PEF in London in 1906, under

the title *Golgotha and the Holy Sepulchre,* a book still highly regarded. Wilson was chairman of the PEF at the time of his death.

[*See also* Jerusalem; Palestine Exploration Fund; Sinai; *and the biography of Kitchener.*]

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YOLANDE HODSON

WINNETT, FREDERICK VICTOR (1903–1989), Canadian philologist, archaeologist, biblical scholar, and educator. Born in Oil Springs, Ontario, Winnett studied under W. R. Taylor and Theophile Meek at the University of Toronto. He was ordained to the Presbyterian ministry in 1927, and a year later completed his Ph.D. dissertation, the translation of and commentary on a manuscript copy of the thirteenth-century Nestorian Abdiso bar Berka's *Paradise of Eden* (published in 1929). A postdoctoral fellowship at Hartford Theological College enabled him to continue advanced studies in Arabic, Akkadian, and Hebrew. He married Margaret J. Taylor and in 1929 was appointed lecturer in Semitic languages at University College, the University of Toronto.

Winnett's career took a decisive turn when he was shown a black basalt stone with a Thamudic inscription (now in the Royal Ontario Museum). His systematic and insightful study of the hundreds of inscriptions in pre-Islamic scripts already published was the pivotal *A Study of the Lihyanite and Thamudic Inscriptions* (1937; see also Albright, 1937). In 1938 he held the post of honorary lecturer at the American School in Jerusalem. A difficult and dangerous field expedition with the school's director, Nelson Glueck, to collect sherds in the Wadi Zerqa marked his introduction to archaeology and the Transjordan, both of which, with one exception, were to be his principle foci for the coming decades. [*See the biography of Glueck.*]

Following World War II (during which he served in the Canadian army as a drill instructor, with the rank of 2d lieutenant), Winnett wrote a series of articles on Himyaritic inscriptions for the *Bulletin of the American Schools of Oriental Research,* together with articles relating these texts to biblical interpretation. Under Meek's influence his major interest during this period, however, was the formation of the Pentateuch. This eventuated in *The Mosaic Tradition* (1949), an attempt to deal with the materials as a unified tradition. Despite its hostile reception by the reigning adherents of the Documentary Hypothesis, Winnett was to revisit this hypothesis in his presidential address to the Society of Biblical Literature in 1964 (see Winnett, 1965).

In 1950–1951 Winnett returned to the American School in Jerusalem as director, continued the excavations begun by James L. Kelso at Tulul Abu el-ʿAlaiq (Kelso, 1955) and initiated soundings, followed by full-scale excavations the following spring, at Dhiban, biblical Dibon (1964). [*See* Dibon.] Winnett also undertook two expeditions with G. Lankester Harding, then director of the Jordan Department of Antiquities, to northern and southern Jordan in search of inscriptions. These resulted in *Safaitic Inscriptions from Jordan* (1957) and "An Arabian Miscellany" (1971). [*See the biography of Harding.*]

In 1957 Winnett assisted James B. Pritchard in clearing the lower portions of the great circular water system at El-Jib, biblical Gibeon. [*See* Gibeon.] Returning again as director of the American School in Jerusalem in 1958–1959, he and Harding made two expeditions to north Jordan, where they recorded some four thousand Safaitic inscriptions, some of which were published in *Inscriptions from Fifty Safaitic Cairns* (1978). Subsequently, Winnett and William L. Reed (who again served successive directorships), accompanied by Aramco's anthropologist, F. S. Vidal, engaged in an adventurous month's expedition locating ancient monuments, recording inscriptions (Winnett) and collecting pottery (Reed) in the wilds of North Arabia. The highly impressive results together with a gripping journal of their adventures, were published in *Ancient Records from North Arabia* (1970). In 1962 Winnett again joined Reed for exploratory soundings at El-ʿAl in the Transjordan. A second major expedition to Saudi Arabia was mounted in 1967 (Winnett, 1970).

From 1952 to 1969 Winnett was chairman of the Department of Oriental Languages of University College, University of Toronto. Under his leadership that small department became a world-class university Department of Near Eastern Studies. Later the Department of Middle Eastern and Islamic Studies was separately organized. From 1966 until his retirement in 1969 Winnett also served as vice-principal of University College. During this period he was active in facilitating the publication of Lankester Harding's *An Index and Concordance of Pre-Islamic Arabian Names* (1971). His latest publications were "Studies in Ancient North Arabian" (1987) and a contribution to the *Festschrift* of Mahmoud Ghul (1989). It is a measure of the man that much of his active retirement was spent caring for his beloved wife.

Winnett was elected a Fellow of the Royal Society of Canada in 1959. He was active at many levels in the American Schools of Oriental Research, including a brief stint as editor of its annual. He was president of the Society of Biblical Literature in 1963–1964 and a member of the editorial

board, a member of the American Oriental Society, the Archaeological Institute of America, and a charter member of the Toronto Oriental Club. Following his death, his family and friends initiated an American Schools of Oriental Research fellowship in his name. As good at administration as he was in the desert or at his scholar's desk, Winnett was an honest, warm-hearted, and courageous human being who inspired and enabled others to do their best.

[*See also* Safaitic-Thamudic Inscriptions.]

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JOHN S. HOLLADAY, JR.

WOOD. Forests were exploited from the very beginnings of Near Eastern civilization. Enough hints exist from such Aceramic Neolithic sites as Jericho in Israel and Çayönü, Aşıklı Höyük, Nevalı Çori, and Hallan Çemi in Turkey to indicate that extensive forest use has a history in this region of at least ten thousand years. These sites provide ample burned evidence for architectural timbers used as building foundations, headers and stretchers in walls, roof posts, roofs themselves, ladders, and furniture. Although the evidence is sometimes to be assessed only by counting empty beam holes, enough burned beams survive at Middle Bronze Age palatial sites such as Kültepe (Kaneš) or Acemhöyük in Turkey so that a reasonable estimate for wood use is in excess of 2,000 trees per 150-room building. The archaeological evidence includes cedar, pine, fir, juniper, oak, spruce, cypress, box, chestnut, walnut, maple, and ash.

Forests. The Lebanon, Anti-Lebanon, Amanus, Taurus, Anti-Taurus, Pontus, and Zagros Mountains probably provided the bulk of quality timber for construction and fine furniture, especially after local wood supplies were exhausted. There is reason to believe, however, that some local supplies—for example, from the Anatolian plateau—were sufficient for most needs, at least until Hellenistic times. At all times lesser-quality woods—poplar, willow, plane, tamarisk, sycamore, elm, beech, and acacia—or wood for specialized uses, such as terebinth, and assorted fruit and nut trees must also have been exploited for ordinary carpentry, fuel, and pottery production. Wood products such as resins were used in treating illness, in mummification, and for caulking boats. [*See* Jericho; Çayönü; Nevalı Çori; Taurus Mountains; Kaneš.]

Wood Production. The surviving architecture at many sites shows considerable use of wood in a wide range of quantities and quality. Much of the wood was probably local, especially for sites on the Anatolian plateau, along the Levantine coast, and in the forested areas mentioned above, where it could be dragged to a site by ox cart. At Gordion in Turkey, cuttings exist in the logs that form the tomb chamber of the Midas Mound Tumulus that reflect precisely this form of timber transport. [*See* Gordion.] In Egypt and Mesopotamia, however, good wood had to be imported by water. As far back as Old Kingdom Egypt, timber was transported from Lebanon to Egypt in multiple shiploads. At all times, timber must have been floated down the Tigris and the Euphrates Rivers to Mesopotamian cities. The occupations or crafts of woodcutter, timber transporter, timber merchant, and carpenter must have been established from the very beginnings of civilization. Cuneiform texts indicate that royal authorities were concerned about regulating timber cutting, setting timber prices, and imposing taxes on timber.

Timber Trade. The oldest surviving written evidence for an international timber trade is the Palermo stone, in which Snefru, the first pharaoh of the fourth dynasty, tells of im-

porting cedar from Lebanon: "Bringing forty ships filled [with] cedar logs. Shipbuilding [of] cedar wood, one . . . ship, 100 cubits [long] [= 45.73 m], and of *meru* wood, two ships, 100 cubits [long]. Making the doors of the royal palace [of] cedarwood." The text does not specify a place of origin, but Byblos is likely. It is worth noting that the actual word translated here as cedar is *ash* wood or *'š* wood in the texts; there is less than total agreement among Egyptologists that the word does indeed mean "cedar." *Meru* may mean cypress or juniper. One school of thought proposes that the Egyptians did not make a distinction between cedar and juniper, and that *ash* refers to better-quality conifers and *meru* refers to some kind of second-quality timber. At any rate both *ash* and *meru,* whatever they may mean, are foreign (imported), usually sold in long lengths, and thus readily distinguished from the local acacia or sycamore. This wood was put to refined uses: shipbuilding and making palace doors. Philologists may argue about the meaning of the words *ash* and *meru,* but archaeologists do have large quantities of identifiable cedar and some juniper in the Egyptian collections of the world's museums.

In dockyard accounts from the time of Thutmosis III (c. 1450 BCE), a fragmentary papyrus in the British Museum records the issuing of timbers to the workers. The parts of the ship for which the timbers were intended (which ought to help identify them) are also given; however, the meaning of all the maritime terms is not known. Four times as many *ash* timbers as *meru* timbers are required, suggesting that whatever *ash* really is, it is straight, pliable, and free of knots—and thus suitable for shipbuilding. The longest timber specified was of *ash,* 30 cubits long (13.72 m), and intended for the mast. *Ash* is required for masts in other documents, and again the lengths are quite long: 40 cubits (18.29 m) and 42 cubits (19.21 m).

No doubt the import and export of high-quality wood goes back even further than these Old and New Kingdom references. That international timber production and marketing were not occasional adventures is attested by the much later report of Wenamun. That the king of Byblos in Wenamun's tale could produce three hundred woodcutters upon demand, as well as sufficient animals and drivers to drag the timbers down to the port, suggests that both he and his woodsmen were accustomed to the practical requirements of the timber business and to fulfilling large foreign orders. A tour through any Egyptian gallery in a Western museum corroborates the texts, revealing a mixture of both local and imported wood on the more elegant of their sarcophagi, furniture likely to be cedar, and domestic objects likely to be riverine wood, such as sycamore, tamarisk, and acacia.

The earliest Mesopotamian reference to cedar is from Sargon of Akkad (c. twenty-third century BCE), who claims that the god Dagan gave him the Upper Country (i.e., Mari), Iarmuti, and Ebla as far as the Cedar Forest and the Silver Mountain. One of his successors, Naram-Sin, has the god Nergal give him Arman and Ebla, and also the Amanus, the Cedar Mountain, and the Upper Sea. [*See* Akkade; Mari; Ebla.]

In a military campaign into Syria and Cilicia Shalmaneser III (ninth century BCE) demands as tribute from one prince one talent of silver, two talents of purple wool, and two hundred cedar logs. Another prince in the Amanus, somewhat poorer, must send metal, cattle, two hundred cedar logs, and two measures of cedar resin at once, and annually thereafter one hundred cedar logs and one measure of cedar resin. A third prince has to include three hundred cedar logs annually. Sargon II (late eighth century BCE) not only uses the timber for taxes, but also places an embargo on sale of it to the Egyptians and other inhabitants of the Levant. Depictions on Assyrian royal reliefs confirm the textual account, with men hauling and floating large logs down from the mountains to Aššur. [*See* Aššur; Assyrians.]

Ashurnasirpal (883–859) has left the most detailed records of the logging activities of the Assyrian kings. His men cut four kinds of trees: *erenu, šurmenu,* and *dapranu* in the Lebanon and Amanus, and *burašu* in the Amanus only. The information regarding Assyrian names for wood is not much better than for Egyptian names. It is believed that *erenu* is *Cedrus libani,* although the arguments are complicated; *dapranu* is a kind of juniper, as is *burašu,* although the latter has also been identified as cypress; and *šurmenu* is probably cypress (see essay by Postgate in Postgate and Powell, eds., 1992). It is known that the words refer to wood because they are preceded by a Sumerian logogram, GIŠ, meaning "wood." GIŠ.ERIN.MEŠ (= cedar) seems more certain than the others, however, particularly because of the Wadi Brisa inscription of Nebuchadrezzar: in it he claims to have built a road and a canal to carry "mighty cedars, high and strong, of precious beauty and of excellent dark quality (?), the abundant yield of the Lebanon, as [if they be] reed stalks [carried by] the river" (Wadi Brisa inscription of Nebuchadrezzar in Brown, 1969, p. 199).

On the other hand, if it were not for the immediate proximity of Wadi Brisa to the cedar forest, the text could refer to *Juniperus excelsa,* which also has red or "dark" wood, as well as to cedar. The Assyrian inscription in Wadi Brisa is of additional interest because only 50 m away, on the wall of the wadi, a Roman inscription (one of about two hundred that encircle the remaining cedar forest but now about 1.5 km downhill from the forest edge) from near the end of the reign of the Roman emperor Hadrian, (c. 134 CE) delimits the forest boundary. Hadrian's procurators had marked this off as a very special forest, and the public was officially informed that four genera were not to be cut. Whether these are the same four genera mentioned in the Assyrian text only 50 m away is not known. At any rate, the cedar forest boundary did not change significantly, at least in Wadi Brisa, for more than seven hundred years. The present deforestation is a post-Roman phenomenon. A scrap of evidence from the western edge of the Near Eastern world, and from a much

later time, is that the cedar for the treasury doors at Eleusis (in central Greece) was supplied, at vast expense (seventy days' wages for a 2″ × 4″ × 12′ board), by an *emporos,* an overseas trader and merchant from Knidos, in Caria.

Wood Use. Although evidence for constructional timbers of all classes is the most commonly found demonstration of the use of wood in antiquity, furniture is an obvious but less-common use. Fine furniture, indeed, is rare, except for the remarkably well-preserved inlaid wooden furniture at Gordion. Stone furniture, such as funeral beds, can be presumed to be copies of wooden furniture. Enough furniture inlay exists elsewhere—of ivory or bone or metal—at Aššur, for example, to show that elaborately carved and decorated furniture was more common than the archaeological record might otherwise suggest. Almost every Urartian site has produced elaborate metal furniture fittings—bronze animal feet and terminals, silver or gold medallions, plaques, and other attachments both practical or ornamental—and the lists of booty taken by the Assyrian kings include furniture of boxwood and ebony embellished with gold, silver, and ivory. Painted furniture representations on Greek pottery are another important indirect source of information.

Shipbuilding as an activity speaks for itself (see above). Every ship lost at sea, whether accidentally or in a naval engagement and then replaced, must have represented a drain on forest resources. Cedar timbers with up to four hundred annual rings from a twelfth-dynasty Egyptian ship, the so-called Dahshur boat now in the Carnegie Museum in Pittsburgh, Pennsylvania, one of five funerary vessels found near the pyramid of Senwosret III, and therefore presumed to belong to the time of Senwosret (c. 1860 BCE) at Dahshur, are clearly cut from enormous trees—some centuries old and probably the size of standing trees found today in the Lebanon and the Taurus ranges. In what was an extremely wasteful woodcutting practice, the timbers were carved or sculpted to shape, not bent, as can be seen on a representation of boat builders at work on a relief in the tomb of Ti (fifth dynasty) at Saqqara, Egypt. At least half the wood was thereby lost. [*See* Ships and Boats.]

Carpentry. Almost every tool—from the crude to the sophisticated—known to modern carpenters was used by the ancients: axes, adzes, hammers, mallets, wedges, chisels, drills, lathes, right-angles (or T-squares), plumb bobs, compasses, planes, rasps, and polishing agents of various kinds. Evidence exists for the use of almost every modern technique as well: mortising, tenoning, treenailing, beveling, gluing, and intricate joining and inlaying. A glance at the more elegant pieces of the Gordion furniture (eighth century BCE) should remove any doubt about the skill and sophistication of the ancient carpenter, not only in the craftsmanship thereby demonstrated, but also in the selection of a half-dozen species of wood for their contrasting colors and textures and the assemblage of thousands of such fragments into an agreeable whole.

[*See also* Building Materials and Techniques; Furniture and Furnishings.]

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PETER IAN KUNIHOLM

WOOLLEY, C. LEONARD (1880–1960), British archaeologist, excavator of Ur in Mesopotamia. Educated at St. John's School, Leatherhead, and at New College, Ox-

ford, Charles Leonard Woolley was appointed in 1905 to be assistant in the Department of Antiquities in the Ashmolean Museum under Arthur Evans. His life's occupation was set in 1907, however, when he joined the Eckley B. Coxe Expedition of the University of Pennsylvania Museum in Philadelphia (now the University Museum) to excavate at Karanog, Nubia, a Meroitic (Hellenistic) cemetery, and at Buhen, a second-millennium fortress, under David Randall-MacIver. He remained with the Coxe expedition until 1911 and joined an Oxford University expedition to Nubia in 1912. Woolley was then chosen to succeed D. G. Hogarth as director of the British Museum's excavations at the important Syro-Hittite site of Carchemish in north Syria. Apart from a six-week survey between seasons on behalf of the Palestine Exploration Fund in Sinai conducted together with his Carchemish colleague T. E. Lawrence in 1914 and an interruption for war service, Woolley continued at Carchemish until 1919. During the war he served as an intelligence officer in the Near East; but from 1916 to 1918 was a prisoner of war in Turkey.

After Carchemish, Woolley excavated on behalf of the Egypt Exploration Society at Amarna in Egypt from 1921 to 1922 and was then invited by the British Museum and the University of Pennsylvania Museum to lead a joint expedition to the site of al-Muqayyar (ancient Ur) in southern Mesopotamia.

Woolley is probably best known for the Ur excavations, carried out between 1922 and 1934, particularly for the rich treasures of the Sumerian Early Dynastic period found in the so-called royal cemetery. Woolley also completed the excavations begun by H. R. H. Hall of the British Museum at the small neighboring Sumerian site of Ubaid. Woolley conscientiously prepared ten volumes of his final report on the Ur excavations, but apart from volumes 1 (al-Ubaid), 2 (royal cemetery), 3 (seals), and 5 (ziggurat), these lay in typescript in the British Museum (7–9) and the University Museum (4, 6, 10) throughout the war, and were only published when funds became available from the 1950s through the 1970s.

After his knighthood in 1935, Woolley began excavations at Tell ʿAtchana in north Syria, the site of ancient Alalakh, in 1937. Once again he was interrupted by war. Although he was too old for active service, he served during 1943–1946, with the rank of lieutenant-colonel, as archaeological adviser to the Civil Affairs Directorate. On Woolley's advice the Allied supreme commander-general, Dwight D. Eisenhower, issued an order prohibiting the looting or damaging of buildings in liberated territories.

After his war service, Woolley resumed his work at Alalakh, completing the uncovering of second-millennium palaces and archives of cuneiform tablets, and, at the neighboring coastal site of al-Mina, he revealed evidence of early Greek settlement. Nearly seventy years old when he closed the Alalakh excavations in 1949, Woolley published a full report on the work there in 1955 and a popular account, *A Forgotten Kingdom*, in 1953. Woolley remained an influential figure in the world of archaeology. His last work, *Mesopotamia and the Middle East* (1961) was published posthumously.

[*See also* Alalakh; Amarna, Tell el-; Carchemish; Ubaid; Ur; *and the biographies of Hogarth and Lawrence.*]

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T. C. MITCHELL

WRIGHT, GEORGE ERNEST (1909–1974), field archaeologist; architect of American "biblical archaeology"; president (1966–1974) of the American Schools of Oriental Research (ASOR); articulator of biblical theology as the recital of God's mighty acts in history; and mentor to two generations of archaeologists and interpreters.

Ernest Wright combined archaeological theory and practice with the bearing of archaeological results on biblical interpretation. The product of a Presbyterian ministerial family in Ohio, his education at the College of Wooster (B.A., 1931) and at McCormick Theological Seminary (B.D., 1934) nurtured a warm but critical Calvinist perspective and a love of Bible and history. His curiosity about the hard and social sciences led him to study with William Foxwell Albright at Johns Hopkins University, where he focused on the ceramic materials of the Neolithic, Chalcolithic, and Early Bronze periods. His dissertation on these materials updated by him and modified by his students and colleagues, remains a basic resource: he published it (New Haven, 1937) and an article on eisegesis and exegesis in the same year. For Wright, this combination of endeavors always made sense.

Wright had his first field experience in 1934 at Bethel, with Albright; during breaks, he roamed the land to gain a sense of its topography. In 1937 he worked with Elihu Grant at

Haverford College bringing order to the ceramic record of 'Ain Shems/Beth-Shemesh. [*See* Beth-Shemesh.] In 1938 he became field secretary of ASOR. That year he launched *The Biblical Archaeologist,* aimed at interpreting archaeological findings for amateurs. For years he and his wife, Emily DeNyse Wright, prepared it out of their home. As its editor for twenty-five years, he contributed thirty-six articles and innumerable short notes and reviews.

From 1939 to 1959, Wright taught Hebrew Bible at McCormick Seminary in Chicago. Early in that period he participated in Henri Frankfort's prehistoric seminar at the Oriental Institute of the University of Chicago; motivated by his appreciation for Robert Braidwood and others in that seminar, his interest in the "lower" tiers of historical study germinated: social history and environmental history. Meanwhile, he wrote three biblical monographs: *The Challenge of Israel's Faith* (Chicago, 1944), *The Old Testament against Its Environment* (Chicago, 1950), and *God Who Acts: Biblical Theology as Recital* (London, 1952). In each, he interfaced archaeologically informed historical interpretation with theological claims. Following up his topographic interest, he produced, with his New Testament colleague Floyd V. Filson, the durable *Westminster Historical Atlas to the Bible* (Philadelphia, 1945). In 1957 he published *Biblical Archaeology,* his portrayal of archaeology as a resource for biblical history and religion; included was a chapter on archaeology and everyday life—an expression of archaeology in the service of social history.

In 1956 Wright joined Bernhard W. Anderson in inaugurating the Drew-McCormick Expedition to Tell Balaṭah/Shechem in the Central Hill Country 64 km (40 mi.) north of Jerusalem. Their aims were to recover data from an earlier, ill-published expedition by Ernst Sellin under Austro-German sponsorship; to train and forge a network among a new generation of field archaeologists; and to practice the soil-deposition field method. Strong on practice, developing its theory as it worked, the Shechem team provided field experience to the future directorships of the Gezer, Tell el-Ḥesi, Ta'anach, Heshbon (Ḥesban), Caesarea, and Ai expeditions. [*See the independent entries on each of these sites.*] In 1959 Wright accepted the Parkman Chair of Divinity at Harvard University, where his graduate seminars nurtured budding archaeologists as well as a host of biblical specialists. His undergraduate courses introduced a multitude of inquisitive students to how biblical studies interacts with archaeology and the social sciences.

In 1964 he yielded Shechem to his colleagues, took a sabbatical in Israel, and launched, with Nelson Glueck, the Gezer Expedition, staffed by his Harvard protégés. There he began to bring hard and social scientists onto the staff, a vision fulfilled at Idalion, on Cyprus, in his most ambitious endeavor (1971–1974). [*See* Idalion.] With his acceptance of the presidency of ASOR in 1966, Wright came to influence all American archaeology in Southwest Asia; his students currently fill many of the offices of ASOR.

Wright's synthesis of biblical archaeology and biblical theology made for controversy among his students and his colleagues. His positivistic historical stance was vulnerable to attack by literary critics. The way he wedded history to divine manifestation was cogently challenged by theologians (see Gilkey, 1961). His archaeological expertise was accepted and esteemed by all, but some of his efforts at interpretation, notably of the Shechem results in relation to the patriarchal stories in *Genesis,* were questioned by those who found him deficient in interpretive theory.

By his expertise and by the sheer force of his personality, G. Ernest Wright pioneered one era, led in the transition to another, and left an unquestioned legacy of inquisitiveness and adaptable encounter with new insights and methods. Usually one jump ahead of his students, he never abandoned his efforts to make archaeology interdisciplinary and both available and accountable to all.

[*See also* Biblical Archaeology; Shechem; *and the biographies of Albright and Noth.*]

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EDWARD F. CAMPBELL

WRITING AND WRITING SYSTEMS. Writing is a system of more or less permanent marks representing a set of utterances in such a way that the utterances can be recovered more or less exactly without the intervention of the utterer. This definition is worded to exclude such "forerunners" of writing as petroglyphs and the "tokens" found in excavations throughout the ancient Near East. Intuitively those are qualitatively different from the earliest systems that are indubitably writing, such as Mesopotamian cuneiform and Egyptian hieroglyphs—that is, a written message represents language, not thought. A necessary (though not sufficient) condition for the/an invention of writing is civilization, including urbanism; writing is prerequisite to history. And the first things to be written within any civilization tend to be things that cannot be expressed orally—accounts, calendars, and divine messages.

Nature and Origin. A forerunner, which perhaps expresses "thought," becomes a writing system (or script) when it has incorporated a means of recording the phonology of the language with which it is associated: a large proportion of the lexicon of any language comprises elements that cannot be represented by "thought pictures" of concrete objects, such as abstracts, function morphemes (e.g., inflections, prepositions), and—perhaps primarily—proper names, especially foreign names (native names are generally not meaningless, like *Jones,* but stretches of text, like *Carpenter, Farmer,* or *Smith*).

Two varieties of marks have recently been suggested as forerunners of true writing in the ancient Near East: the Vinča script and the Mesopotamian token. The former comprises markings incised on votive objects—figurines, models, vessels—excavated originally at sites in Transylvania and subsequently elsewhere in the Balkan region. Two hundred and ten different designs have been cataloged (Gimbutas, 1991, pp. 308–321). There are three difficulties in taking Vinča script as underlying either Sumerian cuneiform or the Aegean family of scripts: although its partisans refer to its marks as "writing," there are apparently no recurring sequences of signs, which indicates that if the marks are indeed representational, at most they represent things or "thoughts," rather than words; evidence of connections with the later and/or distant civilizations of the Aegean and Mesopotamian regions has not yet been established; and there is little hope of determining, let alone reconstructing, the language(s) that might have been spoken by the marks' creators.

Great attention was accorded in the 1980s to the claim by Denise Schmandt-Besserat (in a series of articles published between 1977 and 1988, many collected in Schmandt-Besserat, 1992) that the hundreds of "small clay objects," or tokens, excavated throughout the Near East, and which in some ways resembled the impressions found on the earliest clay tablets from Uruk, were in fact an early recording system: the tokens that looked like the later sign for *sheep* in fact represented sheep; some number of them enclosed in a lump of clay (a bulla) represented a flock of that number of sheep; as a security measure, each token was pressed into the clay, leaving a mark, before it was sealed into the bulla; finally, the impressed marks took the place of the enclosed tokens, and writing had been invented. Schmandt-Besserat identified dozens of token shapes with proto-cuneiform signs. [*See* Tablet; Uruk-Warka; Cuneiform.] Her theories were provocative and suggestive, but upon publication of her database (1992, vol. 2), Paul E. Zimansky (1993) was able to determine that the actual attestation of tokens does not square with the meanings imputed to them: from samples covering some seven thousand years, only eight "sheep" have been found, and from the fourth millennium only twenty-seven "textiles" of eleven kinds. These quantities do not make sense in the context of the economy revealed in later true cuneiform documents. Zimansky summarizes, "There is no reason to assume that tokens stood for specific commodities in ways that remained constant over the millennia in all parts of the Near East. It is less strained to suggest that various people at various times exploited the few geometric shapes that are relatively easy to make in clay and used them as counters or for whatever other purposes they, as individuals, chose" (p. 516).

An origin of writing that derives from the nature of the languages recorded has been suggested (Daniels, 1992b) that applies to the three societies in which writing emerged: Sumerian, Chinese, and Mayan. In each case, the language spoken was largely monosyllabic—that is, morphemes (meaningful units) were generally only one syllable long. This is significant for two reasons. It is commonplace for preliterate societies to make pictographic records, in which a picture stands for an idea, an event, or even a word; and psycholinguistic investigation shows that the basic unit of perception of speech is not the phoneme (roughly equivalent

to the sound represented by a letter of the alphabet), but the syllable. In a monosyllabic language, drawing a pictogram of a word is the same as making a sign for a syllable. Many of the abstracts, function morphemes, and proper names (see above) will also be monosyllabic, homophonous with picturable content words. The pictograms of the latter can thus easily be taken to represent the former as well. If words were more than a syllable long, the likelihood of homophony would be much reduced, and the unpicturable stretches of language would remain unrecorded. An early example is the Sumerian sign for *ti,* "arrow," which also stands for *ti,* "life." [*See* Sumerian.] It is noteworthy that every time someone not previously literate in any language has invented a script for his own language (the best-known example from more than a dozen cases is Sequoyah's Cherokee), the result is a syllabary.

Typology. Orthodoxy has it that there are just three types of writing systems: logographic, syllabic, and alphabetic. This typology seems to have been devised by Isaac Taylor (1829–1901); it achieved apotheosis in the work of Ignace J. Gelb (1907–1985), who asserted that the three types represent an immutable evolutionary sequence in the order named. That is, an alphabet can only develop from a syllabary, and a syllabary can only develop from a logography (Gelb, 1963, p. 201). Inasmuch as an alphabet has only been invented once in all the world, this is a rather incautious claim. It required Gelb to insist that the Northwest Semitic script, traditionally called an alphabet, is actually an "unvocalized syllabary" because the Ethiopic (and Indian) script that developed from it by altering the forms of the letters to denote vowels, is a hybrid that could not have developed from an alphabet.

These convolutions disappear when it is recognized that there are not three script types, but six: logosyllabary (purely logographic notation is not yet writing); syllabary; abjad (consonantary); alphabet; abugida (Ethiopic type); and hangul (feature based). (Abjad is an Arabic word; abugida is Ge'ez; and hangul is Korean.) Logosyllabaries include Mesopotamian cuneiform, Egyptian hieroglyphics, Anatolian hieroglyphics, Chinese characters, and Mayan glyphs. [*See* Egyptian.] Syllabaries include the Cypriot script and, par excellence, the Japanese kana. There is historically but one abjad, represented by its modern developments Arabic, Hebrew, and Syriac script. Again, only one alphabet has been devised, the Greek, ancestor of the diverse scripts of Europe. The abugida principle remains in use throughout South and Southeast Asia (seen in Sanskrit and Hindi Devanagari, and Thai, and all the other scripts derived from ancient Indian Brahmi) and in Ethiopia. The hangul type appears in Korean, in varieties of shorthand, and in general in scripts devised by scholars familiar with practical phonetics.

In a logosyllabary, several hundred to several thousand different characters each represent a morpheme, and a restricted subset of these are used purely for their phonetic value. In Sumerian cuneiform and Egyptian, phonetic complements are written alongside logograms to assist in interpreting signs that may have acquired more than one related meaning. In Chinese, on the other hand, a sign that provides phonetic information is incorporated into an individual character along with one that provides semantic information (so that the full inventory of Chinese characters is much larger than that of Mesopotamian cuneiform). In both Sumerian and Egyptian, further disambiguation is provided by semantic determinatives—characters that label the associated word as designating a member of a general class, such as textile, cattle, or city (e.g., in the Akkadian DINGIR. UTU = *aš*: DINGIR = the determinative for deities, UTU = the logogram for "sun," *aš* = the phonetic indicator for the pronunciation *samaš,* "sun deity").

In a syllabary, each character represents a syllable, almost always of the shape consonant + vowel (CV), or vowel alone. (Mesopotamian cuneiform, in fact, seems unique in allowing VC and CVC characters as well.) The number of characters is on the order of one hundred, being about the number of consonants in the language times the number of vowels. Owing to their derivation from logograms, signs that are phonetically similar generally show no graphic similarity. Where a syllabary has evolved from a logosyllabary, it may retain a limited number of logograms, as in Linear B, but the primary burden of communication is carried by the phonetic signs.

The evolution of writing systems thus far follows a fairly natural course, based in the nature of language and the nature of speech. It is the step to the consonantary that represents the greatest achievement in the analysis of language. Some lone genius had to recognize both that syllables do not differ unsystematically from one another—they could be classed into a small number of groups based on the similarity of their more prominent portions, their vowels—and that the portions of syllables that distinguish those with the same vowels from each other in turn bear some kind of similarity. This similarity is not acoustic, it is articulatory; it characterizes what are called consonants. It is possible that this recognition was the work of a Semitic-speaker because in the Semitic languages the consonants and vowels that make up words vary independently—the vowels are largely conditioned by the grammar. In Sumerian, however, a root always involved the same combination of consonants and vowels. In Akkadian, such a recognition is found only rudimentarily in the *ta-ti-tu* list of signs. [*See* Akkadian.] The consonants-only recording of Semitic was no impediment to reading, given the common assessment that redundancy in language is about 50 percent. Eventually, however, Semitic languages came to be invaded by foreign loanwords that did not respect the division of labor between consonants and vowels. The term *abjad* is offered in complementarity to *alphabet,* acronymically formed from the first letters of the Arabic

script in their ancestral order. (Abjad is the Arabic name for that sequence, which is still used when the letters serve as numbers.)

The developmental path of writing systems then branched when scholars speaking languages from two Indo-European families attempted to write them using forms of the abjad. The earlier result had been the *alphabet,* devised for Greek on the basis of a Phoenician or Aramaic model. [*See* Greek; Phoenician-Punic; Aramaic Language and Literature.] Given the paucity of both early Greek writing and Semitic texts, it is not possible to decide exactly when, where, or how the first attempts to write Greek took place (Pierre Swiggers in Daniels and Bright, 1996, sec. 21). A compromise date is about 800 BCE. Likely sites are trading posts, either Semitic-speaking in a Greek area or Greek-speaking in a Semitic area. (The suggestion of al-Mina, Cilicia, seems to rely on excavational accident rather than positive evidence, since it was merely the most prominent site that happened to be found at the right place and time.) The "how," is that, by a happy coincidence, the Semitic languages employ a number of consonants ("laryngeals") not found in Greek. Some of them apparently were heard by Greeks to color *a*-vowels in the direction of the *e* and *o* of their language: *h* and *ḥ* were used for short and long *e*, ʿ for *o*, and the inaudible ʾ for *a*. The letters *w* and *y* became *u* and *i*, suggesting an Aramaic influence (there, but not in Phoenician, those letters could stand for vowels even if they did not result from historical alteration of diphthongs). An alphabet is thus a script in which each consonant and vowel has its own symbol. This is the ideal state of affairs, and it tends to exist only when an alphabet is first devised: speech is fluid, continually though gradually changing as it is passed from generation to generation and as language communities drift apart; whereas script is fixed, because of the existence of writings from earlier generations and because the craft of writing is passed on in the normative setting of schools. [*See* Scribes and Scribal Techniques.]

In India, the Brahmi script is attested from the fourth century BCE, but in a fully worked-out form, suggesting that it had been devised some centuries before—most likely on the basis of a Semitic abjad. In Brahmi (and also in Kharoshthi, found in the northwest of the subcontinent and clearly based on the local Aramaic variety of abjad), which seems first to have recorded Prakrit and gave rise to the scripts of India and Southeast Asia, the vowels of the Indo-Aryan languages are denoted by appendages to the basic form of the letters. [*See* Indo-European Languages.] The base form does not, as in the underlying abjad, denote just the consonant; rather, it denotes the consonant plus the vowel *a*. A diacritic is available to cancel the vowel and indicate that the letter is used for the bare consonant (Richard Salomon, in Daniels and Bright, 1996, sec. 30). The same method of denoting vowels is found in Ethiopic script, except that a vowelless consonant is denoted by the same symbol as denotes the consonant plus shwa. Continuing the pattern of *abjad* and *alphabet,* a suitable name for this type is *abugida,* again taken from the native name for the characters when taken in their traditional order. (The available English names all incorporate the term *syllable,* misleadingly suggesting a similarity between this type and the syllabary.)

The sixth type of script is first seen in the Korean writing system, hangul. There, letters for phonetically similar phones receive graphically similar shapes, so that it is phonetic features rather than segments that are recorded. Only sophisticated linguistic scholars have created such scripts, which tend to serve special purposes, such as shorthand or phonetic notation.

By the middle of the first millennium CE, scholars of languages using abjads found it advisable to explicitly notate vowels in their texts. The first to do so, writing Syriac, were familiar with the Greek alphabet, but they chose not to add vowel letters to the sequence of consonants for two reasons: in all three abjad languages, the texts—Hebrew Bible, Syriac Peshitta, Arabic Qur'an—were sacred in their physical instantiations (not just in their content), and it would be sacrilegious to alter the received texts by interjecting additional letters. The seventh-century Syriac scholar Jacob of Edessa did in fact propose a full set of vowel letters to be written within words, but they found no favor because they would render all existing literature unreadable. Instead of full letters, textual scholars devised various systems of notating vowels (and other information) that involved placing symbols above, below, between, and even within the inherited letters. The Syriac traditions came first, then the Arabic, and finally, and most elaborately, the Hebrew. [*See* Syriac; Arabic; Hebrew Language and Literature.]

History. The historical development of writing systems largely follows the typological sequence described above.

Logosyllabaries. The first true writing of which specimens have survived is Sumerian cuneiform in its early stages (c. 3200 BCE). Piotr Michalowski (1993) offers evidence that its invention can be localized in Uruk: in the earliest city lists, the name *Uruk* is represented by the sign for "city" itself—that is, Uruk is the city par excellence. The earliest surviving documents are various kinds of lists and then what have come to be known as economic documents—the ephemera of running a temple, farm, or cattle ranch. At first only full words are recorded, then grammatical affixes (taking advantage of the phonetic properties of the signs). By early in the third millennium, cuneiform could record ordinary prose and poetry. With full phonetic capacity came the possibility of its use or adaptation for languages other than, even unrelated to that for which the script was devised. By the middle of the third millennium, the "Sumerian" script was in current use for writing Akkadian and Eblaite. [*See* Ebla Texts.]

Akkadian became the regional vernacular, while Sumerian was maintained as a language of religion and scholarship. With the adaptation of a script to a new language, as happened when cuneiform moved to Akkadian, the signs could

take on a whole new set of phonetic values derived from the new words associated with the same semantics; the inventory of logograms was reduced, and phonetic writing became more prevalent. Eventually, some genres of text eschewed logograms almost entirely, while writers on more arcane topics preferred to render their records confidential by writing in almost nothing but logograms—which required years of study to master. With the further spread of cuneiform (to Elamite, Hittite, Hurrian, Urartian), logogram use became ever more sparse, so that some cuneiform languages were written almost purely syllabically. [*See* Hurrian.] In Hittite and Hurrian, the practice arose of duplicating the vowel of a CV syllable with the sign for the matching V (even for phonologically short vowels), so that a syllable denoting a consonant followed by a vowel might in practice be designating the consonant only (Piotr Michalowski, Jerrold Cooper, and Gene Gragg in Daniels and Bright, 1996, sec. 3).

From Egypt, almost simultaneously with the earliest writing in Mesopotamia, appear the earliest surviving traces of (proto-)hieroglyphic writing, most notably the Narmer palette. The general similarity between hieroglyphic and cuneiform writing (logography, phonetic complements, semantic determinatives) leads most scholars to recognize influence from the latter on the former. Direct borrowing seems ruled out by the nature of the Egyptian script: the phonetic signs denote only consonants, never syllables. The signs represent three, two, or one consonant, and there is no indication whatsoever of the accompanying vowels. (The uniconsonantal signs, eventually numbering twenty-four, are often called an alphabet, but this group was never—until some late experiments in imitation of Greek writing—used as a system to the exclusion of bi- or triconsonantal signs.) The principles of writing Egyptian did not change for more than three thousand years; the hieratic and demotic scripts are cursive and extremely cursive versions of hieroglyphic, which continued to be used and elaborated in formal contexts until the end of the Egyptian civilization (Robert Ritner in Daniels and Bright, 1996, sec. 4).

In eastern Anatolia, perhaps influenced by the Linear A or B scripts of the Aegean, or perhaps by Egyptian hieroglyphics, a pictographic script was used for the Luwian language, a close relative of Hittite. It incorporates a limited number of logograms and is primarily syllabic (Craig Melchert in Daniels and Bright, 1996, sec. 6). [*See* Luwians.]

Abjad. Some time, probably in the second quarter of the second millennium BCE, some scribe, somewhere in the Levant, made the momentous discovery that words could be represented not for their meaning alone, nor according to their syllables, but that the syllables could be further broken down into a vocalic portion and a consonantal portion, and that the words could be represented by their consonants alone. As with Egyptian, this may have been practical because of the structure of the Afro-Asiatic languages (among them Semitic and Egyptian), where much grammatical derivation and inflection is accomplished by varying vowels accompanying consonantal roots (though it is incorrect to claim that all semantic information is in the consonants and all grammatical information is in the vowels). The fallacy must be avoided, however, of insisting on an Egyptian background or origin for the Canaanite abjad on the grounds that among the thousands of hieroglyphs it is possible to find a handful that look like the posited earliest forms found in the abjad: only when both the form and the function (i.e., sound value) of signs match—consistently across the system—can a relationship be claimed. At most, as with cuneiform influence on hieroglyphics, it can be said that the idea of writing consonants rather than syllables could have come from Egypt. The popular claim that the Proto-Sinaitic inscriptions underlie the abjad/alphabet, as codified by William Foxwell Albright (1966), depends on four unproven assumptions: the script is alphabetic, the signs have Egyptian prototypes, the letters are pictographic and acrophonic (i.e., they picture an object whose name begins with the sound denoted by the sign), and the language is Semitic (Sznycer, 1975). Moreover, its advocates do not explain why a group of putative Semitic-speaking miners at work or enslaved in the Sinai desert would have devised a script of their own—or how it could have reached or found general acceptance in Palestine. [*See* Proto-Sinaitic.]

Wherever and however the abjad originated, it found widespread adoption for recording a variety of dialects of the West Semitic language groups: Canaanite, Aramaic, and South Semitic. This last group used a script that diverged early on and is found in difficult-to-date graffiti in North Arabic languages ancestral to Classical Arabic and in beautiful, monumental inscriptions in Old South Arabian dialects. (This script was eventually taken across the Bab el-Mandeb to form the basis of Ethiopic writing.) The Northern Linear, or Canaanite, script (sparsely attested) developed into the Phoenician, which traveled all around the Mediterranean and beyond; it gave rise to the Punic script of Carthage and environs; appeared as an archaic, sacred script in the Dead Sea Scrolls (the Tetragrammaton in some texts was written in these archaic characters within a text otherwise in Square Hebrew script); and survives as the distinctive Samaritan script. [*See* Dead Sea Scrolls; Samaritans.] The script for Aramaic texts diverged somewhat and then followed two paths of development: one maintained the original separation of the letters (adopted, probably during the Babylonian Exile, for Hebrew and still in use) and the other, as a result of increasingly speedy writing, manifests increasingly cursive features. Its descendants include the surviving Arabic, Syriac, and Mandaic scripts, in all of which nearly all the letters of each word are joined (M. O'Connor in Daniels and Bright, 1996, sec. 5). [*See* Mandaic.]

In those languages that used the Aramaic abjad (but also in Hebrew inscriptions prior to the change of script), a means of denoting some vowels emerged gradually. At first,

word-final vowels were indicated with the letter for the homorganic consonant (i.e., ⟨y⟩ for [i], ⟨w⟩ for [u], ⟨'⟩ or ⟨h⟩ for [a]); subsequently, word-medial vowels could be so indicated. These optional consonant letters are known by the Latin term *matres lectionis,* "mothers of reading."

The first script known to have been invented rather than developed from an earlier one is Old Persian cuneiform, devised specifically to record the exploits of Darius the Great. The characters are composed of wedges, in imitation of cuneiform writing, but the script has been found only incised on building stone and cliff faces, never written on clay. Some characters render CV syllables, others plain consonants, showing the influence of both the Akkadian syllabary and the Aramaic abjad (David Testen in Daniels and Bright, 1996, sec. 8).

The earliest sizable corpus written with a form of the Levantine abjad is the Ugaritic texts, which survived because they were written on clay tablets with a reed stylus in imitation of Mesopotamian practice. The shapes of the letters appear to be cuneiform adaptations of the linear forms seen in the handful of contemporary or earlier inked or incised texts. However, they bear no relationship whatsoever to the signs of Mesopotamian cuneiform, which was in use at Ugarit for Akkadian, Hurrian, and, rarely, Sumerian (for the early epigraphic material, see Cross 1979, 1989). The Ugaritic documents include both ephemera and belletristic compositions. These two categories are also found in the rare surviving abjad-written items not impressed on clay tablets: ostraca, seals, and sealings. [*See* Seals.] Fifth-century BCE (and later) papyri from Egypt represent the more quotidian scribal output, while monumental inscriptions found from Dan to Beersheba (and well beyond) record, usually, the conquests and border claims of local rulers, and, especially in South Arabia, achievements in public works projects (such as irrigation systems) as well. The literary records of the Levant have not survived in contemporary manuscripts; the earliest biblical texts are among the Dead Sea Scrolls, and the Bible mentions a number of works that have vanished completely. From the first millennium CE, Syriac, Mandaic, and Jewish Aramaic incantations written on apotropaic bowls and on a handful of other items are preserved from Mesopotamia; the Cairo Geniza, from the end of that millennium, has yielded thousands of fragments of texts (both sacred and mundane) relating to the Jewish community there.

As Christianity spread to the north and east, scripture translations and a great literature were produced in Syriac. In the seventh century, the Prophet Muhammad dictated the Qur'an. Not long after, the Jewish Masoretes recognized the need to fix exactly the pronunciation of the Bible. For each language, a means was required to denote all the vowels in the sacred texts; in each case, the practical reason was different, but the solutions devised were similar. The resulting vowel pointings (not called matres lectionis) remain in use, yet optionally, to this day; theoretically, they change the *abjads* to alphabets, but their absence in the great majority of written materials shows that the supposed advantage of full explicitness of the alphabet is illusory.

Alphabet. The adoption of writing by the Greeks, with the accidental invention of the alphabet, has fallaciously been taken to mark the onset of "true literacy" in history; but this position derives more from ignorance of Near Eastern materials than from any facts of classical civilization (Peter T. Daniels in Daniels and Bright, 1996, sec. 2). It suffices here to outline the descent of the alphabets of Europe. The Greeks brought their script to their colonies, where it flourished and developed varieties (it was standardized in Athens in 401 BCE). A variety planted in Italy was taken up by the Etruscans, whose improvements were passed on to the Romans, resulting in the alphabet used throughout Western Europe and by its cultural descendants. Nonliterate peoples converted by missionaries from the western branch of Christianity tended to adopt the Roman alphabet, while those taught by Greek-speaking missionaries preferred to devise new scripts for their languages on the Greek model, notably Armenian, Georgian, and Glagolitic/Cyrillic (Daniels and Bright, 1996, pt. V).

Abugida. A handful of monumental inscriptions from early in the fourth century CE attest to the introduction, probably several centuries earlier, of consonantal writing from South Arabia to the kingdom of Axum, in present-day Ethiopia and Eritrea. Simultaneously with the conversion of the kingdom to Christianity in the year 348, the script became provided with vowel indications, in the form of appendages and modifications to the consonant letters. This technique cannot have come from Syrian missionaries because Syriac script then represented vowels only with matres; nor from Greek or Coptic missionaries, or vowels would presumably have been indicated with separate letters. Rather, there must have been some awareness, however ephemeral, of the scripts of India, perhaps mediated by the Martomite Christian community around Madras (Daniels, 1992a).

Paleography. While the use of a writing system (the principles of orthography) remain quite stable throughout its existence, it is readily apparent that handwriting changes across generations. The scribes of a particular time and place tend to form their characters in a similar way, if only so that each can read what the others write. Fashions in handwriting can often be correlated with aesthetic aspects of the surrounding culture—for example, the angular handwriting used where Gothic architecture included pointed arches, compared with the rounded writing popular along with Romanesque rounded arches.

The variation is usually not so spectacular. Subtle differences in handwriting between regions and generations make possible the craft of paleography. Given enough precisely dated and placed manuscripts, and intimate familiarity with

as large a corpus of materials as possible, a scholar can assign a given undated document to a limited area and a range of half a century or so. A particular scribe's handwriting is not likely to change over his or her career (Daniels, 1984), so that during any particular decade, or year, documents may be produced representing three or four generations of scribal training and fashion.

Hundreds of thousands of documents in cuneiform have been excavated from several millennia and throughout the Near East. Early in the course of Assyriology, massive collections of the data needed to establish cuneiform paleography were compiled, but no study has ever been completed of the handwriting practice of even a single scribal community. However, René Labat (1948) includes a wide selection of normalized forms of each sign used in Akkadian; and Robert D. Biggs (1973) begins to point the way to what is needed for every region and period before a useful cuneiform paleography can be produced.

Because the West Semitic materials are by comparison limited, it has been possible to draw up handbooks of paleography in several areas. Frank M. Cross (1961) deals with the scripts of the fourth century BCE to the first century CE, mainly as a help in the study of the Dead Sea Scrolls. Beatrice Gruendler (1993) gathers the materials relevant to the history of the Arabic script; Jacqueline Pirenne's 1963 study is the fullest of the Syriac; Alexander Klugkist (1986) covers Mandaic; and Solomon A. Birnbaum (1954–1971) deals with Hebrew to the twentieth century CE.

There are so few epigraphic monuments (Semitology, unlike classical studies, does not distinguish epigraphy, studying incised texts, from paleography, studying inked texts) from the first half of the first millennium BCE, and a little earlier, that every scholar can be expected to be familiar with the full range. As new texts are discovered, they are thoroughly analyzed, and incompatible conclusions regarding their place in the history of writing inevitably arise. The most notable recent example is the Aramaic–Assyrian bilingual from Fakhariyah, which comes from a place and time that makes it relevant to the discussion not just of West Semitic script history, but to the origin of the Greek alphabet as well. [*See* Fakhariyah Aramaic Inscription.]

[*See also* Codex; Libraries and Archives; Literacy; Papyrus; Parchment; Scroll; *and* Writing Materials.]

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WRITING MATERIALS. If Paleolithic cave paintings are taken as the earliest records of human communication, it can be seen that notation began with mineral substances: cavern walls and ground-earth pigments. Vegetal and animal substances successively came into use.

Mineral Substances. The oldest surviving documents, the proto-cuneiform corpus from Uruk, are written on clay, "a natural, earthy, fine-grained material that develops plasticity when mixed with a limited amount of water" (Grim, 1979, p. 700), "formed by the decomposition of . . . rock-forming minerals, notably the feldspars"; they are "hydrated aluminium silicates with subordinate amounts of alkalis, alkaline earths, iron oxides, etc." (Scott, 1954, p. 379). [*See* Cuneiform; Uruk-Warka.] Clay used for cuneiform tablets (as opposed to pottery clay) has apparently never been physically analyzed; Denise Schmandt-Besserat (1992, p. 29) reports that the tokens used in preliterate accounting are most commonly made of a clay called montmorillonite (not mentioned by Grim, 1979). Lindsay Scott (1954, pp. 379–380) distinguishes primary from secondary clays. The former (bedded where they form, in marshes or bogs) include the kaolins or china clays; the latter (transported by water, wind, or ice from their primary source, acquiring additional impurities) are virtually ubiquitous, and it is these that seem to be used in cuneiform tablets. Mixed with an appropriate amount of water, clay is plastic; a mass of it suitable to accommodate the length of the text to be written would be modeled by a scribe into a shape dictated by tradition or convenience (usually a rectangular parallelopiped—called a tablet—for most uses; a disk for a practice text; or a hexagonal prism for annalistic texts). [*See* Tablet.] The obverse surface—the first to be inscribed—was flattened (Jerrold S. Cooper [1996, p. 38] claims that the flattening occurred when the tablet was set down on a flat surface for drying after the obverse was written, but is this not precluded by the high viscosity of the material?), the reverse being somewhat convex. Air drying was the normal way for inscribed objects to harden; very exceptionally, they could be baked, like pottery. Charles E. Jones (personal communication) observes that far fewer, if any, tablets were intentionally baked (as opposed to being accidentally cooked in conflagrations) in antiquity than is generally thought. Jones has also noted that at least some tablets have a mud core with a clay veneer to receive an inscription; and that when such a veneer chips off, pieces can be mistaken for fragments of clay envelopes. The India House Inscription (a very large slab inscribed on five sides recovered from Babylon at the beginning of the nineteenth century, one of the key documents used in the decipherment of cuneiform) seems to be hollow. [*See* Babylon.]

The wedge-shaped impressions that comprise cuneiform characters were made by lightly touching the surface of the clay tablet with a stylus (see below), or by stamping a complete commemorative inscription onto the faces of building bricks; clay is, thus, the primary medium in the Mesopotamian sphere. Mycenaean texts, in Linear A and Linear B, were also written on small clay tablets, but the characters were formed of incised lines rather than impressed wedges. Cuneiform (and other) writing could be imitated on non-yielding surfaces, including cliffsides, quarried or freestanding stones, or portable objects. Stone could be incised using mallet and chisel; the gypsum of which Mesopotamian palace reliefs were often fashioned is a very soft stone and easily worked, whereas boundary stones and other objects for unsheltered display needed to be more durable and must have presented a greater challenge to the engraver. The limestone of statues and other objects is of intermediate hardness. The Hammurabi stela, on which the wedges of the characters are outlined rather than hollowed out, is said to be of diorite. The Rosetta stone, originally described as basalt, is identified in a not-yet-published analysis as a form of granite. In Egypt, hieroglyphic inscriptions (originally written with a pen or brush, see below) could be carved at great length into limestone walls. [*See* Hieroglyphs.] Some monuments in various peripheral areas—among them some Luwian hieroglyphic and Aramaic and South Arabian consonantal inscriptions—exhibit characters that are not incised but are in relief, with the background cut away. [*See* Luwians; Aramaic; South Arabian.] Another material on which writing is sometimes incised is metal: a gold tablet of Ashurbanipal, bronze plates both at Byblos and in early Italy, a copper scroll from Qumran, strips of lead with Gnostic Mandaic inscriptions. [*See* Byblos; Copper Scroll; Mandaic.]

Naphtali Lewis's statement "The need to adapt the cuneiform script of the Fertile Crescent to the pen-and-ink technique of papyrus undoubtedly was a factor in the Phoenicians' development of the world's first alphabet" (1974, pp. 84–85) cannot be defended. [*See* Papyrus.] Assyrian scribes had no difficulty in imitating impressed wedges on a flat surface (see Baer, 1960). Conversely, the Northwest Semitic linear consonantary was successfully adapted to cuneiform technique at Ugarit. [*See* Ugarit.]

Writing also appears on pottery (baked clay): when a vessel shatters, no longer serving its original purpose, the sherds can be written on with ink—they are then called ostraca. Ostraca are often the only kind of ink inscription that man-

ages to survive the stresses of the physical environment; they have been found throughout the Fertile Crescent, from Aššur to Aswan. [*See* Ostracon; Aššur.] Examples of pottery created especially for the purpose of being written on are the apotropaic bowls of Jewish, pagan, and Mandaean tradition. They bear incantations written in a spiral on the bowl's inner surface and were buried upside down under the floors of houses to ward off demons, such as Lilith.

Such ink from the ancient world that has been analyzed generally proves to consist of carbon. Lampblack or incense soot was mixed with water and a small amount of gum arabic to produce a nonfading writing liquid. Iron-based black is not found until about the seventh century CE, and ink made from plant sources (e.g., oak galls) found later, in Europe, is not reported from the Near East. Rubrication could be done in red ink made with ocher, an iron-containing earth (Lucas, 1962, pp. 362–364).

Vegetal Substances. A blank roll of papyrus has been found in an Egyptian tomb at Saqqara dated to 3100 BCE (Černý, 1952, p. 11). [*See* Saqqara.] The Egyptians wrote on papyrus as long as their civilization endured; the earliest testimony to papyrus elsewhere in the ancient Near East comes from the Tale of Wenamun (c. 1100 BCE), but it must have been in use well before that. Only the exceptional desiccation of the Egyptian and Transjordanian deserts allowed the survival of papyrus over the millennia.) Papyrus was ubiquitous in classical Greece and Rome and spread with the expansion of the Roman Empire. The Merovingian chancery ceased using it in 677 CE, but elsewhere in France it continued for at least another century. Dated papyri come from Ravenna in 967, Spain in 1017, and the papal chancery in 1057; not until the twelfth century was papyrus completely superseded in Europe (Lewis, 1974, pp. 84–94).

Papyrus "paper" is formed from layers of the pith of *Cyperus papyrus,* a sedge that formerly grew to 3 meters high in marshy ground throughout the Nile Valley from the Delta as far south as Lake Tana in Kenya, as far west as Morocco, and north into Palestine. [*See* Delta.] In the Seleucid era it was introduced to Babylonia, and by the tenth century CE to Sicily (Lewis, 1974, pp. 3–20). [*See* Seleucids.] The chief, if not completely reliable, source for the preparation of the writing material is Pliny the Elder's *Natural History* (13.74–82). Fresh strips of pith were laid side by side on a flat surface, with their edges touching; more strips were laid on top of them, perpendicularly, again with their edges touching. They were then pressed together (and perhaps pounded with a mallet), and the plants' sap bonded them into a very smooth, white, flexible sheet that could be inscribed on both sides. Usually, the sheets were glued into rolls of twenty, with the horizontal fibers on the inside. The joins were nearly imperceptible, and when a scroll was written in columns, the column breaks did not need to correspond to the joins. [*See* Scroll.]

True paper is "a matted or felted sheet of fibres formed on a fine screen from a water suspension" (Tsien, 1985, p. 35). It was invented in China, perhaps around the beginning of the common era (rather than in the second century CE by Tshai Lun, the traditional account). The earliest such fibers

WRITING MATERIALS. *Three inkwells from Qumran.* (Courtesy ASOR Archives)

seem to have been silk, though paper-mulberry bark was used later. Only textile fibers were used outside China (not bark, and not, until the nineteenth century, wood pulp). The manufacture of paper was not a closely held secret monopoly of China, as is often stated. It was made in neighboring areas as soon as they came into contact with the Middle Kingdom. (The Qur'anic word *qirtas* is believed to be a Chinese loanword in Arabic.) Paper was manufactured in Muslim Samarkand from 751 onward, and in Baghdad by the end of the eighth century. [*See* Baghdad.] From there it spread to Damascus and across Africa in the ninth century; it was introduced from Africa separately to Spain and Italy in the twelfth and thirteenth centuries, and then spread across Europe (Tsien, 1985, pp. 296–303, citing and correcting Hunter, 1947). The oldest dated paper book in the West is a fragment of the *Thousand and One Nights* reused by a legal scribe in 879 (Oriental Institute, 1982, p. 130).

Writing implements fall under the heading of vegetal substances. Not surprisingly—because it is assumed that the stylus was made of wood or reed—no stylus used for impressing wedges on clay has ever been identified in excavations in Mesopotamia. The literature unanimously assumed that the stylus had to be cut to some angle in order to produce wedge-shaped impressions (Driver, 1976). H. W. F. Saggs (1981) plausibly suggests that a sedge widespread in Iraq, with a stem that is triangular in cross section (like the related papyrus plant), could be used to produce the needed shapes without modification beyond stripping off its leaves. (Unfortunately, he does not supply the botanical identification of the species.) This account also explains why the impressions are wedges rather than dots, rectangles, stars, or anything else—the script did not go through stages of experimentation as to suitable shapes of the components of the characters.

Robert M. Whiting (personal communication) has observed that wall paintings from Tell Barsip show the stylus held palm downward, passing under the palm at a low angle to the clay [*See* Til Barsip]; he has determined by microscopic observation that the stylus was rotated through 90 degrees to make horizontal and vertical wedges, noting that the stylus leaves a mark with one smooth side and one side that shows the grain. Horizontal wedges have the grain on the bottom, whereas vertical wedges have the grain on the left side. Thus, the stylus was held in the direction of the writing to make a horizontal wedge and perpendicular to the direction of writing to make a vertical wedge; in positioning the stylus to make wedges of different orientations, the scribe could rotate both the stylus and the medium (which was held in the other hand), to make them meet in the proper relative position.

The notion that the pens used to write Egyptian hieroglyphs were flat-tipped reeds chewed into brushes apparently goes no further back than an unsupported assertion by James H. Breasted of the University of Chicago in 1916. Rather, the sharpness of line even in very early papyri indicates that the pen differed little from that discernible in fifth-century BCE Aramaic papyri or that in current use: it was likely a hollow reed trimmed so that a shallow arch was what made contact with the writing surface, split for a centimeter or so to facilitate the flow of ink (Daniels, 1984).

Animal Substances. The transition to the category of animal substances is represented by wood tablets covered with beeswax that takes the wedge impression of the stylus. They are known from contemporary accounts, but very few have survived (Driver, 1976, pp. 225–226).

The three terms for prepared animal skins used as a writing ground—leather, parchment, and vellum—are not clearly differentiated. Driver (1957, pp. 1–3) apparently uses the word *leather* for any writing on skin, including parchment; Alfred Lucas and J. R. Harris discuss leather and parchment in separate sections (1962, pp. 33–37, 38–39); Dard Hunter (1947, pp. 13–16) distinguishes parchment and vellum by both animal of origin and technique of manufacture; and David Diringer (1953, p. 170) agrees with current usage in calling vellum merely "the finer quality" of parchment, "finer in grain, whiter, and smoother."

Egyptian leather was prepared by treating hides and skins with a number of different substances; true tanning (i.e., with substances containing tannin derived from acacia pods or oak bark) was known in Egypt in the predynastic period. Other materials used include ocherous earth, salt, fat, urine, dung, brain substance, and alum.

For Lucas and Harris (1962), parchment is prepared merely by "first removing the hair and then rubbing the skin smooth with some abrasive material, such as pumice stone." Other authorities insist that the preparation of parchment involves baths in lime (details in Saxl, 1956). For Hunter (1947), parchment is made from the inner layer of a split skin (the outer layer is used for leather), while vellum is made from the unsplit skin of a calf only. Thus, the two sides of the product differ—one being the hair and the other the flesh side. In gathering folded sheets into signatures for codices, care is taken to face hair side to hair side and flesh side to flesh side, to preserve the uniformity of appearance of each opening. [*See* Codex.]

It is difficult to date the earliest use of skin for writing. The "Driver letters" (1954, rev. ed., 1957), from the fifth century BCE, are the earliest surviving corpus, but scribes writing on flexible material—either papyrus or leather—are depicted in eighth-century BCE Assyrian reliefs. [*See* Assyrians.] The Akkadian textual evidence for leather and parchment is even later (Driver, 1976, pls. 23/2, 24; pp. 16–17, 228). By the time of the writing of the Dead Sea Scrolls, it seems that the preferred material for biblical texts was leather (as continues to be the case to this day for sacred Torah scrolls). [*See* Dead Sea Scrolls.]

It is often said that parchment replaced papyrus because papyrus is inferior in various ways (e.g., Diringer, 1953, p. 165). Lewis refutes this notion, attributing the gradual supersession of papyrus by parchment in the West (and by

paper in the East) to the diminution of the supply from Egypt, which was the result not of manipulation of the market or of withholding of the supply, but of the gradual draining of papyrus marshes for agriculture (Lewis, 1974, pp. 57–61; 1989, pp. 27–28). An advantage of both papyrus and parchment over paper is that they can be reused by washing or scraping off existing writing. Fortunately for later scholarship, the underwriting does not entirely disappear from such palimpsests. Many an otherwise lost ancient text has been partially preserved beneath a later text that to modern eyes is of less value.

[*See also* Libraries and Archives; Literacy; Scribes and Scribal Techniques; *and* Writing and Writing Systems.]

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X

X-RAY DIFFRACTION ANALYSIS. The first step in identifying an unknown piece of matter is normally chemical analysis. However, this will mainly provide information on the elements present and not on how they are combined. If the material is crystalline (and almost all solids are, with the exception of glass), X-ray diffraction can supplement the information given by chemical analysis and indicate which compounds are present.

For X-ray diffraction measurements, the specimen is exposed to a beam of monochromatic X-rays (i.e., X-rays with a narrowly defined wavelength) and the intensity of the scattered radiation is monitored at various angles. Because the interatomic spacings in crystals are of the same order of magnitude as the wavelengths of X-rays, crystal structures behave as three-dimensional diffraction gratings for X-rays. A special property of such gratings is that the scattered radiation is reinforced at certain angles while it is extinguished at all others. Therefore, for a given wavelength (λ), appreciable scattered (or diffraction) intensities are only observed when the angle (Θ) satisfies the so-called Bragg condition, which is given by $n\lambda = 2d \sin\Theta$, where d is the spacing between the crystal lattice planes and n is an integer (i.e., 1, 2, 3, etc.).

The simplest technique for obtaining X-ray diffraction patterns is the powder method, which is the one most useful for archaeological specimens. A small sample, which can be less than 1 mg, is pulverized and inserted into a thin-walled glass capillary or deposited on a glass fiber. It is then mounted on the axis, which can be rotated, of a cylindrical X-ray camera, around whose interior a photographic film is wrapped. Because in a finely powdered and rotating sample the respective lattice planes exist at all orientations with respect to the incident beam, the Bragg condition is satisfied along the surface of a cone with a semiangle of 2Θ.

The spacings between crystal planes in a certain crystal system are characteristic parameters of each crystalline substance; it therefore follows that the diffraction pattern (i.e., the observed X-ray intensities at various angles) is also characteristic and can be used as a fingerprint to identify mineral phases by comparing them with cataloged patterns of pure substances. Mineral mixtures, of course, give mixed patterns, but mineral components of less than 10 percent are usually not detected. Thus, minerals can be identified even in mixtures; moreover, their relative amounts in the mixture can be estimated from the X-ray intensities. Only glass does not give any refraction pattern.

The major fields of application for X-ray diffraction analysis in archaeology are pottery analysis, to determine constituent minerals (clay, temper, decoration)—information often required to determine production techniques and provenance; identifying pigments in wall paintings and pottery decoration after firing; identifying corrosion products on the surface of metal objects for purposes of authentication; and identifying the microcrystalline structure of worked metals, which may reveal their mechanical and thermal pretreatment (e.g., if a wire has been drawn or rolled and hammered) as well as information concerning the development of metallurgy in ancient societies.

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ERNST PERNICKA

Y

YABIS, WADI EL- (Ar., "dry valley"), perennial wadi located in northern Jordan, with a total catchment of almost 200 sq km (124 sq. mi.). The wadi descends westward a distance of 18 km (11 mi.) from the hills of Jebel 'Ajlun at 1,200 m above sea level, to the central Jordan Valley, which is 300 m below sea level. The great topographic and climatic range within this short distance results in a steep environmental gradient, with remnants of dense pine, oak, and pistachio forest at the highest elevations yielding to open scrub oak forest in the middle reaches and then to steppic grasses, weeds, and *Acacia st.* arboreal species in the valley. Tamarisk and oleander grow thickly along the banks of the wadi and the Jordan River. *Terra rossa* soils mantle the limestone highlands, while colluvial and alluvial soils accumulate on hill slopes and in wadi bottoms. Permanent springs are common along the eastern escarpment of the Jordan Valley, at the confluences of small tributaries, and at the headwaters of the Wadi el-Yabis catchment. [*See* Jordan Valley.]

The first Westerners to explore the antiquities of the region were early twentieth-century biblical geographers and classical art historian (Steuernagel, 1925, 1926; Augustinovič and Bagatti, 1952). In the 1940s, and again in the 1960s, the area was included in extensive surveys of northern Transjordan that identified the most prominent ancient tells (Glueck, 1951; Mittmann, 1970). The central Jordan Valley has been surveyed several times (Glueck, 1951; Mellaart, 1962; de Contenson, 1964; Ibrahim, Saner, and Yassine, 1976; Muheisen, 1988). Since the 1950s, limited excavations have been conducted at several valley sites near the wadi mouth, dating variously to the Lower Paleolithic (Huckriede, 1966; Muheisen, 1988), the Neolithic (Kirkbride, 1956), the Chalcolithic (de Contenson, 1960; Leonard, 1992), the Early Bronze Age (Fischer, 1991), and the Middle Bronze Age (Falconer and Magness-Gardiner, 1989). Between 1987 and 1992, a series of intensive archaeological surveys and test excavations was conducted throughout the wadi catchment (Mabry and Palumbo, 1988, 1992; Palumbo, Mabry, and Kuijt, 1990; Kuijt, Mabry, and Palumbo, 1991; Palumbo, 1992; Palumbo and Mabry, 1993). Almost 250 sites dating from Lower Paleolithic through Ottoman times were recorded within this area by 1992, and soundings had been excavated at six sites dating from the Kebaran period to the Iron Age.

The oldest clues of human use of the wadi are Lower Paleolithic handaxes, at least 100,000 years old, found at the edge of the Jordan Valley buried in wadi banks, cemented in limestone outcrops, and on the surface at flint quarries on the first ridges above the valley floor. Open-air and buried Middle Paleolithic sites are found at all elevations, but particularly on ridges near the valley, at the former margin of a lake that filled the central Jordan Rift during the late Pleistocene. Upper Paleolithic and Epipaleolithic sites are rare, but their presence attests to continued use of the wadi during the dramatic climatic fluctuations of the final Pleistocene.

In a cliff above the wadi, about halfway to the valley, a cave was inhabited by about 9200 BC, the beginning of both the Holocene and the early Pre-Pottery Neolithic (PPNA) period. A large (6 ha; 15 acres) village developed nearby between 8200 and 7000 BC, the late Pre-Pottery Neolithic (PPNB) period. Pottery Neolithic camps and villages were restricted to the valley. In addition to smaller settlements in the valley, large villages (up to 20 ha, or 49 acres) were occupied in the lower highlands during the Late Chalcolithic period (c. 4500–3500 BC). Extensive fields of piled stone tumuli and megalithic dolmens, both interpreted as tombs, are found in their vicinity and may date to that time.

At the beginning of the Early Bronze Age (c. 3500 BC), villages were established throughout the wadi highlands, implying extensive forest clearance for dry farming and herding. After 3000 BC many of these open villages developed into fortified towns, evenly spaced throughout the watershed to command roughly equal territories. Most of these were abandoned in the mid-third millennium and settlement dispersed into smaller villages and seasonal camps. Only the largest villages in the valley may have had protective enclosures during the Early Bronze IV (EB–MB) period (2400–2000 BC), a transitional interval between urban phases. A cemetery of rock-hewn EB shaft tombs covers an isolated ridge above the valley.

A new pattern again developed at the beginning of the Middle Bronze Age (c. 2000 BC), the start of the historic

record in this region, when settlements were reestablished at a number of abandoned protohistoric tells. Sedentary settlement in the wadi declined, however, during the later Middle and Late Bronze Ages. Rural villages flourished again throughout the region during the Iron Age (1200–586 BC), when the hillsides were first terraced for agriculture. A large fortified town developed at Tell Maqlub, which has been identified by some scholars as biblical Jabesh Gilead.

Only a few sites dating to the Persian and Hellenistic periods have yet been recognized, but this may be because of gaps in the ceramic chronology. Rural settlement greatly expanded during the Roman period though, when this region became a hinterland between the large urban centers at Pella in the Jordan Valley and Gerasa on the plateau. A road with mile markers was built to connect Pella, ʿAjlun, and Gerasa, crossing the Wadi el-Yabis near Tell Maqlub, and a second road was constructed along the eastern floor of the valley. Expansion of the areas of agricultural and pastoral production and timber harvesting for these urban centers led to rapid deforestation of the ʿAjlun highlands, and the resulting erosion led to the abandonment of some villages. This erosion was controlled by the intensive terracing of hillsides during the Byzantine period, when population and rural settlement in the area reached an all-time peak. On isolated hills, early Christian churches and monasteries were surrounded by their own terraced fields. In several still-occupied villages in the wadi, elaborate Byzantine mosaics are preserved in buildings that were once churches.

The Islamic conquest of Palestine was completed in AD 636 with the Arab defeat of the Byzantine army at the Yarmuk River, and the balanced relationships between urban, rural, and nomadic populations in the region were disrupted. A large number of settlements were abandoned during the period of Umayyad rule from Damascus. This decline accelerated after the ʿAbbasids moved the capital of the Arab Empire to Baghdad in AD 762, and the region became peripheral to major trade routes. Economic stagnation and village abandonment led to the neglect of agricultural terraces, resulting in another phase of soil erosion in the hills of Jebel ʿAjlun. During the twelfth century, the Jordan Valley was the frontier between areas controlled by European Christians and Arab Muslims, but the highlands of northern Jordan were protected by the Islamic fortress built at ʿAjlun.

After the Ayyubid general Salah edh-Din defeated the Crusaders at Ḥittin, near Lake Tiberias, in AD 1187, the region prospered as a result of its position between a united Egypt and Syria under the control of the Mamluks, a Turkish-Circassian military class. Many new settlements were established in the southern Levant, and the rural population of northern Jordan increased almost to the peak level of the Byzantine period. Along with the other major streams entering the Jordan Valley, Wadi el-Yabis was used to irrigate sugarcane plantations and to power mills processing the sugar for export.

After the beginning of Ottoman rule in 1516, repeated nomadic incursions into the cultivated lands of northern Jordan, along with the heavy taxation of the peasants, led to the abandonment of many villages. Only pockets of settlement remained in the highlands by the early nineteenth century, when the regions briefly returned to Egyptian control under the Balkan prince Muhammad ʿAli. Most of these remaining villages continued to be occupied into the twentieth century. Today, rapid population growth, intensifying land use, and illicit digging for antiquities increasingly impact the region's rich archaeological heritage.

[*Most of the sites mentioned are the subject of independent entries.*]

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YADIN, YIGAEL (1917–1984), Israeli military leader, archaeologist, and Dead Sea Scroll scholar. As an international figure and gifted public speaker, Yadin played a central role in creating the enormous popularity of and worldwide interest in the archaeology of Israel. He was also able to draw upon international sources of funding to undertake ambitious archaeological excavations and help establish such important archaeological institutions as the Shrine of the Book, which houses the seven complete scrolls from Qumran Cave 1 and the "Bar Kokhba Letters" at the Israel Museum, and the Institute of Archaeology at the Hebrew University of Jerusalem.

Born in Jerusalem in 1917, the eldest of three sons of Eleazar L. Sukenik, one of Palestine's first Jewish archaeologists, Yadin (known during his youth as Yigael Sukenik) studied archaeology at the Hebrew University. Although he spent most of the 1930s and 1940s in active service in the Zionist underground, the Haganah (in which he was given the biblical codename "Yadin" ("he will judge," from *Gn.* 49:16), which he later adopted as his surname), Yadin completed his master's degree in 1944 with a thesis on medieval Arabic inscriptions. He planned to write a doctoral dissertation on biblical weapons and warfare, but his full-time service in the 1948 Arab-Israeli war intervened. Named chief of operations of the Haganah (and, with the establishment of the State of Israel, of the Israel Defense Forces [IDF]), Yadin later served as IDF chief of staff (1949–1952).

Yadin resumed his archaeological career after retiring from military service and in 1955 completed his Ph.D. dissertation on the Qumran "Scroll of the War of the Sons of Light Against the Sons of Darkness." Almost immediately thereafter he joined the Hebrew University faculty and began excavations at Hazor, which continued until 1958. Yadin's directorship of the James A. de Rothschild Expedition to Hazor inaugurated a new era in Israeli archaeology. In uncovering vast expanses of Bronze and Iron Age Hazor, the expedition staff, guided by architect Immanuel Dunayevsky, developed a system of architectural stratigraphy that would long characterize the Israeli field approach. With regard to Hazor's biblical history, Yadin believed that the Late Bronze Age destruction levels provided conclusive evidence for a unified Israelite conquest of Canaan in about 1250 BCE. Later scholars would, however, question both the date and circumstances of that city's fall. [*See* Hazor; *and the biography of Dunayevsky.*]

Yadin's scholarly interests were wide ranging. In 1959 and 1960, he directed stratigraphic probes at Megiddo to test his hypothesis that the so-called Solomonic gates and later Israelite fortification systems were built according to uniform plans. He also devoted considerable attention to a study of the earthen ramparts of Middle Bronze Age Canaan, which he dated to the Middle Bronze IIB period (1850–1750 BCE) and attributed to the introduction of the battering ram by supposed Hyksos invaders. Yadin's great corpus of military artifacts and monuments, *The Art of Warfare in Biblical Lands in the Light of Archaeology*, was published in 1963.

In 1960, in response to reports of illegal digging in the caves in the Judean Wilderness, Yadin joined a large-scale expedition sponsored by the Israel Department of Antiquities, the Hebrew University, and the Israel Exploration Society. Yadin's sector included Naḥal Ḥever, where, in a large cave on the northern cliff face, he and his team uncovered a large collection of artifacts (including contemporary military dispatches and legal documents) left by refugees during the Bar Kokhba Revolt (132–135 CE). [*See* Judean Desert Caves; Bar Kokhba Revolt.]

Yadin's best-known excavation was at the mountain fortress of Masada (1963–1965). In addition to uncovering impressive Herodian palaces and administrative buildings, Yadin's team also retrieved written material, including hundreds of ostraca and several documents resembling those found at Qumran. Yadin gained great scholarly and popular attention with his assertion that the excavated human remains were those of Masada's last Jewish defenders, who, according to Josephus Flavius, had committed suicide in 74 CE rather than fall into Roman captivity. [*See* Masada.]

In the midst of the 1967 Arab-Israeli war, Yadin, then serving as security adviser to Prime Minister Levi Eshkol, obtained IDF assistance in confiscating and ultimately purchasing an important ancient scroll, discovered by bedouin in the Qumran region some years before, that had come into the hands of a Bethlehem antiquities dealer. Yadin's careful transcription of and exhaustive commentary on this document, which he named the Temple Scroll, focused the attention of scholars on the Qumran sect's religious law, or halakhah.

Yadin entered public life after the 1973 Arab-Israeli war, serving first as a member of the Agranat Commission investigating Israel's military preparedness for that war and later as the head of a new parliamentary list called the Democratic Movement for Change (DASH, its Hebrew acro-

nym). After serving as deputy prime minister in the government of Menachem Begin (1977–1981), Yadin returned to academic life. His last archaeological projects were a brief excavation at Tel Beth-Shean and plans to resume excavation at Hazor. With his death in 1984, traditional biblical archaeology, already under intellectual attack, lost one of its most eloquent spokesmen and influential practioners.

[*See also* Biblical Archaeology; Dead Sea Scrolls; *and the biography of Sukenik.*]

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YAHUDIYEH, TELL EL-, site lying about 32 km (20 mi.) northeast of Cairo in Egypt's eastern Delta (30°17′ N, 31°20′ E), in pharaonic times Tell el-Yahudiyeh was in the thirteenth Lower Egyptian nome. Its Arabic name means "mound of the Jews"; this term alludes to the town and temple established at the site in the Ptolemaic period by the Jewish priest Onias. Its ancient Egyptian name was *Nay-tahut* or Nathō, and its Greek name was Leontopolis. Tell el-Yahudiyeh has been investigated half a dozen times over more than a century: the most important excavations were those conducted by Edouard Naville and Francis Llewellyn Griffith in 1887, and by W. M. Flinders Petrie in 1906. The site's archaeological fame derives from the discovery here of important Levantine remains of the Hyksos period (Manetho's fifteenth dynasty, 1648–1540 BCE).

Little is known about the early history of Tell el-Yahudiyeh. As with many Delta sites, most of the ancient settlement today lies beneath the high water table and therefore cannot be excavated, and the surface remains have been extensively looted and destroyed over the centuries. Human activity at the site in the third millennium BCE is indicated by some stone vessels, and scattered, unstratified objects (e.g., scarabs) and possibly some graves suggest occupation during the early second millennium.

The largest surviving structure at Tell el-Yahudiyeh—a roughly square earthwork rampart about 460 m (1,500 ft.) long on each outer face and having an external plastered glacis and rounded corners—may relate to the Hyksos period. Many archaeologists believe that this structure was a fortification erected by the Asiatic Hyksos rulers who controlled part of northern Egypt. Petrie specifically identified the enclosure as a "Hyksos camp," primarily because of its similarity to a number of Middle Bronze II–III enclosures in the Levant. He discovered a similar enclosure (undated and now destroyed) at Heliopolis. The interpretation of the Tell el-Yahudiyeh rampart as a defensive system is not assured, however, nor is its dating. Petrie reports that a building complex of Rameses III (c. 1184–1153) cut into it; if true, that would make the enclosure earlier than the reign of the twentieth-dynasty king.) Some scholars view the enclosure as the temenos wall of a temple complex, citing as a parallel a wall of the twenty-sixth dynasty at the Delta site of Mendes.

A series of generally poor, secondary burials inside and outside the enclosure probably belonged to Levantine pastoralists of the late thirteenth and fifteenth dynasties. Pottery, scarabs, and other finds from the graves link this material to Asiatic burials from such contemporaneous eastern Delta sites as Tell ed-Dabʿa and Tell el-Maskhuta. [*See* Dabʿa, Tell ed-; Maskhuta, Tell el-.] The ceramics include a distinctive type of pottery now known as Tell el-Yahudiyeh ware (see figure 1). This pottery, which occurs most commonly in the form of juglets decorated with incised and punctate geometric patterns containing a white chalky filling, appeared in Nubia, Egypt, Syria-Palestine, and Cyprus during the Second Intermediate period. Its initial region of production probably was northern Palestine; it later was manufactured in several areas around the eastern Mediterranean. The widespread distribution of this pottery reflects extensive commercial relations.

Knowledge of the site's history during the New Kingdom is uneven. Little is known about the place in the early New Kingdom: eighteenth dynasty (1550–1295) excavated remains include little more than some burials. More plentiful are finds of the nineteenth dynasty (1295–1186). These include the quartzite base of a unique temple gateway model inscribed with the name of Seti I, some large statues of Rameses II from a destroyed temple of that king, and a granite column inscribed with the name of Merneptah. The twentieth dynasty (1186–1069) has left the remains of a temple and associated palace complex of Rameses III as well as some graves. Probably deriving from the temple palace are a large number of polychrome, glazed faience tiles showing foreigners, plant and animal motifs, and the

YAHUDIYEH, TELL EL-. Figure 1. *Tell el-Yahudiyeh ware pottery fragment.* Found at the Nubian site of Buhen, New Kingdom period. (Courtesy University of Pennsylvania Museum, Philadelphia)

king's name; these tiles are now scattered around a number of museums.

The history of Tell el-Yahudiyeh is again poorly documented for the first half of the first millennium BCE. Several inscribed fragmentary stone monuments as well as some burials attest to activity of indeterminate extent during the Third Intermediate period (1069–656). The site is mentioned (as Nathū) in the Annals of the Assyrian king Ashurbanipal (668–627).

About 160 the Ptolemaic ruler Ptolemy VI Philometor granted permission to the Jewish priest Onias to build a temple and town at the site. The precise location of the temple, which is mentioned by the Jewish historian Flavius Josephus in his work *Jewish Antiquities,* is uncertain: it was Petrie's opinion that the temple lay outside the northeast wall of the so-called Hyksos camp. From the period of the temple come a series of tombs containing burial stelae inscribed with Greek and Semitic names. The temple apparently stood for slightly more than two centuries, eventually being closed by the Roman prefect, Lupus, in 71 CE.

[*See also* Delta; Hyksos; *and the biography of Petrie.*]

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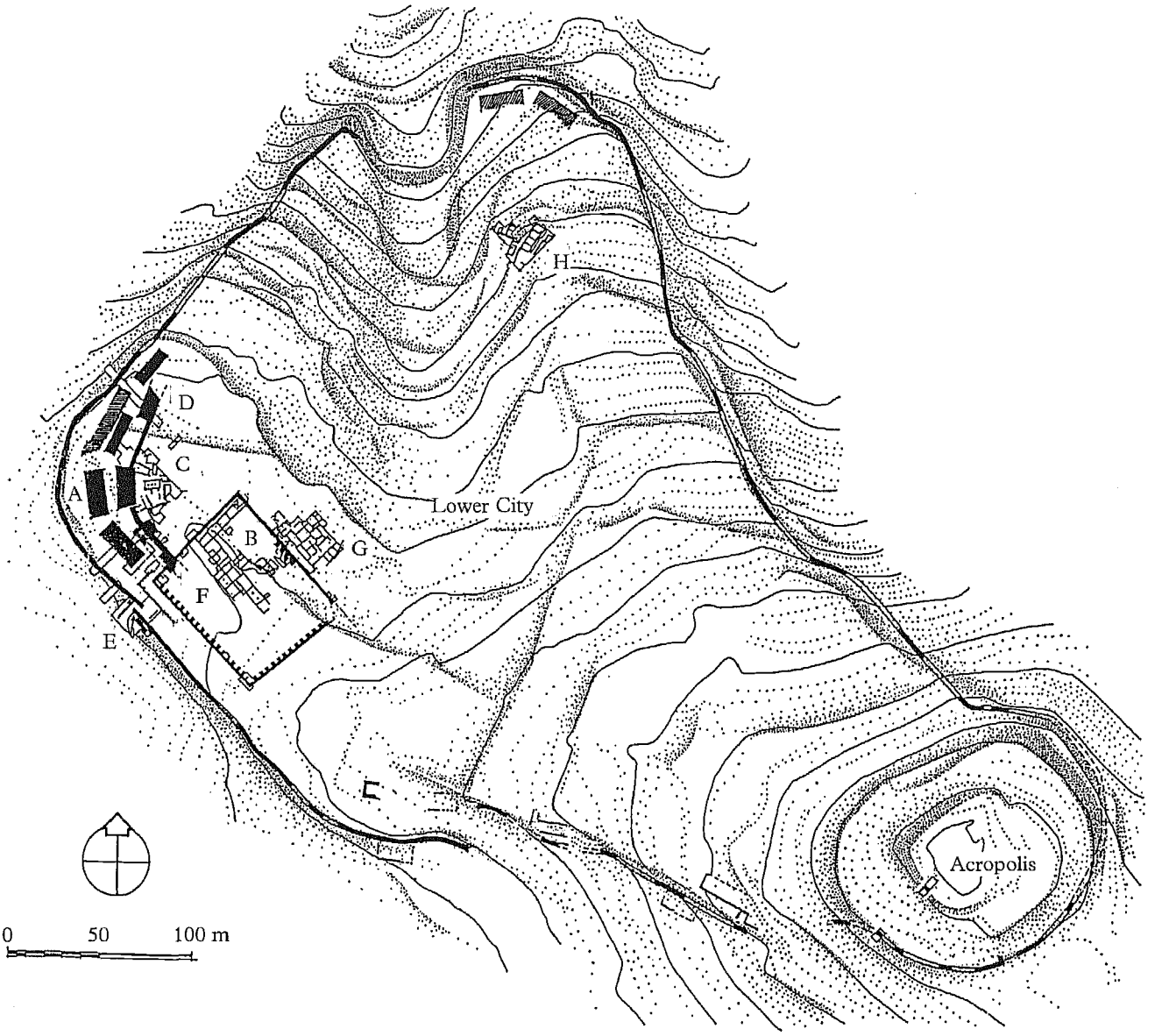
JAMES M. WEINSTEIN

YARMUT, TEL (Ar., Khirbet el-Yarmuk), site located in the central Shephelah, 25 km (15 mi.) southwest of Jerusalem (31°43′ N, 34°58′ E; map reference 147 × 124). The site is comprised of a small acropolis (about 1.5 ha, or 3.75 acres) and a large lower city (about 14.5 ha, or 36 acres), both of which were fortified in the Early Bronze Age (see figure 1). The site is about 640 m long and 420 m wide (about 16 ha, or 40 acres). The site is located on the slope of a hill, with the lowest point at 295 m above sea level and the highest point at 405 m above sea level.

The site may correspond to the "city of Yaramu" mentioned in a mid-fourteenth century BCE letter discovered at Tell el-Ḥesi (see the article by W. F. Albright in *BASOR* 87 [1942], p. 33). It is identified with the biblical city of Yarmut (*Jos.* 10:3–5, 23, 12:11, 15:35; *Neh.* 11:29), based on location, settlement history, and the continuity of its toponym: its Arabic name derives from Iermochos/Jermucha, a Byzantine village mentioned as being in this area by Eusebius of Caesarea (*Onomasticon* 106.24), who equated it with Iermous of the Septuagint, that is, biblical Yarmut.

Tel Yarmut was first settled in the EB I (second half of



YARMUT, TEL. Figure 1. *Plan of the site.* (Courtesy P. de Miroschedji)

the fourth millennium) and was inhabited until about 2300 BCE. It was not reoccupied until the Late Bronze II (c. 1400–1200 BCE). The resettlement took place only on the acropolis and in its immediate environs and lasted until the Early Byzantine period (fourth century CE). The major period of occupation (and the only one in the lower city) is thus the Early Bronze Age, when Tel Yarmut was one of the major fortified cities in Palestine.

Victor Guérin first described and identified the site in 1869, it was tested in 1970 by Amnon Ben-Tor on behalf of the Hebrew University of Jerusalem, and since 1980 it has been excavated by Pierre de Miroschedji for the Centre du Recherche Français de Jérusalem and the Hebrew University of Jerusalem, mostly in the west corner of the lower city. Excavation has revealed a remarkable EB fortified city, with monumental architecture on a scale unmatched at contemporary sites.

Early Bronze City. No remains of the earliest (EB I) occupation at the site have yet been found in situ in the lower city. By the end of the period, however, the settlement reached its west corner, presumably its full and maximum extent. By the beginning of the EB II, this area contained some large buildings, and, along the edge of the site, the first defenses appeared in the form of an earthen glacis. The construction of the first EB II city wall, which inaugurated a long sequence of fortifications, soon obliterated the glacis.

Fortifications. Three major EB phases and several subphases could be distinguished. The first EB II fortifications included a 5–6-meter-thick stone rampart and, in the corner of the city, a massive stone bastion (25 × 13 m). Two large rectangular buttresses were placed at equal distances from the bastion. At the end of EB II, a second city wall (3–3.6 m thick) was built with cyclopean stones. This additional wall made the city's defenses 40 m deep. The wall is preserved to almost 7 m in height in some places and can be traced all around the site for about 1.8 km (1 mi.). In the EB III, a series of very large defensive stone platforms (30–40 × 10–12 m), whose superstructure probably was brick, filled the west corner of the city.

Near the west corner a monumental offset gate was the single entryway into the second (outer) city wall. Preserved to a height of 7 m, access to it from outside the city was via an ascending U-shaped ramp flanked by retaining walls. At the end of EB III, the approach to the offset entryway was protected by a small rectangular "bastion."

Early Bronze II. Inside the city, only limited EB II architectural remains were excavated. A massive platformlike construction, earlier than the first city wall and apparently infrastructure, may have been the foundation of a civic building. A large structure, associated with the first city wall, and domestic buildings were also noted.

Early Bronze III. Most of the building remains excavated to date belong to the large EB III city, whose population may have reached three thousand. The inhabitants were mainly farmers who raised grains, vegetables, and grapes, and olives in abundance. They also practiced animal husbandry (sheep and goats primarily, but also cattle, which were used in the fields and for transport). The site's topography is characterized by a succession of large terraces with retaining walls that are several meters high. Its appearance may have resembled that of traditional villages seen in the region today.

Architecture. The city contained several public buildings. The so-called White Building was probably a sanctuary. It is a plastered, rectangular broadroom hall (13.5 × 6.75 m) with a central row of four columns and a main entrance centered in the southern facade. A chamber at its southeast corner, a courtyard in front of it, and two adjacent rooms to the south formed a complex interpreted as a sanctuary. Its plan resembles that of buildings of a cultic nature that belong to the Chalcolithic and EB I–III periods.

Even more impressive is a palatial complex in area B dated to EB IIIB (twenty-fifth–twenty-fourth centuries BCE). Measuring 84 × 72 m (about 6,000 sq m), it is by far the largest building complex known for the period in the Levant. It is demarcated by a thick wall with deep foundation trenches that is enhanced, for part of its length, with square inner buttresses placed at regular intervals.

While the southwestern half of the palace complex is occupied by a large courtyard, most of the northeast is covered with built-up areas. The complex comprises scores of corridors, small courtyards, and interconnected rooms, including several storerooms. Its construction techniques and quality, overall planning, and room layouts are strikingly different from contemporary buildings discovered so far at Tel Yarmut and elsewhere. Noteworthy is the systematic use of a cubit of about 52 cm, comparable to the Egyptian "royal" cubit. The complex's monumentality, together with the abundance of storage vessels recovered, clearly indicates its palatial function. Although this complex is reminiscent of building 3177 of Megiddo stratum XVI, it is still unique in the archaeology of third-millennium Palestine.

EB III domestic structures were extensively cleared in three areas of the lower city. Most interesting is area G, located on the northeastern side of the palatial complex, from which it is separated by a street. There, the private houses of stratum II were built on a series of small terraces and grouped in an insula bordered by a street. The typical dwelling was composed of one or two rooms (often with a central row of stone pillar bases), a courtyard with several domestic installations, and sometimes small storerooms. On the other side of the lower city, an area was identified in which nondomestic activities took place. Finds and installations (e.g., pithoi, large mortars, and ceramic vats in the floors) in a contiguous series of six small rooms and courtyards suggest that olive oil was processed in the area from the crop raised at the site.

Artifacts. Because it has the largest exposure of EB III remains in the region, Tel Yarmut is a type-site for this material culture in southern Palestine. It exhibits a complete corpus of the contemporary pottery, a large collection of human and animal figurines, and a variety of other objects in stone, bone, and terra cotta. There is evidence of "foreign" trade, with Egypt (stone palettes and fragments of vessels carved out of alabaster and diorite), as well as trade with northern and southern Palestine: sherds of rare Khirbet Kerak (Beth-Yerah) ware, worked basalt from the Golan, bitumen from the Dead Sea, and flint fan scrapers from the Negev desert.

Later Periods. By the twenty-fifth–twenty-fourth centuries BCE, Yarmut had reached the peak of its prosperity. Soon afterward the city was peacefully abandoned and remained deserted for about a millennium. Post-EB settlement was limited to the small acropolis. Excavations there have revealed traces of nearly continuous occupation from LB II to Early Byzantine times. The uppermost of the three Iron I strata appears to have been destroyed in a conflagration. It is dated to the mid-eleventh century BCE by its pottery, which resembles that found at Beth-Shemesh stratum III and Tell Qasile strata XI–X. On the northeast side of the acropolis the remains of a small Early Byzantine (c. fourth century CE) village that is to be identified with Iermochos in the *Onomasticon* (see above). Southwest of the acropolis and

on its slope, cisterns and rock-cut tombs were found that belonged either to the Byzantine or earlier periods.

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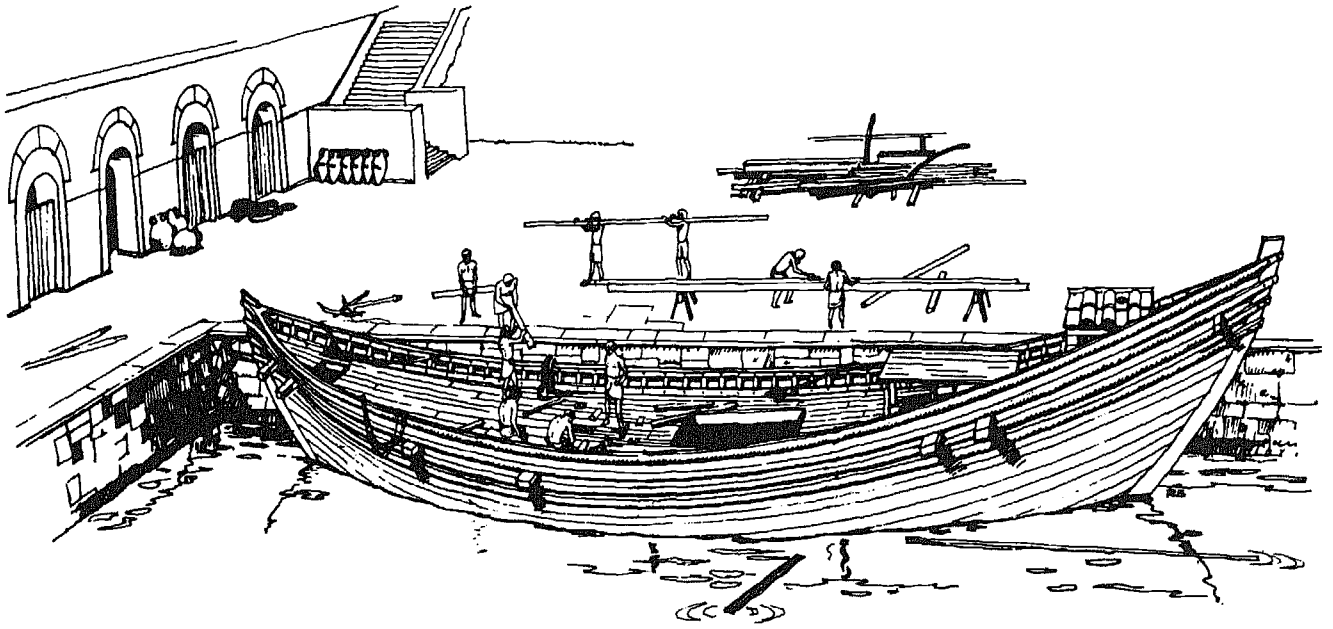
PIERRE DE MIROSCHEDJI

YASSIADA WRECKS. Yassıada (Tk., "flat island") is an island located between Turgut Reis, Turkey, and the Greek island of Pserimo; it is sometimes called Lodo (36°59′30″ N, 27°11′45″ E). The island is small, only 200 × 150 m, with a maximum elevation of 11 m. A reef that extends 200 m southwest from its southwest corner is especially treacherous, for it rises to within 2–3 m of the surface, about 125 m offshore. An unknown number of ships have run onto this reef and sunk, including a Lebanese freighter in 1993; cannonballs are mixed with amphoras on the reef top, with more coherent cargos of Roman-period amphoras and plates lying deeper on its sloping sides. Turkish sponge divers reported raising a ton of glass cullet from the northwest side of the reef in the 1950s, but other than a scatter of glass on that slope, there are no clues to its whereabouts.

At least three ships ripped their bottoms open on the reef, presumably while sailing before the northwest summer wind, and crossed over it to sink close to one another in deeper water off the island's south side. Reports of two of the wrecks by Turkish sponge diver Kemal Aras to Peter Throckmorton led the University Museum of the University of Pennsylvania to excavate one of them between 1961 and 1964.

A seventh-century Byzantine ship, lying at a depth of 32–39 m, approximately 75 m south of the island, it is dated to about 626 CE by fifty-four copper and sixteen gold coins found in its wreckage. Of 60 tons burden, about 20.5 m long, with a beam of 5.2 m, the ship was built in the ancient shell-first manner below the waterline; its pine planks are held together by loosely fitting and widely spaced mortise-and-tenon joints. Above the waterline, however, it was built in the modern frame-first manner, its planks nailed to the ship's elm frames (ribs) with iron nails. This provided the excavators with the first evidence that modern ship construction evolved, and was not an overnight invention. The keel, sternpost, and probably the stem were of cypress. A pair of iron bower anchors rested on either side of the bow, ready for use, with an additional seven iron anchors stacked just forward of the mast. The ship probably carried a single sail and seems to have been steered by sweeps that extended between through-beam extensions on either quarter of the hull. It carried in its hold a cargo of about one thousand wine amphoras in two basic shapes, globular and hourglass; they lack the knobs on their bottoms that had proved helpful in earlier periods for pouring. The disappearance of the knobs may have been the result of the invention of the "wine thief," a kind of pipette found on the wreck, which could draw liquid from a container without tipping it; the oldest known wine thief is from a wreck near Marzamemi, Sicily, from the sixth century.

The ship's stern galley, separated from the hold by a bulkhead, was roofed with terra-cotta tiles, one with a smoke hole over a tiled firebox that supported an iron grill. Virtually all of the personal possessions of those on board were stored here. In addition to the table and cooking wares, which comprise the largest well-dated collection of seventh-century ceramics, including the earliest-known Byzantine glazed pottery, were twenty-four terra-cotta lamps and various copper vessels. The ship's captain, owner, or merchant—or, perhaps, all three—was one Georgios Presbyteros Naukleros, whose name was inscribed on one of the ship's steelyards, the largest known from antiquity. It was he who must have carried a complete set of Byzantine weights, marked one pound, six ounces, three ounces, two ounces, and one ounce. The ship's carpenter stored his tools, the largest collection known from the seventh century, forward in the galley, whereas the boatswain's tools for gathering firewood and digging for water were in a separate storage area at the very stern, along with a grapnel for the ship's boat and net needles for mending fishing nets; that the crew fished is also indicated by lead sinkers. The finds suggest that the ship was sailing southward from a port on the Black Sea, or somewhere in the vicinity of Constantinople, on her last voyage.



YASSIADA WRECKS. *Drawing of the reconstructed Byzantine ship.* (Copyright INA)

Lying slightly deeper (36–42 m), about 100 m south of Yassiada, is a Late Roman wreck of the late fourth or early fifth century. It was partially excavated by the University Museum in 1967 and 1969. A later excavation in 1974, by the Institute of Nautical Archaeology, was halted by the outbreak of hostilities on Cyprus (Van Doorninck, 1976). The ship was 19 m long, with a length-to-beam ratio of 3:1. Its hull, mostly of cypress, but with a keel of white oak, was built in the shell-first Greco-Roman manner. Its pegged mortise-and-tenon joints were weaker and farther apart than those of most earlier vessels, however, although not so widely spaced as the unpegged joints of the later seventh-century ship (see above). These factors, and evidence for the early erection of half frames amidships to help the shipwright shape the hull, provide further proof of a slow evolution toward modern, frame-first construction. The ship's anchors have not been found. It carried about eleven hundred amphoras in its hold. The stern yielded Late Roman plates, a dish, a bowl, pitchers, a cup, cooking pots, and two large storage vessels; four terra-cotta lamps found there, of types made in the late fourth through early fifth centuries, one with the impressed signature of a known Athenian workshop that flourished at the time, provide the approximate date for the ship's sinking. Excavation deeper into the sloping seabed would surely reveal other artifacts that tumbled downslope as the ship disintegrated.

During the excavation of the second wreck, a previously unknown Ottoman hull that overlay part of it and nearly reached the seventh-century wreck was partly uncovered. The Institute of Nautical Archaeology, now affiliated with Texas A&M University, subsequently excavated it, under the direction of Cemal Pulak, in 1983. The ship was about 20 m long and built of oak. It was initially dated by a coin of Philip II to the sixteenth century. Its construction is now dated more precisely, by the dendrochronology of its keel, to sometime after 1572. It was almost barren of artifacts save for tools, glazed bowls like some from Çanakkale on the Asian side of the Dardanelles, lead shot, and both stone and cast-iron cannonballs (the last suggesting that this was a naval vessel, perhaps a supply ship, that was salvaged before being abandoned).

A Roman helmet of a type dated to the late third or second century BCE, found close to shore on the same side of the island, is matched by a helmet in Turkey's Bodrum Museum of Underwater Archaeology. A sponge diver brought the museum's helmet from an unknown location, very likely Yassiada, which is a site commonly worked by sponge divers. The two helmets suggest that a warship is hidden under the sand.

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GEORGE F. BASS

YAVNEH-YAM (Ar., Minet Rubin), coastal site located 16 km (9 mi.) south of Tel Aviv–Jaffa (31°50′ N, 34°35′ E; map reference 1212 × 1479). The site was excavated for three seasons by Jacob Kaplan from 1967 to 1969, under the auspices of the Tel Aviv–Jaffa Municipal Museum. The Israel Antiquities Authority undertook a series of rescue excavations under the direction of Fanny Vitto (1980) and Yosef Levy (1987) in order to save a building complex from being eroded by the sea. Moshe Dothan (1952) suggests that Yavneh-Yam may be ancient Mᶜhôz, mentioned in the geographic lists of Thutmosis III and Alu-Muhazi in the Amarna letter no. 298. [*See* Amarna Tablets.] From Hellenistic times onward it is referred to as Jamnia (Iamnia). Arab geographers referred to it as Mahu Yubna. According to older views, a council of Jewish scholars completed the canon of the Hebrew Bible at Jamnia in 90 CE.

The site consists primarily of a square enclosure (approximately 800 sq m) bounded by a freestanding rampart. Based on the configuration of the ramparts at nearby Ashkelon, Israel Finkelstein (1992) suggests that the site may not have been enclosed on its western, seaward side. This would greatly reduce Kaplan's estimate of the site's size as 64 ha (160 acres). Kaplan was primarily interested in the rampart's construction and in fact found little evidence of occupation within the enclosure. He excavated two trenches, areas A and H, which cut across the rampart. The site dates to the beginning of the Middle Bronze IIA and continued in use intermittently through the Late Bronze I, when it was abandoned. It is possible that the site served as a harborage for the site of Yavneh 8 km (5 mi.) to the southeast.

In order to understand the rampart's construction, area A was cut from the top of the rampart down to its base. The sterile sand at the base of the rampart was leveled and covered with a thick layer of red clayey soil (Ar., *hamra*). The core of the rampart was a light-brown packed earth entirely covered with *hamra.* A glacis, composed of a layer of clayey soil covered by a layer of crushed *kurkar,* was then added to the rampart's exterior. In a later phase, this glacis was capped with stone to form a 30° angle. A series of three superimposed gates was found in area H, near the southeast corner of the rampart. The two earliest gates of strata III and II (MB II) were constructed of sun-dried mud bricks and flanked by towers. The LB stratum I gate was constructed of stone rubble. A second gate system was also detected along the eastern wall. Nine occupational layers on the inner rampart slope were excavated in area A. The earliest layer's ceramic horizon dates to MB IIA. Layers 8–3 date to MB IIB–C. LB I material, including Bichrome Ware, was found in layers 2 and 1. In area H, an MB IIA hearth was found on sterile soil in front of the stratum III gate. Fragments of ivory plaques were also associated with this hearth.

The site was reoccupied in the Persian period when it was probably a key administrative center. Based on the sherd scatter, the site expanded in the Persian and Hellenistic periods and was a large port in the Roman-Byzantine period. Judas Maccabaeus (Judah Maccabee) attacked Jamnia in order to destroy the Seleucid fleet (see Isaac, 1991, p. 140). A fragmentary Greek inscription on a limestone block, approximately dated to the reign of Antiochus V (164–162 BCE), is important for understanding the Phoenician influence on Jamnia. It appears that there was a strong Sidonian presence at the site beginning in the second century BCE. Vitto excavated the remains of a well-made polychromatic mosaic floor with a geometric decoration. [*See* Mosaics.] The floor was probably part of a large building complex that is dated to the Byzantine period. Levy excavated in this same area and found three Mamluk rooms with white mosaic floors and evidence of a wine press. Underneath the Byzantine and Mamluk mosaics earlier levels (Herodian, Hellenistic, and Persian) were found from which a Rhodian handle and a Hasmonean coin were recovered.

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J. P. DESSEL

YEB. *See* Elephantine.

YEIVIN, SHMUEL (1896–1982), archaeologist, philologist, and first director of the Israel Department of Antiquities and Museums (1948). Born in Odessa (Ukraine) Yeivin immigrated to Palestine as a child and was educated in Tel Aviv. He served in the Turkish army in World War I and afterward studied Egyptology, Semitic philology, and Arabic at the University of London. During that period he had the unique opportunity to acquire considerable field experience on excavations in Palestine as well as in Egypt and Mesopotamia. Because of his philological expertise he was appointed chief translator for the British mandatory government in Palestine from 1944 to 1948.

Following the creation of the State of Israel in 1948, the country and Jerusalem, its capital, were divided. The Jewish state was suddenly detached from all Palestinian archaeological organizations, collections, and records libraries, including the Palestine Museum (now the Rockefeller Museum), which remained in the Jordanian sector of Jerusalem. Yeivin was assigned the task of creating a new archaeological service to deal with excavation and antiquities. He did so by creating the Israel Department of Antiquities and Museums (IDAM). Upon his retirement from the IDAM, Yeivin, with Yohanan Aharoni, founded the Institute of Archaeology at Tel Aviv University. Of the several excavations Yeivin conducted, the most important was at Tel 'Erani, which he identified with Gath of the Philistines, an identification no longer accepted. His work at 'Erani revealed an Early Bronze Age city, one of the major cities of the third millennium in the central part of the country. Unfortunately, he published only preliminary reports of that excavation.

[*See also* 'Erani, Tel.]

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RONNY REICH

YEMEN. An age-old cultural entity, *Yemen* potentially derived from the ancient designation *YMNT,* meaning the southern coastal region of present-day Yemen, which lay south of the ancient incense kingdoms ringing the Arabian desert during the first millennium BCE. In Islamic times the name signified a vaguely defined southern part of the Arabian Peninsula. A small group of Arab, European, and North American archaeologists and philologists have contributed to what is known of the history of Arabia Felix, as Yemen was called in antiquity.

Strategically located between Africa and Asia and geographically protected by both sea and desert frontiers, ports on the coasts of the Red Sea and the Indian Ocean complemented desert trade routes, giving direct access to the sources of frankincense (e.g., *Boswellia sacra,* from Dhofar and the eastern Ḥadhramaut) and myrrh (e.g., *Commiphora myrrha,* found as far west as Shabwa today) required for religious services throughout the ancient Near East and the Mediterranean. Volcanic glass, carnelian, and agate are found in Yemen; other stones and aromatics were imported (for reexport) from Africa and India. Although trade connections with the rest of the Near East have not been demonstrated before the tenth century BCE, the Egyptians may have regarded the land of Punt (a source of semiprecious stones and aromatics, with which they had been trading since the third millennium) as lying on both sides of the Red Sea; the land called Meluḫḫa in ancient Mesopotamia may, at times, have included Yemen. Camel caravans from the interior mountains crossed the edge of the desert, moving northward along the Red Sea coast to Petra, Gaza, and Alexandria, while seafarers traded with India and Africa. The Queen of Sheba (*1 Kgs.* 10:1–13) reputedly brought such objects, albeit incense is not specifically mentioned, to Jerusalem during the reign of King Solomon, but the significance of the text is controversial. Geographic isolation and excellent communications allowed a near monopoly on the aromatics trade, generating wealth through the first centuries CE, when Roman seaborne competition emerged. A decline in the demand for incense in the Mediterranean swiftly followed the advent of Christianity and the fall of Rome.

Geography. Tectonic crumpling on the southwestern edge of the Arabian shield produced the mountain ranges dominating the area between the desert and the sea. Volcanic activity on the desert rim ceased several millennia ago, but not in the central highlands, where a late first-millennium BCE site has been covered with lava. The monsoons break the mountains down, cutting gullies and passes, enabling communication, and rendering the land fertile, while filling the sails of trading vessels (the southwestern monsoon in fall, and the northeastern in spring). Wadis bring the water to both the sea and the desert; the erosion of the high western mountains (including the highest point on the Arabian Peninsula) creates the broad plains of the western Tihama (and covers historical-period archaeological sites un-

der meters of debris); and the lower southern ranges occasionally descend straight into the sea. Those wadis leading inland empty into the Ramlah al-Saba'tayn, a lobe of the Empty Quarter (the vast sea of sand dominating the southern center of the Arabian Peninsula, roughly between Najran and the United Arab Emirates).

Part of Wadi Jawf, which flows into the Ramlah al-Saba'tayn on the northeast, was the Minaean kingdom whose capital was at QRNW (modern Ma'in). YṬL (modern Baraqish) is on a plateau separating the Jawf from Wadi Dhanah with the Sabaean capital at Maryab (modern Marib). To the southeast lay the Qatabanian kingdom with its capital Timna' (modern Ḥayd Kuḥlan) at the mouth of Wadi Bayḥan. The roads to Marib led over the mountains across the virtually inaccessible Mablaqah Pass, or farther north on the edge of the desert through the Najd Marqad. Mountain ranges cut the Wadi Markha 'Awsan kingdom from Wadi Bayḥan to the west and from the desert to the north. Unlike the other kingdoms, Wadis Markha and Jawf each have several large mounds, and the capital of 'Awsan, MSWR, remains to be identified at one of the mounds in Markha.

In the early Holocene period, a river valley may have joined the Jawf across the Ramlah al-Saba'tayn with Wadi Ḥadhramaut to the east. In historical times, the capital of the Ḥadhramaut kingdom at ancient Shabwa was on the southern edge of the mouth. Wadi Masilah is the tail end of the wadi leading south to the Arabian Sea, but the main route joining the Ḥadhramaut with the sea follows Wadi Du'an (with the site of Raybun) up to the high plateau (the southern Jol) and down to the coast. The island of Socotra is 350 km off (217 mi.) the coast.

Prehistory and History. Artifacts show that parts of Yemen have been inhabited since the earliest Lower Paleolithic. Developed Oldowan material near the Bab al-Mandeb and in the Ḥadhramaut suggests that the Red Sea was crossed more than a million years ago, and that Yemen was first settled directly from Africa. Acheulean material is found sparsely throughout the confines of modern Yemen. Levallois and Mousterian of the Acheulean tradition are more common, using both locally available flint and quartzite. Upper Paleolithic blade cultures have so far been confirmed only in Wadi Du'an and on the northern edge of the Ḥadhramaut. Epipaleolithic artifacts are conspicuously absent.

Desert Neolithic (c. 6000–3000 BCE?) traditions using unifacially and bifacially retouched projectile points, as well as Rub al-Khali Neolithic tanged arrowheads, are found in the mountains and desert. Points indicate that hunter-gatherer economies corresponding to the Epipaleolithic continued to dominate in the desert, but in the Upland Neolithic tradition similar, albeit crudely executed, foliates are associated with circular and oval huts and incipient ovicaprid pastoralism.

The Bronze Age (c. 3000–1000 BCE) brought the expansion of animal husbandry and the introduction of pottery, polished stone tools, and the cultivation of cereals. Settlements (circular and oval huts and hearths) grew exponentially, so that the largest are more than 10,000 sq m, while others, fewer than 1000 sq m, became more numerous. Archaeological evidence of the earliest direct connections with northeast Africa, Mesopotamia, and India has not yet been found, but contacts must have existed, as indicated by the site of Ṣubr (just south of Lahej), with pottery similar to late third-early second-millennium BCE material from the north and east.

Toward the close of the Bronze Age, the South Arabian kingdoms (c. 1000 BCE–600 CE) arose on the desert fringe, each kingdom associated with an urban capital in each of the major wadis opening into the Ramlah al-Saba'tayn, just on the edge of the area where myrrh trees grow. In competition with one another, the kingdoms vied for political, economic, and military control of the trade routes. The chronology of the ancient incense kingdoms depends on some tenuous correlations, the most important identifying Karib'īl-Watar of Saba' (Sheba) who conquered the kingdom of 'Awsan as Karabilu the Sabaean who rendered tribute to Sennacherib of Assyria in about 685 BCE. An inscription referring to a war between Persia and Egypt cannot be placed later than the fourth century BCE.

After conquering 'Awsan (c. 700 BCE?) Saba' was dominant until Ma'in and Qataban became independent (c. 400 BCE). Competitive coexistence continued until Saba' and Ḥadhramaut swallowed them (first centuries CE). However, the Ḥimyarite mountain kingdom, with its capital at Ẓafar, progressively conquered Saba' and the Ḥadhramaut (third century CE) before the Ethiopians (with support from Byzantium) swept in (c. 525 CE). The Ḥimyarites subsequently brought in the Persians, who stayed put. Yemen was still under Persian rule at the adoption of Islam. The coastal ports changed their allegiances, as in the case of Qana' (Bir 'Ali), the port of the Ḥadhramaut, which must have replaced another port in the first century BCE and yet continued to flourish after Shabwa fell, until just before Islam.

The emergence of Islam coincided with the demise of the ancient kingdoms. The tribal components of the ancient kingdoms reasserted themselves, fragmenting the country's apparent unity. By the end of the tenth century CE, Yemen had become a theater in the confrontation between the various streams of Islam. Fatimid generals vied with insubordinate 'Abbasid vassals and rebellious Zaydi tribesmen for control of the mountainous highlands, while the Ayyubids finally imposed their rule before being eclipsed.

Ancient South Arabia. The people inhabiting these desert, mountain, and coastal regions seem to have identified themselves as a single cultural group, using the same system of writing and worshipping the same gods since the dawn of history. It would appear that the politicoreligious title *mukarrib* was only borne by one person in all of the South Arabian area at any one time, indicating a common identity despite political differences. The primary members of the

South Arabian pantheon were probably Venus (Athtar, a male: cf. Ishtar), the Moon, and the Sun, assigned different roles (and names) in the various kingdoms. Stone temple dedicatory inscriptions in monumental characters are among the most important South Arabic texts. Commercial transactions were recorded in a cursive script on palm sticks.

From the seventh century BCE, ancient South Arabian cities were generally surrounded by defensive walls, more commonly identified in the western than the eastern part of the country. Within the walls stood tall tower houses with rock foundations and superstructures of mud brick reinforced with wood (e.g., at Shabwa and Timnaʿ). South Arabian coins, bronze objects, stone incense burners, and pottery are the usual small finds. Most urban and town sites are laid out around large open areas, and with prominent sanctuaries, both intra- and extramural.

Prehistoric sanctuaries and cemeteries were frequently placed outside the associated settlement or along nomadic routes. The rectangular peristyle temples typical of Maʿin and Saba' reflect a more sophisticated form of the immediately preceding rectangular prehistoric temples and are found both intra- and extramurally. Some sanctuaries at Marib and Ṣirwaḥ are oval, while temples at Timnaʿ, Shabwa, and Raybun are rectangular hypostyle halls. Monumental temple porticoes are common throughout South Arabia.

Prehistoric cairns, dolmens, and stone alignments similar to monuments on the northern part of the peninsula are found frequently in the east but rarely in the west. In the historical periods, the rural dead were buried under cairns in a tradition going back to the Neolithic. The urban dead were also buried in silt accumulations (Saba' and Qataban) or in small chambers hewn into mountain rock (Qataban and Ḥadhramaut). Statues or stylized heads in stone boxes accompanied the weapons, jewelry, and other articles of daily use placed in the tombs. Ritual camel burials dating to the historical periods have been found in the south. The wealth of the tomb offerings was the result of trade. Constantly at odds, each of the desert kingdoms was nevertheless dependent on trade with its neighbors, as frankincense had to pass from Dhofar to the Ḥadhramaut, across the Ramlah al-Sabaʿtayn and on to Maʿin and the north, with the myrrh being passed on from Qataban and Saba'. The trading kingdoms were probably initially dependent on the camel, which requires little water, but much fodder, rendering agriculture the dominant activity in the historical periods.

The irrigation systems designed to catch and distribute the monsoon rains are among the most impressive South Arabian monuments. The original (second or third millennium BCE?) distributor structures in Marib were progressively updated and placed at more suitable locations until the ultimate dam (c. 500 BCE–600 CE) was built there, a masterpiece of engineering designed to contain the maximum amount of floodwater for distribution to more than 10,000 ha (24,700 acres) of cultivated land. Throughout Yemen ancient fields can be recognized by silt accumulations up to 30 meters high.

[*See also* Ḥadhramaut; Ḥimyar; Incense; Marib; Qataban; Shabwa; Sheba; Timnaʿ (Arabia); *and* Ẓafar.]

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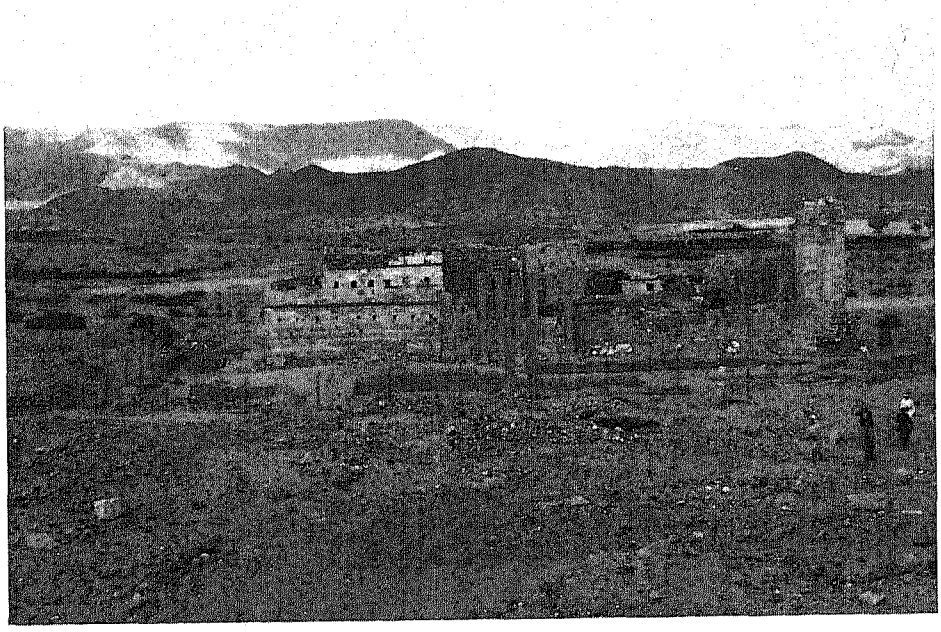

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YIFTAḤEL, site located within a narrow valley, the southwestern extension of the Beth-Neṭofa valley in Lower Galilee (map reference 7086 × 6263). The site is sometimes identified with the biblical valley of Yiftaḥel (*Jos.* 19:14, 27), in references to the border between the territories of the tribes of Zebulon and Asher. This identification was recently extended to a small mound, Ḥorvat Yiftaḥel (Ar., Khirbet Khalladiyah). The designation is problematic, however, as the biblical account indicates a geographic feature rather than a settlement. The mound, located on the valley floor near a small perennial spring, was systematically excavated, but about 2400 sq. m. of late prehistoric occupation was exposed on the nearby east slope in salvage work directed by Eliot Braun for the Department of Antiquities and Museums of Israel.

Pre-Pottery Neolithic B (PPNB) Levels. Evidence of the earliest period of occupation at the site was confined to about 400 sq. m. in which a number of successive occupations were preserved. The major remains include rectangular, multiroomed dwellings, one of which had a central room flanked by two smaller chambers, sometimes interpreted as courtyards. Notable in this period are extremely well-preserved lime-plaster floors with rounded corners where they met the stone and mud-brick walls. A number of primary flexed inhumations were discovered beneath the floors of several houses.

Enormous quantities of flints, cores, debitage, and tools indicate the association of these earliest occupants of the site with the Pre-Pottery Neolithic B (Neolithic 2) culture of the southern Levant. A quantity of ground-stone tools, beads, bone tools, and some imported obsidian was also associated with these levels.

Charred horsebeans *(Vicia faba)* and lentils *(Lens culinaris Medik)* suggest a partially agriculturally based economy combined with hunting, especially of gazelle with some boar and wild goat. Although it is unusual for this period, there was no evidence of cereal farming or of sheep and goat husbandry as is often associated with contemporary occupations.

Stratum IV. Above the early PPNB levels and to the south, an occupation layer consisted of a number of long, meandering curvilinear or irregular fieldstone walls understood as segments of enclosures. Blocked doorways and superimposed, pebbled and earthen surfaces indicate internal phasing in this stratum. The associated flint-tool kit places it within the PPNB horizon. A large number of groundstone bowls, some fragmentary and built into the fabric of the walls, marks the layer's relationship to the succeeding stratum III occupation.

Stratum III. Extensively excavated, stratum III is notable for five rectangular fieldstone structures that share a north–south orientation, giving the overall impression of a well-ordered village. The most complete structure is a house with a porch and three rooms. The house is bisected by doorways along a single central axis. It belongs to a Neolithic tradition of pier houses that are typical of the PPNB in the southern Levant.

Superimposed floors, indicating several occupational phases, were primarily earthen or pebbled, but there was some evidence for the limited use of lime plaster. Several secondary inhumations were noted below the floors of houses and within the precincts of the adjacent courtyards.

To this stratum is attributed a large number of limestone bowls, hollowed from small and large stones from streams. These bowls are similar to those found in stratum IV. This levels' flint-tool kit also belongs to the PPNB period and can be characterized as a flake industry. Some of its typical prod-

ucts are naviform cores, ridge blades, adzes, axes, hammerstones, and arrowheads.

Below Stratum II. Evidence for the sporadic utilization of the site during the Late Neolithic (Neolithic 3–4) and Chalcolithic periods was recovered in fills and on occasional patches of surfaces encountered beneath the stratum II buildings. An identifiable small collection of artifacts includes typical Late Neolithic flint tools, pottery sherds of the Jericho IX and Wadi Rabbah horizons, and a basalt bowl decorated with incised triangles and vessels similar in shape to Neolithic pottery types but fashioned of lime, apparently a late manifestation of the *vaisselles blanches* tradition. A very schematic minuscule ceramic figurine, with enlarged proboscis, conical head, and ears only, either anthropomorphic or zoomorphic, apparently belongs to this horizon.

Stratum II. Remains of a densely occupied village of more than a score of curvilinear houses, may indicate a break with the rectilinear tradition that dominated domestic architecture from PPNB times to the end of the Chalcolithic period. These houses were found often directly on top of the stratum IV structures. Their stone foundations, varying greatly in size, were either circular (e.g., 4.5 m in diameter), oval (5–8 m long), or sausage-shaped (i.e., two parallel walls (12–16 m long) ended in an apse at both ends. Occasionally, the curved ends were paved with flat stones; the larger structures had curvilinear internal walls. These buildings are part of a short-lived but strong curvilinear architectural tradition that can be traced from Byblos in the north to Ashkelon in the south in the Byblian Chalcolithic and local Early Bronze I period (fourth millennium BCE). At Yiftaḥel, some slight evidence suggests as many as three phases within this period, but most of the haphazardly arranged buildings appear to have been contemporary.

This occupation's early EB I date is indicated by numerous examples of Gray Burnished ("Esdraelon") ware, as well as some typical vessels that continued Chalcolithic ceramic traditions but with such distinctive EB I features as indented ledge handles. The lack of grain-wash or band-slip decoration bolsters the argument for an early date within the EB I.

The flint-tool kit was primarily ad hoc, with Canaanean blades being extremely rare. The ground-stone assemblage included some typical finely worked EB I basalt bowls and a number of loaf-shaped basalt grinding stones. Two axheads and a delicate needle are the only copper finds.

Faunal remains suggest that sheep, goat, cattle, and swine were herded. The economy appears to have been somewhat mixed, with the addition of cereal production suggested by a number of flint blades bearing distinctive traces of sickle sheen.

Stratum I. A conglomeration of structures that were probably not all contemporary appears in stratum I. Two multichambered rectangular buildings with cobble pavements were devoid of finds and of uncertain date. Another enigmatic structure, a wide strip of fieldstones of varying widths, was found directly above several stratum II houses. Several poorly preserved walls and adjacent earthen surfaces were assignable, on the basis of typical pottery finds, to the Early Bronze IV and the Middle Bronze II–III horizons.

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ELIOT BRAUN

YIN'AM, TEL (Ar., Tell en-Na'am), an open-air site astride the Darb el-Hawarneh, the ancient road used as an international highway for trade and cultural diffusion from the Late Bronze Age until the early twentieth century CE to connect the Hauran in Syria with Akko in Palestine (32°43′ N, 35°3′ E; map reference 198 × 235). One of thirteen archaeological sites in a northwest–southeast-trending valley in the eastern Lower Galilee, Tel Yin'am is adjacent to Wadi Fajjas, near an inland branch of the Via Maris, at the eastern edge of an alluvial fan of basaltic soils that slopes from the Yavne'el scarp on the west side of the Yavne'el Valley. The site was occupied from the Yarmukian Neolithic until the Late Roman period. Although it is frequently identified with biblical Yavne'el/Jabneel (*Jos.* 19:33), it is not the only Iron Age site in the vicinity. Beth-Gan, which yielded transitional LB/Iron and Iron I material, is another candidate. [*See* Beth-Gan.] In the Jerusalem Talmud (*Meg.* 1:1, 70A) biblical

Yavne'el, a town at the southern border of the tribe of Naphtali, is identified with Khirbet Yamma, but no Iron Age material has been recovered from that nearby settlement. Early efforts to identify Tel Yin'am with Yeno'am in New Kingdom Egyptian sources are now generally disregarded. However, because the site yielded a significant LB II occupation and ended in a fiery destruction, its identification with Yeno'am, which some scholars believe to have been in the Bashan (Na'aman, 1977), may not be out of the question.

The site's rich alluvial soils and ample water supply from springs and wadis fostered an agriculturally based economy, but its inhabitants also engaged in trade and ironworking at the end of the Late Bronze Age. The site's location accounts for its trade connections and the variety and quality of its material culture.

The earliest exploration of the site was conducted by the Palestine Exploration Fund during the survey in western Palestine in 1873. Aape Saarisalo subsequently surveyed the site and carried out a sondage (which the present excavation identified by loose fill and a metal can in square K10 in the 1920s). He believed Tel Yin'am to be the key archaeological site in the valley and claimed that it had been occupied during the Bronze and Iron Ages and the Hellenistic, Roman, and Arab periods (Saarisalo, 1927). The site was later surveyed by Yohanan Aharoni and again by Ruth Amiran (Aharoni, 1957). The most recent survey, prior to systematic excavations, was conducted by Zvi Gal. His report (1992, p. 33) relied on the assessment of the site, as of 1981, by the University of Texas, which excavated there, under the direction of Harold Liebowitz, from 1976 to 1981 and 1983 to 1989.

In preparation for those excavations, Liebowitz conducted a sondage on the north side of the mound in 1975. Work was focused on the north and west sides of the mound (areas A and B). Area C, on the south side, which was badly eroded, was excavated for only one season. In 1978 a brief salvage dig was carried out 50 m west of the foot of the mound in area D, a terrace. The final seasons on excavation revised the site's occupational history. It is now known to have had fewer gaps in occupation than originally assumed. Its broad repertoire of pottery and small finds (see below) have helped to define the eastern lower Galilee as a distinct region in the Late Bronze Age, heretofore considered to have been basically unoccupied in that period.

Neolithic and Chalcolithic Periods. While the material evidence attests to the occupation of the site in the Neolithic and Chalcolithic periods, these levels were not reached in excavation because of the compaction of the soil below the EB I layers. The Neolithic pottery closely parallels assemblages from other Yarmukian sites (Stekelis, 1972), and the serrated flint blades recall sickle blades known from numerous Neolithic sites. The Chalcolithic period is attested primarily by large basalt hammers.

Bronze Age. The Early Bronze Age IA is best represented in area D (10 × 10 sq m), excavated on the terrace settlement (see above). There, a circular platform identified as a *bāmâ* was found in association with partially preserved walls. The surface of the area was 10 cm thick and produced a rich, densely packed assemblage of EB IA pottery paralleled at Khirbet Kerak (and some Neolithic pottery), a miniature basalt bowl, a rare ceramic bull protome, and a profusion of animal bones. A less significant EB layer was excavated on the west side of the mound.

The Middle Bronze Age is represented by the southwest corner of an MB fortress temple in a poorly preserved area immediately below the earliest phase of an LB II building in area B. The surface patch yielded an almost intact electrum figurine of a standing goddess that has parallels in silver from a temple at Nahariyah in Israel and at Syrian sites; and a flat, copper/bronze standing figurine with parallels at Byblos. These figurines from Tel Yin'am were found in association with an MB II cooking pot and the upper part of a large, unusual jar with plastic and incised decoration. The northern part of the structure had been bulldozed by a local farmer prior to excavation; its southeastern part remains unexcavated. Other MB II sherds were found in fills elsewhere in area B.

The tell was abandoned until the latter part of the Late Bronze Age. A ten-room central building (building 1) that served as the residence of the local ruler existed throughout the LB occupation and yielded finds including cylinder seals, a stamp seal, a necklace with a chalcedony lion pendant, and beads (including two gray-and-white barrel-shaped beads), two Egyptian heart amulets, a bronze plow point, an "Egyptian Blue" shallow bowl, basalt bowls, and millstones. [*See* Seals.]

Additional thirteenth-century buildings abutted building 1; all experienced two phases of occupation. On the cobbled floor of the storeroom of building 2 from the later phase, a dense concentration of sherds was found from which unusually large biconical jugs, store jars, and an unparalleled Mycenaean stirrup jar were restored, substantiating, along with the small finds (see above), the extent of foreign trade in the Late Bronze Age. The floor of building 7 was paved with meter-long flagstones. A 50-cm deep layer of ash, charred wood, fire-cracked rock, and burnt and disintegrated mud brick found on the floors of the major LB buildings was evidence of their violent end. In the final LB phase, room 1 of building 1 was turned into an industrial installation that apparently was a primitive iron smelter, heralding the coming of the Iron Age (see below).

Iron Age. The reuse in some places of LB walls in the Iron I settlements and floors laid directly above the LB destruction debris suggest that a relatively short period elapsed between destruction and resettlement. The Iron I buildings were sturdily built, and the pottery was of consistently high

quality. Though much of the western slope of the mound is eroded, and a significant portion of the Iron I levels was destroyed, the preserved remains attest that the site was continuously occupied throughout the Iron I and into Iron II A (the tenth century BCE).

The courtyard of one of two tenth-century (Iron IIA) domestic buildings in area B yielded an oil press, an olive-cracking installation, stone weights, and olive pits, suggesting the existence of a home industry. [*See* Olives.] A long room north of the courtyard yielded forty-five loom weights. Unusual small finds include a rare bimetallic knife and a cone-shaped seal that features two rampant longhorns, each with a human figure seated on its back. Only two loci produced rich assemblages of Iron IIC ceramic remains in situ on the mound, although large quantities of sherds were found scattered throughout the area. A homogeneous assemblages of Iron IIC cooking pots, jugs, and store jars was restored from a courtyard and a partially excavated building in area B. Building activity in the Persian period had considerably disrupted remains in that level.

Persian–Roman Periods. Evidence of a Persian period occupation at the site was found in two phases in areas A and B. The ceramic assemblages reflect local and imported wares, including bowls, jugs, juglets, store jars, cooking pots, and a large pilgrim flask; among the imports were an East Greek painted jug and Attic sherds. The period's most substantial remains were recovered in area B on the tell: a partially excavated building with walls one meter wide and a large stepped podium with a flagsone walkway leading to it. In area A a building with ovens and grain silos, whose dimensions suggest domestic use, was excavated. The site yielded no evidence of occupation in the Hellenistic period but was reoccupied in the Roman period. The domestic structures were comprised of two rooms and appear to have been small. The one exception is a building in area A, on the north. It was partially excavated along with Roman-period buildings in area B. There, because the mound sloped sharply, the western continuation of the walls and floors of several rooms was eroded. Unique to area C are the limestone ashlars used in the building that housed a six-stepped, plaster-lined *miqveh*. [*See* Ritual Baths.] Though carbon-14 tests conducted on the plaster from the *miqveh*'s walls suggest a sixth-century date, the pottery is Late Roman. The absence of Byzantine and Arab pottery either in Gal's survey or in excavation leads to the conclusion that the site was abandoned at some time prior to the fourth century.

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YODEFAT. *See* Jotapata.

YOQNEʿAM, site situated at the northern outlet of Wadi el-Malih into the Jezreel Valley, at the eastern foot of Mt. Carmel (map reference 1604 × 2289). The site covers an area of 10 acres. Rising steeply above the surrounding valley, Yoqneʿam's location commands the vital junction of the route through the Malih Valley that connects the Via Maris of the coastal plain with the route across the Jezreel Valley that leads to the Plain of Akko and beyond, to Phoenicia. Its strategic position accounts for its long occupational history, from the Early Bronze Age to the Mamluk period. Egyptian, biblical, Byzantine, and medieval references to the site, including topographical data, and the resemblance of its Arabic name, Tell-Qeimun, to ancient Yoqneʿam, made its identification certain. Yoqneʿam enjoys exceptionally favorable environmental conditions: moderate climate, fertile soil, and an abundance of water.

Exploration. The site was first surveyed by the Palestine Exploration Fund in the late nineteenth century. In the early 1970s it was resurveyed by the Israel Survey. Excavations began in 1977 as part of the Yoqneʿam Regional Project, carried out on behalf of the Institute of Archaeology of the Hebrew University of Jerusalem, under the direction of Amnon Ben-Tor, and continued for ten seasons until 1988.

History. The earliest reference to Yoqneʿam is on an inscription at Karnak in Egypt that records a military campaign into Canaan by Thutmosis III (c. 1468 BCE). Yoqneʿam (the Egyptian rendering is *ʿnqnʿam*, probably referring to the springs at the foot of the site) is site number

113 on that list. The site is mentioned three times in the *Book of Joshua:* its king is listed as one of the thirty-one kings Joshua defeated (12:22); "the river that is before Jokneam" is the border of the territory of the tribe of Zebulon (19:11); and as a Levitical city within Zebulon's territory (21:34). Kammuna, in Eusebius's *Onomasticon* (116, 21), six miles from Legio, on the road to Ptolemais (Akko), is probably to be identified with Yoqne'am. The most frequent references to the site, under the name Caymont, or Mons Cain (both deriving from a tradition identifying it with the place where Cain was killed by Lamech) are to be found in Crusader documents. After the conquest of Baldwin I, it became first a royal castle and somewhat later the center of a small lordship. After their victory in the battle of Ḥattin (1187), the Muslims held the site for a short time, during which it appears in sources as al-Qaimun (Yaqūt 4.218). During the next century it changed hands several times. The site is last mentioned in a Frankish-Mamluk treaty dated 1268, in which al-Qaimun is listed among the possessions of the sultan Qalawun. The monumental structure covering the site's entire acropolis has been identified with the caravanserai built in the mid-eighteenth century CE by Dahir al-Omar, ruler of the Galilee. Whether it is indeed, or whether the remains belong to the site's Crusader fortress, will be decided by the brief rescue excavation currently in progress by the Israel Antiquities Authority.

Excavation. Five areas (A–E) were opened at the site and twenty-three occupation levels identified.

Early Bronze–Middle Bronze I (strata XXVII–XXIV). No in situ remains were found of any periods because in the areas excavated, subsequent builders, by founding their structures on bedrock, removed all previous architectural remains. However, sherds from all the site's occupational periods, including Gray-Burnished, Abydos, and Khirbet Kerak wares, as well as reserve-slipped Syrian sherds, were found, and stratum numbers were assigned for future reference.

Middle Bronze Age IIA–B (strata XXIIIA–C, XXII). Three interconnected rock-cut, bell-shaped burial caves constitute the earliest and only in situ remains at Yoqne'am. In one of them were two skeletons placed in arcosolia. The pottery associated with these burials dates them to MB IIA. The entrance to one of the caves was sealed by the site's earliest defense system: a solid mud-brick wall and a glacis. The two phases of these fortifications are dated within MB IIA. Another wall, not as wide as the former, and an associated tower, built on top of the fortifications, are dated to MB IIB. Little is known about the settlement's interior.

Transitional Middle Bronze IIC–Late Bronze I (stratum XXIA–B). The remains of dwellings built over the MB IIA–B defenses indicate an unfortified settlement. It is characterized by a large number of infant jar burials dated to the seventeenth–sixteenth centuries BCE.

Late Bronze Age II (strata XXA–B, XIXA–B). Four phases of an unfortified LB II settlement were discerned. The last of these had been violently destroyed, as indicated by a level of burnt debris more than 1 m thick covering all the remains. The date of that destruction should be placed somewhere in the late thirteenth–early twelfth centuries BCE.

Iron Age I (strata XVIIIA–B, XVII). After an apparently short occupational gap, the site was resettled in the Iron Age. Three architectural phases could be clearly discerned. The main architectural feature of the last phase is a house containing installations for the production of olive oil. Large amounts of pottery, both local and Phoenician or Philistine related, characterize this phase. The final destruction of the Iron I settlement may be related to the conquest of the Jezreel Valley by King David.

Iron Age II–III (strata XVI–XI). After a brief transitional phase, Yoqne'am was once again fortified. In the mid-tenth century BCE the city was surrounded by a massive casemate wall. A shaft cut into bedrock, whose excavation was not completed, probably led to the spring at the foot of the tell. The casemate wall was replaced in the ninth century by a defensive system consisting of two parallel walls. A peripheral street ran along the inner wall, separating the defenses from the city's residential buildings. These defenses went out of use in the late eighth century BCE, probably as a result of the Assyrian conquest of northern Israel.

Persian period (strata X–VIII). Three phases of an unwalled settlement from the Persian period were unearthed.

YOQNE'AM. *Iron Age double city walls.* Ninth century BCE. (Courtesy A. Ben-Tor)

YOQNE'AM. *Iron Age faience head.* Ninth-eighth century BCE. (Courtesy A. Ben-Tor)

A strong Phoenician influence is clearly indicated in the architecture and the ceramic finds.

Hellenistic, Late Roman, and Byzantine periods (strata VII–V). A watchtower from the Hellenistic period and a mausoleum from the Late Roman period are all that remain of the later periods of occupation on the tell. The main settlement appears to have moved to the hill immediately to the south. This may have been the case also in the Byzantine period. However, remnants of a church located immediately under the Crusader church on the eastern slope of the acropolis indicate a Byzantine presence at Yoqne'am.

Early Arab period (stratum IVA–C). A well-planned settlement was found that apparently extended over the entire surface of the site during the Early Arab period. It is dated by finds whose origins are local as well as Syrian and Egyptian and belong to the eighth–mid-tenth centuries CE.

Crusader period (stratum IIIA–B). After an occupational gap of about two centuries, Yoqne'am was rebuilt by the Crusaders. A residential quarter, a defensive wall, and a church are the main architectural features uncovered. There are clear indications of a massive fort having been constructed on the acropolis in this period, however.

Mamluk period (stratum II). Sporadic settlement occurred in the ruined Crusader city in the fourteenth century. It was confined mainly to the southern part of the site.

Ottoman period (stratum I). A few sherds and one tomb represent occupation during the Ottoman period (sixteenth-twentieth centuries). Some building activity may have taken place in the ruined Crusader fort on the acropolis.

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Z

ZABID, site located centrally across the 50-km wide coastal plain of the Tihama, in the Republic of Yemen (14°12′ N, 43°19′ E). Founded in 820 CE (AH 203) and now a seat of local government, Zabid's medieval prosperity was the result of irrigable land watered by seasonal floods, good ground water, access to the Red Sea, and ease of ground communication along the pilgrimmage routes to Mecca.

Mention of the city's walls and four gates appears in the commentaries of 'Umarah al-Yamani (twelfth century) and al-Khazrajī (fifteenth century). The walls also are emphasized in Ibn al-Mujawir's thirteenth-century map of the city: it shows a concentric wall system, with varying dimensions attributed to different dynasties. Curiously, the city wall with largest circumference is ascribed to the little-known and rather weak eleventh-century Najahid dynasty of Yemen. There has been a tendency for modern commentators to assume that Zabid's standing gates reflect the medieval configuration of the city (see Chelhod, 1978). Surveys by the Canadian Archaeological Mission of the Royal Ontario Museum, directed by E. J. Keall, indicate that the modern gates have no great antiquity (Keall, 1984). In his unpublished diary Glaser located the pre-Islamic city on a map at a point 10 km (6 mi.) north of modern Zabid (see map reproduced in Pauly-Wissova, 1968, p. 1315). From the study of sherds found on a large site north of Zabid, the mission's finds lend credence to Glaser's otherwise unsubstantiated observation (see Keall, 1983). This site may date back to the second millennium BCE.

Beginning in 1982, the Canadian mission, guided by 1:50,000 maps, surveyed Zabid and its surrounding area. All of the sites found were Islamic, with the exception of the one north of Zabid and another found in a range of dunes close to the coast. Imported Chinese wares furnish vital dates from the tenth to nineteenth centuries. Apart from them, almost all of the pottery is unique to the project: it appears to have little in common with the ceramic finds from the Saudi littoral or the Egyptian Red Sea coast. Petrographic analysis has characterized local production and confirmed the identity of the Islamic imports (mostly from Iraq and Iran).

In 1987, the Canadian mission designed an excavation program to define the development of the city (see Keall, 1989, 1991). The strata were found to have been badly disturbed by intrusive pits. Extensive damage had been caused by brick robbers who had trenched along wall lines to remove baked bricks. Traces of the original walls were positively revealed by the cobblestone footings that, lacking recyclable value for the robbers, had been left. It has been possible to identify occupation from the ninth century CE to the present. The perimeter wall of the Zabid citadel is a makeshift arrangement from around 1904. A fort was first built there during the sixteenth-century Ottoman occupation.

Outside the citadel, traces of copperworking have been tentatively associated with coin production. The implication is that the area was always a government quarter. At a site farther south, the remnants of fourteenth–fifteenth-century domestic buildings were buried beneath the berm of a moat—a clear indication that the last surviving city wall was a moderately recent one. East of Zabid, a ninth–tenth-century workshop produced pottery greatly influenced by contemporaneous Iraqi styles. The clay source was wadi alluvium, which the potter had collected by diverting flood water onto the site in settling ponds.

North of the city, excavations unearthed a sequence of buildings, though only sparse floors and foundation trenches survived the brick robbers. Fragments of carved and painted plaster reflect the quality of the structures, which may have been suburban villas set among watered gardens. The sandy conditions prevalent at all stages reflect an environment little different from today's. Provisions for watering the gardens are indicated by the kind of underground pipes the project unearthed. Two sets of glazed earthenware pipes were found outside of Zabid, as well as a covered conduit that comes from the direction of the mountains (see Hehmeyer, 1995).

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ẒAFAR, capital of the South Arabian kingdom of Ḥimyar, located approximately 8 km (5 mi.) south-southeast of the modern Yemeni town of Yarim and approximately 8 km east of the San'a-Taiz-Aden highway (14°13′ N, 44°24′ E). It sits at the eastern edge of an extensive intermontane valley near the head of Wadi Bana. Its identity has been known locally since antiquity and is confirmed by Ḥimyarite inscriptions found at the site.

Ẓafar, the Sapphar or Tapharon of classical authors, may have been founded as early as about 115 BCE, the beginning of the Ḥimyarite dating system. It was certainly in existence by the mid-first century CE, when it was mentioned by Pliny (*Nat. Hist.* 6.26.104 and by the unknown author of the *Periplus of the Erythrean Sea* (22–23). The earliest inscriptional evidence for Ẓafar consists of the Ḥimyarite royal titulary, "king of Saba and lord of Raydan," which occurs as early as the mid-first century. Raydan is generally understood to be the royal palace at Ẓafar.

Early explorers of the area include the Carsten Niebuhr expedition, which passed nearby in 1763, and Ulrich J. Seetzen, in about 1810. The Austrian South Arabist Eduard Glaser visited the site in the late nineteenth century. Interest in the site increased again in the 1960s and 1970s, with research surveys by Giovanni Garbini, Wolfgang Radt, Walter W. Müller, Paolo Costa, and Raymond Tindel.

Today the site of Ẓafar is a ruin. No major Ḥimyarite features survive. Its condition is the result of war, earthquake, and the heavy reuse of its building stones. The site is situated on a somewhat elongated hilltop whose lower, broader, southern end is occupied by a small village and a museum. A rubble-strewn acropolis rises above the village. Foundations and retaining walls can be traced at some points, and various chambers and tunnels have been cut into the soft rock of the hillside. The valley to the west of Ẓafar is fertile and receives sufficient rainfall to support agriculture. Remains of Ḥimyarite dams, aqueducts, and terrace walls are found throughout the vicinity.

The most comprehensive description of the site is preserved in the *Al-Iklil* by the tenth-century Yemeni historian al-Hamdani. He listed three palaces: Raydan, Shawhatan, and Kawkaban, and named nine city gates. Raydan, the oldest known Ḥimyarite royal palace, probably occupied the acropolis; it is often attested in Ḥimyarite inscriptions and the acropolis at Ẓafar is still known locally by that name. Shawhatan, which is also mentioned in an inscription (*RES* 3383), probably occupied the northernmost extension of the acropolis, which was still known in the nineteenth century as the Fortress Shawhat. A dedicatory inscription (*ZM* [Ẓafar Museum] 1; published by Garbini, 1969) mentions a fourth palace, *HRGB* (vocalization uncertain). A church was built at Ẓafar as the result of the mission of Theophilus Indus, in about 350; three other churches may have been built there during an Ethiopian intervention in the sixth century. The names of other, nonroyal buildings are also known from various dedicatory inscriptions. In one instance the dedicant was clearly Jewish and included a brief Hebrew formulary in his otherwise South Arabic inscription. Nothing survives of the churches at Ẓafar except, perhaps, for a small cross in relief built into a house in a nearby village.

It is the anonymous building rubble covering the site that provides the best cultural profile of Ḥimyarite Ẓafar: fragmentary architectural elements, bas-reliefs, inscriptions, and sculpture. Stylistically, its motifs can be grouped into two broad categories. The first is the geometric style indigenous to South Arabia. Its elements include rectilinear stepped recess panels and polygonal columns with layered rectilinear capitals. It includes only a few naturalistic motifs such as ibex and bull heads. The motifs of the second are drawn from the orientalized Hellenism of Late Antiquity. Its elaborate vine scrolls, staring frontal busts, winged Victories, griffons, sphinxes, and fantastic hybrid creatures are well attested at Ẓafar. A considerable range of skill both in composition and execution is found in this second category. There is very little mingling of elements from the two categories.

These remains probably date primarily from the fourth and fifth centuries, during the period that Ẓafar was the undispute capital of Ḥimyar, and Ḥimyar the overlord of all of South Arabia. Unfortunately, historical sources for this period are very sparse. The less scrupulous execution of the few inscriptions that survive from this period suggest a general cultural decline. Sectarian rivalry between Christians and Jews exploded into violence during the early sixth cen-

tury, leading to intervention by both Ethiopia and Persia. Ẓafar, the scene of sieges and massacres, was abandoned as a capital. South Arabia ended the pre-Islamic period as a Persian dependency with a Sasanian governor ruling from San'a. Ẓafar gradually declined to the small village it is today.

[*See also* Ḥimyar.]

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ZAKKUR INSCRIPTION. The ZKR inscription occupies the front (A. 1–17), right (B. 1–28), and left sides (C. 1–2) of a fragmentary basalt stela discovered in 1903 by H. Pognon at Afis, 40 km (25 mi.) southwest of Aleppo, Syria, and published by him in 1908. It contains lacunae throughout, especially from A. 15 onward; however, the surviving text is legible, allowing a reasonably clear reconstruction of its contents.

The stela, honoring a little-known deity, 'LWR ('Iluwēr?), is dedicated by Zakkur, king of Hamath and L'Š (probably Lu'ath, ancient Nuḥašše). The body of the inscription commemorates the invasion of a coalition of perhaps sixteen rulers, led by Bar-Hadad, king of Damascus, that besieged the city of ḤZRK (assumed to be the capital of Lu'ath; cf. the Akkadian Ḥatarikka and Ḥadrāk in *Zec.* 9:1). Zakkur appealed to the Syro-Palestinian sky god Baal-Shamayn (Ba'al Shamêm), who promised deliverance through prophetic functionaries (A. 2–B. 3)—a deliverance apparently described in the missing and fragmentary lines following A. 17. Zakkur then describes his subsequent building program (B. 4–15), including a probable reference to Afis itself (B. 11, 'PŠ). A typical invocation of curses and blessings concludes the inscription (B. 16–C. 2; cf. the Sefire and Nerab inscriptions). [*See* Sefire Aramic Inscriptions; Nerab Inscriptions.] Such a combination of dedicatory offering with historical commemoration finds parallels in other Northwest Semitic inscriptions (e.g., from Karatepe and Mesha). [*See* Karatepe Phoenician Inscriptions; Moabite Stone.]

Bar-Hadad's identification as the son of Hazael (A. 4) associates this inscription with one phase of Israel's perennial wars against the Arameans (cf. *2 Kgs.* 8–14). [*See* Arameans.] Bar-Hadad III (or II) succeeded his father in about 800 BCE, after which point the fortunes of Damascus declined (see *2 Kgs.* 13:22–25, 14:23–28). This decline was undoubtedly hastened by the western campaigns of the Assyrian ruler Adad-Nirari III (810–783 BCE) in 805–803/802 and 796; undated inscriptions referring to the defeat of Damascus and payment of tribute by Joash of Israel would belong to one of these campaigns (most plausibly 796). [*See* Assyrians.] Damascus—and Ḥatarikka—were again the object of an Assyrian expedition in 773/72. The motives and precise historical background of Bar-Hadad's campaign are not clear. One interpretation views Zakkur as an Assyrian loyalist attacked by an anti-Assyrian coalition and rescued by Adad-Nirari in 796 (cf. *2 Kgs.* 16:5–18). Alternatively, Zakkur may have threatened the local balance of power by uniting Hamath and Lu'ath and so prompted retaliation. The inscription would have been composed in approximately 800–775 BCE.

Apart from its historical significance, the inscription sheds light on the religion of the area (A. 2–4, 11–17). Many details find parallels in the Hebrew Bible (e.g., *Is.* 36–38; *2 Chr.* 20:1–23): the lifting of hands in prayer to avert a crisis; the deity's answer through seers and messengers (?, *'ddn,* A. 12); and the assurance of deliverance based on divine election of the king. (cf. the Ugaritic prayers in *KTU* 1.40 and 1.119.26–36 and the role of prophetic intermediaries at Mari, Emar, Byblos, Deir 'Alla and—implicitly—in the Moabite Stone, ll. 14 and 32.) [*See* Ugaritic Inscriptions; Mari Texts; Emar Texts; Byblos; Deir 'Alla Inscriptions.] Of linguistic significance are the form and poetic content of the text, and three apparent *wayyiqtol* forms that are almost unique in Aramaic (A. 11, 15; cf. Deir 'Alla inscriptions).

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DAVID M. CLEMENS

ZERAQUN, KHIRBET EZ-, site located about 13 km (8 mi.) northeast of Irbid, Jordan, about 2 km southeast of el-Mughayyir (both the village and the ancient mound). The site was first identified by Siegfried Mittmann in 1970. Joint excavations were carried out by Moawiyah Ibrahim for the Institute of Archaeology and Anthropology of Yarmouk University, Jordan, and Mittmann for the Biblisch Archäologisches Institute of the University of Tübingen. Fieldwork was conducted in cooperation with the Department of Antiquities of Jordan.

In five seasons of excavation (1984, 1985, 1987, 1988, 1991) and one survey season (1989) sites located in the triangle of Wadi esh-Shallalah and Wadi Rahub were investigated and Tell el-Mughayyir and Khirbet ez-Zeraqun were excavated. In the 1987 season, with surveyors from the University of Karlsruhe under the direction of Boser, a photogrammetric survey of the Roman bridge spanning Wadi esh-Shallalah, just southeast of Zeraqun, was completed. The bridge, built in two-story arches, is evidence of the Roman road link between Umm Qeis (Gadara) and Dar'a (Adraat). [*See* Umm Qeis.]

The site covers the remains of an Early Bronze occupation and has an area of about 400 × 300 m. It is one of the largest EB towns in Jordan or even southern Bilad ash-Sham ("greater Syria"). Khirbet ez-Zeraqun has a very similar occupational history to EB Bab edh-Dhra' in southern Jordan's Rift Valley. [*See* Bab edh Dhra'.] Excavations were concentrated in two major areas, in the upper and the lower town, adjacent to the town wall on its west and south sides.

The earliest occupational phase seems to date to the Late Chalcolithic/EB I period (beginning of the third millennium), represented by some domestic remains founded on bedrock that underlie the level of the walled town and the EB II–III public buildings and major domestic quarters. The second major phase dates to the EB II, when the site's major buildings were constructed: a 7-meter-wide defensive wall surrounding the town with projecting towers and bastions, a city gateway, a temple complex, and an administration building, all in the upper town. Other buildings belonging to this period were large to small rooms in the lower town, some of which were for domestic use. The third major phase of occupation (EB III) was represented by significant changes and additions to the main architectural complexes (the gateway, town wall, and houses in the lower town). From the EB IV toward the end of the third millennium the fourth and latest occupation is represented by fragmentary disturbed structures close to the surface and a few silos lined with stones dug into earlier deposits.

There are scattered sherds from the Roman-Byzantine period on the surface and in disturbed areas, but they are not associated with structures. Other remains of a later use of the site are a large number of nineteenth-century burials dug into the EB layers. There are also several modern ditches and disturbances. The site was used until recently for agriculture. It is barren of trees and modern houses.

Town Gate. During the last two seasons of excavations, the town's main gate was excavated close to the highest point on the west side of the site. The gate showed four major changes during different EB periods. The earliest stage represents the widest opening (about 15 m). During the following phases it became progressively narrower, until it was reduced to a small, zigzag passageway. Its exterior features two curving, towerlike additions, while the inner part of the wall is connected to two square towers. The inner towers, with other, adjacent rooms, surround a road that leads directly to the temple area and the industrial quarter. The floor of the gate and the passageway consists of beaten earth and areas paved with small stones. The gate is easily accessible from the gradual slope to the west of the site.

Temple Complex. The main cultic area dominates the town and surrounding areas. It is accessible from the site's northwest side via the road coming from the gate's passageway, and from the east via a long street (about 1.5 m wide) on the south side of the administration building (see below). On the west side there seems to be a small gap between the town wall and the temple. The complex consists mainly of a circular altar with a staircase on the east side and large square and rectangular rooms, all surrounding a large open courtyard. With the exception of the large rectangular cult room, all the buildings are oriented east–west, toward the circular altar. A row of storage rooms, designated as the industrial quarter, on the northeast side of the complex have been uncovered.

Administration Building. An administrative architectural complex was exposed on the north side of the east–west street. It is separated from the temple area by a narrow, irregular corridor. This unit consists of rectangular rooms surrounding a large outstanding room, all built of stone with bricks probably used in their upper parts. The arrangement of the rooms in this unit and their connections to the temple and to the rooms in the industrial area indicate that the unit served administrative purposes. Confirmation of this interpretation awaits further excavations and analysis of the material found in the complex.

Lower Town. Excavations in five seasons exposed sections of the city wall and a residential area on the south side of the site. The architectural remains in this area represent

two and possibly three major occupational phases (EB I/II–III). The earlier phase, founded on bedrock, revealed planned architecture oriented east-west around a main street, with subsidiary streets creating separate residential units. The phase could be subdivided into two parts because of changes in the architecture and additional floors. The second major architectural phase is less organized in plan and reveals a new street arrangement. A semicircular tower was found outside the city wall. To the east of the tower, and along the exterior face of the city wall, several horizontal stone slabs were uncovered. They are believed to have been used as steps leading to a higher part of the fortification system. Excavations also revealed a tower on the interior that probably supported the town wall. At the lowest part of the tower, a water channel was discovered. This channel was built to draw off the water running down from the upper town toward the fortification and may have limited the damage caused by runoff.

Water System. The town's highly developed hydrological system must have governed life there for almost a thousand years. In addition to the springs of Wadi esh-Shallalah, the inhabitants of Zeraqun dug three stepped shafts down to the water table. One of these shafts measures some 100 m and leads to the base of the wadi. It is probable that the water of this shaft system was used during enemy attack and when spring water in the surrounding area dried out. At the steep slope toward the wadi closable water outlets were found connected to the shafts that were probably used to water the fields in the wadi. [*See* Hydraulics; Irrigation; Water Tunnels.]

Small Finds. Among the important objects excavated at Zeragun was a large number (about 120) of seal impressions on pottery, which makes the town the richest site for glyptic in third-millennium. Transjordan and Palestine. [*See* Seals.] The impressions show geometric, floral, animal, and figural designs. The seal impressions, the large variety of pottery types, and clay figurines reveal close parallels and contacts with Palestine, Egypt, Anatolia, Mesopotamia, and North Syria. Together with other discoveries, they also show Khirbet ez-Zeraqun to have been a flourishing EB city.

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ZEROR, TEL (Ar., Khirbet et-Tell Dhurur), site located on the northern Sharon plain, near an ancient crossing of the Ḥadera River, on the western branch of the Via Maris (32°28′ N, 35°01′ E; map reference 1476 × 2038). The 6-ha (15 acres) mound is composed of two spurs connected by a lower saddle. The mound's cemetery (Late Bronze II–Iron I periods) extends over a low hill 150 m west of the mound. The site was excavated by Kiyoshi Ohata on behalf of the Japanese Society for Near Eastern Research in 1964–1966 and in 1974; Moshe Kochavi was field director during the 1964–1966 seasons, and Koichito Goto was field director in 1974. Benjamin Mazar and Nadav Na'aman suggested the site's identification with DRR, number 115 in Thutmose III's topographical lists; Yohanan Aharoni proposed MKTR on the same list (MGDL YN in the Annals of Amenhotep II).

The first occupation of Tel Zeror took place at the beginning of the Middle Bronze Age and the last was in the Early Roman period, but remains of not all these periods were found uniformly across the mound. Four strata were assigned to MB I, the only MB phase during which the city existed. Two superimposed city walls were excavated in various areas, which made it possible to follow most of their course. The walls had stone foundations laid on an earthen rampart. A wide moat and a two-chambered tower were found on the western side of the mound. The early city was deserted before the transitional MB I–II phase, and there was an occupation gap in MB II–III.

The Late Bronze settlement had no fortifications, but a major public building was constructed on the mound's southern spur, on whose slope coppersmiths' quarter existed throughout the period. Smelting furnaces, crucibles, clay bellows pipes, and copper slags were found there in abundance. The high percentage of Cypriot pottery found in the coppersmiths' quarter may point to Cyprus as the source of the raw material used there. Burials from the fourteenth to thirteenth centuries BCE were uncovered in the cemetery. These were individual graves cut in the soil, sometimes lined with small stones. The bodies were placed with their heads facing west. [*See* Burial Techniques.]

Two different types of settlement were observed for the Iron Age I. The earliest dated to the twelfth century BCE, and from it only refuse pits containing pottery sherds and animal bones were found. Several burials in collar-rim jars, exposed in the cemetery, were also attributed to this phase. In the later phase (eleventh century BCE) a brick fort with a casemate wall was built on the northern spur. The tombs in the cemetery were family graves in stone-lined cists. They contained many weapons, some copper bowls, and a unique pinched type of oil lamp. A rhyton in the shape of a lioness and a plaque figurine of a naked female were also among the rich finds from these tombs. [*See* Tombs; Grave Goods; Lamps.] During Iron II the settlement continued to be concentrated on the southern spur. Storehouses and pillared four-room houses were exposed, protected by a thin wall

strengthened on its interior with half-meter-wide piers set at 2-m intervals. [*See* Four-room House.] The village well was also unearthed, on the low ground south of the northern spur. Among the finds from this period are an Aramaic inscription on a bowl that reads L'LSMK ("belonging to Elsamakh"); a "Resheph" bronze figurine; a steatite bowl with a hand carved on its base; and storage jars with the letter *mem* inscribed on their bodies. Pits dug in the Persian period were found on the northern spur, where a farmhouse was erected in the third–second centuries BCE. The last occupation on the northern spur was an Early Roman watchtower. The remains of the village of Khirbet et-Tell Dhurur, on the southern spur, dated to the Mamluk period.

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ZIGGURAT. Like modern skyscrapers or medieval cathedrals, Mesopotamian ziggurats served as the visual foci of Mesopotamian cities, providing a symbol of the power of the city and its god visible for miles around. A true ziggurat is a stepped pyramid, square or rectangular in plan, with a temple on top, but this form was not arrived at immediately: the earliest Mesopotamian shrines were built flush with the ground. The sacredness of the shrine structure led to new temples being built on platforms, within which earlier versions were entombed. This development is seen especially clearly at Eridu, where a very small early Ubaid shrine developed over time, first into a standard Mesopotamian temple built on a platform and eventually into a true ziggurat. [*See* Eridu.] Moreover, from a very early period, as with the so-called Anu Ziggurat that supported the fourth-millennium White Temple at Uruk, attempts were made to raise major religious buildings above the rest of the city. [*See* Uruk-Warka.]

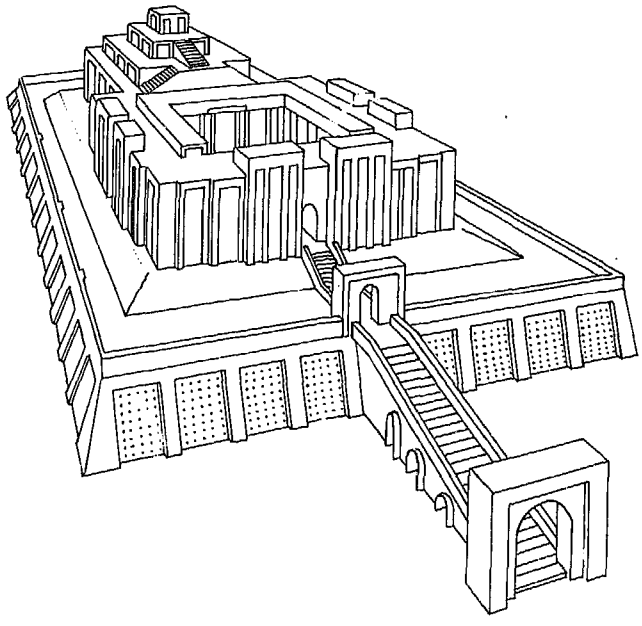
Temple platforms of varying degrees of complexity were built throughout the third millennium, but true ziggurats are not clearly attested until the Third Dynasty of Ur. [*See* Ur.] Both archaeological data and textual sources indicate that from the late third millennium onward, virtually all major cities had ziggurats. The existence of some ziggurats, notably those at Susa and Nineveh, however, is known from textual evidence only. [*See* Susa; Nineveh.] Although the distribution of well-understood ziggurats over time and space is very uneven, they appear to have come in two varieties: the generally earlier and Babylonian one had a rectangular base with stairs providing access to the top; the later one, more often found in Assyria, is square in plan and had more variable access, sometimes including a ramp that spirals up the building.

The archaeological evidence is much better for the Babylonian ziggurats than for the Assyrian variety. Excavations have been carried out on the former at Eridu, Ur, Uruk, Nippur, Sippar, and ʿAqar Quf; the ziggurats at Kish, Borsippa, and perhaps even Babylon and Larsa probably also fall into this category. [*See* Nippur; Sippar; ʿAqar Quf; Kish; Babylon; Larsa.] All these buildings have their corners oriented to the cardinal points and were generally located, together with a lower temple, within a courtyard with a separate forecourt. The shrine at the top was reached by means of staircases often with a triple stair—one perpendicular to the wall face and the other two running along the wall from the two corners—leading up to the first stage of the ziggurat and meeting at a gateway. Only at Ur is the second stage sufficiently preserved for it to be clear that only a single stair provided access to its top.

These ziggurats all had a core of mud bricks, within which earlier buildings were often encompassed. The exterior was generally of baked brick, often several meters thick and sometimes mortared with bitumen. These outer walls were decorated with buttresses, some of which were quite complex. Most of these ziggurats included some form of drainage—either in the form of reed mats interlayered with the mud brick, of reed ropes running from one side of the structure to the other, or of holes, sometimes filled with broken potsherds, also running from one side of the ziggurat to the other.

The later and northern ziggurats are typified by those at Khorsabad, Aššur, Nimrud, Kar-Tukulti-Ninurta, and Tell er-Rimah (see figure 1); some scholars argue that the ziggurat at Larsa resembled them. [*See* Khorsabad; Aššur; Nimrud; Kar-Tukulti-Ninurta; Rimah; Tell er-.] The Khorsabad example preserves clear evidence of a ramp, which spiraled up its height, and of some of the different colors with which the different stages were painted: from bottom to top, black, white, orange, blue, red, silver, and gold—each color representing one of the planets or, in the case of silver and gold, the moon and the sun. Seven stages, reflecting these astronomical associations, seems to have been quite typical of later ziggurats, whether found in Assyria or Babylonia.

The siting of the Assyrian ziggurats was also different. All were built into temple complexes, and at Aššur, Kar-Tu-



ZIGGURAT. Figure 1. *Reconstructed drawing, temple and ziggurat at Tell er-Rimah.* Perhaps built c. 1800 BCE, around the time of Shamshi-Adad I. The ziggurat was part of the temple building and the upper shrine was probably reached from the roof of the courtyard temple. (Courtesy Andromeda Oxford, Ltd.)

kulti-Ninurta, and Tell er-Rimah, they represented no more than the highest of three platforms: the first acted as a forecourt, the second bore the temple, and the third consisted of the ziggurat or, in the case of Aššur, ziggurats. In general, these Assyrian ziggurats were more variable in their orientation, in the type of access—by stair, ramp, or even bridge—and in the degree to which they were incorporated into larger building complexes than their Babylonian forebears; however, they were quite consistent in their square form and perhaps in the number of stages.

In spite of the variability both within and between types, the function of Mesopotamian ziggurats—to support the temple of the city god—remained constant. Ziggurats represent an enduring monument to the important role of religion in defining the political importance of Mesopotamian cities. It was the ziggurat at Babylon, for example, dedicated to Marduk and known as Entemenanki ("the temple of the foundation of heaven and earth") that inspired the later biblical legend of the Tower of Babel (*Gn.* 1:4–9).

[*See also* Assyrians; Babylonians; *and* Mesopotamia, *article on* Ancient Mesopotamia.]

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ZIQLAB, WADI, stream that drains an area in modern Jordan of 115 sq km (21 sq. mi.) north of the Wadi Yabis drainage basin and immediately south of Wadi Taiyiba. Its eastern watershed is on the Irbid plateau and its mouth is in the Jordan Valley. The drainage occupies the greater part of the al-Kura administrative district, whose center is at Dayr Abu Sa'id.

Although several nineteenth-century travelers mentioned antiquities in this district, the first systematic archaeological surveys to include it were by Gottlieb Schumacher (1890; D. C. Steuernagel 1925, 1926), and Nelson Glueck (1951). One by Siegfried Mittmann (1970) followed, and the westernmost part of Wadi Ziqlab fell within the East Jordan Valley Survey (Ibrahim et al., 1976). The 1981 Wadi Ziqlab Project (Banning and Fawcett, 1983; Banning, 1985) was the first archaeological survey to focus specifically on the Ziqlab basin, sampling about 20 percent of its surface area as the target of a medium-intensity survey by transects 1 kilometer long. Test excavations at several, mainly small, Early Bronze–Ottoman-period sites followed in 1986 and 1987 (Banning et al., 1987; Banning et al., 1989). Excavations at Ṭabaqat al-Buma, with occupations in the Kebaran and Late Neolithic periods, took place in 1987, 1990, and 1992 (Banning et al., 1992).

The prehistoric periods in Wadi Ziqlab are represented by large numbers of deflated lithic scatters, mainly from the Middle and Upper Paleolithic periods, by Kebaran deposits at Ṭabaqat al-Buma (WZ 200, YA547996*); and by at least four Neolithic sites. 'Ain Ṣabḥa (WZ 120, YB496012) has 4 m of cultural deposits from the Pre-Pottery Neolithic B (PPNB) and the Late Neolithic and EB Ages. The Wadi Summayl site (WZ 119, YA559969) is probably Late Neolithic. Ṭabaqat al-Buma (WZ 200) has more than a meter of deposits, with stone architecture belonging to three distinct Late Neolithic strata. Site WZ 310 (YB542000) shows occupation from the Late Neolithic through EB I. A small sample of lithics in secondary deposition at locality WZ 308 (YB536002) suggests that there may be another Neolithic site in the vicinity.

The principal EB sites in the catchment are Khirbet Maḥrama (WZ 60, YA620905), sounded in 1986, and Tell al-Arba'in (YB433011), near the wadi's mouth. At Maḥrama, at least 1.5 m of deposit belong to EB I–II. The site is capped by relatively shallow Roman–Byzantine deposits and Mamluk and Early Ottoman ruins. Glueck (1951) and Ibrahim et al. (1976) report EB I material at Arba'in; Glueck also notes some EB I–II material at Tell Abu al-Fokhkhar (WZ 43, YB487014) and Khirbet Sibya (YB530021).

No survey of Wadi Ziqlab to date has found more than slight evidence for occupation from EB III through to the end of the Late Bronze Age (notably MB II at Tell al-Arba'in), and that mainly at lower elevations. However, there is abundant evidence for Iron I and II occupation throughout the basin. Some of this consists of towers (e.g., WZ 9, YA555975 [Banning et al., 1989]), Ras Birqish, WZ 10, YA566927), but mainly there are scatters of pottery and ruined architectural traces of Iron Age villages, such as Sibya and Jebatun (WZ 70, YA579980). Iron Age expansion probably involved clearing forests and terracing hillsides.

Khanzira (Ashrafiya, YA544957), near Ziqlab's southeast watershed, appears to have been the main center for a sparse Hellenistic occupation of the region, followed by extremely intensive use of the basin during the Roman, Byzantine, and Umayyad periods. In the later periods, villages, hamlets, and probably farmsteads or villas dot the landscape, and numerous terraces, wine presses, cisterns, and olive presses attest to thriving agriculture, viticulture, and arboriculture. Tell Abu al-Fokhkhar (WZ 43, YB487014) and Marḥaba (WZ 106, YB514004) appear to have been important sites then, the former with a temple or church on its citadel, the latter with a church and a mosaic.

The next major occupation of the basin was during the Mamluk period, when many of the modern villages were already occupied, and occupation was resumed at Khirbet Maḥrama. During the last century of Ottoman rule, many of these villages were abandoned, and Tubna (YA 546967) became the preeminent village of al-Kura, with its eighteenth-century Zaydani castle and mosque and nineteenth-century ruling Shrayda family.

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E. B. BANNING

APPENDIX 1: EGYPTIAN ARAMAIC TEXTS

The tables on the following pages, compiled by Bezalel Porten, are supplements to his article "Egyptian Aramaic Texts," which appears in volume 2, pages 213–219. The abbreviations below are used in the tables; some shortened forms of bibliographic data are also provided in full in the bibliography of Porten's article.

ÄM = Ägyptisches Museum, Berlin

Aimé-Giron = Aimé-Giron, N., *Textes araméens d'Égypte.* Cairo, 1931

ASAE = *Annales du Service des Antiquités de l'Égypte*

AÖAW = *Anzeiger der österreichischen Akademie der Wissenschaften*

Berlin = Staatliche Museen, Berlin

BIFAO = *Bulletin de l'Institut Français d'Archéologie Orientale du Caire*

BM = British Museum, London

BSOAS = *Bulletin of the School of Oriental and African Studies*

Cairo = Egyptian Museum, Cairo

CdE = *Chronique d'Égypte*

CG = Clermont-Ganneau collection, Académie des Inscriptions et Belles-Lettres, Paris

CRAI = *Comptes rendus des séances de l'Académie des Inscriptions et Belles-Lettres*

CIS = Corpus Inscriptionum Semiticarum

EVO = *Egitto e Vicino Oriente*

ESE = Lidzbarski, M., *Ephemeris für semitische Epigraphik.* 3 vols. Giessen, 1902-1915

Gibson = Gibson, J. C. L., *Textbook of Syrian Semitic Inscriptions.* Vol. 2. Oxford, 1975

Grelot = Grelot, P., *Documents araméens d'Égypte.* Paris, 1972.

Herr = Herr, L., *The Scripts of Ancient Northwest Semitic Seals.* Missoula, 1978

IEJ = *Israel Exploration Journal*

JAOS = *Journal of the American Oriental Society*

JE = Journal d'Entrée, Egyptian Museum, Cairo

JRAS = *Journal of the Royal Asiatic Society*

KAI = Donner, H. and Röllig, W., *Kanaanäische und aramäische Inschriften.* Wiesbaden, 1966

Krug. = Lidzbarski, M., *Phönizische und aramäische Krugaufschriften aus Elephantine.* Berlin, 1912

London = British Museum, London

MAI = *Mémoires presentés par divers savants à l'Académie des Inscriptions et Belles-Lettres*

MDAIK = *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo.*

NESE = R. Degen, W. W. Müller, and W. Röllig, *Neue Ephemeris für semitische Epigraphik.* Weisbaden, 1972-1978.

OLP = *Orientalia Lovaniensia Periodica*

OLZ = *Orientalistische Literaturzeitung*

Oxford = Bodleian Library, Oxford

Paris = Académie des Inscriptions et Belles-Lettres, Paris

PSBA = *Proceedings of the Society of Biblical Archaeology*

RA = *Revue d'Assyriologie et d'Archéologie Orientale*

RAO = *Recueil d'Archéologie Orientale*

REJ = *Revue des Études Juives*

RÉS = *Répertoire d'Épigraphie Semitique*

RHR = *Revue de l'Histoire des Religions*

RSO = *Rivista degli Studi Orientali*

RT = *Recueil de Travaux Relatifs à la Philologie et à l'Archéologie Égyptiennes et Assyriennes*

Sachau = Sachau, E., *Aramäische Papyrus und Ostraka aus einer jüdischen Militärkolonie zu Elephantine.* 2 vols. Leipzig, 1911.

Sayce-Cowley = Sayce, A. H., and Cowley, A. E., *Aramaic Papyri Discovred at Assuan.* London, 1906.

TAD A,B,C,D = Porten, B., and Yardeni, A., *Textbook of Aramaic Documents from Ancient Egypt, Newly Copied, Edited, and Translated into Hebrew and English.* Vols. 1-3, Jerusalem, 1986-1993; vol. 4, in preparation.

WZKM = *Wiener Zeitschrift für die Kunde des Morgenlandes*

TABLE 1. *Chronological List of the Discovery of Papyri and Parchments.* Forty-one separate finds or acquisitions between 1815 and 1988

	Discovery (Publication)	Item	Site	Discoverer/Acquirer	Museum/Library	Editio Princeps	*TAD* A-D
1.	1815-1819 (1960)	2 fragmentary letters	Elephantine	Giovanni Battista Belzoni	Museo Civico, Padua	Edda Bresciani	A3.3-4
2.	1824 (1889)	Fragmentary letter	Unknown	Bernardino Drovetti	Museo Egizio, Turin	CIS, vol. 2.1, 144	A5.3
3.	1825 (1889)	*Tale of Hor b. Punesh*	Unknown	Duc de Blacas	British Library, London	CIS, vol. 2.1, 145	C1.2
4.	1826 (1889)	Disbursement of wine	Unknown	Drovetti	Louvre, Paris	CIS, vol. 2.1, 146	C3.12
5.	1827 (1889)	Fragmentary list	Unknown	Stefano Borgia	Biblioteca Apostolica Vaticana, Vatican City	CIS, vol. 2.1, 148	C4.9
6.	1827 (1889)	Treasury account	Unknown	Henry Salt	Musei Vaticani, Vatican City	CIS, vol. 2.1, 147	C3.19
7.	1842–1845 (1893)	Court record	Unknown	Karl Richard Lepsius	Staatliche Museen, Berlin	CIS, vol. 2.1, 149	B8.5
8.	pre-1862 (1893)	Fragmentary letter	Serapeum, Memphis	F. Auguste Mariette	Egyptian Museum, Cairo	CIS, vol. 2.1, 151	A5.4
9.	pre-1862 (1893)	Fragmentary letter	Serapeum, Memphis	Mariette	Cairo	CIS, vol. 2.1, 152 (Cowley No. 77)	D1.16
10.	pre-1862 (1893)	Fragmentary land registry	Serapeum, Memphis	Mariette	Cairo	CIS, vol. 2.1, 150	C3.21
11.	pre-1884 (1974)	Fragmentary account	Unknown	Wilhelm Fröhner	Universitätsbibliothek, Göttingen	Rainer Degen	C3.2
12.	pre-1887 (1923)	Fragmentary account	Unknown	John Gardner Wilkinson	Harrow School Museum, London	Cowley No. 83	C3.27
13.	1888 (1906)		Abu Sir		Cairo	*RÉS* 1789 = *ESE*, vol. 3, 127	D5.25
14.	1888 (1906)		Abu Sir		Cairo	*RÉS* 1790 = *ESE*, vol. 3, 127–128	D5.11
15.	(1893)	Fragmentary account	Unknown		Cairo	CIS II/1 153	C3.25
16.	pre-1903 (1915)	Fragmentary account	Saqqara	Wilhelm Spiegelberg	Cairo	Mark Lidzbarski	C3.1
17.	1893 (1953)	Anani(ah) family archive (13), 2 letters, 1 fragmentary list	Elephantine	Charles Edwin Wilbour	Brooklyn Museum	Emil G. Kraeling	A3.9 B3.2–13 B6.1 C3.16
18.	1898 (1903)	Fragmentary letter	Elephantine	Spiegelberg	Bibliothèque Nationale, Strasbourg	Julius Euting	A4.5
19.	1901 (1903)	Loan contract	Elephantine	Archibald Henry Sayce	Bodleian Library, Oxford	Arthur Ernest Cowley	B4.2

TABLE 1. *Chronological List of the Discovery of Papyri and Parchments (Continued)*

	Discovery (Publication)	Item	Site	Discoverer/Acquirer	Museum/Library	Editio Princeps	*TAD* A-D
20.	1902 (1902)	Fragmentary list	Elephantine	Gaston Maspero	Acadámie des Inscriptions et Belles-Lettres, Paris	Melchior de Vogüé (Cowley No. 79)	D3.24
21.	1902 (1905, 1917, 1971, 1983)	Fragmentary letter	Saqqara	Maspero	Paris	Charles Clermont-Ganneau, Maurice Sznycer, Bezalel Porten	A5.1
22.	1902 (1902, 1986)	Fragmentary letter	Elephantine	Maspero	Paris	de Vogüé, Porten	A5.5
23.	1904 (1906)	Mibtahiah family archive (10 texts)	Elephantine	Lady William Cecil, Robert Mond	Oxford (1), Cairo (9)	Sayce, Cowley	B2.1–4, 6–11
24.	1904 (1988)	Fragmentary contract	Elephantine	Collection of Mrs. Raden Ajoe Jodjana	Rijksmuseum van Oudheden, Leiden	Jacob Hoftijzer	D2.12
25.	1906 (1907)	Scroll of accounts	Edfu? (acquired at Luxor)	Sayce	Oxford	Sayce, Cowley	C3.28
26.	1906 (1915)	Fragmentary letter	Edfu? (acquired at Luxor)	Sayce	Oxford	Cowley (Cowley 82)	D1.17
27.	1906–1908 (1911, 1970, 1974, 1978, 1988)	20 letters, 18 contracts, 9 lists/accounts, Bisitun, Ahiqar (with erased Customs Account), fragments	Elephantine	Otto Rubensohn, Friedrich Zucker	Berlin, Cairo	Eduard Sachau, Zuhair Shunnar, Degen, Porten	A3.1–2, 5–8, 10; 4.1–4, 6–10; 5.2; 6.1–2; B3.1; 4.1, 3–6; 5.1–2, 4–5; 6.2–4; 7.1–4; 8.5; C1.1; 2.1; 3.3–4, 7, 9, 13–15; 4.4–8
28.	1913 (1921)	Fragmentary list	Saqqara	James Edward Quibell	Cairo	Noel Aimé-Giron	C4.1
29.	1924–1925 (1931)	Fragmentary account	South Saqqara	Gustave Jéquier	Cairo	Aimé-Giron	C3.26
30.	1926 (1931)	Memphis Shipyard Journal; fragmentary list; fragments	South Saqqara	Cecil Mallaby Firth	Cairo	Aimé-Giron	partly in C3.8; 4.2
31.	(1931)	Fragments	Unknown		Cairo	Aimé-Giron	partly in C3.17; 4.2
32.	1930s (1962)	Consignment of oil	Edfu?	Given by Giulio Farina to Giorgio Levi Della Vida	Istituto di Studi del Vicino Oriente, University of Rome	Bresciani	C3.29
33.	1933 (1954)	13 parchment letters; 12 plates of fragments	Unknown	Ludwig Borchardt	Oxford	Godfrey R. Driver	A6.1–16

TABLE 1. *Chronological List of the Discovery of Papyri and Parchments (Continued)*

	Discovery (Publication)	Item	Site	Discoverer/Acquirer	Museum/Library	Editio Princeps	*TAD* A-D
34.	1934–1935 (1959)	Fragmentary letter	El-Hibeh	Evaristo Breccia	Museo Archeologico, Florence	Bresciani	A3.11
35.	pre-1936 (1936)	Joint venture agreement	El-Hibeh	Bruno Meissner	Bayerische Staats-bibliothek, Munich	Hans Bauer, Meissner	B1.1
36.	1940 (1971)	Fragmentary account	Saqqara	Zaki Saad	Cairo	Bresciani	C3.10
37.	1942 (1948)	Letter of Adon King of Ekron	Saqqara	Saad	Cairo	André Dupont-Sommer	A1.1
38.	1945 (1966)	8 private letters	Hermopolis (for Luxor and Syene)	Sami Gabra	Faculty of Archaeology, University of Cairo	Bresciani, Murad Kamil	A2.1–7
39.	1966–1967, 1971–1973 (1983)	202 papyrus fragments	North Saqqara	Walter B. Emery, Geoffrey T. Martin	Cairo	Judah Benzion Segal	partly in B4.7; 5.6; 8.1–4, 6–12; C3.6, 11, 18, 20, 22–24; 4.3
40.	c. 1965–1970	2-line epistolary formula on back of demotic papyrus	Unknown	Don José Palau-Ribes Casamit-Jana	Seminari di Papirologia, Barcelona (Sant Cugat del Vallès)	Unpublished	D1.34
41.	1988	2 lists + fragments	Elephantine	German Archaeological Institute	Cairo	Wolfgang Röllig	D3.15–17

TABLES 2-13. *Alphabetic Museum List of Inscriptions on Pottery, Wood, and Stone*

TABLE 2. *Ninety Ostraca (Letters, Accounts, Lists, Abecedary)*

Museum/Library Number; Acquisition Source	Place and Date of Discovery/Acquisition	Initial Publications	Fitzmyer/Kaufman *Aramaic Bibliography*
1. Berlin P. 1137; Adolf Erman	Elephantine; 1886	CIS, vol. 2.1, 137 = Sachau 78 (Pl. 65,3) = *KAI* 270 = Gibson 123	B.3.c.47
2. Berlin P. 8763; Ludwig Borchardt	Elephantine; 1897	Sayce-Cowley P = *RÉS* 496, 1804	B.3.c.42/48 APO 77/1
3. Berlin P. 10678; Carl Schmidt	Edfu; 1905	Sachau 75 (Pl. 62,1) = *RÉS* 1794	B.3.f.33.1
4. Berlin P. 10679; Otto Rubensohn	Elephantine; 1905	Sachau 77 (Pl. 64,2) = *RÉS* 1792	B.3.c.21
5. Berlin P. 10680; Rubensohn	Elephantine; 1905	Sachau 78 (Pl. 65,2) = *RÉS* 1795	B.3.c.23
6. Berlin P. 10852; Schmidt	Edfu	Sachau 75 (Pl. 62,2)	B.3.f.33.2
7. Berlin P. 10964; Schmidt	Edfu; 1906	Sachau 81 (Pl. 68,1)	B.3.f.33.3
8. Berlin P. 10974; Schmidt	Edfu; 1906	Sachau 81 (Pl. 68,2)	B.3.f.33.4
9. Berlin P. 11363; Friedrich Zucker	Elephantine; 1908	Sachau 77 (Pl. 64,3)	B.3.c.48 APO 79/3

TABLE 2. *Ninety Ostraca (Continued)*

Museum/Library Number; Acquisition Source	Place and Date of Discovery/Acquisition	Initial Publications	Fitzmyer/Kaufman *Aramaic Bibliography*
10. Berlin P. 11365; Zucker	Elephantine; 1908	Sachau 80 (Pl. 67,5)	
11. Berlin P. 11366; Zucker	Elephantine; 1908	Sachau 84 (Pl. 71,1+2)	
12. Berlin P. 11368; Zucker	Elephantine; 1908	Sachau 80 (Pl. 67,7)	B.3.c.48 APO 80/7
13. Berlin P. 11369; Rubensohn	Elephantine; 1906–1907	Sachau 76 (Pl. 63,3)	B.3.c.48 APO 76/3
14. Berlin P. 11370; Rubensohn	Elephantine; 1906–1907	Sachau 80 (Pl. 67,4)	
15. Berlin P. 11371; Rubensohn	Elephantine; 1906–1907	Sachau 79 (Pl. 66,1)	
16. Berlin P. 11372; Rubensohn	Elephantine; 1906–1907	unpublished	
17. Berlin P. 11373; Rubensohn	Elephantine; 1906–1907	Sachau 79 (Pl. 66,3)	
18. Berlin P. 11374; Rubensohn	Elephantine; 1906–1907	Sachau 79 (Pl. 66,5)	B.3.c.48 APO 79/5
19. Berlin P. 11375; Rubensohn	Elephantine; 1906–1907	Sachau 80 (Pl. 67,2)	B.3.c.48 APO 80/2
20. Berlin P. 11376; Rubensohn	Elephantine; 1906–1907	Sachau 84 (Pl. 71,5)	B.3.c.48 APO 84/5
21. Berlin P. 11377; Rubensohn	Elephantine; 1906–1907	Sachau 76 (Pl. 63,5)	B.3.c.48 APO 76/5
22. Berlin P. 11378; Rubensohn	Elephantine; 1906–1907	Sachau 80 (Pl. 67,3)	B.3.c.48 APO 80/3
23. Berlin P. 11379; Rubensohn	Elephantine; 1906–1907	Sachau 84 (Pl. 71,7)	B.3.c.43
24. Berlin P. 11380; Rubensohn	Elephantine; 1906–1907	Sachau 78 (Pl. 65,1)	B.3.c.48 APO 78/1
25. Berlin P. 11381; Rubensohn	Elephantine; 1906–1907	Sachau 84 (Pl. 71,3)	
26. Berlin P. 11382; Rubensohn	Elephantine; 1906–1907	Sachau 80 (Pl. 67,1)	B.3.c.48 APO 80/1
27. Berlin P. 11453; Rubensohn	Elephantine; 1906–1907	Sachau 79 (Pl. 66,4)	B.3.c.48 APO 79/4
28. Berlin P. 12800 (= 17800)	Elephantine?	unpublished	
29. Berlin P. 17801	Elephantine?	unpublished	
30. Berlin P. 17802	Elephantine?	unpublished	
31. Berlin P. 17818	Elephantine?	unpublished	
32. Berlin P. 17819	Elephantine?	unpublished	
33. Berlin P. 17820	Elephantine?	unpublished	
34. Berlin P. 17821	Elephantine?	unpublished	
35. Bodleian Library, Oxford, Aramaic Inscription (lost) 1; Archibald Henry Sayce	Elephantine; 1901	Sayce-Cowley M = *RÉS* 492, 1800	B.3.c.36
36. Bodleian Aramaic Inscription 2; Sayce	Elephantine; 1901	Sayce-Cowley N = *RÉS* 493, 1801	B.3.c.37
37. Bodleian Aramaic Inscription 3; Sayce	Elephantine; 1901	Sayce-Cowley O = *RÉS* 494, 1802	B.3.c.48 APE 93
38. Bodleian Aramaic Inscription 4; Sayce	Elephantine?	Sayce-Cowley Q = *RÉS* 497, 1805	B.3.c.29
39. Bodleian Aramaic Inscription 6; Sayce	Unknown, 1914	unpublished	
40. Bodleian Aramaic Inscription 7; Sayce	Elephantine; pre-1911	*RÉS* 1793	B.3.c.20
41. British Museum 14219; Greville John Chester	Elephantine; 1875	CIS, vol. 2.1, 138 = *RÉS* 495, 1803 = *KAI* 271	B.3.c.28

TABLE 2. *Ninety Ostraca (Continued)*

Museum/Library Number; Acquisition Source	Place and Date of Discovery/Acquisition	Initial Publications	Fitzmyer/Kaufman *Aramaic Bibliography*
42. BM 14220; Chester	Elephantine; 1876	CIS, vol. 2.1, 139	B.3.c.48 APE 95
43. BM 45035; auction	Unknown; 1906	Porten and Yardeni, *Maarav* 7 (1991): 207-217	
44. BM 45036; auction	Unknown; 1906	Porten and Yardeni, *Maarav* 7 (1991): 217-219	
45. BM 133028	Unknown; 1906	Segal, *Iraq* 31 (1969): 173-174	B.3.c.35
46. Cairo JE 35468A	Elephantine; 1902	*RÉS* 1295 = Sayce, *PSBA* 31 (1909):154	B.3.c.30
47. Cairo JE 35468B	Elephantine; 1902	*RÉS* 1296 = *ESE*, vol. 3, 121f = Aimé-Giron 3	B.3.c.31
48. Cairo JE 35468C	Elephantine; 1902	*RÉS* 1297 = *ESE*, vol. 3, 122f = Aimé-Giron 4	B.3.c.32
49. Cairo JE 43464A; Zucker	Elephantine; 1908	Sachau 76 (Pl. 63,2)	B.3.c. 41
50. Cairo JE 43464B; Rubensohn	Elephantine; 1906–1907	Sachau 76 (Pl. 63,1)	B.3.c.22
51. Cairo JE 43464C; Rubensohn	Elephantine; 1906–1907	Sachau 76 (Pl. 63,4)	B.3.c.48 APO 76/4
52. Cairo JE 43464D; Zucker	Elephantine; 1908	Sachau 80 (Pl. 67,6)	B.3.c.48 APO 80/6
53. Cairo JE 49624	Elephantine; 1925	Aimé-Giron, *ASAE* 26 (1926): 27-29	B.3.c.28
54. Cairo JE 49625	Elephantine; unknown	Aimé-Giron, *ASAE* 26 (1926): 29-31	B.3.c.48 Aimé-Giron
55. Cairo JE 49635	Elephantine; 1924	Aimé-Giron, *ASAE* 26 (1926): 23-27	B.3.c.27
56. Cairo JE 64738; Lacau	Edfu; 1933	Aimé-Giron 113 = *BIFAO* 38 (1939): 38-40	B.3.f.33.6
57. Cairo JE 67040; French-Polish excavations	Edfu; 1937	Aimé-Giron 120 = *BIFAO* 38 (1939): 57-63	B.3.f.33.7
58. Cambridge 131-133; Henry Thompson	Elephantine; pre-1929	Cowley, *JRAS* (1929): 107-111	B.3.c.34
59. Clermont-Ganneau 16	Elephantine; 1907	Dupont-Sommer, *ASAE* 48 (1948): 109-116	B.3.c.33
60. Clermont-Ganneau 44; Jean Clédat	Elephantine; 1907	Dupont-Sommer, *Studies Presented to G. R. Driver* (1963), pp. 53-58	B.3.c.33
61. Clermont-Ganneau 70; Clédat	Elephantine; 1907	Dupont-Sommer, *RHR* 130 (1945): 17-28 (no photo)	B.3.c.33
62. Clermont-Ganneau 125?; Clédat?	Elephantine; 1907	Lozachmeur, *Semitica* 39 (1989): 29-36; Porten and Yardeni, *JAOS* 113 (1993): 451-455	B.3.c.33
63. Clermont-Ganneau 152	Elephantine; 1908	Dupont-Sommer, *Semitica* 2 (1949):29-39	B.3.c.33
64. Clermont-Ganneau 167	Elephantine; 1908	Dupont-Sommer, *CRAI* (1947): 179-80 (no photo)	B.3.c.33
65. Clermont-Ganneau 169	Elephantine; 1908	Dupont-Sommer, *Revue des Études Sémitiques et Babyloniaca* (1942–1945): 65-75	B.3.c.33

TABLE 2. *Ninety Ostraca (Continued)*

Museum/Library Number; Acquisition Source	Place and Date of Discovery/Acquisition	Initial Publications	Fitzmyer/Kaufman *Aramaic Bibliography*
66. Clermont-Ganneau 175	Elephantine; 1908	Dupont-Sommer, *CRAI* (1947): 181-185 (no photo)	B.3.c.33
67. Clermont-Ganneau 186	Elephantine; 1908	Dupont-Sommer, *RSO* 32 (1957): 403-409	B.3.c.33
68. Clermont-Ganneau 204	Elephantine	Dupont-Sommer, *MAI 15* (1960): 68-71 (no photo)	B.3.c.33
69. Clermont-Ganneau 228; Gautier	Elephantine; 1908–1909	Lozachmeur, *Semitica* 21 (1971): 81-93	B.3.c.33
70. Clermont-Ganneau 277; Gautier	Elephantine; 1908–1909	Dupont-Sommer, *RHR* 128 (1944): 28-39	B.3.c.33
71. Columbia University Ostracon 97.4.18	Oxyrhynchus, 1897	unpublished	
72. Elephantine Storeroom 1424	Elephantine; 1978	unpublished	
73. Elephantine Storeroom 1661	Elephantine; 1979	Maraqten, *MDAIK* 43 (1987): 170-171	
74. Elephantine Storeroom 2293	Elephantine; 1988	unpublished	
75. Louvre E. 23566; Raymond Weill	Kom el-Ahmar; 1912	*RÉJ* 65 (1913): 16-23	
76. Munich, Staatliche Sammlung Ägyptischer Kunst, 898; Mook acquisition	Elephantine; pre-1880	*RÉS* 1298 = *ESE*, vol. 3, 19-20, 21-22	B.3.c.24
77. Munich ÄS 899; Mook acquisition	Elephantine; pre-1880	*RÉS* 1299 = *ESE*, vol. 3, 19-21	B.3.c.25
78. Pontifical Biblical Institute, Jerusalem	Elephantine?	Lemaire and Lozachmeur, *Semitica* 27 (1977): 99-103	B.3.c.26
79. Pushkin Museum, Moscow I.i.b 1029; Vladimir Golénischeff	Elephantine; 1888-1889	CIS, vol. 2.1, 154	B.3.c.40
80. Pushkin I.i.b 1030; Golénischeff	Elephantine; 1888-1889	CIS, vol. 2.1, 155	B.3.c.39
81. Saqqara Antiquities Service Register, 1525	North Saqqara	Segal, *North Saqqâra*, No. VII	
82. Spiegelberg Ostracon (lost)	Unknown	Lidzbarski, *OLZ* 30 (1927): 1043-1044 (no photo)	B.3.f.32
83. Strasbourg Aramaic 2	Edfu?; pre-1908	*RÉS* 1301 = *ESE*, vol. 3, 25-26	B.3.c.45
84. Strasbourg Aramaic 3	Edfu?; pre-1908	*RÉS* 1300 = *ESE*, vol. 3, 22-25	B.3.c.44
85. Strasbourg Aramaic 6	Edfu?; pre-1908	*ESE*, vol. 3, 298-301	B.3.c.46
86. Vienna Aramaic Ostracon 1; Hermann Junker	Edfu?; 1911	*NESE*, vol. 3, pp. 39-43	B.3.f.40
87. Vienna Aramaic Ostracon 2; Junker	Elephantine?; 1911	*NESE*, vol. 3, pp. 34-39	B.3.c.19
88. Vienna Aramaic Ostracon 3; Junker	Edfu?; 1911	*NESE*, vol. 3, pp. 43-47	B.3.f.40
89. Vienna Aramaic Ostracon 4; Junker	Edfu?; 1911	*NESE*, vol. 3, pp. 48-57	B.3.f.40
90. Vienna Aramaic Ostracon 5; Wessely estate	Edfu?; 1933	Porten and Yardeni, *Maarav* 7 (1991): 220-225	

TABLE 2a. *Fifteen Lists (included in above)*

Museum/Library Number; Acquisition Source	Place and Date of Discovery/Acquisition	Initial Publications	Fitzmyer/Kaufman *Aramaic Bibliography*
1. Berlin P. 11373; Otto Rubensohn	Elephantine; 1906–1907	Sachau 79 (Pl. 66,3)	
2. Berlin P. 11374; Rubensohn	Elephantine; 1906–1907	Sachau 79 (Pl. 66,5)	B.3.c.48 APO 79/5
3. Berlin P. 11375; Rubensohn	Elephantine; 1906–1907	Sachau 80 (Pl. 67,2)	B.3.c.48 APO 80/2
4. Berlin P. 11376; Rubensohn	Elephantine; 1906–1907	Sachau 84 (Pl. 71,5)	B.3.c.48 APO 84/5
5. Berlin P. 11381; Rubensohn	Elephantine; 1906–1907	Sachau 84 (Pl. 71,3)	
6. Berlin P. 11453; Rubensohn	Elephantine; 1906–1907	Sachau 79 (Pl. 66,4)	B.3.c.48 APO 79/4
7. Berlin P. 17801	Elephantine?	unpublished	
8. Berlin P. 17820	Elephantine?	unpublished	
9. British Museum, London 45036; auction	Unknown; 1906	Porten and Yardeni, *Maarav* 7 (1991): 217-219	
10. Egyptian Museum, Cairo JE 35468C	Elephantine; 1902	*RÉS* 1297 = *ESE*, vol. 3, 122f = Aimé-Giron 4	B.3.c.32
11. Cairo 64738; Pierre Lacau	Edfu; 1933	Aimé-Giron 113 = *BIFAO* 38 (1939): 38-40	B.3.f.33.6
12. Elephantine Storeroom 1424	Elephantine; 1978	unpublished	
13. Elephantine Storeroom 2293	Elephantine; 1988	unpublished	
14. Pushkin Museum, Moscow I.i.b 1029; Vladimir Golénischeff	Elephantine; 1888-1889	CIS, vol. 2.1, 154	B.3.c.40
15. Pushkin I.i.b 1030; Golénischeff	Elephantine; 1888-1889	CIS, vol. 2.1, 155	B.3.c.39

TABLE 2b. *Thirteen Accounts (included in above)*

1. Berlin P. 10678; Carl Schmidt	Edfu; 1905	Sachau 75 (Pl. 62,1) = *RÉS* 1794	B.3.f.33.1
2. Berlin P. 10852; Schmidt	Edfu	Sachau 75 (Pl. 62,2)	B.3.f.33.2
3. Berlin P. 10974; Schmidt	Edfu; 1906	Sachau 81 (Pl. 68,2)	B.3.f.33.4
4. Berlin P. 11363; Friedrich Zucker	Elephantine; 1908	Sachau 77 (Pl. 64,3)	B.3.c.48 APO 79/3
5. Egyptian Museum, Cairo 67040; French-Polish excavations	Edfu; 1937	Aimé-Giron 120 = *BIFAO* 38 (1939): 57-63	B.3.f.33.7
6. Columbia University Ostracon	Oxyrhynchus, 1897	unpublished	
7. Louvre E. 23566; Raymond Weill	Kom el-Ahmar; 1912	*RÉJ* 65 (1913): 16–23	
8. Strasbourg Aramaic 2	Edfu?; pre-1908	*RÉS* 1301 = *ESE*, vol. 3,25–26	B.3.c.45
9. Strasbourg Aramaic 6	Edfu?; pre-1908	*ESE*, vol. 3, 298–301	B.3.c.46
10. Vienna Aramaic Ostracon 1; Hermann Junker	Edfu?; 1911	*NESE*, vol. 3, pp. 39–43	B.3.f.40
11. Vienna Aramaic Ostracon 3; Junker	Edfu?; 1911	*NESE*, vol. 3, pp. 43–47	B.3.f.40
12. Vienna Aramaic Ostracon 5; Wessely estate	Edfu?; 1933	Porten and Yardeni, *Maarav* 7 (1991): 220–225	
13. Spiegelberg Ostracon (lost)	Unknown	Lidzbarski, *OLZ* 30 (1927): 1043–1044 (no photo)	B.3.f.32

TABLE 3. *Twenty-six Jar Inscriptions*

Museum/Library Number; Acquisition Source	Place and Date of Discovery/Acquisition	Initial Publications	Fitzmyer/Kaufman *Aramaic Bibliography*
1. Berlin P. 11359 (= P. 17804); Ludwig Borchardt	Abu Sir; 1907	Sachau 85 (Pl. 72, 1)	
2. Berlin P. 11360 (= P. 17803 + 17805); Ludwig Borchardt	Abu Sir; 1907	Sachau 83 (Pl. 70, 5)	
3. Berlin P. 11388; Otto Rubensohn	Elephantine; 1906–1908	Sachau 84 (Pl. 71, 9) = *Krug.* 34	B.3.c.49
4. Berlin P. 11412; Rubensohn	Elephantine; 1906–1908	Sachau 83 (Pl. 70,3) = *Krug.* 18	B.3.c.49
5. Berlin P. 11416; Rubensohn	Elephantine; 1906–1908	Sachau 86 (Pl. 73,14) = *Krug.* 65	B.3.c.49
6. Berlin P. 11422; Rubensohn	Elephantine; 1906–1908	Sachau 86 (Pl. 73,12)	B.3.c.49
7. Berlin P. 11430; Rubensohn	Elephantine; 1906–1908	Sachau 84 (Pl. 71,11) = *Krug.* 36	B.3.c.49
8. Berlin P. 11442; Rubensohn	Elephantine; 1906–1908	Sachau 82 (Pl. 69,6) = *Krug.* 6	B.3.c.49
9. Berlin P. 11444; Rubensohn	Elephantine; 1906–1908	Sachau 86 (Pl. 73,10) = *Krug.* 55	B.3.c.49
10. Berlin P. 11453 *bis*; Rubensohn	Elephantine; 1906–1908	Sachau 84 (Pl. 71,6) = *Krug.* 32	B.3.c.49
11. Berlin P. 11459; Rubensohn	Elephantine; 1906–1908	Sachau 85 (Pl. 72,17)	B.3.c.49
12. Ägyptisches Museum, Berlin P. 17807; Rubensohn	Elephantine; 1906–1908	unpublished	
13. ÄM, Berlin 18429; Rubensohn	Elephantine; 1906–1908	Sachau 82 (Pl. 69,15), 87 (Pl. 74,1) = *Krug.* 15	
14. ÄM, Berlin 18432; Rubensohn	Elephantine	Sachau 82 (Pl. 69,14), 87 (Pl. 74,2) = *Krug.* 14	
15. Egyptian Museum, Cairo JE 43198; Rubensohn	Saqqara; 1911	Aimé-Giron 2	B.3.e.1
16. Cairo JE 43464G; Rubensohn	Elephantine; 1906–1908	Sachau 84 (Pl. 71,4) = *Krug.* 31	B.3.c.49
17. Cairo JE 43464H; Rubensohn	Elephantine; 1906–1908	Sachau 84 (Pl. 71,8) = *Krug.* 33	B.3.c.49
18 Cairo JE 43464J[b]; Rubensohn	Elephantine; 1906–1908	Sachau 85 (Pl. 72,19) = *Krug.* 53	B.3.c.49
19. Cairo JE 53040; Rubensohn	Edfu; 1929	Aimé-Giron 4*bis*	B.3.f.33.5
19a. Cairo JE 63378	South Saqqara	Aimé-Giron 121 = *BIFAO* 38 (1939): 63 (omitted; not Aramaic)	
20. Elephantine Storeroom 1596	Elephantine; 1979	Maraqten, *MDAIK* 43 (1987): 170	
21. Elephantine Storeroom 1597	Elephantine; 1979	Maraqten, *MDAIK* 43 (1987): 170	
22. Saqqara Antiquities Service Register 725	North Saqqara	Segal, *North Saqqâra*, No. I	
23. Saqqara Antiquities Service Register 2189	North Saqqara	Segal, *North Saqqâra*, No. XVI	
24. Saqqara Antiquities Service Register 4371	North Saqqara	Segal, *North Saqqâra*, No. XXVI	
25. Saqqara Antiquities Service Register 5557	North Saqqara	Segal, *North Saqqâra*, No. XXII	
26. Saqqara Antiquities Service Register (unknown number)	North Saqqara	Bresciani, *EVO* 3 (1980): 16	B.3.f.9

TABLE 4. *Two Stone Plaques*

Museum/Library Number; Acquisition Source	Item Description	Place and Date of Discovery	Initial Publications	Fitzmyer/ Kaufman
1. Ashmolean Museum, Oxford, Aramaic Ostracon 1	Limestone plaque dated 19 Aug. 403 BCE	Memphis; pre-1909	Cowley, in Petrie, *Apries*, pp. 12-13; Lemaire, *Semitica* 37 (1987): 52-55	B.3.e.11
2. Berlin P. 11385; Rubensohn	Opisthographic granite fragment with six names	Elephantine; 1906–1907	Sachau 79 (Pl. 66,2)	B.3.c.50

TABLE 5. *Six Wooden Pieces (not including Mummy Labels)*

1. Ägyptisches Museum, Berlin 11361; Friedrich Zucker	Opisthographic fragment with hole at top	Elephantine; 1907–1908	Sachau 83 (Pl. 70,15)	
2. ÄM, Berlin 18468 (Sachau: incorrectly 18462); Otto Rubensohn	Mummy label with string; name and title	Elephantine; 1906–1907	Sachau 84 (Pl. 71,12)	B.3.c.53
3. ÄM, Berlin 19435; Zucker	Palette fragment?; personal name	Elephantine; 1907–1908	Sachau 81 (Pl. 68,3) = Aimé-Giron, *BIFAO* 34 (1934): 86-87	B.3.c.54
4. Brooklyn Museum 16.99; Charles E. Wilbour	Palette; obscure inscription	Elephantine; 1893	Aimé-Giron 119 = *BIFAO* 38 (1939): 47-57	
5. Louvre AF 11016	Opisthographic palette; accounts	Provenance unknown	Lemaire, *Semitica* 37 (1987): 47-55	B.3.f.35
6. Medinet Maadi (Narmuti)	Handled stamp; name + verb	Medinet Maadi (Narmuti); 1966	Bresciani, *Medinet Maadi*, 30-32	

TABLE 6. *Six Seals and Bullae (not including Wooden Pieces)*

1. Aimé-Giron; personally acquired	Eight-sided cone	Provenance unknown	Aimé-Giron 116 = *BIFAO* 38 (1939): 43-45	
2. Aimé-Giron; personally acquired	Light, striped, ellipsoidal agate cylinder	Provenance unknown; 1934	Aimé-Giron 117 = *BIFAO* 38 (1939): 45-47	B.7.1.34
3. Bodleian Library, Oxford Sigill. aram. VIII., lap. insc. impr.	Bulla	Provenance unknown	Driver, *Aramaic Documents*, 4, n. 1	B.7.1.66
4. Egyptian Museum, Cairo JE 25225	Quartz scaraboid seal	Saqqara?; 1882	CIS, vol. 2.1, 124 = Herr 1	B.7.1.157
5. Israel Museum, Jerusalem 71.46.91	Black agate scaraboid seal	Provenance unknown; pre-1954	Reifenberg, *IEJ* 4 (1954): 139	
6. Pushkin Museum, Moscow, Seal N I, 2B 255; Vladimir Golénischeff	Chalcedony scaraboid seal	Provenance unknown; pre-1868	CIS, vol. 2.1, 140 = Herr 6	B.7.1.64

TABLE 7. *Three Statuettes*

Museum/Library Number; Acquisition Source	Item Description	Place and Date of Discovery	Initial Publications	Fitzmyer/ Kaufman
1. Egyptian Museum, Cairo JE 31919	Red granite headless statue with name	Provenance unknown; 1897	*RÉS* 965 = *ESE*, vol. 3, 117-18	
2. Cairo JE 35562; Archibald Henry Sayce	Sandstone statue with fragmentary name	Qubbet el-Hawa; 1889	Maspero, *ASAE* 3 (1902): 96; Daressy, *ASAE* 17 (1917): 81-85; Ronzevalle, *ASAE* 17 (1917): 270-271	
3. Pisa; personally acquired	Clay statuette with lament	Provenance unknown	Bresciani, *Hommages Dupont-Sommer*, pp. 5-8	B.3.f.31 "possibly a forgery"

TABLE 8. *Five Libation Bowls*

1. Brooklyn Museum 54.50.32; Charles Edwin Wilbour Fund	Silver bowl with dedication	Tell el-Maskhuta pre-1956	Rabinowitz, *JNES* 15 (1956): 4-5 = Grelot 79	B.3.f.12
2. Brooklyn Museum 54.50.34; Wilbour Fund	Silver bowl with dedication	Tell el-Maskhuta pre-1956	Rabinowitz, *JNES* 15 (1956): 5-9 = Grelot 78 = Gibson 25	B.3.f.12
3. Brooklyn Museum 54.50.36; Wilbour Fund	Silver bowl with dedication	Tell el-Maskhuta pre-1956	Rabinowitz, *JNES* 15 (1956): 2–4	B.3.f.12
4. Brooklyn Museum 57.121; Wilbour Fund	Silver bowl with dedication	Tell el-Maskhuta pre-1956	Rabinowitz, *JNES* 18 (1959): 154-156; Honeyman, *JNES* 19 (1960): 40-41	B.3.f.12
5. Stockholm, Sweden; currently in Carl Kempe collection; Robert Erskine	Silver bowl with name	Provenance unknown; c. 1956	Bivar, *BSOAS* 24 (1961): 189–199; Hinz, 237	B.3.f.38

TABLE 9. *Nine Mummy Labels*

1. Ägyptisches Museum, Berlin 18464; Otto Rubensohn	Wooden	Elephantine; 1906–1907	Sachau 84 (Pl. 71,13)	B.3.c.52
2. Egyptian Museum, Cairo JE 54157; Gustave Jéquier	Ceramic; inscribed on convex	South Saqqara; 1929–1930	Aimé-Giron 109	B.3.e.27
3. Cairo JE 54158; Jéquier	Ceramic	South Saqqara; 1929–1930	Aimé-Giron 111b (see Aimé-Giron 111a)	B.3.e.27
4. Cairo JE 54159; Jéquier	Ceramic; inscribed on convex	South Saqqara; 1929–1930	Aimé-Giron 105	B.3.e.27
5. Cairo JE 54160; Jéquier	Ceramic	South Saqqara; 1929–1930	Aimé-Giron 112b (see Aimé-Giron 112a)	B.3.e.27
6. Cairo JE 54161; Jéquier	Ceramic	South Saqqara; 1929–1930	Aimé-Giron 110b (see Aimé-Giron 110a)	B.3.e.27
7. Cairo JE 55033; Jéquier	Limestone	South Saqqara; 1929–1930	Aimé-Giron 102 (see Aimé-Giron 96, 108)	B.3.e.27
8. Lost; Jéquier	Stone	South Saqqara; 1930	Aimé-Giron 118 = *BIFAO* 38 (1939): 46	B.3.3.20
9. Cairo JE 63379	Wooden	South Saqqara	unpublished	

TABLE 10. *Twenty-two Inscribed Sarcophagi*

Museum/Library Number; Acquisition Source	Item Description	Place and Date of Discovery	Initial Publications	Fitzmyer/ Kaufman
1. Aswan Museum 2605; El-Hetta	Painted sandstone anthropoid sarcophagus; at base, engraved inscription	Aswan; 1963	Kornfeld, *WZKM* 61 (1967): 9-10, 12-13	B.3.f.4
2. Aswan Museum 2606; El-Hetta	Painted sandstone anthropoid sarcophagus; at base, engraved inscription	Aswan; 1963	Kornfeld, *WZKM* 61 (1967): 10-11, 13	B.3.f.4
3. Aswan Museum 2607; El-Hetta	Painted sandstone female anthropoid sarcophagus; at base, engraved inscription	Aswan; 1963	Kornfeld, *WZKM* 61 (1967): 11-14	B.3.f.4
4. Egyptian Museum, Cairo JE 55213; Gustave Jéquier	Ceramic coffin lid	South Saqqara; 1929–1930	Aimé-Giron 101	B.3.e.27
5. Cairo JE 55214a, b; Jéquier	Ceramic coffin lid; left exterior	South Saqqara; 1928–1929	Aimé-Giron 104a, c	B.3.e.27
6. Cairo JE 55215a, b; Jéquier	Ceramic coffin lid; left exterior	South Saqqara; 1929–1930	Aimé-Giron 103a, c	B.3.e.27
7. Cairo JE 55217; Jéquier (same vessel as JE 55224)	Ceramic coffin lid	South Saqqara; 1929–1930	Aimé-Giron 97a	B.3.e.27
8. Cairo JE 55218; Jéquier	Ceramic coffin left exterior	South Saqqara; 1928–1929	Aimé-Giron 99 = Grelot 76	B.3.e.27
9. Cairo JE 55219; Jéquier	Ceramic coffin left exterior	South Saqqara; 1929–1930	Aimé-Giron 111a (see Aimé-Giron 111b)	B.3.e.27
10. Cairo JE 55220; Jéquier	Ceramic coffin left exterior	South Saqqara; 1929–1930	Aimé-Giron 110a (see Aimé-Giron 110b)	B.3.e.27
11. Cairo JE 55221; Jéquier (same vessel as JE 55222)	Ceramic coffin right exterior	South Saqqara; 1929–1930	Aimé-Giron 100b	B.3.e.27
12. Cairo JE 55222; Jéquier (same vessel as JE 55221)	Ceramic coffin lid	South Saqqara; 1929–1930	Aimé-Giron 100a	B.3.e.27
13. Cairo JE 55223; Jéquier	Ceramic coffin right interior	South Saqqara; 1929-1930	Aimé-Giron 112a (see Aimé-Giron 112b)	B.3.e.27
14. Cairo JE 55224; Jéquier (same vessel as JE 55217)	Ceramic coffin left exterior	South Saqqara; 1929–1930	Aimé-Giron 97b	B.3.e.27
15. Cairo JE 55225; Jéquier	Ceramic coffin exterior	South Saqqara; 1929–1930	Aimé-Giron 106	B.3.e.27
16. Cairo JE 55226; Jéquier (same vessel as JE 55227)	Foot of ceramic coffin	South Saqqara; 1929–1930	Aimé-Giron 96c	B.3.e.27
17. Cairo JE 55227; Jéquier (same vessel as JE 55226)	Ceramic coffin lid	South Saqqara; 1929–1930	Aimé-Giron 96a, b (see Aimé-Giron 102)	B.3.e.27
18. Cairo JE 55228; Jéquier	Ceramic coffin left exterior	South Saqqara; 1929–1930	Aimé-Giron 98	B.3.e.27
19. Cairo JE 55245; Jéquier	Ceramic coffin lid	South Saqqara; 1928–1929	Aimé-Giron 95	B.3.e.27

TABLE 10. *Twenty-two Inscribed Sarcophagi (Continued)*

Museum/Library Number; Acquisition Source	Item Description	Place and Date of Discovery	Initial Publications	Fitzmyer/ Kaufman
20. Cairo JE 55247; Jéquier	Foot of ceramic coffin	South Saqqara; 1928–1929	Aimé-Giron 108 (see Aimé-Giron 102)	B.3.e.27
21. Cairo JE 63380; Jéquier	Wooden fragment	South Saqqara; 1929–1930	Aimé-Giron 115 = *BIFAO* 38 (1939): 43	B.3.3.21
22. Disintegrated; Jéquier	Wooden lid	South Saqqara; 1929–1930	Aimé-Giron 107	

TABLE 11. *Fourteen Tombstones and One Memorial Stela*

1. Ägyptisches Museum, Berlin 18502	Limestone plaque with name	Abu Sir; 1907	Sachau 87 (pl. 74,4)	B.3.c.51
2. Greco-Roman Museum, Alexandria 5904; Evaristo Breccia	Limestone; painted inscription	El-Ibrahimiya (Alexandria); 1906	*RÉS* 798	B.3.f.39.3
3. Alexandria 18361; Breccia	Limestone; painted inscription	El-Ibrahimiya (Alexandria); 1906	*RÉS* 797	B.3.f.39.1
4. Alexandria, number not certain; Breccia	Tombstone; painted inscription	El-Ibrahimiya (Alexandria); 1906	*RÉS* 799	
5. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 123-129; Kornfeld, *Kairos* 18 (1976): 58	B.3.f.41
6. Edfu Storeroom	Reused offering table; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 129-130	B.3.f.41
7. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 131; *NESE*, vol. 3, pp. 64-65	B.3.f.41
8. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 131-132	B.3.f.41
9. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 132-133	B.3.f.41
10. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 133; Lipiński, *OLP* 6-7 (1975–1976): 382ff; *NESE*, vol. 3, pp. 63-64	B.3.f.41
11. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 134	B.3.f.41
12. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 134-135	B.3.f.41
13. Edfu Storeroom	Tombstone; incised inscription	Edfu	Kornfeld, *AÖAW* 110 (1973): 135; *AÖAW* 111 (1974): 376-378	B.3.f.41
14. Luxor Museum Storeroom (uncollated); Taher	Sandstone; incised inscription	Hagir Esna; 1971	Kornfeld, *AÖAW* 111 (1974): 374-376	
15. Paris; personally acquired	Memorial stela?	Provenance unknown	Aimé-Giron 110bis = Dupont-Sommer, *Syria* 33 (1956): 79-87 = Grelot 77	B.3.e.2

TABLE 12. *Five Funerary Stelae, One Offering Table, One Dedication*

Museum/Library Number; Acquisition Source	Item Description	Place and Date of Discovery	Initial Publications	Fitzmyer/ Kaufman
1. Berlin (Gipsformerei 939); Travers; destroyed in World War II	Stela; 1 register + hieroglyphic inscription + 2 registers + 4-line Aramaic inscription	Saqqara; pre-1877	CIS, vol. 2.1, 122 = *KAI* 267 = Grelot 85 = Gibson 23	B.3.3.22
2. Brussels (Musées Royaux d'Art et d'Histoire E.4716); Jean Capart and Franz Cumont	Stela	Provenance unknown; 1907	*RÉS* 1788; Lipiński, *CdÉ* 50 (1975): 93-104	B.3.e.29
3. Carpentras; Rigord	Stela; 2 registers + 4-line inscription	Provenance unknown; 1704	CIS, vol. 2.1, 141 = *KAI* 269 = Grelot 86 = Gibson 24	B.3.f.18
4. Saqqara; Cecil M. Firth	Fragmentary stela; 1-line inscription	Saqqara; 1926?	Aimé-Giron 114 = *BIFAO* 38 (1939): 40-43	
5. Vatican XI.32.21; Charles Lenormant	Stela; register + 1-line inscription + register	Provenance unknown; 1860	CIS, vol. 2.1, 142 = *KAI* 272	B.3.f.28
6. Louvre AO 4824; F. Auguste Mariette	Offering table; 4-line inscription	Serapeum, Memphis; 1851	CIS, vol. 2.1, 123 - Grelot 84 = *KAI* 268	B.3.e.8
7. Cairo JE 36448	Sandstone stela 6-line inscription	Aswan; pre-1903	*RÉS* 438, 1806 = Grelot 75	B.3.f.3

TABLE 13. *Fifty-one Graffiti (arranged from north to south)*

1. Giza; Imile Baraize; Egyptian Museum, Cairo, Temporary Register 29-12-28-1	1-line inscription	Sphinx column drum, 1928	Aimé-Giron 90	B.3.f.19
2. Ma'sarah; Archibald Henry Sayce	Personal name, above demotic cartouche of Achoris	Quarry south of Tura, 1886	*RÉS* 1819	B.3.f.37
3–5. Dahshur; Jacques J. M. de Morgan	3 graffiti: 1 fragment, 2 prenomina	Senwosret III pyramid	*RÉS* 1818; Aimé-Giron, p. 97, n. 1	B.3.f.36
6. Wadi Sheikh Sheikhun; Gaston Maspero and Eugène Grébaut	2-line proskynema	Large boulder near wadi entrance; 1886	CIS, vol. 2.1, 134 = RÉS 1817; *RAO* 6 (1905): 267-270	B.3.f.29
7-16. Abydos	10 proskynemata to Osiris	Seti I temple; 1868–1915	*ESE*, vol. 3, 103, No. Ag = RÉS 1368; *ESE*, vol. 3, 107, No. Al = RÉS 1364; *ESE*, vol. 3, 108, No. Ap = RÉS 608; *ESE*, vol. 3, 108, No. Aq = RÉS 1369; *ESE*, vol. 3, 109, No. As = RÉS 1370; *ESE*, vol. 3, 112, No. Bb = RÉS 1366 = Grelot 80; *ESE*, vol. 3, 113, No. Bf = RÉS 1373; Kornfeld, *AÖAW* 115 (1978): 199; *ESE*, vol. 3, 113, No. Bi = RÉS 1375; *ESE*, vol. 3, 114, No. Bk = RÉS 1376; *ESE*, vol. 3, 114, No. Bl = RÉS 1377	B.3.f.23

TABLE 13. *Fifty-one Graffiti (Continued)*

Museum/Library Number; Acquisition Source	Item Description	Place and Date of Discovery	Initial Publications	Fitzmyer/ Kaufman
17-18. Abydos	Two 4-line proskynemata (Anatolians?) (perhaps three distinct inscriptions)	Seti I temple; 1868–1915	*ESE*, vol. 3, 103, No. Aha = RÉS 1367 = Grelot 81; *ESE*, vol. 3, 103, No. Ahb = RÉS 1372 = Grelot 82; Aimé-Giron, p. 79; Dupont-Sommer, *Annuaire* (1966–1967), 119	B.3.f.23
19-24. Abydos; Ada Yardeni	4 personal names; 2 prenomina	Seti I temple; 1868–1915, 1993	*ESE*, vol. 3, 98, No. J = RÉS 1371; *ESE*, vol. 3, 107, No. Am = RÉS 1363; Kornfeld, *AÖAW* 115 (1978): 198; *ESE*, vol. 3, 109, No. Ar = RÉS 1370; *ESE*, vol. 3, 113, No. Bh = RÉS 1374; (unlocated; perhaps illusory) CIS, vol. 2.1, 133, contra Kornfeld, *AÖAW* 115 (1978): 202; 1 unpublished	B.3.f.23
25. Wadi Hammamat; J.-C. Goyon	Abecedary	Black granite; 1946	Dupont-Sommer, *RA* 41 (1947): 105-110	B.3.f.10
26-32. Wadi Abu Qwei; Arthur Weigall, Luisa Bongrani-Fanfoni	5 proskynemata; 2 personal names	Wadi inside Wadi Hammamat; 1907, 1989	Weigall, *Travels in the Upper Egyptian Deserts*, Pl. 7.15; Fanfoni-Israel, *Transeuphratène* 8 (1994): 81-93	
33-36. Gebel Abu-Gurob; Sayce	4 personal names	Between Heshan (=Hosh?) and Wadi el-Shatt er-Rigal; 1907	Sayce, *PSBA* 30 (1908): 28-29 (readings uncertain)	
37-41. Wadi el-Shatt er-Rigal; Petrie (2); Sayce (4)	4 proskynemata	Near large rock at northern entrance of wadi; 1887, c. 1890	CIS, vol. 2.1, 135, 136 = RÉS 960, 961, 962, 962 = Sayce, *RT* 17 (1895): 164, Nos. 5-6	
42. Aswan; Sayce	3 incisions of same word	Sandstone quarry	Sayce, *PSBA* 28 (1906): 174-75	
43-48. Wadi el-Hudi, Ibrahim Effendi 'Abd el-'Al (Cairo JE 71901)	5 proskynemata; 1 personal name	Stela on hill at amethyst quarries; 1939	Aimé-Giron 124 = *ASAE* 39 (1939): 351-363	B.3.f.20
49-50. Tomas; Weigall	2 personal names	Sandstone; 1906–1907	Weigall, *Report on the Antiquities of Lower Nubia*, 113 + Pl. 64.6; Aimé-Giron 92-93	B.3.f.1.2-3
51. Unknown; Henry Salt; bought by W.T. Ready, 20 June 1899	Prenomen incised	Royal dedicatory stela; provenance unknown; pre-1836	CIS, vol. 2.1, 143 = *RÉS* 490	B.3.f.17

TABLES 14-15. *Chronological List of the Discovery of Ostraca and Jar Inscriptions*

TABLE 14. *Ostraca.* Thirty-four separate finds or acquisitions between 1875 and 1988

	Dates	Item	Site	Discoverer/Acquirer	Museum/Library	Editio Princeps	Fitzmyer-Kaufman
1.	1875 (1889)	Fragmentary letter	Elephantine	Greville Chester	British Museum, London	CIS, vol. 2.1, 138	B.3.c.28
2.	1876 (1889)	Fragmentary letter	Elephantine	Chester	London	CIS, vol. 2.1, 139	B.3.c.48 APE 95
3.	pre-1880 (1915)	2 fragmentary letters	Elephantine	Friedrich Mook	Staatliche Sammlung Ägyptische Kunst, Munich	Mark Lidzbarski	B.3.c.24-25
4.	1886 (1887)	Dream letter	Elephantine	Adolf Erman	Staatliche Museen, Berlin	Julius Euting	B.3.c.47
5.	1888-1889 (1889)	2 lists	Elephantine	Vladimir S. Golénischeff	Pushkin Museum, Moscow	CIS, vol. 2.1, 154-155	B.3.c.39-40
6.	1897 (1906)	Fragmentary letter	Elephantine	Ludwig Borchardt	Berlin	Archibald Henry Sayce, Arthur Ernest Cowley	B.3.c.42/48 APO 77/1
7.	1897	Unknown	Oxyrhynchus		Columbia University	Unpublished	
8.	1900-1901 (1903)	4 letters	Elephantine	Sayce	Bodleian Library, Oxford (on permanent loan to the Ashmolean Museum, Oxford)	Cowley	B.3.c.29, 36-37, 48 APE 93
9.	1902 (1909, 1915)	2 letters (barley, *marzeah*), 1 fragmentary list	Elephantine		Egyptian Museum, Cairo	Sayce, Lidzbarski	B.3.c.33-32
10.	1905 (1911)	2 letters	Elephantine	Otto Rubensohn	Berlin	Eduard Sachau	B.3.c.21, 23
11.	1905-1906 (1911)	1 fragmentary letter; 3 accounts	Edfu	Carl Schmidt	Berlin	Sachau	B3.f.33.1-4
12.	1906 (1969)	1 fragmentary letter	Elephantine?		London	Judah Benzion Segal	B3.c.35
13.	1906 (1991)	1 letter; 1 list	Elephantine?	Rustafjaell sale at Sotheby's auction	London	Bezalel Porten, Ada Yardeni	
14.	1906-1908 (1911)	23 ostraca	Elephantine	Rubensohn, Friedrich Zucker	Berlin; Cairo	Sachau	B3.c.22, 41, 43, 48
15.	Unknown	1 list; 6 letters	Elephantine	Unknown	Berlin	Unpublished	
16.	1907-1909 (1944, 1945, 1948, 1949, 1957, 1963, 1971, 1989)	256? ostraca	Elephantine	Charles Clermont-Ganneau, Jean Clédat, Henri Gauthier	Académie des Inscriptions et Belles-Lettres, Paris	André Dupont-Sommer, Hélène Lozachmeur	B.3.c.33
17.	pre-1908 (1915)	2 accounts; 1 letter	Edfu?		Bibliothèque Nationale et Universitaire, Strasbourg	Lidzbarski	B.3.c.44-46

TABLE 14. *Ostraca (Continued)*

	Dates	Item	Site	Discoverer/Acquirer	Museum/Library	Editio Princeps	Fitzmyer-Kaufman
18.	pre-1911 (1911)	Passover letter	Elephantine	Sayce	Bodleian Library, Oxford (on permanent loan to the Ashmolean Museum, Oxford)	Sayce	B.3.c.20
19.	1911 (1978)	2 accounts; 2 letters	3 Edfu?; 1 Elephantine	Hermann Junker	Österreichische Nationalbibliothek, Vienna	Rainer Degen	B.3.c.19f.40
20.	1912 (1913)	Account	Kom el-Ahmar	Raymond Weil	Louvre	Raymond Weill	
21.	1914	Fragmentary letter	Unknown	Sayce	Bodleian Library, Oxford (on permanent loan to the Ashmolean Museum, Oxford)	Unpublished	
22.	1924 (1926)	Fragmentary letter	Elephantine		Cairo	Noel Aimé-Giron	B.3.c.27
23.	1925 (1926)	Tunic letter	Elephantine		Cairo	Aimé-Giron	B.3.c.28
24.	pre-1926 (1926)	Fragmentary letter	Elephantine		Cairo	Aimé-Giron	B.c.3.48. Aimé-Giron
25.	pre-1927	Tax receipt	Edfu?	Wilhelm Spiegelberg	Lost	Lidzbarski	B.3.f.32
26.	pre-1929 (1929)	Letter to Kaviliah	Elephantine	Herbert Thompson	Cambridge University Library	Cowley	B.3.c.34
27.	1933 (1939)	Fragmentary account	Edfu	Pierre Lacau	Cairo	Aimé-Giron	B.3.f.33.6
28.	1933 (1991)	Account	Edfu?	Carl Wessely estate	Österreichische Nationalbibliothek, Vienna	Porten and Yardeni	
29.	1937 (1939)	Account	Edfu	French-Polish excavations	Cairo	Aimé-Giron	B.3.f.33.7
30.	1966-1973	Abecedary	North Saqqara	Egypt Exploration Society	Cairo?	Judah Benzion Segal	B.3.e.25
31.	pre-1977 (1977)	Abecedary	Elephantine?		Pontifical Biblical Institute, Jerusalem	André Lemaire, Hélène Lozachmeur	B.3.c.26
32.	1978	List	Elephantine	German Archaeological Institute	Elephantine Storeroom, Aswan	unpublished	
33.	1979	Letter	Elephantine	German Archaeological Institute	Elephantine Storeroom, Aswan	Mohammed Maraqten	
34.	1988	List	Elephantine	German Archaeological Institute	Elephantine Storeroom, Aswan	unpublished	

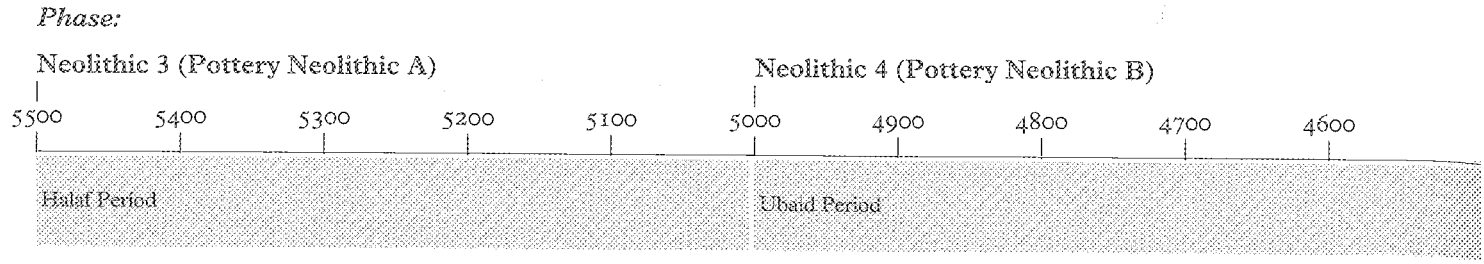
TABLE 15. *Jar Inscriptions.* Nine separate finds or acquisitions between 1906 and 1979

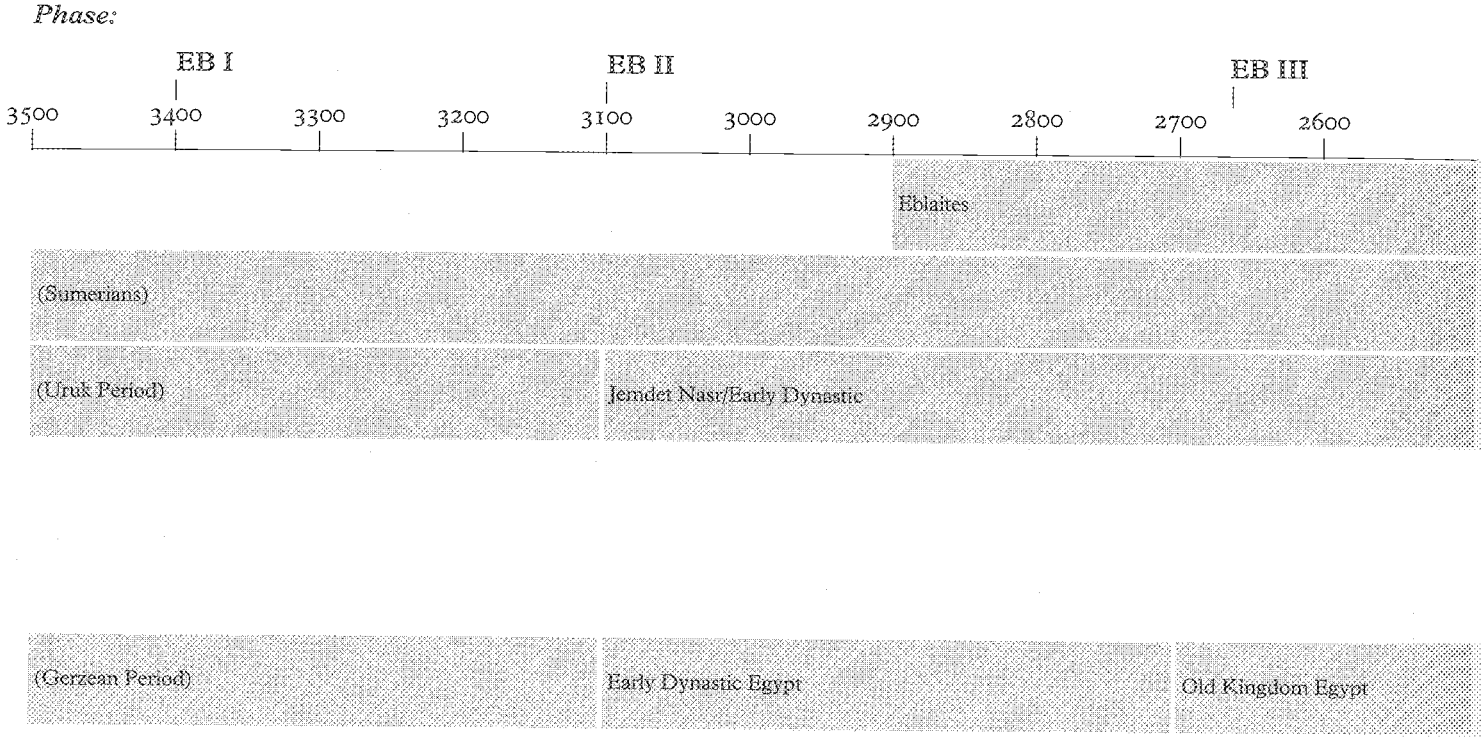
1.	1906-1908 (1911)	14 jar inscriptions	Elephantine	Otto Rubensohn	Staatliche Museen, Berlin; Egyptian Museum, Cairo	Eduard Sachau	B.3.c.49
2.	Unknown	1 jar inscription	Elephantine	Unknown	Berlin	Unpublished	
3.	1907 (1911)	2 jar inscriptions	Abu Sir (Memphis)	Ludwig Borchardt	Berlin	Sachau	
4.	1911 (1931)	1 jar inscription	Saqqara	Unknown	Cairo	Noel Aimé-Giron	B.3.c.1
4a.	Unknown (1939)	Potter's mark	South Saqqara	Cecil Mallaby Firth	Cairo	Aimé-Giron	Omitted (not Aramaic)
5.	1978-1979	Potter's mark	Saqqara	Edda Bresciani		Bresciani	B.3.f.9
6.	1929 (1931)	1 jar inscription	Edfu	Pierre Lacau	Cairo	Aimé-Giron	B.3.f.33.5
7.	1966-1973	2 jar inscriptions; 2 potter's marks	North Saqqara	Egypt Exploration Society	Saqqara Storeroom	Judah Benzion Segal	B.3.e.25
8.	pre-1987	2 jar inscriptions	Elephantine	German Archaeological Institute	Elephantine Storeroom	Mohammed Maraqten	
9.	1979	2 jar inscriptions	Elephantine	German Archaeological Institute	Elephantine Storeroom	Maraqten	

APPENDIX 2: CHRONOLOGIES

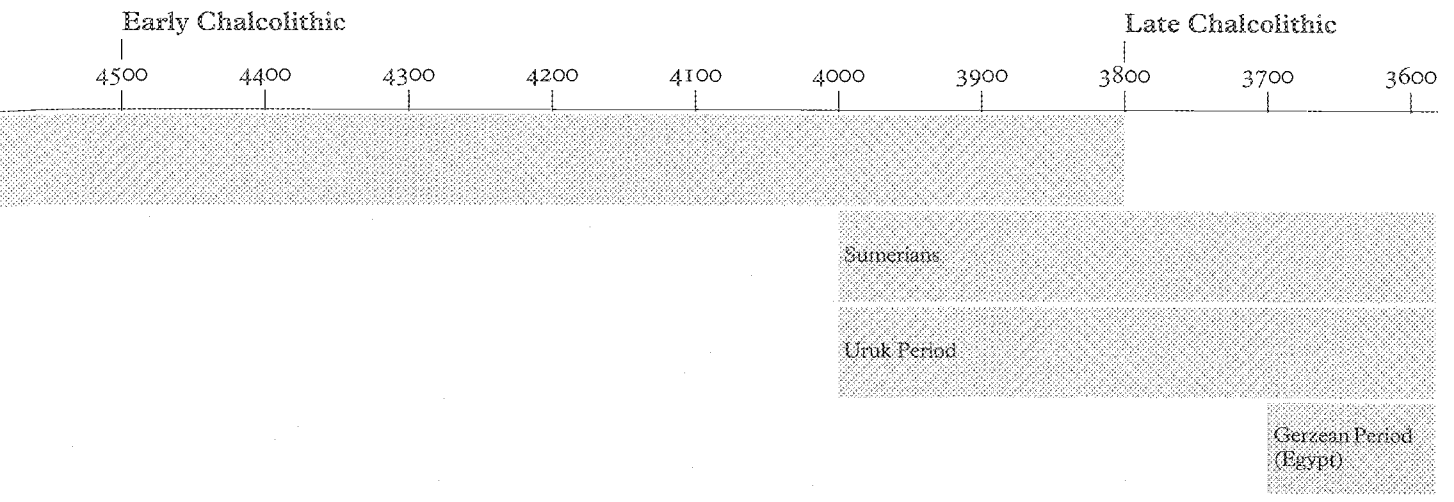
The table below provides a general chronology based on material culture and, for the later periods, historical events. The dates listed do not necessarily apply in all regions. For further discussion of dating, see "Periodization" and the survey articles on major regions (e.g., "Egypt," "Mesopotamia," "Palestine").

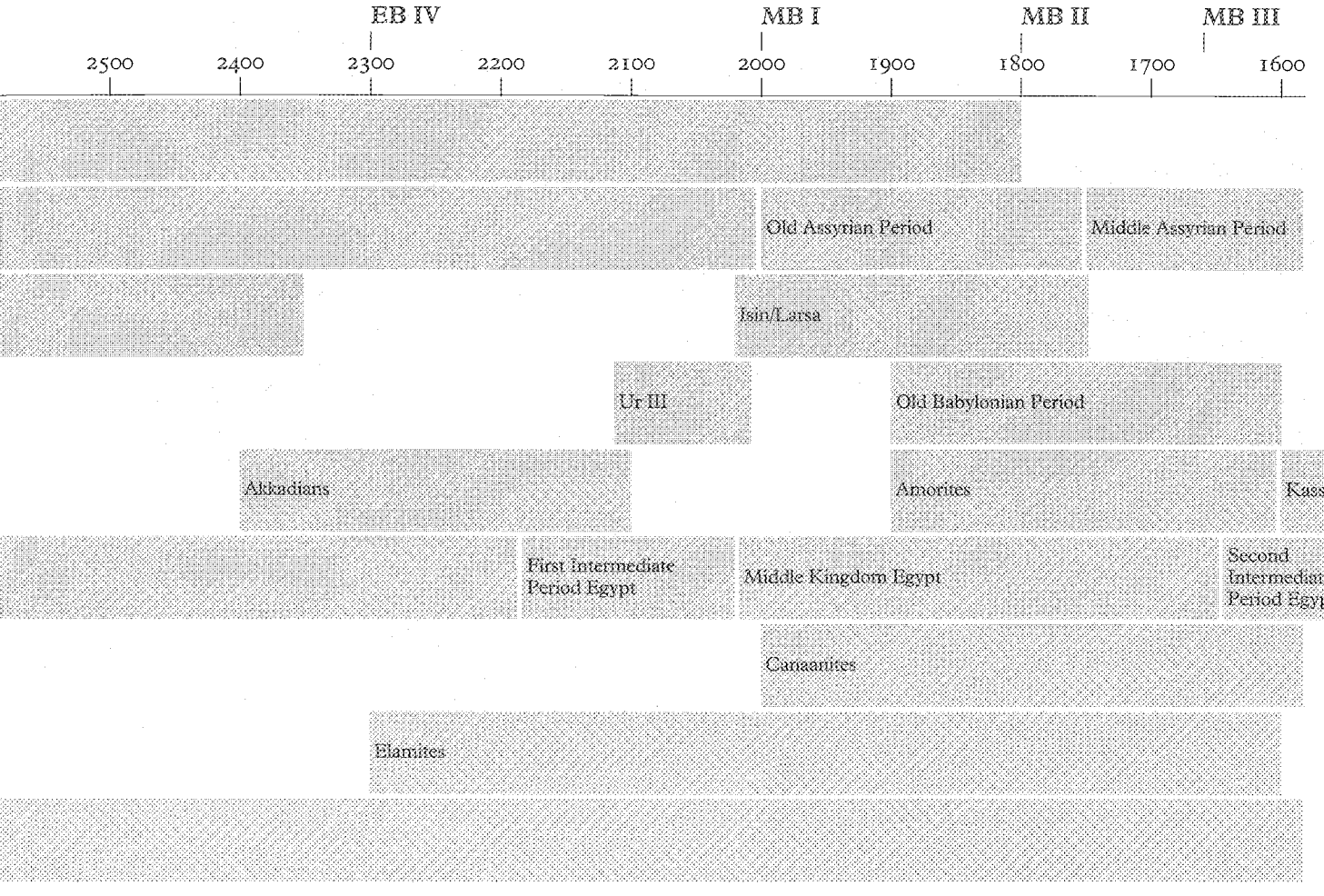
Phase	*Variants*	*Dates*
Upper Paleolithic		c. 43,000–18,000 BCE
Epipaleolithic	Mesolithic	18,000–8,500
Neolithic 1	Pre-Pottery Neolithic A	8500–7200
Neolithic 2	Pre-Pottery Neolithic B	7200–6000
Neolithic 3	Pottery Neolithic A	6000–5000
Neolithic 4	Pottery Neolithic B	5000–4500
Early Chalcolithic		4500–3800
Late Chalcolithic	Proto-Urban	3800–3400
Early Bronze IA-B		3400–3100
Early Bronze II		3100–2650
Early Bronze III		2650–2300
Early Bronze IVA-C	Intermediate Early–Middle Bronze, Middle Bronze I	2300–2000
Middle Bronze I	Middle Bronze IIA	2000–1800
Middle Bronze II	Middle Bronze IIB	1800–1650
Middle Bronze III	Middle Bronze IIC	1650–1500
Late Bronze IA		1500–1450
Late Bronze IB		1450–1400
Late Bronze IIA		1400–1300
Late Bronze IIB		1300–1200
Iron IA		1200–1125
Iron IB		1125–1000
Iron IC	Iron IIA	1000–925
Iron IIA	Iron IIB	925–722
Iron IIB	Iron IIC	722–586
Iron III	Neo-Babylonian	586–520
Early Persian		520–450
Late Persian		450–332
Early Hellenistic		332–200
Late Hellenistic		200–63
Early Roman		63 BCE–135 CE
Middle Roman		135–250
Late Roman		250–363
Early Byzantine		363–460
Late Byzantine		460–638
Early Arab		638–1099
Crusader and Ayyubid		1099–1291
Late Arab		1291–1516
Ottoman		1516–1917

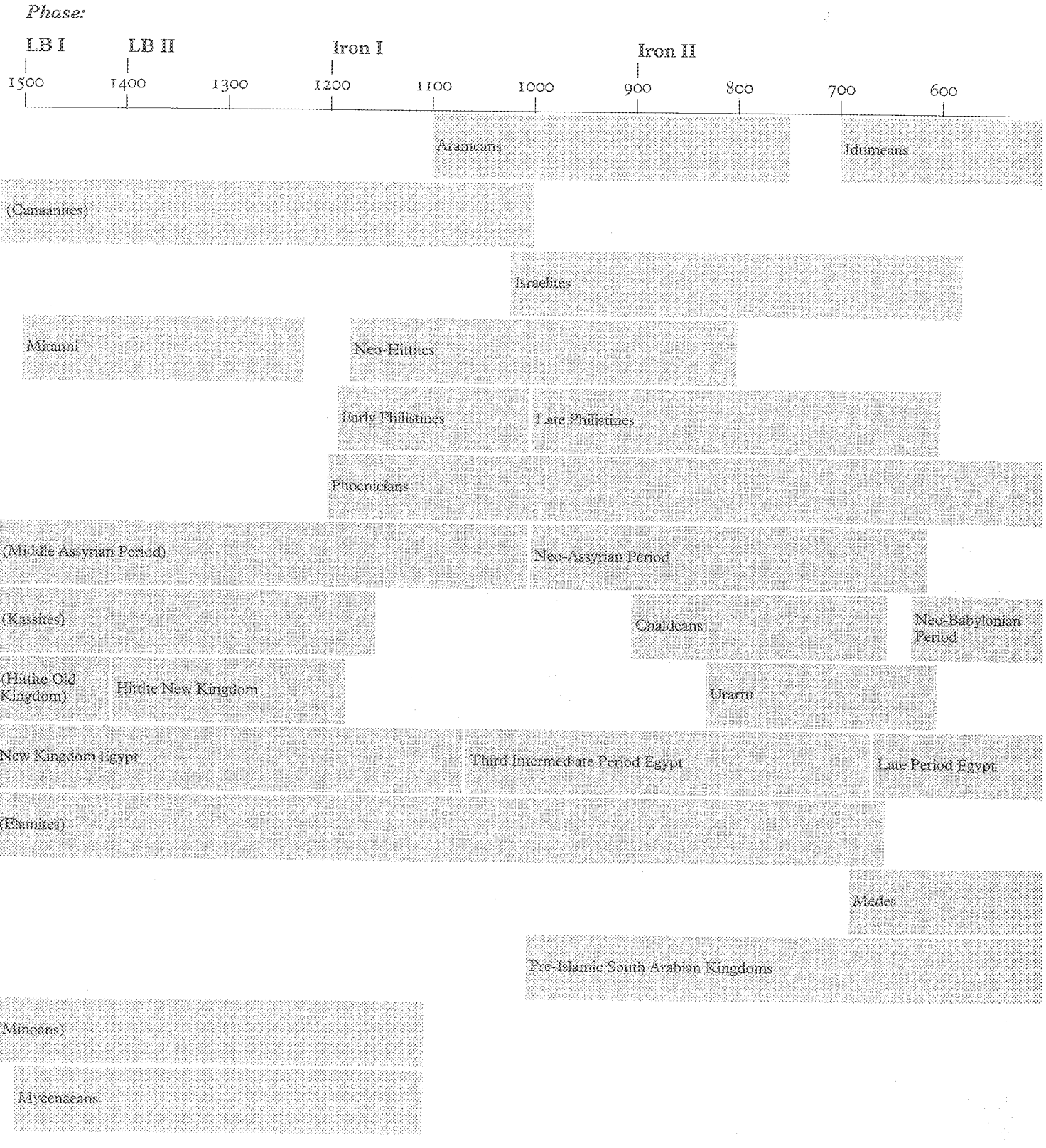


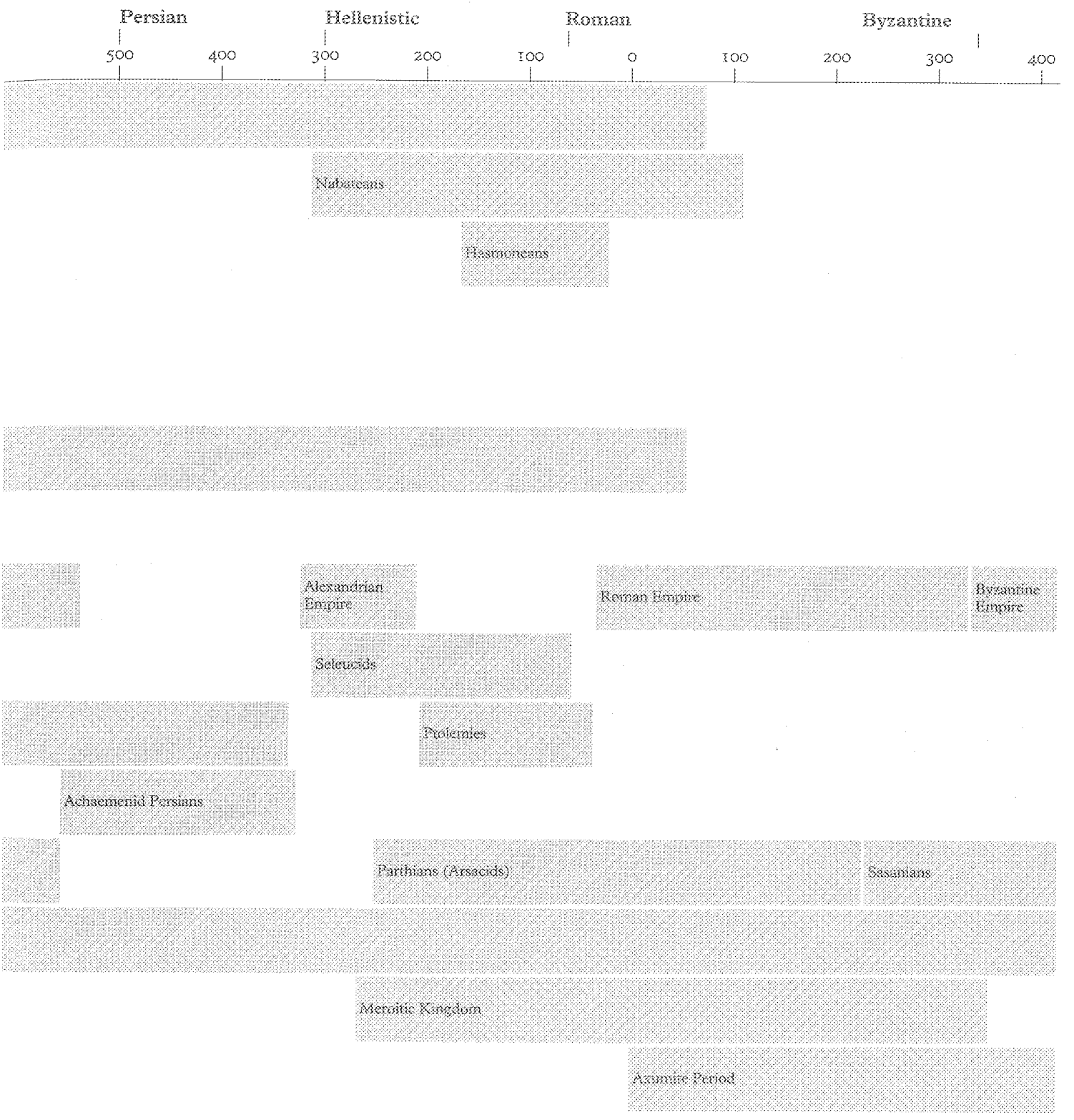


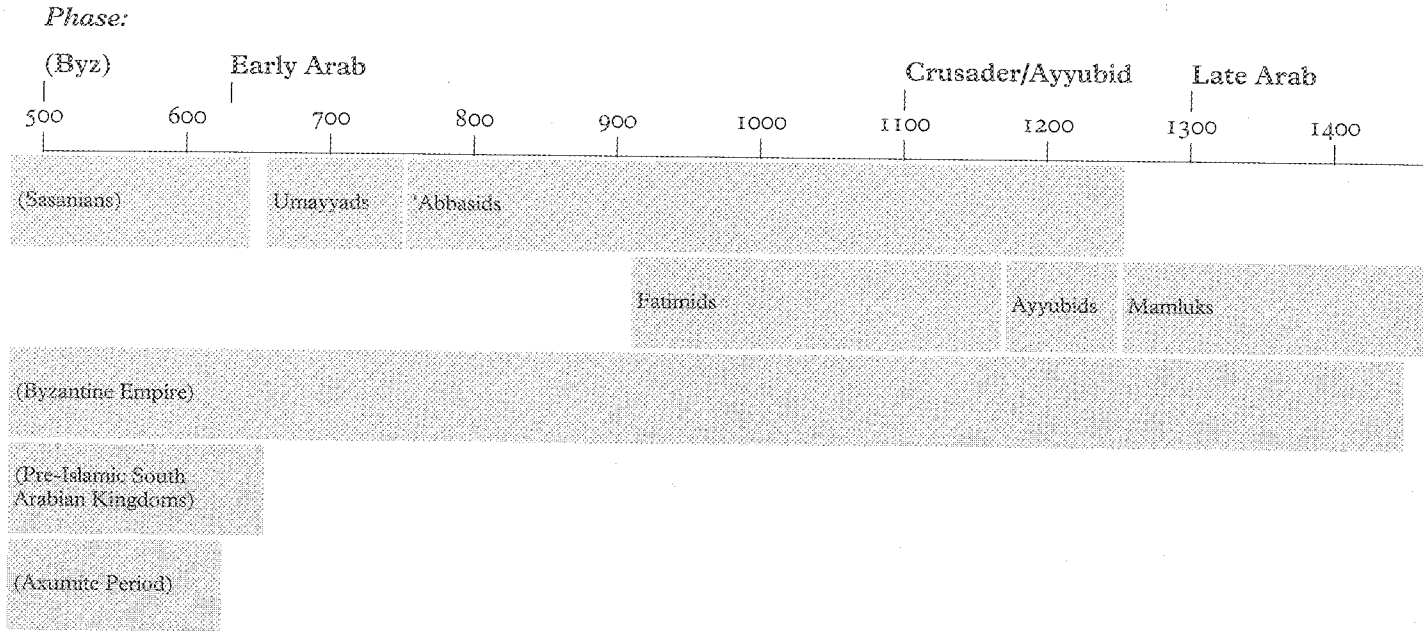
This time line is intended as a general guide for the non-specialist reader to show the approximate span of major cultures and periods and their contemporaneity with other Near Eastern cultures and periods. Related items tend to be placed near each other, and to the extent possible, succeeding dynasties or periods within a single culture follow along the same line; this is not intended to imply, however, that items on the same line are necessarily related.

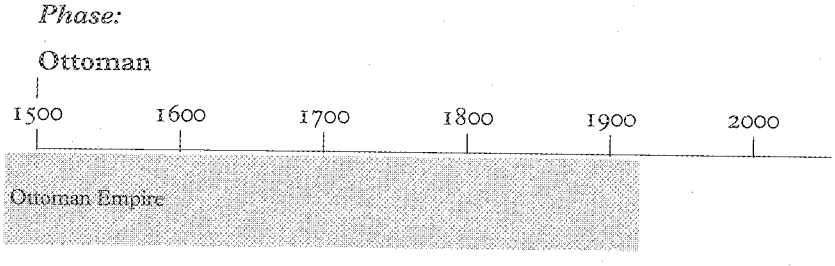

Early Chalcolithic
Late Chalcolithic
4500
4400
4300
4200
4100
4000
3900
3800
3700
3600
Sumerians
Uruk Period
Gerzean Period (Egypt)


EB IV
MB I
MB II
MB III
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
Old Assyrian Period
Middle Assyrian Period
Isin/Larsa
Ur III
Old Babylonian Period
Akkadians
Amorites
Kassites
First Intermediate Period Egypt
Middle Kingdom Egypt
Second Intermediate Period Egypt
Canaanites
Elamites


Phase:
LB I
LB II
Iron I
Iron II
1500
1400
1300
1200
1100
1000
900
800
700
600
Arameans
Idumeans
(Canaanites)
Israelites
Mitanni
Neo-Hittites
Early Philistines
Late Philistines
Phoenicians
(Middle Assyrian Period)
Neo-Assyrian Period
(Kassites)
Chaldeans
Neo-Babylonian Period
(Hittite Old Kingdom)
Hittite New Kingdom
Urartu
New Kingdom Egypt
Third Intermediate Period Egypt
Late Period Egypt
(Elamites)
Medes
Pre-Islamic South Arabian Kingdoms
(Minoans)
Mycenaeans


Persian
Hellenistic
Roman
Byzantine
500
400
300
200
100
0
100
200
300
400
Nabateans
Hasmoneans
Alexandrian Empire
Roman Empire
Byzantine Empire
Seleucids
Ptolemies
Achaemenid Persians
Parthians (Arsacids)
Sasanians
Meroitic Kingdom
Axumite Period


Phase:
(Byz)
Early Arab
Crusader/Ayyubid
Late Arab
500
600
700
800
900
1000
1100
1200
1300
1400
(Sasanians)
Umayyads
'Abbasids
Fatimids
Ayyubids
Mamluks
(Byzantine Empire)
(Pre-Islamic South Arabian Kingdoms)
(Axumite Period)

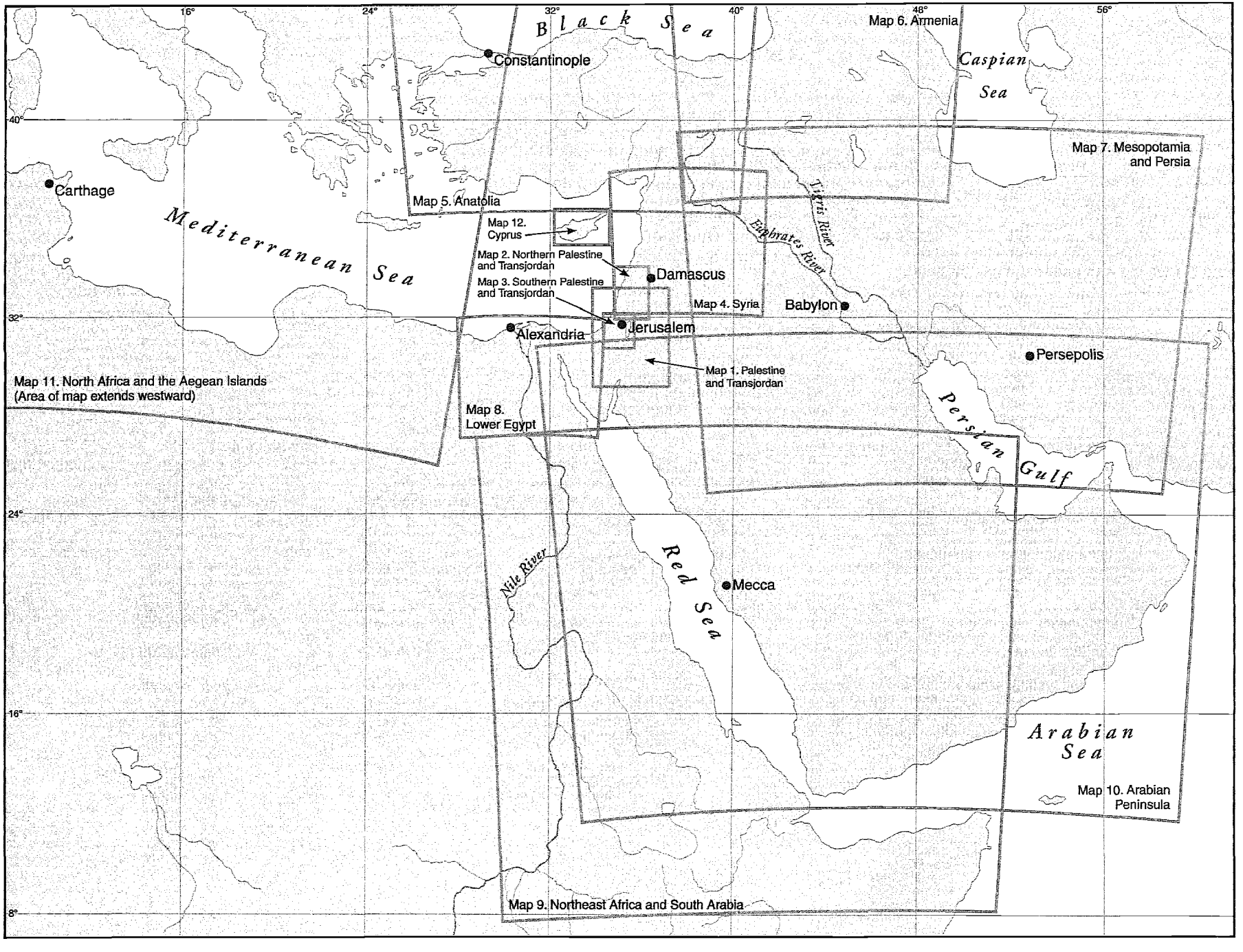

Phase:
Ottoman
1500
1600
1700
1800
1900
2000
Ottoman Empire

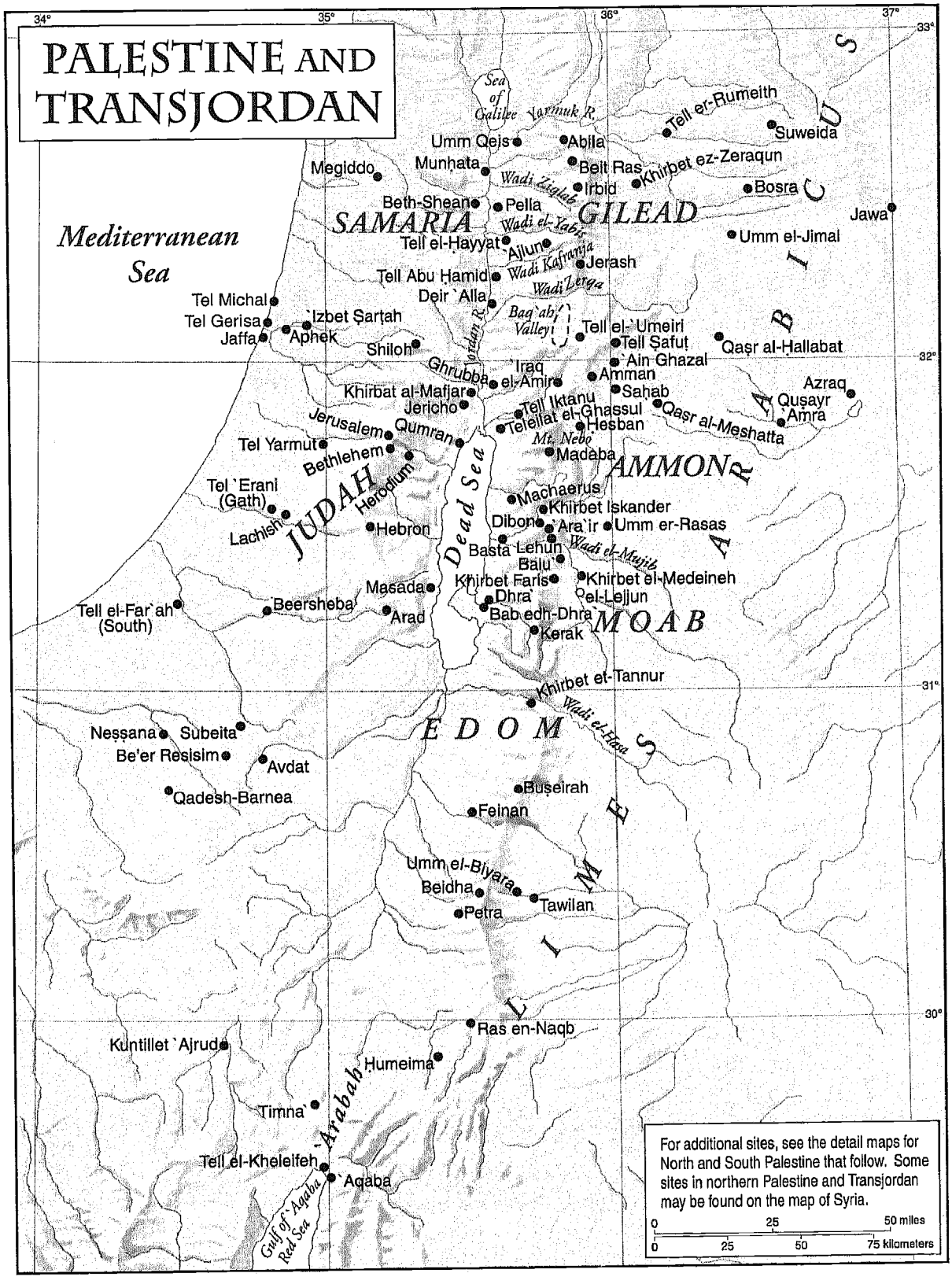
APPENDIX 3: MAPS

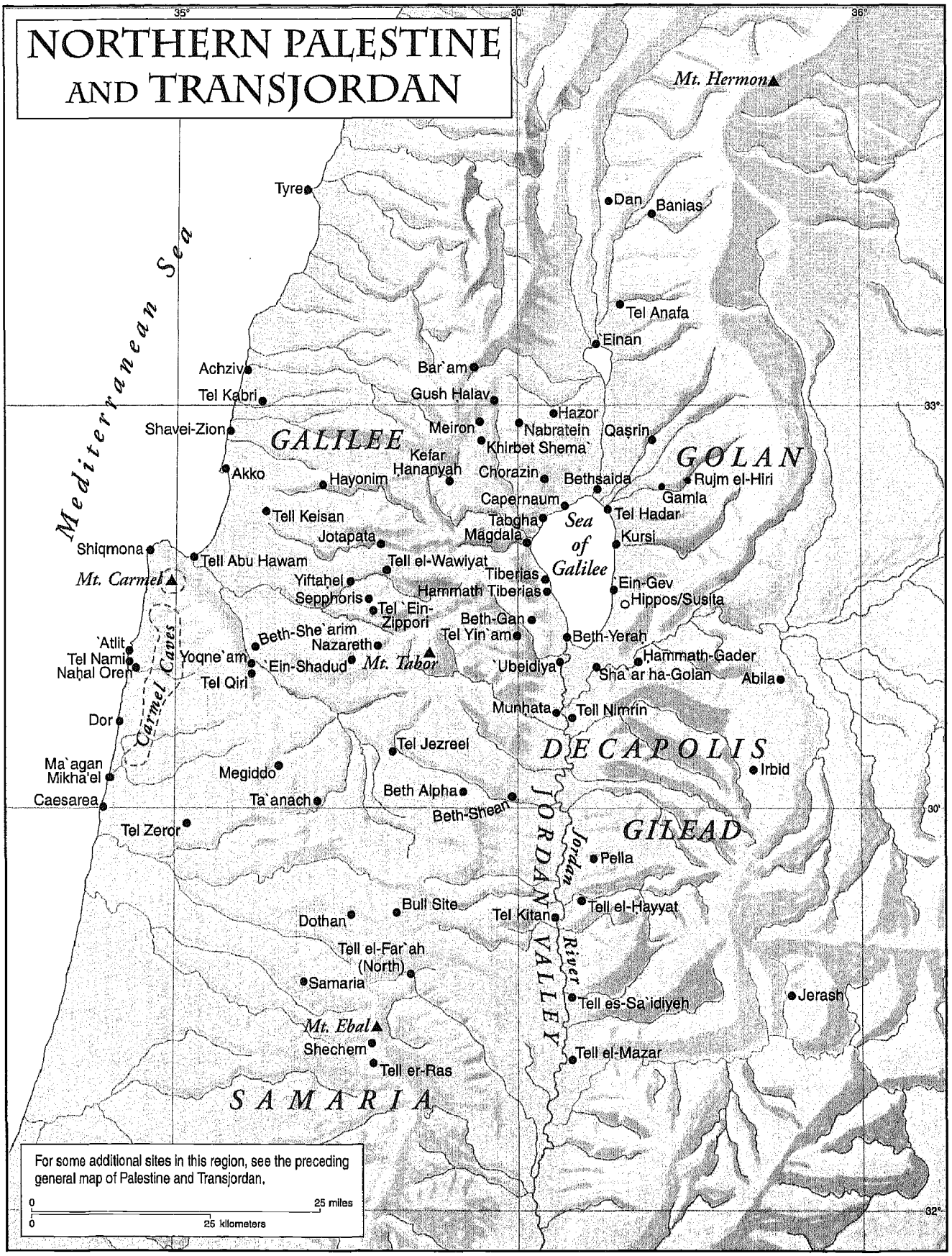
The maps that appear on the following pages are primarily intended to show the locations of the sites and regions covered in this encyclopedia. Sites that are the subject of independent entries are marked with solid dots; other important sites are marked with open circles.

1. Palestine and Transjordan
2. Northern Palestine and Transjordan (detail of map 1)
3. Southern Palestine and Transjordan (detail of map 1)
4. Syria
5. Anatolia
6. Armenia
7. Mesopotamia and Persia
8. Lower Egypt
9. Northeast Africa and South Arabia
10. Arabian Peninsula
11. North Africa and the Aegean Islands
12. Cyprus

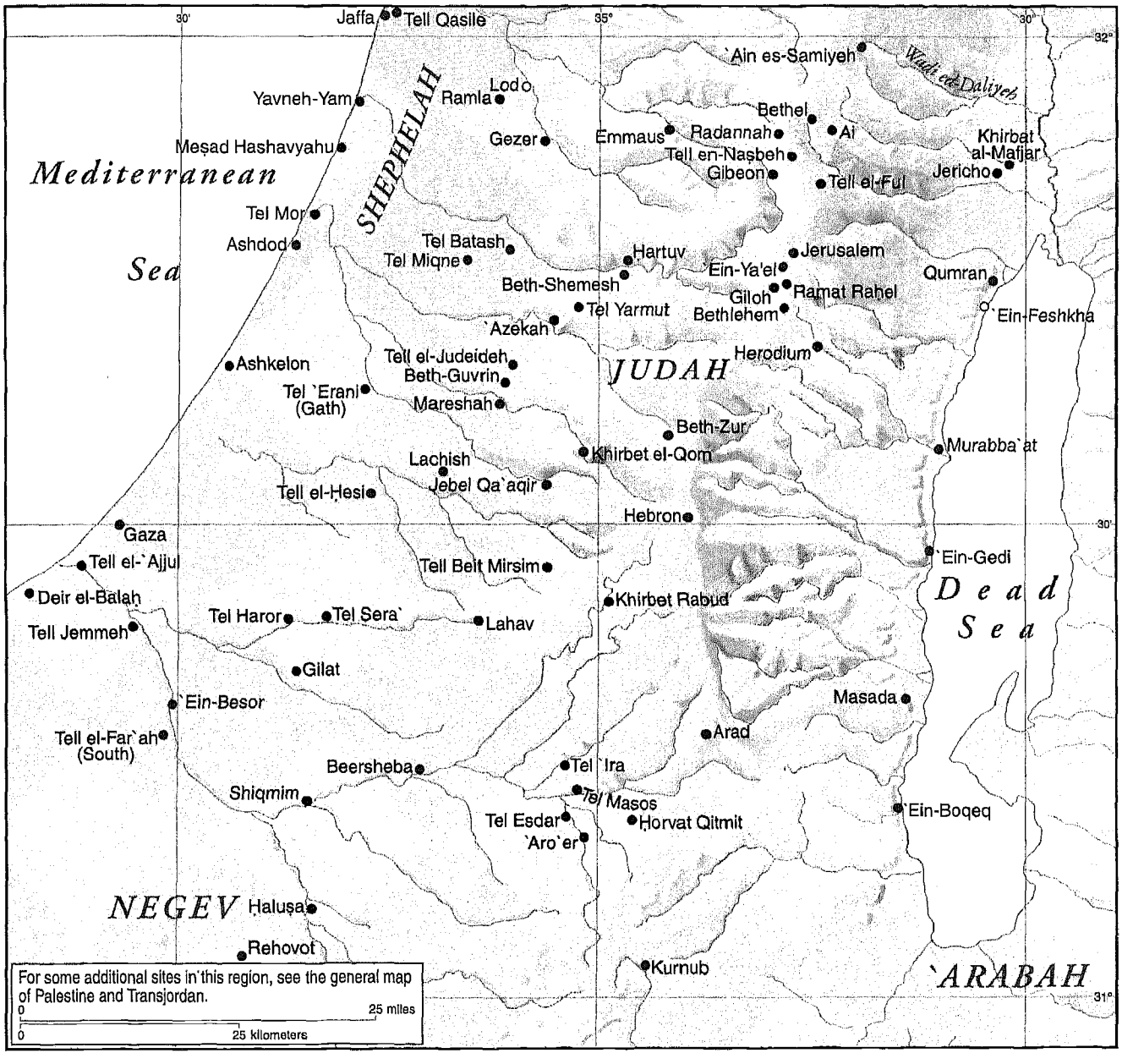
The area of each map is indicated on the general map of the Near East on the following page.

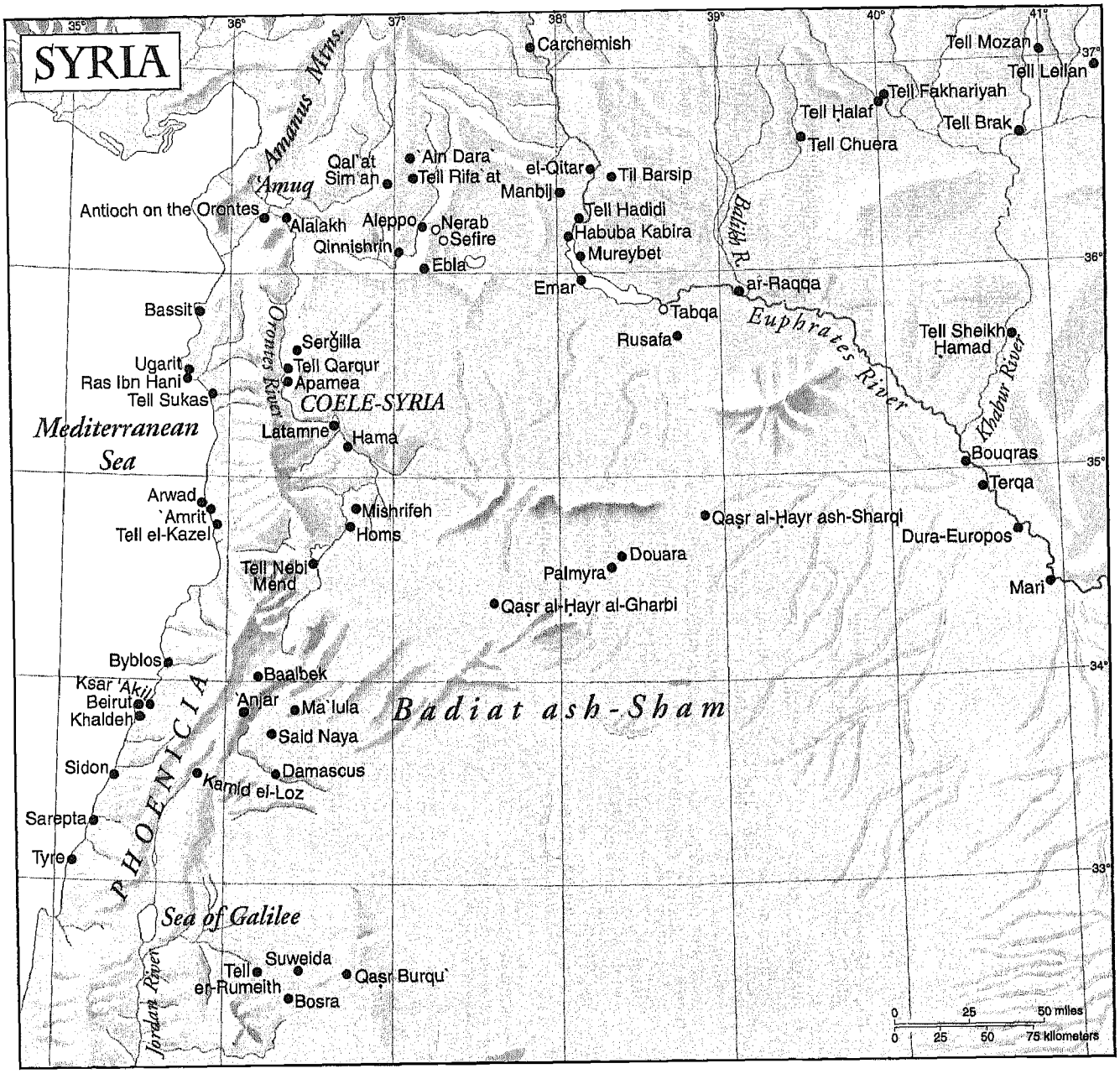

16°
24°
32°
40°
48°
56°
40°
32°
24°
16°
8°
Black Sea
Caspian Sea
Mediterranean Sea
Red Sea
Persian Gulf
Arabian Sea
Constantinople
Carthage
Alexandria
Damascus
Jerusalem
Babylon
Persepolis
Mecca
Tigris River
Euphrates River
Nile River
Map 1. Palestine and Transjordan
Map 2. Northern Palestine and Transjordan
Map 3. Southern Palestine and Transjordan
Map 4. Syria
Map 5. Anatolia
Map 6. Armenia
Map 7. Mesopotamia and Persia
Map 8. Lower Egypt
Map 9. Northeast Africa and South Arabia
Map 10. Arabian Peninsula
Map 11. North Africa and the Aegean Islands (Area of map extends westward)
Map 12. Cyprus

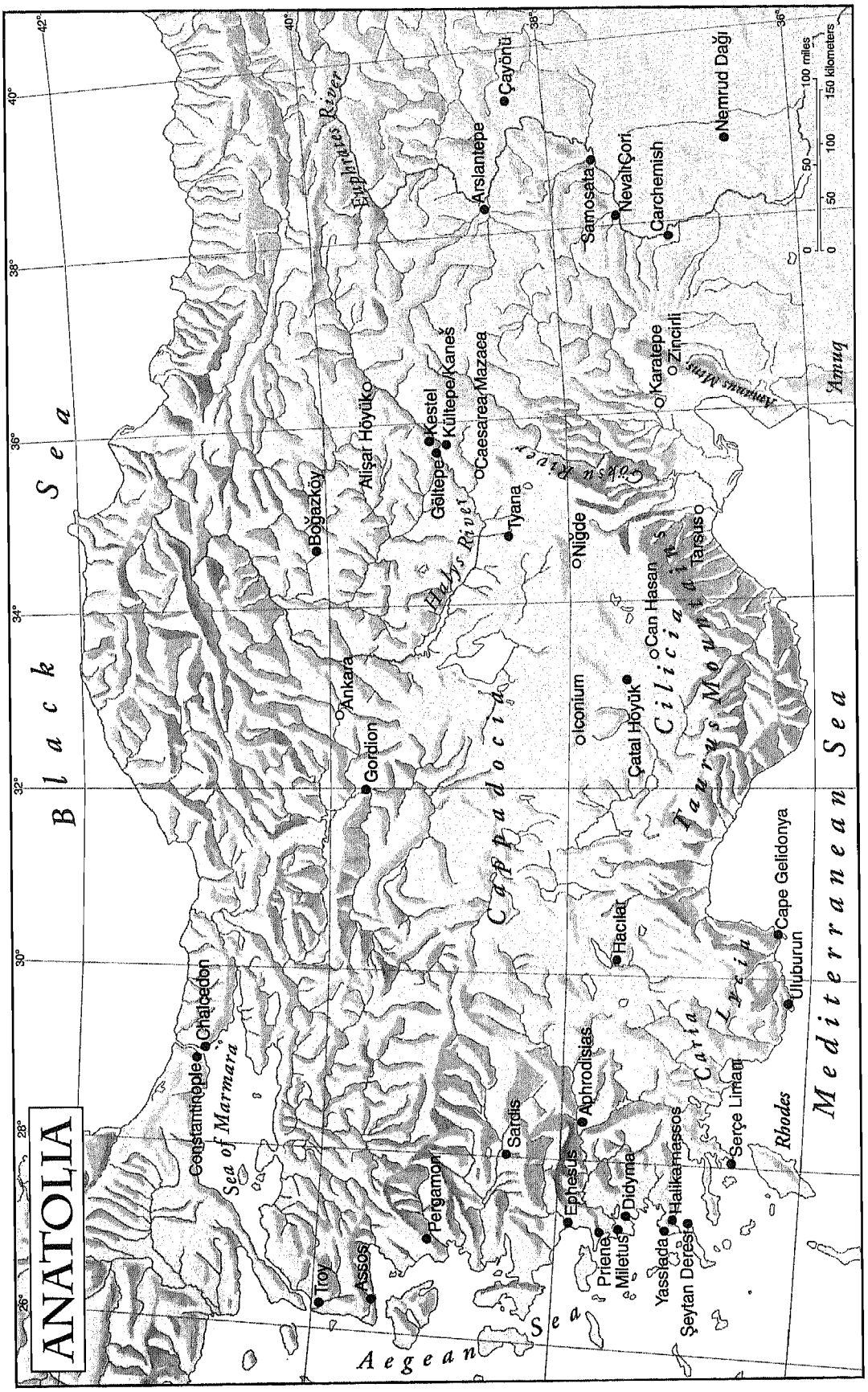

PALESTINE AND TRANSJORDAN
34°
35°
36°
37°
33°
32°
31°
30°
Mediterranean Sea
Sea of Galilee
Yarmuk R.
Tell er-Rumeith
Suweida
Umm Qeis
Abila
Megiddo
Munhata
Beit Ras
Khirbet ez-Zeraqun
Wadi Ziqlab
Irbid
Bosra
Beth-Shean
Pella
SAMARIA
Wadi el-Yabis
GILEAD
Jawa
Tell el-Hayyat
Ajlun
Umm el-Jimal
Wadi Kaframa
Jerash
Tell Abu Hamid
Wadi Zerqa
Deir `Alla
Tel Michal
Tel Gerisa
`Izbet Sartah
Jaffa
Aphek
Jordan R.
Baq`ah Valley
Tell el-`Umeiri
Tell Safut
Qasr al-Hallabat
Shiloh
Ghrubba
`Iraq el-Amir
`Ain Ghazal
Amman
Khirbat al-Mafjar
Jericho
Sahab
Azraq
Qusayr `Amra
Tell Iktanu
Telleilat el-Ghassul
Qasr al-Meshatta
Jerusalem
Qumran
Hesban
Mt. Nebo
Tel Yarmut
Bethlehem
Madaba
AMMON
Herodium
Dead Sea
Tel `Erani (Gath)
JUDAH
Machaerus
Khirbet Iskander
Lachish
Hebron
Dibon
`Ara`ir
Umm er-Rasas
Basta
Lehun
Wadi el-Mujib
Balu
Masada
Khirbet Faris
Khirbet el-Medeineh
Dhra`
el-Lejjun
Tell el-Far`ah (South)
Beersheba
Arad
Bab edh-Dhra`
MOAB
Kerak
Khirbet et-Tannur
Wadi el-Hasa
Nesṣana
Subeita
EDOM
Be'er Resisim
Avdat
Buseirah
Qadesh-Barnea
Feinan
Umm el-Biyara
Beidha
Tawilan
Petra
Ras en-Naqb
Kuntillet `Ajrud
Humeima
Timna`
`Arabah
Tell el-Kheleifeh
`Aqaba
Gulf of `Aqaba
Red Sea
For additional sites, see the detail maps for North and South Palestine that follow. Some sites in northern Palestine and Transjordan may be found on the map of Syria.
0
25
50 miles
0
25
50
75 kilometers

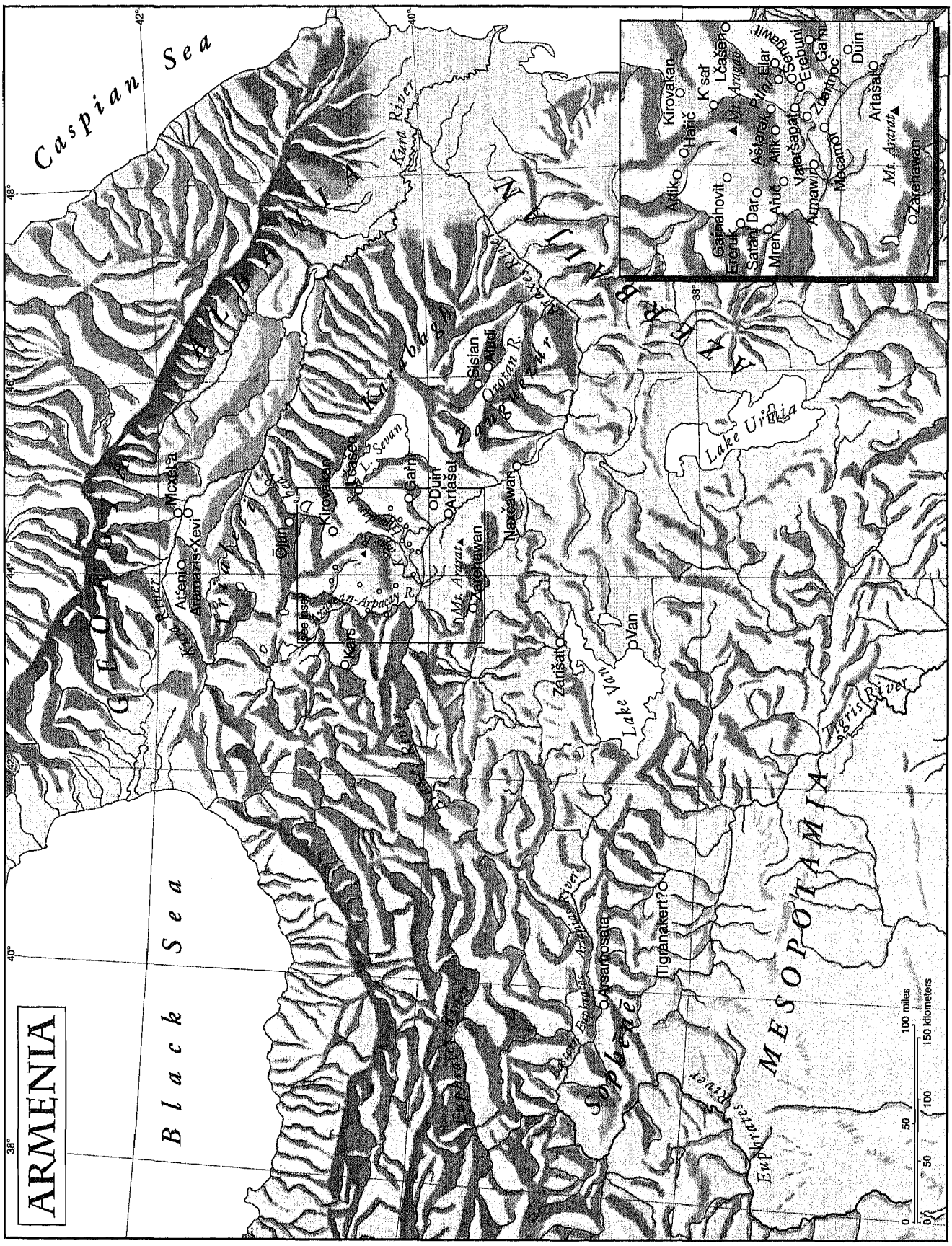

NORTHERN PALESTINE AND TRANSJORDAN
35°
30'
36°
33°
30'
32°
Mediterranean Sea
Mt. Hermon
Tyre
Dan
Banias
Tel Anafa
Einan
Achziv
Bar`am
Tel Kabri
Gush Halav
Hazor
Meiron
Nabratein
Qasrin
Shavei-Zion
GALILEE
Khirbet Shema`
Kefar Hananyah
GOLAN
Akko
Hayonim
Chorazin
Bethsaida
Rujm el-Hiri
Gamla
Capernaum
Tell Keisan
Tabgha
Tel Hadar
Sea of Galilee
Jotapata
Magdala
Kursi
Shiqmona
Tell Abu Hawam
Tell el-Wawiyat
Tiberias
Ein-Gev
Mt. Carmel
Yiftahel
Hammath Tiberias
Hippos/Susita
Sepphoris
Tel `Ein-Zippori
Beth-Gan
Beth-She`arim
Tel Yin`am
Beth-Yerah
`Atlit
Nazareth
Hammath-Gader
Tel Nami
Yoqne`am
Mt. Tabor
`Ubeidiya
Sha`ar ha-Golan
Abila
Nahal Oren
`Ein-Shadud
Tel Qiri
Carmel Caves
Munhata
Tell Nimrin
Dor
Tel Jezreel
DECAPOLIS
Irbid
Ma`agan Mikha'el
Megiddo
Beth Alpha
Caesarea
Ta`anach
Beth-Shean
JORDAN VALLEY
Jordan River
Tel Zeror
GILEAD
Pella
Bull Site
Tell el-Hayyat
Dothan
Tel Kitan
Tell el-Far`ah (North)
Samaria
Tell es-Sa`idiyeh
Jerash
Mt. Ebal
Shechem
Tell el-Mazar
Tell er-Ras
SAMARIA
For some additional sites in this region, see the preceding general map of Palestine and Transjordan.
0
25 miles
0
25 kilometers

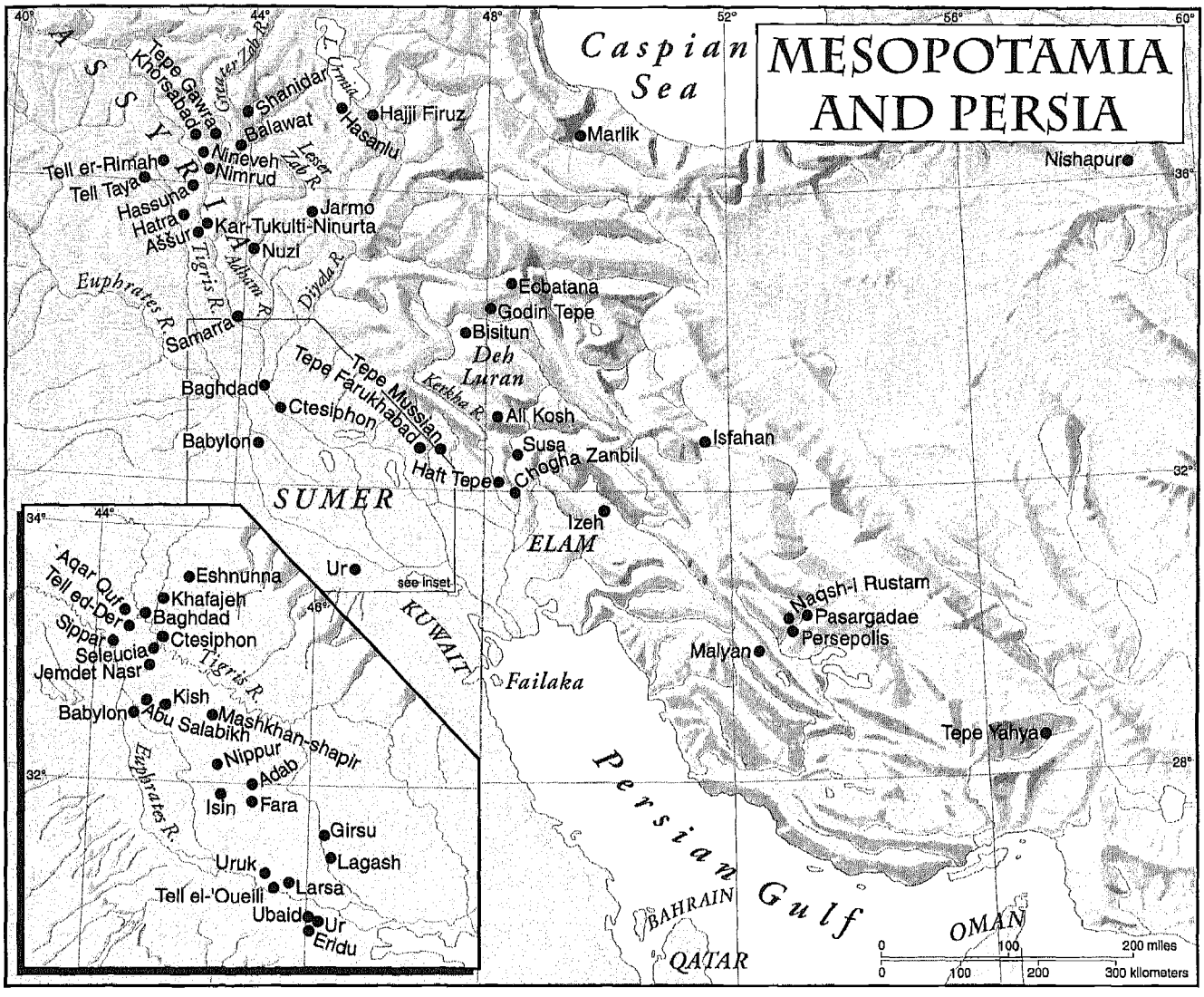
SOUTHERN PALESTINE AND TRANSJORDAN

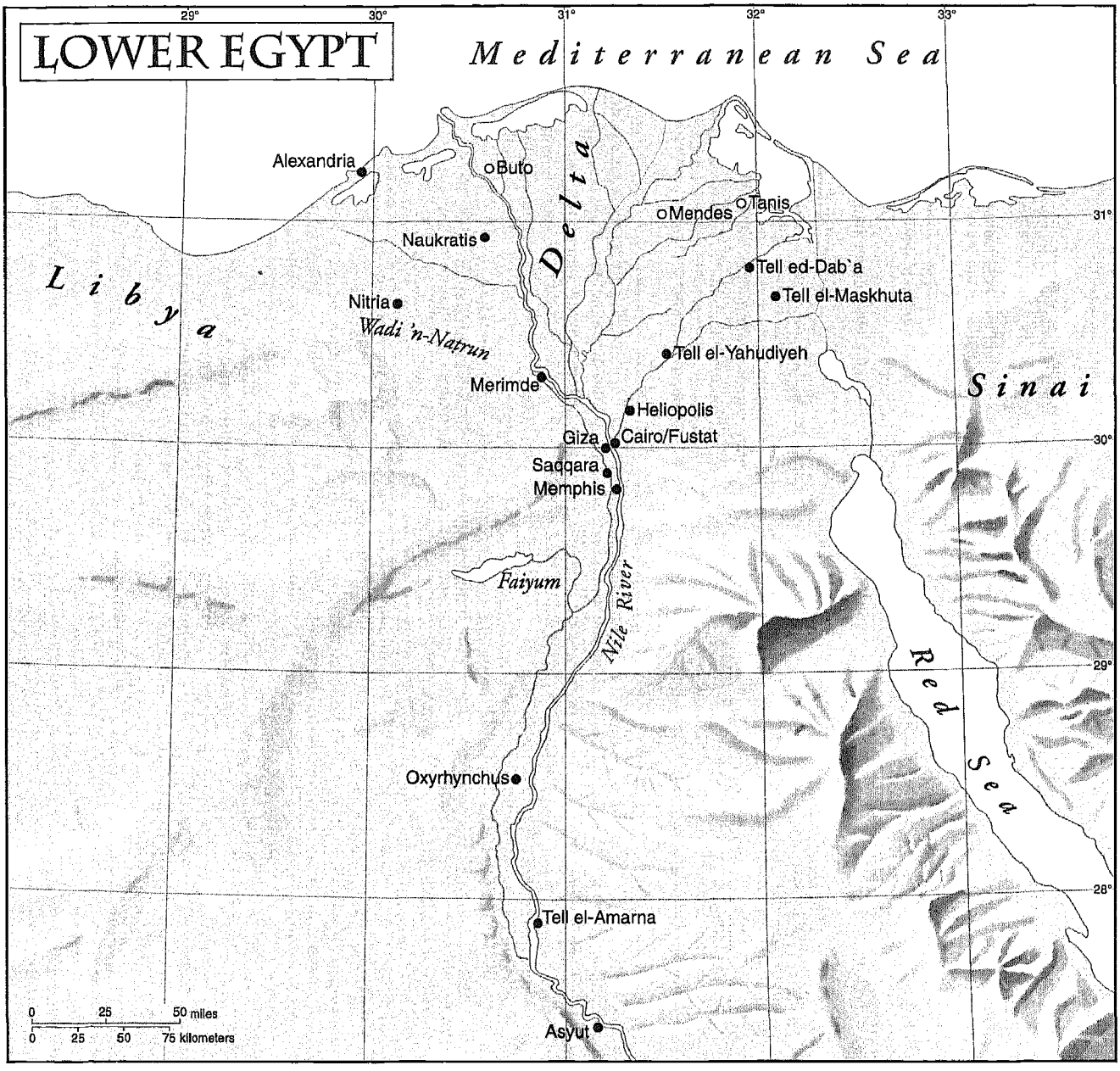


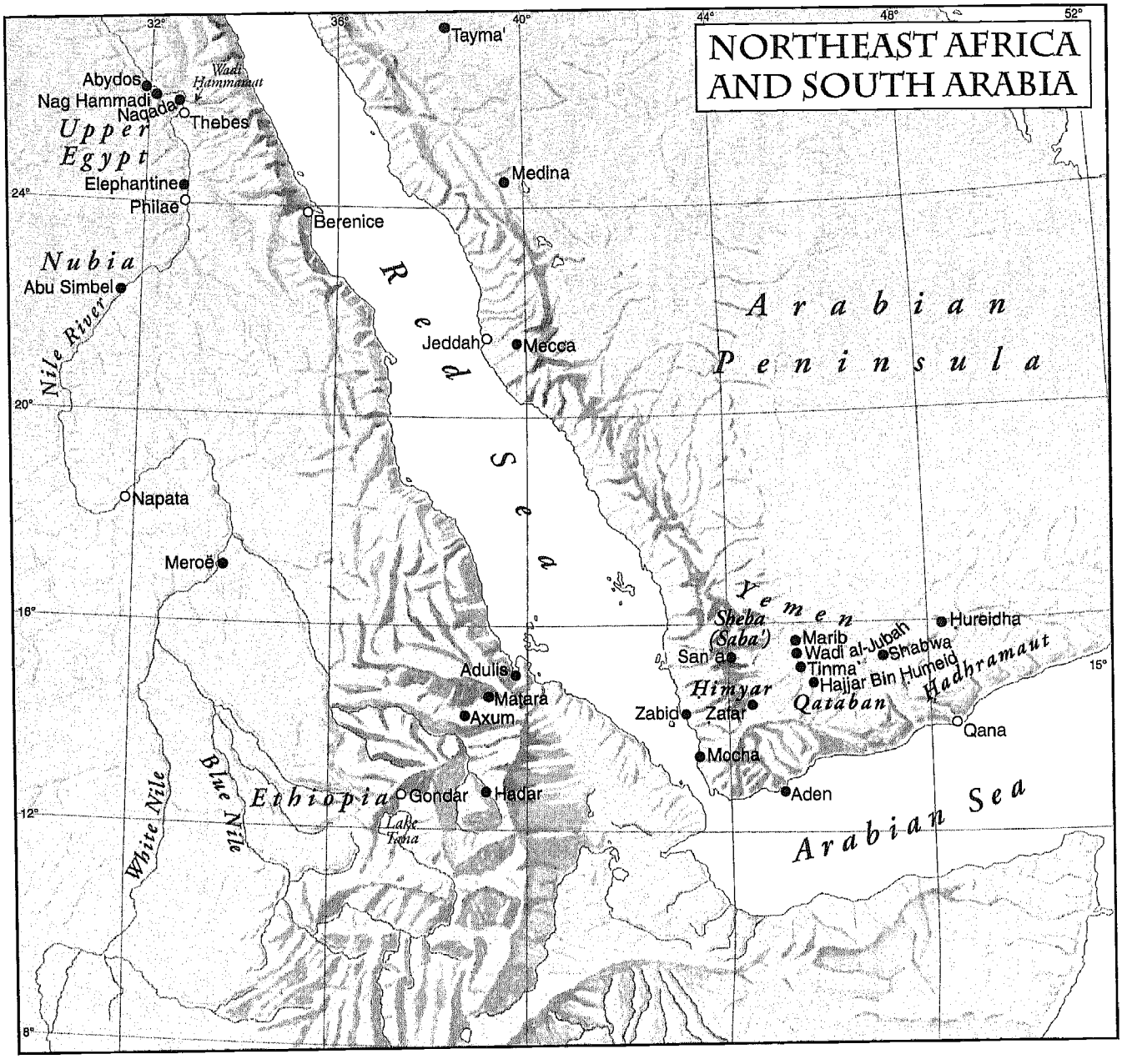

SYRIA
35°
36°
37°
38°
39°
40°
41°
Carchemish
Tell Mozan
Tell Leilan
Tell Fakhariyah
Tell Halaf
Tell Brak
Tell Chuera
Amanus Mts.
'Amuq
Qal'at Sim'an
`Ain Dara`
Tell Rifa`at
el-Qitar
Til Barsip
Manbij
Tell Hadidi
Habuba Kabira
Mureybet
Balikh R.
Antioch on the Orontes
Alalakh
Aleppo
Nerab
Sefire
Qinnishrin
Ebla
Emar
ar-Raqqa
Tabqa
Rusafa
Euphrates River
Tell Sheikh Hamad
Khabur River
Bassit
Orontes R.
Serǧilla
Ugarit
Tell Qarqur
Ras Ibn Hani
Apamea
Tell Sukas
COELE-SYRIA
Mediterranean Sea
Latamne
Hama
Bouqras
Terqa
Arwad
`Amrit
Tell el-Kazel
Mishrifeh
Homs
Qaṣr al-Ḥayr ash-Sharqi
Dura-Europos
Douara
Palmyra
Tell Nebi Mend
Mari
Qaṣr al-Ḥayr al-Gharbi
Byblos
Baalbek
Ksar 'Akil
Beirut
Khaldeh
`Anjar
Ma`lula
Said Naya
Badiat ash-Sham
Sidon
Damascus
Kamid el-Loz
Sarepta
Tyre
PHOENICIA
Sea of Galilee
Jordan River
Tell el-Rumeith
Suweida
Qaṣr Burqu`
Bosra
0 25 50 miles
0 25 50 75 kilometers

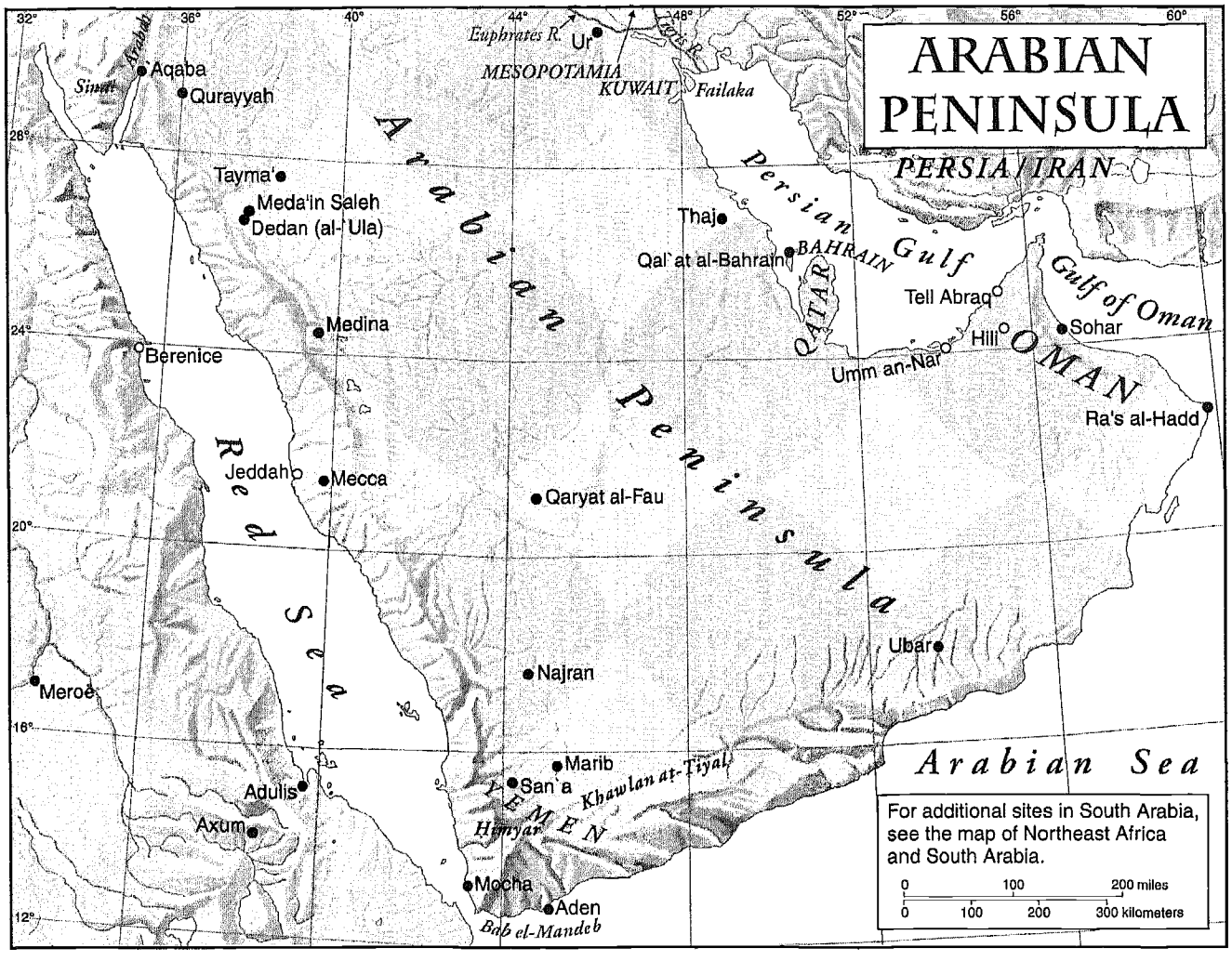

ANATOLIA
Black Sea
Aegean Sea
Mediterranean Sea
Sea of Marmara
Cappadocia
Cilicia
Taurus Mountains
Lycia
Caria
Constantinople
Chalcedon
Troy
Assos
Pergamon
Sardis
Ephesus
Priene
Miletus
Didyma
Halikarnassos
Yassıada
Şeytan Deresi
Serçe Limanı
Rhodes
Aphrodisias
Hacılar
Cape Gelidonya
Uluburun
Çatal Höyük
Iconium
Ankara
Gordion
Boğazköy
Alişar Höyük
Gâvurkalesi
Kültepe/Kaneš
Caesarea Mazaca
Tyana
Nigde
Can Hasan
Tarsus
Karatepe
Zincirli
Samosata
Arslantepe
Çayönü
Nevalı Çori
Carchemish
Nemrud Dağı
Euphrates River
Halys River
Amanus
0 50 100 miles
0 50 100 150 kilometers

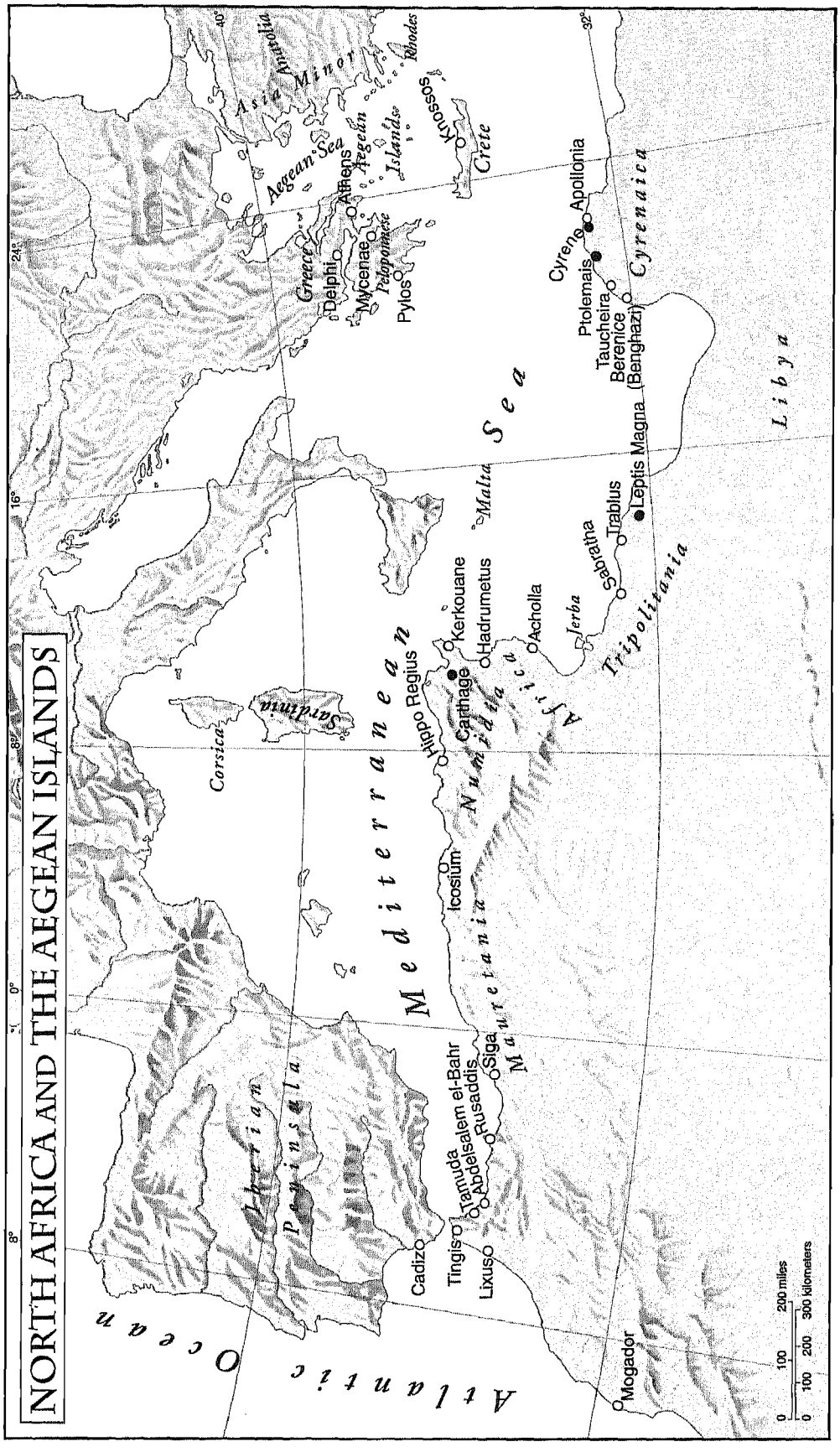

ARMENIA
Caspian Sea
Black Sea
MESOPOTAMIA
Lake Urmia
Lake Van
Kura River
Euphrates River
Tigris River
Mt. Ararat
Mt. Aragats
Kirovakan
Ałaverdi
Mcxet'a
Aparan
Ōjun
Kars
Sisian
Ordubad
Naxčawan
Zarišat'
Van
Dilman
Artašat
Ararat
Zarehawan
Ałtamar
Aramazis-Xevi
Ałtēnio
Tigranakert?
Arsamosata
Soplene
Kars R.
Araxes R.
Arpaçay R.
Euphrates R.
Eastern Euphrates
Arsanias R.
Batman R.
Bitlis R.
Zagros Mts.
Ararat Valley
Gegham Mts.
Vardenis Mts.
Zangezur Mts.
Kirovakan
Ałaverdi
K'sał
Lčašen
Mt. Aragats
Ałarak
Ałaverdi
Ałarak
Ałik
Ałič
Gaznahovit
Ełeruk
Satani Dar
Mren
Aruč
Vararšapat
Armawir
Zartonoc
Mecamor
Ererbuni
Garni
Dilijan
Artašat
Mt. Ararat
Zarehawan
0
50
100 miles
0
50
100
150 kilometers

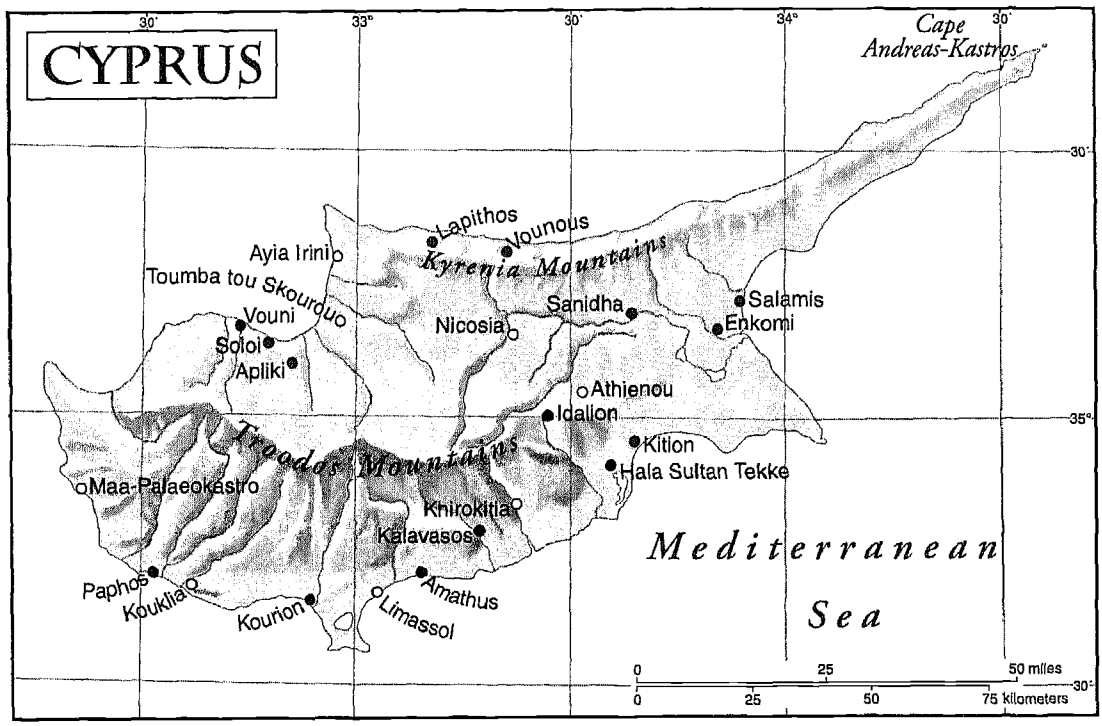

MESOPOTAMIA AND PERSIA
Caspian Sea
ASSYRIA
SUMER
ELAM
KUWAIT
Persian Gulf
BAHRAIN
QATAR
OMAN
Failaka
Deh Luran
Euphrates R.
Tigris R.
Diyala R.
Adhem R.
Greater Zab R.
Lesser Zab R.
Kerkha R.
Tepe Gawra
Khorsabad
Shanidar
Balawat
Nineveh
Nimrud
Tell er-Rimah
Tell Taya
Hassuna
Hatra
Assur
Kar-Tukulti-Ninurta
Nuzi
Jarmo
Lake Urmia
Hajji Firuz
Hasanlu
Marlik
Nishapur
Ecbatana
Godin Tepe
Bisitun
Samarra
Baghdad
Ctesiphon
Tepe Farukhabad
Tepe Mussian
Babylon
Haft Tepe
Susa
Chogha Zanbil
Ali Kosh
Izeh
Isfahan
Naqsh-i Rustam
Pasargadae
Persepolis
Malyan
Tepe Yahya
see inset
Aqar Quf
Tell ed-Der
Sippar
Seleucia
Jemdet Nasr
Eshnunna
Khafajeh
Ur
Kish
Abu Salabikh
Mashkhan-shapir
Nippur
Adab
Isin
Fara
Girsu
Lagash
Uruk
Larsa
Tell el-'Oueili
Ubaid
Eridu
0 100 200 miles
0 100 200 300 kilometers


LOWER EGYPT
29°
30°
31°
32°
33°
Mediterranean Sea
Alexandria
Buto
Delta
Mendes
Tanis
Naukratis
Tell ed-Dab`a
Tell el-Maskhuta
Libya
Nitria
Wadi 'n-Natrun
Tell el-Yahudiyeh
Merimde
Sinai
Heliopolis
Giza
Cairo/Fustat
Saqqara
Memphis
Faiyum
Nile River
Red Sea
Oxyrhynchus
Tell el-Amarna
Asyut
31°
30°
29°
28°
0 25 50 miles
0 25 50 75 kilometers


NORTHEAST AFRICA AND SOUTH ARABIA
32°
36°
40°
44°
48°
52°
24°
20°
16°
12°
8°
15°
Tayma'
Abydos
Wadi Hammamat
Nag Hammadi
Nagada
Thebes
Upper Egypt
Elephantine
Philae
Berenice
Medina
Nubia
Abu Simbel
Nile River
Red Sea
Jeddah
Mecca
Arabian Peninsula
Napata
Meroë
Yemen
Sheba (Saba')
Hureidha
Marib
Wadi al-Jubah
Shabwa
San'a
Tinma'
Hajjar Bin Humeid
Hadhramaut
Himyar
Qataban
Zabid
Zafar
Qana
Mocha
Aden
Adulis
Matara
Axum
Ethiopia
Gondar
Hadar
Lake Tana
White Nile
Blue Nile
Arabian Sea


ARABIAN PENINSULA
Arabian Peninsula
Red Sea
Persian Gulf
Gulf of Oman
Arabian Sea
PERSIA/IRAN
MESOPOTAMIA
KUWAIT
BAHRAIN
QATAR
OMAN
YEMEN
Euphrates R.
Tigris R.
Ur
Failaka
Aqaba
Qurayyah
Sinai
Arabah
Tayma'
Meda'in Saleh
Dedan (al-'Ula)
Thaj
Qal'at al-Bahrain
Tell Abraq
Umm an-Nar
Hili
Sohar
Ra's al-Hadd
Medina
Berenice
Jeddah
Mecca
Qaryat al-Fau
Najran
Ubar
Meroe
Marib
San'a
Khawlan at-Tiyal
Himyar
Adulis
Axum
Mocha
Aden
Bab el-Mandeb
32°
36°
40°
44°
48°
52°
56°
60°
28°
24°
20°
16°
12°
For additional sites in South Arabia, see the map of Northeast Africa and South Arabia.
0 100 200 miles
0 100 200 300 kilometers


NORTH AFRICA AND THE AEGEAN ISLANDS
Atlantic Ocean
Mediterranean Sea
Libya
Asia Minor
Aegean Sea
Aegean Islands
Greece
Crete
Rhodes
Corsica
Sardinia
Malta
Iberian Peninsula
Numidia
Mauretania
Africa
Tripolitania
Cyrenaica
Athens
Delphi
Mycenae
Peloponnese
Pylos
Knossos
Cyrene
Apollonia
Ptolemais
Taucheira
Berenice (Benghazi)
Leptis Magna
Sabratha
Tripolis
Acholla
Ierba
Hadrumetus
Kerkouane
Carthage
Hippo Regius
Icosium
Tamuda
Abdelsalem el-Bahr
Rusaddis
Siga
Tingis
Lixus
Cadiz
Mogador
8°
0°
8°
16°
24°
32°
40°
0 100 200 miles
0 100 200 300 kilometers


CYPRUS
30°
33°
30°
34°
30°
Cape Andreas-Kastros
30°
Lapithos
Vounous
Kyrenia Mountains
Ayia Irini
Toumba tou Skourdou
Vouni
Soloi
Apliki
Sanidha
Salamis
Enkomi
Nicosia
Athienou
Idalion
35°
Kition
Hala Sultan Tekke
Troodos Mountains
Maa-Palaeokastro
Khirokitia
Kalavasos
Mediterranean Sea
Paphos
Kouklia
Kourion
Amathus
Limassol
0
25
50 miles
0
25
50
75 kilometers
30°

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Alt, Albrecht; Cities, *article on* Cities of the Bronze and Iron Ages; Dalman, Gustaf; Deutsche Orient-Gesellschaft; Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes; Galling, Kurt; Israelites; Masos, Tel; Schumacher, Gottlieb; Sellin, Ernst

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Ali Kosh; Deh Luran; Persia, *article on* Prehistoric Persia

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Four-Room House; House, *article on* Syro-Palestinian Houses; Maskhuta, Tell el-; Stables; Stratigraphy; Stratum; Winnett, Frederick Vincent

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Abydos; American Research Center in Egypt; Asyut; Breasted, James Henry; Memphis; Merimde; Nile

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Franciscan Custody of the Holy Land; Machaerus; Madaba; Nebo, Mount

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Albright Institute of Archaeological Research
American Center of Oriental Research
American Institute for Maghreb Studies
American Institute for Yemeni Studies
American Institute of Iranian Studies
American Palestine Exploration Society
American Research Center in Egypt
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American School of Oriental Research in Baghdad
American Schools of Oriental Research
Archaeological Institute of America
British Institute at Amman for Archaeology and History
British Institute of Archaeology at Ankara
British Institute of Persian Studies
British School of Archaeology in Egypt
British School of Archaeology in Iraq
British School of Archaeology in Jerusalem
Council of American Overseas Research Centers
Cyprus American Archaeological Research Institute
Deutsche Orient-Gesellschaft
Deutscher Palästina-Verein
Deutsches Archäologisches Institut, Abteilung Damaskus
Deutsches Archäologisches Institut, Abteilung Istanbul
Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes
École Biblique et Archéologique Française

Egypt Exploration Society
Franciscan Custody of the Holy Land
French Archaeological Missions
Institute of Holy Land Studies
Institut Français d'Archéologie du Proche Orient
Institut Français d'Archéologie Orientale
Institut Français d'Études Anatoliennes d'Istanbul
Institut Français d'Études Arabes
Israel Antiquities Authority
Israel Exploration Society
Istituto Italiano per il Medio ed Estremo Oriente
Middle Eastern Culture Center in Japan
Middle East Medievalists
Middle East Studies Association
Nederlands Historisch-Archeologisch Instituut te Istanbul
Nelson Glueck School of Biblical Archaeology
Palestine Exploration Fund
Palestine Oriental Society
Society of Biblical Literature
Undersea Exploration Society of Israel

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Aharoni, Yohanan
Albright, William Foxwell
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Andrae, Walter
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Avi-Yonah, Michael
Badè, William Frederic
Bagatti, Bellarmino
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Barrois, Augustin Georges
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Bliss, Frederick Jones
Botta, Paul-Émile
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Burrows, Millar
Butler, Howard Crosby
Callaway, Joseph Atlee
Carter, Howard
Caton-Thompson, Gertrude
Champollion, Jean François
Clermont-Ganneau, Charles
Conder, Claude Reignier
Corbo, Virgilio C.
Creswell, Keppel Archibald Cameron
Crowfoot, John Winter
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Di Cesnola, Luigi Palma
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